Agricultural Policy Monitoring and Evaluation 2023

ADAPTING AGRICULTURE TO CLIMATE CHANGE



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Foreword

This *Agricultural Policy Monitoring and Evaluation 2023* report provides up-to-date monitoring and evaluation of agricultural policies across 54 countries from across the world, including the 38 OECD countries and the five non-OECD EU Member States, and eleven emerging and developing economies: Argentina, Brazil, People's Republic of China, India, Indonesia, Kazakhstan, the Philippines, the Russian Federation,* South Africa, Ukraine and Viet Nam. It is the 36th in the series of the OECD *Agricultural Policy Monitoring and Evaluation* reports, and the 11th report to include both OECD countries and emerging and developing economies.

The report provides insights into the increasingly complex nature of agricultural policy and is based on the OECD's comprehensive system for measuring and classifying support to agriculture — the Producer and Consumer Support Estimates (PSE and CSE) and related indicators. These indicators provide comparable information across countries on the nature and extent of support and serve as a basis for the OECD's Agricultural Policy Monitoring and Evaluation. This 2023 report focuses on the role of agricultural and other policies in adapting agriculture to climate change.

The report is structured as follows. The Executive Summary synthesises the key findings. Chapter 1 discusses the implications of climate change for the agricultural sector and analyses public efforts to foster agricultural climate change adaptation. In particular, it provides an overview of countries' strategies and policy actions for enhancing the sector's adaptive, absorbtive and transformative capacities relative to climate change, discusses how agricultural support policies may affect these capacities, and makes recommendations to accelerate climate change adaptation in agriculture. Chapter 2 provides an overview of recent developments in agricultural policies and support, with a special focus on policies implemented in response to Russia's war of aggression in Ukraine. Chapter 3 describes the overall trends in agricultural support and is followed by individual chapters for each of the countries covered (the European Union, which has a Common Agricultural Policy, is presented as a single chapter). Country chapters begin with snapshots containing brief summaries of developments in agricultural policies and support as well as country-specific policy recommendations. This is followed by more comprehensive descriptions of agricultural policy developments, including related to efforts towards agricultural climate change adaptation. A Statistical Annex containing detailed background tables of the indicators of agricultural support is available as a separate document on the OECD website (https://doi.org/10.1787/b14de474-en).

The Executive Summary as well as Chapters 1 and 2 are published under the responsibility of the OECD Committee for Agriculture. The remainder of the report is published under the responsibility of the Secretary-General of the OECD.

* This report does not contain a country chapter on the Russian Federation, nor any tables with support indicators in the Statistical Annex. However, aggregate data for the 11 emerging economies and for all 54 countries covered in this report continue to include those for Russia.

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Authorship of the different parts of this report is acknowledged as follows:

Chapter 1: Kelly Cobourn, Tim Whitnall and Jibran Punthakey

Chapter 2: Tim Whitnall and Martin von Lampe

Argentina: Mercedes Campi, with material provided by: Gerardo Luis Petri, Federico Amodei and Iván Hrydziuszko (Ministry of Agriculture, Livestock and Fisheries)

Australia: Jibran Punthakey

Brazil: Dalila Cervantes-Godoy and Florence Bossard, with material provided by Antônio Luiz Machado de Moraes (Ministry of Agriculture) and Helena Müller Queiroz Agricultural Counsellor, (Embassy of Brazil in Paris)

Canada: Hélène Bombrun

Chile: Dalila Cervantes-Godoy

China: Silvia Sorescu and Florence Bossard, with material provided by: Cheng Guoqiang (National School of Food Security Strategy, Renmin University of China and Rural Revitalization Expert Advisory Committee of the Ministry of Agriculture and Rural Affairs)

Colombia: Dalila Cervantes-Godoy

Costa Rica: Adriana García Vargas

European Union: Francesco Vanni, Urszula Ziębińska and Hélène Bombrun, based on information collected for individual member states by their country-desk officers, additionally including: Masayasu Asai, Mercedes Campi, Adriana García Vargas, Guillaume Gruère, Ben Henderson, Jussi Lankoski, Roger Martini, Silvia Sorescu, Noura Takrouri-Jolly, Hugo Valin, Veronika Vanišová, Martin von Lampe, and Tim Whitnall

Iceland: Jussi Lankoski

India: Silvia Sorescu and Florence Bossard, with material provided by: Ashok Gulati (Indian Council for Research on International Economic Relations)

Indonesia: Jesús Antón and Florence Bossard, with material provided by: Tahlim Sudaryanto (Indonesian Center for Agriculture Socio Economic and Policy Studies, Ministry of Agriculture)

Israel: Guillaume Gruère

Japan: Masayasu Asai

Kazakhstan: Tim Whitnall and Ben Henderson, with material provided by: Yerlan Syzdykov (Analytical Centre for Economic Policy in the Agricultural Sector)

Korea: Jaewon Song

Mexico: Dalila Cervantes-Godoy

New Zealand: Martin von Lampe

Norway: Tim Whitnall

Philippines: Florence Bossard, with material provided by Katrin Mares (Department of Agriculture), and Divine Kathylin San Juan and Rachel C. Lacsa (Philippines Statistics Agency)

South Africa: Ben Henderson, with material provided by: André Joost (Stellenbosch University) and David Spies (North-West University, Potchefstroom)

Switzerland: Hugo Valin

Türkiye: Roger Martini

Ukraine: Kelly Cobourn, with material provided by Vitaliy Zhygadlo (consultant to the OECD)

United Kingdom: Jibran Punthakey, Florence Bossard and Michael Ryan

United States: Roger Martini

Viet Nam: Kelly Cobourn, with material provided by Tran Con Thang (Institute of Policy and Strategy for Agriculture and Rural Development) and Trang Nguyen (Ministry for Agriculture and Rural Development)

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List of Acronyms and Abbreviations

AEIs	Agri-environmental Indicators
AFOLU	Agriculture, Forestry and Other Land Use
AIS	Agricultural Innovation System
APMC	Agricultural Produce Marketing Committee (India)
ASEAN	Association of Southeast Asian Nations
ASF	African Swine Fever
BPNT	Food assistance programme (Indonesia)
BRM programmes	Business Risk Management programmes (Canada)
BULOG	Food Logistics Agency (Indonesia)
CAP	Canadian Agricultural Partnership
CAP	Common Agricultural Policy (of the European Union)
CEPA	Comprehensive Economic Partnership Agreement
CMU	Cabinet of Ministers of Ukraine
COVID-19	Corona Virus Disease, first recorded in 2019
EAEU	Eurasian Economic Union (Kazakhstan)
EEA	European Economic Agreement
EFTA	European Free Trade Association
EMBRAPA	Brazilian Agricultural Research Corporation
FAO	Food and Agriculture Organization of the United Nations
FTA	Free Trade Agreement
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GI	Geographical Indication
GRA	Global Research Alliance on Agricultural Greenhouse Gases (New Zealand)
GRF	Gross Farm Receipts
IHS	Import Health Standards (New Zealand)
INDAP	The smallholders' agency (Chile)
IPCC	Intergovernmental Panel on Climate Change
LULUCF	Land Use, Land Use Change and Forestry
MAFF	Ministry of Agriculture, Forestry and Fisheries (Japan)
MAPA	Ministry of Agriculture and Livestock (Brazil)
MARA	Ministry of Agriculture and Rural Affairs (China)
MARD	Ministry of Agriculture and Rural Development (Israel)
NAFTA	North American Free Trade Agreement
NDC	Nationally Determined Contribution
OECD	Organisation for Economic Co-operation and Development
PEM	Policy Evaluation Model
PROAGRO	General agriculture insurance programme (Brazil)
PROCAMPO	System of direct income support payments (Mexico)
RCEF	Rice Competitiveness Enhancement Fund (the Philippines)

RCEP	Regional Comprehensive Economic Partnership
R&D	Research and Development
RDP	Rural Development Programme
RTA	Regional Trade Agreement
TFP	Total Factor Productivity
TRQ	Tariff Rate Quota
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
USDA	United States Department of Agriculture
VAT	Value Added Tax
WHO	World Health Organization
WTO	World Trade Organization
OECD indicators of support	
ACT	All Commodity Transfers
CSE	Consumer Support Estimate
GCT	Group Commodity Transfers
GSSE	General Services Support Estimate
MPS	Market Price Support
NAC	Nominal Assistance Coefficient
NPC	Nominal Protection Coefficient
OTP	Other Transfers to Producers
PSE	Producer Support Estimate
SCT	Single Commodity Transfers
TBSE	Total Budgetary Support Estimate
TSE	Total Support Estimate
Currencies	
ARS	Argentinian peso
AUD	Australian dollar
BRL	Brazilian real
CAD	Canadian dollar
CLP	Chilean peso
COP	Colombian peso
CHF	Swiss frank
CNY	Chinese yuan renminbi
CRC	Costa Rican colon
EUR	Euro
GBP	British pound
IDR	Indonesian roupiah
INR	Indian rupee
ILS	Israeli shekel
ISK	Icelandic krona
JPY	Japanese yen
KRW	Korean won
KZT	Kazakh tenge
MXN	Mexican peso
NOK	Norwegian krone
NZD	New Zealand dollar
PHP	Philippines peso
RUR	Russian rouble
TRY	New Turkish lira
UAH	Ukrainian hryvnia
USD	United States dollar
VND	Vietnamese dong
ZAR	South African rand

Executive Summary

Rising impacts of climate change underscore the necessity of adaptation and reform of policies that hinder adjustments to agricultural production systems

Agricultural markets have been facing successive crises while being confronted with climate-change challenges. Policies urgently need to be reformed, to meet the triple-challenge of providing adequate, affordable, safe and nutritious food for a growing global population; providing livelihoods all along the food value chain; and doing so while increasing the environmental sustainability of the sector. Harmful support should be reduced or reoriented notably towards climate change adaptation, emission reductions, resilience, and sustainable productivity growth.

Support to agriculture continues to grow

Total support to agriculture reached USD 851 billion per year during 2020-22 for the 54 countries covered by this report. This is a historical high and an almost 2.5-fold increase compared to 2000-02, even if below the 3.6-fold growth in the value of agricultural production. Support to the agricultural sector includes transfers to producers (both individually or collectively) and to consumers. Most producer support hinders climate change adaptation, often is market distorting, and risks harming the environment.

Support remains highly concentrated in a few large producing economies: the People's Republic of China (hereafter "China"), now representing 36% of this total, has emerged as the country providing the most support, displacing large OECD economies which have historically held that role. India, the United States and the European Union, all large agricultural producers as well, now represent 15%, 14% and 13%, respectively. Overall, China and India, although different in the structure and implications of their agricultural policies, together account for 87% of the support provided to agriculture in the covered emerging economies. In turn, the United States and the European Union provide close to two-thirds of support among OECD countries.

Across the 54 countries, USD 518 billion per year was paid from government budgets, with the remaining USD 333 billion per year being provided through policies lifting domestic prices above reference prices. Both have continued to increase over most of the past five years. That said, higher prices on international markets resulted in lower price support and counter-cyclical budgetary transfers in 2022. Global agriculture has experienced exceptional conditions with Russia's war of aggression against Ukraine hitting agricultural markets that were still recovering from the impacts of the COVID-19 pandemic.

In terms of direct beneficiaries of support, USD 630 billion per year was transferred to individual producers during 2020-22. This positive producer support accounted for 14% of gross farm receipts across the 54 countries covered in the report, with significant variation between them. While this average represents a decline compared to the 20% measured for 2000-02, it has changed little since the early 2010s. In 2022, two countries, Costa Rica and Israel, took steps to reduce market price support. However, efforts to reform support have largely stalled over the past decade. More than half the producer support was provided through higher market prices paid by consumers, while the remaining USD 297 billion per year was

transferred from public budgets and hence paid by taxpayers. Policies in several countries suppress domestic prices for some or most commodities, generating average annual transfers of USD 179 billion *away from* producers in 2020-22, a more than seven-fold increase from the USD 24 billion two decades earlier and on a strong rise in recent years. Differences in support across commodities, and the co-existence of significant price support for some products with price-depressing policies for others, add to the distortions generated by the overall price support, including within individual countries.

Finally, consumers and other first-level buyers of agricultural commodities received USD 115 billion per year in budgetary support during 2020-22, a four-fold increase relative to the beginning of the century. Despite this increase, however, this budgetary support did not, on average, offset the higher prices induced by trade barriers and other price-increasing policies. Overall, consumers were implicitly taxed by close to USD 150 billion per year, or 4% of their expenditures at farm-gate prices, down from 10% implicit taxation 20 years earlier but still adding to consumers' cost of living.

Governments have taken significant policy actions to limit the market impacts of the war in Ukraine and to address inflationary pressures more broadly

While the economic effects of the COVID-19 pandemic are still lingering, the war in Ukraine has further disrupted international markets and value chains for both agricultural commodities and key inputs, notably energy and fertilisers. Many governments have extended emergency measures or put in place new ones to assist producers and consumers. These include helping Ukraine to continue to produce and export, reducing import barriers for food and fertilisers, and providing support to compensate for rising input costs. Countries also provided additional support to partly shield consumers from rising food costs.

At the same time, some countries have also implemented additional export barriers that added to pressures on international markets, increased market uncertainty and risk increasing global food insecurity, as was the case for those put in place during the COVID-19 pandemic. Others eased or suspended environmental requirements to encourage domestic production and increase global commodity supplies, or subsidised fertiliser and fuel, which may result in environmental degradation.

Governments are scaling up efforts to help agriculture adapt to climate change…

In addition to these acute crises, climate change is increasingly affecting agricultural production worldwide through increased variability of temperatures and rainfall, disruptions to ecosystem services, and a slowdown of productivity growth. Agriculture faces an increasing frequency and severity of extreme weather events, including droughts, floods, heat waves, and storms. While some regions may benefit from longer growing periods, production in most parts of the world urgently needs to adapt to less favourable and more variable growing conditions.

This report identifies close to 600 measures for climate change adaptation in agriculture adopted in the countries covered. Among the adaptation programmes, social, economic and institutional measures, such as adaptation planning, investments in capacity-building, provision of climate services, and creation of financial and insurance mechanisms, are most prominent. Together, they jointly account for 61% of all adaptation measures. Other initiatives, which are more targeted to finding solutions for farmers and farming systems, such as various ecosystem-based approaches, infrastructure and technical solutions, and behavioural approaches, together account for the remaining 39% of the total.

…but further actions and reforms are urgently needed

Effective adaption of agriculture to climate change will require further actions. Governments should move beyond planning and urgently advance implementation, monitoring and assessment of adaptation measures. Policy approaches for a more resilient agriculture should balance efforts to support short-run recovery from climate and other shocks, with medium-term incremental adjustments to changing conditions as well as the long-run transformation needed when existing systems become untenable. Although the context matters, it is essential to evaluate to what extent the programmes developed by countries contribute to strengthened resilience.

The growing number and severity of extreme weather events, together with other shocks, have made what was once considered exceptional situations increasingly common. Preparing agriculture for a future where climate change introduces new risks and exacerbates existing vulnerabilities calls for agricultural policies that encourage agility and incentivise adaptation in a changing environment, yet most support reinforces existing production structures. The continued prominence of market price support in many countries, together with other forms of support that are potentially production and market distorting or commodity-specific, discourage changes in production systems. These types of support also distort international markets, which remain a key mechanism to smoothen the impacts of shortfalls or bumper harvests. Avoiding trade barriers to the extent possible therefore contributes to the resilience of agriculture and food systems.

In parallel, countries should urgently enhance their efforts to reduce agricultural greenhouse-gas (GHG) emissions given that 11% of global anthropogenic emissions are directly agriculture related (with an additional 11% related to land-use change that often is linked to the expansion of farming). Several countries have updated their economy-wide mitigation targets, and an additional five countries have joined the Global Methane Pledge calling for reducing global methane emissions. Still, today only 19 of the 54 countries covered in this report have put in place some form of mitigation target for their agricultural sector. Mitigation efforts in agriculture are essential to meet the 1.5-degree target stipulated in the Paris Agreement. This requires adjustments to production structures and methods, calling for reforms to the same support policies that are hindering adaptation, and further reinforcing the importance of transformative approaches to respond to the impacts of climate change. This calls for a need to foster synergies between adaptation and mitigation efforts.

Opportunities to foster climate change adaptation are being missed as the share of expenditures for general services declines

While overall support to agriculture has increased, investments in general services (GSSE), including R&D, biosecurity services, infrastructure and other expenditures benefitting the sector overall, continue to represent a small and declining share of transfers towards the agricultural sector. In 2020-22, these investments amounted to USD 106 billion, or 12.5% of the total positive support, a share that had fluctuated between 15% and 17% since 2000 but has fallen significantly after 2018. Almost half of this is spent on investments in infrastructure, notably related to irrigation. While irrigation plays an important role to withstand production under arid conditions, greater consideration needs to be given to unintended consequences caused by such investments in the absence of adequate water management policies, such as increased GHG emissions or growing pressures on water availability and water tables.

Less than a quarter of the general services investments across the 54 countries are for agricultural knowledge and innovation systems. Research and development, as well as extension services and other forms of knowledge transfer, are known to be highly efficient investments with high payoffs, even if the returns may materialise only many years later. Nonetheless, public expenditures on innovation have declined relative to the sector's size, from 0.9% of the value of agricultural production in 2000-02 to less

than 0.6% in 2020-22, with countries missing a significant opportunity. Continued technical progress requires public investments in innovation complemented by private ones. At the same time, such investments should be better targeted towards avoiding environmental damage and lowering the use of natural resources, rather than just labour-saving technologies, as seen in many countries in recent years. Agricultural productivity needs to rapidly increase in an environmentally sustainable manner to meet stated global food security targets while reducing agricultural emissions and preserving natural resources.

Under a changing climate, investments in biosecurity may also play an increasingly important role. Expenditures on inspection and control systems, including those related to pests and diseases, correspond to 0.2% of the value of agricultural production, with little relative change over the past 20 years. These activities are particularly relevant in the context of risks related to invasive species that can harm domestic food systems and biodiversity, which can generate significant economic and environmental costs.

Transformative action for sustainable agriculture and food systems

At the OECD Meeting of Agricultural Ministers in November 2022, ministers and high representatives of 42 OECD member countries and emerging economies as well as of the European Union jointly committed "to support the transformation of agriculture and food systems towards more sustainability and resilience".[1] In line with the ministers' declaration, the following actions for governments are identified for improving agriculture and food system's resilience to successive shocks, including related to climate change.

- **Phase out measures that hinder adjustments to production**, such as price support and other policies targeting specific commodities that increase the rigidity of food systems by reducing farmers' incentives to adjust their production programmes to changing conditions. These are the same policies, that previous editions of this report have found to be economically inefficient and potentially most environmentally harmful. To facilitate reform, short-term non-trade-distorting measures may be required. Periods of high food prices provide an additional impetus to reduce and eliminate price support policies with minimal adjustment costs to producers and consumers. Nonetheless, the persistently high levels of such support in some OECD countries and the increased levels in some emerging economies suggest that more concerted multilateral action may be required to facilitate such reforms.
- **Prioritise government engagement in agriculture's risk management on information, facilitation, and catastrophic risks**. Governments should ensure that risk-related information is available to farmers and other market participants, that insurance markets function well, and that recovery-related support focuses on large-scale systemic or catastrophic risks that cannot be borne by farmers or risk markets.
- **Invest in targeted interventions supporting climate-change adaptation and the sector's transition to more sustainable and resilient agriculture and food systems**. This should include significantly increasing investments in research, development and innovation to enhance on-farm resilience, such as through activities that can safeguard genetic and species diversity, encourage farmers to develop entrepreneurial skills and human capital, foster innovation on and promote the uptake of resilience-enhancing practices and technologies. Governments should also consider measures to increase agriculture's transformative capacity, including the facilitation of structural adjustments. This could also relate to diversifying income sources for farmers, including off-farm employment. Although the context matters, governments should evaluate to what extent the programmes developed by countries contribute to strengthened resilience.
- **Favour no-regret measures that support resilience in a wide range of circumstances**. Given the unknown nature of future crises and stressors, governments should focus on policy opportunities that provide benefits and address underlying vulnerabilities under different conditions. Facilitating international trade in agricultural commodities and their inputs, R&D focused

on improved management of natural resources and the provision of other general services such as biosecurity and key infrastructure, are important elements in this regard and should receive increased attention.

In addition, governments should foster sustainable productivity growth in agriculture and food systems to meet its triple challenge of providing adequate, affordable, safe and nutritious food for a growing global population; providing livelihoods all along the food value chain; and doing so while increasing the environmental sustainability of the sector. In addition to reforming policies and reorienting support as recommended above, governments should:

- **Enhance the agricultural knowledge and innovation system and its focus on sustainable productivity growth**. Public expenditures should target productivity growth that reduces the sector's use of natural resources, its emissions of pollutants and their harmful effects. They should also target the adoption of innovations by both small and large producers through enhanced extension and farm advisory services, the designation of model farms, or other means. Public investments need to complement private ones, and public-private R&D projects can facilitate the adoption of innovative tools and practices. Reducing food losses and waste can further contribute to lowering economic and environmental pressures.
- **Incentivise the supply of public goods**. The agricultural sector faces an increasing demand for contributions towards improved environmental outcomes and public goods, such as biodiversity conservation, water quality, habitat restoration, or other ecosystem services. Governments should increasingly consider targeted and tailored payments to support such activities where regulations and market incentives are insufficient. This includes efforts towards reducing agricultural GHG emissions, including by carbon pricing or other market-based approaches and through complementing supply and demand side measures. Reorienting existing support that is distorting or environmentally harmful provides an opportunity for supporting public goods without requiring additional resources. Standards on the monitoring, measurement and reporting of such public goods, and digital technologies to measure and trace them, could facilitate their provision and valorisation. Countries may need to collaborate to avoid possible environmental leakages and other issues that may arise from asymmetries in policies across countries.

Note

[1] OECD (2022), *Declaration on Transformative Solutions for Sustainable Agriculture and Food Systems*, OECD/LEGAL/0483, https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0483.

1 Policies for agricultural adaptation to a changing climate

This chapter analyses current policies and provides recommendations to help agriculture adapt to climate change. It begins with an overview of the current and future impacts of climate change on agriculture, and outlines opportunities for agriculture to adapt to climate change. This is followed by an analysis of UNFCCC reports yielding insights on the importance governments attribute to agriculture in their adaptation strategies, and a comprehensive stocktaking of nearly 600 agricultural climate change adaptation programmes and activities across the 54 countries covered in OECD's Agricultural Policy Monitoring and Evaluation 2023. Finally, the chapter discusses how agricultural support policies influence the ability of farmers to adapt to climate change. The chapter concludes with key recommendations for reforming agricultural policies to facilitate agriculture's adaptation to climate change.

Agriculture is increasingly experiencing the impacts of climate change

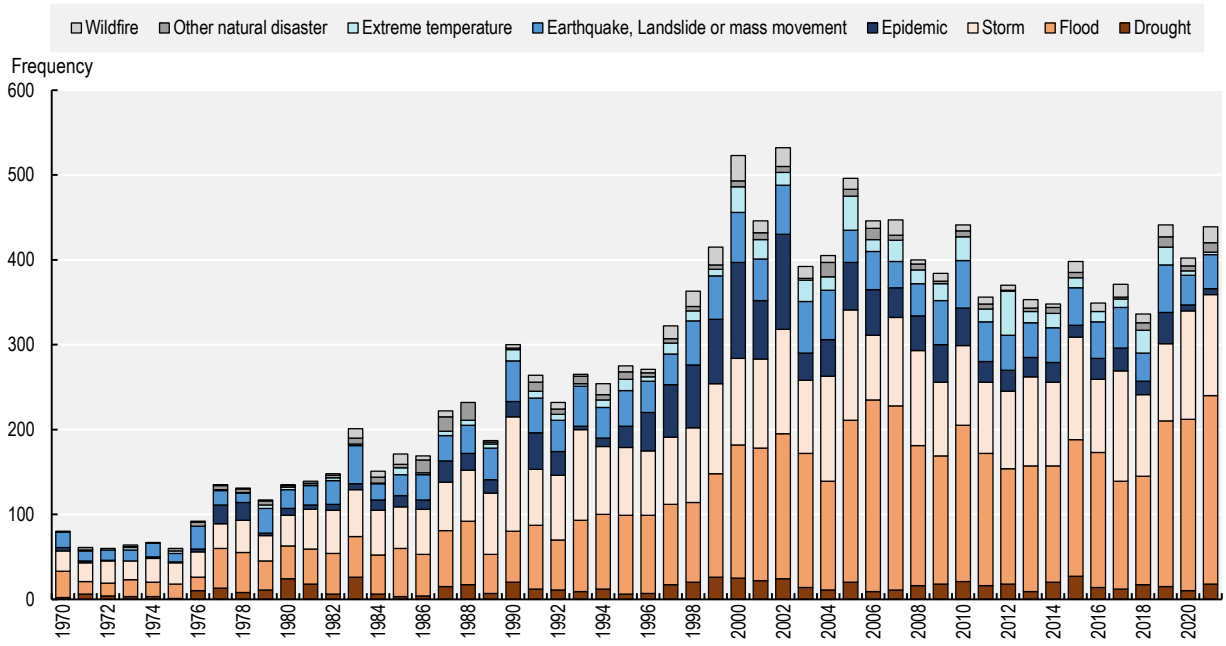
According to the Intergovernmental Panel on Climate Change (IPCC, 2023[1]), global temperatures averaged 1.1°C higher over the previous decade than preindustrial levels and are rising by 0.2 degrees per decade. Agriculture is among the sectors that is most exposed to the resulting changes in weather patterns and extreme events, such as drought and flooding. Adapting to this changing environment is imperative to tackle the triple challenge of providing food for a growing population, providing livelihoods all along the food value chain and increasing the sustainability of the agricultural sector.

Observed impacts of climate change on agriculture

The effects of climate change have already had noticeable impacts on yield and the quality of agricultural products. Although yields of staple crops have risen by 2.5 to 3-fold since 1960 due to improved technology and management practices, global yields for crops such as maize and soybean are between 4% and 6% lower than they would have been in the absence of warming trends (IPCC, 2022[2]; Moore, 2020[3]; Iizumi et al., 2018[4]). Growth in the productivity of the sector has also significantly slowed: since 1961, climate change has reduced total factor productivity – a measure of how much output can be produced from a given quantity of inputs – by an estimated 21% (Ortiz-Bobea et al., 2021[5]).

Agriculture is also particularly vulnerable to weather extremes given its intrinsic dependence on the natural environment. Among the events most damaging to agricultural production, the frequency of droughts has roughly doubled (from 8 per year in 1971-80 compared to 16 per year in 2011-20), storms have more than tripled (from 29 to 103 per year), and floods have become nearly six times as prevalent (from 27 to 155 per year) (CRED, 2023[6]).[1] In total, the number of natural disasters globally has increased since the 1970s, from an average of 92 events per year between 1971-80 to 372 events per year between 2011-20 (Figure 1.1). The economic cost of disasters has risen from USD 1.63 trillion in 1980-99 to USD 2.97 trillion in 2000-19, driven by a combination of factors including increased frequency of some types of events, increased exposure, and increased vulnerability (CRED and UNDRR, 2020[7]).[2] While the economic losses are greatest in absolute terms in developed countries, the impacts of natural disasters are particularly pronounced in developing countries, where the most vulnerable are less able to cope with and recover from their impacts (OECD/FAO, 2021[8]).

Figure 1.1. Frequency of reported natural disasters worldwide, 1970-2021



Note: Data include all reported natural disasters meeting at least one of the following criteria: 10 or more people dead; 100 or more people affected; a declaration of a state of emergency; a call for international assistance.
Source: EM-DAT, CRED / UCLouvain, Brussels, Belgium – www.emdat.be.

StatLink https://stat.link/e5mk10

The risks to agriculture from climate change are considerable, but there are also potential positive effects in some regions, such as the geographic migration of agricultural production and resulting new opportunities.[3] For example, northern regions of Europe and North America are likely to become increasingly suitable for agricultural production as warmer temperatures extend the length of the growing season. Some regions may become more suitable for growing different types of crops. For example, some parts of Spain have reported becoming increasingly favourable for growing tropical fruits. Wine production has already extended northward, into the United Kingdom, for example, and into high-altitude growing regions, such as mountainous areas of Italy. Countries in northern latitudes anticipate improved growing conditions broadly for staple crops, such as sugar beets and maize. Even in countries with warmer climates where increased temperatures are expected to be detrimental, a decrease in frost is expected to benefit certain crops (Cobourn, 2023[9]).

Regionally, climate change has had varied effects on agriculture. Europe has faced earlier onset of growing seasons, as well as warming and precipitation changes (IPCC, 2022[10]). Estimates suggest that this positively affects maize and sugar beet yields, but negatively affects those of wheat and barley. Crop losses due to droughts and heat waves in Europe have tripled over the past five decades (Brás et al., 2021[11]). In recent years, cold winters, excessive autumn and spring rain, and summer droughts have combined to reduce yields from expected levels based on historical trends. Warmer temperatures have also led to poleward incursions of pests, diseases and invasive species. For example, the European corn borer has moved over 1 000 km northward, and the Diamondback moth has moved 800 km farther northward in Scandinavia than its former range in Russia. These trends are expected to continue with the spread of the olive fly into northern areas of Italy (Skendžić et al., 2021[12]).

In Asia, climate change has been associated with changing monsoonal rains, extreme temperatures and oceanic oscillations (IPCC, 2022[13]; Thirumalai et al., 2017[14]). For agricultural production, climate change

has delayed crop harvesting, reduced crop yields and quality, increased the incidence of pests and diseases, stunted livestock growth and increased animal mortality. Climate change influences the magnitude, timing and pattern of El Niño events, with adverse impacts on agricultural productivity and food security in middle- and lower-income countries in Southeast and South Asia (Cai et al., 2014[15]). This is particularly salient for rice production, which depends heavily on monsoon rainfall that declines with a stronger El Niño. According to a recent study, El Niño negatively affects 13.4% of global rice harvesting areas, including those located in India, Viet Nam, the Philippines, northeast People's Republic of China (hereafter "China"), and Japan (Cao et al., 2023[16]). Australasia has been affected by a number of drought, heat and frost events in recent decades that have had strongly negative effects on agriculture (IPCC, 2022[17]). Northern Australia's agricultural output losses are estimated to average 19% each year due to drought. In New Zealand, reduced winter chill has led to earlier harvesting of kiwifruits (Cobourn, 2023[9]).

North America has faced shifting growing seasons, as well as extreme heat and precipitation (IPCC, 2022[18]). The share of land area in the United States that experienced extreme precipitation has risen significantly since the 1980s which bring with it increased risk of surface runoff, soil erosion and loss of soil carbon (Gowda et al., 2018[19]). Agricultural total factor productivity growth across North America has generally declined as a direct result of climate change, with growing regions at lower latitudes more affected (Ortiz-Bobea et al., 2021[5]).

Most subregions of South America have experienced increases in the intensity and frequency of hot extremes and decreases in those of cold extremes (IPCC, 2022[20]). Drought duration and intensity is also increasing with events such as the "Central Chile Mega Drought", representing the longest drought in the region in one thousand years, and the multi-year drought in the Parana-La Plata Basin, the most severe since 1944. In South America overall, drought conditions reduced cereal harvests in 2020-2021 by 2.6% relative to the prior year (WMO, 2022[21]). Drought in the Mexican state of Zacatecas reduced the bean harvest in 2020 to its lowest level in 20 years. Central America and Northern South America have experienced increases in magnitude and frequency of extreme precipitation events as well as fire. In Argentina, fire destroyed critical pasture in the Gran Chaco region in 2022, decreasing pasture and livestock productivity.

Potential future impacts of climate change on agriculture

Against this backdrop, the need for adaptation measures to limit and anticipate the effects of climate change is ever increasing. IPCC scenarios project rising temperatures, elevated levels of CO_2 and more frequent and extreme weather events (IPCC, 2023[1]). These effects will continue to challenge agriculture over the coming decades. For example, rising temperatures could reduce soil carbon and nitrogen levels, which in turn will reduce the yield potential of crops (IPCC, 2022[2]; Basso et al., 2018[22]). Further yield losses are expected to be realised from changes in insect pest populations and metabolic processes, which are sensitive to rising temperatures (Deutsch et al., 2018[23]; IPCC, 2022[2]). Higher temperatures will also increase the number of extreme stress days per year for livestock and could cause large production losses, particularly for beef and dairy (Nardone et al., 2006[24]; IPCC, 2022[2]). Increasing CO_2 levels are projected to affect the establishment, competition, distribution, and management of weeds, reducing herbicide efficacy (IPCC, 2022[2]). Increasing temperatures will reduce available water resources as a result of changes in river flows, basin storage and decreased rates of groundwater recharge. This will have negative consequences for the roughly 40% of global crops which are irrigated and could have even more important impact in regions where agriculture faces increased competition from other sectors (OECD, 2017[25]).

The frequency and intensity of extreme events are also expected to worsen (IPCC, 2021[26]). More frequent and damaging extreme weather events such as droughts, storms and floods will lead to more crop failures, increase aflatoxin contamination, and affect the economic viability of grassland-based livestock production in some regions. Floods and storms may increase the spread of water-borne diseases, microorganisms and algae which negatively affect livestock health. They may also damage critical infrastructure required

for the harvest, transport, and processing of farm produce. Although some tipping points have already been crossed, or are close to being crossed, warming beyond 1.5°C is more likely to induce climate tipping points, irreversibly affecting agriculture in certain regions. For instance, the slowdown of the Atlantic Meridional Overturning Circulation (AMOC), is predicted to lead to abrupt and irreversible impacts, including changes in monsoon systems and widespread drought with detrimental impacts for current agricultural systems (OECD, 2022[27]).

Along with risks to individual growers, there are also risks to global food systems. There is growing evidence that rising temperatures increase the probability of simultaneous yield losses in major food producing regions (IPCC, 2022[2]; Gaupp et al., 2019[28]; Cai et al., 2014[15]; Perry et al., 2017[29]). These concurrent yield loss events could lead to significant price spikes on international markets due to reduced global supplies. This will impair the ability of importing countries to secure supplies and could increase the risks to global food security.

The magnitude of the impacts of climate change on agriculture rise substantially with every additional degree of warming, stressing the importance of mitigation efforts to limit emissions (IPCC, 2022[2]). Adverse changes in precipitation, temperature and aridity could see as much as one third of current agricultural land become unsuitable for major crop or livestock production by the end of the century under the IPCC's most pessimistic emissions scenario (Kummu et al., 2021[30]; IPCC, 2022[31]). However, even under more optimistic climate change scenarios, large impacts on agricultural production are projected. For instance, under a low-emissions scenario, up to 8% of current agricultural land is expected to become unsuitable for major crop or livestock production by the end of the century.

How can agriculture adapt to a changing climate?

The IPCC defines climate change adaptation in human systems as "the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities" (Ara Begum et al., 2022[32]). Adaptation in the agricultural sector may be autonomous or planned. *Autonomous adaptation* is defined as a process undertaken without explicit planning or guidance and in response to changes in the environment or market (Malik, Qin and Smith, 2010[33]). This form of adaptation often occurs when farmers adjust their practices in response to observed changes in climatic conditions, such as changing livestock or farm management practices, switching varieties or species, or altering the timing of planting, stocking and other key activities. In contrast, *planned adaptation* follows from an intentional and deliberative decision making process. Planned adaptations are often, but not exclusively, undertaken by groups of actors or public entities in anticipation of or in response to a change. Examples include investments in more resilient seeds or technologies to improve irrigation efficiency (Ignaciuk and Mason-D'Croz, 2014[34]).

Farmers are often best positioned to determine the adaptation measures needed to mitigate climate risk on their farms, provided that they have sufficient resources, access to knowledge, and financial and technical capacity to adapt (Wreford, Ignaciuk and Gruère, 2017[35]). In many cases, on-farm adaptation occurs without the need for policy interventions, or in spite of policies that hinder adaptation, as farmers react to observed or projected changes in climatic conditions. In these instances, the benefits of adaptation are derived locally and directly captured by farmers. This means that self-interest is a sufficient incentive for the adaptation action to occur (Ignaciuk, 2015[36]).

However, even when there is a private benefit, farmers may choose not to engage in climate adaptation actions due to information gaps, financial constraints or misaligned incentives (Wreford, Ignaciuk and Gruère, 2017[35]). In other instances, climate adaptation cannot be adequately implemented on farm due to market failures, externalities and information asymmetries or if more radical transformation is required (Ignaciuk, 2015[36]). The IPCC (2022[2]) predicts that because of limited adaptive capacities and non-climatic compounding drivers of food insecurity, autonomous adaptation will be insufficient to meet the UN

Sustainable Development Goal 2 of ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture. Thus, more pro-active planned adaptation, supported by public policy, will be essential.

The role for policy in climate change adaptation: Enhancing resilience

Given that farmers undertake their decisions within the context of social and economic institutions that constrain, or facilitate, their ability to adapt, there is a clear role for public policy to play in creating an enabling environment. The types of adaptation actions that may be justified for public interventions from an economic perspective include, for example, actions that generate or transfer knowledge, correct for externalities, allow for sharing extreme risk, and correct for institutional, regulatory or financial barriers to adaptation (Ignaciuk, 2015[36]).

Planning adaptation strategies comes with a great deal of uncertainty and adaptation strategies can fail. In some circumstances strategies may actually increase vulnerability to climate change, a phenomenon known as maladaptation. Maladaptation refers to actions or inactions which lead to increased risk of adverse outcomes, increased vulnerability, or diminished welfare as a result of climate change, now or in the future (IPCC, 2022[2]). For example, subsidies for water efficient irrigation measures may lead to greater extraction of groundwater and planting of more water-intensive crops, increasing the likelihood and magnitude of losses due to future drought (OECD, 2017, p. 166[25]). Government support to specific practices or technologies that do not fully respond to local needs can also generate harmful incentives or simply reinforce existing production profiles and techniques, undermining the incentives for autonomous adaptation. Even well-intentioned adaptation policies implemented today can turn out to be a driver of maladaptation in the future because of significant uncertainty in climate projections. To minimise the risk of maladaptation, "no regret" policies should be prioritised, alongside adaptation policies that are flexible and suitably robust across a range of climate scenario outcomes with a view to improving long-term productivity (Ignaciuk, 2015[36]; Antón et al., 2013[37]).

It is difficult for a policymaker to determine the specific adaptation actions suited for local conditions, thus is generally accepted that policy should focus on developing the capacity of a system to adapt, rather than prioritising specific adaptation strategies (OECD, 2014[38]). As a result, adaptation policies often focus on increasing resilience, defined as "the ability to prepare and plan for, absorb, recover from, and more successfully adapt and transform in response to adverse events" (OECD, 2020[39]). This definition incorporates preparation and three core capacities – absorptive, adaptive, and transformative capacity – which correspond to action over the short, medium, and long run, respectively.

Following OECD (2020[39]), absorptive capacity refers to the ability of a system to cope with the impacts of a shock in the short run, e.g. by establishing early warning systems that allow farmers to adjust their operations, or crop insurance schemes that compensate farmers for damages. Adaptive capacity is the ability of a system to adjust in the medium-term through incremental changes in behaviour, but without structural change. Examples of such incremental changes in behaviour include changes in farm operations, adjustments to planting dates or crop mix, or changing irrigation systems. Transformative capacity corresponds to the ability of a system to undergo structural change, such as moving crops into new production regions, developing new infrastructure, creating new market opportunities, or leaving farming altogether which could be supported by compensation for exiting the sector.[4]

It is essential that policy for climate change adaptation supports each of these three capacities in order to facilitate effective adaptation and to avoid maladaptive outcomes in the long run. Actions that focus only on countering short-term impacts of climate change can become maladaptive over time if the situation does not improve (Lankoski, Ignaciuk and Jésus, 2018[40]; Schipper, 2020[41]). For example, *ex-post* disaster compensation may support farmers through a season of drought, but increasing instances of drought attributable to climate change may mean that better tools to assist farmers plan for and manage risks or potentially even more transformative change may be necessary in the long-term. Similarly, focusing

on medium-run capacity may supplant investments in transformative capacity that are necessary in the long run. For example, investing in the development of new cultivars may delay the need to shift to a new crop or new producing region, even if structural change will be necessary in the long run.

While agricultural and climate policies and investments are the main vehicles to progress towards enhanced resilience capacity for agriculture, water policy can also play an important role to foster climate change adaptation particular in regions subject to high water risks (Box 1.1).

Box 1.1. Water policies and climate change adaptation

Climate change is exacerbating water risks for agriculture, including via prolonged and more intense droughts, extreme flooding, irregular precipitation or sea level rise. Managing these risks, which are often local, complex and dynamic, require a multi-layer approach, encompassing changes at the farm level, water basin level, and national level.

Water policies are essential as a complement to agriculture policies and investments for climate resilient agriculture production systems. They include, in particular, a combination of regulatory economic and collective approaches to manage groundwater sustainably, as aquifers remain the largest water reservoir globally and a central resource for irrigated agriculture in key production regions. Water policies also include water allocation regimes that can balance water demand and supply depending on changes in precipitations.

Earlier OECD work found that future water risks for agriculture are concentrated in particular locations in each country, continent and globally (OECD, 2017[25]). These "water risk hotspots" therefore deserve more policy attention and efforts, as they are particularly likely to affect production, and may generate significant market and food security impacts.

Source: OECD (2015[42]; 2016[43]; 2017[25]; 2020[44]).

The importance of linking adaptation and mitigation measures

Both adaptation and mitigation actions are critical in the face of a worsening climate and there are important synergies to be realised from integrated responses that encompass both (Bezner Kerr et al., 2022[45]). Mitigation refers to actions or activities that limit greenhouse gas (GHG) emissions from entering the atmosphere or reduce their levels in the atmosphere (e.g. through carbon sinks) (Grubb et al., 2022[46]). Even with progress on mitigation, some climate impacts are already unavoidable and adaptation efforts will be necessary to address further losses and damages. In this context, an integrated approach to climate policy that includes both mitigation and adaptation components is necessary to develop long-term resilience. To transition towards net-zero emissions, leveraging synergies between the two is essential to generating effective and efficient policies (OECD, 2023[47]).

Adaptation and mitigation actions often have different drivers, benefits and barriers to adoption (Wreford, Ignaciuk and Gruère, 2017[35]). In particular, adaptation actions can generate direct benefits for farmers and local communities, whereas mitigation actions tend to result in public rather than private benefits. As a result, policy intervention is often required to incentivise mitigation actions. The use of incentives such as well-designed payments for environmental and climate services, land retirement policies, afforestation and R&D incentives are examples of policies that may encourage emissions reductions, although care must be taken in their design and implementation (OECD, 2022[48]). Reform of agricultural support policies, in particular the phase out of market price support and payments with strong potential to harm the environment and to distort markets and trade, is among the priority actions for climate change mitigation (OECD, 2022[48]).

Although adaptation actions may sometimes be socially optimal, there are many cases in which adaptation fails due to a lack of financial, knowledge or technical resources. In these cases, the role for policy predominantly lies in the provision of information, access to credit and engagement (Wreford, Ignaciuk and Gruère, 2017[35]). In other cases where structural changes are required, or where there are considerable public benefits, there is a clear economic rationale for policy intervention. Adaptation policies should consider long-term risks, but factor in future uncertainty and build in flexibility so that well-intentioned policies do not lead to maladaptation (Ignaciuk, 2015[36]). Policy coherence is imperative along with monitoring the effectiveness of policy approaches.

Although the role of policy in mitigation and adaptation differs, it is often the case that a single policy instrument simultaneously contributes to both objectives, providing mitigation-adaptation co-benefits (Bustamante et al., 2014[49]). For example, measures to increase soil organic carbon may contribute to both mitigation and to improving the yields of crops and pasture.

In practice, policies for mitigation and adaptation can be misaligned with each other, and with other objectives (Lankoski, Ignaciuk and Jésus, 2018[40]). For instance, Lankoski, Ignaciuk and Jésus (2018[40]) found that a green set-aside payment may have positive effects on productivity and mitigation but negative effects on adaptation. The impacts of any policy will be highly context-specific. Countries will thus need to make specific assessments of likely policy effects on the three objectives and adopt a holistic approach in order to tackle the triple challenge.

An evolving focus on agricultural adaptation and resilience: Analysis of UNFCCC reports

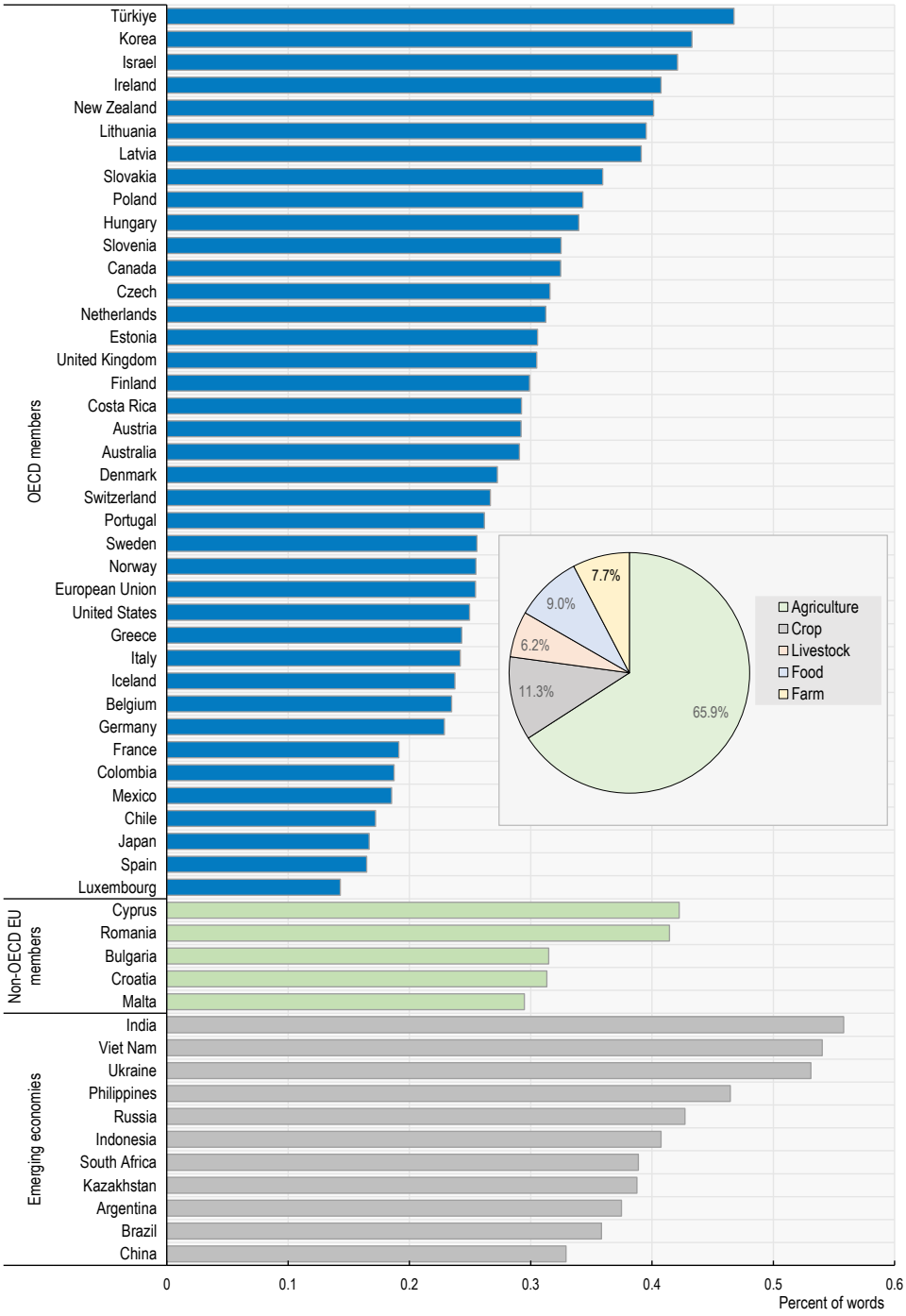
What importance do governments convey to agriculture in their overall adaptation strategies? Following Cobourn (2023[9]) and the related literature, international reporting documents submitted by each of the countries included in this report (henceforth referred to as the "M&E countries") to the United Nations Framework Convention on Climate Change (UNFCCC) yield some insight into how the attention paid by governments to climate change adaptation in agriculture has evolved over nearly four decades, from the mid-1990s through early 2023.[5] These include periodic national communications submitted by Parties to the Convention, as well as reporting documents under the Paris Agreement, namely required nationally determined contributions (NDCs) and optional adaptation communications.[6]

All of the documents submitted to the UNFCCC refer to agriculture, though the national communications are the most comprehensive source of information spanning the M&E countries in terms of frequency with which agriculture is discussed (Figures 1.2 and 1.3).[7] Adaptation communications also address issues related to agriculture but have been submitted by only 17 of the 54 M&E countries to date. A keyword frequency analysis was conducted of all reporting documents (see the chapter Annex for more details), which showed that there are large differences between countries in terms of how extensively agriculture is discussed. Among OECD members, for example, words related to agriculture appear 3.3 times more often in the national communications of Türkiye than of Luxembourg. In general, the national communications of emerging economies more heavily emphasise agriculture than those of OECD countries, with a mean frequency of references that is 1.5 times greater. This difference may be driven by the relatively greater importance of agriculture to their overall economies or it may capture differences in predicted climate risks arising from changing growing conditions and extreme events. However, it may also be driven by reporting differences that arise because emerging economies rely on UNFCCC documents to justify their needs for adaptation financing (Pauw, Mbeva and van Asselt, 2019[50]).

Since the mid-1990s, the UNFCCC documents have grown in length nearly four-fold as reporting on climate change, including adaptation, has become more developed. The frequency of references to agriculture within these documents has been relatively constant across reporting rounds for OECD

members and for the emerging economies, but the total amount of text relevant to agriculture has increased over time, indicating an increased depth of reporting on the sector (Annex Figure 1.A.1).

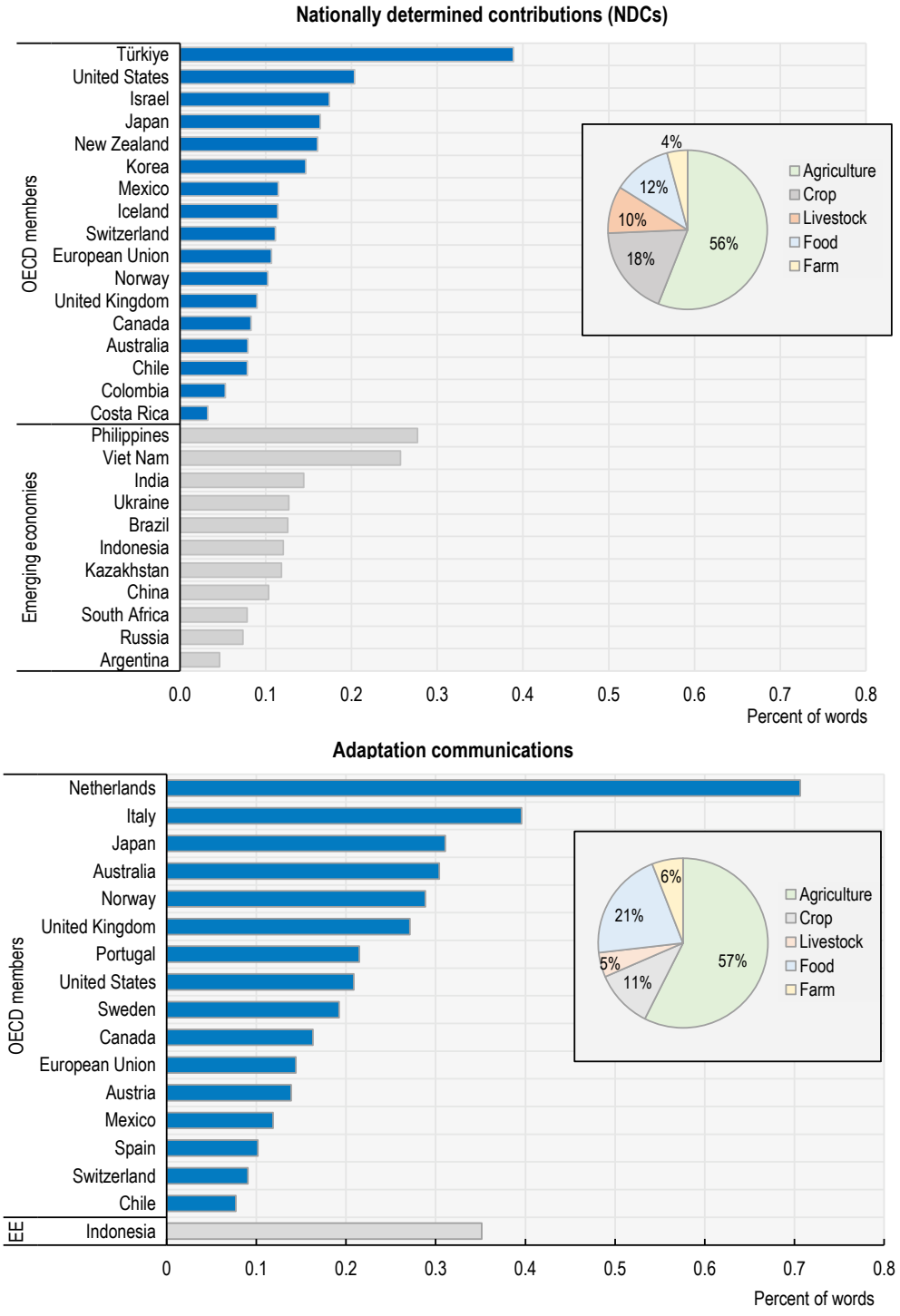
Figure 1.2. Frequency of reference to agricultural keywords, UNFCCC national communications



Note: Pie chart represents the proportion of usage of each agricultural keyword within all national communications reviewed (for all M&E countries).
Source: Author's analysis based on documents submitted to the UNFCCC.

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Figure 1.3. Frequency of reference to agricultural keywords, Paris Agreement documents



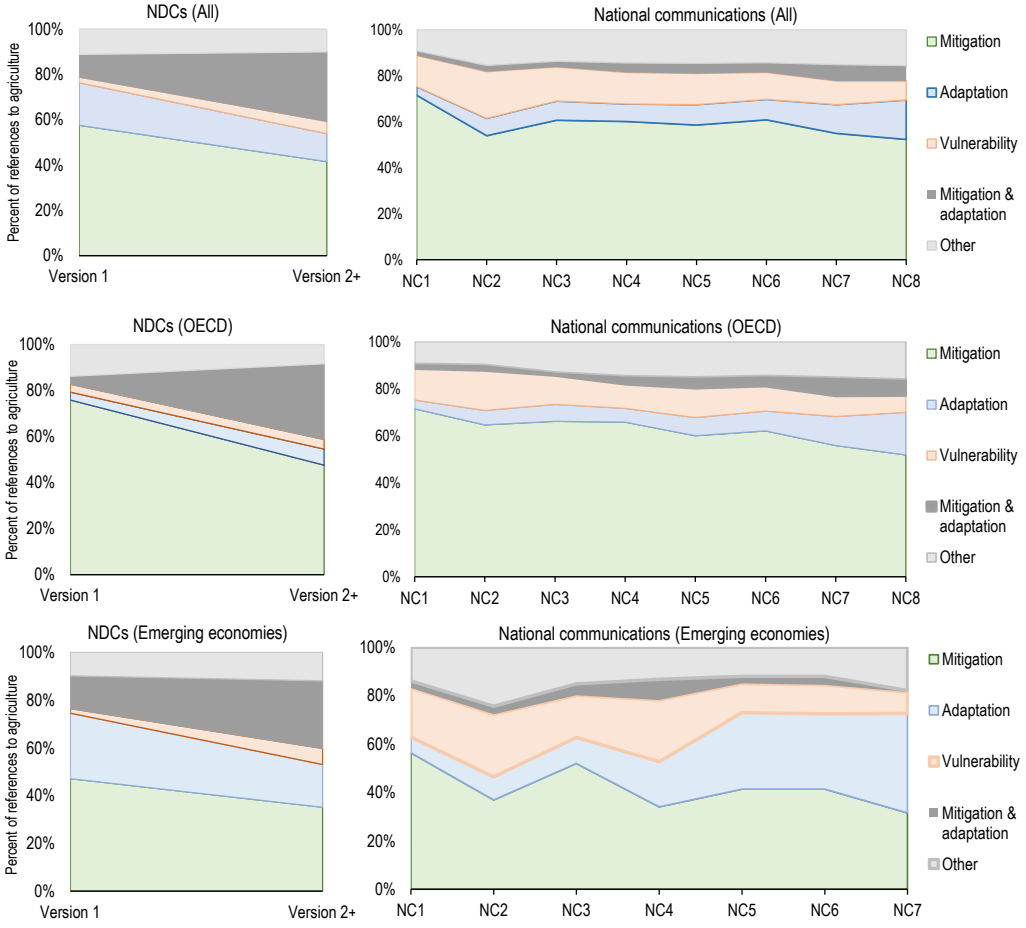
Note: EE = Emerging economies. Pie charts represent the proportion of usage of each agricultural keyword within all NDCs and adaptation communications reviewed (for all M&E countries).
Source: Author's analysis based on documents submitted to the UNFCCC.

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References to agriculture discuss different topics, including the role of agriculture in mitigation, agricultural vulnerabilities to climate change, and adaptation of agricultural and food systems. The vast majority of the discussion of agriculture in the UNFCCC documents focuses on mitigation, though OECD countries emphasise mitigation more than the emerging economies, which focus more heavily on identifying agricultural vulnerabilities and on adaptation (Figure 1.4).

Over time, agricultural mitigation, in terms of textual references, has declined in relative importance, falling by 27% among OECD countries between the mid-1990s and 2023. Discussion has also focused less on identifying climate change vulnerabilities and more on adaptation, a trend that is particularly evident among emerging economies. Between the first and most recent reporting round for OECD countries, references to agricultural adaptation increased by a factor of 4.9, compared to 6.3 for emerging economies. Notably, discussion of the mitigation-adaptation co-benefits associated with agriculture has increased substantially in the nationally determined contributions of all M&E countries, though the growth in discussion of these co-benefits has been most pronounced among OECD countries.

Figure 1.4. Contextual topic areas within which agriculture key words appear in UNFCCC reports



Note: NC1 to NC8 refer to reporting rounds for the national communications to the UNFCCC. For original signatories, NC1 was submitted starting in 1994, with successive reporting rounds approximately every 5 years. For Non-Annex I Parties, NC1 was submitted within 5 years of signing the Convention, with dates that vary.
Source: Analysis based on national communications (NC) to the UNFCCC and nationally determined contributions (NDCs) and adaptation communications under the Paris Agreement.

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Agricultural climate change adaptation programmes and activities

Governments of M&E countries have undertaken a wide range of climate change adaptation programmes and activities that may not all be described in the UNFCCC reports. This section analyses these efforts, based on reporting from the M&E countries, as described in the country chapters.

More specifically, this section assesses and classifies adaptation responses using the following four categories: (1) infrastructure and technological measures (INT); (2) behavioural and cultural measures (BHC); (3) ecosystem or nature-based measures (ECO); and (4) social, economic, and institutional measures (SEI). These categories are based on the classification scheme of the Global Adaptation Mapping Initiative (GAMI), used in the 6th IPCC report to link agricultural adaptation options with the Sustainable Development Goals (SDGs) (Bezner Kerr et al., 2022[45]).[8] The sub-categories presented in Table 1.1 were developed by the Secretariat to reflect the range of programmes and activities implemented and reported by the M&E countries (see the chapter Annex for more details).

In total, 599 adaptation programmes and activities across the M&E countries were identified by the Secretariat based on each country's self-reported activities. The majority fall into the SEI category, which account for 60.6% (363) of the total, shown in blue in Figure 1.5. Following that is ECO at 18.7% (112) shown in green; INT at 11.4% (68) shown in grey; and BHC at 9.3% (56) shown in orange. When reported programmes or activities included components or elements spanning multiple categories or sub-categories, they were included in each of them for completeness.[9] The following sub-sections discuss the programmes and activities in each category, with examples from member countries included for illustrative purposes.

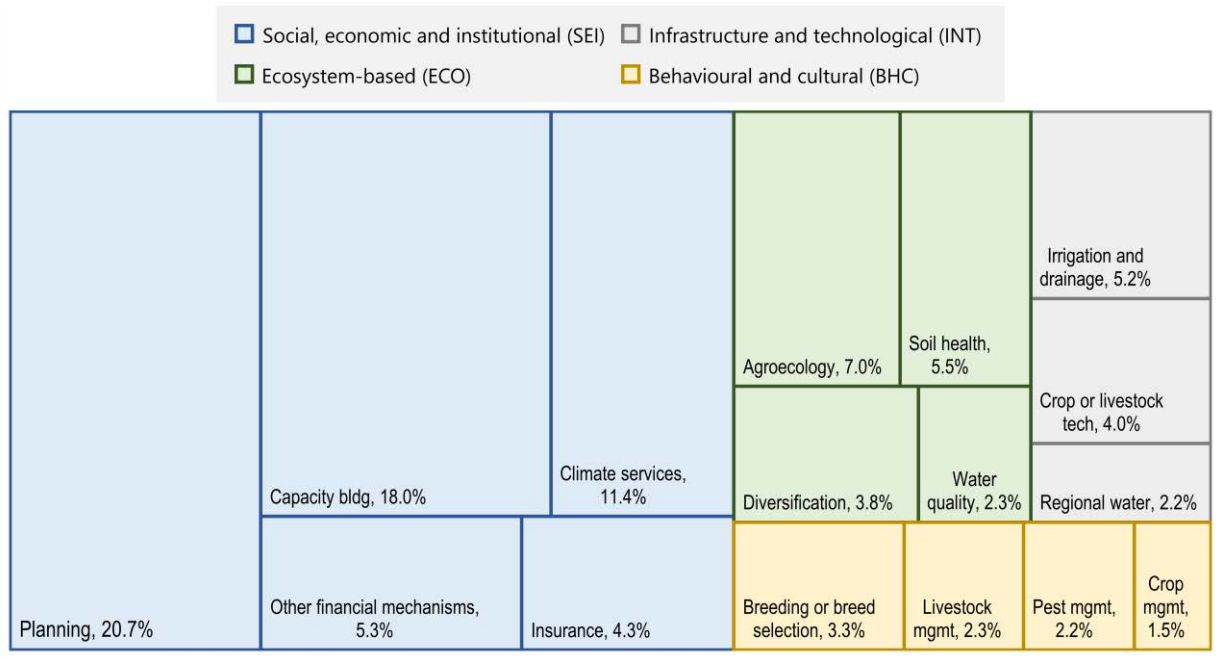
Table 1.1. Categories and sub-categories for adaptation actions and programmes

Categories based on Global Adaptation Mapping Initiative (GAMI), with sub-categories modified to capture the range of activities reported by M&E countries

Category and sub-category	Description
Infrastructure and technological approaches (INT)	Enabling, implementing or undertaking technological innovation or infrastructure development
Irrigation and drainage	Investing in irrigation and drainage infrastructure on farm; e.g. installation of irrigation or drainage technology, development of individual water storage systems
Regional water infrastructure	Investing in water infrastructure at a regional level (off farm); e.g. installation of flood control technology, construction of reservoirs or canals
Crop or livestock technology	Investing in technologies for crop or livestock production; e.g. installation of canopies to control the growing climate for tree crops, sprinkler or ventilation systems to prevent livestock heat stress
Behavioural and cultural approaches (BHC)	Enabling changes in farmer behaviour
Crop management and operations	Altering crop management practices; e.g. adjusting planting dates, changes in growing location
Livestock management and operations	Altering livestock management practices; e.g. adjustments in animal husbandry or manure management.
Pest, disease and invasive species control	Managing pest, disease and invasive species problems in crop or livestock production; e.g. invasive species inspection programmes, collaborative efforts to slow spread
Crop or livestock breeding or breed selection	Supporting the selection of cultivars or breeds or developing new cultivars or breeds; e.g. breeding programmes, adoption of climate-adapted cultivars or breeds
Ecosystem-based approaches (ECO)	Enhancing, protecting or promoting ecosystem services
Water quality	Efforts to limit soil erosion and nutrient runoff into waterways; e.g. riparian buffers, use of catch crops, fertilisation plans and nutrient balances
Soil health	Efforts to improve soil health, reclaim land or limit desertification; e.g. conservation tillage, soil testing, humus management
Diversification	Efforts to promote diversity, e.g. crop rotations, preservation of agrobiodiversity, agroforestry

Category and sub-category	Description
Agroecology	Efforts to advance agro-ecological systems, e.g. organic production, land conservation, land retirement
Social, economic and institutional approaches (SEI)	Enhancing the capacities of individuals, groups and institutions to respond to climate change
Climate services	Providing information to support improved decision making; e.g. early warning systems, decision support tools, the provision of forecasts or climate scenarios, extension and outreach
Insurance	Creating or expanding insurance mechanisms to accommodate climate risks
Other financial mechanisms	Creating other non-insurance financial instruments; e.g. disaster recovery funding, payments for environmental services; this category also includes funding programmes that support a diversity of activities that potentially span other categories and subcategories (e.g. funding instruments awarded by a national to regional or local governments to support various adaptation activities
Capacity building	Investing in the capacity of individuals or institutions to adapt; e.g. research or research funding, the development of partnerships, community based adaptation, changes in legal or governance structures
Planning	Developing adaptation strategies or plans; e.g. local, regional, national or sectoral adaptation plans, disaster or contingency planning

Figure 1.5. Agricultural adaptation actions and programmes by category and sub-category



Note: Size of rectangle is proportional to the share of the total number of adaptation actions and programmes identified by the Secretariat.

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Social, economic, and institutional measures

The majority of activities reported by national governments fall within the realm of *social, economic and institutional (SEI)* approaches. This is not surprising as the category covers the key functions of governments, including developing strategic planning documents; the development of capacity via governance changes, education and outreach; and the provision of information to support decision making.

Also included in this category is the provision of insurance programmes targeted to climate risks and the establishment of other financial mechanisms, such as *ex post* disaster relief.

Within the SEI category, activities predominantly fall into the categories of *planning* (20.7% of all activities reported), *capacity building* (18.0%) and *climate services* (11.4%). Over three-quarters of the countries covered in this monitoring report reported 124 planning activities relevant to agricultural adaptation. These include general, high-level planning documents that address agriculture, such as **Argentina's** National Plan for Adaptation and Mitigation to Climate Change by 2030, the **European Union's** New Strategy on Adaptation to Climate Change: Forging a Climate-Resilient Europe, and the publication by the **New Zealand** Government in August 2022 of its first National Adaptation Plan, which sets out actions to address the priority and significant risks the country faces from the impacts of climate change.[10] A number of countries report regional-scale planning efforts, such as **Australia's** Regional Drought Resilience Planning Program, which supports the development of community led resilience plans, and **Greece's** efforts to incorporate consideration of climate change adaptation issues into regions' rural development programmes.

Planning also includes region-, sector-, resource- and event-specific guidance documents. Sector-specific plans include **Brazil's** Agricultural Policy for Climate Adaptation and Low Carbon Emissions (ABC+ Plan), the **Japan** Ministry of Agriculture, Forests and Fisheries (MAFF) Climate Change Adaptation Plan and **Germany's** Agenda for Climate-change Adaptation in Agriculture, Forestry, Fisheries and Aquaculture. Resource-specific guidance covers soil health, e.g. **Mexico's** National Soil Strategy for Sustainable Agriculture (ENASAS), water resources, e.g. **Hungary's** Watershed Management Plan, and the development of organic agriculture, e.g. **Croatia's** National Action Plan for the Development of Organic Agriculture for the period 2023-2030.[11] Event specific guidance includes the **Netherlands'** Action Plan for Heat Stress in Livestock, **Poland's** Drought Counteraction Plan and **France's** Wildfire Programme.

Efforts to track adaptation progress or plan implementation are also included in the *planning* category, although there are relatively few examples. One is **Ireland's** Adaptation Scorecard, which assesses adaptation progress across sectors overall and with respect to three criteria: 1) risk, prioritisation and adaptive capacity; 2) resourcing and mainstreaming; and 3) governance, co-ordination and cross-cutting aspects. **France** also conducted an evaluation of the implementation of its National Climate Change Adaptation Plan for the period 2011-2015, finding that the five actions related to agriculture were finished or in process at the time of the assessment.[12]

Capacity building, cited in 108 activities, includes a broad range of investments and measures that strengthen the capacity of farmers or institutions to adapt to climate change. Investments in agricultural research and development (R&D) and knowledge transfer are critical for driving productivity improvements and supporting the development of new cultivars, livestock breeds, and production technologies. Community-based adaptation strategies involve building adaptive capacity through locally driven and place-based approaches. Examples include community seed, feed or fodder banks, and community forest management. Leveraging indigenous and local knowledge through participatory plant breeding can support adaptation by facilitating interactions between indigenous knowledge systems and scientific research. In livestock systems, pastoralists' local knowledge can complement scientific research and help to inform decision making.

The majority of activities in *capacity building* reported target investments in research or research funding programmes, such as **Israel's** Center for Agricultural Adaptation, which supports research on field crops and vegetables, fruit trees, plant protection and animal sciences, and activities related to extension and outreach, such as **India's** National Mission on Agricultural Extension and Technology. **New Zealand's** new Centre for Climate Action on Agricultural Emissions was also established to achieve the objectives of accelerating the development of high-impact technologies and practices to reduce greenhouse gas emissions.[13] This category also includes developing partnerships and promoting knowledge sharing, such as **Belgium's** Flemish Resilience Plan, which allocates EUR 2.8 million (USD 2.9 million) to improve co-

operation between the agricultural sector and entrepreneurship, digitalisation and knowledge sharing. Programmes in this category also support extension and outreach, such as the **Chile** Conscious Origin (*Chile Origen Consciente*) programme, established in 2022, to provide a framework for farmers to incorporate sustainability standards in their operations and to verify compliance through self-assessments and independent audits. Several countries also reported participating in international efforts on R&D and knowledge sharing. One such example is the Global Research Alliance on Agricultural Greenhouse Gases, launched in 2009, which brings together leading scientists, researchers and policymakers from over 60 countries to share knowledge and improve agricultural productivity while reducing greenhouse gas emissions. Another example is the OECD's Co-operative Research Programme, a programme joined by **Israel** in 2022, which contributes to climate change adaptation (Box 1.2).

Box 1.2. The OECD's Co-operative Research Programme: Sustainable Agricultural and Food Systems

The OECD's Co-operative Research Programme: Sustainable Agricultural and Food Systems (CRP) aims to generate knowledge sharing and provide relevant scientific information and advice for policy decisions related to the sustainable use of natural resources in agriculture, food, fisheries and forests. To do so, it focuses on two activities: first, through its fellowships, the CRP funds short-term research projects for individual scientists in other CRP member countries. Second, the CRP sponsors international conferences and workshops. During 2010-2023, a total of 375 fellowships and 112 conference or workshop sponsorships were granted.

Climate change is one of the priority areas of research for the CRP and it has funded many activities related to the issue. These recently included fellowships on, for example, related topics of peatland restoration, land tenure models for carbon-positive land use, adapting crops to changing environments, plant variety protection to drought tolerant varieties, and improved innovation and knowledge systems for forests and natural resource management. Related recent workshops and conferences have explored topics such as nitrogen losses and agricultural GHG emissions, synergies and trade-offs between adaptation, mitigation and ecosystem services, the treatment of peatlands, sustaining soil productivity, and the evaluation of agricultural management practices and infrastructures adapted to climate change.

Further information about CRP fellowships and conferences is available at www.oecd.org/agriculture/crp.

Climate services, in 68 reported programmes, can contribute to adaptation via the production, translation, communication, and use of climate information in decision-making. The provision of tailored information to decision makers can increase yields and promote changes in farmers' practices. Improvements to weather forecasting, crop monitoring and early warning systems can help farmers to prepare for extreme weather events, manage risks and reduce losses.

Activities reported involve the collection and dissemination of data to support decision making. This includes forecasts, such as the **United States'** National Significant Wildland Fire Potential Outlook, which features a monthly and 7-day fire potential outlook, and decision support tools, such as **Australia's** My Climate View online platform, which enables farmers, industry and regional communities to anticipate future climate conditions, draw comparisons with recent weather, consider the implications for production and prepare for future drought. In addition to addressing climate and adaptation possibilities, tools developed by countries support enhanced sustainability in production, such as **Estonia's** Big Data Project, launched in 2022 to provide a free and publicly accessible tool to support precision fertilisation and nutrient balancing, and **Switzerland's** national Soil Mapping Implementation Strategy, which seeks to support sustainable land use in a changing climate.

Insurance mechanisms developed to target climate-related risks are cited as part of 26 programmes by 24 of the countries covered in this report. **Indonesia**, for example, has implemented insurance products in collaboration with the insurance company PT Jasindo, rice farming insurance (AUTP) and cattle/buffalo insurance (AUTS/K) to protect farmers against flood, drought, pests and disease outbreaks. **Slovenia's** Ministry of Agriculture co-finances insurance premiums at a rate of 55% with the goal of encouraging farmers to insure crops against natural disasters as well as the risk of animal deaths due to disease. **Switzerland** likewise promotes the market penetration of crop insurance through federal contributions to protect against large-scale crop risks.

Other financial mechanisms include disaster recovery funding or payments for environmental services. Market-based mechanisms that pay farmers for the preservation of biodiversity or other environmental improvements can support transformative capacity by encouraging the development of new and diversified income streams for farmers. Other financial mechanisms, cited as part of 32 programmes, most frequently refer to financial support to recover from climatic events, such as **Canada's** AgriRecovery framework and the **United States'** Livestock Forage Disaster Program (LFP) or Emergency Assistance for Livestock, Honey Bees, and Farm-raised Fish Program (ELAP). Between mid-2021 and early 2023, **New Zealand** endured a record six climate events that required a response under the Primary Sector Recovery Policy: government funding allocated by the Ministry for Primary Industries in the amount of NZD 1.5 million (USD 0.95 million) in the fiscal year ending June 2022 enabled rural support trusts (RSTs) to increase psychosocial support, run information sessions and co-ordinate local recovery efforts. This category also includes instruments such as the **Netherlands'** Transition Fund (Transitiefonds landelijk gebied en natuur), which anticipates spending EUR 24.3 billion (USD 25.6 billion) from 2022-2034 to reduce the negative environmental impacts of farming operations, with a focus on ammonia emissions, but also targeting other environmental concerns.

Nature- or ecosystem-based measures

Although *ecosystem-based approaches* (ECO) are cited in far fewer programmes, this is the second-most frequently cited type of action or programme, with 112 references to efforts that seek to broadly advance *agro-ecology* (7.0% of all references) or target specific ecosystem services, by improving *soil health* (5.5%), *diversification* (3.8%) or *water quality* (2.3%).

Agroecology, a sub-category defined by the GAMI, includes actions or programmes that aim to advance agro-ecological systems, such as organic production, land conservation or land retirement, among other possibilities.[14] Agroecology can help to improve resilience while providing important co-benefits through climate change mitigation and ecosystem services, by increasing soil organic matter, enhancing soil and water conservation, and diversifying food systems. Consistent with this reasoning, **France** has adopted a holistic approach to reinforcing agricultural resilience by investing in soils, diversification, and agro-ecologic infrastructure. The **United States** Farm Service Agency's Soil Health and Income Protection Program (SHIPP) seeks to enhance soil and water conservation. An area of focus within the category of agro-ecological systems is on advancing organic production methods. Examples include **Costa Rica's** support payments for producers during the transition period toward certified organic and sustainable agriculture, and **India's** Organic Value Chain Development project for the Northeast Region, which supports the purchase of inputs, including seeds, organic fertilisers, and liquid organic pesticides.

Soil health measures promote practices to limit soil erosion, improve soil fertility and enhance carbon storage. This sub-category also includes programmes targeting soil erosion, land reclamation or desertification. For example, **Kazakhstan's** Republican Scientific and Methodological Center of Agrochemical Activities provides landowners with soil testing to determine nutrient levels and provide targeted recommendations for increasing soil fertility. The **European Union's** Soil Observatory (EUSO) synthesises evidence on soils to identify areas that are vulnerable to soil degradation.[15]

Diversification of agricultural systems can strengthen resilience to climate change, while providing important synergies with socio-economic and environmental objectives. Examples include expanding the genetic diversity of crops or livestock or altering the mix of crop and livestock production. It also encompasses variations to spatial and temporal arrangements through mixed planting, crop rotations, and integrated crop, livestock and agroforestry systems. Diversification can help to strengthen ecosystem services such as pest control, soil fertility and pollination, and regulate water and temperature extremes, resulting in more stable yields and reduced risk of losses (Tibi et al., 2022[51]). Some practices such as agroforestry can mitigate GHG emissions while improving food security and yield stability.

These measures most frequently target the adoption of agroforestry or integrated production systems or greater landscape diversity. **Brazil's** ABC+ programme seeks to move away from conventional cropping and toward integrated crop-livestock-forestry systems (ILPF). The **United Kingdom's** Countryside Stewardship (CS) scheme provides incentives to increase biodiversity, improve habitat and expand woodland areas. A small number of references seek to specifically address water quality degradation, such as the introduction in **Spain** of regulation governing nutrient inputs to reduce greenhouse gas and ammonia emissions and prevent water pollution, while maintaining soil fertility and agricultural productivity. **Switzerland's** programme for the enhanced use of land and water includes a component specifically focused on diversification, including the experimental design and testing of integrated management systems that combine crop rotation, choice of varieties, tillage and other measures.

Infrastructure and technological approaches

With 68 references to actions or programmes, the category of *infrastructure and technological approaches* accounts for 11.4% of all programmes referenced. The majority of programmes in this area target either *irrigation and drainage* (5.2% of all references) or *crop and livestock technology* (4.0%). A relatively small number discuss *regional water infrastructure* (2.2%).

Irrigation and drainage infrastructure can improve overall water use efficiency at the basin level and productivity on the farm, alleviating some of the adverse consequences of climate change by helping farmers to cope with higher temperatures and drought. Investments in on-farm rainwater storage can reduce pressures on off-farm water supplies. Programmes for irrigation typically provide support to adopt more efficient technologies, with the goal of supporting adaptation to more variable water availability, although their impact on water consumption will depend on the presence of effective water demand policies (Grafton et al., 2018[52]; OECD, 2016[43]). **China's** Farmland Irrigation Construction programme provides payments to support the construction of small irrigation facilities, rainwater collection, sprinkler and drip irrigation, pumps and small hydropower stations. The **United Kingdom's** Water Management Grant, round 2 provides grants for capital items to promote more efficient use of water for irrigation and support to construct on-farm reservoirs to store water abstractions or harvested rainwater. Countries expected to experience a surplus of water under climate change, such as **Denmark**, **Norway** and **Sweden**, have invested in support to install and renovate drainage systems.

Crop or livestock production technology investments can facilitate adaptation on the farm, for example through the installation of canopies to control the growing climate for tree crops. Strategies such as providing shading, installing electric fans in sheds, bathing animals several times per day, or installing ventilation and cooling systems can support adaptation in livestock systems by providing relief from heat stress. Programmes also target on-farm investments in adapted crop and livestock technology. For example, **Austria's** Investment Loans in Agriculture provide an approach for investments in technologies, such as biomass heating systems and equipment for manure management. **Lithuania's** Modernization Fund, initiated in 2022 with EUR 1 million already committed, supports the development of non-arable technologies to reduce fuel and mineral fertiliser costs, preserve carbon deposits in the soil and reduce the risk of spring drought. The **Philippines'** Adaptation and Mitigation Initiative in Agriculture (AMIA) is its national flagship programme, which seeks through an approach tailored to villages, to advance the delivery

of productivity enhancing technologies, such as the use of coconut husk as mulch in the upland agro-ecological zone. **Colombia's** Climate-smart Initiatives for Climate Change Adaptation and Sustainability in Prioritised Agricultural Production Systems (CSICAP) seeks to develop, validate and scale technologies to increase resilience and low-carbon agriculture.

Regional water infrastructure such as flood control technology, or the construction of reservoirs or canals, can play an important role in adaptation as complement to water policies (OECD, 2016[43]). The impacts of climate change on infrastructure needed for agriculture is expected to increase, and it is therefore essential to ensure that regional water infrastructure can withstand damage from climate-related natural hazards. At the same time, not all investment will be conducive to adaptation: large-scale or groundwater-based irrigation projects without effective water demand, including water pricing, policies can lead to maladaptation, potentially resulting in increased water consumption and surface or groundwater depletion during periods of drought (OECD, 2015[42]; OECD, 2016[43]).[16]

A handful of programmes are targeted toward mitigating flood-related risks, such as **Hungary's** efforts to develop temporary flood water storage in agricultural areas of the Middle Tisza River Basin and the Emergency Watershed Protection Program (EWP) of the **United States**. Others, primarily in emerging economies, seek to expand water supply infrastructure, such as **China's** expenditures to support large-scale irrigation projects and **Viet Nam's** Mekong River Delta water planning and supply projects.

Behavioural and cultural approaches

Behavioural and cultural approaches are cited in 56 programmes, accounting for 9.3% of the total. Among these, attention is predominantly given to *breeding or breed selection* (3.3%), followed by *livestock operations or management* (2.3%), *pest, disease and invasive species management* (2.2%) and *crop operations or management* (1.5%).

Improvements in cultivars offer an effective means to combat climate change. Adaptation via conventional crop breeding has demonstrated good progress but will require rapid incremental improvements to keep pace with changes in temperatures and the environment. The IPCC states with high confidence that plant breeding biotechnology will contribute to adaptation for large-scale producers, however the uptake of climate-resilient crops may be limited by socio-economic and political factors (Bezner Kerr et al., 2022[45]). Genome sequencing can help to identify agronomic traits that are relevant to climate change and develop crop varieties that are resilient to stress from pests, diseases, temperature and water extremes. In the livestock sector, a range of adaptation options are available including breeding for heat stress tolerance, crossbreeding, and switching to more heat and drought-resilient species.

Programmes in *breeding and breed selection* emphasise the development and adoption of varieties adapted to their particular climate challenges. The project Breeding Coffee for Agroforestry System (BREEDCAFS) from 2017-2021, co-ordinated by **France's** CIRAD and funded by the European Union, seeks to develop varieties of Arabica coffee suited to agroforestry production, which reduces temperatures in coffee plantations, preserves soil biodiversity, and enhances yield. **India**, **Indonesia** and **Viet Nam** are experimenting with varieties of rice that are tolerant of increased salinity. **Costa Rica's** Project for Strengthening Capacities in Seed Production for Adaptive and Resilient Agriculture seeks to promote the use of adapted seeds by family farmers to enhance agricultural productivity. In 2023, India promoted the production and use of millets, which are drought resistant nutritious crop, during its Presidency of the G20 coinciding with the United Nations' International Year of Millet. A special scheme was also established in 2023 by the OECD Seed Scheme to facilitate trade in pearl millets and sorghum seeds (Box 1.3). The **United Kingdom** is exploring more environmentally efficient cattle breeds via its Ruminant Genetics Programme in Northern Ireland.

Altering *crop management and operations* can involve changes in planting schedules or shifts in production location. While shifting the location of crop production holds significant potential as an adaptation strategy,

it may also be impeded by climatic, cultural, institutional and economic barriers, including support payments that lock in production systems and discourage adaptation. Altering livestock management and operations includes measures such as matching stocking rates with feed availability, managing diet quality, rotational grazing, adjustments in animal husbandry and manure management.

While governments tend not to specify particular adaptation strategies, favouring instead the development of adaptive capacity, there are some examples of programmes that support the adoption of crop or livestock operations that are known to perform well under changing climate conditions. The Red Meat Development Programme (for sheep) and the Dairy Improvement Programme of Wales (**United Kingdom**) are examples of programmes that specifically target herd management. **Australia's** Extension and Adoption of Drought Resilience Farming Practices Grants Program funds grants ranging from AUD 100 000 to AUD 3 million (USD 69 000 to USD 2.1 million) to support adoption of proven drought resilient farming practices at a large scale (e.g. multiple farms, regions or industries).

Pest, disease, and invasive species management is essential to mitigate the potential increased impacts of pests and diseases on agricultural production resulting from climate change. Some programmes address pest and disease risk, either in general or in response to specific threats, typically by enhancing monitoring. This category also includes efforts to reduce harmful effects from chemical pesticide use by moving to alternative products or pest control systems. In **Croatia**, for example, the Phytosanitary Information System (FIS) has been upgraded and a new Act passed that requires farmers to connect to the FIS and to be trained in the safe handling and proper applications of pesticides. **Japan's** strategy MIDORI targets a 10% and 50% reduction in risk-weighted use of chemical pesticides through facilitating a shift toward Integrated Pest Management (IPM) systems by 2030 and 2050, respectively.

Box 1.3. The OECD Seed Schemes for Sorghum and Pearl Millets

The OECD Schemes for the Varietal Certification of Seed (hereafter the "Seed Schemes") aims to facilitate the international trade of quality seeds by applying harmonised seed-certification standards and procedures. The Seed Schemes play a key role in the distribution of plant-breeding innovations from breeders to farmers by facilitating the distribution of seeds of adapted varieties worldwide. By helping farmers improve and stabilise their crop yields, high-quality seeds may help reduce the need to increase the area of agricultural land. New varieties also offer important opportunities for reducing water, fertiliser and pesticide use by improving input efficiency.

Pearl millet is a highly nutritious and climate-resilient crop that thrives in arid and semi-arid regions. It can be used as fodder, but its use as a staple cereal crop is gaining importance in Africa and Asia. Having recognised the importance of pearl millet as a significant food crop and its exceptional resilience to drought and high temperatures, the Seed Schemes agreed to establish a specific Sorghum and Pearl Millet Scheme at its 2023 Annual Meeting in Türkiye. By incorporating these two species into this specific scheme and facilitating their certification and trade, the OECD is working towards developing further the potential of drought-tolerant crops to address food security challenges and mitigate the negative effects of climate change.

More information on the OECD Seeds Schemes can be found at https://www.oecd.org/agriculture/seeds/.

How do agricultural support policies influence climate change adaptation?

The above section discussed policies employed by countries that specifically deal with enabling agricultural sectors to adapt to a changing climate. However, other agricultural support policies may unintentionally

improve or hinder the ability of individuals to adapt to climate change. As discussed in Chapter 2, in 2020-22, support to agriculture across the 54 countries – totalled USD 851 billion per year, of which USD 630 billion per year was provided as transfers to individual producers. The remainder was made up of support for general services (USD 106 billion) and budgetary transfers to consumers (USD 115 billion). Some emerging economies also implicitly taxed their producers by an average of USD 179 billion per year. This section discusses the mechanisms by which these current support policies may impact climate change adaptation and the potential effects.

Adaptation impacts of producer support policies

Agricultural support for the production of specific commodities can discourage adjustments

Agricultural policies that provide support coupled to production are among the most common forms of support to the agricultural sector (around 65% of positive producer support). By distorting production signals, these policies can worsen vulnerabilities to climate risk through a variety of mechanisms (Ignaciuk, 2015[36]). Policies that increase the price received by the producer (positive MPS), which represent the largest share of overall producer support, incentivise production, the intensification of input use, the allocation of land to supported crops and the entry of land to the agricultural sector, all of which can reduce the capacity of agriculture to adapt to climate change. Other types of direct production support, including coupled payments, have a similar effect as positive MPS. Some of these effects can be mitigated when support is subjected to environmental conditionality. Conversely, negative MPS for a given commodity shifts resources away from the production of that commodity, potentially altering the mix of commodities produced relative to what would be optimal under given market and climatic conditions. Policies that distort trade flows may reduce resilience: trade plays an essential role in supporting climate change adaptation and ensuring stability by allowing goods to flow from food surplus to food deficit areas, and by helping to absorb the impacts of local and regional supply shocks (Adenäuer, Frezal and Chatzopoulos, 2023[53]; OECD, 2017[25]; OECD, 2014[38]). Given that production tends to be more volatile in domestic than in global markets, and that domestic shocks are becoming more frequent with climate change, trade will play an increasingly important role in mitigating domestic supply volatility and enhancing global food security.

Most support policies also incentivise the production of specific agricultural commodities over others.[17] These policies, here entitled single commodity transfers (SCT), can create barriers to changing production systems away from subsidised commodities and potentially hamper the ability of farmers to adjust production to a changing climate (Wreford, Ignaciuk and Gruère, 2017[35]; OECD, 2017[54]; OECD, 2014[38]). Depending on the commodities that are subsidised and the conditions or regulations associated with these payments, SCTs can reduce incentives to change to more resilient crops; reduce incentives to diversify production; or can induce farming in more risky locations or with risky practices. For instance, support for the production of water-intensive crops such as cotton or rice may increase farmers' risk of loss due to drought in a given season (OECD, 2015[42]; Wreford, Moran and Adger, 2010[55]). Modelling suggests that removal of certain forms of SCTs could enable adaptation by facilitating a shift in production towards regions with comparative advantage and increasing trade flows to areas affected by climate change (Guerrero et al., 2022[56]). These measures are significant; across all 54 countries covered in this report, governments provided USD 380 billion in positive transfers to individual commodities, as well as USD 179 billion in implicit taxation.

Other targeted forms of direct payments not included in the SCTs may also favour certain types of products, and ultimately hamper adaptation. For example, support for cereals or ruminants are included as Group Commodity Transfers (GCT), but also create barriers to adaptation by limiting farmers' ability to adjust their production in response to changing climatic conditions. Ultimately the impact on adaptation is highly context-specific and depend on the specific instrument used, the commodity subsidised, and the conditions or regulations associated with these payments.

Producer support for managing risk

Policies to help manage risk are a common form of producer support. Interest in these forms of support is rising due to the uncertainties posed by climate change, as reflected in the adaptation actions and programmes focused on insurance (4.4% of programmes from Figure 1.5) and other financial mechanisms (5.5% of programmes). Subsidised agricultural insurance policies are largely used to help manage risks and insurance markets can be useful mechanisms to transfer and pool risks. This can improve resilience in the face of increasing extreme events by allowing farmers to build absorptive capacity to recover from shocks (Cobourn, 2023[9]). Government insurance subsidy programmes can play an important role in ensuring the functioning of insurance markets that allow farmers to manage small to medium business risks. This is because insurance programmes can be economically unviable for insurance companies to offer without subsidies due to high costs of administering, monitoring and adjusting losses which keeps demand low (Glauber et al., 2021[57]).

However, insurance-related subsidies can also change producer behaviour and impede adaptation, encouraging farmers to adopt riskier and unsustainable production strategies (Ignaciuk, 2015[36]; OECD, 2016[43]). Insurance which covers a farm for individual loss of yields may cause a moral hazard problem in which the farmer undertakes fewer other risk mitigating activities and instead takes on more risk with less diversification (OECD, 2011[58]; Antón et al., 2012[59]). For instance, insured corn and soybean crops have been shown to be significantly more sensitive to extreme heat compared to uninsured crops, suggesting farmers are less inclined to undertake other adaptation measures to mitigate these risks (Annan and Schlenker, 2015[60]). Subsidies could be made less distortionary by, for example, shifting subsidies to cover only insurance for catastrophic risk rather than normal farm business risks, refraining from restricting crop choice, requiring minimum deductibles on claims and providing transparency over the level of subsidy in each premium (Glauber et al., 2021[57]; OECD/FAO, 2021[8]). Likewise, switching support from schemes based on individual losses to index-based schemes – facilitated by satellite and digital technologies – may reduce the moral hazard problem and the administering costs (Sumner and Zulauf, 2012[61]). However, under this approach indemnities may differ from actual loses, which may not be attractive for farmers.

Disaster assistance programmes are another commonly adopted form of risk management support. These programmes are usually introduced in the form of a payment following a natural disaster. In most instances producers are unaware they will be protected until the disaster occurs and the payment is announced. However, there are some cases, such as the United States' Livestock Forage Disaster Program, where the conditions for disaster relief are known in advance. Expectations play a significant role in how producers interact with disaster assistance, as producers may be willing to forego other forms of risk management if there is a credible belief that governments will bail them out in the event of a loss. Disaster assistance should therefore be limited to providing protection for catastrophic or uninsurable risk so as not to discourage participation in other risk mitigating activities such as diversification, irrigation investment or insurance (Glauber et al., 2021[57]). An optimal approach should emphasise capacities farmers need to adapt or transform to climate risks, including exiting the sector altogether. Investment in public goods including weather and climate information resources, research and development and knowledge dissemination will build producers' resilience and strengthen their ability to plan and prepare for, absorb, recover from, and adapt to adverse events.

Payments for provision of environmental public goods can help adaptation

Agricultural policies can also be designed to incentivise adaptation directly, by linking payments to providing environmental goods and services, such as preservation of rural landscapes, resilience to natural disasters, habitat provision, and control of invasive species. Payments for ecosystem services can provide nature-based solutions to some climate risks while also yielding co-benefits for climate mitigation and the environment. For instance, payments for restoration and protection of wetlands reduce flood risk by providing a store for excess water while also providing habitat for animals and sequestering carbon.

However, only USD 1.6 billion of the USD 297 billion in budgetary producer support in 2020-22 across the 54 countries was purely for environmental public goods (i.e. payments based on specific non-commodity outputs in the PSE data). The **United Kingdom**'s Countryside Stewardship programme and **Korea's** direct payments for land conservation are two examples of these types of policies. Some countries also require compliance with certain environmental standards as a condition to other types of payments.

Adaptation impacts of general services support policies

Support for agricultural knowledge generation and transfer

Public funding for agricultural knowledge generation and innovation remains limited, despite the fact that investments in these areas are often cited as one of the most important roles for public policy in aiding the agricultural sector to adapt to a changing climate and build resilience (Ignaciuk, 2015[36]; Wreford, Ignaciuk and Gruère, 2017[35]; OECD, 2020[39]). Spending on agricultural knowledge generation programmes represented 0.4% of the value of agricultural production for the 54 countries covered in this report in 2020-22, while support for knowledge transfer programmes accounted for 0.2% of value of production.

There is a clear role for public R&D to provide accurate and detailed information that allows private agents to make well-informed adaptation decisions. Modelling has suggested that directed innovation has offset as much as 20% of the potential losses in agricultural land value from damaging climate trends in the **United States** since the 1960s (Moscona and Sastry, 2022[62]). Equally important is to support research on risk and vulnerability assessment. A number of countries already provide services which help producers to assess their vulnerability to climate risks and adaptation needs, as captured by the 66 actions and programmes dedicated to climate services. Examples include the **Netherlands**' Climate Stress Test tool, the **Philippines'** Climate-Risk Vulnerability Assessment Maps, **Portugal's** Climate Portal and the **United States** Climate Hubs among others.

Weather forecasting or early warning systems are also important tools to prepare farmers to undertake early action to minimise the negative effects of extreme events. Some countries already provide funding for or are developing such services, including **Australia's** Drought Early Warning System, **Austria's** contribution to a worldwide Database for Soil and Near Surface Temperatures, **France's** Meteo-France agro-climatic services, **Ireland's** Forest Fire Danger Rating, **New Zealand's** high resolution drought-forecasting tool (NIWA35), and the **United States'** Drought Monitor, among others. Services such as these equip producers with necessary information to understand short and medium-term risks of climate change and facilitate autonomous adaptation actions by producers without distorting production or trade signals. In designing knowledge generation programmes, consideration should be given to "no-regrets" policies, which are those that help farmers under a wide range of scenarios of worsening climate change, such as those discussed above.

Knowledge transfer programmes targeting adaptation also play a key role in building capacity of the agricultural sector to deal with future climate change. Knowledge gaps can play a contributing role in creating barriers to uptake of adaptation and other climate-friendly practices on farms (Wreford, Ignaciuk and Gruère, 2017[35]). Improved access to information helps farmers and other private agents to overcome these barriers and make rational decisions in relation to adaptation actions. Capacity-building policies are among the most common employed by countries in this report, for example **Australia**'s Farm Business Resilience Program, **Canada's** Agricultural Climate Solutions Living Labs and the **Netherland's** Regional online connection sessions all work to bring farmers together with the aim of exchanging best practices on climate change.

Infrastructure

Provision of infrastructure projects will often be required to reduce barriers to the adoption of climate-friendly practices in agriculture. In the context of this report, infrastructure spending is included under

general support services for public good infrastructure, whereas subsidies to producers for the provision of on-farm infrastructure projects are included in payments to producers for fixed capital formation. Spending on these programmes totalled USD 49 billion across the 54 countries covered in this report in 2020-22, equivalent to 1.1% of the value of agricultural production.

Farmers rely directly or indirectly on public infrastructure, and its availability will influence how they respond to climate change (Ortiz-Bobea, 2021[63]; Wreford, Ignaciuk and Gruère, 2017[35]). Infrastructure needs are highly location specific and long-term sustainability assessments of each project are important to assess their suitability. For example, irrigation infrastructure will be important to deal with the effects of climate change in some regions, whereas in other regions, in the absence of adequate water management policies, adoption of irrigation infrastructure may actually become a maladaptation mechanism and discourage the move towards less water and emission-intensive production systems, which would increase the overall resilience of the region. Faced with uncertainty in the viability of long-run adaptation projects, the economic literature typically prescribes implementing "no-regret" policies – those which build resilience to risk under a wide range of future scenarios and which will provide benefits to the sector even in the absence of shocks (OECD/FAO, 2021[8]; OECD, 2020[39]; Mullan et al., 2013[64]; Hallegatte, 2009[65]; Antón et al., 2013[37]).

Biosecurity, prevention, management and control

Disease and pest outbreaks will be an increasing source of risk for agricultural producers under climate change (Skendžić et al., 2021[12]). Producers typically manage some pest and disease risks on farm through the use of pesticides, cropping practices, antibiotics and other forms of management actions. However, some risks are outside the control of individual producers. For instance, outbreaks on farm can harm producers directly through crop and livestock losses, however, outbreaks elsewhere can still impact them if it results in closures of trade or changing consumer preferences. For this reason, there is also a clear role for governments to continue providing a public good in preventing and managing these risks. Many governments operate nationwide biosecurity systems which employ inspection and control measures to prevent incursions from entering and spreading through agricultural areas. In 2020-22, these measures accounted for USD 8 billion among the 54 covered countries in this report, equivalent to 0.2% of the value of agricultural production.

There is also a role for more forward-looking activities, including systems to anticipate new pests and diseases, developing response plans, and early notification systems that help producers and other actors respond to threats. Knowledge transfer and extension programmes are also important to spread information on best practices to manage disease and pests. For instance, as part of its Farm to Fork Strategy, the **European Union** ran a pilot programme, Farmer's Toolbox for Integrated Pest Management, between 2020 and 2022 with the objective to provide background knowledge on the most promising ways farmers could reduce pesticide dependency.

Reforming agricultural policies for climate change adaptation

Climate change is increasingly impacting global agriculture and food systems, through slowing agricultural productivity growth, negative impacts on crop and grassland quality and harvest stability, and disruptions to terrestrial ecosystem services. Higher temperatures and the increased frequency of droughts, floods and natural disasters have negative consequences for food security and livelihoods; this includes a greater frequency of sudden losses in food production, reduced food availability, and higher food prices. Climate change is projected to make some areas unsuitable for food production, increasing the number of people at risk of hunger, malnutrition and diet-related mortality (Bezner Kerr et al., 2022[45]). The agricultural sector faces a formidable challenge: it needs to adapt to a changing climate while reducing GHG emissions, preserving biodiversity and environmental quality, ensuring food security and nutrition, and supporting rural incomes and livelihoods.

A broad range of programmes have been developed to help agriculture adapt to climate change, but more attention could be given to implementation, monitoring and evaluation

Governments are already taking significant steps to facilitate climate change adaptation in their agricultural sectors: UNFCCC reports reflect greater attention to agricultural adaptation and adaptation-mitigation co-benefits over time and a stocktake of measures indicates 587 adaptation programmes and activities across the 54 M&E countries. However, a large proportion of reported activities focus on planning, with 120 strategic planning documents recorded across three-quarters of M&E countries. Moving beyond planning to focus on implementation is imperative to support agricultural production systems in adapting to climate change. While there is increasing evidence that many plans are being implemented, evidence on the extent of implementation or documenting the outcomes of programmatic efforts is scant. Countries should continue to implement, monitor and evaluate adaptation policies and programmes in an effort to strengthen resilience by fostering absorptive, adaptive and transformative capacities.

Reform is needed so that producer support policies facilitate and do not hinder climate change adaptation

Most agricultural producer support policies were not designed to address climate change adaptation objectives. While some may support adaptation, the majority do little to facilitate, and in many cases hinder, farmers' efforts to adapt to climate change. Support to individual producers amounted to USD 630 billion per year in 2020-22, of which USD 380 billion was provided in the form of support tied to the production of specific commodities that discourage production adjustments. Governments should reduce and reform market price support (MPS) and payments targeted to specific commodities that encourage farmers to maintain pre-existing production systems and reduce incentives to shift production away from subsidised commodities in response to changing climatic conditions. Dismantling policies that distort trade and impede price transmission can also reduce supply volatility by allowing produce to flow from food surplus to food deficit areas, helping to manage domestic food shortages driven by droughts, floods, and other catastrophic events. To facilitate this, short-term non-trade-distorting measures may be required. Market price support and payments linked to outputs or the unconstrained use of variable inputs also have the greatest potential to increase GHG emissions, exacerbating the extent of adaptation required (OECD, 2022[48]). Reforming these policies would help to mitigate climate change and increase the resources available to allocate to climate change adaptation. Developing coherent policy approaches involving all agencies with policy levers is important in this regard so that the synergies and trade-offs are properly understood.

Governments should provide support for catastrophic risks only, not impeding adaptation while ensuring well-functioning markets for agricultural insurance

Well-functioning insurance markets can strengthen resilience to climate change by allowing farmers to build absorptive capacity to recover from shocks. While small and medium-scale idiosyncratic risks can be managed at the farm level and through market-based instruments such as insurance, agricultural policy still has a role to play in covering large-scale systemic risks that cannot be covered by farmers themselves or by risk markets, particularly in view of the increasing number of extreme weather events and catastrophic disasters. Disaster assistance payments can generate maladaptation if they are not targeted to catastrophic risks and not well designed. Governments should ensure that insurance subsidies and disaster assistance payments do not cause moral hazard and impede on-farm adaptation, and policies should be well-designed to avoid crowding out private sector activity. Better and more granular data on risks and climate can help to reduce uncertainties surrounding climate change and support the development of optimal local solutions and on-farm strategies. The development of index-based insurance schemes for marketable risks can help to reduce moral hazard and make coverage more affordable for small-scale producers.

Targeted interventions to support climate change adaptation in agriculture are needed

Overall, agricultural support policies tend to be poorly targeted, inequitably distributed, and often result in substantial leakages to unintended beneficiaries along the supply chain. This comes at considerable cost not only to consumers and taxpayers, but also to farmers due to the low income transfer efficiency of support policies. Policies should aim to offer multiple adaptation pathways for farm households: supporting sustainable productivity improvements, diversifying income sources among household members, and when necessary, facilitating the transition away from agriculture.

Better targeting of agricultural support can facilitate autonomous adaptation and free up scarce budgetary resources that could be used to support planned adaptation initiatives or provide transitional assistance. Investments in research and development, extension services, entrepreneurial skills, human capital, and the uptake of resilience-enhancing technologies can build on-farm resilience capacity and reduce farmers' risk exposure to climate change over the long-term. Payments can also be made conditional on the provision of ecosystem services such as landscape preservation, biodiversity conservation and control of invasive species – although care must be taken in design and implementation to ensure environmental benefits. However, only USD 1.6 billion of the USD 297 billion per year of budgetary support to producers in 2020-22 was purely dedicated to the provision of environmental public goods (i.e. payments based on a specific non-commodity output).

Greater support should be provided for transformative capacity to help farmers build long-run resilience to climate change

Investments in innovation, infrastructure and biosecurity can play an essential role in helping agriculture adapt to climate change. However, support for these and other general services is low. Only USD 106 billion in 2020-22 was spent on these areas, an amount accounting for just 2.5% of the value of agricultural production, or 12.5% of total support directed to the sector. Channelling a greater share of R&D spending towards adaptation can provide the foundation for stronger risk and vulnerability assessments, support informed decision making, facilitate the emergence of new technologies and production practices adapted to the changing climate, and build capacity via knowledge transfer programmes. Investments in infrastructure should be climate-resilient, in that they are planned, designed, built, and operated in a way that adapts to changing climate conditions. Investments in infrastructure may also support nature-based solutions at a landscape scale, which have the potential to contribute simultaneously to objectives related to adaptation, mitigation, and other ecosystem services. Biosecurity measures should be upgraded to ensure farmers can prevent, respond to, and recover from emerging threats from pests and diseases.

Public-private partnerships can catalyse investment in innovation and infrastructure, allowing public and private entities to share the risks and costs associated with projects. They can be particularly effective for large-scale infrastructure projects with long time horizons, or in areas where the private sector may be less active. Investments should be carefully designed to avoid maladaptation: for instance, the development of irrigation infrastructure or water-efficient technologies should be complemented by additional measures to discourage the adoption of water-intensive crops or the expansion of production into overly arid areas that may become unsuitable for production in the long run.

In the long run, farmers will face increasing pressure for transformative change. This is particularly salient in the context of tipping points, which are likely to irreversibly affect agriculture in certain regions, rendering current agricultural systems untenable. Policies should aim to facilitate structural adjustment and support the emergence of new and diverse income sources as complements to revenue from traditional cropping and livestock production. Examples include renewable energy generation or payments for biodiversity conservation, emissions reductions, and other ecosystem services, or moving towards off-farm employment.

Governments should prioritise adaptation measures that have co-benefits with mitigation and other food system objectives

Policies to support climate change adaptation in agriculture can have important synergies with climate change mitigation and other food systems objectives and require a coherent, whole-of-government approach to policy making. Successful adaptation actions should be effective (anticipated or observed to reduce climate risk), feasible (possible and desirable in a particular context), and just. Robust monitoring and evaluation frameworks can help to assess the effectiveness of adaptation measures, prevent maladaptation, and ensure consistency with climate change mitigation goals and wider objectives for food systems. In 2022, signatories to the OECD Ministerial Declaration[18] committed to "promote the development and implementation of agricultural practices that conserve, sustainably use and restore biodiversity, tackle negative effects of land conversion to agriculture on biodiversity, enhance ecosystem services and improve soil health and water and air quality, including through agro-ecological and other innovative, context specific, approaches."

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Annex 1.A. Details of the analysis

Keyword frequency analysis based on UNFCCC reports

Each Party to the United Nations Framework Convention on Climate Change (UNFCCC) is required to submit national communications in accordance with guidelines developed and adopted by the Conference of the Parties (COP). The Convention defines three main groups: Annex I countries that were members of the OECD as of 1992 plus economies in transition (EIT); Annex II parties that consist of OECD members as of 1992 but excluding the EIT and Türkiye; and Non-Annex I parties. The distinction is important because reporting requirements differ between groups, as do expectations with respect to climate financing.

Annex I Parties are required to submit a national communication (NC) every four years, with the most recent being the 8th national communication, due as of 31 December 2022. Non-Annex I Parties are required to submit their first national communication within three years of entering the Convention and every four years thereafter. For Annex I Parties, the COP adopted guidelines for a standardised national communication format that includes a chapter specifically devoted to assessing climate change vulnerabilities and adaptation measures. For Non-Annex I Parties, the reporting guidelines are more flexible, but the national communications are expected to include sections on programmes that facilitate adaptation to climate change, barriers to implementation of adaptation measures and information on how support programmes through the Convention help to meet their adaptation needs.

A core component of the Paris Agreement is the preparation by each Party of a nationally determined contribution (NDC), which embodies "efforts by each country to reduce national emissions and adapt to the impacts of climate change" (UNFCCC, 2022[66]). Each Party is required to communicate an updated NDC every five years starting in 2020, where each NDC represents a progression compared to its predecessor and captures the Party's "highest possible ambition." As of October 2021, all 191 Parties to the Agreement had submitted one or more NDCs to the UNFCCC.

In addition to the NDCs, Parties are encouraged to provide information on climate change impacts and adaptation progress as part of an adaptation communication. Although not a formal requirement, article 7 of the Paris Agreement establishes the expectation that each Party submit and update a communication on adaptation in order to: "(a) increase the visibility and profile of adaptation and its balance with mitigation; (b) strengthen adaptation action and support for developing countries; (c) provide input to the global stocktake; (d) enhance learning and understanding of adaptation needs and actions" (UNFCCC, 2022[67]).

While NDCs are mandatory under the Paris Agreement, reporting on adaptation within them is not. In contrast, adaptation communications are not mandatory, but their content by design focuses exclusively on adaptation. There is considerable flexibility in the form of the adaptation communication. Slightly more than half of those submitted to date are unique documents. The remainder take the form of the most recent NDC, national adaptation plan (NAP), or national communication to the UNFCC. Adaptation communications are relatively new, with first version submission dates in 2020-2022.

The analysis of keyword frequencies in this chapter incorporates all versions of national communications, NDCs and adaptation communications submitted to the UNFCCC prior to 1 February 2023 by 38 OECD members, the European Union as a collective, 5 non-OECD EU members, and the 11 emerging economies included in this report. In total, the quantitative portion of the analysis reviews 413 documents (329 national communications, 67 NDCs, and 17 adaptation communications). The documents reviewed are listed in Table 1.A.1.

Annex Table 1.A.1. UNFCCC documents reviewed for keyword analysis

Country	Classification	National communications (NC)	Nationally determined contributions (NDCs)	Adaptation communications
Argentina[e]	Non-Annex I	NC1 (1999)-NC3 (2015)	v1 (2016)-v3 (2021)	v1 (2020)
Australia	Annex II	NC1 (1994)-NC8 (2022)	v1 (2016)-v4 (2022)	v1 (2021)
Austria	Annex II	NC1 (1994)-NC8 (2022)	n/a	v1 (2021)
Belgium	Annex II	NC1 (1994)-NC8 (2022)	n/a	
Brazil[a,e]	Non-Annex I	NC2 (2010)-NC4 (2020)	v1 (2016)-v3 (2022)	v1 (2022)
Bulgaria	Annex I	NC1 (1996)-NC8 (2022)	n/a	
Canada	Annex II	NC1 (1994)-NC8 (2022)	v1 (2016)-v3 (2021)	v1 (2021)
Chile	Non-Annex I	NC1 (2000)-NC4 (2021)	v1 (2017)-v2 (2020)	v1 (2022)
China[e]	Non-Annex I	NC1 (2004)-NC3 (2019)	v1 (2016)-v2 (2021)	v1 (2021)
Colombia[e]	Non-Annex I	NC1 (2001)-NC3 (2017)	v1 (2018)-v2 (2020)	v1 (2020)
Costa Rica[e]	Non-Annex I	NC1 (2000)-NC4 (2021)	v1 (2016)-v3 (2020)	v1 (2020)
Croatia	Annex I	NC1 (2002)-NC7 (2018)	n/a	
Cyprus	Annex I	NC6 (2013)-NC8 (2022)	n/a	
Czech Republic[b]	Annex I	NC2 (1997)-NC8 (2023)	n/a	
Denmark	Annex II	NC1 (1994)-NC7 (2018)	n/a	
Estonia	Annex I	NC1 (1995)-NC8 (2022)	n/a	
European Union[b]	Annex II	NC2 (1998)-NC8(2022)	v1 (2016)-v2 (2020)	v1 (2021)
Finland	Annex II	NC1 (1995)-NC8 (2022)	n/a	
France	Annex II	NC1 (1994)-NC8 (2023)	n/a	
Germany	Annex II	NC1 (1994)-NC7 (2017)	n/a	
Greece	Annex II	NC1 (1995)-NC8 (2022)	n/a	
Hungary	Annex I	NC1 (1994)-NC7 (2018)	n/a	
Iceland	Annex II	NC1 (1994)-NC7 (2018)	v1 (2016)-v2 (2021)	
India	Non-Annex I	NC1 (2004)-NC2 (2012)	v1 (2016)-v2 (2022)	
Indonesia	Non-Annex I	NC1 (1999)-NC3 (2018)	v1 (2016)-v3 (2022)	v1 (2022)
Ireland	Annex II	NC1 (1995)-NC7 (2018)	n/a	
Israel	Non-Annex I	NC1 (2000)-NC3 (2018)	v1 (2016)-v2 (2021)	
Italy	Annex II	NC1 (1995)-NC8 (2022)	n/a	v1 (2021)
Japan	Annex II	NC1 (1994)-NC8 (2022)	v1 (2016)-v4 (2021)	v1 (2021)
Kazakhstan[c]	Non-Annex I	NC1 (1998)-NC7 (2017)	v1 (2016)	
Korea	Non-Annex I	NC1 (1998)-NC4 (2019)	v1 (2016)-v3 (2021)	
Latvia[b]	Annex I	NC1 (1995)-NC8 (2022)	n/a	
Lithuania[a]	Annex I	NC1 (1996)-NC8 (2023)	n/a	
Luxembourg	Annex II	NC1 (1995)-NC7 (2018)	n/a	
Malta	Annex I	NC3 (2014)-NC8 (2022)	n/a	
Mexico	Non-Annex I	NC1 (1997)-NC6 (2019)	v1 (2016)-v3 (2022)	v1 (2022)
Netherlands[a]	Annex II	NC2 (1997)-NC8 (2022)	n/a	v1 (2021)
New Zealand[f]	Annex II	NC1 (1994)-NC8 (2022)	v1 (2016)-v2 (2021)	v1 (2017)-v2 (2022)
Norway	Annex II	NC1 (1994)-NC8 (2022)	v1 (2016)-v3 (2022)	v1 (2021)
Philippines	Non-Annex I	NC1 (2000)-NC2 (2014)	v1 (2021)	
Poland	Annex I	NC1 (1994)-NC8 (2022)	n/a	
Portugal	Annex II	NC1 (1994)-NC8 (2022)	n/a	v1 (2021)
Romania	Annex I	NC1 (1995)-NC8 (2022)	n/a	
Slovak Republic[a]	Annex I	NC1 (1995)-NC7 (2017)	n/a	
Slovenia	Annex I	NC1 (2002)-NC7 (2018)	n/a	
South Africa[e]	Non-Annex I	NC1 (2003)-NC3 (2018)	v1 (2016)-v2 (2021)	v1 (2021)
Spain[b]	Annex II	NC2 (1997)-NC8 (2022)	n/a	v1 (2021)
Sweden	Annex II	NC1 (1994)-NC7 (2017)	n/a	v1 (2022)

Country	Classification	National communications (NC)	Nationally determined contributions (NDCs)	Adaptation communications
Switzerland	Annex II	NC1 (1994)-NC8 (2022)	v1 (2017)-v3 (2021)	v1 (2020)
Türkiye[d]	Annex I	NC1 (2007); NC5 (2013)-NC7 (2019)	v1 (2021)	
Ukraine[c]	Annex I	NC1 (1998)	v1 (2016)-v2 (2021)	
United Kingdom[b]	Annex II	NC2 (1997)-NC8 (2022)	v1 (2016)-v3 (2022)	v1 (2020)
United States[b]	Annex II	NC2 (1997)-NC8 (2022)	v1 (2016)-v2 (2021)	v1 (2021)
Viet Nam	Non-Annex I	NC1 (2003)-NC3 (2019)	v1 (2016)-v3 (2022)	

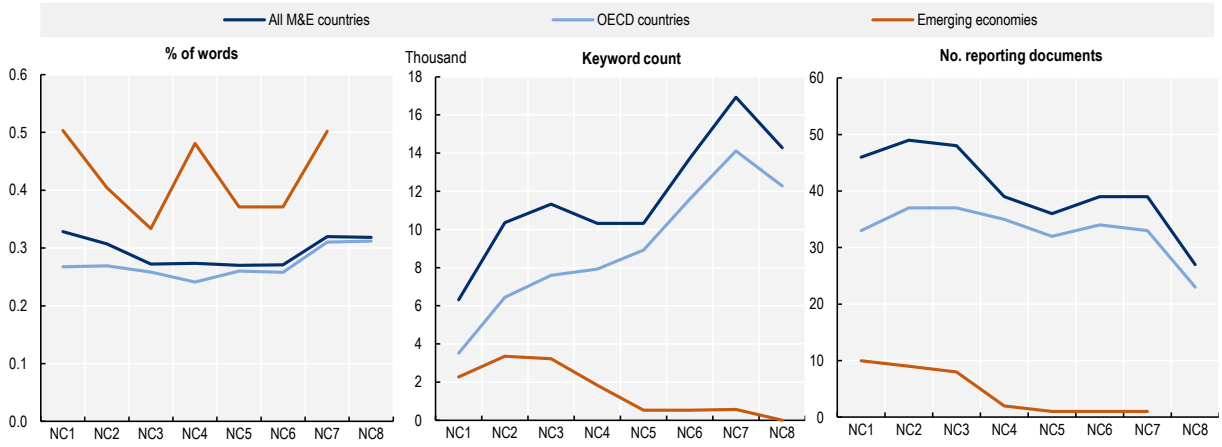
Notes: National communication notes: a) one or more national communications unreadable by keyword analysis software (NVivo), not reviewed; b) one or more national communications available only in hard copy, not reviewed; c) one or more national communications published only in Russian, not reviewed; d) Türkiye did not submit NC2-NC4
Nationally determined contribution notes: the EU submits an NDC as a collective, individual EU members are marked "n/a"
Adaptation communication notes: e) identical to NDC; f) identical to national communication(s); blank cells indicate no adaptation communication submitted to date.
Source: UNFCCC submission registries for national communications, nationally determined contributions (NDCs) and adaptation communications.

The approach taken to analyse the use of keywords is grounded in content analysis, established within the social sciences as a method for analysing textual data. At its core, content analysis views words and the context in which they are used as data (Hsieh and Shannon, 2005[68]). The analysis takes a mixed-methods approach, which combines quantitative and qualitative approaches to content analysis. It begins with quantification of the frequency of word use, which serves as an indicator of the extent of interest in, or importance assigned to, particular words, without considering their contextual meaning (Potter and Levine-Donnerstein, 1999[69]). For example, the number of instances in which keywords related to agriculture appear in the UNFCCC documents may indicate the degree of concern over the consequences of climate change for the sector (Gagnon-Lebrun and Agrawala, 2006[70]). The analysis then takes a qualitative approach to examine the context within which keywords of interest are used. This second stage involves examining the text near a keyword to determine, for example, if words related to agriculture are used in a discussion of vulnerabilities, mitigation, or adaptation.

The keyword analysis is conducted using NVivo qualitative analysis software (release 1.7). Keyword frequency analysis is executed by developing a set of search words that describe a concept of interest. In this analysis, keywords for agriculture include "agriculture", "food", "farm", "crop", "livestock", related variants for each (e.g. agricultural, farming, crops, cropping). Contextual keywords used for mitigation include "mitigation", "emission", "carbon", "greenhouse", "gas", "enteric", "fermentation" and "food waste"; keywords for adaptation include "adaptation" and "resilience"; keywords for vulnerability include "vulnerability", "impact" and "pressure". For each category, related word variants in English and the Spanish and French equivalents for all keywords are included. To identify the context within which agriculture is discussed, the analysis identified the intersection of agricultural keywords with each of the categories of contextual words (mitigation, adaptation and vulnerability). The coding for each text excerpt was then manually verified.

The results of the keyword search are reported as a percentage of the total number of words published, which adjusts for differences in the lengths of documents by type (NDCs are generally shorter than adaptation communications or national communications) and across UNFCCC classifications (the NDCs of Non-Annex I Parties tend to be longer than those of Annex I parties).

Annex Figure 1.A.1. Agricultural keywords in UNFCCC reports over time



Note: NC1 to NC8 refer to reporting rounds for the national communications (NC) to the UNFCCC, the timing of which is presented in Annex Table 1.A.1. Left panel reports frequency of agricultural word references among total words published. Right panel reports the number of reporting documents analysed. Graphic omits data on non-OECD member states of the European Union.
Source: Analysis based on national communications to the UNFCCC.

StatLink https://stat.link/itk97z

Stocktake of agricultural climate change adaptation programmes and activities

This chapter's stocktake of current agricultural climate change adaptation programmes and activities uses information collected by the Secretariat from each of the M&E countries, as reported in the individual country chapters, as well as supplemental research to identify efforts implemented to support climate change adaptation. The catalogue of activities reported herein is not exhaustive, but rather represents an overview of areas of programmatic emphasis and investment across the M&E countries.

Each of the programmes and activities that were self-reported to the Secretariat by member countries was manually reviewed and classified, first to ensure that activity is specifically focused on adaptation (rather than a general programme that may touch incidentally on adaptation), then reviewed and classified based on GAMI category and sub-category, as defined in Table 1.1. Where actions spanned more than one category or sub-category, they were cross-listed. Each action was coded by at least two staff to ensure consistency in the classification of programmes. Many actions undertaken by governments do not involve direct intervention to facilitate adaptation, but rather the creation of institutions to support adaptation decisions by individuals or groups. In most cases, these sorts of supporting actions fall into the realm of social, economic and institutional (SEI) measures. For example, a decision support tool that provides information on potential changes in crop operations in response to climate change would fall into the category of "climate services", not "crop operations and management." Programmes that are planned for implementation but have not yet been implemented were coded to the SEI category and the sub-category that best fit the information available on the programme.

Notes

[1] Part of this increase in event frequency may be attributed to better recording and reporting of disaster events since the 1980s. For more information, see CRED database documentation/publications.

[2] Expressed in 2019 US dollar terms.

[3] Increasing levels of carbon dioxide in the atmosphere have been shown to increase biomass growth and drought resistance. This has the potential to benefit crop yields and pasture growth. However, it could also increase the growth of weeds and invasive plant species. Increased carbon dioxide has also been associated with declining nutrient content in many crops which may offset some of the potential benefits of increased vegetation. The IPCC report finds that the positive impacts of climate are likely to be outweighed by the negatives in most regions (IPCC, 2022[10]).

[4] The speed of transformation may vary, but the underlying shift in the structure of the industry typically corresponds to the economic notion of the long-run in which fixed costs become variable.

[5] This analysis builds on OECD (2023[9]), Gagnon-Lebrun and Agrawala (2006[70]), Mullan et al. (2013[64]), Pauw et al. (2019[50]), and Crumpler et al. (2021[71]) to analyse the text of documents submitted to the UNFCCC by each of the M&E countries. Details of the analysis are presented in the chapter Annex.

[6] As discussed in the Annex, the national communications contain a chapter that focuses on vulnerabilities and adaptation. The NDCs for Annex I parties are largely focused on mitigation, whereas those of Non-Annex I parties contain a wealth of information on adaptation. The adaptation communications are solely focused on adaptation.

[7] These documents cover many sectors and topics, and as a result do not present a comprehensive catalogue of adaptation activities undertaken by the M&E countries.

[8] The GAMI classification encompasses both autonomous and planned adaptation measures. As such, not all of the categories are areas that are appropriate or desirable for government policy intervention, nor are they all applicable to food and agriculture.

[9] Cross-listed activities are counted in each category, meaning that the number of actions and programmes summarised herein exceeds the number reported.

[10] The European Climate Adaptation Platform Climate-ADAPT supports sharing of information on climate change adaptation strategies across Europe (https://climate-adapt.eea.europa.eu/).

[11] The evidence on organic production systems with respect to adaptation and mitigation is mixed. These systems certainly reduce the use of inputs and evidence suggests that they increase soil carbon sequestration, but they also generate lower yields, potentially requiring an increase in production elsewhere. For example, Smith et al. (2019[73]) find that at a national scale, a shift to organic farming increases net emissions.

[12] https://igedd.documentation.developpement-durable.gouv.fr/documents/Affaires-0009000/010178-01_rapport.pdf

[13] The Centre has two key components: AgriZeroNZ (the Centre for Climate Action Joint Venture – an innovation 50:50 government/private-funded mechanism), and the New Zealand Greenhouse Gas Research Centre (NZAGRC).

[14] Agroecological actions or programmes broadly refer to sustainable agricultural production systems. There are a variety of approaches and practices that may fit into this category, including among others regenerative agriculture, conservation agriculture, circular agriculture.

[15] https://esdac.jrc.ec.europa.eu/esdacviewer/euso-dashboard/

[16] Public investments should also not prevent self-financing as countries should aim to ensure full supply cost recovery in irrigation (OECD, 2010[72])

[17] This is the case with MPS and output payments but can also occur through policies such as payments per head of specific livestock, or payments for area planted to specific crops, among others.

[18] OECD (2022[74]), *Declaration on Transformative Solutions for Sustainable Agriculture and Food Systems*, OECD/LEGAL/0483, https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0483.

2 Developments in agricultural policy and support

This chapter presents a cross-cutting analysis of agriculture policy trends based on information and support estimates gathered for 54 countries covered in OECD's Agricultural Policy Monitoring and Evaluation 2023. It provides an overview of recent economic and market developments that influence the context for the implementation of agricultural policies. It then outlines the implications on policies of Russia's aggression against Ukraine and of inflationary pressures more generally, with an overview of policy responses by governments to help agricultural producers and consumers cope with these challenges. The third section presents developments in other agricultural policies in 2022-23, as well as an analysis of developments in the level and structure of support to agriculture. Key recommendations for reforms to better address public objectives conclude this chapter.

For the past several years, agricultural have been shaped by multiple crises. Policy makers were forced to respond first to the pandemic caused by the coronavirus SARS-CoV-2 (henceforth referred to as the COVID-19 pandemic), which initially disrupted production and later snarled supply chains. As the effects of the pandemic faded, Russia's[1] illegal and unjustified invasion of Ukraine in February 2022 roiled markets for specific agricultural inputs and outputs.

Alongside these acute consequences of war and pandemic, the effects of climate change were felt in the increased prevalence of natural disasters such as floods, drought and storms in many of the countries in this report. African Swine Fever and Avian Flu are two reoccurring biosecurity threats that also strongly affected global markets in 2022.

All of this taken together has put the stability and resilience of the sector, the predictability of trade, food security, and the stability of markets on the top of the policy agenda. These issues added to (and competed with) existing priorities to improve the sustainability of food systems and mitigate their effects on climate change. As this chapter will describe, policymakers took action to try to help the sector absorb and recover from these events in the short run and undertook steps to address the impacts of future shocks. Temporary export bans, tariff reductions (or increases) and other measures were used with the intention of securing domestic food supplies and managing market disruptions. Overall, these and other actions taken by policy makers increased total support to producers.

Agriculture policy in 2022 was also made in the context of a global economy weighed by value chain disruptions and high energy prices. GDP growth both globally and in the OECD area dropped by close to half in 2022, as did real global trade. These rates remained above those observed prior to the pandemic, but fell short of earlier expectations after the contractions in 2020. Moreover, average inflation in the OECD area climbed to more than 9%.

This chapter first presents the general economic and market context in which agricultural policies evolved over 2022. The second section provides an overview of policies responding to the Russian war of aggression in Ukraine and its consequences for agricultural input and output markets. This is complemented by a discussion of other agricultural policy developments in 2022 and early 2023, while a fourth section presents and analyses developments in agricultural support. The chapter concludes by providing an overall assessment of the use of support against the main policy objectives for the agricultural sector.

Key economic and market developments

Conditions in agricultural markets are strongly influenced by macro-economic factors such as economic growth (measured by gross domestic product, GDP), which drives demand for agricultural and food products, as well as by prices for crude oil, natural gas and other energy sources that underpin many production inputs in agriculture, notably fuel, chemicals and fertiliser. Energy prices also affect the demand for cereals, sugar crops and oilseeds through the market for biofuels produced from these feedstocks.

Global GDP, which had begun to recover from its 3% contraction following the COVID-19 pandemic and grew by almost 6% in 2021, saw its growth reduced to just over 3% in 2022 (Table 2.1). Across the OECD, deceleration was most significant in fast-growing economies, including Chile (2.5%, down from 11.9% in 2021), Estonia (-1.7% compared to +8%) and Türkiye (5.6% after 11.4%). Across the euro area, growth remained comparatively robust at 3.5%, down from 5.2% in 2021. While output exceeded pre-pandemic levels in most countries, GDP remained below 2019 levels in Spain, Japan, Mexico and the United Kingdom.

Labour markets were a bright spot in the overall economic picture. Unemployment rates that had peaked in 2020 fell over the course of 2021 and 2022 to average 5% across the OECD area, the lowest in more

than 40 years. At the same time, shortages of qualified workers have sometimes dampened economic growth.

Prices rose strongly over the same period and inflation reached an average 9.3% in 2022, a level not seen for more than 30 years. Energy and food prices strongly contributed to such high inflation rates (see below).

Emerging economies were also affected. Growth in the countries covered by this report fell significantly relative to their rebounds in 2021, but in most cases remained close to or above average growth rates seen prior to the pandemic. The stark and obvious exception is Ukraine, where the war has wiped out close to 30% of its economic output.

Global trade grew by 5% year on year, a deceleration relative to the 10% growth in 2021 but still slightly higher than average pre-pandemic growth rates.

Table 2.1. Key economic indicators

	Average 2010-19	2020	2021	2022
Real GDP growth[1]				
World[2]	3.1	-3.1	6.1	3.3
OECD[2]	1.8	-4.4	5.7	3.0
United States	2.0	-2.8	5.9	2.1
Euro area	1.2	-6.2	5.2	3.5
Japan	0.8	-4.3	2.2	1.0
Non-OECD[2]	4.3	-2.0	6.5	3.7
Argentina	0.3	-9.9	10.4	5.2
Brazil	0.7	-3.6	5.3	3.0
China	6.6	2.2	8.4	3.0
India[3]	5.8	-5.8	9.1	7.2
Indonesia	4.8	-2.1	3.7	5.3
South Africa	1.4	-6.3	4.9	2.0
Ukraine	..	-3.8	3.4	-29.1
OECD area				
Unemployment rate[4]	7.0	7.2	6.2	5.0
Inflation[1,5]	1.6	1.5	3.8	9.3
World real trade growth[1]	3.5	-8.0	10.4	5.0

1. Per cent; last three columns show the change over a year earlier.
2. Moving nominal GDP weights, using purchasing power parities.
3. Fiscal year.
4. Per cent of labour force.
5. Personal consumption expenditures deflator.
Source: OECD (2023), Economic Outlook N°113 - June 2023, *OECD Statistics Database*, https://stats.oecd.org/Index.aspx?lang=en&SubSessionId=943670ea-b9e0-4eb4-9447-2347c99584f5&themetreeid=4.

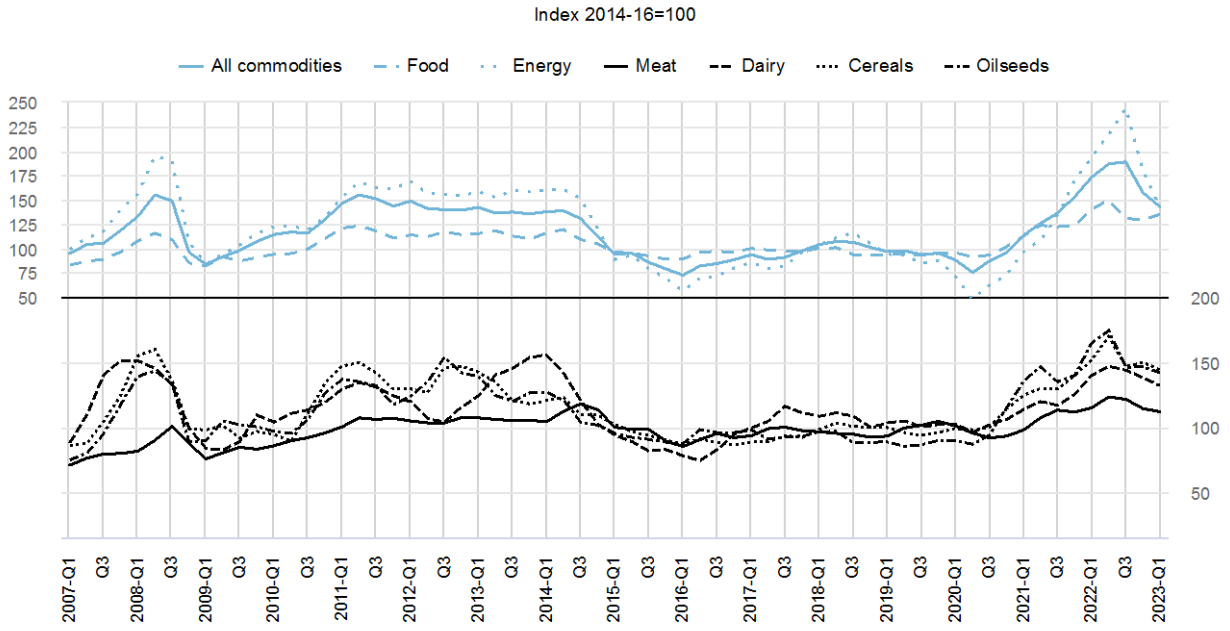
Inflation was driven notably by prices for energy and food. Energy prices, which had doubled already in 2021 relative to the comparatively low levels in 2020, rose by a further 64% year on year in 2022 and began to fall only in the last third of the year (Figure 2.1). Sanctions against Russia following its war against Ukraine, Russia's decision to suspend gas deliveries to EU Member States and the continued relatively robust economic growth have contributed to lower supplies and growing demand for primary energy sources. Average prices for natural gas doubled again in 2022, after a 253% increase in 2021. Crude oil also increased by almost 50% year on year. Prices for both declined in early 2023, approaching their pre-pandemic levels.

Fertiliser prices, which had almost doubled in 2021, rose further after Russia's invasion of Ukraine and averaged 74% higher in 2022 than in 2021, peaking only in November 2022, before slowly retreating. The

run-up in fertiliser prices was driven not only by higher energy prices but also by the high pre-war market share of exports from Russia, Belarus and Ukraine. Potash prices rose by 166% year on year, as Russia and Belarus alone had accounted for more than a third of global potash exports in 2018-20.

Food prices had been on the rise before the war, driven by stronger demand due to the rebounding economic activities post-COVID-19, harvest shortfalls in some major producing countries and higher input costs. On average, food prices further increased by 14% in 2022, as lower exports from Ukraine and Russia reduced supply and increased uncertainties on markets already affected by rising energy and fertiliser costs. This increase, while significant, remains lower than the increase observed in 2021 and significantly less pronounced than those for energy or fertilisers, although the extent of price increases differed by commodity (FAO, 2022[1]).

Figure 2.1. Commodity world price indices, 2007 to 2023



Note: The top part of the graph relates to the left scale, while the bottom part of the graph to the right scale.
Source: IMF (2023), Commodity Market Review, for all commodities, food and energy indices (base year: 2016), www.imf.org/external/np/res/commod/index.aspx; FAO (2023), FAO Food Price Index dataset, for meat, dairy and cereal indices (base period: 2014-16), www.fao.org/worldfoodsituation/foodpricesindex/en.

The growth rate of *meat production* slowed from over 4% in 2021 to 1% in 2022. Higher pig meat production in the People's Republic of China (hereafter "China") was a factor for continued growth, as the sector continues to recover from the African Swine Fever (ASF) disease. Production levels in North and South America remained relatively stable, while Europe and Oceania observed a decline in meat output. Rising input costs, the prevalence of animal diseases, and unfavourable weather conditions adversely affected producer margins and disrupted meat production in various parts of the world. This, together with growing import demand, has led to average meat prices rising by more than 10% in 2022, although prices started to decline in the second half of the year as import demand slowed, and in December were only slightly higher than a year earlier.

World *milk* production grew by just 0.6% in 2022. Output increased notably in India, Pakistan and China, offset by contractions in Ukraine due to the ongoing war, and in several other countries due to extreme weather events, shortages in labour supply and higher input costs. World dairy prices further increased

and peaked in June before declining due to lower import demand. On average, dairy prices in 2022 were almost 20% higher than in 2021.

Recovering demand for vegetable oils and rising feed demand for oilseed meals notably in China were met by a 7% increase in oilseed production in 2022/23 compared to the previous season.[2] Record world soybean production was driven mainly by strong output growth in Brazil, while rapeseed production growth factors included its recovery from the very low preceding harvest in Canada and increased output also in Australia and the European Union, among others. In contrast, lower global sunflower seed production is caused mainly by disrupted production in Ukraine. World oilseed prices, already high in 2021, increased sharply in early 2022, peaking at record levels in March before declining by more than 40% towards the end of the year. On average, oilseed prices in 2022 were 13% higher than in 2021 as stock-to-use ratios remained low compared to historical levels. Prices for vegetable oils and for meals and cakes rose slightly more strongly, by 14% and 15% respectively.

Global cereal production was down by almost 2% in 2022/23, as lower production of coarse grains and rice more than offset a slight increase in global wheat output. Reductions in coarse grains were mainly driven by declining maize harvests in the European Union, Ukraine and the United States, and lower sorghum production in the United States, more than offsetting higher global barley production. Production in the European Union and the United States was down also for rice, but the global decline was mainly due to weather conditions in southern Asia, while other parts of Asia and Africa saw some increased output. A 40% drop in Ukraine's wheat output and declining production also in several other countries were more than offset by significant recovery from the previous harvest in Canada and a second record harvest in a row in Australia, among others. Overall, cereal prices increased by 18% year on year, with barley, maize and wheat prices rising particularly strongly, while rice prices on average remained largely unchanged. Prices have declined somewhat following the implementation of the Black Sea Grain Initiative,[3] allowing significant amounts of grains to be exported through three key Ukrainian ports.

Sugar production increased as a result of a significant recovery in Brazil's output, the world's largest sugar producer and exporter, and increased production notably in Australia, China and Thailand, which more than offset declines in the European Union, India and Pakistan. Overall, global sugar production increased by more than 4% in 2022/23 and exceeded slightly increasing sugar demand, driven among others by population growth and urbanisation in Africa and growing demand from the processing industry in Asia but limited by lower economic growth. International sugar prices, which peaked in April, declined thereafter, but rebounded strongly since October 2022. On average, prices in 2022 were 5% higher than in 2021, a much less pronounced increase compared to other food commodities and dampened by the global supply surplus.

Overall, average farm receipts (including budgetary transfers from agricultural policies) across the 54 countries covered in this report, which have been rising continuously since 2016, are estimated about 5% higher[4] than in 2021, mostly driven by higher international commodity prices. This increase is slightly above the average growth during the decade preceding the COVID-19 pandemic, but lower than growth in the two years of the pandemic. This suggests that on average, farm revenues have not only proved relatively resilient vis-à-vis the COVID-19 pandemic but also against the implications of the war in Ukraine. However, farmers also faced significant increases in the prices for key production inputs such as fertilisers and fuels, meaning that production margins and incomes have likely developed less favourably than revenues.

Policy responses to the war in Ukraine and to inflationary pressures more generally

As supply chains were recovering from the COVID-19 pandemic, inflationary pressures and the outbreak of war had profound impacts on global agro-food systems in 2022. World prices for grains and oilseeds

rose as tensions escalated and spiked following the outbreak of war (OECD/FAO, 2023[2]). These effects were particularly important for commodities such as wheat, barley, maize and sunflower oil for which Ukraine is among the largest global exporters (more context on Ukraine's importance to global agricultural markets is provided in Box 2.1). Input costs such as for fertiliser and energy also rose due to reduced global supply. Russian exports of natural gas declined following the outbreak of war, and supply concerns prompted some producing countries to restrict exports of fertiliser to ensure domestic availability.

Policy responses to these global challenges were introduced by most countries covered in this report in 2022. These included direct support measures to farmers, consumers, and food processors; measures dealing with fertiliser supplies and prices; measures to facilitate imports and restrict exports of critical materials. Countries also introduced measures to improve the prospects for Ukrainian agriculture.

Box 2.1. Impacts of the war on Ukraine's agricultural sector

On 24 February 2022, Russia started its large-scale invasion of Ukraine which marked the beginning of the largest military conflict in Europe since World War II. The war has caused significant damage to Ukraine's economy which shrank by close to 30% in 2022.

Agriculture accounted for more than 10% of total GDP and almost 15% of employment in Ukraine prior to the war, but production and trade have fallen considerably since. The impacts on the sector include damage to infrastructure and material, labour shortages, loss of productive land, direct loss of production, shortage and high costs of agricultural inputs, and reduced export capacity, among others.

More than USD 6.6 billion in agriculture and land resources have been damaged or lost (Kyiv School of Economics, 2023[3]). This includes agricultural machinery and equipment on farms along with infrastructure such as elevators and grain storage. More detailed estimates as of September 2022 suggest that 6.5 million tonnes of storage capacity had been destroyed, with another 2.9 million tonnes of capacity having been partially damaged (Kyiv School of Economics, 2022[4]).

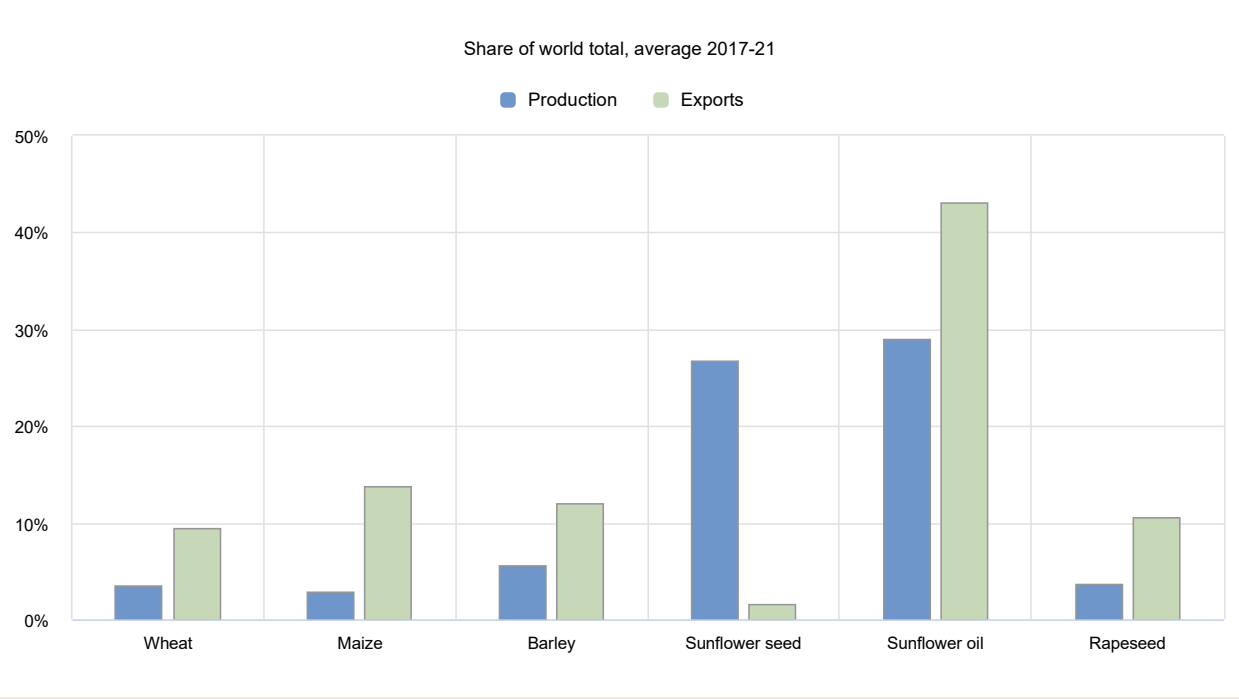
Agriculture may have lost up to 15% of its labour force[1] as many former farm workers now serve in the Ukrainian military. Land use is imperilled too as agricultural land has become part of the battleground, impacted by artillery strikes and land mines that make sowing and harvesting potentially life-threatening tasks. This touches farms not only in areas close to the combat zones but in large parts of the country.[2] Estimates of the area affected differ widely, ranging from just over 1% of Ukraine's farmland[3] to as much as 30% of the country's territory, including in several highly agriculture dependent regions[4], with other estimates falling in-between.[5] High concentrations of toxins from munitions and fuel pose an additional threat to agricultural land. At least 10.5 million hectares of agricultural land in Ukraine could be degraded, equivalent to a quarter of its total farm land.[6]

Economic losses to agriculture go well beyond destroyed or damaged property and were estimated to exceed USD 34 billion as of October 2022 (Kyiv School of Economics, 2022[5]), which would correspond to one-sixth of the country's GDP in 2021. These losses include the effects of reduced crop production in 2022 (more than USD 11 billion), expected production shortfalls in the winter crop 2023 (USD 3 billion), livestock losses, higher input costs (notably for diesel and fertilisers, close to USD 1 billion) and depressed output prices due to disruptions in logistics and export facilities (more than USD 18 billion).

Before the war, Ukraine was an important producer and exporter of agricultural products, notably grains and vegetable oil. Over the five years preceding the war, Ukraine produced 4% of the world's wheat, 3% of its maize and 6% of its barley. However, Ukraine's shares in global exports were multiples of those at 9%, 14% and 12%, respectively (Figure 2.2), placing the country among the top five exporters for these commodities. The country's importance was even higher in some oilseeds, with production of sunflower seed exceeding 25% of the world total. Ukraine was the world's largest exporter of sunflower oil, originating

43% of global sunflower oil exports. Due to the very good harvest in 2021, shares in the year just preceding the war were even higher.

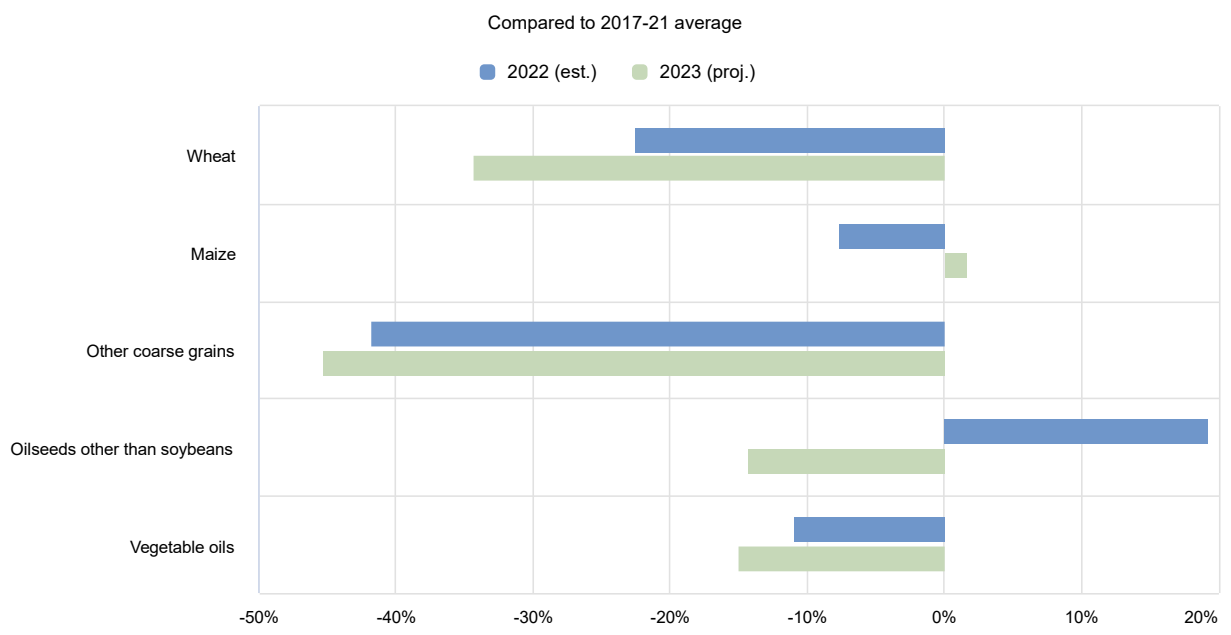
Figure 2.2. Ukraine's share in global production and exports of selected agricultural commodities



Source: FAO (2023[6]; 2023[7]).

The combined production of wheat, maize, barley and sunflower seed could fall by between one-fifth and one-third relative to this five-year average due to the war, and by between one-third and a half relative to the year preceding the war.[7] Total agricultural production in 2022 is estimated to have been about 28% below its 2021 level.[8] This, combined with the damage to infrastructure and blockage of ports, significantly hinders Ukraine's exports of these products. While data for the full marketing year following the invasion remain incomplete, exports of agricultural commodities are estimated to have fallen significantly in the 2022 marketing year and to be lower still in 2023 (OECD/FAO, 2023[2]), with future developments strongly depending on the continuation of the Black Sea Grain Initiative (Figure 2.3). Wheat and barley (the most important cereal in "other coarse grains") exports are most strongly affected. Due to damage to infrastructure, more sunflower seed was exported rather than processed domestically in 2022, leading to some increased oilseed exports compared to historical averages.

Figure 2.3. Ukraine's exports 2022 and 2023 of selected agricultural commodities



Source: OECD/FAO, (2023[2]).

1. https://www.reuters.com/world/europe/ukraine-farms-lose-workers-war-complicating-tough-harvest-2023-05-08/
2. https://edition.cnn.com/2023/03/27/europe/farmers-land-mines-clearance-ukraine-russia-invasion-intl-hnk/index.html
3. Forbes Ukraine as reported by (USDA, 2023[8]).
4. Ukrainian authorities as reported by (UNOCHA, 2023[9]).
5. The Yale School of Environment estimates that "some 15 percent of farmland in Ukraine has been littered with land mines" (https://e360.yale.edu/digest/russia-ukraine-war-environmental-cost-one-year), an assessment that is backed up by (GLOBSEC, 2023[10]) and by the Agrarian Committee of the Parliament, as cited by d'Istria (2023[11]), which in March 2023 spoke of about 5 million hectares of farmland that would be unusable due to landmines, explosive remnants and continued combat.
6. Ukraine's Institute for Soil Science and Agrochemistry Research. https://www.reuters.com/world/europe/soils-war-toxic-legacy-ukraines-breadbasket-2023-03-01/.
7. Estimates by USDA and the Ukrainian Grain Association (Martyshev, Nivievskyi and Bogonos, 2023[12]).
8. State Statistics Service and the Ministry of Agrarian Policy and Food of Ukraine.

Many countries introduced or increased support for rising input costs….

The rising costs of farm inputs were a global concern for farmers and policymakers responded with a number of different types of support to assist. Some countries introduced policy support targeting specific inputs, such as the **Philippines** which provided fuel discount vouchers to farmers. Others provided support to specific industries. For instance, **China** provided three rounds of direct subsidies to grain farmers between March and August 2022. Certain provinces also provided additional area and/or production payments to encourage higher production of soybean and intercropping of maize and soybean. **Japan** provided payments to livestock farmers to compensate for higher feed costs.

Countries also introduced more general support to compensate for rising input costs. For instance, **Canada** increased the interest-free limit on loans under its *Advance Payment Program* for 2022 and 2023, providing interest rate relief to participating agricultural producers. **Colombia** provided input cost support to small-

holder farms through a 20% refund on the value of purchases of agricultural inputs. **Iceland** increased existing payments and introduced new payments to accommodate increased production costs. **Norway** similarly increased the size of its annual support package to farmers by a substantial amount, including one-off exceptional payments to compensate for rising input costs. **Korea** provided tax relief to farmers and direct compensation for higher feed and fertiliser prices. In the **United Kingdom**, the government of Northern Ireland expedited the delivery of direct payments to assist farmers with cash flow.

The **European Union** implemented an aid framework allowing individual Member States to implement direct support to farmers and rural areas; exceptional market measures; actions to foster the overall resilience of the sector; and exceptional flexibilities in the use of CAP funding. EU Member States implemented their own suite of support measures, such as tax concessions, investment assistance, and allowances to consumers and farm households to help farmers and agro-food enterprises cope with the financial impacts.

…including support to farmers for fertiliser

Fertiliser supply was of particular concern for many countries and led to many measures to attempt to either reduce costs to farmers or dependence on fertiliser. For instance, **Chile** both provided fertiliser and gave per hectare payments to compensate for rising variable input costs as part of the country's *Sow for Chile (Siembra por Chile)* programme. **India** increased its fertiliser subsidies twice during 2022 and **Mexico** increased its subsidy by 16-fold across 2022 and 2023. The **Philippines** implemented subsidies for fertiliser in the form of fertiliser discount vouchers as part of its *Plant, Plant, Plant Part 2* programme. **Switzerland** released 20% of its strategic reserves of fertiliser in 2021 in response to early supply difficulties in international and kept the measure in place throughout 2022 to mitigate the market effects of Russia's war of aggression, equal to roughly one third of the country's annual needs for crop production. **Japan** subsidised transportation and storage costs for fertiliser manufacturers to compensate for costs associated with changing suppliers. The **United States** announced the new *Fertiliser Production Expansion Program* to increase domestic fertiliser availability.

Internationally, a group of countries announced the Global Fertiliser Challenge in 2022. The challenge seeks to both strengthen food security and reduce agricultural emissions by advancing fertiliser efficiency and alternatives in low-and middle-income countries. It hopes to achieve this challenge through innovation and knowledge sharing on fertiliser-efficient farming practices. US and European officials announced at the 2022 United Nations Climate Change Conference (COP27) that USD 135 million in funding had been raised for the effort.

Some countries suspended environmental requirements to encourage domestic production

Several countries made decisions to postpone the implementation of sustainability measures as a response to food security concerns stemming from the war in Ukraine. The **European Union** adopted an exceptional flexibility to allow agricultural production on fallow land while still maintaining the full level of the associated income support payments. This option was taken up by several EU Member countries, including **Austria**, **Belgium** (Wallonia), the **Czech Republic**, **France**, **Germany** (partly), **Italy**, Latvia, **Luxembourg** and **Poland**. **Switzerland** similarly postponed measures to fallow cropland for the promotion of biodiversity by one year.

Additional support was provided for agricultural consumers

Rising inflation and cost of living was an issue for many countries in 2022. Some countries introduced measures to specifically aid agricultural consumers. For instance, **China** began releasing strategic supplies of pig meat with the objective of stabilising prices. The government in the **Philippines** imposed

price ceilings for staple foods such as milk, beef, poultry and pork in an effort to counter food price inflation. In the **United States**, additional food assistance was provided for children in eligible families as part of the *Consolidated Appropriations Act*. Many more countries introduced other measures that were not agriculture-specific and increased consumer incomes. These included actions such as reducing various taxes; raising minimum wages and welfare payments for the poorest in society; energy price caps; and one-off cash payments.

Other countries implemented policies to assist processing firms who use agricultural products as inputs. For instance, **Japan** subsidised the costs of food producers to develop, manufacture, and source materials for new food products. **Belgium** introduced emergency changes to labelling regulations allowing food producers to more easily change the composition of food products and still abide by labelling requirements.

Trade restrictions were eased on some imports….

Several countries sought to make importing inputs and food easier to avoid domestic shortfalls. **Brazil** temporarily suspended some agricultural tariffs from non-Mercosur countries, including on maize, soybeans, soymeal and soy oil. **China** signed a protocol to allow imports of maize from Brazil as part of its strategy to diversify its import sources of key commodities. **Colombia** removed tariffs on all agricultural inputs and 163 basic household consumer products. **Mexico** similarly exempted tariffs on imports of 5 strategic agricultural inputs and 21 basic consumer goods. **Switzerland** reduced tariffs on animal feed imports from 15 March 2022. Some **EU** Member States made use of existing flexibility in EU legislation to make imports of animal feed easier, for example **Spain** relaxed maximum residue limits for pesticides in maize. **Korea** reduced the tariff rate to 0% for wheat and flour imports within quota to alleviate upward pressure on prices, and increased the quota for unhulled barley, wheat hull and root vegetables to secure supplies of feed.

Countries also facilitated trade as a way of providing economic support for Ukraine. **Australia, Canada, Iceland, the European Union,** the **United Kingdom** and the **United States** all implemented temporary exemptions from tariffs on agricultural products imported from Ukraine.

….but trade restrictions were increased on some exports

India introduced export bans, duties or permits on commodities such as rice, wheat, sugar and related products. **China** imposed a ban on state-owned phosphate producers from exporting phosphate starting from October 2021 until June 2022 and introduced a new requirement for inspection certificates to ship fertilisers. In addition, a quota limiting total phosphate exports to 3.16 million tonnes was introduced for the second half of 2022. **Mexico** introduced a 50% export tariff on white maize for human consumption.

Countries also provided support for Ukraine and Ukrainian agriculture

Along with domestic measures to assist with the fallout from the war, many countries also took steps to support Ukraine. As mentioned in Box 2.1, Ukraine was a significant exporter of grain and oilseeds before the war and exports were significantly hampered following its outbreak. To assist with the challenges, the Black Sea Grain Initiative was brokered with the assistance of **Türkiye** and the United Nations to allow Ukraine to resume exports of grain through the Black Sea. A Joint Coordination Center with officials from Türkiye, Russia and Ukraine and the United Nations was set up in Istanbul to oversee shipments of grain from three Ukrainian Black Sea ports. The **European Union** also assisted in establishing “Solidarity Lanes” to ensure Ukraine can export grain and import essential goods, such as animal feed, fertiliser, and humanitarian aid. The “Solidarity Lanes” and the Black Sea Grain Initiative allowed the export of about 25 million tonnes of Ukrainian grain, oilseeds and related products between May 2022 and the end of October 2022 (EC, 2022[13]). Despite these initiatives, logistics costs and bottlenecks have caused a larger-than-usual amount of Ukrainian grain to be marketed in neighbouring countries. In April 2023, **Poland,**

Bulgaria, Hungary, and the **Slovak Republic** all introduced measures to ban imports of a range of agricultural products from Ukraine as a result. An agreement was soon made following intervention from the European Commission which keeps the import bans in place but allows Ukrainian grain to transit through these countries for export elsewhere. **Romania** joined this agreement later in April.

Countries worked together with private companies and international organisations to aid Ukraine with seed and infrastructure investments. In February 2023, the **United States** (through the US Agency for International Development, USAID) and biotechnology company Bayer provided a joint donation of 13.5 tonnes of high-quality vegetable seeds to Ukrainian farmers in advance of planting season. USAID also partnered with agribusinesses Grain Alliance, Kernel and Nibulon to invest USD 44 million in storage and infrastructure expansion to help enable Ukraine to increase its grain shipping capacity. **Japan** partnered with the Food and Agriculture Organisation of the United Nations (FAO) to provide maize and sunflower seeds to agricultural producers and small farms during the 2023 spring-summer season. The **Netherlands** included EUR 40 million (USD 42 million) for the purchase of seed and equipment as part of its 2023 support package for defence and recovery.

To help address the challenges related to the large-scale contamination of Ukrainian agricultural land with mines and other explosives (Box 2.1), the **Netherlands** provided EUR 10 million (USD 11 million) for demining as part of its 2023 support package to Ukraine. **Switzerland** also included CHF 7.5 million (USD 8 million) in targeted support for mine clearance in Ukraine over the next few years as part of its "Action Plan on Mine Action 2023-2026

The **United States** and Ukrainian agricultural ministries issued a memorandum of understanding to co-operate on areas of productivity data, shared expertise and guidance on new technologies, and enhanced co-operation on bilateral trade and post-conflict capacity building. To date, technical assistance and other initiatives have been launched in the areas of animal health, biosecurity, sanitary and phytosanitary capacity building, agricultural and trade policy, wildfire control, water management, and preventing illegal deforestation.

The **European Union** activated the *Temporary Protection Directive*, granting access to labour market, housing, education and healthcare across the European Union to over 4 million people fleeing the war. **Poland** extended the admissible period of employment for Ukrainian citizens involved in harvest assistance. The **Czech Republic** supported inclusion of Ukrainian scientists, and students in research teams, including providing CZK 6 million (USD 269 224) to subsidise salaries of Ukrainians joining certain projects in agriculture, forestry, fisheries and aquaculture.

In addition to these activities, the OECD launched its Ukraine Country Programme to support Ukraine's agenda for reform, recovery and reconstruction, including related to agriculture (Box 2.2).

Box 2.2. OECD Ukraine Country Programme

The OECD and the government of Ukraine launched a four-year Country Programme that will support Ukraine's agenda for reform, recovery and reconstruction and will help Ukraine advance its ambitions to join the OECD and the European Union. The programme will enable Ukraine to leverage OECD expertise and best practices, strengthen institutions, and build capacity for successful policy reforms aligned with OECD standards and best practices. It will consist of reviews and other projects resulting in policy recommendations and capacity building activities; legal instruments for Ukraine to advance alignment with the Organisation's standards; and targets to enhance Ukraine's participation in OECD bodies.

Together with energy, agriculture will be one of the two focus areas of sectoral policy work within the programme. The OECD has monitored developments in Ukraine's agricultural policy and provided recommendations and analysis as part of this publication since 2004 and will continue to do so into the

future. The programme intends to build upon this work as the situation in Ukraine stabilises to conduct an OECD Agricultural Policy Review. Ukraine could also consider being a potential new member of the Co-operative Research Programme: Sustainable Agricultural and Food Systems.

Note: Further information about the Ukraine Country Programme is available at https://www.oecd.org/mcm/documents/Ukraine-Country-Programme.pdf.

Other recent developments in agricultural policies

While policies for agriculture and food have been strongly influenced by the war in Ukraine, not all policy changes introduced in 2022 were related to the war situation. This section provides a summary of some other major trends in agricultural policies implemented by countries. More details on specific policies are available within the relevant country chapters.

Several countries implemented changes to their policy frameworks

A number of countries updated their policy frameworks for agriculture during the year. The **EU** *Common Agricultural Policy* (CAP) for 2023-27 entered into force in January 2023. This new CAP is built around ten specific objectives: ensuring fair incomes for farmers; increasing competitiveness; improving the position of farmers in the food chain; climate change action; environmental care; preserving landscapes and biodiversity; supporting generational renewal; vibrant rural areas; protection of food and health quality; and fostering knowledge and innovation. Under the new CAP, Member States play a key role in designing and implementing their *CAP 2023-27 Strategic Plans* to achieve EU-level objectives. **Canada** agreed on its new five-year agricultural policy framework for 2023-28, called the *Sustainable Canadian Agriculture Partnership*. The framework focuses on five priorities: climate change and environment; market development and trade; building sector capacity, growth, and competitiveness; resiliency and public trust; and science, research and innovation.

In **Colombia**, the new administration introduced the *Towards Agriculture for Life (Hacia Una Agricultura Para La Vida)* development plan for 2022-26. The plan focuses on five key strategies of comprehensive land reform; addressing inequalities facing indigenous, black, women, and young people in the sector; environmental protection and sustainability; market inclusion on agricultural value chains; and a territorial approach. In the **United Kingdom**, both Wales and Northern Ireland introduced new policy framework documents. The *Agriculture (Wales) Bill* was introduced by the Welsh parliament setting the overarching framework for future support for agriculture with a major focus on sustainable land management. The Northern Ireland ministry published the *Future Agricultural Policy Decisions* report along with 54 policy decisions on the future of agricultural support. The **Philippines** published the *National Agriculture and Fisheries Modernisation Plan* that serves as the directional plan for the agricultural sector for the next decade.

Argentina launched the *Plan GanAr* with the aim of contributing to the sustainable development of Argentine livestock. **Australia** drafted the *National Agricultural Traceability Strategy 2023-28* and its five-year implementation plan. The strategy aims to develop connected, aligned and interoperable world-class traceability systems along supply chains to accelerate premium Australian exports and enhance biosecurity and food security. The **United States** introduced a new rule, *Requirements for Additional Traceability Records for Certain Foods,* which establishes traceability recordkeeping requirements for participants in supply chains of certain foods in an effort to facilitate rapid identification and removal of potentially contaminated food from the market.

Costa Rica reduced market price support and liberalised trade in paddy and milled rice in 2022 as part of its *Rice Path* strategy. In 2023, the government unveiled a new public policy governing the agricultural sector for 2023-32 aiming for greater prominence of Costa Rican products in international markets; creating decent jobs; and improving living conditions. **Israel** similarly underwent important sector reforms for egg, dairy and beef production, and limited tariffs on selected produce. Production quotas for eggs and dairy target price mechanisms will be progressively phased out over time, while tariffs for chilled beef were eliminated and replaced with direct payment compensation and branding investments. Tariffs were also cut on selected fruits and vegetables and agricultural inputs.

Some countries increased their climate mitigation ambitions

Countries unveiled new measures relating to climate change. Chapter 1 of this publication provides a detailed discussion of the many adaptation policies implemented by countries. However, several countries also took further steps to mitigate the contribution to climate change of their agricultural sectors. **Australia** invested new funds into discovering technological solutions to reduce agricultural emissions and announced knowledge transfer initiatives to encourage farmers to participate in carbon markets and integrate low-emission technologies into their operations. **Canada** tabled its *2030 Emissions Reduction Plan* in March 2022 which outlines efforts it is undertaking across all sectors to meet its 2030 emissions target and lay the foundation for achieving net-zero emissions by 2050. **New Zealand** published its first *Emissions Reduction Plan* in May 2022. The plan contains several key actions including the introduction of an agricultural emissions pricing mechanism by 2025, among others. The **United States** launched its initiative *Partnerships for Climate-Smart Commodities* in 2022, providing USD 3.1 billion in funding for 141 pilot projects to expand markets for climate-smart commodities.

Several countries also pledged to increase the ambition of their climate mitigation targets. **Australia, India, Norway** and **Viet Nam** all updated their emissions reductions targets, and **Australia, Austria,** the **Czech Republic,** the **Slovak Republic**, and the **United Kingdom** all joined the Global Methane Pledge in 2022. Of the 54 countries covered in this report, 19 have mitigations targets specifically for the agricultural sector. A summary of emissions reductions targets of all 54 countries is provided below (Table 2.2).

Table 2.2. Emissions reductions targets

	Economy-wide emissions reduction targets		Long-term strategy submitted to UNFCCC	Agriculture-specific target (base year/level)	Global methane pledge (reduce global anthropogenic CH4 30% from 2020 levels by 2030)
	2030 target (base year/level)	2050 target			
Argentina	Max 349 $MtCO_2eq$	Net zero	Yes	None	Yes
Australia	-43% (2005)	Net zero	Yes	None	Yes
Brazil	-50% (2005)	Net zero	No	None	Yes
Canada	-40-45% (2005)	Net zero	Yes	-30% fertiliser emissions by 2030 (2020)	Yes
Chile	Max 95 $MtCO_2eq$	Net zero	Yes	None	Yes
China	Peak CO_2; -65% GDP emission intensity (2005)	Net zero by 2060	Yes	None	No
Colombia	Max 169.4 $MtCO_2eq$	Net zero	Yes	None	Yes
Costa Rica	Max 9.11 $MtCO_2eq$	Net zero	Yes	None	Yes
European Union	-55% (1990)	Net zero	Yes	None at EU level	Yes
EU Member States			19 out of 27 countries (except Bulgaria, Estonia, Greece, Croatia, Ireland, Italy, Poland, Romania)	2030 Targets: Belgium -25% (1990); Denmark -55-65% (1990); Germany -31-34% (1990); Spain -18% (2005); France -18% (2015); Ireland -25% (2018); Portugal -11% (2005); Netherlands -3.5 $MtCO_2eq$	22 out of 27 countries (except Hungary, Lithuania, Latvia, Poland, Romania)
Iceland	-55% (1990)	"Largely neutral" by 2040	Yes	Carbon neutral by 2040	Yes
India	-45% GDP emission intensity (2005)	Net zero by 2070	Yes	None	No
Indonesia	-32% (BAU); up to -43% conditional on int. support	Net zero by 2060	Yes	None	Yes
Israel	-27% (2015)	-85% from 2015 levels	No	None	Yes
Japan	-46% (2013)	Net zero	Yes	49.5 $MtCO_2eq$ by 2030	Yes
Kazakhstan	-15% (1990)	None	No	None	No
Korea	-40% (2018)	Net zero	Yes	-27.1% by 2030; -37.7% by 2050 (2018)	Yes
Mexico	-25% (BAU); up to -40% conditional on int. support	None	Yes	-8% by 2030 (BAU)	Yes
New Zealand	-50% (2005)	Net zero	Yes	-24-47% reduction in biogenic methane by 2050	Yes
Norway	-55% (1990)	-90-95% (1990)	Yes	Voluntary agreement with agriculture sector: -5 $MtCO_2eq$ by 2030	Yes
Philippines	-2.7% (2020); up to -72% conditional on int. support	None	No	-29.4% by 2030 (BAU) conditional on int. support	Yes
Russia	-30% (1990)	Net zero by 2060	Yes	None	No
South Africa	350-420 $MtCO_2eq$ (BAU 398-614 $MtCO_2e$)	Net zero	Yes	None	No
Switzerland	-50% (1990)	Net zero	Yes	-40% by 2050 (1990)	Yes

	Economy-wide emissions reduction targets		Long-term strategy submitted to UNFCCC	Agriculture-specific target (base year/level)	Global methane pledge (reduce global anthropogenic CH4 30% from 2020 levels by 2030)
	2030 target (base year/level)	2050 target			
Türkiye	-21% (BAU)	Net zero by 2053	No	None	No
Ukraine	-65% (1990)	Net zero by 2060	Yes	None	Yes
United Kingdom	-68% (1990)	Net zero	Yes	-17-30% by 2030; -24-40% by 2035 (2019)	Yes
United States	-50-52% (2005)	Net zero	Yes	None	Yes
Viet Nam	Reduction of 15.8% (BAU) or 146.3 $MtCO_2eq$ (unconditional distribution); 43.5% or 403.7 $MtCO_2eq$ (conditional distribution with international financing)	Net zero	No	-43% (BAU) by 2030, Decision No. 888/QD-TTg	Yes

Several countries responded to natural disasters with assistance to their agricultural sectors

Several countries that experienced natural disasters implemented direct support to those affected within the agricultural sector. **Argentina** adopted exceptional measures in 2022 and 2023 to compensate territories affected by droughts, fires and frost. In October 2022, provincial governments in **Canada** implemented programmes to provide additional support to agricultural producers significantly affected by Hurricane Fiona. **China** provided disaster relief funds to 13 provinces affected by floods and droughts. Several **EU** Member States, such as **Croatia**, the **Czech Republic**, **France**, **Poland**, **Romania** and the **Slovak Republic** provided disaster relief funding for various adverse weather events in 2022, ranging from droughts, floods, frost, hail, torrential rain, hurricanes, landslides and avalanches. **New Zealand** responded to a record number of weather-related adverse events, including flooding, drought and cyclones, by providing funding for psychosocial support, recovery and clean-up. The **United States** launched two temporary programmes in 2022 to compensate for losses incurred in prior years – the Emergency Livestock Relief Program and Emergency Relief Program.

Many worked on policies which will improve environmental sustainability

Australia launched several new measures that trial market-based approaches to incentivise landholders to improve biodiversity as part of the *Agriculture Biodiversity Stewardship Package.* These include the *Carbon + Biodiversity Pilot*, and the *Enhancing Remnant Vegetation Pilot.* A *National Stewardship Trading Platform* was also established allowing landholders to plan and evaluate carbon and biodiversity projects, and options are being explored to implement the *Australian Farm Biodiversity Certification Scheme* to certify farm businesses for their biodiversity management. As of 30 April 2023, the **European Union** completed 47 of the more than 100 actions committed to in the EU Biodiversity Strategy intended to halt and reverse biodiversity loss by 2030. Several EU Member States also adopted new regulatory measures to reduce the environmental impacts of agricultural inputs, including **Austria**, **Croatia**, the **Czech Republic**, **France, Poland**, **Romania**, and **Spain**. The **EU** *CAP 2023-27* introduced a new "green architecture" with higher environmental ambitions, including stricter basic requirements (conditionality) in cross-compliance. Twenty-five per cent of the direct payments budget is dedicated to eco-schemes, a new policy tool that has been introduced to incentivise the adoption of farming practices with additional

environmental benefits. These schemes are part of the CAP's long-standing commitment to helping farms make necessary ecological transitions.

Japan added nine key performance indicators to its 2030 *MIDORI* plan, including zero CO_2 emissions from fossil fuels combustion in agriculture, forestry and fisheries sectors; reductions in risk-weighted use of chemical pesticides and chemical fertiliser; and increases in organic farming. In the **United Kingdom**, England launched a programme on sustainable farming standards for arable and horticultural soils, improved grassland soils and the moorlands. Numerous conservation projects were introduced to restore over 40 000 hectares of land to protect and provide habitats for wildlife as part of the *Landscape Recovery* scheme. The **United States** gave a substantial funding increase of approximately USD 20 billion over ten years to various conservation programmes as part of the *Inflation Reduction Act*. New initiatives were also launched in 2022 to assist businesses to transition to organic farming. In 2022, **Viet Nam** approved the *National Green Growth Action Plan for 2021-2030* which includes goals to develop a sustainable and low-emissions agricultural sector that is adaptable in the face of climate change.

Countries took steps to foster inclusion in the sector

To improve equity and inclusion, the **United States** undertook several actions focused on improving equity for farmers from minority groups. These include new investments in *Equity Conservation Cooperative Agreements*, funding various outreach and assistance programmes and releasing the USDA Equity Action Plan. **Canada** renewed the *AgriDiversity Program* which aims to reduce barriers to participation for indigenous peoples and increase economic development through capacity building activities. Most **EU** Member States proposed to maintain higher rates of investment support for young farmers and the vast majority include plans for additional income support and installation aid for young farmers in their Strategic Plans. Some **EU** Member States, such as Austria, Germany, Ireland, Italy and Spain, included specific measures supporting rural women in their *CAP 2023-27* Strategic Plans. In particular, **Spain** included direct payments for young female farmers who own or co-own their farm.

Countries implemented new programmes for innovation and the modernisation of agriculture

Countries introduced a number of new initiatives aimed at knowledge generation in agriculture. In the **European Union**, the European Commission presented four new partnership programmes as part of its *Horizon Europe Research and Innovation Framework*. These are designed to bring together the European Commission and a consortium of partners, structured around research funders and other public authorities, to tackle some of the European Union's most pressing challenges in agriculture by stimulating public and private investment in research activities.

Korea announced new innovation measures to enhance smart agriculture, with goals to convert 30% of horticultural and livestock facilities into smart facilities. The **Philippines** approved the *Coconut Farmer and Industry Development Plan*, aimed at modernising the coconut industry and increasing incomes and competitiveness of farmers. **India** introduced new support for the use of drones in agricultural activities to modernise land records, check the state of crops and for pesticide and fertiliser application.

Other countries made changes to modernise programme delivery. **Türkiye** made additional efforts to advance digital transformation, including the *Tarim Cebimde* mobile application deployment and the new *Farmer Registration System* which both make it easier to register applications and receive product notifications. The application also provides some functionality for livestock farmers to monitory herd demographics. **Kazakhstan** introduced the *Unified State Information System for Subsidies* to streamline subsidy registration and remove the need for farmers to pay subscription fees to apply for subsidies.

New laws and programmes on biosecurity and animal health were introduced

A number of new and ongoing disease outbreaks prompted countries to tighten biosecurity regulations. **Australia** passed the *Biosecurity Amendment (Strengthening Biosecurity) Act 2022* to strengthen the ability to manage and respond to emerging biosecurity risks. **Canada** provided new funding to enhance efforts to prevent African Swine Fever (ASF) from entering the country and to prepare for a potential outbreak. Outbreaks of avian influenza led several **EU** Member States to adopt policies such as bans on outdoor poultry farming (the **Czech Republic**), vaccination programmes (**France**) and compensation payments for affected producers (**France**, **Poland**). In 2022, **Indonesia** declared an outbreak of Foot-and-Mouth disease for the first time in more than 30 years and introduced control measures including decontamination, massive vaccination, and strengthened surveillance on areas with known infections.

Measures were also introduced targeting animal welfare. **New Zealand** passed legislation in 2022 ending the export of livestock by sea from April 2023, although with an adjustment period for affected businesses. **New Zealand** also had a ban on battery cages for layer hens come into effect on 1 January 2023 following a period of adjustment since the ban was passed in 2012. In the **United Kingdom**, the *Animals (Penalty Notices) Act 2022* gives ministers powers to impose financial penalties for a wide range of animal health and welfare offences in England and Wales. In the **European Union**, **Austria** and **France** ended the culling of male chicks in egg-laying hen production as of 1 January 2023, one year after **Germany** became the first to do so. **Austria**, **Germany** and **Spain** introduced new rules on the transportation of livestock.

Some COVID-19 measures were phased out while new and post-pandemic measures were implemented

Countries generally scaled back some of the support provided in previous years for the COVID-19 pandemic. In June 2022, **Australia** concluded its temporary emergency freight assistance support that had been introduced in response to the collapse of international airfreight capacity during the pandemic. The **EU** rules allowing Member States to introduce COVID-19 aid to affected sectors ended on 30 June 2022.

New Zealand lifted the annual cap on *Recognised Seasonal Employee Scheme* workers from 16 000 to 19 000 places to address seasonal worker shortages experienced during the pandemic. **China** introduced new disinfection requirements on imports of non-cold chain goods in September 2022. These and other PCR testing requirements were then later removed in December 2022.

Progress was made on several trade deals and negotiations

Countries advanced several multilateral agreements in 2022 and early 2023. The Regional Comprehensive Economic Partnership (RCEP) entered into force on 1 January 2022. The agreement covers 15 countries in the Asia-Pacific region including **Australia, China, Indonesia, Japan, New Zealand, the Philippines, Korea** and **Viet Nam**. The agreement foresees reductions to 8.4% of agricultural tariff lines, with an average tariff reduction of 12.8 percentage points. With the introduction of RCEP, around 83% of agricultural tariff lines are either subject to tariff reduction under the agreement or were already at zero (UNCTAD, 2021[14]). The agreement also provides a framework for streamlining rules of origin and border processes for perishable goods, as well as strengthening co-operation in the areas of standards, technical regulations, and conformity assessment procedures.

In other multilateral agreements, in 2022 and 2023, **Chile**, Malaysia and Brunei became the final three signatories to ratify the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The CPTPP eliminates 98% of tariffs in the free trade area and contains a number of provisions on agriculture. These include reduced Japanese beef tariffs; new access for dairy products into Japan, Canada and Mexico; the elimination of all tariffs on sheep meat, cotton, wool and manufactured products; and some elimination of tariffs on seafood, horticulture and wine. The **United Kingdom** concluded

negotiations to join the CPTPP in 2023 pending ratification of their entry from all 11 signatories. **South Africa** also ratified the African Continental Free Trade Agreement.

Several bilateral free trade agreements (FTAs) were finalised or came into effect in 2022, helping to facilitate trade in agricultural products. These include: the **Australia-United Kingdom** FTA, the **Australia-India** Economic Cooperation and Trade Agreement, the **Israel-Korea** FTA, the **Cambodia-Korea** FTA, the **Indonesia-Korea** FTA and the **New Zealand-United Kingdom** FTA. Many other FTAs are awaiting ratification, including the **EU-Chile** FTA, the **EU-Mercosur** agreement, the **EU-New Zealand** FTA, and the **Korea-Philippines** FTA. Market access and tariff reductions or phase-outs on agricultural products formed part of most trade agreements. However, products deemed domestically important continue to remain excluded from agreements, such as rice in Korea or wheat, rice and maize in India. The European Union agreements were notable for the novel inclusion of chapters on sustainable food systems, covering co-operation on topics such as animal welfare, food waste, pesticides and fertilisers among others.

Developments in support to agriculture

This section provides an overview on developments in policy support in agriculture, building on the OECD indicators of agricultural policy support that are comparable across countries and time. These indicators show the diversity of support measures implemented across different countries and focus on different dimensions of these policies. Definitions of the indicators used in this report are shown in Annex 2.A, while Figure 2.4 illustrates the links between, and components of, the different indicators.

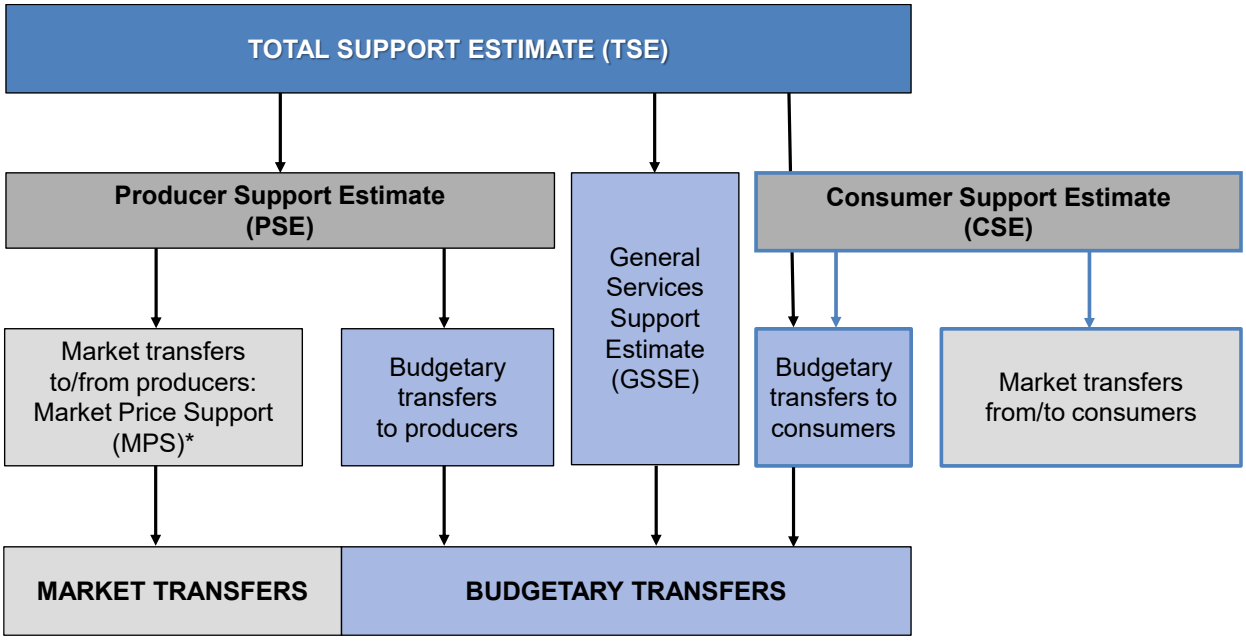
The **Total Support Estimate (TSE)** is the broadest of the OECD support indicators. It combines three distinct elements: a) transfers to agricultural producers individually; b) policy expenditures for the primary agricultural sector collectively; and c) budgetary support to consumers of agricultural commodities. The TSE is expressed as a net transfer indicator, including both positive and negative elements.

The **Producer Support Estimate (PSE)** measures all transfers to agricultural producers individually. Two major types of transfers can be distinguished: **Market Price Support (MPS)** represents transfers from taxpayers and consumers to agricultural producers through domestic prices that are higher than their international reference prices due to domestic and trade policies. MPS can also be negative, representing transfers from producers to consumers through domestic prices that are lower than references prices. **Budgetary support** is financed by taxpayers only and is further broken down into various categories distinguished by the different implementation of the underlying policies. The PSE indicator is expressed as a net transfer, including both positive and negative elements.

The **General Services Support Estimate (GSSE)** measures policy expenditures that benefit the primary agricultural sector as a whole, rather than going directly to individual producers. Different types of expenditures are represented in specific categories of the GSSE.

Similarly to the PSE, the **Consumer Support Estimate (CES)** reports support to consumers of agricultural commodities, distinguishes between market transfers that mirror the MPS, and budgetary support. To avoid double-counting, only the budgetary part of the CSE is included in the TSE.

Figure 2.4. Structure of agricultural support indicators



Note: *Market Price Support (MPS) is net of producer levies and excess feed cost.
Source: Annex 2.A.

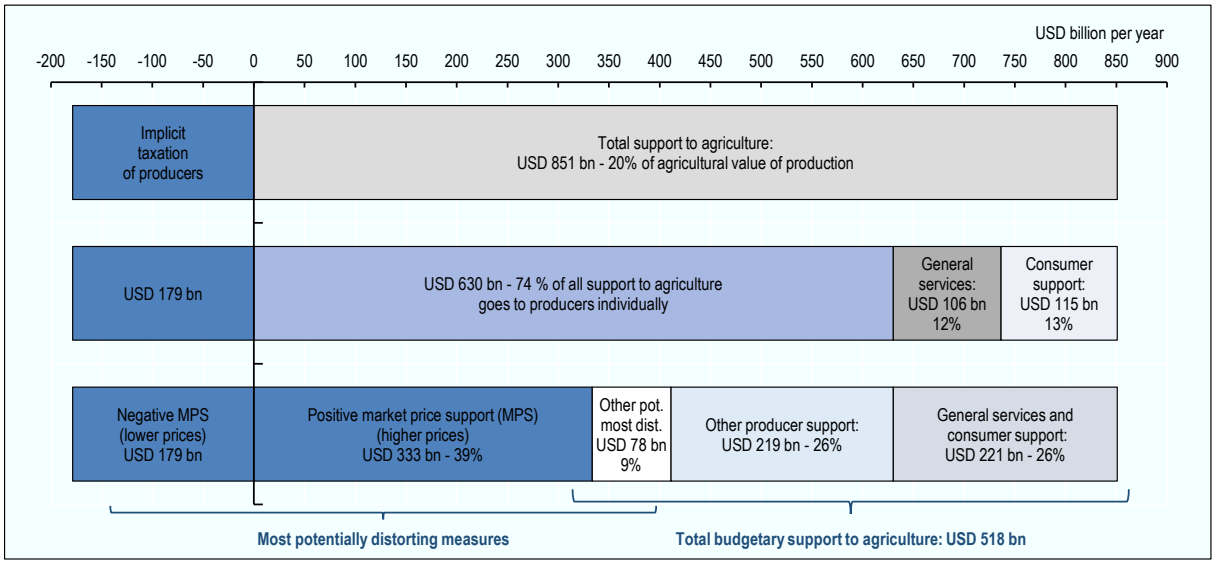
Total Support

Total support to agriculture remains around record highs despite recommendations for reform

Across the 54 countries covered in this report, total support directed to the sector totalled **USD 851 billion** per year on average over 2020-22 (Figure 2.5). This is considerably higher than the USD 696 billion averaged in the three years preceding it from 2017 to 2019, largely reflecting policy responses to the COVID-19 pandemic, inflationary pressure and fallout from the war in Ukraine. Transfers to producers rose by 20% and budgetary consumer support for agriculture was nearly double in 2020-22 compared to 2017-19. Producer support is estimated to have declined in 2022 due to falling market price support, but still remains higher than pre-pandemic levels.

Of the 2020-22 total, USD 630 billion (74% of total support) goes to producers individually either directly from government budgets or implicitly through market price support (MPS). The remainder of support was split nearly equally between support for general services (USD 106 billion, 12.5%) and budgetary transfers to consumers of agricultural products (USD 115 billion, 13.5%). At the same time, some emerging economies implicitly taxed their producers through measures such as export taxes and other actions which suppress domestic market prices. This implicit taxation was valued at USD 179 billion per year on average between 2020-22.

Figure 2.5. Breakdown of agricultural support, total of all countries, 2020-22



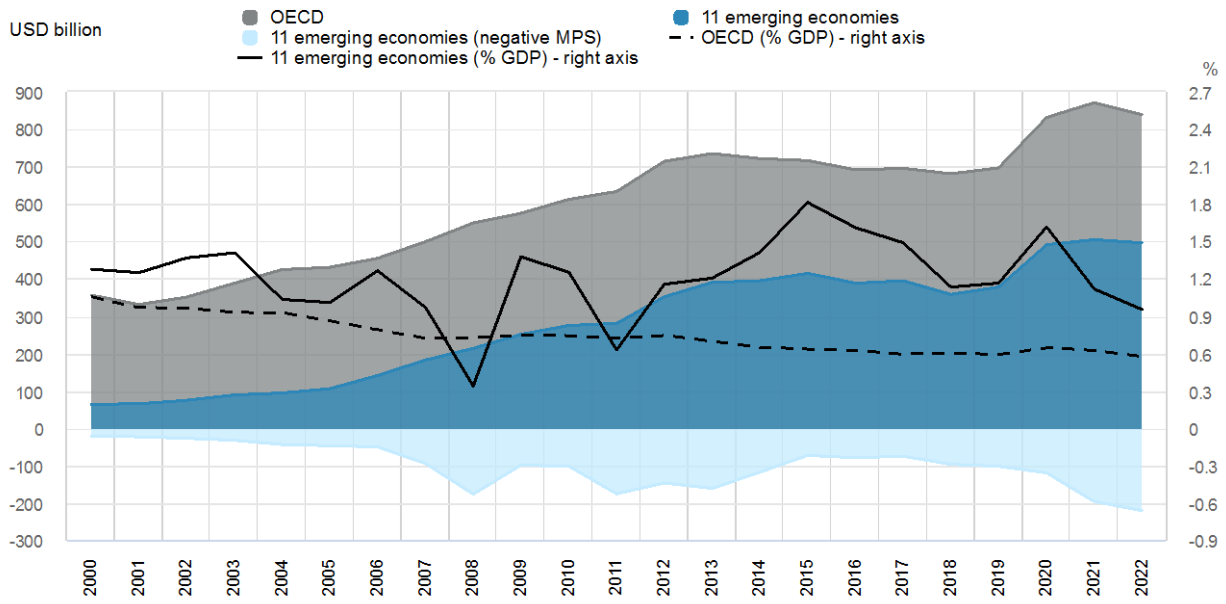
Notes: Data refer to the All countries total, including all OECD countries, non-OECD EU Member States, and the 11 emerging economies. "Implicit taxation" of producers refers to negative market price support, "General services" refers to the General services support estimate, "Consumer support" is transfers to consumers from taxpayers, "Other pot. most dist." refers to the potentially most distorting producer support measures other than market price support (i.e. support based on output payments and on the unconstrained use of variable inputs).
Source: Based on OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

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Support in countries covered in this report has risen consistently over the past 20 years in nominal terms (Figure 2.6). Much of this rise has been driven by emerging economies where support has increased markedly from averaging USD 68 billion per year in 2000-02 to USD 497 billion per year in 2020-22. China and India account for the vast majority of emerging economy support, valued at USD 310 billion and USD 124 billion, respectively. Agricultural support among OECD countries has grown at a modest rate from a higher base, rising from an average of USD 278 billion per year in 2000-02 to USD 349 billion per year in 2020-22. The United States and the European Union combine for the largest share of OECD support at USD 122 billion and USD 107 billion, respectively, in 2020-22.

Despite the rise in nominal support among OECD countries, total support has been declining consistently relative to GDP. Support in the emerging economies covered in this report generally places a higher burden on their respective economies. This reflects the larger relative importance of agriculture to these economies and policy choices.

Figure 2.6. Evolution of total support to agriculture in OECD and 11 emerging economies, 2000 to 2022



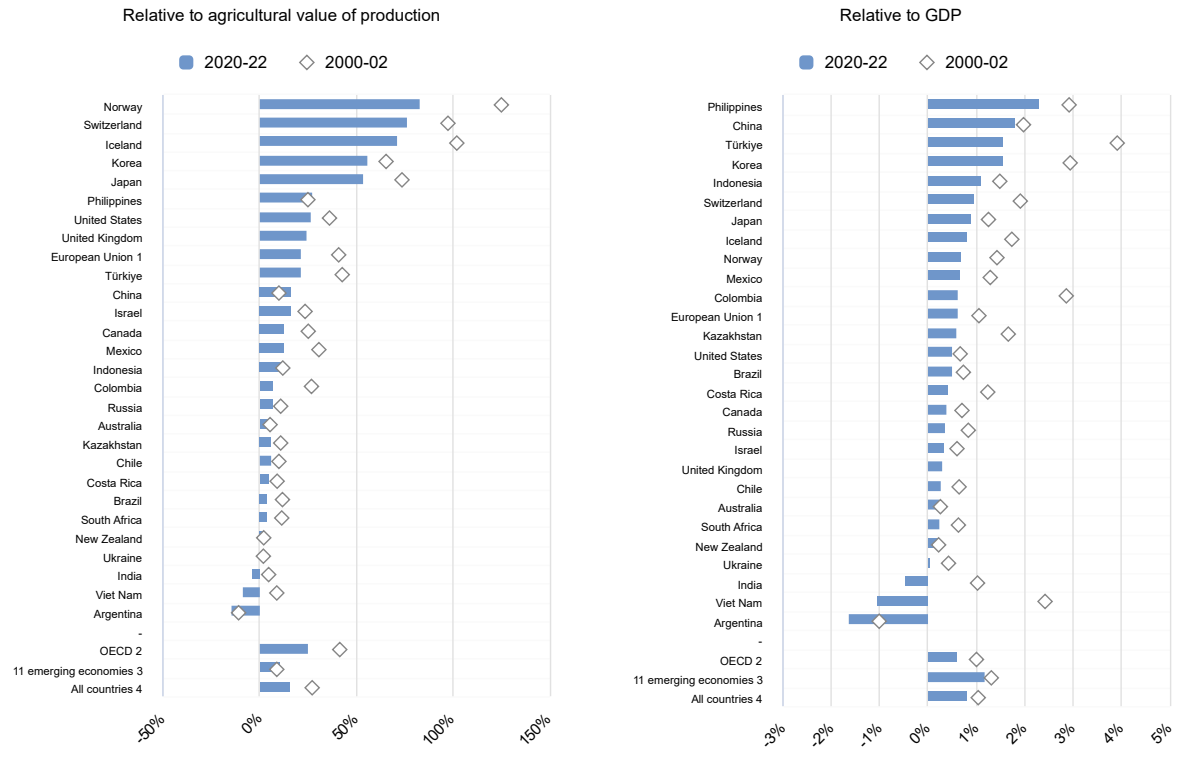
Note: Negative MPS for OECD countries, mostly reflecting adjustments for higher feed costs due to positive MPS for feed commodities, averaged USD 423 million per year between 2000 and 2022, and is therefore too small to be visible on the graph.
The OECD total does not include the non-OECD EU Member States. Latvia and Lithuania are included only from 2004.
The 11 emerging economies include Argentina, Brazil, China, India, Indonesia, Kazakhstan, the Philippines, Russian Federation, South Africa, Ukraine and Viet Nam.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Expressing support as a share of the value of production adds important context to the data. For the 54 countries covered by this report, the total positive support provided in 2020-22 was equivalent to 20% of the production value generated by the sector. This represents a decline from 29% of the production value of the sector in 2000-02. Across the OECD area, support as a percentage of the value of production fell from 41% in 2000-02 to 25% in 2020-22. In contrast, this percentage rose across the 11 emerging economies from 13% to 17% over the same time frame. However, including the effects of negative MPS (that is, the extent that countries implicitly tax the sector), this percentage rose from 9% to 11%.

The situation varies considerably for individual countries.[5] For example, in 2020-22 support as a percentage of production value was between 72% and 83% in Norway, Switzerland and Iceland; less than 5% in Brazil, South Africa, New Zealand and Ukraine; and negative in India, Viet Nam and Argentina (Figure 2.7). The countries that provide the highest level of support relative to the sector's size are not always those with the highest economic burden of support. This reflects differences in levels of support, levels of economic development and agricultural sector size between countries. For example, countries such as Norway, Switzerland and Iceland have the highest levels of support based on value of production, but because agriculture is a relatively small share of GDP, the economic burden is lower than countries such as the Philippines, China and Türkiye. These latter three countries have the highest support relative to GDP at 2.3%, 1.8% and 1.6%, respectively. In Australia, South Africa, New Zealand and Ukraine, support is 0.25% or less of GDP. China and India, the world's two most populous countries, are the largest providers of positive support to agriculture (USD 310 billion and USD 124 billion per year in 2020-22, respectively). However, the countries differ in how the support is provided. China provides almost all of its support to the sector in the form of positive market price support, while India provides high levels of

producer payments for the use of variable inputs as well as budgetary support to consumers. Although gross support in India is high, its policies suppressing domestic prices result in negative net support to the agricultural sector.

Figure 2.7. Total Support Estimate by country, 2000-02 and 2020-22



Notes: Countries are ranked according to TSE relative to the value of agricultural production (left panel) and relative to GDP (right panel) in 2020-22, respectively.
1. EU15 for 2000-02, EU27 and the United Kingdom for 2020, and EU27 from 2021.
2. The OECD total does not include the non-OECD EU Member States. Latvia and Lithuania are included only for 2020-22.
3. The 11 emerging economies include Argentina, Brazil, China, India, Indonesia, Kazakhstan, the Philippines, Russian Federation, South Africa, Ukraine and Viet Nam.
4. The All countries total includes all OECD countries, non-OECD EU Member States, and the Emerging Economies.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

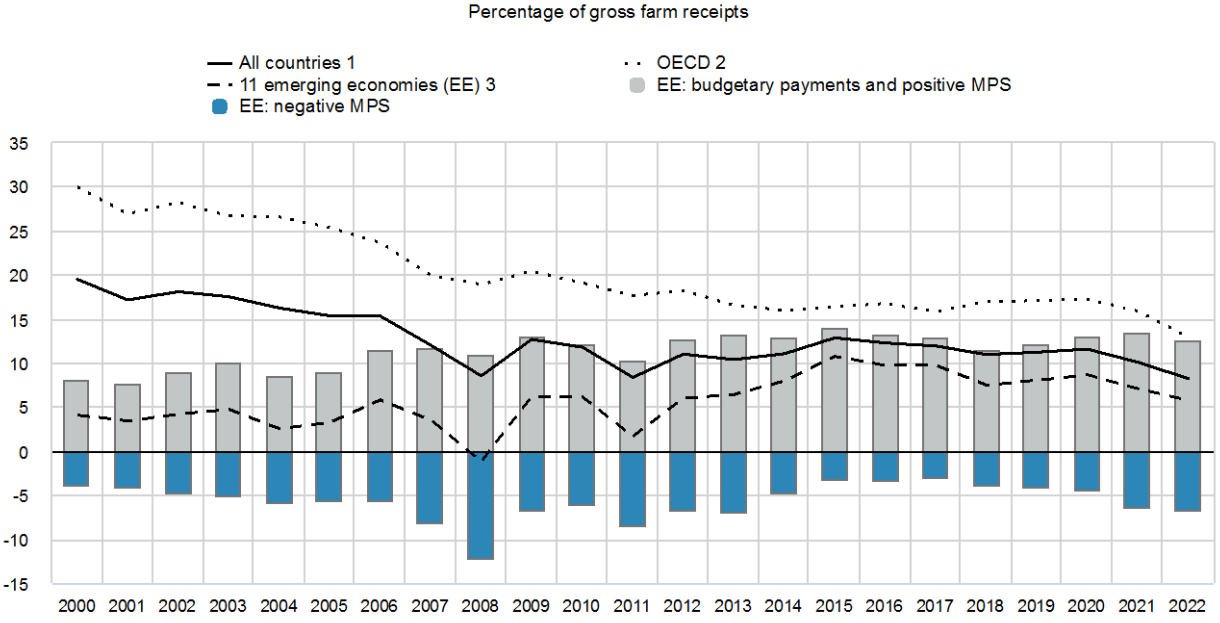
Producer Support

Reform to producer support has stalled in recent years

Preliminary estimates for 2022 across the 54 covered economies indicate that the level of support to individual producers declined for a second year when measured relative to gross farm receipts (an indicator referred to as **%PSE**). This decline largely reflects an estimated decline in market price support (and increase in negative market price support) due to rising world prices rather than substantial policy reforms. On a three-year average, the %PSE across the 54 countries equalled 10% of gross farm receipts in 2020-22, relatively unchanged from 2010-12 and down from 18% in 2000-02.

Producer support among OECD countries has been in long-term decline. However, the rate of decline has slowed since the early 2010s (Figure 2.8). OECD producer support averaged 15% of gross farm receipts in 2020-22, compared to 18% in 2010-12 and 28% in 2000-02. Levels of producer support among the 11 emerging economies rose markedly starting in the 2010s before stabilising at about half the OECD average. The average %PSE in these economies averaged 7.1% in 2020-22, compared to 4.5% in 2010-12 and 3.9% in 2000-02. However, these figures for average support to producers include the effects of negative market price support. Countries such as Argentina, India and Viet Nam employ measures such as export taxes or other programmes which implicitly tax producers by suppressing domestic prices. Excluding negative market price support, the %PSE among emerging economies was 13.0% in 2020-22, close to but still below the OECD average, while across all 54 countries, the positive producer support corresponded to 13.7% of gross farm receipts.

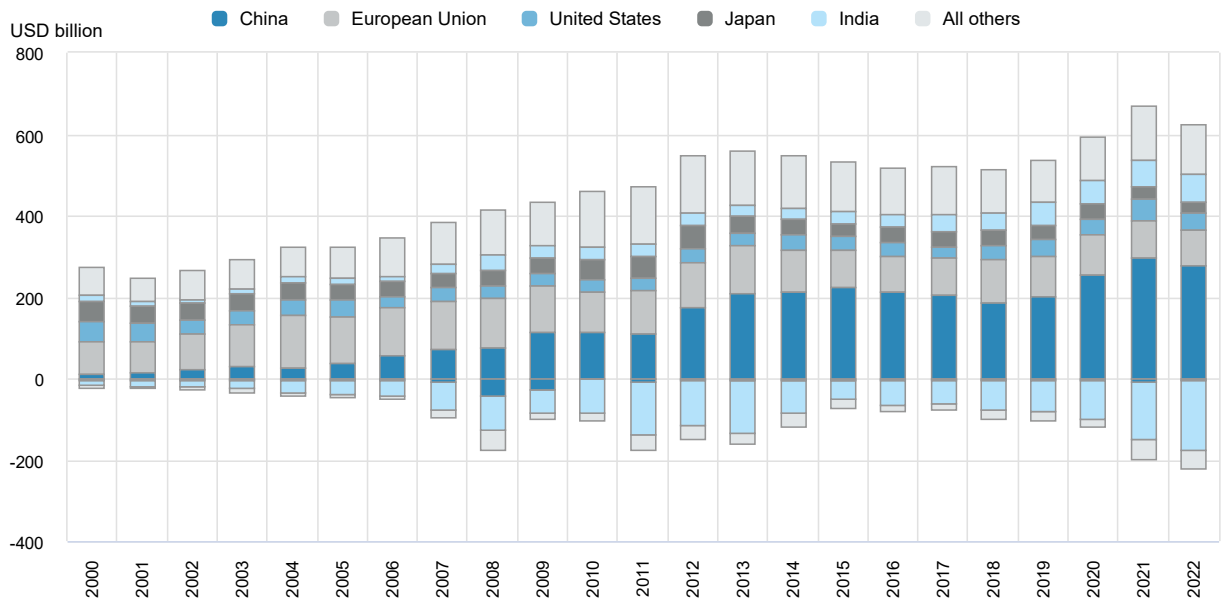
Figure 2.8. Evolution of the % Producer Support Estimate, 2000 to 2022



Notes: The two bars relate to the 11 Emerging Economies and represent a decomposition of PSE into its positive and negative parts.
1. The All countries total includes all OECD countries, non-OECD EU Member States, and the 11 emerging economies.
2. The OECD total does not include the non-OECD EU Member States. Latvia and Lithuania are included only from 2004.
3. The 11 emerging economies include Argentina, Brazil, China, India, Indonesia, Kazakhstan, the Philippines, Russian Federation, South Africa, Ukraine and Viet Nam.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Only four economies – China, Japan, the European Union, and the United States – account for roughly 70% of all positive producer support over the past 20 years. However, the relative shares among these economies have changed dramatically over this time (Figure 2.9). In 2000-02, the European Union[6] accounted for the largest share with 30% of all positive producer support, followed by Japan (17%), the United States (17%) and China (7%). In 2020-22, China now represents just under 44% of producer support, followed by the European Union[7] (15%), United States (7%) and Japan (5%). India has accounted for a majority and growing share of all implicit taxation among countries, from 61% of all negative support in 2000-02 to 76% in 2020-22.

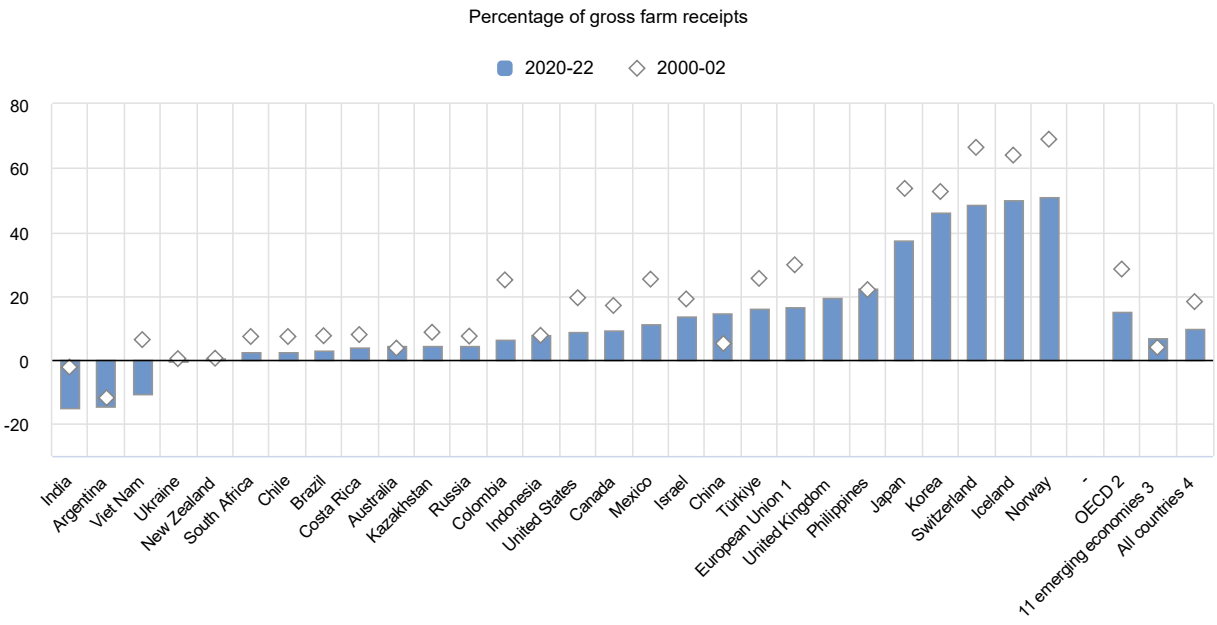
Figure 2.9. Producer support by country, 2000 to 2022



Note: European Union refers to EU15 for 2000-03, EU25 for 2004-06, EU27 for 2007-13, EU28 for 2014-19, EU27 and the United Kingdom for 2020, and EU27 from 2021.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

While China provides the most support in terms of value transferred, the countries with the highest levels of producer support as a share of gross farm receipts are all found in the OECD area (Figure 2.10). In Norway, Iceland, Switzerland, Korea, and Japan, the benefits arising from direct budgetary support as well as implicit support from measures such as protective tariffs on imports represent between 35% and 55% of the revenue received by farmers. Conversely, support accounts for about 15% of farm receipts in China and less than 5% in New Zealand, South Africa, Chile, Brazil, Costa Rica, Australia, and Kazakhstan (including the negative effects of implicit taxation from policies in Kazakhstan).

Figure 2.10. Producer Support Estimate by country, 2000-02 and 2020-22



Notes: Countries are ranked according to the 2020-22 levels.
1. EU15 for 2000-02, EU27 and the United Kingdom for 2020, and EU27 from 2021.
2. The OECD total does not include the non-OECD EU Member States. Latvia and Lithuania are included only for 2020-22.
3. The 11 emerging economies include Argentina, Brazil, China, India, Indonesia, Kazakhstan, the Philippines, Russian Federation, South Africa, Ukraine and Viet Nam.
4. The All countries total includes all OECD countries, non-OECD EU Member States, and the Emerging Economies.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Governments use a mix of different types of policies in order to achieve their objectives and support farmers, and each may emphasise different types of policies. For instance:

- Market price support (MPS) arises as a result of domestic or trade policies that raise or lower domestic market prices, such as border tariffs, export taxes and price ceilings or floors. Excluding policies that depress prices, MPS accounts for the majority of positive support provided to farmers across all covered economies both in aggregate as well as within a majority of the covered economies (counting the European Union collectively as one economy).
- Payments based on output are payments made to farmers per unit of production, often through measures such as strategic stabilisation funds or deficiency payments. These types of payments were between 10% and 25% of support in Iceland and Norway between 2020 and 2022.
- Payments based on use of variable inputs, such as subsidies on the use of fertiliser, electricity, animal feed or credit. These types of payments were between 20% and 40% of positive support in South Africa, Viet Nam and Australia, and 70% of positive support in India in 2020-2022.
- Payments made on the basis of production area or animal numbers, or to top up farmers' receipts or incomes. This approach was the largest share of support provided to producers in the OECD in 2020-22, reflecting its prominence in the support packages provided in economies such as the European Union, the United Kingdom, Canada, and the United States.

- Payments made to subsidise the acquisition of fixed capital like farm equipment, land, or breeding stock. This approach accounted for over 30% of the positive support provided to producers in Australia, Chile, and Kazakhstan.
- Payments are provided to individual farmers to reduce the cost of on-farm services such as technical, accounting, commercial, training and sanitary or phytosanitary assistance. This type of support made up between 10-25% of total producer transfers in New Zealand, Chile, and the United States.
- Payments can be based on variable input use, but with constraints, limits or restrictions. Brazil was the only country which used this form of support for more than 10% of their transfers to producers.
- Payments for non-commodity criteria, which include payments for long-term resource retirement or for non-commodity based output such as reducing pesticide or fertiliser use, or linked directly to supply of environmental public goods. This type of support was 10-20% of producer transfers in Mexico and Switzerland.

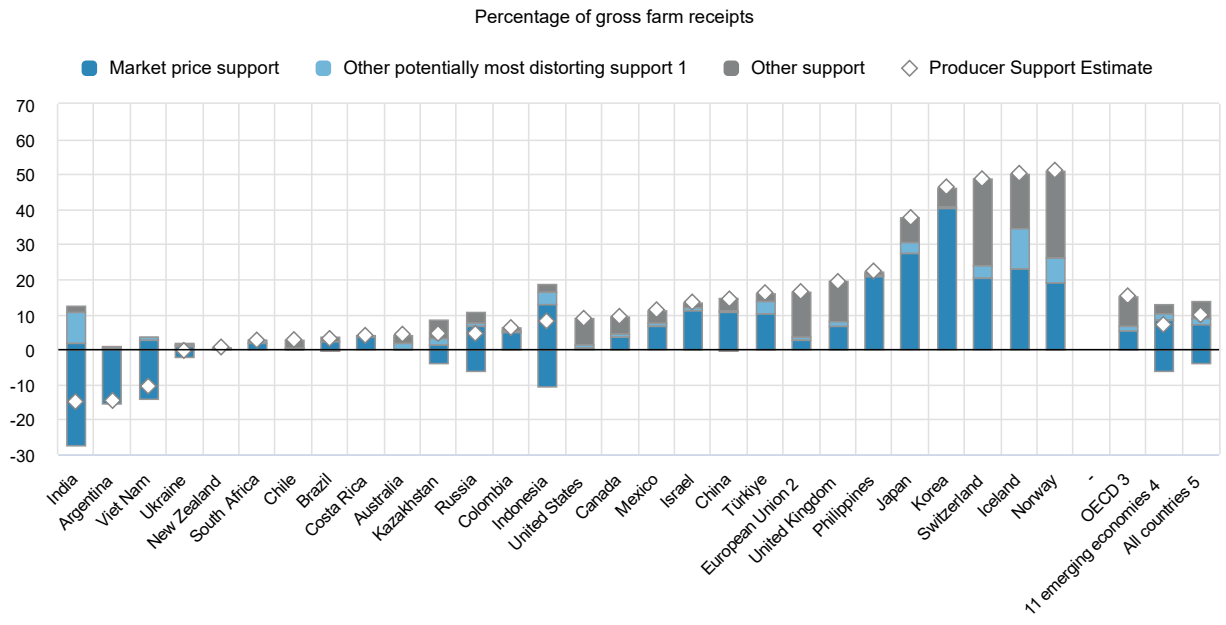
The majority of producer support still takes the form of the potentially most distorting measures

Different types of support have different impacts on producer behaviour. Producers respond to the incentives provided by support policies and adjust their production decisions accordingly. This changes the overall level of agricultural production, the mix of agricultural products produced, farm incomes and social and environmental outcomes.

In 2020-22, USD 411 billion, or two-thirds of the USD 630 billion in positive support to producers across the 54 countries covered in this report, was in forms considered to be the potentially most distorting to production and trade (9% of gross farm receipts). Across the OECD, such support amounted to USD 103 billion, while for the 11 emerging economies such transfers to producers totalled to USD 308 billion per year. Negative MPS policies additionally gave rise to USD 179 billion in implicit taxation in 2020-22 and these also have a distorting effect. The OECD has consistently recommended the phase out of potentially most distorting policies. More recent OECD work has shown that these measures also have a particularly high potential to harm the environment (Henderson and Lankoski, 2019[15]).[8]

Based on past and ongoing OECD work, the types of support considered to have the potential to be the most distorting are market price support, payments based on output, and payments based on the unconstrained use of variable inputs. These forms of support are also known for being both inefficient and untargeted to providing support to those households in need as a large share of the transfers are leaked in the form of higher prices for and larger use of inputs, or capitalised into land values. On average, these forms of support are much more prevalent in emerging economies than in OECD nations. In the 11 emerging economies, potentially most distorting policies generated positive support to producers equalling 10% of gross farm receipts and implicit taxation equal to 6% of gross farm receipts in 2020-22. In OECD countries, potentially most distorting policies generated positive support equalling 7% of gross farm receipts in 2020-22, but did not implicitly tax producers (Figure 2.11).

Figure 2.11. Potentially most distorting transfers and other support by country, 2020-22



Notes: Countries are ranked according to the %PSE levels.
1. Support based on output payments and on the unconstrained use of variable inputs.
2. EU27 and the United Kingdom for 2020, and EU27 from 2021.
3. The OECD total does not include the non-OECD EU Member States.
4. The 11 emerging economies include Argentina, Brazil, China, India, Indonesia, Kazakhstan, the Philippines, Russian Federation, South Africa, Ukraine and Viet Nam.
5. The All countries total includes all OECD countries, non-OECD EU Member States, and the emerging economies.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

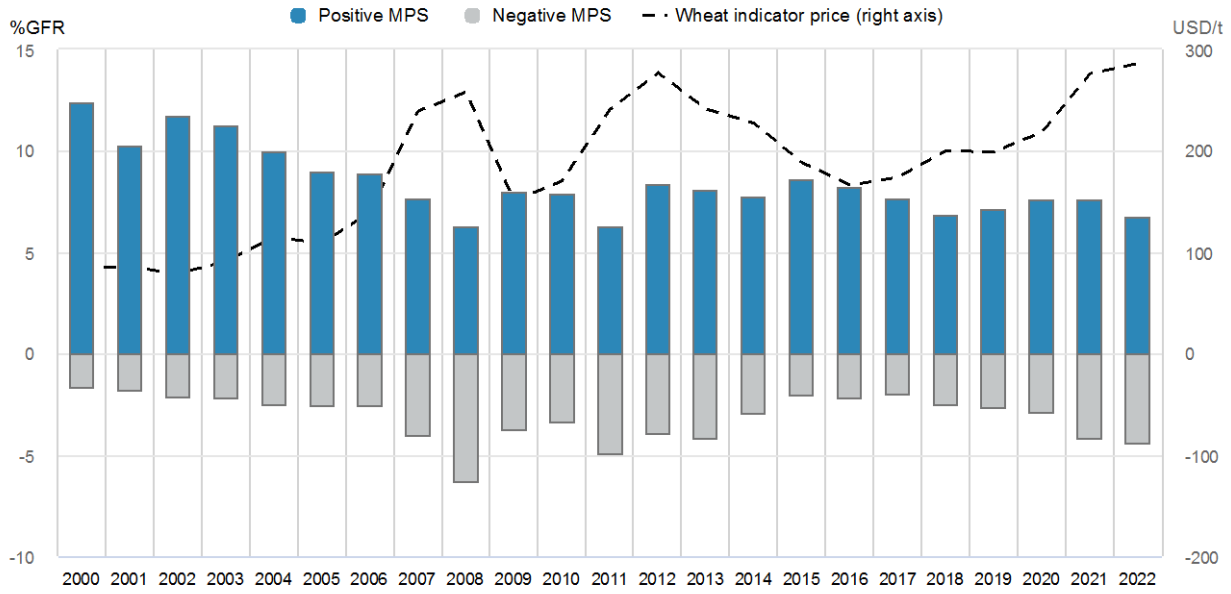
Recent macroeconomic factors drove a decline in market price support

Preliminary estimates indicate that net market price support declined for a second year in 2022. Positive MPS fell by an estimated USD 22 billion and negative MPS became USD 24 billion further negative. This means that both farmers benefitting from supported domestic prices and those already implicitly taxed experienced an estimated reduction in support equivalent to 0.5% of their 2021 receipts. This decline has been largely driven by the recent period of exceptional spikes in agricultural prices (Figure 2.1). Market price support can fall or become increasingly negative when there are sudden increases in world prices if supported domestic prices do not change to match. This is because supported domestic prices lose some of their premium and suppressed domestic prices become increasingly unfavourable compared to border prices. This phenomenon of falling net MPS was also observed in 2008 and 2011 during instances of sudden and rapid rises in the prices of agricultural products (Figure 2.12). MPS subsequently rebounded as price spikes abated and emergency measures were eased, and this may be the case as well in 2023 depending on the path of global prices and the corresponding responses by countries.

Measures providing positive MPS to producers provided USD 333 billion per year on average between 2020-22 across all covered economies. This was equivalent to 7% of annual gross farm receipts over the same period. Negative MPS caused by policies which reduce domestic prices was worth USD 179 billion or 4% of gross farm receipts over that time. Import tariffs and tariff rate quotas are the most frequently

applied policies which give rise to positive MPS, whereas export restrictions, quotas, bans or taxes are most frequent for negative MPS.

Figure 2.12. Market price support for all 54 covered countries and global wheat indicator price, 2000 to 2022



Note: Wheat indicator price refers to export price of wheat from Ukraine with less than 11% protein content. The price is free on board denominated in USD per tonne. Both positive and negative market price support include MPS for all 54 countries and all commodities.
Source: International Grains Council (2023), OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

MPS declines estimated in 2022 were largest in China, where most commodities tracked in the MPS data are subject to domestic market price support and most of which saw declines, in particular cotton, maize, groundnuts, and milk. These declines more than offset a significant increase in MPS for pig meat that reflects policies implemented to encourage pig herd rebuilding following recent outbreaks of African Swine Fever. Japanese farmers also experienced a significant reduction in market price support. The value of MPS in Japan declined by over 50% for rice and over 25% for pork. This reflected a narrowing of the gap between domestic and border prices and a depreciation of the Japanese Yen.

Changes in India drove movements in negative MPS estimated in 2022. India introduced export bans, duties or permits on several commodities to stabilise prices following the outbreak of war in Ukraine. While this kept domestic prices from rising by the same rate as border prices, it also meant that producers' receipts were lower than they would have been had these policies not been in place. The effect of these new and other existing policies was particularly pronounced for the MPS of Indian wheat, causing implicit taxation to increase by close to USD 10 billion. Indian wheat single commodity transfers were estimated to have risen from -48% to -74% of 2022 wheat receipts.[9]

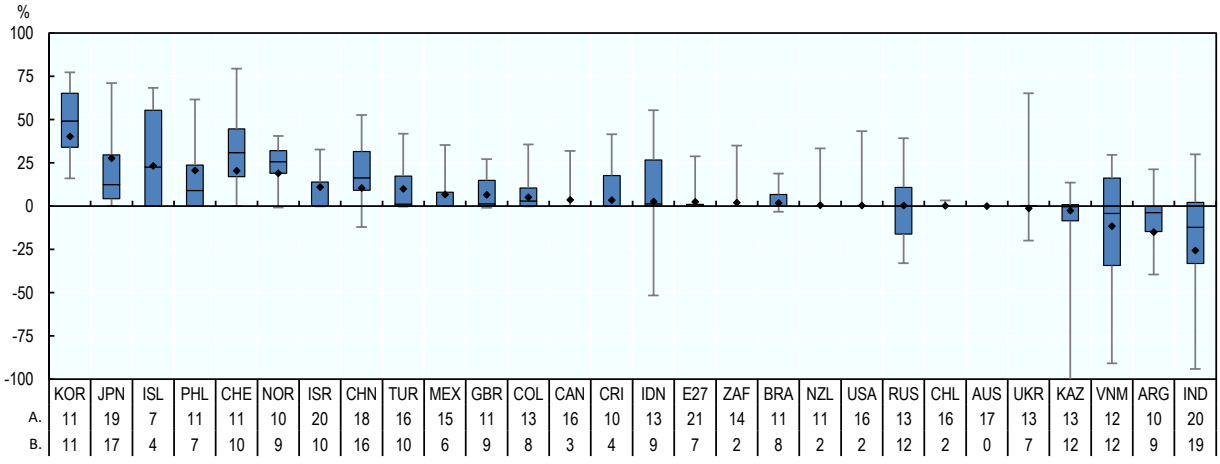
The significance of MPS varies strongly across countries. In Norway, Switzerland, the Philippines, Iceland, Japan, and Korea, MPS accounts for around 20% to 40% of gross farm receipts. In 16 other countries, MPS represents less than 5% of gross farm receipts. While in Argentina, India, Kazakhstan, Ukraine, and Viet Nam, producers are implicitly taxed, with negative MPS values of anywhere from -1% to -26%.

Levels of support also differ between commodities in a given country. Countries can have a low rate of average MPS that masks the fact that particular commodities are highly supported while others are relatively unsupported or implicitly taxed. For example, in Indonesia, MPS represented 2.6% of gross farm receipts in 2020-22. However, MPS represented 55% of the gross farm receipts specifically related to the production of beef and veal, and -52% of those related to the production of palm oil. Gross farm receipts for a specific commodity are referred to as "commodity gross receipts", which includes the value of production of that specific commodity plus any transfers arising from policies specifically targeting that commodity.

In Korea, Japan, Iceland and Switzerland, MPS on the most supported product is between 68% to 80% of commodity gross receipts. Whereas, in countries such as India, Kazakhstan and Viet Nam, MPS on the most implicitly taxed product is between -91% and -138% of commodity gross receipts (Figure 2.13) (see Box 2.3 for interpretation).

Figure 2.13. Variation of product-specific market price support by country, 2020-22

Percentage of commodity gross receipts



Notes: A. Number of MPS commodities. B. Number of MPS commodities with non-zero MPS values.
The ends of the whiskers represent the minimum and maximum values across commodities, while the boxes indicate ranges between the first and the third quartiles with the horizontal line inside indicating the median. Diamonds represent the MPS share in GFR for total agriculture.
The minimum value for Kazakhstan is -138%
EU27 and the United Kingdom for 2020, and EU27 from 2021.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

StatLink https://stat.link/th42ld

Box 2.3. Market price support – concept and interpretation

Simply put, market price support (MPS) is the benefit or loss farmers receive by having domestic prices that do not reflect those of world prices. Specifically, MPS is defined as the "annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, arising from policy measures that create a gap between domestic market prices and border prices of a specific agricultural commodity, measured at the farm gate level" (OECD, 2016[16]). It is calculated for individual commodities as the gap between the domestic price paid to producers and the equivalent price at the border. This is multiplied by the quantity produced and aggregated to the national level.

This definition contains three key elements. First, it measures the transfers that arise from policy measures that create a price gap (e.g. import tariffs, minimum prices, export taxes, etc.). Second, it measures gross transfers (positive or negative) to agricultural producers from consumers and taxpayers. Third, it is measured at the farm gate level to ensure that MPS values are consistent with the production and price data for the farming sector overall.

The price gap for a specific commodity measures the difference between two prices: the average domestic price and a reference price calculated at the same level in the value chain (generally at the farm gate). This reference price corresponds to the country's border price, i.e. the import price (for net-imported commodities) or the export price (for net-exported commodities). In the absence of a border price, another price indicative of them is used which could be a world price or another country's border price, adjusted for transportation costs and any differences in quality, weight or processing level, to make them comparable to the average domestic price (see below).

If the price gap is such that the domestic price is twice the border price, the MPS as a share of commodity gross receipts should be 50% and producers receive double the revenue they would have otherwise. If domestic prices are five times border prices, the MPS as a share of commodity gross receipts would be 80%--an amount observed for some commodities. For negative MPS, if the MPS as a share of commodity gross receipts is -138%, the implicit tax on revenue would be 58%.

The price gap is calculated only if policies exist that can could cause such a gap, such as border measures that restrict or promote imports or exports, and government purchases, sales and intervention prices in the domestic market. If countries do not implement such policies, the price gap is assumed to be zero. A non-zero price gap, whether positive or negative, originates from price-distorting policies. It is important to note that MPS measures the "policy effort" (or level of support to prices), not the policy effect (e.g. the impact on farm income). In addition to policy instruments that restrict price transmission (say, a target price), market developments (such as exchange rate movements affecting world prices expressed in local currencies) may influence the implied policy effort and, hence, the resulting transfers.

The calculation of the price gap for individual commodities requires information not only on product prices, but also on differences in product qualities, processing and transportation margins, to compare like with like. In some cases, difficulties in identifying and obtaining relevant prices or other required information prevent the price gap calculation used to calculate MPS from being based on observed price gaps. An alternative option for calculating the price gap is the use of import tariffs or export taxes, which is likely to provide accurate MPS estimates only if a uniform tariff or tax rate is the sole border measure in place.

The use of tariffs rather than price gap data comes with a number of complex measurement issues, covering issues such as the composition of product groups across tariff lines and the seasonality of production and trade. Moreover, in order to capture the marginal rather than the average import protection rate, the statutory applied most-favoured nation (MFN) tariffs are used. In light of the growing number of preferential trade agreements (PTAs) engaged in by countries covered in this report, an

important caveat therefore relates to the fact that the statutory applied MFN tariffs remain unchanged even when increased quantities of products are imported under preferential tariffs or duty-free within such PTAs. As a consequence, potential liberalising effects of new PTAs are not reflected in the MPS estimates when tariffs are used to calculate them. With the increased relevance of PTAs for international trade, it therefore becomes even more important to base the MPD calculations on price gap calculations whenever data allow.

When interpreting MPS values, it is important to bear in mind that MPS is not a measure of public expenditures but an estimation of implicit or explicit transfers. MPS estimates published by the OECD therefore often differ from, and should not be confused with, those published by other organisations, including by the World Trade Organization, which may use very different concepts to calculate their indicators, despite similar names.

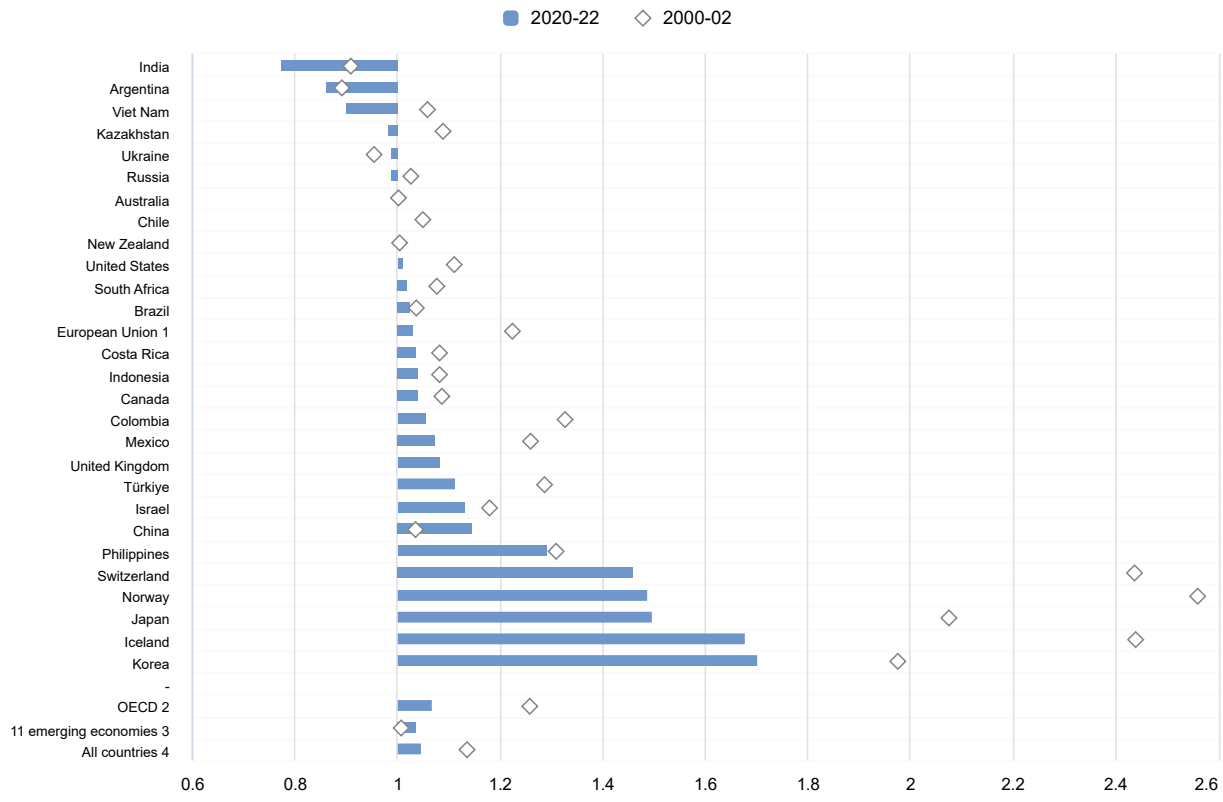
Source: OECD (2020[17]).

The gap between domestic prices and world prices has narrowed over the past 20 years on average across the OECD (Figure 2.14). To measure this, the OECD uses the indicator Nominal Protection Coefficient (NPC), which is the ratio between average effective producer prices and the border price. The effective producer price is the price received plus any payments provided per unit of output. Declining price gaps, measured by NPC, imply that producers are receiving price signals that more closely reflect world prices.

On average over all OECD countries, the NPC averaged 1.07 in 2020-22. This means that effective prices received by farmers were on average 7% higher than world prices. This represents a decline of 19 percentage points from the 26% higher prices averaged in 2000-02. Price gaps have declined in almost all countries between 2000-02 and 2020-22. Change has been particularly substantial in countries such as Switzerland, Norway, Japan, and Iceland where price gaps have reduced by between 55 and 110 percentage points.

China is the only country to have seen a rising positive NPC over the past 20 years, with the gap widening from 1.03 to 1.15 over that time. This reflects the introduction of several measures that have increased domestic prices, such as minimum purchase prices for rice and wheat. Price gaps in India and Argentina are increasingly negative. The NPC in India has fallen from 0.91 to 0.78, meaning prices are now 22% below international levels. Likewise, the NPC of Argentina has fallen from 0.89 to 0.86, putting prices 14% below world prices.

Figure 2.14. Producer Nominal Protection Coefficient by country, 2000-02 and 2020-22



Notes: Countries are ranked according to 2020-22 levels.
1. EU15 for 2000-02, EU27 and the United Kingdom for 2020, and EU27 from 2021.
2. The OECD total does not include the non-OECD EU Member States. Latvia and Lithuania are included only for 2020-22.
3. The 11 emerging economies include Argentina, Brazil, China, India, Indonesia, Kazakhstan, the Philippines, Russian Federation, South Africa, Ukraine and Viet Nam.
4. The All countries total includes all OECD countries, non-OECD EU Member States, and the emerging economies.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

The use of partly or fully decoupled producer support has increased

Payments based on production factors (area, animal numbers, revenue or income) or other non-commodity criteria have declined as a share of gross farm receipts across the 54 countries from 4.6% in 2000-02 to 3.8% in 2020-22. This has been driven by countries opting to remove or reorient policies which use *current* area, animal numbers, farm receipts or income as the criteria for determining the eligibility or amount of payments. Payments from policies of this type have declined from 3.2% to 1.9% of gross farm receipts in the last 20 years. This is a welcome development as payments that use current production factors as a criterion for payment provide a direct production incentive to farmers that can have a distorting effect, even if generally less so than MPS and other measures previously discussed.

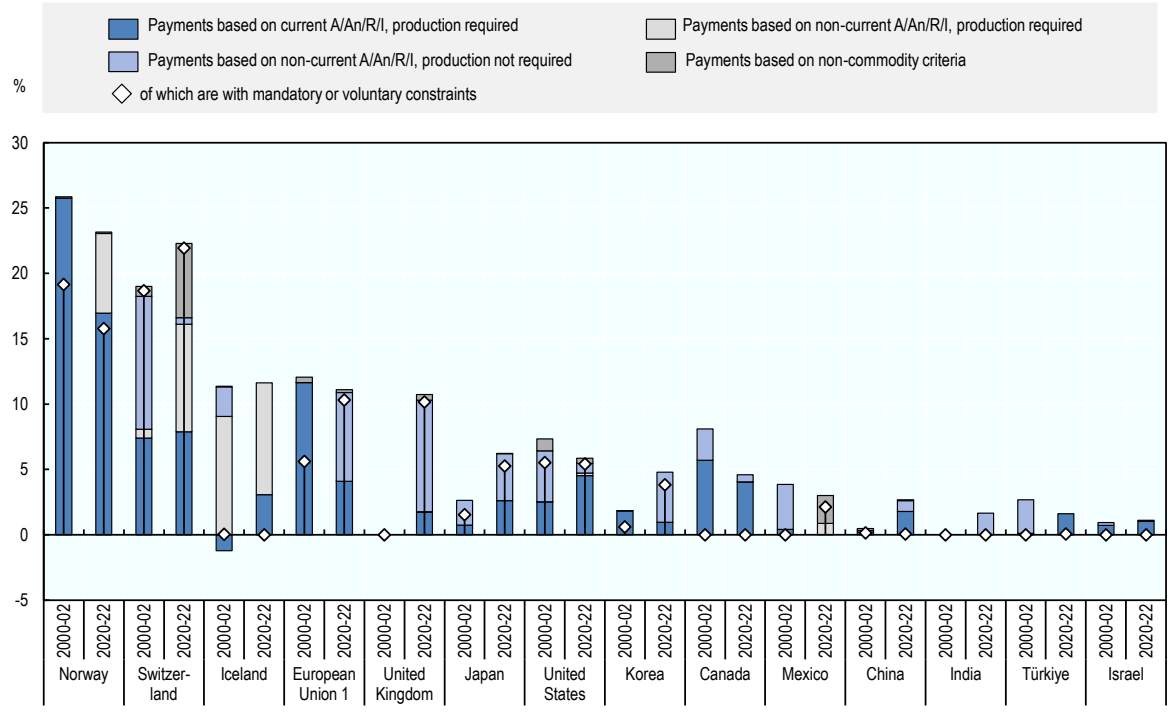
Payments based on current production factors have in many cases been replaced by payments based on historical production factors (both those requiring and not requiring production), which rose from 1.1% to 1.7%. Payments based on historical production factors like this are generally said to be "decoupled" from production because they have no direct link to current production decisions, even though they tend to slow

structural change and hinder the conversion of agricultural land to other uses. About 96% of payments based on historical production factors do not require current production.

The move from current to historical production factor payments has been particularly visible in the European Union. Payments based on current production factors accounted for 11.6% of gross farm receipts in 2000-02 and there were none based on non-current production factors. Following the Fischler Reform from 2003 much of the support in the European Union was decoupled from production and in 2020-22, payments on current production factors had fallen to 4.1% of the total and those on non-current production factors represented 6.8%. A similar pattern of decoupling has occurred to lesser degree in Korea and Norway (Figure 2.15).

Figure 2.15. Use and composition of support that is less coupled to production, selected countries, 2000-02 and 2020-22

Percentage of gross farm receipts



Notes: Figure presents countries having share of payments based on area, animal numbers, farm receipts or farm income and on non-commodity criteria above 1% for 2020-22 period. Countries are ranked according to the total share of payments for 2020-22.
1. EU15 for 2000-02, EU27 and the United Kingdom for 2020, and EU27 from 2021.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

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Producer support tied to specific commodities also declined

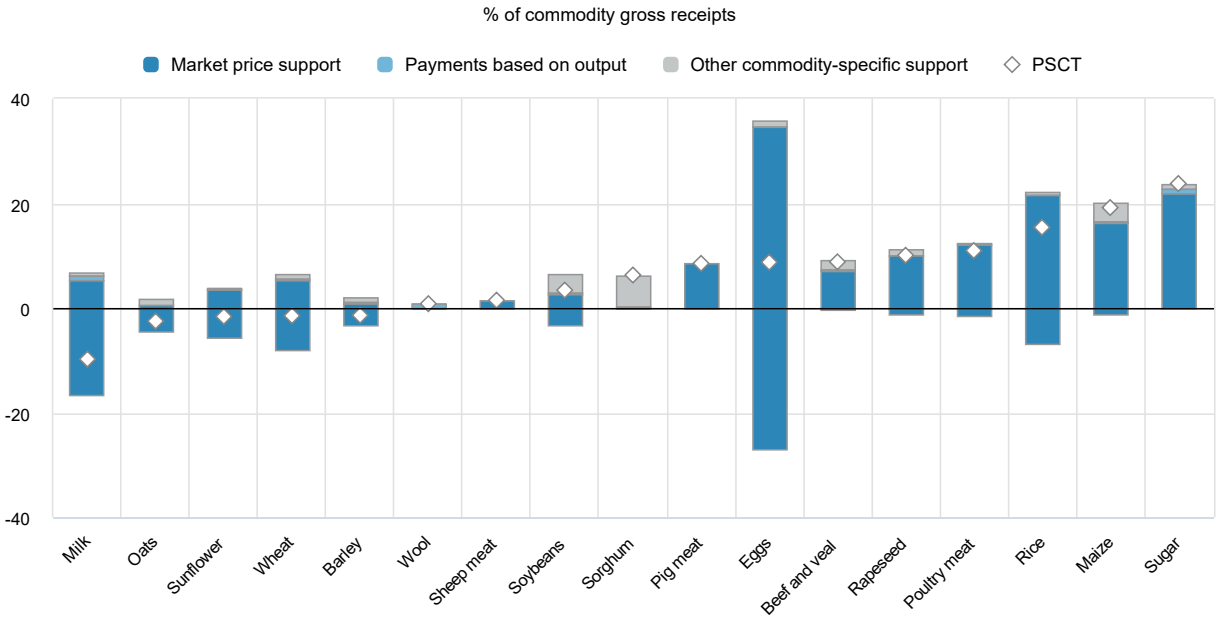
As well as the structure of support, another important lens to investigate producer support is to examine which commodities (or groups of commodities) are being supported. Policies are often designed to result in benefits or losses that are commodity specific. For example, a tariff put on imports of wheat results in market price support which advantages domestic producers of wheat to the exclusion of producers of other

commodities. By their construction, policies providing MPS and payments for outputs are commodity specific, while other budgetary payments may or may not be targeted to a specific commodity. For example, payments based on inputs or other production factors often stipulate terms that make them commodity specific such as when a fertiliser subsidy is granted only for production of maize, or a payment that is made per head of livestock. The total value of such payments taken together with MPS are reported for each commodity as single-commodity transfers (SCT).

On average across all countries in this report, SCTs averaged 4.4% of gross farm receipts in 2020-22, roughly half of the 9.8% averaged in 2000-02. Preliminary estimates for 2022 indicate that SCTs declined in 2022 for the second year in a row. MPS policies account for most commodity-specific support, so SCTs followed a similar pattern to those described in the section on MPS above.

SCTs are particularly high for sugar, maize and rice where they each represented over 15% of the gross receipts for the respective commodity in 2020-22 (Figure 2.16). However, there is significant variation in the level of commodity support among the covered countries. Support averaged 8.7% of egg receipts, but this average is the net effect of significant price support in some countries and significant implicit taxation in others. In countries that subsidised egg production through supported domestic prices and other measures, support averaged 36% of egg receipts. Conversely in countries that penalised egg production through depressed market prices, implicit taxation averaged 27% of egg receipts. Egg production has been negatively affected by avian flu which has decimated flocks in recent years. As a result, the gap between domestic and border prices has been volatile, a fact that is reflected in the changed values of MPS.

Figure 2.16. Transfers to specific commodities (SCT), all countries, 2020-22



Note: Data refer to the All countries total, including all OECD countries, non-OECD EU Member States, and the 11 emerging economies. Commodities are ranked according to their net percentage Specific Commodity Transfers (PSCT).
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Commodity-specific support can influence production choices by changing the relative returns of commodities or groups of commodities. For example, a payment per bale of cotton produced can lead to

more area being planted to cotton instead of other alternatives. In this way, support that is targeted to a few specific commodities can be more distorting of production than the same level of support that is distributed evenly across commodities or that is not commodity specific. To the extent the commodities targeted by SCTs are more intensive users of natural resources or generate higher pollution than those not benefitting from this support, commodity-specific support can also increase environmental pressures.

Farm revenues continued to increase, despite lower levels of producer support in 2022

Despite falling levels of producer support in 2022, gross farm receipts are estimated to have increased for a sixth consecutive year. Higher world market prices for agricultural products in 2022 drove a significant increase in the value of agricultural production which more than offset declines in market price support and budgetary payments to producers. Overall, gross farm receipts were 20% higher in 2020-22 compared to 2017-19 before the COVID-19 pandemic.

Consumers support

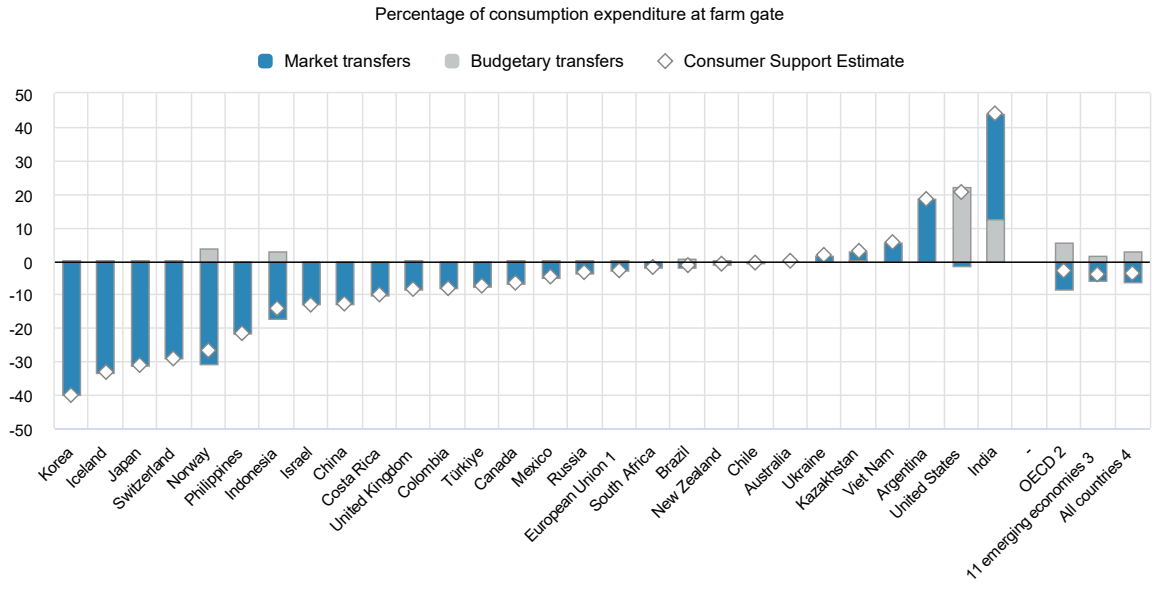
Consumers are implicitly taxed on average due to market price support

Agricultural policies can increase the price of food bought by consumers, as when positive MPS is in place, or they can reduce food costs through food assistance programmes (which usually target poor consumers). The Targeted Public Distribution System (TPDS) in India and the Supplemental Nutrition Assistance Program (SNAP) in the United States are two examples. Consumer support includes both support to final consumers of agricultural products as well as industry consumers who transform agricultural commodities into processed products. India, Argentina, Viet Nam and Kazakhstan also support consumers via depressed commodity prices.

Budgetary consumer support rose dramatically following the outbreak of the COVID-19 pandemic. In 2020, governments provided USD 131 billion in budgetary support to agricultural consumers, roughly double the USD 65 billion provided one year earlier. Consumer budgetary support declined to an estimated USD 112 billion in 2022, still higher than pre-pandemic levels. Food subsidies in India accounted for a large share of this increase, with temporary measures in 2020 increasing budgetary consumer support 5-fold to USD 74 billion.

While the pandemic brought about temporary increases in consumer support, the normal situation is that consumers pay higher than world prices for food. In 2020-22, policy support to consumers represented -3.7% of gross expenditures as measured at farm gate prices (an indicator referred to as **%CSE**) (Figure 2.17). This implies that consumers were implicitly taxed on purchases of agricultural products. In most countries, the %CSE mirrors the level of market price support provided to producers. Korea, Iceland, Japan, Switzerland, Norway, and the Philippines all have %CSE of -20% or above of gross expenditures reflecting high levels of market price support to producers. Norway and Indonesia provide some level of budgetary support to consumers to partially offset these negative effects.

Figure 2.17. Composition of the Consumer Support Estimate by country, 2020-22



Notes: Countries are ranked according to percentage CSE levels. A negative percentage CSE is an implicit tax on consumption.
1. EU27 and the United Kingdom for 2020, and EU27 from 2021.
2. The OECD total does not include the non-OECD EU Member States.
3. The 11 emerging economies include Argentina, Brazil, China, India, Indonesia, Kazakhstan, the Philippines, Russian Federation, South Africa, Ukraine and Viet Nam.
4. The All countries total includes all OECD countries, non-OECD EU Member States, and the emerging economies.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Declining rates of MPS have reduced the effect of agricultural policies on consumers over time. Across all 54 countries, the %CSE has risen from an average of -10.3% in 2000-02 to -3.7% in 2020-22. This is most notable in OECD countries, where the %CSE rose from -18.3% in the early 2000s to -3% in the recent data. Conversely, consumers in emerging economies have become worse off over time, with %CSE falling from near zero 20 years ago to average -4.1% in 2020-22. This largely reflects increasing market price support in China which drove %CSE to average -12.7% in 2020-22.

General Services Support

Support to general services is declining in real terms

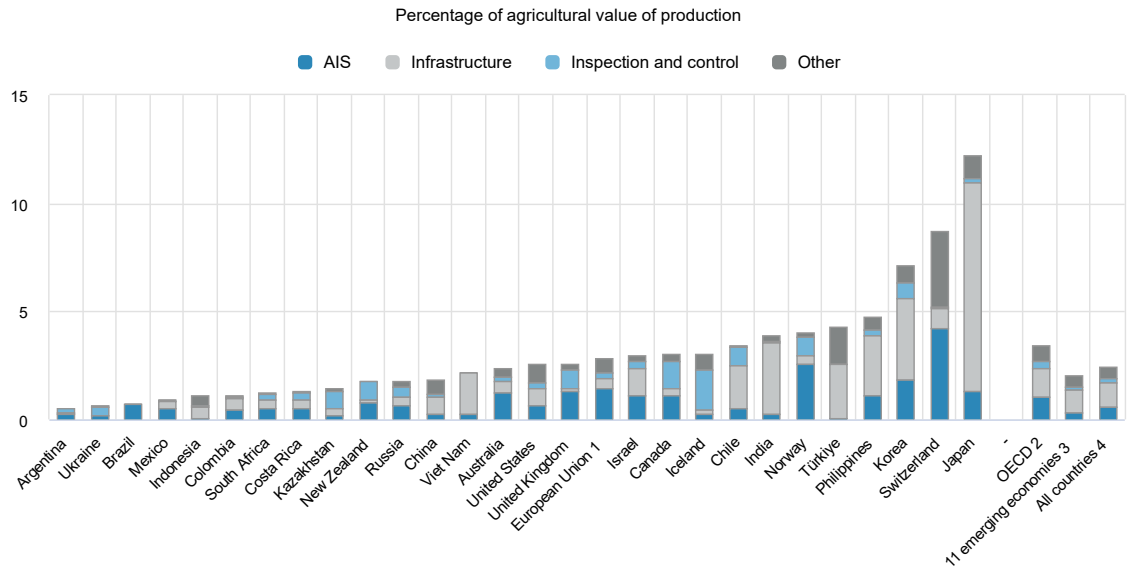
Countries provided USD 106 billion in support for general services to the agricultural sector on average over 2020-22. While this spending has increased in nominal terms over the past 20 years, it has declined as a share of total support to the sector. This share had fluctuated between 15% and 17% of support since 2000 but fell significantly after 2018 and averaged 12.5% in 2020-22. General services support has also declined relative to the size of the sector, from an average of 4.6% of the value of agricultural production in 2000-02 to 2.5% in 2020-22. This trend is observed both in the OECD and among emerging economies. In 2020-22, spending on general services was the equivalent of 3.4% of the value of production in OECD countries and 2% in the 11 emerging economies.

General services support arises from policies that are aimed to benefit the broader agricultural sector, rather than producers or consumers individually. Investments in general services can help the agricultural

sector to become more productive, sustainable and resilient. For example, infrastructure development and maintenance can include building hydrological assets which make irrigation more accessible, or other physical infrastructure such as rail or port storage which makes transport and marketing of products easier and reduces wastage. It can also include institutional infrastructure such as support for farm organisations or payments relating to structural transformation of the industry, such as financing new entrants, exits or diversification strategies outside of agriculture. Infrastructure spending was almost half of general services support in the most recent data, worth 46% in 2020-22, most of which was for irrigation-related projects. Agricultural innovation systems, covering both the generation and transfer of knowledge; and inspection and control measures are also important for enabling productivity growth and accounted for 23% and 8%, respectively. These three types of investment will be crucial for preparing agriculture to adapt to a changing climate. However spending across all three has declined relative to the size of the agricultural sector, accounting for under 10% of total support.

Other forms of general service spending have the potential to distort markets, but also generally account for a low, and decreasing, percentage of general service spending. Marketing and promotion was 8% of general service spending and the cost of public stockholding[10] was 13%.

Figure 2.18. Composition of General Services Support Estimate, 2020-22



Notes: "AIS" refers to the Agricultural knowledge and innovation system. "Other" includes the marketing and promotion, cost of public stockholding, and miscellaneous categories of the GSSE. Countries are ranked according to the share of total GSSE in agricultural value of production.
1. EU27 and the United Kingdom for 2020, and EU27 from 2021.
2. The OECD total does not include the non-OECD EU Member States.
3. The 11 emerging economies include Argentina, Brazil, China, India, Indonesia, Kazakhstan, the Philippines, Russian Federation, South Africa, Ukraine and Viet Nam.
4. The All countries total includes all OECD countries, non-OECD EU Member States, and the emerging economies.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Summary and conclusions

Agricultural support policies generated USD 851 billion per year in transfers towards agriculture in 2020-22 across the 54 countries covered in this report. This is the highest level since records began and 2.5 times

larger than aggregate transfers observed in 2000-02, although it represents a decline as a share of the agricultural value of production. Almost three-quarters of transfers, USD 626 billion, was transferred to individual producers through higher prices and budget payments. Some countries continue to implicitly tax their producers through policies that depress domestic market prices, generating transfers away from producers worth USD 179 billion per year.

Overall, total net support to the sector (TSE) is equivalent to 0.6% of GDP across the 54 countries, down from 1.0% in the early 2000s. As a share of the agricultural sector, total net support was 16% of agricultural value of production in 2020-22, compared to 27% in 2000-02.

Net producer support across all 54 countries has declined as a share of gross farm receipts (%PSE) over the past 20 years, from 18% in 2000-02 to 10% in 2020-22. This reflects declining producer support amongst OECD countries, which fell from 28% of gross farm receipts in the early 2000s to 15% in 2020-22. Conversely, producer support rose in emerging economies between 2000-02 and 2020-22 from 4% to 7%.

Most of the decline in OECD support occurred in the 2000s, driven by declining market price support. Progress in reducing support has been slower in recent years and there has been some increase in payments based on current production factors in recent years, despite consistent recommendations to reduce notably the potentially most distorting forms of support. The rise in emerging economy support largely reflects a significant increase in the prominence of China as an agricultural producer and the vast market price support it provides to producers. China now accounts for around 44% (USD 276 billion) of all the producer support among the 54 countries covered in this report after accounting for only 7% in 2000-02.

Market price support is still the dominant form of support to producers. MPS generated USD 333 billion or roughly half of the positive support to agriculture in 2020-22. It has declined as a share of gross farm receipts from 11.5% at the start of the century to 7.3% today. At the same time, several countries utilise policies which caused negative market price support worth USD 179 billion. This implicit tax was equivalent to 3.9% of gross farm receipts in 2020-22, up from 1.8% of GFR two decades earlier. This implies that across all 54 countries, positive producer support accounted for 13.7% of gross farm receipts in 2020-22.

Other support to farmers included USD 11 billion in payments based on production output and USD 67 billion in input subsidies without use constraints. These payments have a similar tendency as market price support to create production distortions. This means that USD 411 billion was transferred to producers in forms that are potentially the most distorting, or around two-thirds of positive producer support. The remaining USD 219 billion was provided for in payments that were less coupled to production decisions. This includes USD 77 billion in decoupled payments based on historical production factors such as area, animal numbers, receipts or income. Although they tend to be less harmful than coupled payments, decoupled payments may slow structural change and hinder the conversion of agricultural land to other uses.

Aside from support to individual producers, governments provided USD 106 billion to assist the sector more broadly through general services in 2020-22. This equates to around 12.5% of positive transfers to agriculture, down from 16.0% two decades earlier. Expenditures for general services also declined relative to the sector's size, from 4.6% of the value of production in 2000-02 to 2.5% in 2020-22. Investments in agricultural knowledge and innovation, inspection and control, and infrastructure development and maintenance, which represent general services with a particularly strong potential to facilitate sustainable productivity growth and resilience, totalled USD 82 billion or about three-quarters of all support to general services. Relative to the total value of production, spending on these services fell from 3.1% in 2000-02 to 1.9% in 2020-22.

Consumers were also supported with direct budgetary assistance of USD 115 billion per year on average in 2020-22. This was mostly in the form of food assistance programmes. On average, however, consumers were still implicitly taxed on agricultural products through price policies that support farmers. These implicit taxes more than offset the direct budgetary assistance from government.

The level of support varied greatly among countries. On average during 2020-22, producer support ranged from 5% or less of the value of agricultural production in Brazil, South Africa, New Zealand, and Ukraine, to more than 70% in Norway, Switzerland, and Iceland. Net support was negative in Argentina, Viet Nam, and India.

Countries introduced a range of emergency measures in response to recent global shocks including inflationary pressures as well as the war in Ukraine and its effects. Countries should now act to build resilience to future shocks

Prices for agricultural products and inputs rose significantly following the outbreak of war due to the prominence of Ukraine and Russia in global trade markets for these goods. This happened in the context of global value chains that had already been tested by COVID-19 in the two years prior. Governments responded to these new global challenges by implementing a wide range of different policies aimed at supporting farmers and consumers, securing critical supplies, and providing assistance to Ukraine.

The shocks experienced have led some governments to rethink their approach to securing strategic supplies. Many countries reduced tariffs on imports of animal feed and agricultural goods as a means of taming rising input costs and consumer prices. Others put restrictions on exports of food and fertiliser to protect domestic supplies. Countries also took steps to help Ukraine and its agricultural sector. These included efforts to resume Ukrainian exports through the Black Sea and via road or rail through Europe, easing restrictions on trade with Ukraine, and providing employment opportunities to Ukrainian refugees in the agricultural sector. Countries are also taking steps now to prepare the Ukrainian agricultural sector to be able to rebound swiftly once hostilities end. Such efforts include bi- or plurilateral government-to-government collaboration, public-private partnerships, and international efforts such as the recently launched OECD Ukraine Country Programme.

Looking ahead, countries should draw on the experiences of the past few years and seek to build resilience to risks in the future. Governments should look to implement policies and investments that enhance the ability of the sector to absorb, adapt and transform in response to future shocks. For example, they should seek out “no-regrets” policies that provide these benefits under a wide range of future scenarios, while also contributing to agricultural productivity and sustainability. Temporary measures are often hard to dismantle once in place and long-term objectives need to be balanced with short-term responses. Risk management policies should be developed with stakeholders to ensure a common understanding of the risk landscape and responsibilities for managing risks.

Market price support has fallen in response to macroeconomic factors, but more reform is needed

Preliminary estimates indicate that market price support declined in 2022. This decline has been largely driven by the recent period of exceptional spikes in agricultural prices which caused prices of supported products to become relatively less valuable compared to if it were valued at world prices. This is a similar experience to what occurred during price spikes in 2008 and 2011. Market price support will likely rebound in 2023 depending on actions taken by governments implementing MPS policies and the path of global prices.

Two countries, Costa Rica and Israel, took steps in 2022 to reduce market price support as part of an effort to liberalise some of their agricultural industries in line with OECD recommendations. These are positive steps to reduce production and trade distortions within their agricultural sectors. However, policies which create market price support remains particularly prevalent in the portfolio of agricultural support for many economies and more should be done to reform.

Reforms in OECD countries have largely stalled in the past ten years, with little change in the level or composition of support over this period. In 2022, signatories to the OECD Ministerial Declaration[11]

committed to “intensify efforts as appropriate to reform or reorient agricultural policy, and in particular to address those support measures that are harmful to the environment, to move towards more sustainable agriculture and food systems”. Meanwhile, support, which had increased significantly in the past, has remained high over the past decade in large emerging economies. Across the 54 countries, two-thirds of support is still provided through price interventions and other distorting support. These are known for their negative implications for food security and the environment, and for being both inefficient and untargeted to providing support to those households in need. Countries should look to reinvigorate domestic policy reform efforts to reduce the use of these measures. At the same time, more stringent multilateral disciplines may be required to facilitate such reforms.

Countries should not lose sight of the need to do more to mitigate and adapt their agricultural sectors to climate change

The recent few years has seen significant challenges for agriculture between the COVID-19 pandemic and now the fallout from the war in Ukraine. Countries have largely managed to respond effectively to these crises and absorb the shocks rapidly. However, countries should not lose sight of the existing and coming challenges posed by climate change.

Some countries pledged more ambitious climate targets in 2022. Others, such as New Zealand have taken positive new steps to price carbon. These are welcome developments that will help countries to respect their Paris Agreement commitments. More could be done to increase ambitions, however. Only 19 out of the 54 countries in this report have a mitigation target specific to the agricultural sector, and three do not have targets to reach or get close to net zero emissions for their overall economies.

The structure of much agricultural policy support is at odds with the actions needed to mitigate and adapt to climate change. USD 411 billion of support is in forms that are potentially most distorting, comprising market price support and payments linked to output or the unconstrained use of inputs. These policies may encourage over-production and can contribute to GHG emissions if they lead to the overuse of polluting inputs, degradation of soils and increased land clearing. They can also contribute to increasing pressure on resources, biodiversity and the environment that are already adversely affected by climate change. Many of these policies also have the potential to hinder climate change adaptation by reducing incentives for farmers to change production systems away from subsidised commodities in response to changing climatic conditions. Countries may need to collaborate to avoid possible environmental leakages and other issues that may arise from asymmetries in policies across countries.

The role of support for livestock production is particularly sensitive in this regard. Livestock is responsible for the largest share of agricultural GHG emissions and a strong contributor to the global methane footprint. Livestock is highly supported, typically in the form of MPS. Support to poultry, beef and veal and pig meat are all around 10% of their gross commodity receipts. Combined, market price support to these three commodities were worth USD 71 billion or 11% of all positive producer support. Rice also contributes significantly to emissions relative to other crops due to methane from flooded areas. Support to rice production totalled USD 54 billion in 2020-22. These forms of support to highly emitting commodities should be reduced and reformed as much as possible while taking into consideration national conditions and policy design.

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Notes

[1] This report does not contain a country chapter on the Russian Federation, nor any tables with support indicators in the Statistical Annex. However, aggregate data for the 11 emerging economies and for all 54 countries covered in this report continue to include those for Russia.

[2] Crop production developments are expressed on a crop year basis.

[3] The Initiative on the Safe Transportation of Grain and Foodstuffs from Ukrainian ports, also known as Black Sea Grain Initiative, is an agreement between Russia and Ukraine facilitated by Türkiye and the United Nations and creating procedures to safely export grains from certain Ukrainian ports, after Russia had blocked such exports following its invasion of Ukraine. The agreement was originally signed in July 2022 for a period of 120 days and renewed several times thereafter. The initiative was not renewed after its third term, which expired on 17 July 2023.

[4] This refers to total gross farm receipts expressed in current US dollar.

[5] Any variation in support levels across EU Member States is not presented in the support database OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

[6] Includes 15 countries.

[7] Includes all current EU27 countries for all three years. United Kingdom is included for 2020 only.

[8] Further analysis is needed on the environmental impacts of market price support when limits on production are in place.

[9] Single Commodity Transfers (SCTs) are the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers arising from policies linked to the production of a single commodity, such that the producer must produce the designate commodity in order to receive the transfer. In this instance it is the monetary value of the gross transfers from Indian producers of wheat to consumers and taxpayers as a result of policies affecting wheat production. SCTs are measured at the farm gate level.

[10] Cost of public stockholding are expenditures to cover the cost of storage or disposal of agricultural commodities, as well as their depreciation.

[11] OECD (2022[18]), *Declaration on Transformative Solutions for Sustainable Agriculture and Food Systems*, OECD/LEGAL/0483, https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0483.

Annex 2.A. Definition of OECD indicators of agricultural support

Nominal indicators used in this report

Producer Support Estimate (PSE): The annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on farm production or income. It includes market price support, budgetary payments and budget revenue foregone, i.e. gross transfers from consumers and taxpayers to agricultural producers arising from policy measures based on: current output, input use, area planted/animal numbers/receipts/incomes (current, non-current), and non-commodity criteria. PSE categories are defined in Box 2 A.1.

Market Price Support (MPS): The annual monetary value of gross transfers from consumers and taxpayers to agricultural producers arising from policy measures that create a gap between domestic market prices and border prices of a specific agricultural commodity, measured at the farm gate level. MPS is available by commodity, and sums of negative and positive components are reported separately where relevant along with the total MPS.

Producer Single Commodity Transfers (producer SCT): The annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm gate level, arising from policies linked to the production of a single commodity such that the producer must produce the designated commodity in order to receive the payment. This includes broader policies where transfers are specified on a per-commodity basis. Producer SCT is also available by commodity.

Group Commodity Transfers (GCT): The annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm gate level, arising from policies whose payments are made on the basis that one or more of a designated list of commodities is produced, i.e. a producer may produce from a set of allowable commodities and receive a transfer that does not vary with respect to this decision.

All Commodity Transfers (ACT): The annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm gate level, arising from policies that place no restrictions on the commodity produced but require the recipient to produce some commodity of their choice.

Other Transfers to Producers (OTP): The annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm gate level, arising from policies that do not require any commodity production at all.

Consumer Single Commodity Transfers (consumer SCT): The annual monetary value of gross transfers from (to) consumers of agricultural commodities, measured at the farm gate level, arising from policies linked to the production of a single commodity. Consumer SCT is also available by commodity.

Consumer Support Estimate (CSE): The annual monetary value of gross transfers from (to) consumers of agricultural commodities, measured at the farm gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on consumption of farm products. If negative, the CSE measures the burden (implicit tax) on consumers through market price support (higher prices), that more than offsets consumer subsidies that lower prices to consumers.

General Services Support Estimate (GSSE): The annual monetary value of gross transfers arising from policy measures that create enabling conditions for the primary agricultural sector through development of private or public services, institutions and infrastructure, regardless of their objectives and impacts on farm production and income, or consumption of farm products. The GSSE includes policies where primary agriculture is the main beneficiary, but does not include any payments to individual producers. GSSE transfers do not directly alter producer receipts or costs or consumption expenditures. GSSE categories are defined below.

Total Support Estimate (TSE): The annual monetary value of all gross transfers from taxpayers and consumers arising from policy measures that support agriculture, net of the associated budgetary receipts, regardless of their objectives and impacts on farm production and income, or consumption of farm products.

Total Budgetary Support Estimate (TBSE): The annual monetary value of all gross budgetary transfers from taxpayers arising from policy measures that support agriculture, regardless of their objectives and impacts on farm production and income, or consumption of farm products.

Gross Farm Receipts (GFR): The annual monetary value of production, to which budgetary transfers to individual producers are added (i.e. VP + PSE – MPS).

Commodity Gross Receipts: The annual monetary value of production for an individual commodity, to which budgetary transfers to producers of that commodity are added (i.e. VP + producer SCT – MPS).

Ratio indicators and percentage indicators

Percentage PSE (%PSE): PSE transfers as a share of gross farm receipts (including support in the denominator).

Percentage SCT (%SCT): Single Commodity Transfers as a share of gross receipts for the specific commodity (including support in the denominator).

Share of SCT in total PSE (%): Share of Single Commodity Transfers in the total PSE. This indicator is also calculated by commodity.

Producer Nominal Protection Coefficient (producer NPC): The ratio between the average price received by producers (at farm gate), including payments per tonne of current output, and the border price (measured at farm gate). The Producer NPC is also available by commodity.

Producer Nominal Assistance Coefficient (producer NAC): The ratio between the value of gross farm receipts including support and gross farm receipts (at farm gate) valued at border prices (measured at farm gate).

Percentage CSE (%CSE): CSE transfers as a share of consumption expenditure on agricultural commodities (at farm gate prices), net of taxpayer transfers to consumers. The %CSE measures the implicit tax (or subsidy, if CSE is positive) placed on consumers by agricultural price policies.

Consumer Nominal Protection Coefficient (consumer NPC): The ratio between the average price paid by consumers (at farm gate) and the border price (measured at farm gate). The Consumer NPC is also available by commodity.

Consumer Nominal Assistance Coefficient (consumer NAC): The ratio between the value of consumption expenditure on agricultural commodities (at farm gate) and that valued at border prices.

Percentage TSE (%TSE): TSE transfers as a percentage of GDP.

Percentage TBSE (%TBSE): TBSE transfers as a percentage of GDP.

Percentage GSSE (%GSSE): Share of expenditures on general services in the Total Support Estimate (TSE).

Share of potentially most distorting transfers in aggregated gross producer transfers (%): represents the sum of positive MPS, the absolute value of negative MPS, payments based on output and payments based on unconstrained use of variable inputs, relative to the sum of positive MPS, the absolute value of negative MPS, and all budgetary payments to producers.

Annex Box 2.A.1. Definitions of categories in the PSE classification

Definitions of categories

Category A1, Market price support (MPS): Transfers from consumers and taxpayers to agricultural producers from policy measures that create a gap between domestic market prices and border prices of a specific agricultural commodity, measured at the farm gate level.

Category A2, Payments based on output: Transfers from taxpayers to agricultural producers from policy measures based on current output of a specific agricultural commodity.

Category B, Payments based on input use: Transfers from taxpayers to agricultural producers arising from policy measures based on on-farm use of inputs:

- ***Variable input use*** that reduces the on-farm cost of a specific variable input or a mix of variable inputs.
- ***Fixed capital formation*** that reduces the on-farm investment cost of farm buildings, equipment, plantations, irrigation, drainage, and soil improvements.
- ***On-farm services*** that reduce the cost of technical, accounting, commercial, sanitary and phytosanitary assistance and training provided to individual farmers.

Category C, Payments based on current A/An/R/I, production required: Transfers from taxpayers to agricultural producers arising from policy measures based on current area, animal numbers, revenue, or income, and requiring production.

Category D, Payments based on non-current A/An/R/I, production required: Transfers from taxpayers to agricultural producers arising from policy measures based on non-current (i.e. historical or fixed) area, animal numbers, revenue, or income, with current production of any commodity required.

Category E, Payments based on non-current A/An/R/I, production not required: Transfers from taxpayers to agricultural producers arising from policy measures based on non-current (i.e. historical or fixed) area, animal numbers, revenue, or income, with current production of any commodity not required but optional.

Category F, Payments based on non-commodity criteria: Transfers from taxpayers to agricultural producers arising from policy measures based on:

- ***Long-term resource retirement:*** Transfers for the long-term retirement of factors of production from commodity production. The payments in this subcategory are distinguished from those requiring short-term resource retirement, which are based on commodity production criteria.
- ***A specific non-commodity output:*** Transfers for the use of farm resources to produce specific non-commodity outputs of goods and services, which are not required by regulations.
- ***Other non-commodity criteria:*** Transfers provided equally to all farmers, such as a flat rate or lump sum payment.

Category G, Miscellaneous payments: Transfers from taxpayers to farmers for which there is a lack of information to allocate them among the appropriate categories.

Note: A (area), An (animal numbers), R (receipts) or I (income).

Definitions of labels

With or without current commodity production limits and/or limit to payments: Defines whether or not there is a specific limitation on current commodity production (output) associated with a policy providing transfers to agriculture and whether or not there are limits to payments in the form of limits to area or animal numbers eligible for those payments. Applied in categories A–F.

With variable or fixed payment rates: Any payments is defined as subject to a variable rate where the formula determining the level of payment is triggered by a change in price, yield, net revenue or income or a change in production cost. Applied in categories A–E.

With or without input constraints: defines whether or not there are specific requirements concerning farming practices related to the programme in terms of the reduction, replacement, or withdrawal in the use of inputs or a restriction of farming practices allowed. Applied in categories A–F. The payments with input constrains are further broken down to:

- Payments conditional on compliance with basic requirements that are mandatory (with mandatory);
- Payments requiring specific practices going beyond basic requirements and voluntary (with voluntary).
  - Specific practices related to environmental issues.
  - Specific practices related to animal welfare.
  - Other specific practices.

With or without commodity exceptions: defines whether or not there are prohibitions upon the production of certain commodities as a condition of eligibility for payments based on non-current A/An/R/I of commodity(ies). Applied in Category E.

Based on area, animal numbers, receipts or income: defines the specific attribute (i.e. area, animal numbers, receipts or income) on which the payment is based. Applied in categories C–E.

Based on a single commodity, a group of commodities or all commodities: defines whether the payment is granted for production of a single commodity, a group of commodities or all commodities. Applied in categories A–D.

Drivers of the change in PSE

Decomposition of PSE

***Per cent change in PSE*:** Per cent change in the nominal value of the PSE expressed in national currency. The per cent change is calculated using the two most recent years in the series.

***Contribution of MPS to per cent change in PSE*:** Per cent change in nominal PSE if all variables other than MPS are held constant.

***Contribution of price gap to per cent change in the PSE*:** Per cent change in nominal PSE if all variables other than gap between domestic market prices and border prices are held constant.

***Contribution of quantity produced to per cent change in the PSE*:** Per cent change in nominal PSE if all variables other than quantity produced are held constant.

***Contribution of budgetary payments (BP) to per cent change in PSE*:** Per cent change in nominal PSE if all variables other than BP are held constant.

***Contribution of BP elements to per cent change in PSE*:** Per cent change in nominal PSE if all variables other than a given BP element are held constant. BP elements include Payments based on output, Payments based on input use, Payments based on current A/An/R/I, production required, Payments based on non-current A/An/R/I, production required, Payments based on non-current A/An/R/I, production not required, Payments based on non-commodity criteria and Miscellaneous payments.

Change in Producer Price

***Per cent change in Producer Price*:** Per cent change in Producer Price (at farm gate) expressed in national currency. The per cent change is calculated using the two most recent years in the series.

Decomposition of the change in the Border Price

***Per cent change in Border Price*:** Per cent change in Border Price (at farm gate) expressed in national currency. The per cent change is calculated using the two most recent years in the series.

***Contribution of Exchange Rate to per cent change in Border Price*:** Per cent change in the Border Price (at farm gate) expressed in national currency if all variables other than Exchange Rate between national currency and USD are held constant.

***Contribution of Border Price expressed in USD to per cent change in Border Price*:** Per cent change in the Border Price (at farm gate) expressed in national currency if all variables other than Border Price (at farm gate) expressed in USD are held constant.

Note: The change in Producer Support Estimate (PSE) is not decomposed when PSE is negative for the current and/or previous year. The producer price change and the border price change are not calculated when both negative and positive market price support (MPS) occur at the commodity level for the previous year. Note that negative MPS estimates for livestock products may arise in cases of aligned product prices if there is positive MPS for feed commodities.

Definition of GSSE categories

Agricultural knowledge and innovation system

- ***Agricultural knowledge generation***: Budgetary expenditure financing research and development (R&D) activities related to agriculture, and associated data dissemination, irrespective of the institution (private or public, ministry, university, research centre or producer groups) where they take place, the nature of research (scientific, institutional, etc.), or its purpose.
- ***Agricultural knowledge transfer***: Budgetary expenditure financing agricultural vocational schools and agricultural programmes in high-level education, training and advice to farmers that is generic (e.g. accounting rules, pesticide application), not specific to individual situations, and data collection and information dissemination networks related to agricultural production and marketing.

Inspection and control

- ***Agricultural product safety and inspection***: Budgetary expenditure financing activities related to agricultural product safety and inspection. This includes only expenditures on inspection of

domestically produced commodities at first level of processing and border inspection for exported commodities.

- ***Pest and disease inspection and control:*** Budgetary expenditure financing pest and disease control of agricultural inputs and outputs (control at primary agriculture level) and public funding of veterinary services (for the farming sector) and phytosanitary services.
- ***Input control:*** Budgetary expenditure financing the institutions providing control activities and certification of industrial inputs used in agriculture (e.g. machinery, industrial fertilisers, pesticides, etc.) and biological inputs (e.g. seed certification and control).

Development and maintenance of infrastructure

- ***Hydrological infrastructure:*** Budgetary expenditure financing public investments into hydrological infrastructure (irrigation and drainage networks).
- ***Storage, marketing and other physical infrastructure***: Budgetary expenditure financing investments to off-farm storage and other market infrastructure facilities related to handling and marketing primary agricultural products (silos, harbour facilities – docks, elevators; wholesale markets, futures markets), as well as other physical infrastructure related to agriculture, when agriculture is the main beneficiary.
- ***Institutional infrastructure***: Budgetary expenditure financing investments to build and maintain institutional infrastructure related to the farming sector (e.g. land cadastres; machinery user groups, seed and species registries; development of rural finance networks; support to farm organisations, etc.).
- ***Farm restructuring***: Budgetary payments related to reform of farm structures financing entry, exit or diversification (outside agriculture) strategies.

Marketing and promotion

- ***Collective schemes for processing and marketing***: Budgetary expenditure financing investment in collective, mainly primary, processing, marketing schemes and marketing facilities, designed to improve marketing environment for agriculture.
- ***Promotion of agricultural products***: Budgetary expenditure financing assistance to collective promotion of agro-food products (e.g. promotion campaigns, participation on international fairs).
- ***Cost of public stockholding***: Budgetary expenditure covering the costs of storage, depreciation and disposal of public storage of agricultural products.
- ***Miscellaneous***: Budgetary expenditure financing other general services that cannot be disaggregated and allocated to the above categories, often due to a lack of information.

More detailed information on the indicators, their use and limitations is available in *OECD's Producer Support Estimate and Related Indicators of Agricultural Support: Concepts, Calculation, Interpretation and Use* (the PSE Manual) available on the OECD public website (http://www.oecd.org/agriculture/topics/agricultural-policy-monitoring-and-evaluation/documents/producer-support-estimates-manual.pdf).

Developments in Agricultural Policy and Support by Country

This part contains an overview of the developments of support in the OECD area and selected Emerging Economies overall, followed by chapters on agricultural policy developments and support to agriculture in each of the countries covered in this report. Each country chapter includes a brief summary of policy developments and support to agriculture, with a special focus on climate adaptation action for agriculture, and related assessments and recommendations; a brief outline of historical policy trends; a more detailed description of climate change adaptation policies in agriculture; a presentation of the main policy developments in 2022-23; and information on the context in which agricultural policies are implemented.

3 Overall trends in agricultural support

OECD countries

Total support to agriculture (Total Support Estimate, TSE) in OECD countries[1] represented USD 349 billion (EUR 311 billion) per year on average in 2020-22, of which 67%, or USD 234 billion (EUR 208 billion), was provided as support to producers individually (Producer Support Estimate, PSE). Producer support across the OECD represented 15.2% of gross farm receipts in 2020-22, down from around 28% in 2000-02 and more than 35% in 1986-88 (Table 3.1). These averages mask significant variations within the OECD, details on which are presented in Chapter 2 of this report.

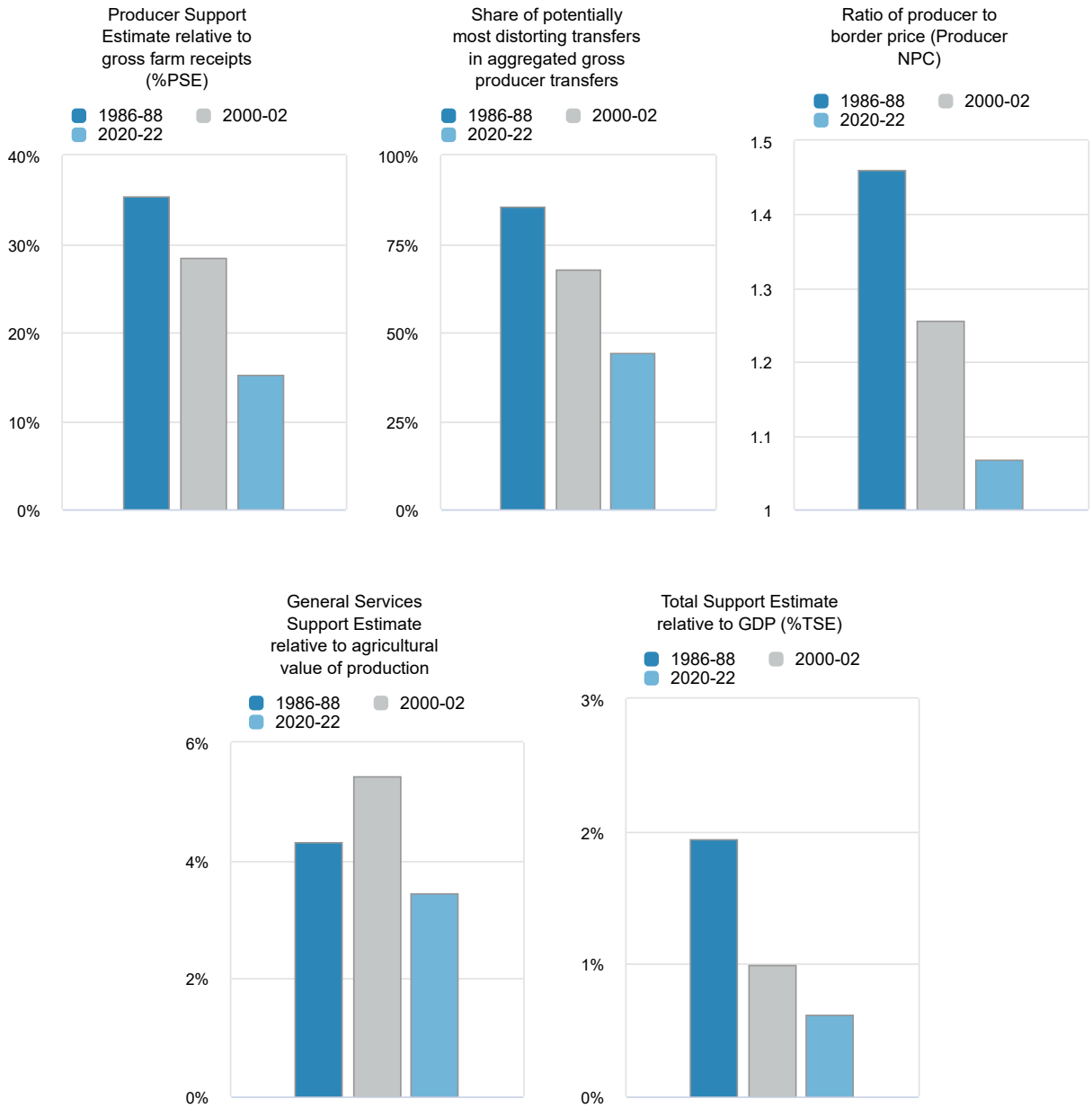
There has been long-term decline in the use of Market Price Support (MPS) and output-based payments across OECD countries. Payments based on the unconstrained use of variable inputs slightly increased across the OECD compared to the beginning of the millennium. OECD work finds that these three types of support have the greatest potential to distort agricultural production and trade, and can induce negative impacts on the environment.

Overall, MPS represents the largest share of support to individual commodities, driven by a range of domestic and trade policies. Rice is by far the most supported commodity in the OECD area, followed by sugar, sunflower seed, and several livestock products (Figure 3.2). For several commodities – particularly maize, sorghum, soybeans, and sheep meat – support also comes through other types of transfers, including payments less directly coupled to production.

Some countries apply less-distorting forms of support, such as payments based on parameters not linked to current production, or based on non-commodity criteria such as land set-aside, or payments for specific environmental or animal-welfare outcomes (Chapter 2, Figure 2.15). Payments based on historical entitlements – generally crop area or livestock numbers during a reference period in the past[2] – increased in the last two decades, representing more than 3% of Gross Farm Receipts (GFR) and about 22% of PSE during 2020-22. The share of payments based on current crop area, animal numbers, receipts, or income has fallen since 2000-02; these now represent around 23% of PSE (Table 3.1).

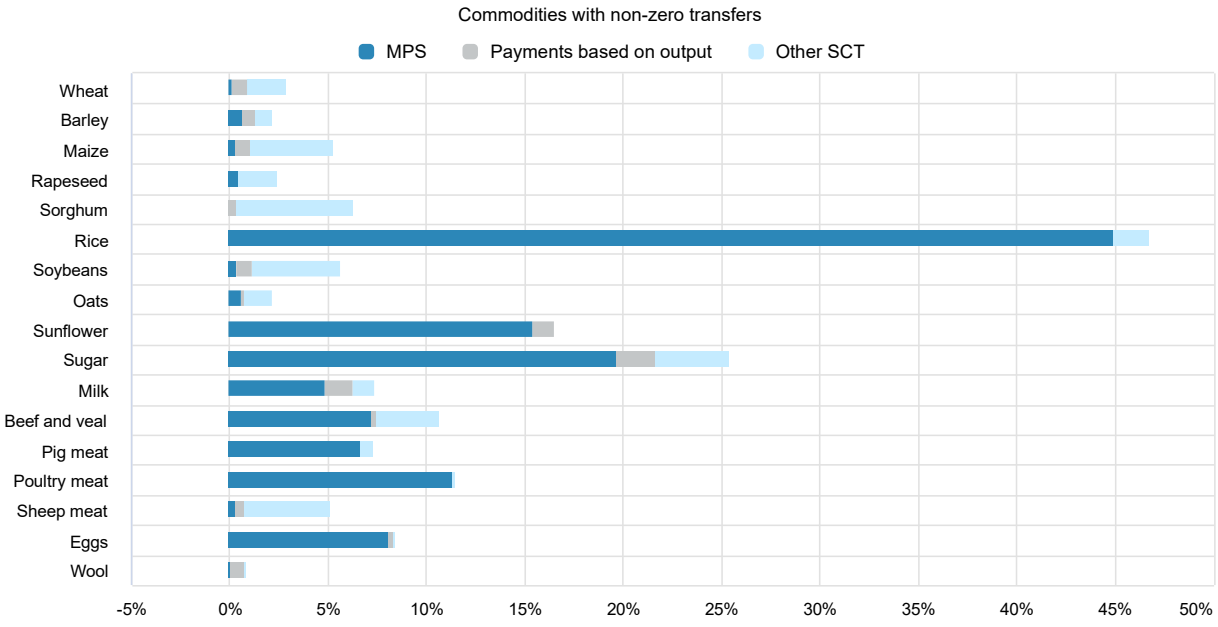
Expenditures financing general services to the sector (General Service Support Estimate, GSSE) in the OECD area increased in nominal terms from USD 37 billion (EUR 40 billion) per year in 2000-02 to USD 48 billion (EUR 43 billion) in 2020-22. However, this increase fell short of the sector's growth, and expenditures for general services declined as a share of the agricultural value of production from 5.4% to 3.4%. In 2020-22, most of this went to infrastructure (USD 18 billion), a slight increase from 2000-02, and to agricultural knowledge and innovation (USD 15 billion), an increase of 87% in nominal terms, almost in line with the sector's growth. Expenditures for inspection and control services more than doubled, while spending for marketing and promotion increased less and public stockholding declined substantially over the period. But all these accounted for comparatively small shares of the GSSE expenditure (Table 3.1). Total support to agriculture as a share of GDP declined significantly over time.

Figure 3.1. OECD: Development of support to agriculture



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 3.2. OECD: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 3.1. OECD: Estimates of support to agriculture

Million USD

	1986-88	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**594 108**	**673 504**	**1 390 641**	**1 229 916**	**1 417 426**	**1 524 583**
***of which:** share of MPS commodities (%)*	71.27	70.22	74.92	72.75	74.99	77.03
Total value of consumption (at farm gate)	**557 842**	**664 944**	**1 265 647**	**1 125 813**	**1 266 415**	**1 404 713**
Producer Support Estimate (PSE)	**230 224**	**217 203**	**234 352**	**237 239**	**250 577**	**215 239**
Support based on commodity output	187 284	139 467	90 132	100 402	93 483	76 511
Market Price Support[1]	174 689	124 508	83 451	89 220	88 224	72 907
Positive Market Price Support	178 990	125 109	83 506	89 265	88 306	72 948
Negative Market Price Support	-4 302	-600	-56	-45	-81	-41
Payments based on output	12 596	14 959	6 681	11 181	5 259	3 604
Payments based on input use	19 571	19 523	34 256	35 948	32 340	34 480
Based on variable input use	9 146	8 012	13 947	15 662	12 212	13 967
with input constraints	1 146	342	990	900	767	1 304
Based on fixed capital formation	6 882	5 079	10 822	11 356	10 482	10 626
with input constraints	1 638	629	2 237	2 321	2 219	2 171
Based on on-farm services	3 543	6 431	9 487	8 930	9 645	9 887
with input constraints	439	967	1 903	1 765	1 907	2 038
Payments based on current A/An/R/I, production required	19 377	41 382	53 201	46 285	60 968	52 349
Based on Receipts / Income	2 052	3 173	5 720	4 963	6 320	5 877
Based on Area planted / Animal numbers	17 325	38 209	47 481	41 322	54 648	46 473
with input constraints	4 093	16 898	41 550	36 612	48 075	39 964
Payments based on non-current A/An/R/I, production required	533	71	3 093	1 983	4 829	2 468
Payments based on non-current A/An/R/I, production not required	2 080	13 721	47 690	47 027	52 505	43 538
With variable payment rates	181	4 318	4 001	2 882	6 619	2 504
with commodity exceptions	0	4 079	3 778	2 699	6 366	2 270
With fixed payment rates	1 899	9 403	43 689	44 146	45 886	41 034
with commodity exceptions	1 561	6 081	2 806	2 593	2 883	2 943
Payments based on non-commodity criteria	1 078	3 206	5 403	5 047	5 722	5 439
Based on long-term resource retirement	1 076	2 900	3 684	3 386	3 926	3 740
Based on a specific non-commodity output	2	237	1 592	1 536	1 658	1 583
Based on other non-commodity criteria	0	69	127	126	138	117
Miscellaneous payments	300	-166	577	548	729	453
Percentage PSE (%)	**35.44**	**28.35**	**15.20**	**17.22**	**15.86**	**12.91**
Producer NPC (coeff.)	**1.46**	**1.26**	**1.07**	**1.09**	**1.07**	**1.05**
Producer NAC (coeff.)	**1.55**	**1.40**	**1.18**	**1.21**	**1.19**	**1.15**
General Services Support Estimate (GSSE)	**25 594**	**36 575**	**47 947**	**48 333**	**48 358**	**47 149**
Agricultural knowledge and innovation system	4 872	8 018	15 029	14 165	16 109	14 813
Inspection and control	1 076	1 931	4 600	4 380	4 754	4 665
Development and maintenance of infrastructure	10 223	16 400	17 692	18 436	17 177	17 462
Marketing and promotion	2 156	5 572	7 939	8 846	7 556	7 416
Cost of public stockholding	5 872	2 282	553	535	531	593
Miscellaneous	1 395	2 371	2 134	1 971	2 231	2 200
Percentage GSSE (% of TSE)	**9.28**	**13.19**	**13.72**	**14.23**	**13.23**	**13.75**
Consumer Support Estimate (CSE)	**-155 058**	**-117 599**	**-35 831**	**-54 972**	**-42 555**	**-9 965**
Transfers to producers from consumers	-163 991	-121 895	-78 902	-83 863	-83 778	-69 065
Other transfers from consumers	-22 443	-19 819	-24 806	-26 152	-26 569	-21 696
Transfers to consumers from taxpayers	19 956	23 580	67 046	54 100	66 529	80 507
Excess feed cost	11 420	534	831	943	1 262	289
Percentage CSE (%)	**-28.83**	**-18.34**	**-2.99**	**-5.13**	**-3.55**	**-0.75**
Consumer NPC (coeff.)	**1.50**	**1.27**	**1.09**	**1.11**	**1.10**	**1.07**
Consumer NAC (coeff.)	**1.41**	**1.22**	**1.03**	**1.05**	**1.04**	**1.01**
Total Support Estimate (TSE)	**275 774**	**277 358**	**349 344**	**339 673**	**365 464**	**342 896**
Transfers from consumers	186 434	141 714	103 708	110 015	110 347	90 761
Transfers from taxpayers	111 782	155 463	270 442	255 810	281 686	273 830
Budget revenues	-22 443	-19 819	-24 806	-26 152	-26 569	-21 696
Percentage TSE (% of GDP)	**1.95**	**1.00**	**0.62**	**0.65**	**0.63**	**0.58**
Total Budgetary Support Estimate (TBSE)	**101 085**	**152 850**	**265 894**	**250 453**	**277 240**	**269 988**
Percentage TBSE (% of GDP)	**0.71**	**0.55**	**0.47**	**0.48**	**0.47**	**0.45**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
The OECD total for 1986-88 includes all 38 OECD member countries except Chile, Colombia, Costa Rica, Israel, Latvia, Lithuania and Slovenia, for which data are not available. The OECD total for 2000-02 includes all 38 OECD member countries except Latvia and Lithuania. TSE as a share of GDP for 1986-88 for the OECD is an estimate based on available data.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities: see notes to individual country tables.
Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Emerging economies

Agricultural policies in the 11 emerging economies[3] in this report generated positive transfers to their agricultural sectors, averaging USD 497 billion (EUR 443 billion) per year in 2020-22, of which USD 391 billion (EUR 349 billion) went to individual producers. At the same time, policies in a few countries such as Argentina, India, and Viet Nam, suppressed domestic prices for certain products, generating an implicit tax in the form of negative MPS, averaging USD 179 billion (EUR 160 billion) per year in the same period.

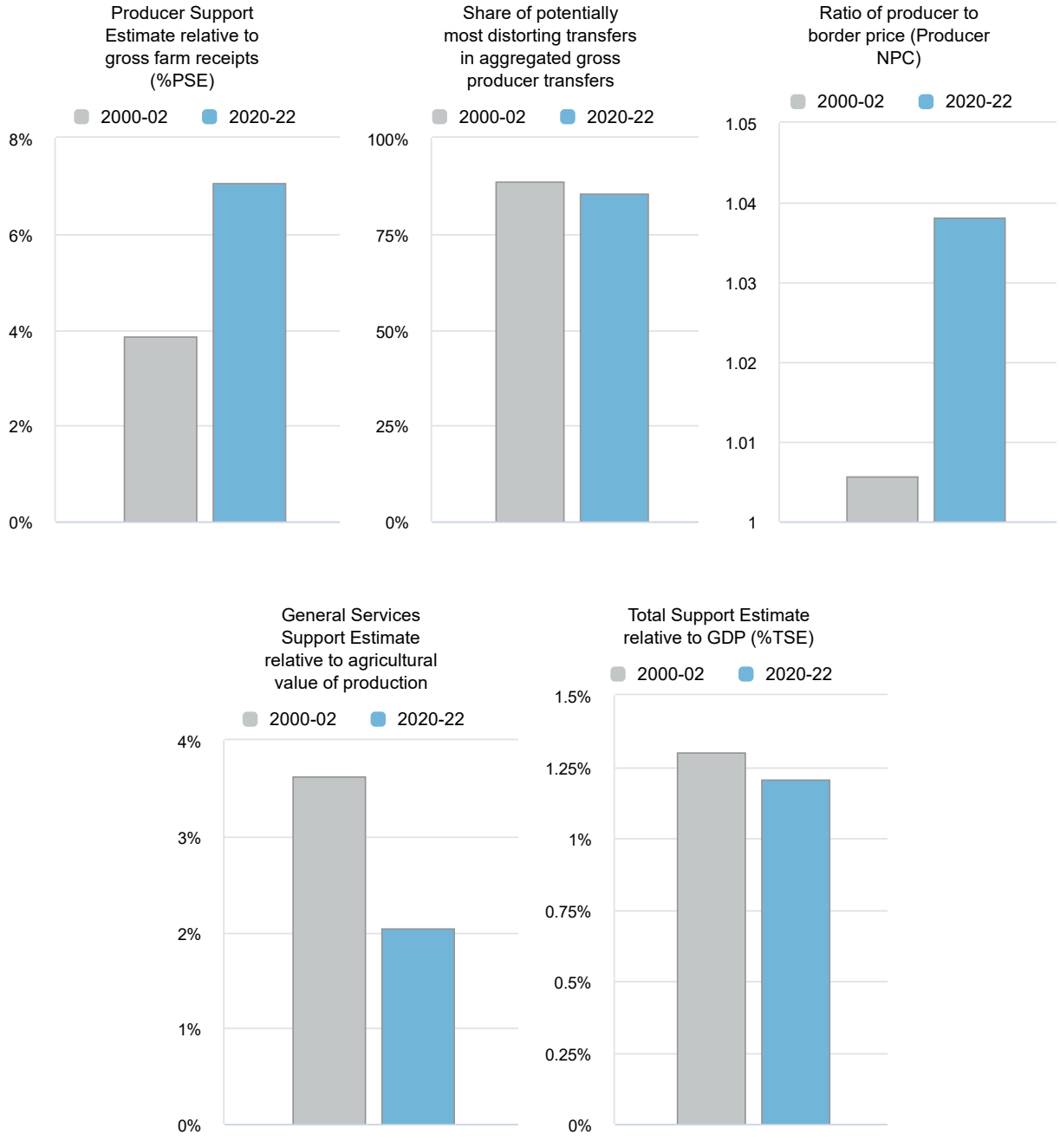
Net support for the sector (TSE) amounted to 319 billion (EUR 283 billion) per year during 2020-22 (Table 3.2). Within this, the net producer support (PSE) averaged USD 213 billion (EUR 189 billion), or 7.1% of gross farm receipts (13% of positive support, -5.9% of negative MPS), up from 3.9% in 2000-02. These averages mask significant variations among the 11 economies included in this group, details on which are presented in Chapter 2 of this report.

The share of potentially most-distorting transfers (including positive and negative MPS, output-based payments and payments for unconstrained variable input use) in gross producer support still averaged 85% in 2020-22, slightly down from 89% in 2000-02. Maize, sugar, and rapeseed were the most supported commodities in emerging economies, with transfers amounting to 19-28% of commodity gross farm receipts, while oats and milk were the most taxed in 2020-22 (Figure 3.4). Almost all these transfers to specific commodities operate through MPS, and are a result of domestic or trade policies such as minimum support prices or import tariffs (in the case of positive transfers) or export taxes and other restrictions (in the case of negative transfers).

Among the remaining forms of producer support, the most prominent are payments based on other input use (mainly fixed capital formation), payments to areas planted and animal numbers, and payments based on historical entitlements. Payments based on areas and animal numbers were almost non-existent across emerging economies in 2000-02 but reached more than 16% of aggregate net support to producers in 2020-22. Similarly, payments based on historical entitlements account for more than 11% of net producer support. In contrast, the relative size of support for investments,[4] often related to irrigation, declined over time to represent just over 9% of PSE. All other forms of support to producers remain small (Table 3.2).

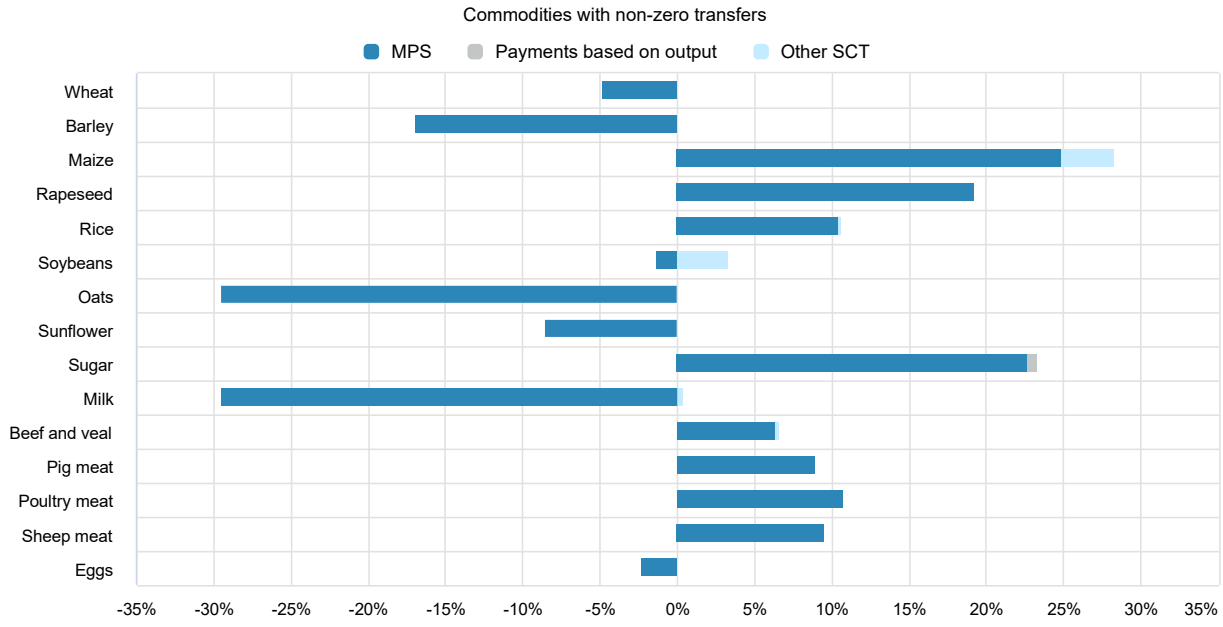
Expenditure on GSSE in emerging economies reached an annual average of USD 59 billion (EUR 52 billion) in 2020-22. Most of this went to infrastructure projects (USD 31 billion), often related to irrigation, and public stockholding (USD 13 billion). The remaining expenditure mainly went to agricultural knowledge and innovation (USD 9 billion) (Table 3.2). Relative to the value of agricultural production, expenditures for general services declined and remain lower than the OECD average. Aggregate total support to agriculture as a share of GDP decreased slightly to 1.2% in 2020-22, and is mainly driven by producer support, which represents 67% of total support.

Figure 3.3. Emerging Economies: Development of support to agriculture



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 3.4. Emerging Economies: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 3.2. Emerging Economies: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**522 032**	**2 875 036**	**2 589 973**	**2 935 662**	**3 099 475**
***of which:** share of MPS commodities (%)*	75.01	81.11	76.79	83.25	83.28
Total value of consumption (at farm gate)	**520 727**	**2 850 025**	**2 554 904**	**2 929 572**	**3 065 599**
Producer Support Estimate (PSE)	**20 929**	**212 741**	**234 515**	**216 945**	**186 764**
Support based on commodity output	1 665	75 516	108 457	74 407	43 683
Market Price Support[1]	1 249	71 405	103 796	70 423	39 996
Positive Market Price Support	24 762	250 024	223 027	266 867	260 179
Negative Market Price Support	-23 513	-178 620	-119 231	-196 444	-220 184
Payments based on output	416	4 111	4 661	3 984	3 687
Payments based on input use	17 321	76 779	66 252	80 372	83 714
Based on variable input use	11 479	54 874	46 717	56 519	61 385
with input constraints	0	1 251	730	950	2 073
Based on fixed capital formation	4 466	19 380	17 298	20 937	19 905
with input constraints	1	1 071	661	1 090	1 463
Based on on-farm services	1 377	2 525	2 236	2 916	2 423
with input constraints	0	0	0	0	0
Payments based on current A/An/R/I, production required	813	34 169	32 611	35 200	34 696
Based on Receipts / Income	813	1 704	1 960	1 613	1 538
Based on Area planted / Animal numbers	0	32 465	30 651	33 587	33 158
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	370	23 733	24 127	24 430	22 640
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	370	23 733	24 127	24 430	22 640
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	458	1 300	1 550	1 189	1 162
Based on long-term resource retirement	458	1 300	1 550	1 189	1 162
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	302	1 245	1 519	1 347	869
Percentage PSE (%)	**3.86**	**7.05**	**8.62**	**7.04**	**5.75**
Producer NPC (coeff.)	**1.01**	**1.04**	**1.05**	**1.04**	**1.02**
Producer NAC (coeff.)	**1.04**	**1.08**	**1.09**	**1.08**	**1.06**
General Services Support Estimate (GSSE)	**18 949**	**58 529**	**60 766**	**57 251**	**57 570**
Agricultural knowledge and innovation system	2 978	9 199	10 264	8 744	8 590
Inspection and control	784	3 876	4 381	3 550	3 697
Development and maintenance of infrastructure	6 955	31 214	29 747	31 909	31 988
Marketing and promotion	28	684	699	645	707
Cost of public stockholding	8 102	13 386	15 575	12 233	12 350
Miscellaneous	103	170	102	169	238
Percentage GSSE (% of TSE)	**42.48**	**18.36**	**16.33**	**18.56**	**20.89**
Consumer Support Estimate (CSE)	**-1 228**	**-114 068**	**-110 183**	**-143 297**	**-88 723**
Transfers to producers from consumers	-4 177	-130 790	-142 606	-143 442	-106 322
Other transfers from consumers	-2 855	-54 459	-62 341	-64 893	-36 144
Transfers to consumers from taxpayers	4 735	47 494	76 918	34 265	31 298
Excess feed cost	1 069	23 688	17 846	30 772	22 446
Percentage CSE (%)	**-0.24**	**-4.07**	**-4.45**	**-4.95**	**-2.92**
Consumer NPC (coeff.)	**1.01**	**1.07**	**1.09**	**1.08**	**1.05**
Consumer NAC (coeff.)	**1.00**	**1.04**	**1.05**	**1.05**	**1.03**
Total Support Estimate (TSE)	**44 613**	**318 764**	**372 199**	**308 461**	**275 632**
Transfers from consumers	7 033	185 249	204 947	208 335	142 466
Transfers from taxpayers	40 436	187 974	229 593	165 020	169 310
Budget revenues	-2 855	-54 459	-62 341	-64 893	-36 144
Percentage TSE (% of GDP)	**1.30**	**1.20**	**1.62**	**1.12**	**0.95**
Total Budgetary Support Estimate (TBSE)	**43 364**	**247 359**	**268 403**	**238 038**	**235 637**
Percentage TBSE (% of GDP)	**1.26**	**0.93**	**1.16**	**0.86**	**0.82**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
The Emerging Economies include Argentina, Brazil, China, India, Indonesia, Kazakhstan, the Philippines, Russian Federation, South Africa, Ukraine and Viet Nam.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities: see notes to individual country tables.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

All countries

Agricultural policies across all 54 countries in this report generated positive transfers to the agricultural sector, averaging USD 851 billion (EUR 758 billion) per year in 2020-22, of which USD 630 billion (EUR 561 billion) went to individual producers. Considering implicit taxation of producers in some emerging economies – which created transfers *away from* producers (negative MPS) worth USD 179 billion (EUR 160 billion) per year over the same period – net support for the sector (TSE, Table 3.3) amounted to USD 672 billion (EUR 598 billion) per year during 2020-22. Around 71% or USD 452 billion (EUR 401 billion) of this was provided as net support to producers individually (PSE).

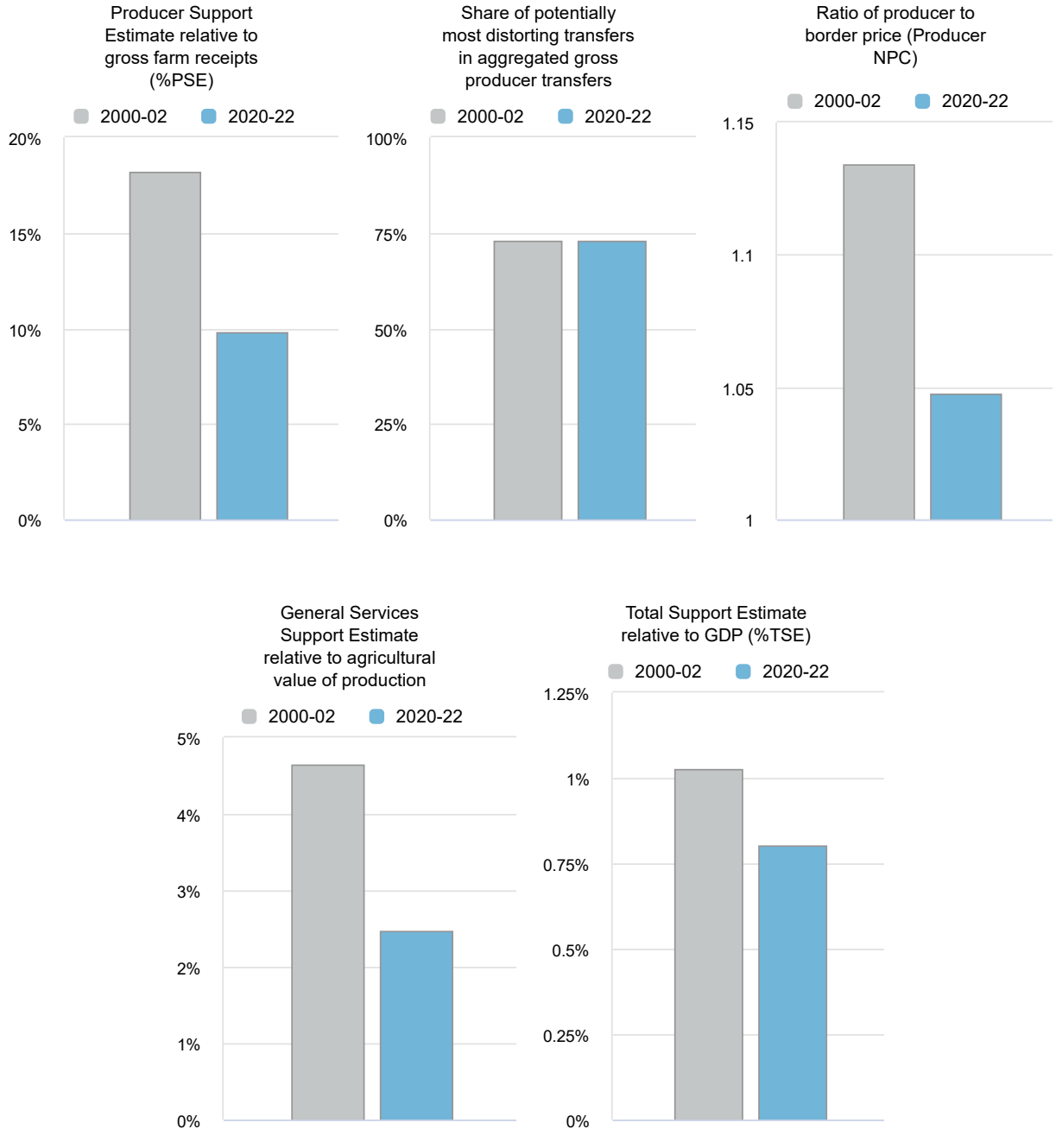
Aggregate support to producers in all 54 countries represented 9.8% of gross farm receipts on average in 2020-22. This is a significant reduction from 18.2% in 2000-02 (Table 3.3) and is composed of 13.7% of gross farm receipts in positive support, and -3.9% of negative MPS. These averages mask significant variations among the economies covered by this report, details on which are presented in Chapter 2 of this report.

Changes to the structure of aggregate support were relatively moderate between 2000-02 and 2020-22 in all countries. The share of potentially most-distorting transfers (MPS, payments based on output or unconstrained use of variable inputs) declined slightly, but these policies continue to represent around 73% of gross producer transfers (positive or negative) in absolute terms across all countries. Transfers based on output became less prominent while those based on unconstrained input use increased. Sugar is the most strongly supported commodity, followed by maize and rice. Several livestock products, particularly poultry meat, pig meat, sheep meat, and beef, also receive substantial transfers (Figure 3.6).

Among the remaining forms of support to producers, the most significant are payments based on area planted and animal numbers (20% of all producer support), and those based on historical parameters not requiring production. The latter, which are decoupled from current production, increased significantly to represent 16% of all producer support (Table 3.3).

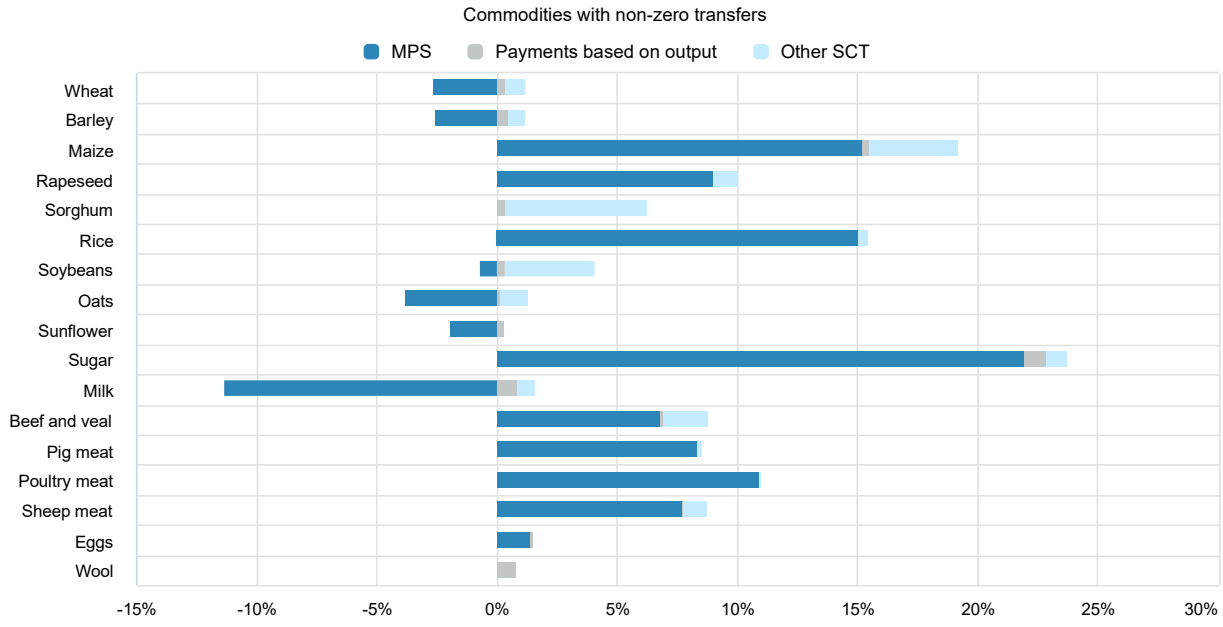
Aggregate expenditures for general services to the sector (GSSE) reached an annual average of USD 106 billion (EUR 95 billion) in 2020-22, almost twice that spent in nominal terms by the 54 countries in 2000-02. Most went to infrastructure projects (USD 49 billion), agricultural knowledge and innovation (USD 24 billion), and public stockholding (USD 14 billion) (Table 3.3). Despite the growth, expenditures for general services declined in relative terms as the value of agricultural production more than tripled in nominal terms since 2000-02. Total support to agriculture as a share of Gross Domestic Product (GDP) declined over time, driven by the shrinking relative size of the sector within economies.

Figure 3.5. All countries: Development of support to agriculture



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 3.6. All countries: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 3.3. All countries: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**1 195 537**	**4 295 259**	**3 843 793**	**4 385 751**	**4 656 235**
***of which:** share of MPS commodities (%)*	72.31	78.99	75.44	80.43	81.09
Total value of consumption (at farm gate)	**1 185 671**	**4 164 684**	**3 730 377**	**4 246 657**	**4 517 018**
Producer Support Estimate (PSE)	**238 131**	**451 706**	**476 609**	**472 516**	**405 992**
Support based on commodity output	141 132	165 585	209 469	167 550	119 736
Market Price Support[1]	125 757	154 768	193 566	158 299	112 438
Positive Market Price Support	149 871	333 443	312 843	354 824	332 662
Negative Market Price Support	-24 114	-178 675	-119 277	-196 525	-220 224
Payments based on output	15 374	10 818	15 903	9 252	7 299
Payments based on input use	36 843	111 700	102 792	113 468	118 839
Based on variable input use	19 491	69 101	62 655	69 025	75 623
with input constraints	342	2 242	1 631	1 717	3 377
Based on fixed capital formation	9 545	30 508	28 888	31 793	30 841
with input constraints	630	3 336	2 982	3 353	3 673
Based on on-farm services	7 808	12 091	11 249	12 650	12 375
with input constraints	967	1 903	1 765	1 907	2 039
Payments based on current A/An/R/I, production required	42 194	88 972	80 279	98 001	88 636
Based on Receipts / Income	3 986	7 612	7 103	8 129	7 604
Based on Area planted / Animal numbers	38 209	81 360	73 176	89 872	81 032
with input constraints	16 898	42 618	37 580	49 291	40 985
Payments based on non-current A/An/R/I, production required	71	3 093	1 983	4 829	2 468
Payments based on non-current A/An/R/I, production not required	14 091	73 780	73 377	79 619	68 343
With variable payment rates	4 318	4 001	2 882	6 619	2 504
with commodity exceptions	4 079	3 778	2 699	6 366	2 270
With fixed payment rates	9 773	69 778	70 496	73 000	65 839
with commodity exceptions	6 081	2 806	2 593	2 883	2 943
Payments based on non-commodity criteria	3 664	6 739	6 628	6 954	6 636
Based on long-term resource retirement	3 358	4 984	4 935	5 115	4 902
Based on a specific non-commodity output	237	1 625	1 565	1 697	1 614
Based on other non-commodity criteria	69	130	128	142	120
Miscellaneous payments	136	1 836	2 080	2 095	1 333
Percentage PSE (%)	**18.21**	**9.84**	**11.55**	**10.05**	**8.20**
Producer NPC (coeff.)	**1.13**	**1.05**	**1.06**	**1.05**	**1.03**
Producer NAC (coeff.)	**1.22**	**1.11**	**1.13**	**1.11**	**1.09**
General Services Support Estimate (GSSE)	**55 525**	**106 059**	**107 906**	**105 616**	**104 655**
Agricultural knowledge and innovation system	10 996	24 300	24 461	24 959	23 479
Inspection and control	2 715	8 486	8 774	8 315	8 368
Development and maintenance of infrastructure	23 355	48 992	48 268	49 184	49 524
Marketing and promotion	5 600	8 038	8 220	7 995	7 901
Cost of public stockholding	10 384	13 939	16 110	12 764	12 944
Miscellaneous	2 475	2 304	2 073	2 400	2 438
Percentage GSSE (% of TSE)	**17.25**	**15.78**	**15.08**	**15.56**	**16.81**
Consumer Support Estimate (CSE)	**-118 827**	**-149 922**	**-165 648**	**-185 704**	**-98 414**
Transfers to producers from consumers	-126 073	-209 716	-226 973	-227 068	-175 107
Other transfers from consumers	-22 674	-79 279	-88 498	-91 481	-57 858
Transfers to consumers from taxpayers	28 315	114 554	131 034	100 810	111 817
Excess feed cost	1 604	24 519	18 789	32 035	22 734
Percentage CSE (%)	**-10.27**	**-3.70**	**-4.60**	**-4.48**	**-2.23**
Consumer NPC (coeff.)	**1.14**	**1.07**	**1.09**	**1.08**	**1.05**
Consumer NAC (coeff.)	**1.11**	**1.04**	**1.05**	**1.05**	**1.02**
Total Support Estimate (TSE)	**321 972**	**672 318**	**715 548**	**678 943**	**622 464**
Transfers from consumers	148 747	288 995	315 470	318 549	232 965
Transfers from taxpayers	195 899	462 602	488 576	451 875	447 357
Budget revenues	-22 674	-79 279	-88 498	-91 481	-57 858
Percentage TSE (% of GDP)	**1.03**	**0.80**	**0.94**	**0.79**	**0.70**
Total Budgetary Support Estimate (TBSE)	**196 214**	**517 551**	**521 982**	**520 644**	**510 026**
Percentage TBSE (% of GDP)	**0.63**	**0.62**	**0.69**	**0.60**	**0.58**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
The All countries total includes all OECD countries, non-OECD EU Member States, and the Emerging Economies: Argentina, Brazil, China, India, Indonesia, Kazakhstan, the Philippines, Russian Federation, South Africa, Ukraine and Viet Nam. The All countries total for 2000-02 includes data for all countries except Latvia and Lithuania, for which data are not available.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities: see notes to individual country tables.
Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Notes

[1] The OECD total does not include non-OECD EU Member States.

[2] Payments based on non-current Area, Animal numbers, Revenues or Income, whether production is required or not (Table 3.1).

[3] Argentina, Brazil, the People's Republic of China (hereafter "China"), India, Indonesia, Kazakhstan, the Philippines, the Russian Federation, South Africa, Ukraine, and Viet Nam.

[4] Payments based on fixed capital formation (Table 3.2).

4 Argentina

Support to agriculture

Argentina's overall support to the agricultural sector has been negative since the beginning of the 2000s due to export taxes that depress domestic prices received by producers. However, some budgetary payments are provided to producers based on input use, mainly in the form of credit at preferential rates.

Fluctuations in support are driven by changes in export tax rates and macroeconomic conditions such as the steep depreciation of the Argentine peso since 2018 and high inflation. Support to producers (Producer Support Estimate, PSE) averaged -14.6% of gross farm receipts in 2020-22, compared to -11.8% two decades earlier, but has been as negative as -51.1% in 2008. Negative market price support has been the main component of producer support, such that 98.8% of policy transfers were considered most-distorting in 2020-22. The ratio of producer to border price (National Protection Coefficient, NPC) reached 0.86 in 2020-22, making producers' prices on average 14% below world market prices.

Soybeans are the main export commodity and face the highest export tax rate. As a consequence, Single Commodity Transfers (SCT) are most negative for this product, representing 39.5% of commodity gross farm receipts. Price support and SCTs are only positive for pig meat and eggs. Mirroring the negative PSE, consumers enjoyed a positive Consumer Support Estimate (CSE) of 18.5% of expenditure at farm-gate prices in 2020-22.

Starting from a level well below that of most other emerging economies covered in this report, support to general services (General Service Support Estimate, GSSE) decreased relative to the value of agricultural production, falling from 0.6% in 2000-02 to 0.5% in 2020-22. Expenditure on the agricultural innovation system and extension services represents the biggest component but has been decreasing relative to the size of the total GSSE budget, falling from 57% in 2000-02 to 50% in 2020-22. Agricultural production and exports grew dynamically in the last two decades due to an innovative private sector, despite negative price support and a relatively lower increase of support by public services, particularly for knowledge, research and extension, and sanitary inspection, in terms of share of government spending.

In 2020-22, 61% of total budgetary support targets GSSE rather than individual producers. Total budgetary support to farmers and the sector overall was 0.1% of Gross Domestic Product (GDP) in 2020-22, well below the absolute value of negative market price support, making the Total Support Estimate (TSE) negative throughout the period: -1.0% of GDP in 2000-02 and -1.6% in 2020-22.

Recent policy changes

During 2022, Argentina set standards for bovine meat marketing, launched the Plan GanAr to develop livestock, and created the Economic Compensation Programme for Small and Medium Sheep Wool Producers. An organic sector strategic plan was implemented, comprising a new law to promote organic production and the creation of a voluntary label for products in the conversion process. Programmes such as "En nuestras manos" ("In our hands") continued to promote sustainable agri-food systems for family farming and to reduce gender gaps in rural areas.

SENASA, the main agency in charge of plant and animal health and food safety, issued a national sanitary alert due to African Swine Fever outbreaks and implemented measures to mitigate its spread. Efforts were made to improve infrastructure, with execution agreements signed with several provinces to improve rural roads, electrify remote areas, and develop agriculture within the framework of the Regional Plan for Irrigation Reservoirs.

The government engaged into actions to support the bioeconomy. It introduced the BIODESARROLLAR and CoopAR programmes to stimulate innovation and competitiveness in regional agro-industrial value chains. Commercial authorisation was granted for a vaccine against Bovine Leukosis and four genetically modified organisms for plants were approved. Argentina agreed with Brazil to link their respective regulatory bodies responsible for biosafety regulations of biotechnological products, with the aim of reducing delays in bilateral trade of biotechnological products.

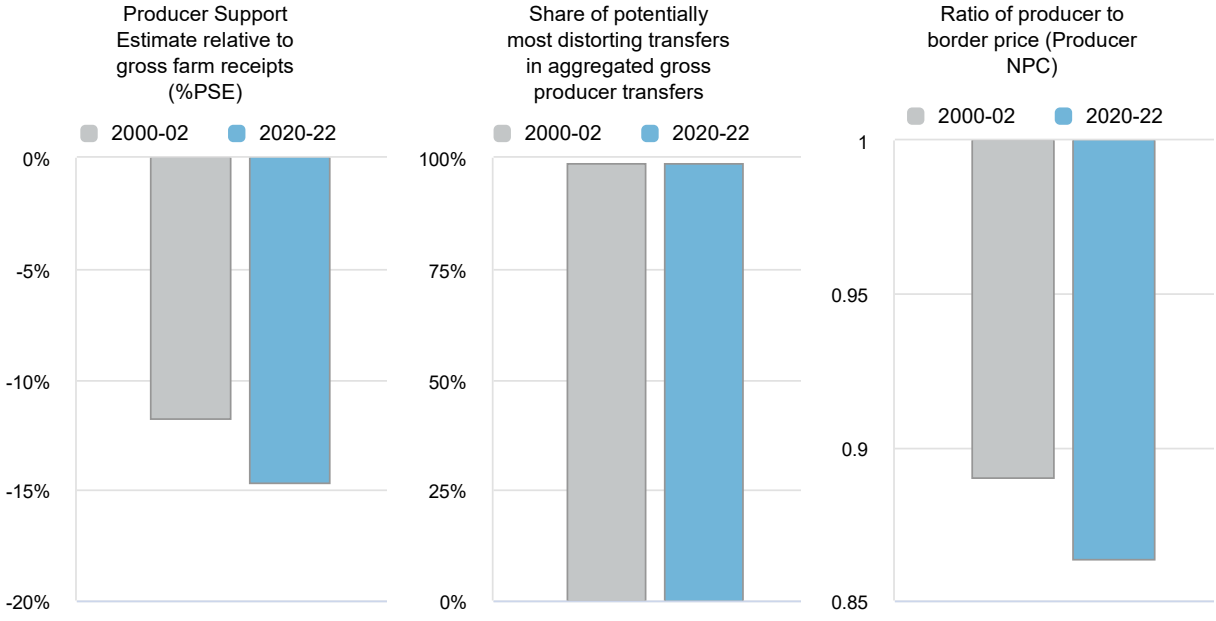
Exchange rate controls in place since 2019 have led to a widening gap between official and market exchange rates, affecting the price received by farmers. In response, the government launched the Export Increase Programme, in which soybean producers are paid at a higher exchange rate than the official one. This intends to make exports more attractive, to promote soybean sales and strengthen international currency reserves. Export taxes were reduced for organic products.

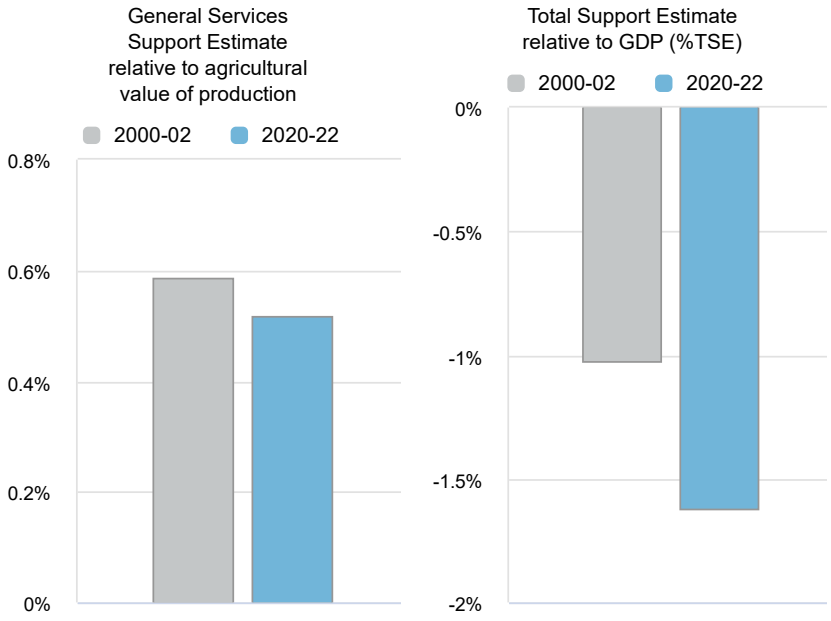
Assessment and recommendations

- Argentina should strengthen its efforts to develop and disseminate climate information to enhance climate-change adaptation in the agricultural sector. The Inter-institutional Protocol for Information Management should be strengthened and expanded to include comprehensive climate information and research findings related to agriculture. Leveraging research projects such as those implemented by the National Institute for Agricultural Technology (INTA) can contribute to the adoption of mitigation practices and improve adaptation policies.
- Building on the Rural Change Programme and the Territorial Agroecological Nodes Project, further investment should be made to provide technical assistance, training, and capacity building for farmers to become more resilient and improve their sustainability performance. The government should encourage farmers to adopt climate-smart practices, crop diversification, and sustainable land-management techniques through targeted support programmes and financial incentives.
- More investment in irrigation infrastructure and improved water-management systems is needed to deal with persistent drought. The government should extend the Regional Plan for Irrigation Reservoirs to cover water-deficit regions. Promoting the adoption of drought-tolerant crops and sustainable farming practices can also enhance resilience in the face of changing climate patterns.
- Given agriculture's high share (28%) of greenhouse gas (GHG) emissions, and Argentina's commitment to reduce national emissions in 2030 and achieve net zero in 2050, the government would benefit from introducing mitigation targets for the agricultural sector and proposing measures to achieve those targets.
- To help small and medium-sized producers, the government should expand financial assistance programmes and provide easy access to credit with preferential interest rates. Investing in training programmes, knowledge-sharing platforms, and the development of regional agro-industrial value chains can boost the competitiveness and resilience of these producers.
- The government should provide technical assistance and training to improve livestock production, enhance value-added at origin, and modernise the beef marketing system. Emphasising environmental sustainability within the Argentine cattle system through better land-management practices can also contribute to long-term success.

- Unpredictable export restrictions and uncertainty with respect to exchange rates and inflation disincentivise long-term investment and reduce food security. A more balanced and transparent approach to export taxes should be adopted, accounting for the economic viability of producers and the competitiveness of the agricultural sector, as part of an economy-wide tax-system review considering alternative sources of fiscal revenue.
- Agricultural policy could be better anchored in a broad, long-term policy framework, moving towards more neutral, stable, predictable, and targeted policies. The execution of policy must be delivered in a timely manner, avoiding legislative and implementation delays, for farmers to plan their economic activities more efficiently.
- To deliver research, extension, and other public goods for agricultural innovation, Argentina should develop systematic monitoring of efforts and results in R&D and innovation and define and implement strategic priorities. Innovation policy should emphasise public goods such as those related to sustainability and improving value chains, or for regional economies.

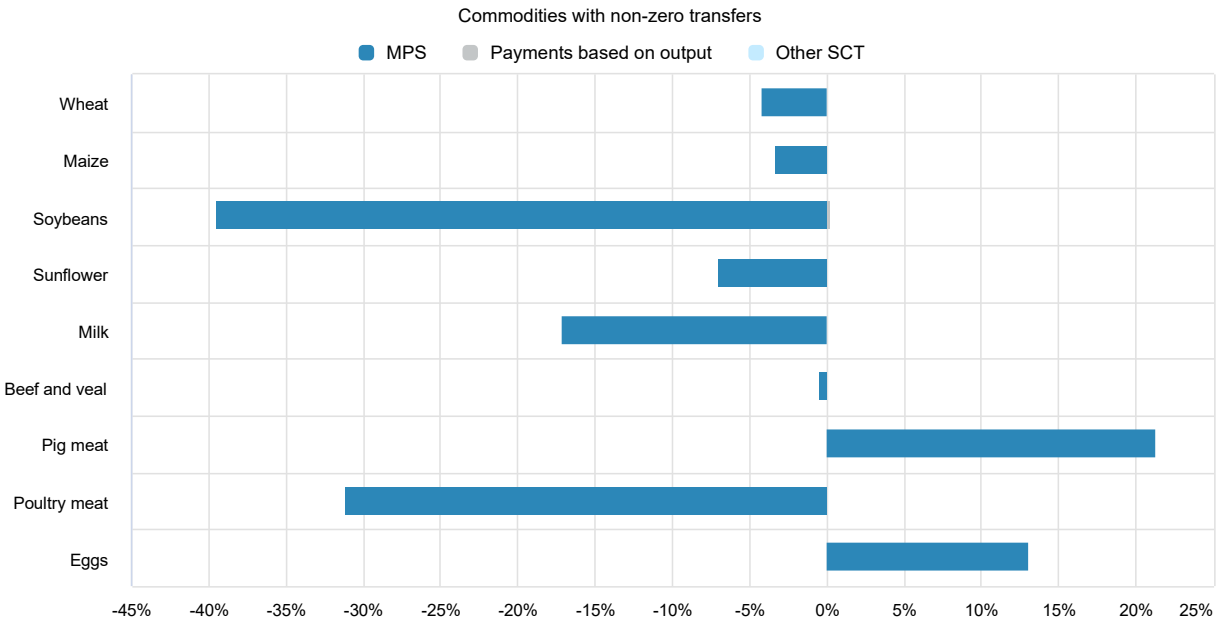
Figure 4.1. Argentina: Development of support to agriculture





Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 4.2. Argentina: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Table 4.1. Argentina: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**16 296**	**57 559**	**45 922**	**55 065**	**71 689**
***of which:** share of MPS commodities (%)*	82.55	86.14	85.68	86.48	86.27
Total value of consumption (at farm gate)	**7 417**	**39 932**	**33 283**	**37 870**	**48 643**
Producer Support Estimate (PSE)	**-971**	**-8 439**	**-4 989**	**-10 863**	**-9 463**
Support based on commodity output	-1 005	-8 558	-5 076	-10 978	-9 621
Market Price Support[1]	-1 067	-8 642	-5 239	-11 002	-9 684
Positive Market Price Support	156	329	205	426	355
Negative Market Price Support	-1 223	-8 971	-5 444	-11 428	-10 040
Payments based on output	62	83	163	24	64
Payments based on input use	34	117	85	111	155
Based on variable input use	2	9	6	11	11
with input constraints	0	0	0	0	0
Based on fixed capital formation	23	85	59	79	116
with input constraints	0	0	0	0	0
Based on on-farm services	8	23	20	21	28
with input constraints	0	0	0	0	0
Payments based on current A/An/R/I, production required	0	3	2	3	2
Based on Receipts / Income	0	0	0	0	0
Based on Area planted / Animal numbers	0	3	2	3	2
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	0	0	0	0
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0
Percentage PSE (%)	**-11.79**	**-14.64**	**-10.81**	**-19.68**	**-13.16**
Producer NPC (coeff.)	**0.89**	**0.86**	**0.90**	**0.82**	**0.88**
Producer NAC (coeff.)	**0.89**	**0.87**	**0.90**	**0.84**	**0.88**
General Services Support Estimate (GSSE)	**116**	**300**	**264**	**266**	**371**
Agricultural knowledge and innovation system	66	150	150	120	179
Inspection and control	33	115	80	113	151
Development and maintenance of infrastructure	17	31	31	31	31
Marketing and promotion	0	5	3	1	10
Cost of public stockholding	0	0	0	0	0
Miscellaneous	0	0	0	0	0
Percentage GSSE (% of TSE)	..	..	..	..	..
Consumer Support Estimate (CSE)	**455**	**7 200**	**4 191**	**8 334**	**9 076**
Transfers to producers from consumers	482	7 573	4 318	9 125	9 276
Other transfers from consumers	-6	160	110	14	356
Transfers to consumers from taxpayers	0	0	0	0	0
Excess feed cost	-21	-533	-238	-805	-556
Percentage CSE (%)	**13.44**	**18.48**	**12.59**	**22.01**	**18.66**
Consumer NPC (coeff.)	**0.87**	**0.83**	**0.88**	**0.81**	**0.83**
Consumer NAC (coeff.)	**0.88**	**0.84**	**0.89**	**0.82**	**0.84**
Total Support Estimate (TSE)	**-855**	**-8 139**	**-4 726**	**-10 598**	**-9 093**
Transfers from consumers	-476	-7 733	-4 429	-9 139	-9 632
Transfers from taxpayers	-373	-565	-407	-1 473	184
Budget revenues	-6	160	110	14	356
Percentage TSE (% of GDP)	**-1.02**	**-1.62**	**-1.21**	**-2.16**	**-1.45**
Total Budgetary Support Estimate (TBSE)	**212**	**503**	**513**	**404**	**592**
Percentage TBSE (% of GDP)	**0.10**	**0.10**	**0.13**	**0.08**	**0.09**
GDP deflator (2000-02=100)	**100**	**10 684**	**6 208**	**9 570**	**16 273**
Exchange rate (national currency per USD)	**1.70**	**98.79**	**70.64**	**95.08**	**130.66**

.. Not available

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Argentina are: wheat, maize, soybean, sunflower, fruit and vegetables, milk, beef and veal, pig meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

Argentina has a history of macroeconomic instability and policy volatility, switching from open markets to import substitution in a way that has led to overall poor long-term economic performance (OECD, 2019[1]). The main exception has been the agricultural sector which, despite policy impediments, has innovated and grown. Driven by higher international agricultural prices, Argentinian agriculture – in particular, in the extended Pampas region – has experienced a major structural transformation. This has been reflected in changing land use, the emergence of soybean as a major commodity, and diversified and growing export markets, especially toward Asia. However, outside of the Pampas, other crops like tobacco, cotton and fruits and vegetables have been less successful.

Argentina liberalised trade in the late 1970s and explored ways to increase trade with its neighbours and other economies from the second half of the 1980s. In the 1990s, the Argentine economy became more integrated in international trade, including the liberalisation of the agri-food sector, through the creation of MERCOSUR in 1991 and the 1994 WTO Agreement. However, after the financial crisis in 2001, Argentina reverted to increasing tariffs, establishing price controls for food products, and re-introducing export taxes on agricultural products such as soybeans to raise revenue and reduce basic food prices. Further export restrictions in the form of quotas for wheat, maize, milk, and beef were imposed in 2008. Between 2007 and 2011, a consumer price subsidy was implemented. The National Office of Agricultural Commercial Control (ONCCA) agency provided payments to processors purchasing wheat, maize, soybeans, and sunflower products from the local market.

In December 2015, the government began to gradually re-open markets again: it reduced export taxes on soybeans and soybean oil, eliminated export taxes on all other agricultural products, removed all export quotas, and free-floated the exchange rate of the Argentine peso to other currencies. But following the 2018-19 depreciation of the local currency and the subsequent economic recession, export taxes were re-established not only for agri-food products but for all goods by the government that had reduced or eliminated them. By early 2020, agricultural-specific export taxes were re-instated for most products in early 2020. Simultaneously, the exchange-rate controls introduced in the beginning of 2020 resulted in a widening gap between the official exchange rate and other market exchange rates.

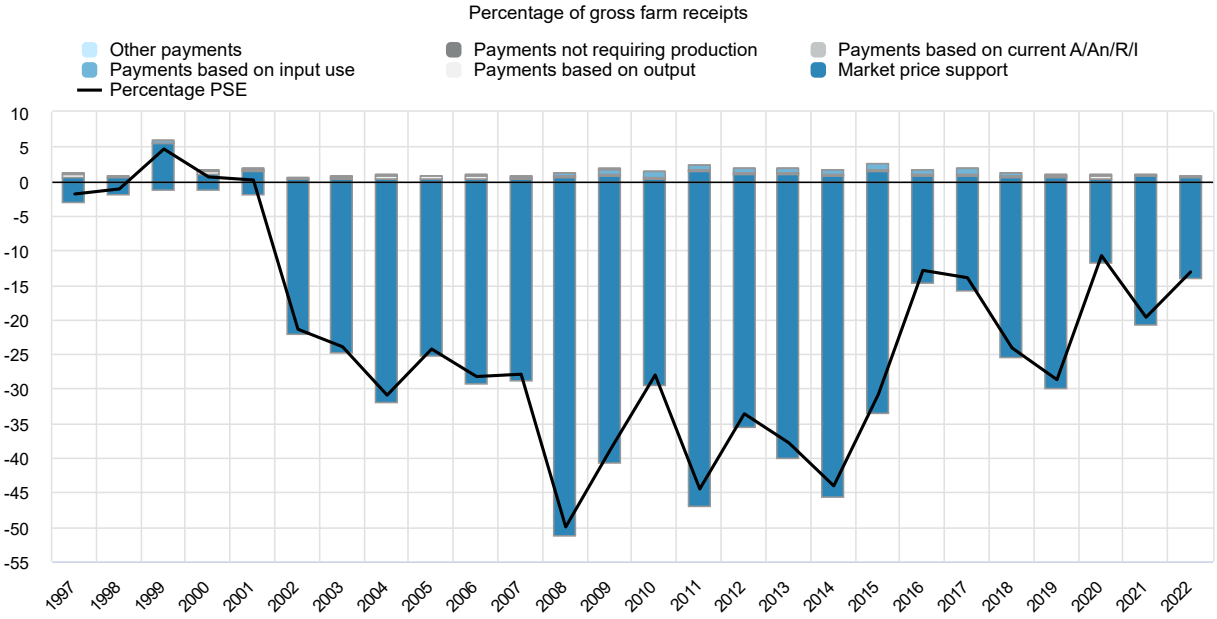
Table 4.2. Argentina: Agricultural policy trends

Period	Framework	Changes in agricultural policies
Prior to 1990	Alternate free trade and import substitution policies	Price interventions on main agricultural products, mandatory public stockholding, export taxes on agricultural trade, tariffs on imports of agricultural inputs such as fertiliser, low levels of investment in private agricultural R&D and infrastructure in general Several attempts to liberalise trade Creation of agricultural R&D and extension services institute INTA (1956); private institutions such as AACREA (1960) and AAPRESID (1989) created to provide services to farmers
1991-2001	Shifts to open the economy	Dismantling stockholding and price-setting public institutions, reduction of import and export tariffs, free trade agreements (Mercosur and WTO) Price stabilisation, reduction of barriers to trade, privatisation and deregulation of markets Dissolution of National Commercial Boards (1991) Creation of animal and plant health and food safety SENASA (1996) Creation of the seed regulatory institution INASE (1991)
2002-2015	Return to a closed economy	Implementation of export taxes, import restrictions, value chains subject to regulations as export quotas and price controls at the retail level The National Office of Agricultural Commercial Control (ONCCA) dismantled (2011)

Period	Framework	Changes in agricultural policies
2016-2017	Gradual shifts to open the economy	Elimination of export taxes for all agricultural commodities, except reduced taxes on soybean exports Elimination and reforms to the Register of Export Operations ROEs (2015) Federal Agricultural Council (CFA) reformed (2017)
2018-present	Reintroduction of export taxes	Export taxes established for all exports including agriculture in response to the economic crisis of 2018 Reintroduction of specific taxes on agricultural products and exchange rate controls since 2019

Prior to the economic crisis of 2001, producer support fluctuated around zero. With the reintroduction of export taxes and other trade restrictions after the 2001-02 financial crisis, the PSE turned negative due to substantial negative market price support and absence of any significant budgetary support to farmers. Negative producer support peaked with price spikes in world markets in 2008, reaching -51.6% of gross farm receipts. Lower export taxes in 2015 reduced negative support. Budgetary support to farmers remained limited and mainly in the form of subsidies for tobacco. Around 60% of total expenditures on agriculture in the last ten years financed general services to the sector. From 2007 to 2010, Argentina provided subsidies to food processors (primary consumers), to compensate for high prices of agricultural products.

Figure 4.3. Argentina: Level and PSE composition by support categories, 1997 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

Unlike most countries covered by this report, producers of main agricultural products are taxed through negative price support. Export taxes are by far the most important market intervention and the major source

of policy-driven transfers from producers to the government. The Ministry of Finance designs and implements these export taxes and adjusts their rates by decree. Export taxes for soybeans, soybean products (meal and oil), maize, wheat, other cereals, sunflower grain and oil, maize and wheat flour, several milk products, and beef raised 8.3% of total tax revenues for the national budget in 2022. Additionally, the Ministry of Agriculture, Livestock and Fisheries implements the so-called “equilibrium volumes of exports” (VEE) to meet the demand of the Argentine market for maize, wheat, and beef. All these measures continue to substantially depress domestic prices below international reference prices.

A relatively small amount of input subsidies are provided, mostly in the form of implicit interest rate subsidies through preferential credits that finance investment and working capital in the production of a range of commodities. For example, the fund FONDAGRO, which was established in 2017, finances investment in the sector at preferential interest rates for specific groups with a limited scope. The Ministry of Productive Development provides credit financing for capital investments by micro, small, and medium-sized enterprises in the poultry and pig sectors.

Very small direct payments are provided occasionally as disaster assistance in response to extreme weather events, mainly drought. There are no national direct payments for agri-environmental services, and few at provincial level.

The Special Tobacco Fund (FET) was created in 1972 to provide additional revenue and support to tobacco producers in certain northern provinces. The fund is financed by a 7% tax on tobacco retail prices and managed by the Ministry of Agriculture, Livestock, and Fisheries. The federal government transfers 80% of collected funds to tobacco-producing provinces based on their share of production. After signing the WTO agreement in 1994, Argentina committed to reducing this support, and FET payments to tobacco producers were reduced to USD 75 million. The remaining funds are used for technical assistance, investing in local infrastructure, and providing social and health assistance.

Public expenditures in agriculture are mainly for general services to the sector such as the agricultural knowledge and innovation system and inspection control services. INTA is the federal agency responsible for research and promoting technological innovation in agriculture, livestock, and agri-food. The institute conducts scientific and technological research, provides technical assistance and training to farmers and other stakeholders in the agricultural sector, and develops and disseminates knowledge and technologies related to agricultural production, agro-industrial processes, and rural development. INTA also collaborates with national and international organisations, universities, and private companies to promote innovation and competitiveness in the agricultural sector.

SENASA is responsible for ensuring the safety and quality of agricultural and livestock products. It develops and enforces regulations and standards for the production, processing, and transport of agricultural products, it provides certification, inspection, and laboratory services to ensure compliance with these standards. SENASA also works to prevent and control the spread of animal and plant diseases, and it monitors and controls the use of pesticides and other agricultural chemicals to protect human health and the environment.

The Agricultural Provincial Services Programme (PROSAP) invests mainly in large-scale agricultural infrastructure. In addition, it provides support services for competitiveness with projects aimed at improving agri-food chains.

Since 2016, Argentina is party to the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) for the conservation and sustainable use of all plant genetic resources for food and agriculture. The National Advisory Committee on Genetic Resources for Food and Agriculture (CONARGEN) co-ordinates public agencies on genetic resources and biodiversity for food and agriculture.

Agri-environmental regulations and policies in Argentina are mostly legislated and implemented at the provincial level. For example, the province of Córdoba has a Law of Good Agricultural Practices that sets standards for sustainable agricultural production and compliance with the programme gives farmers

access to lump-sum payments. Santa Fe also started a Good Agricultural Practices Programme in 2021, and Entre Ríos enacted a Law on Soil Conservation in 2018, which requires mandatory soil conservation for areas with soil degradation. In Buenos Aires, the *Buenas Prácticas Agrícolas - Suelos Bonaerenses* Programme of 2020 provides training and supports extensive producers of crops to carry out crop rotation, practices reducing water and wind erosion, and plans to reduce pesticide use.

Mandatory blending of biofuels in diesel and gasoline has been in effect since 2010. The blending rates have been frequently adjusted within a range between 5 and 12.5% and has been fixed at 7.5% since October 2022. Also in October 2022, the Secretary of Energy established quality specifications for biofuels and their blends and created the Registry of Biofuel Operators and Mixers, which registers the main actors in the biofuel production and marketing chain.

Since January 2020, the social programme "Argentina Against Hunger" provides financial support for children, pregnant women and disabled people. Support is provided through an electronic food card (ALIMENTAR Card) that can be used in any grocery store. The food card is given to parents of children under the age of six who receive the Universal Allowance per Child (AUH), pregnant women who receive the Universal Pregnancy Allowance (AUE), and people with disabilities who receive the AUH. In 2022, the programme reached over 2.5 million adult beneficiaries and 4.4 million children.[1] Beneficiaries receive different amounts depending on the number of children in the family.

The agricultural sector contributes 28% of GHG emissions in Argentina (Ministerio de Ambiente y Desarrollo Sostenible, 2021[2]). Argentina's second NDC in the framework of the 2015 Paris Agreement on Climate Change was submitted in December 2020 and updated in October 2021. Argentina is committed to an absolute, economy-wide and unconditional net emission limit of 349 $MtCO_2eq$ by 2030 – equivalent to a decrease of 19% compared to the peak reached in 2007. Some of the tools that Argentina employs to reach this goal are expansion of renewable energies (at least 30% of the total energy matrix will have to be from renewable sources by 2030), lower subsidies for fossil fuels, expanded protected areas, and improved efficiency in agriculture, industry, transport and construction among others. In addition to its active commitment and participation in the primary multilateral competent fora on climate change, i.e. the UNFCCC, Argentina participates in other initiatives, such as the Global Bioenergy Partnership and the Global Research Alliance on Agricultural Greenhouse Gases (GRA) and the Global Methane Pledge initiative, among others. The National Institute of Agricultural Technology (INTA) plays an important role in research and innovation to reduce GHG emissions from agriculture. It has a portfolio of research projects related to climate change mitigation and adaptation.[2]

Climate change adaptation policies in agriculture

The National Plan for Adaptation and Mitigation to Climate Change by 2030 is designed to align with the objectives of the United Nations Framework Convention on Climate Change (UNFCCC) under the Paris Agreement. The plan includes mitigation and adaptation measures for the sector based on risk management. An inventory of GHGs from agriculture, livestock, forestry, and other land uses was completed to monitor and evaluate the sector's emissions.

The Smart Climate and Inclusive Agri-food Systems project began in 2022 with a budget of USD 400 million financed by the World Bank (Ministerio de Agricultura, Ganadería y Pesca, 2022[3]). The general objectives of the project relate to adaptation and resilience. It invests in coverage and quality of rural public infrastructure; promotes the sustainability of small and medium-sized agri-food producers and their organisations through climate-smart practices; and supports the reorientation of INTA towards climate issues. The project is implemented by the Ministry of Agriculture, Livestock and Fisheries, through the General Directorate of Sectoral and Special Programmes and Projects (DIPROSE).

Various adaptation policies have been implemented, targeting short-, medium-, and long-term goals. Policies for short-term action include:

- The Inter-institutional Protocol for Information Management, which addresses the threat of meteorological and agricultural droughts in Argentina by articulating access to data and information, and promotes research and development of new technologies, for the evaluation of fire-danger conditions.
- The Integral Risk Management Programme (GIRSAR) Component 3 focuses on risk transfer and the improvement of agricultural emergencies. It includes an insurance programme for family horticultural and floricultural producers under greenhouse in the province of Buenos Aires, and an incentive programme to promote drought insurance.
- The National System for the Prevention and Mitigation of Agricultural Emergencies and/or Disasters extends the deadline for tax obligations to pay sworn declarations or advances related to taxes on income, personal assets and presumed minimum profit, and provides funds for education and cooperative promotion until the end of the productive cycle following a state-of-emergency or disaster.
- The 2020 Critical and Direct Assistance Programme for Peasant and Indigenous Family Farming (PACyD) grants non-refundable contributions in a direct and timely manner for peasant and indigenous family farmers. Potential beneficiaries are those affected by situations of productive risk caused by extreme climatic or social events.

Measures to support incremental change over the medium-term aim to modify production practices, including changes in planting dates, crop-mix adjustments, and technology adoption:

- The Rural Change Programme established in 1994 promotes agroecological livestock practices through technical and organisational advice, training, and experience sharing among producers.
- The Territorial Agroecological Nodes Project launched in 2022 promotes the development of agroecological livestock practices in partnership with institutions such as INTA and universities by creating exchange nodes for discussion.
- Other initiatives focus on building the capacity of beneficiaries through technical assistance, training, and investments in innovation and adaptation. For example, the Programme for the Promotion of Resilient and Sustainable Agri-Food Systems for Family Farming, the Argentine Agricultural Bio-inputs Programme (PROBIAAR), the Comprehensive Plan for Women in Peasant and Indigenous Family Farming, Sustainable AgroSMEs, the Smart Climate and Inclusive Agri-food Systems, the Programme for the Development of the Goat Chain (PRODECCA), and the Economic Insertion Programme for Family Farmers in Northern Argentina (PROCANOR).

Efforts to support long-term transformational change in agriculture include moving production to new regions, developing new value chains, and investing in large infrastructure projects. New governance structures, collaborative planning, and multi- and trans-disciplinary research are also important. Examples:

- Smart Climate and Inclusive Agri-food Systems
- direct public investment projects in rural roads of the Provincial Agricultural Services Programme (PROSAP) IV
- Plan for Access to Water for Family, Peasant and Indigenous Agriculture AFCI-DIPROSE-INTA (2020-2023)
- Project for Socio-Economic Inclusion in Rural Areas (PISEAR) to promote socioeconomic inclusion of rural families living in poverty
- GIRSAR Programme
- land registration and land regularisation programmes

The National Institute of Viticulture (INV) promotes sustainable practices in the sector since 2009, including through the Protocol of Self-Assessment of Wine Sustainability of Wineries of Argentina, the Methodological Guide for the Estimation of the Carbon Footprint in Wine, and the Argentine Wine

Sustainability Guide. The INV works with academics, research institutions, and the private sector to promote a National Training Programme on wine sustainability, which has reached a significant number of participants from all over the country.

The INTA's framework of the Medium-Term Plan (PMP) 2021-25 includes two guidelines related to climate-change adaptation:

- "Adaptation to climate variability and climate change mitigation" includes actions to contribute to the strengthening of climate governance. These are designed to increase adaptation capacity, collectively manage risks and boost the resilience of production systems and territories. It also develops mitigation strategies that reduce GHG emissions.
- "Sustainable management of natural resources and the territory linked to the care of the environment" provides proactive and integrated institutional actions for the sustainable management of natural resources and the territory.[3]

Domestic policy developments in 2022-23

Argentina has been facing extreme drought conditions since 2019, with only 44% of the average precipitation received in the last four months of 2022, the lowest value in 35 years. Thus, Argentina's domestic policy in 2022-23 was marked by extreme drought conditions, which resulted in poor agricultural yields and production. Simultaneously, the country showed macroeconomic instability with high inflation, exchange rate volatility, devaluation, and difficulties to keep the level of necessary foreign currency.

Production and marketing practices

In April 2021, the Ministry of Agriculture, the Ministry of Productive Development and the Ministry of Labour determined that bovine meat for retail may only be marketed in units resulting from the division of half carcasses into pieces not exceeding 32 kilos. The objective is to increase quality and health standards and market transparency. A transition period of between three months and one year was agreed for meat packing plants to implement the new marketing standard. The implementation of the measure was postponed several times and in 2023 is still pending. Currently, the only measure that was maintained was the ban of any transfer by workers of a product weighting more than 32 kilos, which needs to be done with the assistance of mechanical means.

The Plan GanAr was launched in 2022 with the aim of contributing to the development of Argentine livestock through the intensification of primary production, the increase of value added at origin, the modernisation of the beef marketing system, and the strengthening of livestock policies. The plan includes technical assistance, training, the improvement of productive financing conditions, and the development of a strategy to demonstrate the environmental sustainability of the Argentine cattle system.

In 2023, the Economic Compensation Programme for Small and Medium Sheep Wool Producers in the Patagonian Region (LANAR) was created. It has a total investment of ARS 1.5 billion (USD 11.5 million)[4] from the "Export Increase Fund" to finance programmes that stimulate the production and development of small and medium producers and regional economies.

Following the 2021 strategic plan for the organic sector by 2030, several actions took place in 2022. These include a new law promoting organic production, the creation of a voluntary label for products in the conversion process, events and contests to promote organic products, and a platform providing information about certified organic operators.

Animal and plant health and safety

In November 2021, SENASA, the main agency in charge of plant and animal health and food safety, issued a national sanitary alert due to African Swine Fever (ASF) outbreaks in domestic pigs in the Dominican

Republic and Haiti and its potential spread throughout the American continent. This alert remains in force, and SENASA has implemented new prevention measures and strengthened existing ones to reduce the risk of entry, exposure, and dissemination of the ASF virus in domestic pigs. In 2022, SENASA updated the documentation and infrastructure requirements that must be met by transporters of live animals and established the responsibilities and obligations of the owner and driver of the transport related to animal welfare standards.[5] Also, in 2022, SENASA created the "Strategic Table of Cannabis and Industrial Hemp" to advance in the development of this sector.

Irrigation

In 2022, several execution agreements were signed with several provinces, including Chaco, Corrientes, Neuquén and Misiones to improve rural roads, electrify remote areas, and develop agriculture. These agreements were signed within the framework of the Regional Plan for Irrigation Reservoirs that started in 2021. The plan includes a diagnosis of the situation of irrigation in San Juan and Mendoza and proposals for improvement in irrigation efficiency using water reservoirs for pressurised irrigation, promoting the construction and use of reservoirs for small and medium-sized producers. Other water deficit regions such as Patagonia are to be included in the next stage of the plan. The project is implemented by the Ministry of Agriculture, the Ministry of Economy, the Ministry of Productive Development and the Provincial Governments.

Bioeconomy and Biotechnology

The Ministry of Economy's Secretariat of Agriculture, Livestock and Fisheries launched two programmes in 2022: "BIODESARROLLAR" and "CoopAR". BIODESARROLLAR aims to promote the development, innovation, adoption, and production of bioproducts by micro, small, and medium-sized enterprises, co-operatives, and public research entities. CoopAR aims to improve the competitiveness of regional agro-industrial value chains, promote differentiation, technological modernisation, and transformation of agro-industrial co-operatives.

The Advisory Commission of the Bioeconomy Promotion Programme approved the Action Plan for 2022-2026, and the Argentine Bioproduct Programme was relaunched with a modified definition of bioproducts to promote innovative companies. In 2022, twelve Argentine Bioproduct Seals were awarded, and the technical and administrative criteria for the incorporation of bio-inputs for agricultural use have been unified.

In 2022 a commercial authorisation was granted for a vaccine to combat Bovine Leukosis that was developed by the National Institute of Agricultural Technology (INTA).

Four genetically modified plants were approved in 2022 in Argentina: two soybeans resistant to pests and herbicides, one herbicide-tolerant maize, and one drought and herbicides tolerant wheat.[6] Soybeans and wheat with drought tolerance characteristics offering solutions for water stress in some regions, developed by the Institute of Agrobiotechnology of Rosario (INDEAR S.A), have been authorised in the main export destinations of Argentina (the People's Republic of China and Brazil). These are the first genetically modified crops entirely developed by Argentine entities to obtain commercial authorisation in the export market.

Biofuels

The blending rates of biofuels have been fixed at 7.5% since October 2022. The Secretariat of Energy set the acquisition prices of biodiesel in the domestic market for its mixture with diesel, for the months of November 2022 to the end of March 2023.

Risk Management

In 2022, SENASA adopted exceptional measures for territories affected by droughts or fires. In 2023, the Ministry of Agriculture, Livestock and Fisheries will provide financing to assist the 11 provinces that suffered from frost damage. The Agricultural Emergency Fund will be executed, providing a total of ARS 1.5 billion (USD 11.5 million) to support affected producers in La Pampa, Río Negro, Neuquén, Mendoza, San Juan, La Rioja, Catamarca, Tucumán, Salta, Jujuy and Santa Cruz. In addition, FONDAGRO received ARS 1 billion (USD 7 million) to offer a credit line at a 0% interest rate to small producers in these provinces, with a maximum amount of ARS 900 000 (USD 6 888) per producer and a term of 30 months, including an 18-month grace period.

Rural development, family farms and indigenous agriculture

The project "*En nuestras manos*" that aims to reduce gender gaps in rural areas and assist agricultural producers in the context of the COVID-19 crisis. In 2022, the project assisted 2 229 families with an expenditure of EUR 4 million.

The Programme for the Promotion of Resilient and Sustainable Agri-food Systems for Family Farming (PROSAF) supports sustainable, inclusive production and marketing systems for peasants and family farmers. The programme, which was launched in June 2022, is financed by the International Fund for Agricultural Development (IFAD) and the Development Bank FONPLATA. The executing agency is the Ministry of Agriculture, Livestock and Fisheries, through DIPROSE and the Secretariat of Family, Peasant and Indigenous Agriculture. Between September and December 2022, training activities with the provincial technical teams were organised. The programme is expected to advance in 2023 with the realisation of a call for integral projects with INTA.

Trade policy developments in 2022-23

Export taxes were "temporarily" increased for some products in March 2022, including in particular for soybean products (meal and oil) from 31% to 33% (until December 2022), and for biodiesel from 29% to 30%. At the same time, a special fund was created with the objective of stabilising the price of wheat paid by Argentine mills. The fund is to be financed by the additional resources resulting from the temporary modification of export duties. The government has the possibility to adjust export tax rates by decree using a special authorisation from Congress based on "economic emergency" considerations since 2018. Thus, in 2023, export taxes are of 33% for soybean, 31% for soybean products (meal and oil), 12% for maize, wheat and other cereals, and 7% for sunflower grain and sunflower oil, 5% for maize flour, 7% for wheat flour, 4.5% for milk products, 9% for milk powder, and 9% for beef. Export taxes on other products from outside the Pampas region, such as wine, pears, apples, grapes, and cotton are 5%, and they were eliminated for a group of products, including ovine and caprine meat. The tariff scheme for dirty, washed and carded wool was set between 3% and 5%. For hair of different species, it was established between 3% (dirty) and 0% (washed).

In contrast, export duties on organic products were reduced. As from 15 January 2022, export duties for certified agro-ecological, biological and organic products were eliminated, and were reduced by five percentage points for wheat, soybeans and maize certified as organic.

Exchange-rate controls in place since 2019 have resulted in a widening gap between the legal (so called official) exchange rate and other market exchange rates. Agricultural exports are settled at the official exchange rate, which is lower than the rest and implies an additional reduction in the price received by farmers in ARS. Within the framework of the current programme with the International Monetary Fund (IMF) regarding exchange rate policy, to strengthen international reserves the government launched the "Export Increase Programme" in September and December 2022, aimed at promoting soybean sales and strengthening international currency reserves. Exporters of soybeans, flour, oil, and biodiesel made with

soybean oil, have agreed to bring foreign currency into the country at a higher exchange rate than the official rate, which implies that they receive a higher price in ARS. The programme allowed the Central Bank of the Republic of Argentina (BCRA) to acquire USD 7 292 million because of a greater export sale, which in the months of the programme reached USD 12 416 million.

Since January 2021, maize and wheat exporters are required to comply with administrative export permits that are granted by the Ministry of Agriculture depending on the quantity available and the price in the domestic market. In December 2021, the Ministry of Agriculture, Livestock, and Fisheries established a framework regulating exports based on a "equilibrium volumes of exports" (VEE) and limiting export permits. The ministry publishes the VEE for maize and wheat based on the government's projection of production, domestic consumption and stocks. Exporters can request export declarations (DJVE) for up to 90% of the VEE. Once this limit is reached, additional export permits will only be granted within 30 days of the expected exporting date. Between December 2022 and February 2023, there was an exceptional automatic extension of 360 calendar days for requiring the DJVE to export wheat and of 180 calendar days for foreign sales DJVE with expiration of the declared shipping period, plus the automatic extension, for maize.

In October 2022, Argentina and Brazil signed an agreement to establish a link between their regulatory bodies responsible for biosafety regulations of modern biotechnological products for agriculture, with the aim of reducing delays in biotechnological product trade between the two countries. The Memorandum of Understanding seeks to promote the development, authorisation, and commercialisation of national biotechnological products with the support of public policies of both nations, affecting industries such as flour, oil, pellet, and biofuels.

The MERCOSUR-EU free trade agreement involving EU Member States and the members of Mercosur (Argentina, Brazil, Paraguay and Uruguay) continues with its legal revision and public debate for its approval by the parliaments of the European Union, its Member States, and Mercosur countries.

Contextual information

Argentina is an upper middle-income country with a dynamic agricultural sector that has been making a growing contribution to the GDP, from 4.7% of the GDP in 2000 to 7.1% in 2021. In contrast, agriculture's share of employment decreased from 12.5% in 2000 to 7.7% in 2021. The country is one of the world's largest agricultural exporters, and agro-food exports have been growing significantly in the last decades, representing 41.5% of total exports in 2000, and 48.5% in 2021. In contrast, agro-food imports represent only 7.7% of total imports.

Argentina has abundant agricultural land representing almost 4% of the total agricultural area of all countries covered in this report, with a large share of this area composed of pastureland. The share of livestock in the total value of production was 35% in 2021.

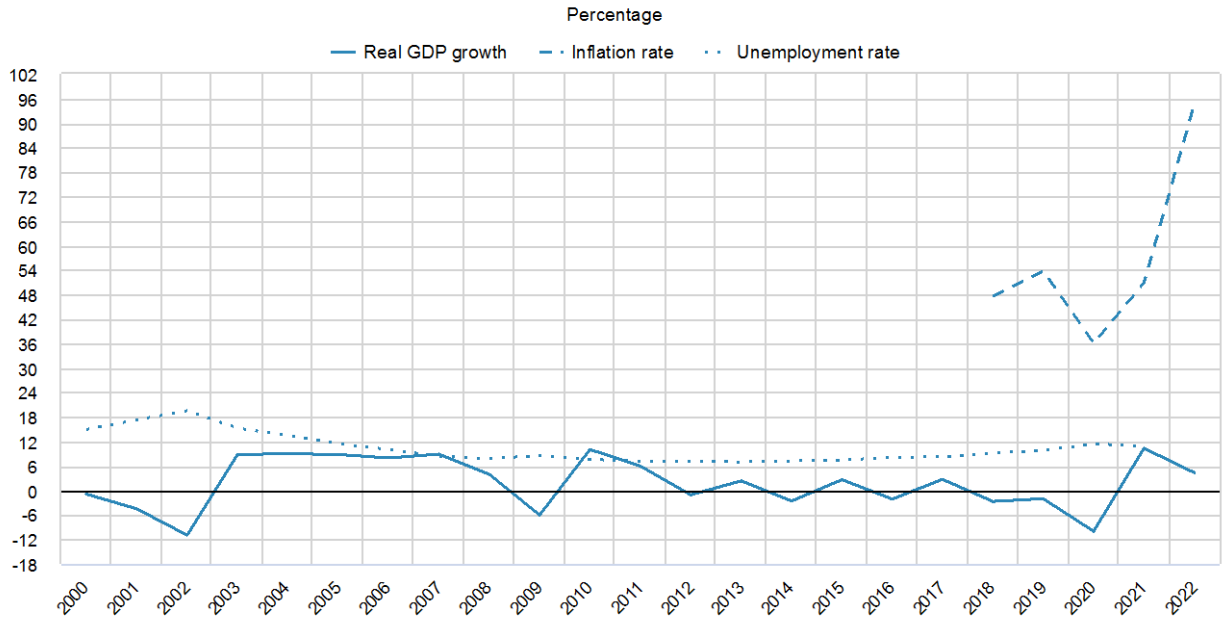
Table 4.3. Argentina: Contextual indicators

	Argentina		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	428	1 083	1.1%	0.9%
Population (million)	37	45	0.9%	0.9%
Land area (thousand km^2)	2 737	2 737	3.4%	3.3%
Agricultural area (AA) (thousand ha)	128 510	108 382	4.3%	3.7%
			All countries[1]	
Population density (inhabitants/km^2)	13	16	52	64
GDP per capita (USD in PPPs)	11 543	23 650	9,350	23,401
Trade as % of GDP	9.1	14.4	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	4.7	7.1	2.9	3.9
Agriculture share in employment (%)	12.5	7.7	-	-
Agro-food exports (% of total exports)	41.5	48.5	6.2	7.9
Agro-food imports (% of total imports)	5.4	7.7	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	57	65	-	-
Livestock in total agricultural production (%)	43	35	-	-
Share of arable land in AA (%)	22	30	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

The Argentine economy began to stall when the peso came under pressure in April 2018. The value of the peso vis-à-vis the USD was reduced by 40% in 2018, and by 70% in the period 2018-2021, and the economy plunged into recession and inducing annual inflation rates above 40%. The year 2022 ended with an annual inflation rate of 94.8%. Due to exchange rate controls, there exist exchange market rates that have been increasingly diverging from the official rate. Adversely affected by COVID-19, GDP declined by 9.9% in 2020, increased by 10.4% in 2021 and increased by 4.4% in 2022.

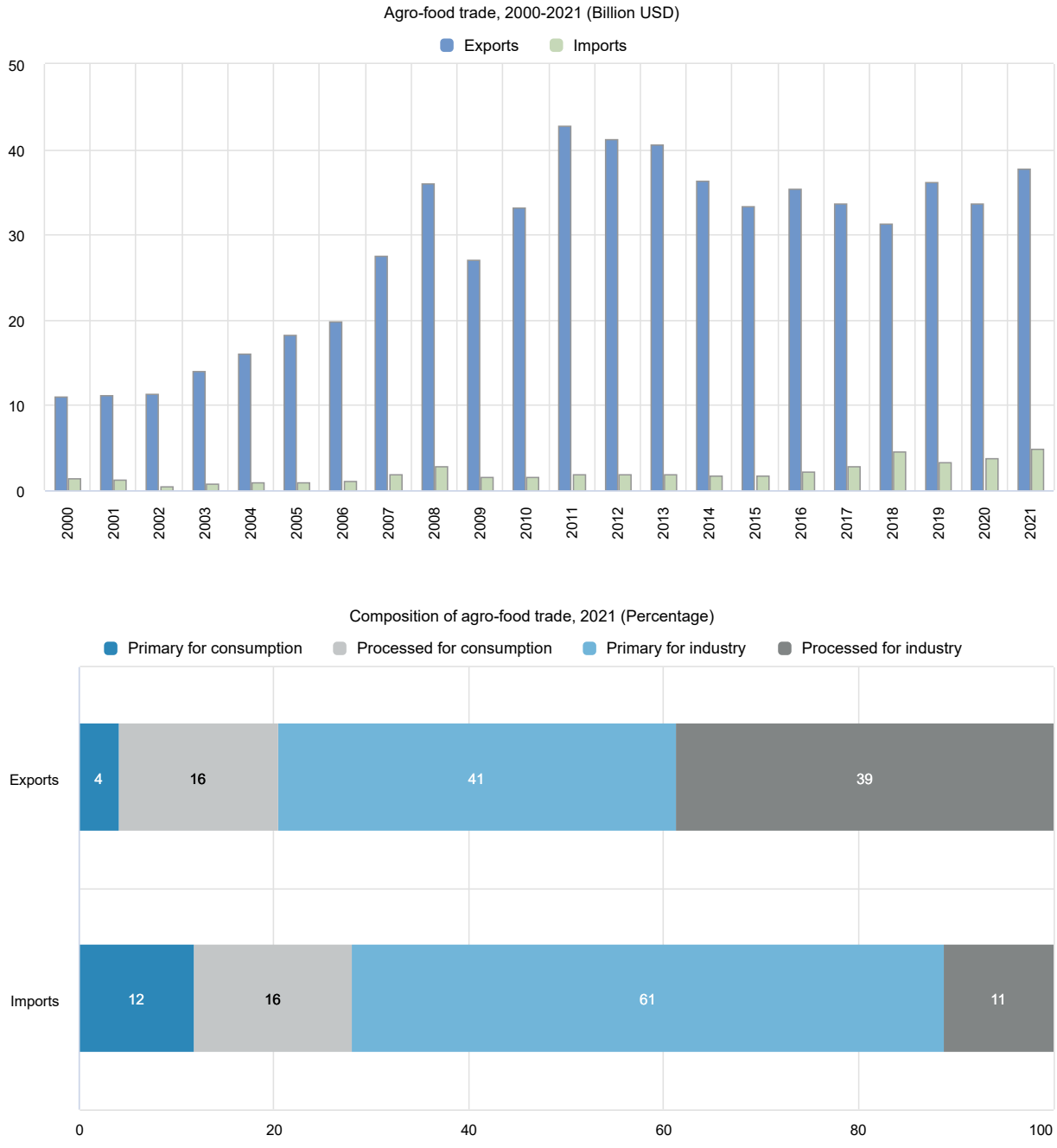
Figure 4.4. Argentina: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Argentina runs a significant agro-food trade surplus having exceeded USD 30 billion for most of the past decade. Most of agro-food exports (80%) are primary or processed products used as inputs in downstream industries abroad, whereas the much smaller bundle of agro-food imports is mostly composed of primary products for use by industry (61%).

Figure 4.5. Argentina: Agro-food trade

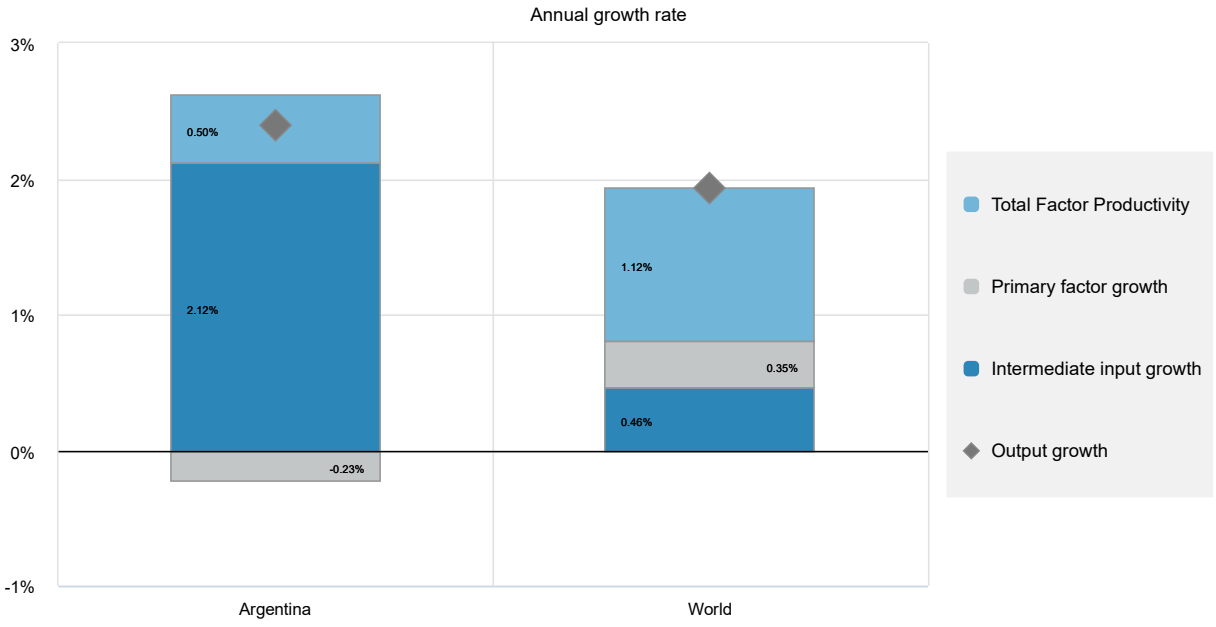


Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Argentine agricultural production has grown at an annual rate of 2.4% between 2011 and 2020, above the world average of 1.9%. Within this total growth, 2.1% was due to an increased use of intermediate inputs, while only a small portion of production growth (0.5%) was due to Total Factor Productivity (TFP) growth, that is, innovations and technical improvements in the way resources are used in production. With this, the TFP growth was well below the world average.

Agricultural nutrient balances in Argentina, and in particular its average nitrogen balance, are comparatively low, albeit increasing. The shares of agriculture in energy use and in greenhouse gas (GHG) emissions are, at 7.3% and 30.6% respectively in 2021, well above the OECD average, with the high emissions reflecting the large number of ruminants. Notably the emissions share is well above the sector's contribution to the economy. With more than 74% of total water abstractions, agriculture also is a major water user.

Figure 4.6. Argentina: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 4.4. Argentina: Productivity and environmental indicators

	Argentina		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	1.7%	0.5%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	-1.4	5.2	32.2	30.4
Phosphorus balance, kg/ha	1.7	2.8	3.3	3.0
Agriculture share of total energy use (%)	5.8	7.3	1.7	2.0
Agriculture share of GHG emissions (%)	40.5	30.6	8.6	10.5
Share of irrigated land in AA (%)	..	2.2	-	-
Share of agriculture in water abstractions (%)	70.9	74.1	46.6	49.7
Water stress indicator	..	..	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

References

Ministerio de Agricultura, Ganadería y Pesca (2022), *Climate Intelligent and Inclusive Agri-food Systems Project. Ministerio de Agricultura, Ganadería y Pesca, República Argentina*, https://www.argentina.gob.ar/sites/default/files/agro_xxi_-_mgas_-_anexo_3_pppi.pdf (accessed on May 2023). [3]

Ministerio de Ambiente y Desarrollo Sostenible (2021), *Inventario Nacional de Gases de Efecto Invernadero*, https://inventariogei.ambiente.gob.ar/files/Booklet_INGEI-2022_entero.pdf (accessed on March 2023). [2]

OECD (2019), *Agricultural Policies in Argentina*, OECD Food and Agricultural Reviews, OECD Publishing, Paris, https://doi.org/10.1787/9789264311695-en. [1]

Notes

[1] https://www.anses.gob.ar/sites/default/files/2022-08/Informe%20de%20Estad%C3%ADsticas%20de%20la%20Seguridad%20Social%202022.pdf

[2] https://inta.gob.ar/paginas/proyectos.

[3] https://inta.gob.ar/documentos/plan-de-mediano-plazo-2021-2025

[4] In this chapter, the official average exchange rate of 2022 is used for transforming ARS to USD at a rate of ARS 130.66 for USD 1.

[5] http://servicios.infoleg.gob.ar/infolegInternet/anexos/370000-374999/370218/norma.htm

[6] https://www.argentina.gob.ar/agricultura/alimentos-y-bioeconomia/ogm-vegetal-eventos-con-autorizacion-comercial

5 Australia

Support to agriculture

Australia's support to agricultural producers (Producer Support Estimate, PSE) is among the lowest in the OECD, estimated at 4.3% of gross farm receipts in 2020-22, slightly higher than the 3.7% observed 20 years before. Policy settings are characterised by a strong emphasis on market openness, building resilience, and investments in public goods, including R&D, hydrological infrastructure, and biosecurity.

Market Price Support (MPS) to producers ended in 2000 and domestic prices for Australia's main agricultural outputs have been at parity with world prices since then. Most producer support in 2020-22 was provided in the form of payments based on input use. Much of these went to concessional loans for on-farm investments, including in response to adverse events. The bulk of remaining producer support (about 20% of the PSE) went mainly to disaster relief payments, income support, and income-smoothing programmes that address cashflow fluctuations, such as the Farm Management Deposits and income-tax-averaging arrangements.

The General Services Support Estimate (GSSE) averaged 2.4% of the value of agricultural production during 2020-22, higher than the 1.9% of the early 2000s but below the OECD average of 3.4% for the period. More than half of this went to support for R&D, innovation, and extension services (corresponding to 1.3% of agricultural production value, compared with 1.1% in the OECD on average). Public expenditure to develop and upgrade infrastructure (mostly hydrological) and strengthen biosecurity represented most of the remaining general services expenditure. Overall support to agriculture (Total Support Estimate, TSE) represented 0.3% of Gross Domestic Product (GDP) in 2020-22 and has barely changed since 2000-02.

Recent policy changes

Several climate-related initiatives were introduced. New funding was provided for investments in climate-smart and sustainable agriculture under the next phase of the Natural Heritage Trust. Also, the On-farm Emergency Water Infrastructure Rebate Scheme was extended to 30 June 2024 to allow farmers impacted by natural disasters to repair and replace damaged infrastructure.

Australia set a new target to reduce economy-wide greenhouse-gas (GHG) emissions to 43% below 2005 levels by 2030, and signed up to the Glasgow Breakthrough Agenda on Agriculture, the Forests and Climate Leaders Partnership, and the Global Methane Pledge. A new Carbon Farming Outreach Program offers a training package and tools for farmers to participate in carbon markets and integrate low-emission technologies and practices into their operations.

Increased funding for the Agriculture Biodiversity Stewardship Package supports market-based approaches to pay farmers for biodiversity improvements through the Carbon + Biodiversity Pilot and the Enhancing Remnant Vegetation Pilot. The government also launched a National Stewardship Trading Platform to connect farmers with buyers of biodiversity outcomes, and is exploring options to implement an Australian Farm Biodiversity Certification Scheme to certify farms and farm businesses for their biodiversity management.

The Regional Comprehensive Economic Partnership (RCEP) agreement entered into force on 1 January 2022, establishing a Free Trade Agreement (FTA) between 15 Asia-Pacific nations. An FTA between Australia and the United Kingdom entered into force on 31 May 2023, and the Australia-India Economic Co-operation and Trade Agreement (AI-ECTA) was signed on 2 April 2022. Several initiatives aim to improve transparency in agricultural supply chains. A newly established Inspector-General of Animal Welfare aims to increase accountability and transparency for animal welfare in livestock exports. The National Agricultural Traceability Strategy 2023-33 aims to develop interoperable traceability systems along supply chains to support exports and strengthen biosecurity and food safety.

Biosecurity remains critical for the Australian Government, with the Bolstering Australia's Biosecurity System package introducing emergency funding to strengthen domestic biosecurity preparedness, support biosecurity outcomes in neighbouring countries, support improvements in livestock traceability systems, and expand detector dog and handler capabilities. Additional funding was allocated to combat pest animals and weeds through the Supporting Communities Manage Pest Animals and Weeds Program and the National Forest Pest Surveillance Program.

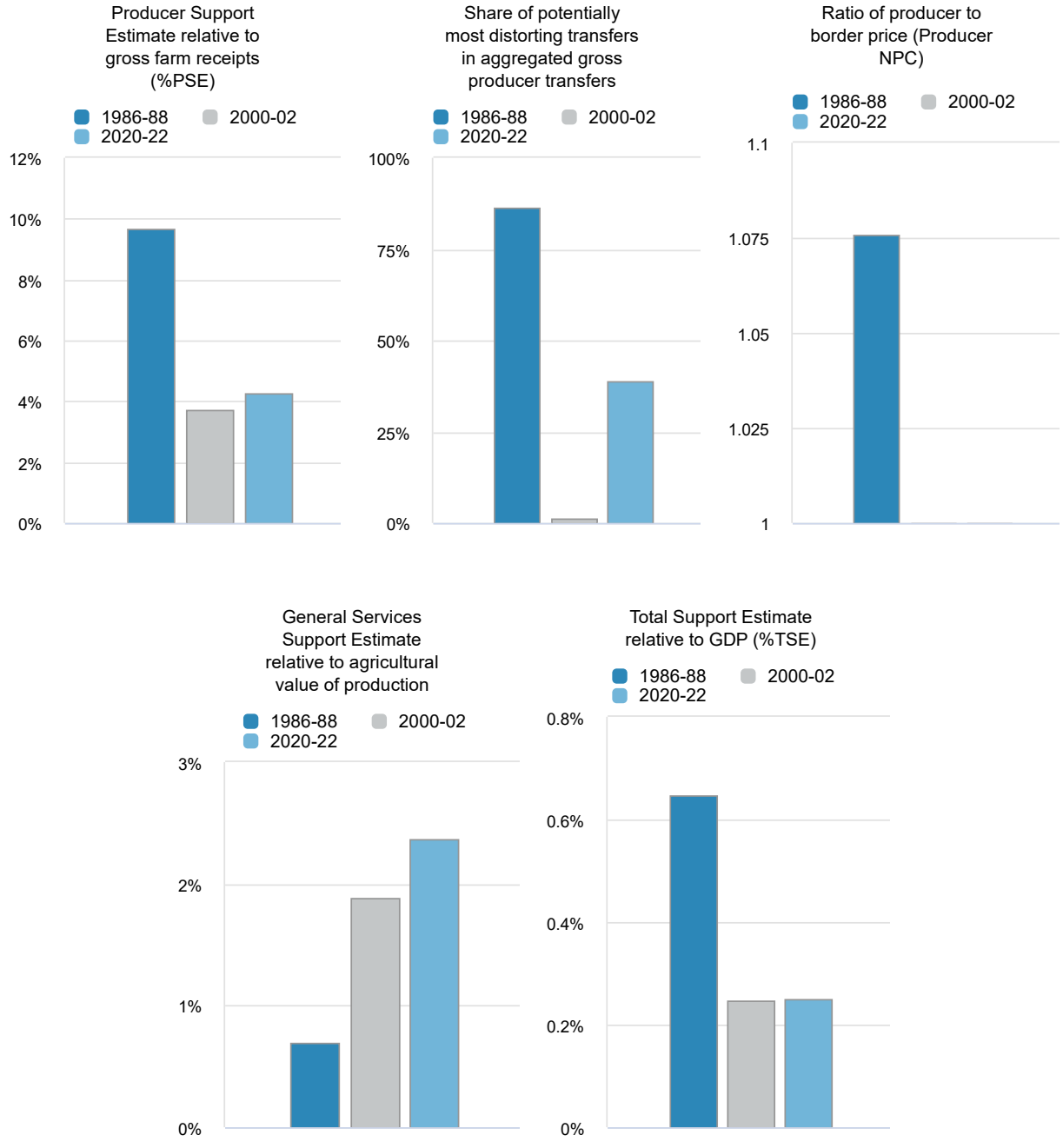
Assessment and recommendations

- Adaptation is imperative for Australian agriculture as the sector is increasingly vulnerable to the effects of climate change. The current suite of adaptation policies includes a focus on strengthening drought resilience under the Future Drought Fund. Investment in the Climate Services for Agriculture platform, its online platform My Climate View and the Drought Resilience Self-Assessment Tool are crucial for encouraging long-term adaptation and could support the development of drought insurance markets using new approaches such as index-based insurance. Concessional loans, income-support schemes and ex post drought relief measures should be monitored to ensure they do not inhibit structural adjustment and long-term transformative change.
- Research and development are a major component of support to the sector and play an important role in building farmers' capacity to adapt to climate change. Extension services and agricultural education receive less funding. Scaling up knowledge-transfer services in partnership with the private sector can facilitate uptake of innovations, support sustainable productivity growth, and strengthen on-farm capacity to manage risks.
- While Australia's rural research and development corporations (RDCs) are well positioned to support adaptation in traditional crop and livestock production systems, research effort should also be directed towards facilitating long-term resilience and transformative change. New investments in climate-smart agriculture are welcome in this regard. The development of carbon and biodiversity markets could provide farmers with new and diversified sources of income, if carefully designed with robust performance and integrity standards.
- Sustainable management of water resources is essential for Australian farmers to adapt to higher temperatures, lower winter rainfall, and increased frequency of drought and extreme weather events. Support goes to upgrading hydrological infrastructure and improving water-use efficiency at farm level and in wider water-management basins. However, infrastructure modernisation for water recovery in the Murray Darling Basin should be closely linked to environmental outcomes, while accounting for the impacts of improved irrigation efficiency on increased water consumption and reduced return flows to groundwater and surface water. Irrigation infrastructure subsidies should be weighed against alternatives such as direct purchases of water entitlements, which have proven to be more efficient and cost-effective for delivering environmental water recovery.
- The Australian Carbon Credit Unit (ACCU) scheme (formerly known as the Emissions Reduction Fund) supports projects to reduce or avoid GHG emissions or store carbon, but has yet to demonstrate significant impact on reducing agricultural emissions, with just 1.1 $MtCO_2eq$ of

abatement delivered as of April 2022. In the absence of a national carbon-pricing scheme, efforts to scale up the ERF could strengthen progress in mitigating agricultural emissions.

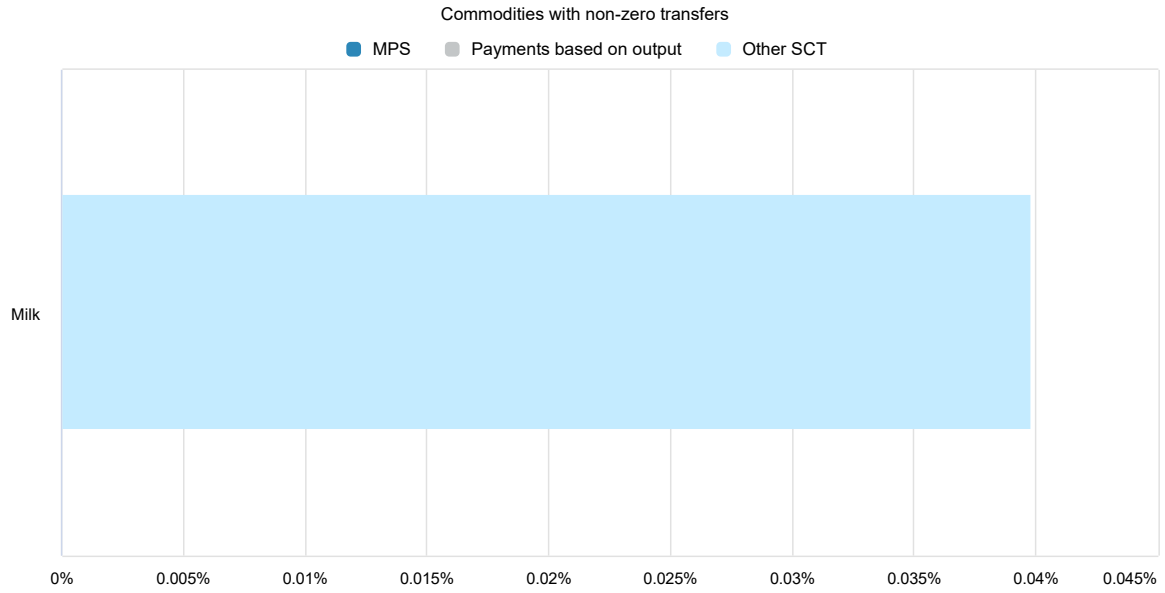
- While ACCUs enjoy a strong reputation both domestically and internationally, questions have been raised regarding the additionality of certain ACCUs, such as those generated by human-induced regeneration and avoided deforestation projects. A recent independent review of ACCUs highlighted these issues and produced a list of 16 recommendations, which the government has accepted in principle. Efforts to strengthen confidence in the transparency and integrity of ACCUs will be essential to sustain confidence in the ACCU scheme and its ability to help Australia meet its emissions-reduction targets.
- Funding to accelerate the development and commercialisation of technological solutions to reduce emissions rightly focuses on methane emissions from livestock, which represent 79% of Australia's agricultural emissions. However, the extent to which technologies such as feed supplements can be feasibly deployed at scale to grazing cattle and sheep remains uncertain. To support the red meat industry's target of carbon neutrality by 2030, a stronger policy response, comprising a mix of abatement subsidies, emissions taxes, standards, and regulations will be needed to create sufficient incentives for farmers to adopt low-emission technologies.

Figure 5.1. Australia: Development of support to agriculture



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 5.2. Australia: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 5.1. Australia: Estimates of support to agriculture

Million USD

	1986-88	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**14 358**	**19 605**	**59 529**	**50 299**	**65 873**	**62 414**
***of which:** share of MPS commodities (%)*	82.36	74.30	73.91	72.49	74.33	74.90
Total value of consumption (at farm gate)	**5 072**	**7 514**	**21 342**	**19 299**	**23 063**	**21 664**
Producer Support Estimate (PSE)	**1 411**	**761**	**2 655**	**2 085**	**3 057**	**2 824**
Support based on commodity output	1 000	0	0	0	0	0
Market Price Support[1]	1 000	0	0	0	0	0
Positive Market Price Support	1 002	0	0	0	0	0
Negative Market Price Support	-2	0	0	0	0	0
Payments based on output	0	0	0	0	0	0
Payments based on input use	230	309	2 068	1 590	2 399	2 216
Based on variable input use	217	14	1 057	682	1 294	1 195
with input constraints	0	4	19	30	14	13
Based on fixed capital formation	4	145	869	775	952	879
with input constraints	0	0	1	4	0	0
Based on on-farm services	9	149	143	133	153	142
with input constraints	0	0	0	0	0	0
Payments based on current A/An/R/I, production required	0	11	268	214	307	283
Based on Receipts / Income	0	11	268	214	307	283
Based on Area planted / Animal numbers	0	0	0	0	0	0
with input constraints	0	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	181	442	291	255	321	297
With variable payment rates	181	343	287	251	318	293
with commodity exceptions	0	110	71	76	71	66
With fixed payment rates	0	99	4	4	4	3
with commodity exceptions	0	0	0	0	0	0
Payments based on non-commodity criteria	0	0	28	26	30	28
Based on long-term resource retirement	0	0	0	0	0	0
Based on a specific non-commodity output	0	0	7	2	11	10
Based on other non-commodity criteria	0	0	21	24	20	18
Miscellaneous payments	0	0	0	0	0	0
Percentage PSE (%)	**9.65**	**3.74**	**4.26**	**3.98**	**4.44**	**4.33**
Producer NPC (coeff.)	**1.08**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Producer NAC (coeff.)	**1.11**	**1.04**	**1.04**	**1.04**	**1.05**	**1.05**
General Services Support Estimate (GSSE)	**98**	**370**	**1 407**	**1 469**	**1 605**	**1 148**
Agricultural knowledge and innovation system	95	252	762	721	813	751
Inspection and control	3	39	120	116	130	114
Development and maintenance of infrastructure	0	75	294	354	274	253
Marketing and promotion	0	4	225	270	382	24
Cost of public stockholding	0	0	0	0	0	0
Miscellaneous	0	0	7	9	6	5
Percentage GSSE (% of TSE)	**6.48**	**36.45**	**34.67**	**41.34**	**34.43**	**28.90**
Consumer Support Estimate (CSE)	**-513**	**-116**	**0**	**0**	**0**	**0**
Transfers to producers from consumers	-513	0	0	0	0	0
Other transfers from consumers	0	0	0	0	0	0
Transfers to consumers from taxpayers	0	-116	0	0	0	0
Excess feed cost	0	0	0	0	0	0
Percentage CSE (%)	**-10.12**	**-1.52**	**0.00**	**0.00**	**0.00**	**0.00**
Consumer NPC (coeff.)	**1.11**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
Consumer NAC (coeff.)	**1.11**	**1.02**	**1.00**	**1.00**	**1.00**	**1.00**
Total Support Estimate (TSE)	**1 509**	**1 015**	**4 063**	**3 554**	**4 662**	**3 971**
Transfers from consumers	513	0	0	0	0	0
Transfers from taxpayers	996	1 015	4 063	3 554	4 662	3 971
Budget revenues	0	0	0	0	0	0
Percentage TSE (% of GDP)	**0.65**	**0.25**	**0.25**	**0.25**	**0.27**	**0.24**
Total Budgetary Support Estimate (TBSE)	**509**	**1 015**	**4 063**	**3 554**	**4 662**	**3 971**
Percentage TBSE (% of GDP)	**0.22**	**0.25**	**0.25**	**0.25**	**0.27**	**0.24**
GDP deflator (1986-88=100)	**100**	**150**	**263**	**249**	**262**	**280**
Exchange rate (national currency per USD)	**1.40**	**1.83**	**1.41**	**1.45**	**1.33**	**1.44**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Australia are: wheat, barley, oats, sorghum, rice, soybean, rapeseed, sunflower, sugar, cotton, milk, beef and veal, sheep meat, wool, pig meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

Before the 1980s, Australian agriculture was supported by a range of measures designed to maintain and stabilise farm income, and to provide farmers with support to offset the perceived disadvantages of remoteness. In 1980, Australia had 65 statutory marketing boards that used border protection through tariffs and import controls to divide domestic and international markets, and set higher prices in domestic markets (Table 5.2).

Price stabilisation schemes assisted export industries such as wheat, manufactured dairy products, sugar, and dried vine fruit. Other policy measures included fertiliser subsidies, income tax incentives, rural credit, subsidies for agricultural research and extension, and public investment in land and water development and rural infrastructure.

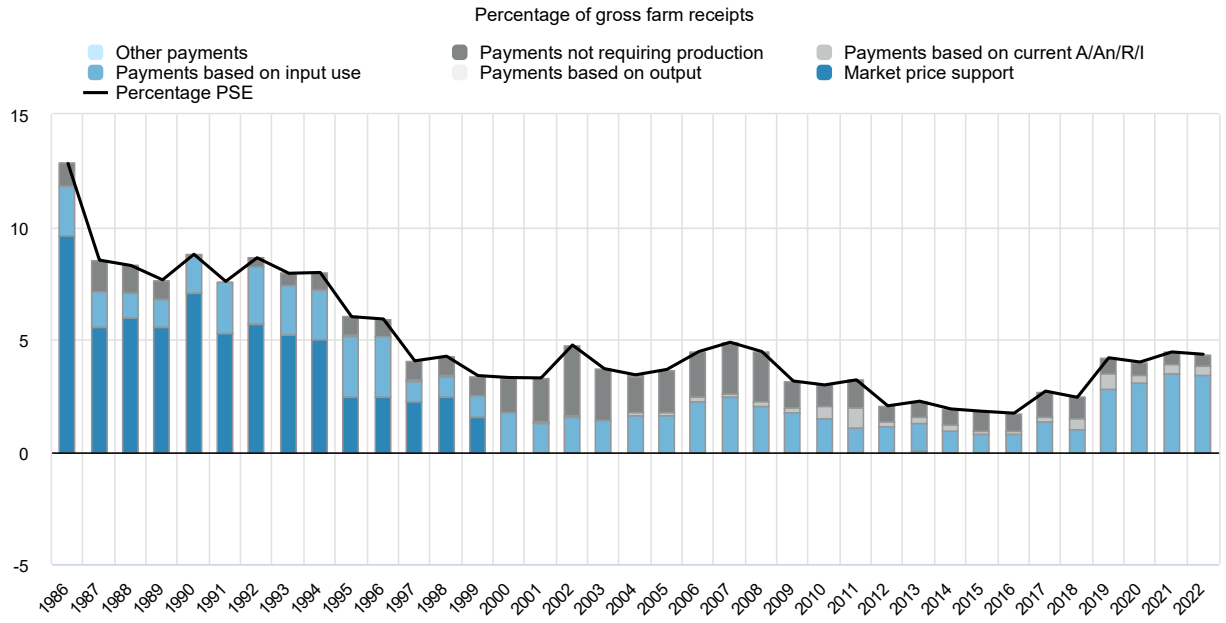
Australia's agricultural policy evolved significantly starting in the mid-1980s. Competition policy reforms in the 1980s and 1990s led to the removal of policies that distort agricultural production and trade. The National Drought Policy introduced in 1992 formalised the transfer of drought risk management to farmers and repurposed government support towards resilience-strengthening activities. Trade practices and anti-dumping legislation ensured competitive markets across the whole economy, reducing the need for sector-specific measures. Price stabilisation policies were relaxed, with price and output controls removed and centralised marketing schemes gradually dismantled (Gray, Oss-Emer and Sheng, 2014[1]). Tariffs were reduced. Floating exchange rates and trade liberalisation reduced price volatility in agricultural commodities.

Table 5.2. Australia: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to 1980s	Closed economy (interventionist agricultural policy)	High tariffs Production quotas Price controls Tariff protection and import controls carried out by 65 statutory commodity marketing boards
1980-Present	Reforms and trade liberalisation	Floating exchange rates Removal of agricultural price and output controls Gradual dismantling of Statutory marketing authorities Reduction of agricultural tariffs on both outputs and inputs Sanitary and phytosanitary (SPS) measures strengthened

In Australia, total support to the sector is composed of general services and budgetary payments to producers. Market price support was progressively phased out during the 1990s, and support to producers (PSE) is now among the lowest in the OECD. Producer support is mostly delivered through payments based on inputs and payments not requiring production.

Figure 5.3. Australia: Level and PSE composition by support categories, 1986 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

Australia's agricultural sector is market-oriented, and domestic and international prices are generally aligned. Support to agriculture comprises a mix of direct budgetary outlays, concessional loans and tax concessions. Direct support is provided to upgrade on-farm infrastructure that aims to improve the efficiency of natural resource use. Several programmes also support the development and uptake of farming practices to enhance sustainability, including through innovation take-up and pilot testing of certification schemes.[1]

Concessional loan schemes create incentives for investments in new farm businesses, farm succession arrangements, drought resilience and preparedness, and plantations. The Regional Investment Corporation (RIC) has administered the Australian Government's concessional farm business loans since 2018. Income stabilisation tools such as the *Farm Management Deposits Scheme* and income tax averaging arrangements are designed to strengthen financial risk management by helping primary producers to deal more effectively with fluctuations in cash flows. For producers experiencing hardship, regardless of the cause, there is the safety net of the farm household income support. This is supplemented with natural disaster assistance provided through the *Disaster Recovery Funding Arrangements* that came into force in 2018.[2] Primary producers experiencing financial hardship can also access free, confidential financial counselling under the Rural Financial Counselling Services Program. The *Drought Response, Resilience and Preparedness Plan* was released in 2019, and focuses on immediate action and support as well as long-term resilience and preparedness for farmers and communities affected by drought – including through the AUD 5 billion (USD 3.5 billion) *Future Drought Fund* launched in July 2020 (Australian Government, 2022[2]). Central and regional funding supports large-scale water infrastructure

investments, and programmes support farmers and land managers in pest and weed control during drought.

Research and development (R&D) programmes are a major component of Australian support to agriculture. Rural research and development corporations (RDCs) are one of the Australian Government's primary vehicles to support rural innovation. RDCs are a partnership between the government and industry created to share funding and strategic direction-setting for primary industry R&D, investment in R&D and subsequent adoption of R&D outputs. A levy system collects contributions from primary producers to finance RDCs, and the Australian Government provides matched funding for the levies, up to legislated caps.

A smaller portion of public expenditure goes to the development and maintenance of infrastructure and inspection services, including pest and disease control activities. Industry and governments cost-share actions to address pest and disease outbreaks, while trade-related costs of biosecurity and food safety inspection services are covered by industry.

Australia's Nationally Determined Contribution (NDC) commits to achieving net zero emissions by 2050 and reducing GHG emissions to 43% below 2005 levels by 2030. While agriculture is included under Australia's economy-wide emissions reduction targets, no specific emissions reduction targets have been defined for the agricultural sector. Investments in climate-smart and sustainable agriculture projects have increased in recent years, providing support for technological solutions to reduce methane emissions from livestock, improve soil health, build resilience to climate change, and protect natural capital and biodiversity.

The Australian Carbon Credit Unit (ACCU) scheme, formerly known as the Emissions Reduction Fund, was established in 2015 under the Carbon Credits (Carbon Farming Initiative) Act of 2011. The ACCU scheme provides incentives for businesses to undertake voluntary emissions reductions and carbon sequestration projects that meet strict integrity requirements, including in relation to additionality. Agricultural landowners and farmers can earn income by generating ACCUs for every tonne of emissions reduced or carbon stored through a project and selling these to the government or third parties. As of March 2023, the scheme had committed AUD 2.7 billion (USD 1.9 billion) through 15 auctions for a total of 217.3 $MtCO_2eq$ of abatement, including 14.8 $MtCO_2eq$ of agricultural emissions (of which just 1.1 $MtCO_2eq$ of abatement has been delivered as of April 2022).

Improving market transparency is also part of the government's assistance to the food sector. One example is the mandatory dairy code of conduct under the authority of the Australian Competition and Consumer Commission (ACCC), which came into force in January 2020 (Australian Government, 2019[3]).

Australia's agriculture is export-oriented with 18 comprehensive regional or bilateral free trade agreements in force.[3] Policies support access to export markets, including helping small exporters overcome market access barriers and costs associated with exports registration. Imports of agriculture and food products, on average, face lower tariff rates than non-agricultural goods (WTO, 2022[4]). A number of SPS measures are in place to manage pest and disease risks that could harm the sector and affect Australia's plant, animal and human health as well as Australia's environment more broadly. These SPS measures mean that several conditions are in place for imports of agricultural products and other goods from certain regions.

Climate change adaptation policies in agriculture

Climate change is impacting Australian agriculture through increased variability of rainfall and temperatures, and greater frequency of extreme weather events, including drought, floods, and bushfires. According to estimates from the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), changes in seasonal conditions over 2001-20 (relative to 1950-2000) reduced annual average farm profits by 23% or around AUD 29 200 (USD 20 253) per farm. Climate conditions have also

contributed to increased variability in farmers' cash income and profits, with the most pronounced impacts observed in south-western and south-eastern Australia.

The government recently scaled up its support for investments in climate-smart and sustainable agriculture. The October 2022-23 federal budget provides AUD 302 million (USD 209 million) over five years for sustainable agriculture investments under the next phase of the Natural Heritage Trust. The climate-smart agriculture package includes AUD 159 million (USD 110 million) for sustainable agriculture projects that encourage climate adaptation practices, emissions reduction technologies, greater engagement in carbon and biodiversity markets, and sustainable management of natural resources. In addition, AUD 36 million (USD 25 million) will be invested to design and deliver a new National Soil Monitoring Program and to facilitate extension services, and knowledge sharing through the Regional Soil Coordinators Program and the National Soil Community of Practice. The package also provides AUD 41 million (USD 28 million) for a network of Sustainable Agriculture Facilitators, and AUD 36 million (USD 25 million) for a network of delivery partners to deliver climate-smart agriculture actions efficiently and at scale. An additional AUD 31 million (USD 22 million) is earmarked for programme design and implementation.

Drought preparedness continues to be a focus for the Australian government, particularly in the context of a changing climate, which is resulting in an increasing frequency and severity of droughts. The October 2022-23 federal budget provided AUD 6.6 million (USD 4.6 million) to improve planning, tools, and systems to help the government and farmers prepare for drought. This includes delivery of two key policies: the next Australian Government Drought Plan and a new National Drought Agreement with states and territories.

The On-farm Emergency Water Infrastructure Rebate Scheme launched in December 2018 and includes AUD 100 million (USD 69 million) in funding for farmers to improve drought preparedness through the installation of on-farm water infrastructure (e.g., buying and laying pipes, installing water storage devices, desilting dams and water bores). The October 2022-23 budget extended the scheme to 30 June 2024, and expanded the scheme to allow farmers impacted by natural disasters to repair and replace damaged infrastructure for improved water-use efficiency and flexibility.

The AUD 5 billion (USD 3.5 billion) Future Drought Fund (FDF) provides AUD 100 million (USD 69 million) in returns from the fund each year to help farmers and communities build drought resilience. Since its establishment in July 2020, the FDF has allocated a total of AUD 420 million (USD 291 million) to drought-resilience initiatives, structured around four themes: better climate information; better planning; better practices; and better-prepared communities.

- Better climate information
  - My Climate View is a free, online platform that makes climate information more accessible, enabling farmers, industry, and regional communities to anticipate future climate conditions, draw comparisons with recent weather, consider the implications for production, and prepare for future drought.
  - The Drought Resilience Self-Assessment (DRSAT) is an online tool that enables farmers to add farm-scale data to regional-scale data, helping them understand their own farm-scale resilience, see farm-level climate-change projections, view satellite data for their farm and see suggested tailored pathways to improve resilience.
- Better planning
  - The Farm Business Resilience Program builds the capacity of farmers to plan for and manage risks, including drought. The programme supports learning and development opportunities in areas such as strategic business skills, risk management, natural-resource management, and personal resilience. It also supports farm-business planning and provides farmers with professional feedback on their plans. The Australian government committed AUD 16 million

(USD 11 million) to the programme's initial rollout and announced an additional AUD 60 million (USD 42 million) in the 2021-22 Federal Budget for the next three years.

- The Regional Drought Resilience Planning Program supports regions to develop drought-resilience plans to drive proactive management of drought risks. Plans are community-led and owned through partnerships of local governments, regional organisations, community organisations and industry. The Australian Government committed AUD 9.85 million (USD 6.8 million) to the initial rollout of the programme and announced a further AUD 31 million (USD 22 million) in the 2021-22 Federal Budget for the next three years.

- Better practices
  - Eight Regional Drought Resilience Adoption and Innovation Hubs support primary producers in building drought resilience through on-ground extension and adoption activities, and to drive uptake of new on-farm and local innovations.
  - A range of National Enabling Activities help farmers and regional communities build drought resilience through investments in collaboration, greater information-sharing, knowledge management, First Nations engagement, and the Science to Practice Forum.
  - The Drought Resilience Innovation Grants Program provides AUD 29 million (USD 20 million) to support projects that will drive the development and adoption of new and innovative technologies and practices to improve the drought resilience of farmers and agriculture-dependent communities. Three types of grants are offered to cater for projects and ideas at different stages of development: (1) ideas grants providing AUD 50 000 (USD 35 000) to help develop good ideas; (2) proof-of-concept grants providing up to AUD 120 000 (USD 83 000) for 12 months to test the feasibility of innovative projects; and (3) innovation grants providing AUD 30 000 (USD 21 000) to AUD 1.1 million (USD 763 000) per year for up to three years for mature ideas.
  - The Natural Resource Management Drought Resilience Program provides AUD 13.4 million (USD 9.3 million) for the trial and adoption of transformative on-ground practices that contribute to landscape-scale drought resilience.
  - The Drought Resilient Soils and Landscapes Program will invest AUD 23.1 million (USD 16 million) to support projects that focus on demonstrating drought-resilient land management practices at broad scale that will help Australia's farmers prepare for and recover quicker from drought and make agricultural landscapes more resilient to drought.
  - The Long-Term Trials of Drought Resilient Farming Practices Program will invest AUD 40 million (USD 27.7 million) into establishing a national network of farm laboratories that will conduct trials of drought resilience farming practices until 2028.
  - The new AUD 14.3 million (USD 9.9 million) Extension and Adoption of Drought Resilience Farming Practices Grants Program will deliver grants ranging from AUD 100 000 (USD 69 000) to AUD 3 million (USD 2.1 million) to support adoption of proven drought-resilient farming practices and technologies at a large scale, either across multiple farms, a farming system, landscapes, regions or industries.
  - The Drought Resilience Commercialisation Initiative is a two-year, AUD 10 million (USD 6.9 million) pilot programme designed to help innovators turn their good ideas into commercially viable, drought-resilient products and services. The initiative will help increase market readiness by offering one-on-one facilitation services and commercialisation planning.
  - The Drought Resilience Scholarship Program was developed to recognise and reward innovators and leaders in the field of drought resilience and encourage ongoing learning and uptake within the agricultural sector. The Future Drought Fund is investing AUD 1.6 million (USD 1.1 million) through Nuffield Australia to provide farmers with drought-resilience scholarships valued at up to AUD 35 000 (USD 24 000).

- Better prepare communities
  - The Networks to Build Drought Resilience Program is delivered by the Foundation for Rural and Regional Renewal. Projects support drought preparedness by building the capacity and capabilities of community organisations, holding community events, and strengthening ties across community networks, including through funding for First Nations organisations and projects to benefit rural youth and women.
  - The Drought Resilience Leaders Program provides opportunities for individuals from agriculture-dependent communities in 12 regions to gain leadership knowledge and skills to support their communities in tackling drought and climate change.
  - The Helping Regional Communities Prepare for Drought Initiative is the next phase of investment in community drought resilience and will expand existing programmes to support a national cohort of community organisations to benefit of agriculture-dependent communities.

Domestic policy developments in 2022-23

The *Department of Agriculture, Fisheries and Forestry* was created in July 2022 following the election of a new federal government. The former *Department of Agriculture, Water and the Environment* was dissolved, and the water and environment functions were transferred to a new *Department of Climate Change, Energy, the Environment and Water*.

Australia submitted an update to its Nationally Determined Contribution (NDC) under the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC) in June 2022. The updated NDC reaffirms Australia's target to achieve net zero emissions by 2050 and commits to reducing GHG emissions to 43% below 2005 levels by 2030. The government continued its support for technological solutions to reduce agricultural emissions, in particular methane emissions from livestock, which made up 79% of agricultural emissions in 2020-21. Under stages 2 and 3.1 of the AUD 29 million (USD 20 million) *Methane Emissions Reduction in Livestock (MERiL)* programme, AUD 11 million (USD 7.6 million) was awarded through 14 grants to support R&D for low-emissions feed supplements for grazing animals. The government is also investing AUD 8.1 million (USD 5.6 million) over three years in the Australian seaweed industry to progress research, support commercialisation and scale up production of emissions-reducing seaweeds for use as a livestock feed supplement. Furthermore, several grants were awarded under the three-year AUD 38.9 million (USD 27 million) *National Soil Carbon Innovation Challenge*: stage one provided over AUD 1 million (USD 694 000) for 17 projects to determine the feasibility of proposed technology solutions for soil carbon stock measurement, and stage 2 awarded AUD 29 million (USD 20 million) to 8 projects in an initial funding round, for proof of concept, validation and deployment activities to further test and develop a technology solution in Australian landscapes. A second funding round opened in 2023.

The *Carbon Farming Outreach Program* was announced in October 2022 and will develop a training package and tools for farmers and land managers, including First Nations peoples, to participate in carbon markets and integrate low-emission technologies and practices into their operations. The programme has an overall budget of AUD 20.3 million (USD 14.1 million) over four years, of which AUD 17.5 million (USD 12.1 million) will be provided as grants for independent and trusted advisers to deliver the training package across Australia.

Australia joined three global initiatives related to climate change in 2022, namely:

- The *Glasgow Breakthrough Agenda on Agriculture*, which aims to make climate-resilient sustainable agriculture the most attractive and widely adopted option for farmers everywhere by 2030.

- The *Forests and Climate Leaders Partnership*, which supports the goals of the *Glasgow Leaders Declaration on Forests and Land Use*, to halt and reverse forest loss and land degradation by 2030, and promote sustainable production and trade.
- The *Global Methane Pledge*, a voluntary commitment with 122 signatories working collectively to reduce global methane emissions across all sectors by at least 30% below 2020 levels by 2030.

Continued progress was made in implementing the *Agriculture Biodiversity Stewardship Package,* with the total investment in the programme increasing to AUD 91.6 million (USD 63.4 million). This includes the *Carbon + Biodiversity Pilot* and the *Enhancing Remnant Vegetation Pilot*, which are trialling market-based approaches for landholders to improve biodiversity and inform the development of a national nature repair market. A *National Stewardship Trading Platform* was established allowing landholders to plan and evaluate carbon and biodiversity projects, connect farmers with potential buyers of biodiversity and carbon services, and apply for government-funded biodiversity stewardship pilot programmes. The government is exploring options to implement the *Australian Farm Biodiversity Certification Scheme* to certify farms and farm businesses for their biodiversity management and is consulting on legislation to support a voluntary biodiversity stewardship market, supporting new income streams for farmers who improve biodiversity outcomes on their land.

Trade policy developments in 2022-23

Australia's trade policy seeks further market opening through multilateral, bilateral and regional trade agreements (DFAT, 2023[5]). Recent developments were mainly related to progress in trade agreements, export promotion and strengthening biosecurity.

The *Regional Comprehensive Economic Partnership Agreement (RCEP)* entered into force on 1 January 2022. Australia ratified RCEP on 2 November 2021 and was an original party to the agreement along with Brunei Darussalam, Cambodia, China, Japan, Laos, New Zealand, Singapore, Thailand and Viet Nam. RCEP is a comprehensive free trade agreement that provides Australian exporters and importers with a single set of rules of origin to access tariff preferences across the region. RCEP also includes improved mechanisms to tackle non-tariff barriers, expand trade in services, support the movement of business people across the region, and improve the investment environment.

The *Australia-United Kingdom Free Trade Agreement (A-UK FTA)* was signed on 17 December 2021 and passed by the Australian Parliament on 22 November 2022. Following ratification by the UK Parliament and Royal Assent on 23 March 2023, the agreement entered into force on 31 May 2023. Under the A-UK FTA, more than 99% of Australia's exports to the United Kingdom are now duty free, providing new and enhanced market access for Australian farmers and exporters of beef, sheep meat, wine, sugar, dairy, grains, horticulture, and seafood. The agreement also eliminates tariffs on 98% of Australia's imports from the United Kingdom, will facilitate the mobility of skilled workers between Australia and the United Kingdom, and will enhance technical collaboration on biosecurity, animal welfare and antimicrobial resistance.

Negotiations on an Australia-European Union FTA, launched in 2018, are ongoing.

Negotiations for the *Australia-India Comprehensive Economic Co-operation Agreement* launched in May 2011, were suspended in 2015, and re-launched in September 2021. An interim agreement called the *Australia-India Economic Co-operation and Trade Agreement (AI-ECTA)* was signed on 2 April 2022 and entered into force on 29 December 2022. Negotiations have now resumed for a Comprehensive Economic Co-operation Agreement (CECA), which will build upon ECTA outcomes. Key exports of Australian agricultural products to India include lentils, wool, cotton, and almonds. Under the AI-ECTA, tariffs on a range of Australian crops will be bound at zero, providing Australian exporters with more certainty on Indian tariffs when planning their crops.

Australia also engages in the plurilateral Environmental Goods Agreement (EGA) negotiations, undertaken in conjunction with 45 other WTO member countries to reduce tariffs on goods that benefit the environment (DFAT, 2023[5]).

The October 2022-23 federal budget provides AUD 12.3 million (USD 8.5 million) over three years to support regional agricultural trade events including Beef Australia 2024, Casino Beef Week, the second Dairy Symposium, LambEx, Hort Connections 2023 and 2024, and other horticulture conferences and agritech industry events. Regional trade events and forums provide opportunities for producers to learn about new on-farm practices that foster innovation, gain direct access to export expertise, connect with businesses and form new partnerships with key international trading partners. In addition, AUD 4 million (USD 2.8 million) has been allocated over four years for the establishment of an Inspector-General of Animal Welfare to strengthen animal welfare assurance, and increase accountability and transparency for animal welfare in livestock exports.

A 10-year *National Agricultural Traceability Strategy 2023-33* and its five-year implementation plan aim to put in place interoperable traceability systems along supply chains to support Australian exports and strengthen responses to biosecurity and food safety, while supporting emerging ESG reporting requirements. The government is also offering several new Agricultural Traceability Grants. The AUD 6 million (USD 4.2 million) *National Agricultural Traceability Regulatory Technology (RegTech) Research and Insights Grant* round opened for applications from 9 November to 14 December 2022, and provides funding for projects lasting up to two years for the investigation of how RegTech (i.e. the use of technology to better achieve regulatory objectives) can assist in streamlining agricultural compliance obligations, and for feasibility assessments of traceability RegTech systems. The AUD 4 million (USD 2.8 million) *National Traceability Sustainability Reporting Uplift Grants* round opened for applications from 19 January to 23 February 2023 and will aim to deliver projects that support the agricultural sector through consistent collection, measurement and reporting of data to demonstrate sustainable practices to meet increasing expectations from international markets and consumers.

Biosecurity remains a critical focus for the Australian Government and is key for preventing, responding to, and recovering from pest and disease outbreaks. The *Biosecurity Amendment (Strengthening Biosecurity) Act 2022* was passed through parliament in November 2022 and introduced key measures to strengthen Australia's ability to manage and respond to emerging biosecurity risks. In addition, the 2022-23 budget provides AUD 134.1 million (USD 93 million) over four years for the *Bolstering Australia's Biosecurity System* package, including:

- AUD 14 million (USD 9.7 million) in emergency funding for biosecurity preparedness in Australia, as well as funding to support Indonesia, Timor Leste and Papua New Guinea to prevent and respond to the spread of foot and mouth disease (FMD) and lumpy skin disease (LSD).
- AUD 61.6 million (USD 42.7 million) to strengthen Australia's biosecurity capability, including in Northern Australia, and to support domestic preparedness and biosecurity outcomes in neighbouring countries.
- AUD 46.7 million (USD 32.4 million) to support continuous improvements in livestock traceability by maintaining systems and ensuring quick recovery from any disease incursions.
- AUD 11.7 million (USD 8.1 million) to expand detector dog and handler capabilities at the border.

Additional funding was announced for the *Supporting Communities Manage Pest Animals and Weeds Program,* which provides AUD 49.1 million (USD 34 million) over four years to deliver better solutions to combat established pest animals and weeds that pose a significant threat to agricultural production, the environment and biodiversity. The *National Forest Pest Surveillance Program* was launched in December 2022 and will improve the early detection of exotic forest pests and the likelihood of their subsequent eradication. A national action plan for production animal health, *Animalplan 2022 to 2027*, was developed and approved following extensive stakeholder engagement with government, industry organisations and animal health experts. It aims to strengthen emergency animal disease preparedness,

bolster on-farm biosecurity systems, support diagnostic and surveillance capabilities, minimise the risk of antimicrobial resistance, foster sustainable industry practices and further enhance traceability systems.

Trade policy responses to the COVID-19 pandemic

The International Freight Assistance Mechanism was an AUD 1.04 billion (USD 721 million) temporary emergency measure that was introduced in response to the collapse of international airfreight capacity in and out of Australia as a result of the COVID-19 pandemic. IFAM supported and maintained domestic and global supply chains by helping to restore key airfreight routes, ensuring the flow of time-sensitive, perishable products and vital medical supplies. The mechanism concluded in June 2022 when international airfreight movements resumed.

Contextual information

Australia is the world's 19th largest economy in purchasing power parity (PPP) terms and the sixth largest country by land area, accounting for 12% of all agricultural land in the 54 countries included in this report, but only 0.5% of the total population of these countries. The country's GDP per capita is more than twice the average of the countries covered in this report (Table 5.3). Agriculture represents a small share of the economy, accounting for just 3.4% of GDP and 2.4% of total employment in 2021. Australia is an important producer of agricultural commodities. In 2021, the country ranked as the world's second-largest producer of sheep meat and wool, the seventh-largest producer of beef, and is also among the world's top-ten producers of wheat, barley, oats, rapeseed and sugar cane.

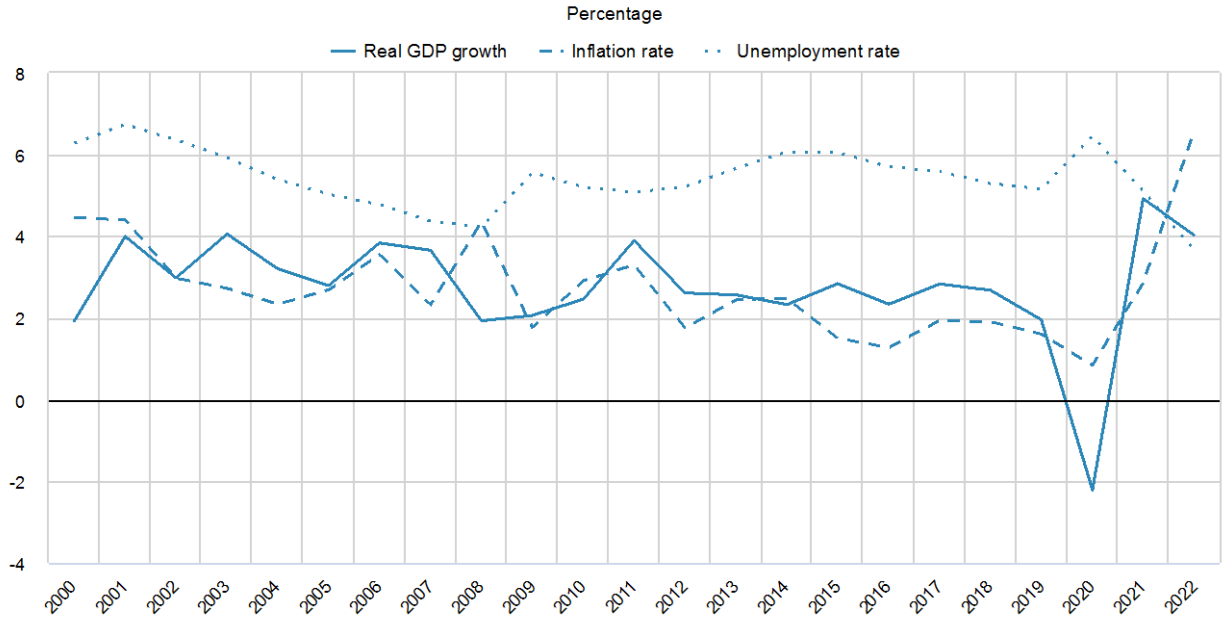
Table 5.3. Australia: Contextual indicators

	Australia		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	539	1 595	1.3%	1.3%
Population (million)	19	26	0.4%	0.5%
Land area (thousand km^2)	7 682	7 692	9.4%	9.3%
Agricultural area (AA) (thousand ha)	455 469	355 775	15.1%	12.1%
			All countries[1]	
Population density (inhabitants/km^2)	2	3	52	64
GDP per capita (USD in PPPs)	28 313	61 977	9 350	23 401
Trade as % of GDP	16.5	17.4	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	3.8	3.4	2.9	3.9
Agriculture share in employment (%)	4.8	2.4	-	-
Agro-food exports (% of total exports)	23.1	12.3	6.2	7.9
Agro-food imports (% of total imports)	4.3	6.2	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	55	59	-	-
Livestock in total agricultural production (%)	45	41	-	-
Share of arable land in AA (%)	5	9	32	34

Note: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

After 28 years of uninterrupted GDP growth, the COVID-19 pandemic brought Australia's economy to a halt in 2020. After a sharp contraction, real GDP growth rebounded quickly and has been strong at 4.0% in 2022, while the unemployment rate has fallen from 6.5% in 2020 to 3.7% in 2022 (Figure 5.4). Inflation also increased to 6.6% in 2022, its highest level in more than three decades, driven by rising costs for energy, housing and food.

Figure 5.4. Australia: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Australia is a net exporter of agricultural products. Around 72% of the value of agricultural production is exported, and the country is a major exporter of wheat, barley, oats, cattle, beef, sheep meat, wool, rapeseed, and chickpeas. Primary goods for final consumption and further processing make up 53% of the country's agro-food exports. Approximately three-quarters of Australia's agro-food imports go to domestic final consumption and the remaining share (24%) is destined for the processing industry (Figure 5.5).

Figure 5.5. Australia: Agro-food trade



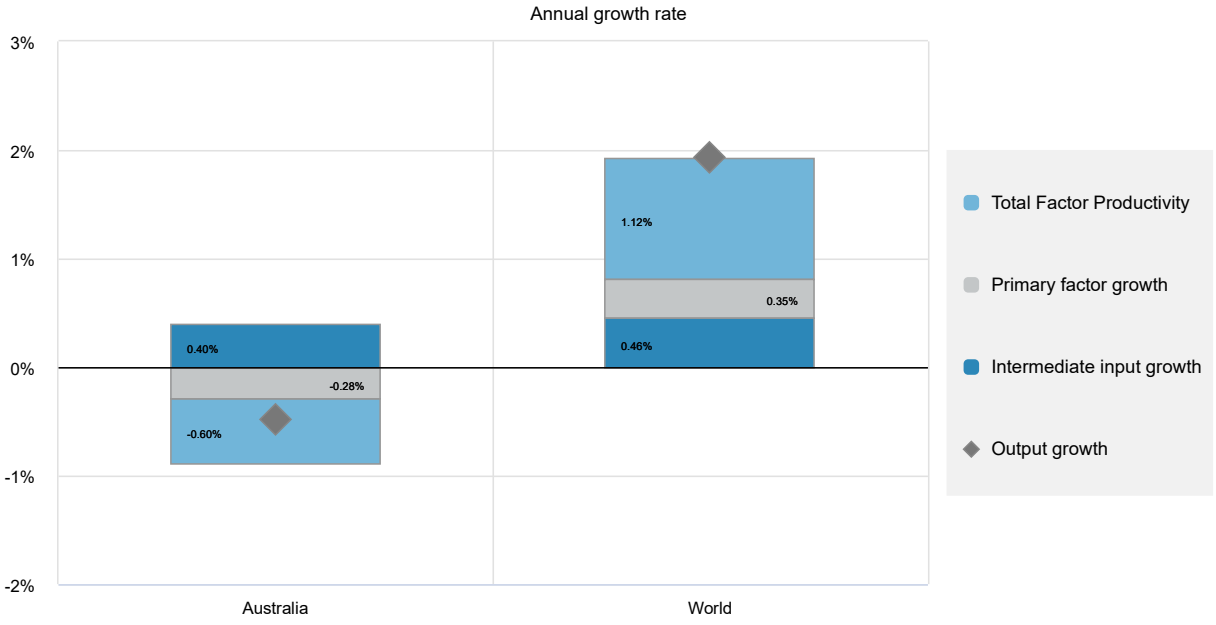
Note: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Over the 2011-20 period, agricultural output declined by 0.5% per year, compared to a 1.9% per year increase globally (Figure 5.6). This was partly due to a decline in total factor productivity (TFP), which fell by -0.6% per year (compared with the global average of 1.1% growth). Primary factor growth also declined at -0.3% per year, driven by a decline in the agricultural land area. These declines were partly offset by an intensification of intermediate input use, which grew at 0.4% per year.

Agriculture accounted for 16.8% of Australia's GHG emissions (78.3 out of 464.8 $MtCO_2eq$) in 2020-21 and can play an important role in helping the country to achieve its economy-wide target of net-zero emissions by 2050 (Table 5.4). Agriculture's contribution to GHG emissions has declined over the past two decades but remains above the OECD level. The share of agriculture in total energy use has increased slightly since 2000 and was above the OECD average in 2021, despite the small share of the sector in the economy.

Compared to the OECD area, agriculture accounts for a relatively high share of total water abstractions. While aggregate national indicators suggest that water stress is less of a problem than in many OECD countries, water availability and competition for natural resources with other sectors remains a significant constraint that is likely to be exacerbated by climate change. Estimates also indicate a relatively low nitrogen surplus balance and point to a low phosphorous balance.

Figure 5.6. Australia: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 5.4. Australia: Productivity and environmental indicators

	Australia		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	1.4%	-0.6%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	20.7	17.3	32.2	30.4
Phosphorus balance, kg/ha	1.3	0.6	3.3	3.0
Agriculture share of total energy use (%)	2.3	2.5	1.7	2.0
Agriculture share of GHG emissions (%)	16.8	12.9	8.6	10.5
Share of irrigated land in AA (%)	0.5	0.4	-	-
Share of agriculture in water abstractions (%)[1]	67.7	67.0	46.6	49.7
Water stress indicator	5.5	3.4	8.3	7.4

Note: *or closest available year.
1. Data are not comparable between time periods, 2020 data from (Australian Bureau of Meteorology, 2021[6]).
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Notes

[1] Examples include the Smart Farms programme and Smart Farming Partnerships under the second phase of the National Landcare Program 2019-23 (https://www.awe.gov.au/agriculture-land/farm-food-drought/natural-resources/landcare/national-landcare-program/australian-government-investment-in-landcare) and the Agriculture Biodiversity Stewardship Package (https://www.agriculture.gov.au/about/reporting/budget/sustaining-future-australian-farming).

[2] Depending on the scale of the disaster, a range of assistance can be made available to primary producers impacted by natural disasters. For example, in the 2019-20 Black Summer Bushfires and 2022 NSW and Queensland floods, primary producers were eligible for AUD 75 000 (USD 56 300) clean up grants, concessional loans along with continued access to the Farm Household Allowance.

[3] These are agreements with New Zealand (ANZCERTA 1983), Singapore (SAFTA 2003), Thailand (TAFTA 2005), the United States (AUSFTA 2005), Chile (ACI-FTA 2009), the ASEAN-Australia-New Zealand Free Trade Area (AANZFTA 2010), Malaysia (MAFTA 2013), Korea (KAFTA 2014), Japan (JAEPA 2015), the People's Republic of China (ChAFTA 2015), the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP 2018), Hong Kong (A-HKFTA 2020), Peru (PAFTA 2020), Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA 2020), the Pacific Agreement on Closer Economic Relations (PACER Plus 2020), the Regional Comprehensive Economic Partnership Agreement (RCEP 2022), the Australia-India Economic Co-operation and Trade Agreement (ECTA 2022) and the United Kingdom (A-UKFTA 2023).

6 Brazil

Support to agriculture

Brazil is a competitive agricultural exporter, with low levels of support and protection to the sector. The Producer Support Estimate (PSE) fell from 7.6% of gross farm receipts in 2000-02 to 3.1% in 2020-22. PSE has been relatively low over the past decade, not surpassing 5% and below the OECD average. Domestic prices align with international markets almost fully, with a ratio of producer to border price (Nominal Protection Coefficient, NPC) of 1.025%.

Average Market Price Support (MPS) decreased from 2021 to 2022 due to higher domestic prices for certain commodities, but still accounted for more than 50% of PSE. The highest rates of positive Single Commodity Transfer (SCT) are seen for cotton, maize, and rice.

Support to producers is also provided through input payments, in particular credit at preferential rates and crop insurance. Concessional credit is available for farm marketing, working capital, and fixed capital investment. Since the late-2000s, all support based on input use – mainly credit and insurance – is conditional on environmental criteria and specific farming practices.

Support to general services (General Service Support Estimate, GSSE) fell from 3.4% of the agricultural value of production in 2000-02 to 0.7% in 2020-22. More than 90% of that goes to agricultural research and development (R&D), technology transfer, and extension services, with the rest used for infrastructure, inspection and control, and land-restructuring. However, GSSE is small relative to the sector's size, and expenditures on R&D and extension services relative to the value of production is only just above the OECD average. The Total Support Estimate (TSE) declined from 0.7% of Gross Domestic Product (GDP) in 2000-02 to 0.5% in 2020-22, suggesting little burden on the economy.

Recent policy changes

The Ministry of Agriculture and Livestock (MAPA) annual Harvest Plan (PAP) defines maximum funding and guidelines for the main policy instruments for 2021-22. Total credit allocation under this plan was BRL 341 billion (USD 66 billion) or 36% more than under the previous plan. Working capital and commercialisation credit represent 72% of the total, with the remainder directed to investment credit. Resources available for the Programme ABC+ increased from BRL 5 billion (USD 968 million) in 2021 to BRL 6.2 billion (USD 1.2 billion) in 2022. The Programme ABC+ was adjusted to comply with the newly updated ABC+ Plan. The Programme provides financing for a variety of activities related to sustainable production, such as bio-inputs, biofertilisers, recovery of degraded areas, no tillage, etc.

Expenditures on subsidies for rural insurance premiums (PSR) reached BRL 1.11 billion (USD 215 million) in 2022. This covers approximately 7.25 million hectares (3.1% of agricultural land), benefiting more than 78 000 producers, and resulting in a total insurance coverage of BRL 43.9 billion (USD 8.5 billion).

After reviewing 30 crops and production systems in 2021, the new rules for Agricultural Climate-Risk Zoning (ZARC) were published in 2022, establishing the method for classifying soil based on water

availability (AD). Soybeans is the first crop to use the new rules for the 2023-24 harvest; studies are being updated for other crops. Moreover, the programme continued to implement ZARC 4.0, which integrates various technical risk data: agro-climatic, management, water activity in soils, and indications of productivity losses.

The Ministry of Rural Development and Family Farming (MDA) was reconstituted in January 2023. This institutional adjustment means that MDA will deal with key challenges such as land reform; sustainable rural development for indigenous, black, and traditional communities; local food supply systems; agricultural sustainable development of family farms, etc. While MAPA is in charge of public policies to promote sustainable agriculture and livestock in general, and of regulating and standardising services linked to the sector. Furthermore, a new structure was established for MAPA, including the new Department of Reforestation and Recovery of Degraded Areas to promote reforestation and agroforestry systems in agricultural production units.

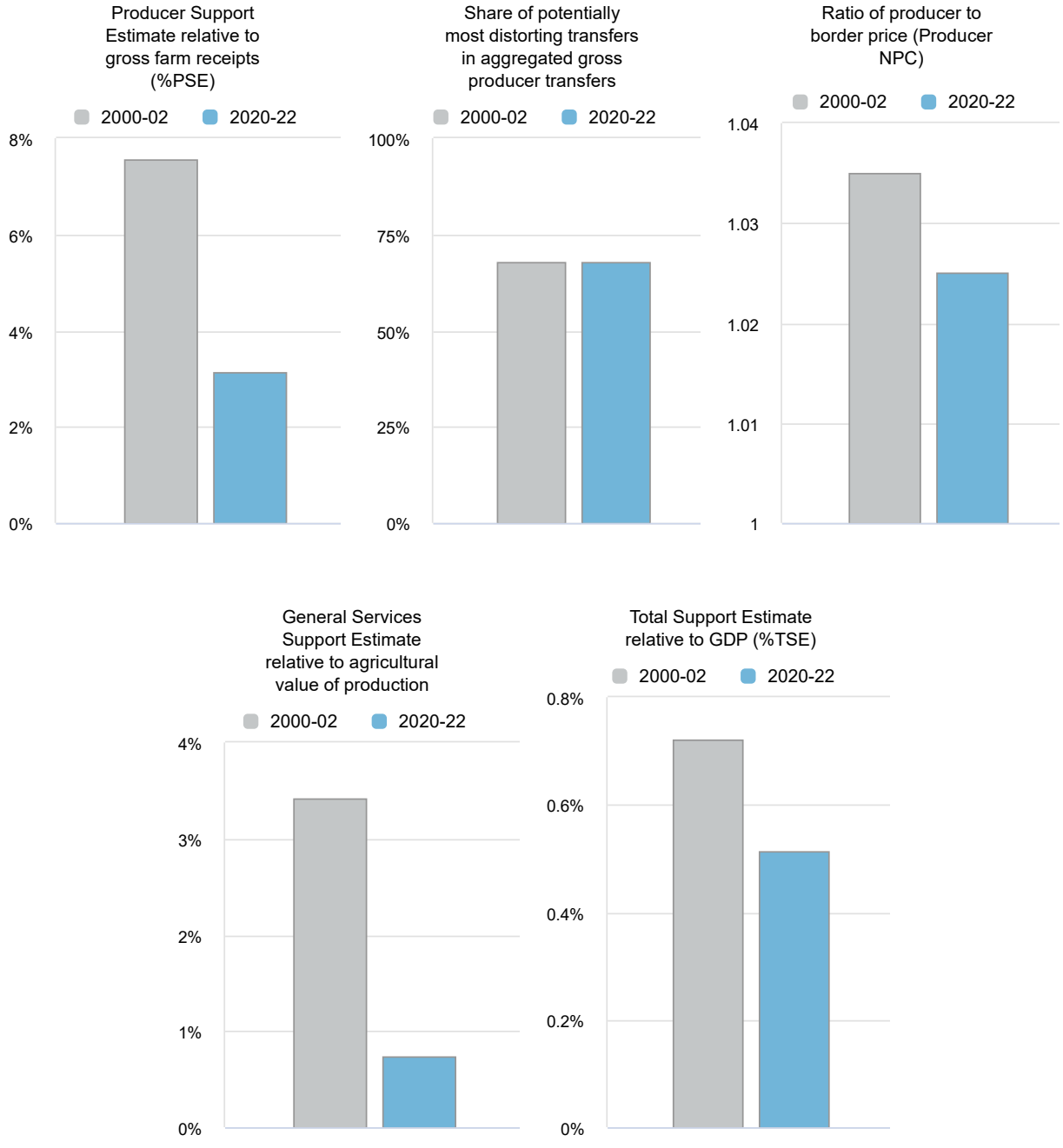
In 2022, some agricultural tariffs were reduced to curb food-price inflation caused by the COVID-19 pandemic and exacerbated by the war in Ukraine. Import tariffs were reduced to zero until 2023 for non-Mercosur imports, which had been at 8% for maize and soybeans, 6% for soymeal and 10% for soy oil.

Assessment and recommendations

- Brazil has a well-developed legal framework and guidelines for adapting its agricultural sector to climate change. The Brazilian Agricultural Policy for Climate Adaptation and Low Carbon Emission (ABC+), has the national sectorial strategy to cope with climate change in agriculture. Moreover, agricultural credit – Brazil's main form of support – is conditioned on implementation of conservation, mitigation, and adaptation practices. However, the implementation of tailored adaptation practices needs to be monitored and evaluated to ensure progress in the sustainable transformation of production systems.
- Brazil's Nationally Determined Contribution (NDC) does not set sector-specific greenhouse-gas (GHG) emission-reduction targets. However, since 2010, the country started incorporating agricultural, forestry, and land-use policies that contribute to climate-change mitigation and adaptation. Sector-specific targets could accelerate the low-carbon transition of agriculture, forestry, and other land use (AFOLU) sector, and provide mitigation goals for measuring progress – particularly given that AFOLU contributes 43% of national GHG emissions.
- Brazil is one of the most biodiverse countries in the world, but this biodiversity could be at risk, notably from land-clearing for agriculture. Agricultural policy instruments, particularly related to land-use change involving deforestation such as the Forest Code, must be legally binding and better enforced.
- Agricultural credit at preferential interest rates represents a main source of agricultural support in Brazil. A reform of the credit system could consider decreasing concessional loans for working capital to commercial farms. Moreover, simplified regulations and procedures could facilitate access by rural borrowers increasing credit access to small-scale and medium size farms.
- Credit programmes that provide incentives for sustainable agriculture could be expanded. Increasing the share of supported credit for technological packages that focus on innovation, modernisation, climate-change mitigation and adaptation, and increased productivity can reach more farmers and accelerate the transition to an environmentally sustainable sector.
- Insurance-subsidy programmes need further improvement of monitoring and evaluation to determine their impact and ensuring efficient use of public funds, while confirming that they do not crowd out market solutions.

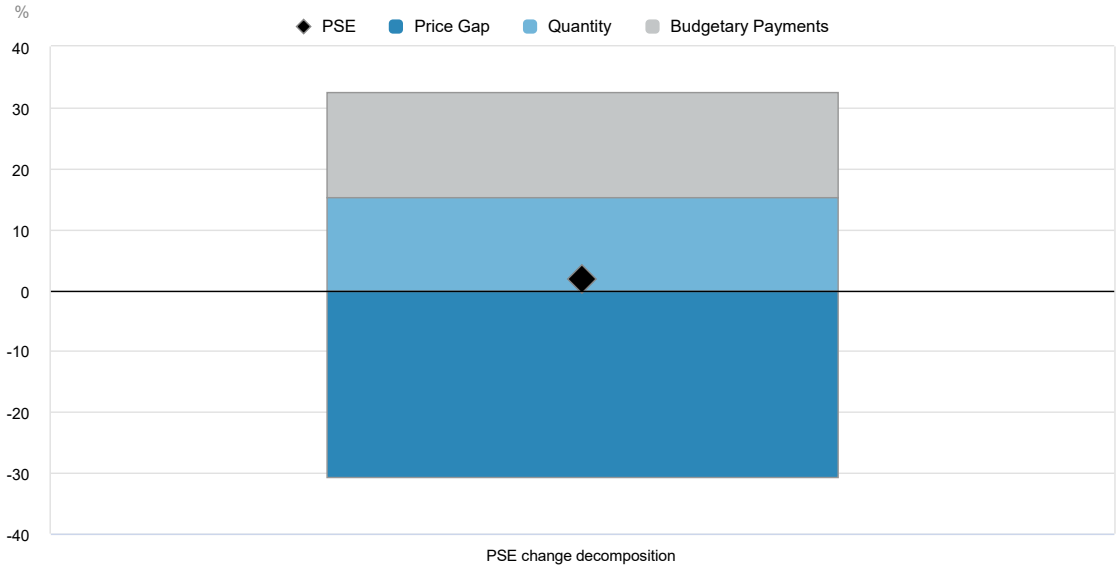
- Insurance and credit support are conditional on environmental criteria and zoning rules that promote environmental improvements such as preservation of forests and native vegetation. The impact of environmental conditionality set by the Environmental Rural Registry (CAR), ZARC, and the Forest Code should continue being assessed with respect to outcomes such as targets related to deforestation and GHG emissions. Better law enforcement is needed to halt deforestation rates. This should remain the basis for improving policy design for environmental conditionality, along with specific programmes such as the ABC and initiatives against deforestation.
- Budgetary support to GSSE is mostly invested in R&D, technology transfers, and extension services. But these public outlays represent less than 1% of the value of agricultural production. It is important to increase Brazil's significant research and extension capacity to match sector growth, notably through the Brazilian Agricultural Research Corporation (EMBRAPA), by focusing on sustainability as much as on productivity growth, and increasing the diffusion and creation of innovation networks for medium- and small-scale farmers.

Figure 6.1. Brazil: Development of support to agriculture



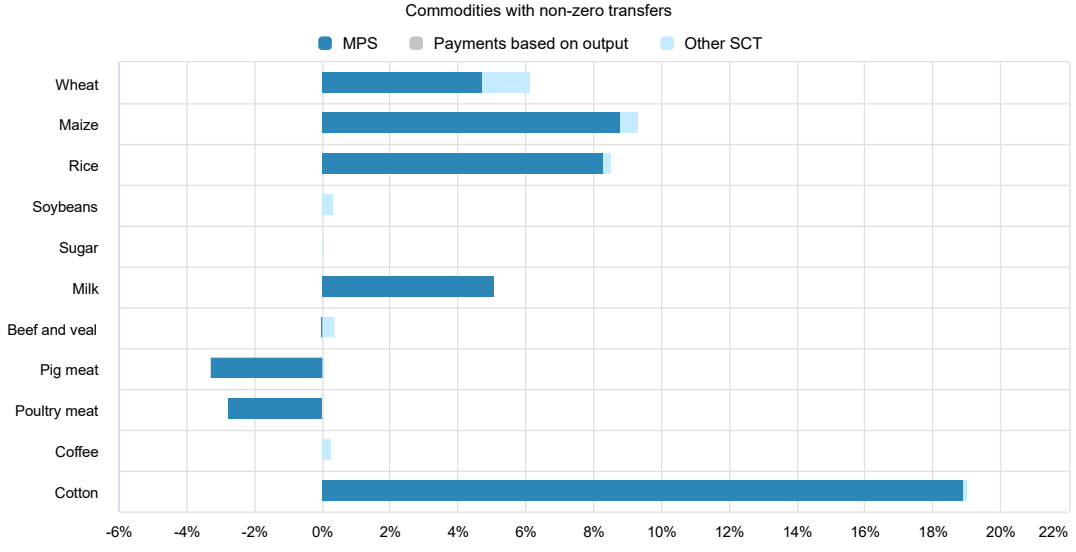
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 6.2. Brazil: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency. The producer price change and the border price change are not calculated when both negative and positive market price support (MPS) occur at the commodity level for the previous year. Note that negative MPS estimates for livestock products may arise in cases of aligned product prices if there is positive MPS for feed commodities.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 6.3. Brazil: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Table 6.1. Brazil: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**35 538**	**193 947**	**149 777**	**200 503**	**231 561**
***of which:** share of MPS commodities (%)*	77.53	89.60	88.53	90.60	89.65
Total value of consumption (at farm gate)	**34 563**	**115 359**	**89 447**	**120 633**	**135 997**
Producer Support Estimate (PSE)	**2 869**	**6 107**	**2 352**	**7 740**	**8 230**
Support based on commodity output	1 013	3 704	851	5 636	4 626
Market Price Support[1]	973	3 702	850	5 634	4 622
Positive Market Price Support	1 179	4 369	1 020	7 465	4 622
Negative Market Price Support	-206	-667	-171	-1 831	0
Payments based on output	40	2	2	1	4
Payments based on input use	1 856	2 342	1 410	2 059	3 557
Based on variable input use	825	1 251	730	950	2 073
with input constraints	0	1 251	730	950	2 073
Based on fixed capital formation	955	1 071	661	1 089	1 463
with input constraints	0	1 071	661	1 089	1 463
Based on on-farm services	76	20	19	20	21
with input constraints	0	0	0	0	0
Payments based on current A/An/R/I, production required	0	61	91	46	48
Based on Receipts / Income	0	61	91	46	48
Based on Area planted / Animal numbers	0	0	0	0	0
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	0	0	0	0
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0
Percentage PSE (%)	**7.56**	**3.12**	**1.55**	**3.82**	**3.50**
Producer NPC (coeff.)	**1.04**	**1.03**	**1.01**	**1.04**	**1.02**
Producer NAC (coeff.)	**1.08**	**1.03**	**1.02**	**1.04**	**1.04**
General Services Support Estimate (GSSE)	**1 242**	**1 439**	**1 487**	**1 489**	**1 340**
Agricultural knowledge and innovation system	663	1 347	1 414	1 390	1 237
Inspection and control	51	18	18	17	18
Development and maintenance of infrastructure	471	46	48	44	46
Marketing and promotion	5	3	1	3	4
Cost of public stockholding	53	25	6	34	36
Miscellaneous	0	0	0	0	0
Percentage GSSE (% of TSE)	**29.78**	**17.18**	**31.80**	**14.88**	**12.91**
Consumer Support Estimate (CSE)	**-1 176**	**-1 486**	**3**	**-2 505**	**-1 956**
Transfers to producers from consumers	-1 175	-3 218	-880	-6 148	-2 625
Other transfers from consumers	-277	-114	-143	-60	-140
Transfers to consumers from taxpayers	31	807	838	775	809
Excess feed cost	245	1 039	189	2 928	0
Percentage CSE (%)	**-3.34**	**-1.31**	**0.00**	**-2.09**	**-1.45**
Consumer NPC (coeff.)	**1.04**	**1.03**	**1.01**	**1.05**	**1.02**
Consumer NAC (coeff.)	**1.03**	**1.01**	**1.00**	**1.02**	**1.01**
Total Support Estimate (TSE)	**4 142**	**8 353**	**4 677**	**10 004**	**10 380**
Transfers from consumers	1 452	3 332	1 024	6 207	2 765
Transfers from taxpayers	2 967	5 136	3 796	3 856	7 754
Budget revenues	-277	-114	-143	-60	-140
Percentage TSE (% of GDP)	**0.72**	**0.51**	**0.32**	**0.62**	**0.56**
Total Budgetary Support Estimate (TBSE)	**3 169**	**4 651**	**3 827**	**4 369**	**5 757**
Percentage TBSE (% of GDP)	**0.55**	**0.28**	**0.26**	**0.27**	**0.31**
GDP deflator (2000-02=100)	**100**	**427**	**389**	**430**	**461**
Exchange rate (national currency per USD)	**2.37**	**5.24**	**5.15**	**5.39**	**5.16**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Brazil are: wheat, maize, rice, soybean, sugar, milk, beef and veal, pig meat, poultry, cotton, coffee.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

Before the 1990s, Brazil had a history of government intervention in the agricultural sector. Price interventions were first introduced in the 1940s amid food security concerns (OECD, 2015[1]; OECD, 2005[2]), and starting in the 1950s, Brazil adopted an import-substitution industrialisation strategy with wide-ranging controls over supply and prices in the agro-food sector. Prices were both supported for producers and subsidised to consumers.

The National Agency for Food Supplies (SUNAB) regulated distribution of basic foodstuffs and set prices and profit margins for all levels of the food chain, including low prices for consumers. SUNAB also controlled agro-food imports and exports. At the producer level, a general price support system existed for rice, maize, soybeans, beans, cassava, and cotton. Another government agency, the Company for Production Financing (CFP), carried out direct purchases of these commodities at minimum guaranteed prices. Marketing boards were created for wheat, sugar, and coffee. They set overall production volumes, administered marketing quotas, and controlled prices and trade.

These policies continued until the late 1980s, when the government undertook a general restructuring of the economy. Trade was liberalised, state owned enterprises privatised, domestic markets deregulated, and a customs union established with other South American countries (Mercosur). Agricultural policies were no exception to this move towards openness and less state intervention. State enterprises related to agriculture were dismantled or their functions reduced. Agricultural import tariffs were substantially reduced. Export licensing for primary agricultural products was removed. Brazilian producers faced fewer controls and obtained freer access to world commodity and input markets.

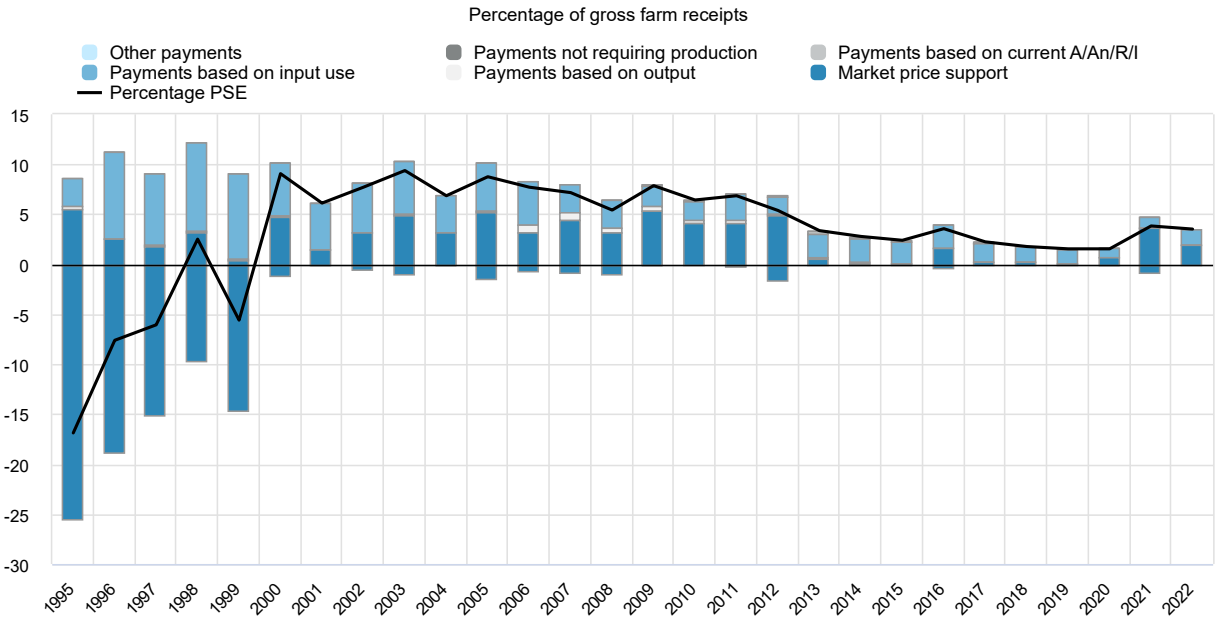
Since the mid-2000s, policy has emphasised support to smallholders and setting minimum prices for staples produced in the poorest regions of the country. Purchases of staple foods to be distributed to poor populations has been enhanced, and mandatory sugar cane ethanol fuel-blending continue to be imposed. The National Programme for the Production and Use of Biodiesel was established in 2005 and the blending of biodiesel with mineral diesel became mandatory in 2008. Currently, the blend percentage varies between 6% and 15%. Biodiesel is sold through public auctions, where preference is given to manufacturers that support family farming. In addition to prioritising the acquisition of raw materials from family farms, technical assistance by the government is targeted to these farms (Table 6.2).

Table 6.2. Brazil: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to 1990s	Import substitution Industrialisation model Closed economy	Fixed exchange rates High agricultural tariffs Production and marketing control of agricultural products (CFP state company) Minimum agricultural prices for producers (CFP state company) Subsidised prices of agricultural products for consumers (SUNAB state company) Creation of the Brazilian Agricultural Research Corporation (EMBRAPA) Consumption of sugar cane ethanol stimulated through obligatory blending of ethanol with gasoline
1990-2005	Reforms to trade liberalisation	Floating exchange rates Removal of agricultural price and output controls Reduction of agricultural tariffs of both outputs and inputs Dismantling of marketing boards for wheat, sugar and coffee Dismantling of SUNAB and CFP WTO agreement and Mercosur signed Minimum prices of basic products kept but reduced Subsidised credits (working capital and marketing loans) enhanced as the financial crisis hit farmers Liberalisation of the wheat, coffee and sugar sectors Creation of the Ministry of Rural Development and Family Farming (MDA) Consumption of sugar cane ethanol was also stimulated by the growth of the flex fuel vehicle fleet. Flex Fuel cars have represented more than 85% of new vehicle sales in Brazil since the late 2000s.
2005-2015	Continuing reforms	Subsidised agricultural credit and insurance subsidies as main agricultural policy, supported by the Law of agribusiness bonds 11076/2004. Minimum prices of basic products set for smallholders through government purchases of staple foods Sugar cane ethanol ratio policy continues to apply Government purchases of staples kept in order to provide food to poor populations Institutionalisation of the National Programme for the Production and Use of Biodiesel. Current regulations of blending ranged between 6% and 15%.
2015-present	Institutional changes	Incorporation of the structure of the Ministry of Rural Development and Family Farming (MDA) into the into the Ministry of Agriculture and Livestock (MAPA) in 2019, then reinstated as an independent Ministry in 2023. Relatively low support, with subsidised credit continuing as key agricultural policy tool. New competences of the 2023 MDA include family farming, agrarian reform, incorporation of several state enterprises such as CONAB (national supply), CEASA-Minas (wholesale Minas), CEAGESP (warehouse company), ANATER (extension services) and INCRA (agrarian reform). In 2023, MAPA created under its structure the Department of Reforestation and Recovery of Degraded Areas.

Brazil's support to agricultural producers included market price support and input subsidies in the 2000s, up to 10% of gross farm receipts. Market price support has gradually disappeared and is dominated by subsidised credit and insurance subsidies. In recent years, total support in Brazil is mostly in the form of budgetary support, in particular for producers' inputs and for the provision of general services. Brazil provides a relatively low aggregate level of support and protection to agriculture, reflecting its position as a competitive exporter and price maker for a range of commodities (Figure 6.4).

Figure 6.4. Brazil: Level and PSE composition by support categories, 1995 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

The annual Agricultural and Livestock Plan (PAP) administered by the Ministry of Agriculture and Livestock (MAPA) defines the key parameters of agricultural policy (MAPA, 2022[3]). Family farming policy is managed by the newly reinstated Ministry of Rural Development and Family Farming (MDA). Innovation, R&D services are provided by the Brazilian Agricultural Research Corporation (EMBRAPA), created in 1973. Extension services are provided by the National Agency for Technical Assistance and Rural Extension (ANATER) that has agencies in each state.

Agricultural policy has been stable over the past decade, with a focus on:

- rural credit (since the 1960s)
- risk management programmes including subsidised insurance programmes (since 2005)
- limited use of minimum and reference prices and marketing interventions (e.g. government purchases of food)
- agricultural land zoning with environmental compliance and promotion of biofuels.

While price support is low overall, minimum guaranteed prices are used regionally. These cover a broad range of crops and a few livestock products such as cow and goat milk and honey. Minimum prices are set by the National Monetary Council (CMN) based on domestic and international prices, and the evolution of production costs in different locations. These are implemented through several price support mechanisms on the domestic market, including premiums to commercial buyers who pay minimum fixed prices to producers, and public and private options contracts backed by a private risk premium option. In addition, producers receive reduced-interest marketing loans, which enable them to withhold the sale of a

product in anticipation of a higher market price. The National Food Supply Company (CONAB) operates these programmes on behalf of MAPA. Several programmes offer deficiency payments calculated as the difference between the market price and the minimum (reference) price (e.g. the Rural Equity Prize programme called PEPRO, and the Product Reward Prize programme known as PEP).

One of the main agricultural policy instruments is credit at preferential interest rates provided to large, medium, small-scale, and family farms. It is designed in co-operation between the Central Bank, the Treasury, the Secretariat of Economic Policy (Ministry of the Economy) and the MAPA. Most rural credit is allocated under the National Rural Credit System (SNCR) and provided at preferential interest rates with differentiated conditions for family farmers (PRONAF), small and medium size farmers (PRONAMP) and commercial farms. The main sources of preferential rural credit are Compulsory Resources or lending quotas, equivalent to around 25% of sight deposits in commercial banks and 59% of Rural Saving deposits, Constitutional Funds and loans from the National Bank for Economic and Social Development (BNDES).

Agricultural credit is provided as short-term credit for commercialisation and working capital and long-term credit for investments on fixed capital formation. Long-term credit is provided through the Programme ABC+ used on investments on adaptation and mitigation, Moderfrota used for machinery and equipment, the PRONAF and PRONAMP with their investment component, and Inovagro. Additional sources of rural credit are the Coffee Fund (FUNCAFÉ) and the Agribusiness Credit Notes called LCAs (*Letras de Crédito do Agronegócio*).

Two agricultural insurance programmes target commercial farmers. The rural insurance premium programme (PSR) provides insurance premium subsidies to a diverse range of producers including commercial producers who establish contracts with insurance companies listed by the government, and the general agriculture insurance programme (PROAGRO) offers farmers partial compensation for investment losses on working capital loans. Most resources from this programme are allocated to the southern region for grain crops, mainly soybeans. Small-scale family farms can benefit from the PROAGRO-Mais or family farming insurance (SEAF) and the crop guarantee programme in the north-east of the country (*Garantía Safra*, GS).

Rural credit and subsidies insurance programmes must comply with environmental criteria defined by the Environmental Rural Registry (CAR), a mandatory digital registration. Working capital credit is conditional on agricultural zoning of climatic risks (Agricultural Risk Zoning, ZARC), which links agricultural support to farming practices and activities adapted for the environmental sustainability of each geographical zone. Compliance with zoning is also required to access both PRS and PROAGRO programmes. Rural environmental registration of geo-referenced information on rural property, including property perimeters, location of Permanent Preservation Areas, Legal Reserves, Restricted Use Areas, and areas of agricultural production is compulsory across the country since 2012.

Brazil's central initiative on adaptation and mitigation in agriculture is the National Low Carbon Agriculture Plan (ABC+ Plan), which seeks to disseminate technologies that mitigate GHG emissions in agricultural production and promote adaptation to climate change. A key programme under this ABC Plan, with a strong environmental component on mitigation, is the Low Carbon Agricultural Programme (ABC Programme), providing credit to farmers for activities that reduce GHG emissions; as well as promote adaptation to climate change. Brazilian agricultural policies related to climate change mitigation are embedded in the country's agricultural policy instruments such as credit, insurance and zoning. For example, credit provided by PRONAF such as PRONAF-Agroecologia, PRONAF-Bioeconomia, FNE Verde, FNO Verde and FCO Verde, incorporate mitigation and adaptation features.

The ABC Programme is subdivided into the following subprogrammes: a) Recovery of degraded pastures (ABC Recovery); b) Implementation and improvement of organic agricultural production systems (ABC Organic); c) Implementation and improvement of no-tillage systems in straw (ABC No-Till); d) Implement and improve crop-livestock, crop-forest, livestock-forest or crop-livestock-forest integration systems and agroforestry systems (ABC Integration); e) Implementation, maintenance and improvement of commercial

forest management, including those destined for industrial use or charcoal production (ABC Florestas); f) adequacy or regularisation of rural properties concerning environmental legislation (ABC Ambiental); g) implementation, maintenance and improvement of waste treatment systems and waste from animal production for energy generation and composting (ABC Waste Treatment); h) plantation, improvement and maintenance of oil palm forests, primarily in degraded productive areas (ABC Dendê); i) encouraging the use of biological nitrogen fixation (BNF) (ABC Fixation); j) adoption of conservation practices for the use, management.

Climate change adaptation policies in agriculture

Brazilian agricultural policies related to climate-change adaptation (and mitigation) are mainstreamed into core agricultural policy instruments such as credit, insurance, and the land-management tool of zoning.

The 2009 National Policy on Climate Change (NPCC) formalised Brazil's voluntary commitment on GHG emissions to the United Nations Framework Convention on Climate Change (UNFCCC). As part of the 2010 NPCC, the Sectorial Low Carbon Emission and Adaptation to Climate Change Agriculture Plan (*ABC Plan*) was developed to reduce GHG emissions and adapt agriculture to climate change.

The ABC Plan was updated in 2022 and published the Brazilian Agricultural Policy for Climate Adaptation and Low Carbon Emission (*ABC+ Plan)*. Its overarching objective is to promote adaptation to climate change and reduce GHG emissions in Brazilian agriculture by increasing the efficiency and resilience of production systems and integrated landscape management (MAPA, 2022[4]). It has the following specific objectives:

- support the adoption and conservation of sustainable agricultural production systems that increase productivity, income, and resilience while controlling GHG emissions
- improve the transfer and dissemination of technologies, training, and technical assistance for production systems, practices, products, and sustainable processes (SPS-ABC) within the agricultural sector
- promote and support applied research for SPS-ABC, SPS-ABC-development or -improvement, focusing on increasing resilience, productivity and income, and controlling GHG emissions
- create and strengthen mechanisms to recognise and appreciate farmers who adopt SPS-ABC
- expand and diversify sources for financing initiatives linked to SPS-ABC
- improve the ABC+ Plan's information-management system to measure, report, and verify SPS-ABC, and monitor and evaluate its portfolio of actions and results
- promote agriculture that is integrated with the landscape to encourage farms' environmental compliance and sustainable production in farming areas

Actions of the ABC+ Plan are divided between three new concepts: (1) an Integrated Landscape Approach (ILA) focused on increasing the resilience of agricultural production systems; (2) synergy between GHG mitigation and adaptation; and (3) adoption and maintenance of SPS-ABC (Table 6.3).

Brazil also has programmes and policies to support climate-change adaptation over a range of time horizons:

- Measures to buffer the short-term impact of shocks include early-warning systems, monitoring, seasonal forecasts, emergency-preparedness planning, and support for recovery after climate-change related events, such as the PROAGRO and PSR climate disaster-insurance programmes.
- Measures to address medium-term adaptation include new production practices as those financed by the ABC+, shifting planting dates according to ZARC, which considers among other things water availability for different type of soils, adjusting crop mix, decision-support tools, extension and

outreach programmes, developing inter-cropping systems (ILPF), monitoring production systems with the GEO-ABC platform, among others.

- Measures to address long-term adaptation include moving production affected by changing climate to new regions (for example adaptation of soybean production from subtropical to tropical areas), developing new value chains like pulses cultivation, investing in major infrastructure, developing new governance structures, collaborative planning, and multi/transdisciplinary research. The ABC+ credit programme plays an important role in long-term initiatives, as it finances the acquisition and use of new agricultural technologies.

Table 6.3. Brazil's commitments under SPS-ABC for mitigation and adaptation in agriculture

SPS$_{ABC}$		Targeted outcomes	Mitigation potential of GHG emissions ($MtCO_2eq$ millions)	CC adaptation supported
Practices for Recovery of Degraded Pastures (PRPD)[1]		30 million ha	113.70[2]	Increasing the carbon stock and allows greater infiltration and storage of water by increasing the amount, proportional distribution, depth, and decomposition of roots along the soil profile. Reducing erosion and increases adaptive capacity to prolonged droughts.
No-Till System	No-Till System for Grain Production	12.5 million ha[3]	12.11[4]	Promoting conservation of natural resources, maintains permanent soil cover, and improves its chemical, physical and biological quality. Promoting greater availability of water and a favourable environment for crop root growth, increasing efficiency of water use. Reducing productivity losses and the vulnerability of grains to pests by reducing water availability for long periods. Contributing to reducing the negative impacts of extreme rainfall events on soil and water conservation.
	No-Till System for Horticulture (NTSH)	0.08 million ha[5]	0.88[6]	Increasing efficiency in the use of inputs, reducing the loss of soil, water and nutrients by erosion, and reducing the thermal amplitude and temperature of the soil. Promoting less dependence on external inputs, and less use of fossil fuels. Making it possible to improve the use of irrigation water. Reducing losses to erosion.
Integrated Systems (SIN)	Integrated crop-livestock-forestry systems (ILPF)	10 million ha[7]	37.90	Reducing the effects of water-deficit, increasing thermal comfort and animal welfare, improving the productivity of system components and the use of natural resources, especially soil and water, and minimising pasture losses in regions subject to sudden thermal inversions.
	Agroforestry systems (SAF)	0.10 million ha	0.38	Improving physical, chemical and biological properties of soils, reducing erosion, increasing water-stock and quality, intensifying nutrient cycling, reducing the need for fertilisers and pesticides, increasing biomass production, increasing biodiversity, climate stability and microclimate of production systems. Promoting diversification of production and increasing farmers' level of employment and income.

SPS_{ABC}	Targeted outcomes	Mitigation potential of GHG emissions ($MtCO_2eq$ millions)	CC adaptation supported
Commercial Forestry (PF)	4 million ha	510[10]	Increasing water-capture and depth, and streamlining water cycles in their surroundings. Creating habitats for several animal and plant species, with increased biodiversity. High potential to generate products and bioproducts for different uses.
Bio-inputs (BI)	13 million ha	23.40[11]	Increasing root growth, allowing greater use of water available in the soil. Improving physical and chemical attributes of the soil. Reducing the use of chemical fertilisers based on nitrogen, phosphorus and potassium, both via the supply of nutrients via microbes and by increasing the efficiency of fertiliser use by plants. Inducing plants' defence system.
Irrigation Systems (SI)	3 million ha[12]	50[13]	Reducing the vulnerability of production systems to dry spells and the risk of crop loss due to extreme events. Increasing the stability and supply of food throughout the year.
Animal Production Waste Management (APWM)[14]	208.4 million m^3	118.20[15]	Decreasing external dependence on fertilisers and energy. Is a complementary source of income.
Sustainable Intensive Cattle Finishing (ICF)	5 million cattle heads[16]	16.24[17]	Promoting the best use of forage resources. Increasing productivity.
TOTAL SPS_{ABC}	72.68 million ha 208.4 million m^3 5 million cattle heads	1 042.41	Decreasing vulnerability and increasing resilience of agricultural production systems. Promoting conservation of natural resources, increasing biodiversity and climate stability of production systems.

Notes: 'SPS-ABC' means production systems, practices, products, and sustainable processes of the ABC+ Plan. SPS-ABC by 2023, considering 2020 as baseline year. (1) Considering recovery or reclaiming degraded pastures; (2) Considering a default emission/removal factor of 3.79 MtCO2eq ha-1 year-1); (3) Considering 4.5 million ha in NTS and 8.0 million hectares in NT; (4) Considering carbon sequestration rates of 1.75 Mg C ha-1 year -1 for SPD and 0.53 Mg C ha-1 year -1 for PD, and conversion factor for CO_2eq of 3.67; (5) Considering at least 10% of the horticultural production area being converted from conventional to Reduced Revolving Systems (RRS) or NTSH; (6) Calculated based on the reduction of the use of 200 kg ha-1 of nitrogen fertilisers, in 8 annual cycles, and considering IPCC default emission/removal factors of 0.01 for N2O, and conversion factor for CO_2eq 3.67; (7) Considering 1 million hectares with tree species; (8) Considering emission/removal factor of 33.79 Mg CO2 eq ha-1 year-1); (9) Considering default emission/removal factor of 3.79 $MtCO_2$ eq ha-1 year-1; (10) Considering default emission/removal factor for eucalyptus, pine, and other commercial tree species; (11) Reduction calculated based on the replacement of chemical fertilisers by the adoption of microbial processes; (12) Considering areas of intensification, with aggregation of areas under rainfed agriculture, and expansion, aggregating areas of pastures, especially degraded pastures; (13) Considering emission/removal factor of 3.03 Mg CO_2 eq ha-1 year-1; (14) Whereas 27% of total waste generated by agricultural production systems is treated by bio-digestion or composting; (15) Calculated according to the methodology used in the Technical Note: "Diagnosis of the expansion of using technology for animal waste treatment (TDA) in Brazil between 2010 and 2019" ; (16) Considering cattle finished in feedlot and dry feeding on pasture, although there is no official data on how much they represent of the total number of animals slaughtered in the country; (17) Considering growth in herd under Intensive Finishing is 500 000 cattle per year, with mitigation potential of approximately 11.4 kg CO_2 eq/kg carcasses, equivalent to 3,250 kg CO_2 eq/animal of 19.
Source: (MAPA, 2022[4]).

Domestic policy developments in 2022-23

Each year, MAPA releases its annual Harvest Plan that defines the maximum resources and guidelines for main policy instruments: 1) rural credit; 2) agricultural insurance; 3) commercialisation support; 4) the zoning programme; and 5) the minimum and reference prices for each production year. While the new

government that took office in 2023 continued implementing the Harvest Plan 2022/23, new emphasis has been given to small-scale agriculture, sustainability, conservation, and environmental protection.

For the 2022/23 harvest plan, the total credit allocation was BRL 341 billion (USD 66 billion), an increase of 36% compared to the 2021/22 harvest plan. Working capital and commercialisation credit represent 72% of the total with the remainder directed to investment credit. This total credit allocation is divided between small-scale farmers who receive 16% (PRONAF), medium-size producers who receive 13% (PRONAMP), and other producers who receive 71%. Preferential interest rates increased by between 1.5 and 4.5 percentage points depending on the type of credit provided to farmers.

The available resources for the Programme ABC+ increased from BRL 5 billion (USD 968 million) in 2022 to BRL 6.1 billion (USD 1.2 billion) in 2023; moreover, the Programme ABC+ had to be adjusted to comply with the newly updated ABC+ Plan. Some activities financed under the Programme ABC+ are biomass-based inputs and organic fertilisers, renewable energy systems, power generation from biogas and bio-methane, restoring degraded areas and pastures, implementing integrated crop-livestock-forestry systems, adopting conservation practices, managing, and protecting natural resources, organic agriculture, among many others. These measures are driven by concessional loans provided through the Programme ABC+. Moreover, of the total resources of the Harvest Plan, 47% are directed to financing sustainable production systems.

In 2022 expenditures on rural insurance subsidies (PSR) reached BRL 1.11 billion (USD 215 million). This subsidy covers approximately 7.25 million hectares (3.1% of total agricultural land), benefiting 78 574 producers, and resulting in a total insurance coverage of BRL 43.9 billion (USD 8.5 billion). The Minimum Price Policy (PGPM) for the 2022/23 harvest identified 27 regional and national products including main grains, as well as 17 local products for the domestic market.

A new rule document for the Agricultural Risk Zoning (ZARC) was published in 2022, establishing the method for classifying soil, based on water availability (AD). Soybeans is the first crop to use the new rules for the 2023/24 harvest; studies are being updated for other crops. Moreover, the ZARC continued to implement “ZARC 4.0” that integrates various technical risk data: agro-climatic, management, soils and indications of productivity losses. MAPA, EMBRAPA and the Central Bank agreed to jointly provide funds for research on the ZARC programme, with the objective of expanding harvested areas and production systems in the country through new zoning. These funds also aim at modernising the information collection and methods to determine the most suitable planting periods, and minimising the risks related to adverse climatic events. By 2022, 30 crops and production systems were researched by the ZARC.

The 2022 Agro Law 2 aims at the simplification of the registration of guarantees for rural credit operations. An additional Decree in July 2022 sets mandatory procedures for the traceability of products of plant origin for agents of the supply chains, including control measures for food safety and quality.

In January 2023, the Ministry of Rural Development and Family Farming (MDA) was reinstated. Key competences of MDA are: 1) sustainable rural development aimed at family farms and other traditional communities; 2) agricultural policy for family farms covering production, credit, insurance, promotion and productive inclusion; 3) conservation and management of natural resources linked to family farms ; 4) biodiversity, conservation, protection and use of the genetic resources of interest to family farms; and 5) production and dissemination of information on agricultural and livestock systems, including socio-biodiversity products. Also in January 2023, a new structure of MAPA was established, including the creation of the Department of Reforestation and Recovery of Degraded Areas. The new Department oversees promoting reforestation and the agroforestry systems in agricultural production units.

Domestic policy responses to Russia’s war of aggression in Ukraine

The country has been incentivising the use of biomass-based inputs and organic fertilisers, to reduce the dependency on the world market of chemical fertilisers. The bio-input portfolio is wide and includes

inoculants, plant growth promoters, ingredients for plant and animal nutrition, plant extracts, pest, parasites and diseases control agents.

Trade policy developments in 2022-23

Trade policy responses to Russia's war of aggression in Ukraine

In 2022, some agricultural tariffs were reduced to curb food price inflation caused by COVID-19 and exacerbated by the war in Ukraine. Import tariffs for non-Mercosur imports, which had been at 8% for maize and soybeans, 6% for soymeal and 10% for soy oil, were temporarily reduced to zero.

Contextual information

Brazil is one of the ten biggest economies of the world, and it is the largest country in Latin America in terms of area and population. It has abundant land and water resources and is a major agricultural producer and exporter. The share of agriculture in Brazil's GDP increased from 5.5% in 2000 to 6.9% in 2021, while its share in employment decreased from 16.3% to 9.7% during the same period. These shares remain higher than in most other countries covered in this report. Agro-food exports have grown in importance for Brazil, representing 37% of its total exports in 2021. Arable land accounts for 24% of Brazilian agricultural land.

Brazil is among the world's leaders in the production of soybeans, poultry, beef, cotton, corn, and orange juice, being the third biggest exporter of agro-food products after the European Union and the United States. Around two-thirds of the total value of agricultural production are crop products, and one-third livestock products. The main product in Brazilian exports is soybeans in grain, meal, and oil.

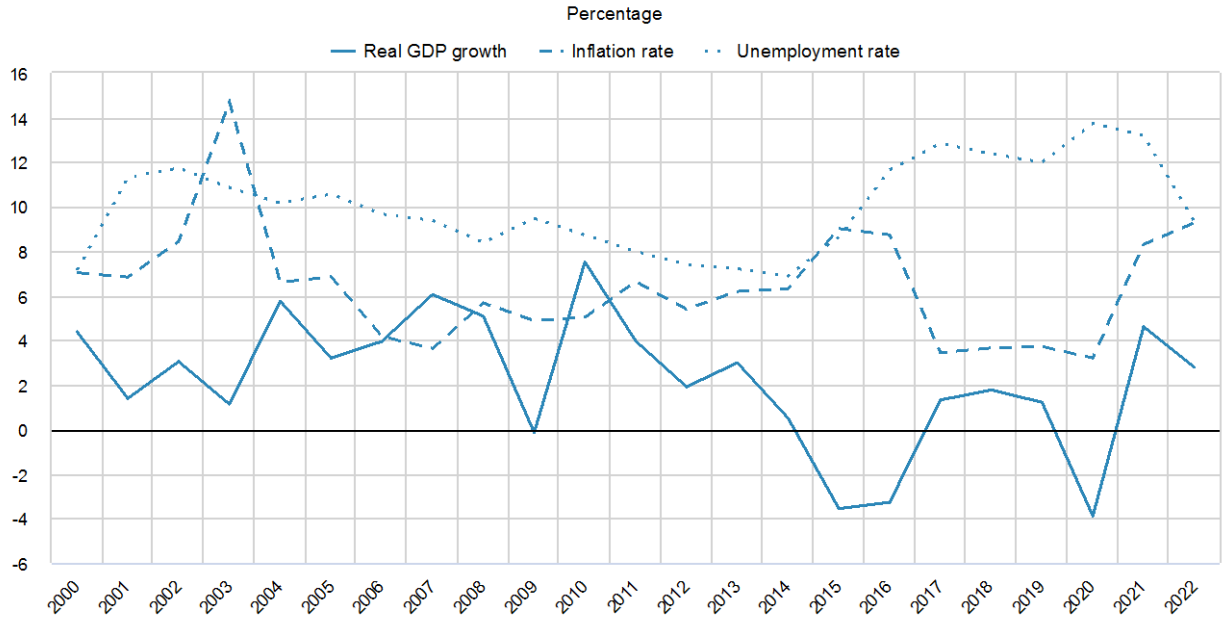
Table 6.4. Brazil: Contextual indicators

	Brazil		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	1,582	3 436	4.0%	2.8%
Population (million)	176	214	4.1%	4.1%
Land area (thousand km^2)	8 358	8 358	10.2%	10.1%
Agricultural area (AA) (thousand ha)	228 324	236 879	7.6%	8.1%
			All countries[1]	
Population density (inhabitants/km^2)	21	26	52	64
GDP per capita (USD in PPPs)	8 995	16 031	9 350	23 401
Trade as % of GDP	8.8	16.0	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	5.5	6.9	2.9	3.9
Agriculture share in employment (%)	16.3	9.7	-	-
Agro-food exports (% of total exports)	23.4	37.0	6.2	7.9
Agro-food imports (% of total imports)	7.1	5.4	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	67	68	-	-
Livestock in total agricultural production (%)	33	32	-	-
Share of arable land in AA (%)	20	24	32	34

Note: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

After the recession in 2015 and 2016, Brazilian GDP grew moderately at just below 2% between 2017 and 2019. The economy shrank by 4% in 2020 during the COVID-19 and rebounded in 2021 reaching a 4.4% growth rate. However, in 2022 the economy witnessed a deceleration growing 2.8%. At the same time, unemployment decreased to 9.3% in 2022 from 13.2% in 2021; but inflation increased to reach 9.3% in 2022.

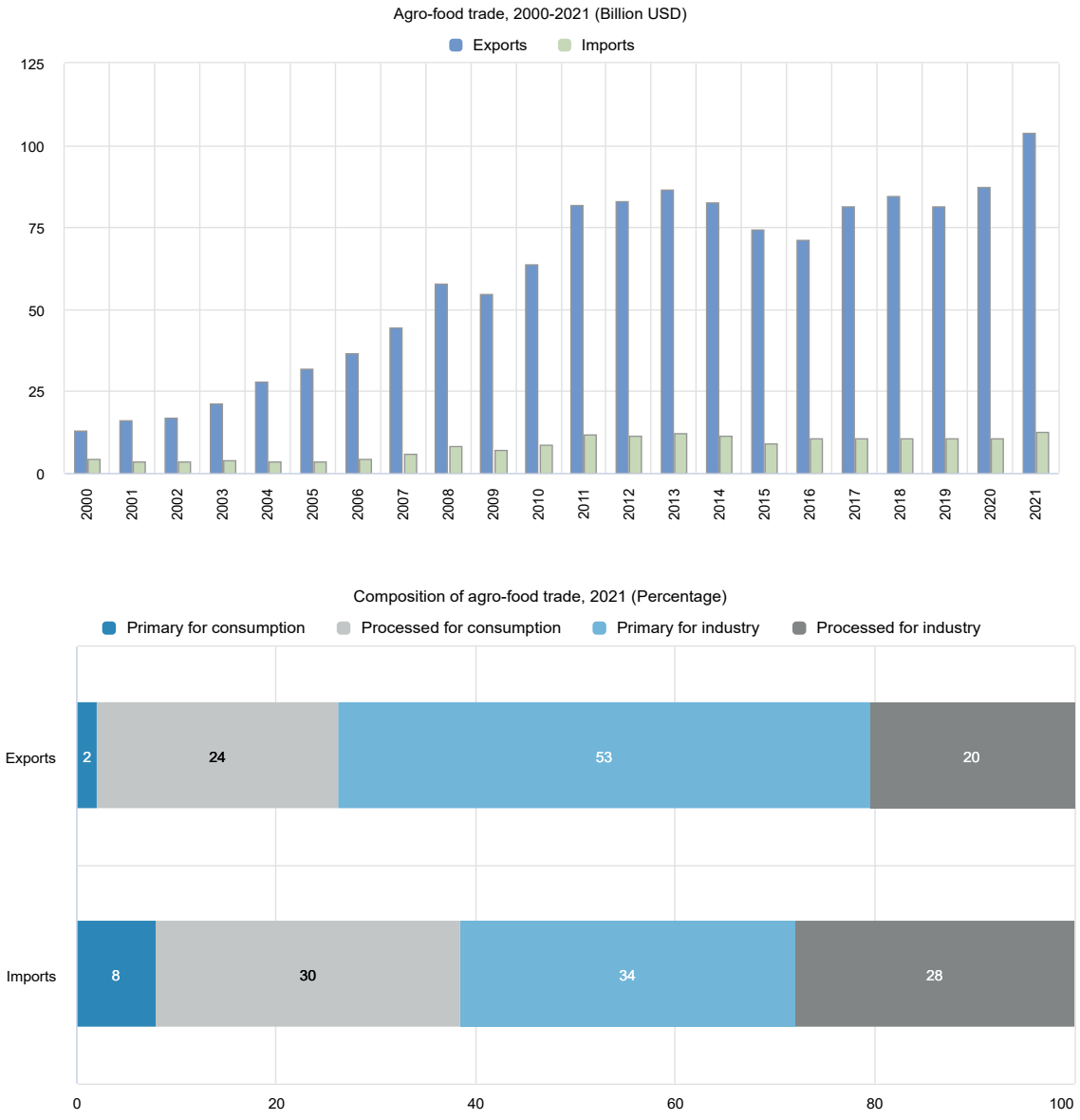
Figure 6.5. Brazil: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Agro-food exports in Brazil have exceeded USD 80 billion per year since 2017, generating an annual agro-food trade surplus of more than USD 100 billion in 2021. Around 53% of Brazilian agro-food exports are primary products for industry (including soybeans), and more than 58% of the country's imports are processed products.

Figure 6.6. Brazil: Agro-food trade



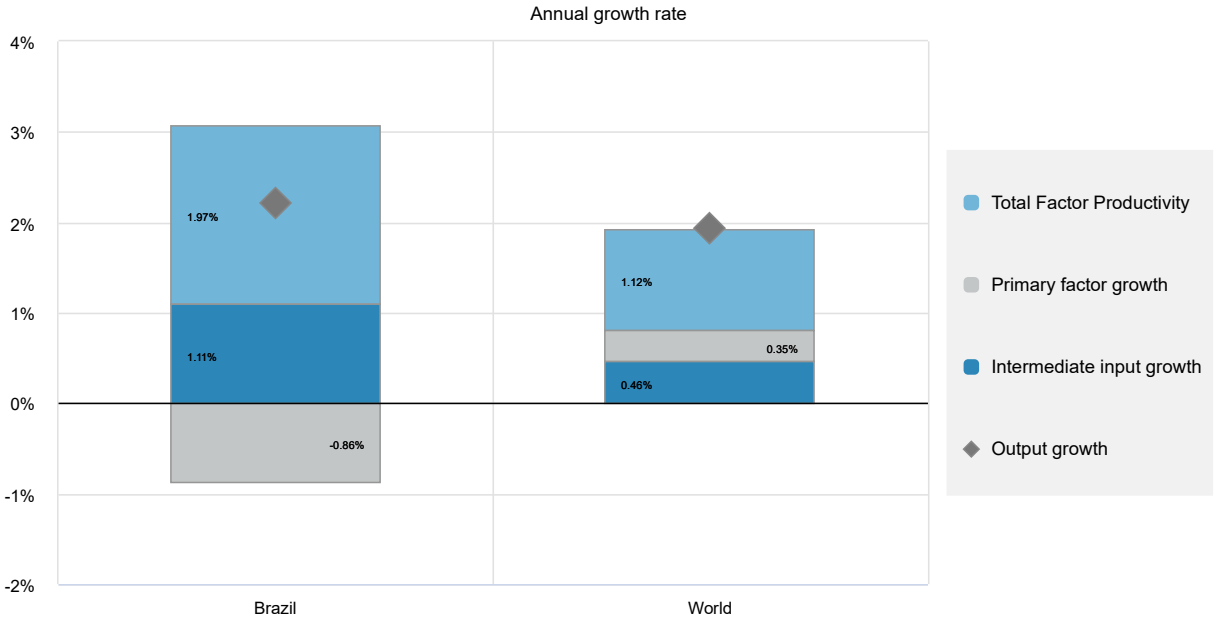
Note: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Between 2011 and 2020, Brazilian agricultural production increased at an annual rate of 3.1%, above the world average. Increases in production were driven by Total Factor Productivity (TFP) growth of 2% per year, again well above the global average, while increased use of intermediary inputs was offset by the declining use of primary factors in agricultural production.

Agriculture accounted for 43% of GHG emissions in 2021, which is below the level observed in 2000, but still high compared to the OECD average. The use of energy by the agricultural sector has increased up to 5.6% of total use in 2021, also above the OECD average. The larger share of the agricultural sector in the Brazilian economy and the importance of pasture-based livestock contribute to these outcomes. Even though the agriculture's share of water abstractions remained high at 61%, water stress is low (0.8).

Nutrient surpluses in Brazil have increased since 2000, and the phosphorous balance is more than five times the OECD average.

Figure 6.7. Brazil: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 6.5. Brazil: Productivity and environmental indicators

	Brazil		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	2.5%	2.0%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	21.0	26.0	32.2	30.4
Phosphorus balance, kg/ha	11.8	18.0	3.3	3.0
Agriculture share of total energy use (%)	4.8	5.6	1.7	2.0
Agriculture share of GHG emissions (%)	45.3	43.3	8.6	10.5
Share of irrigated land in AA (%)	1.4	2.2	-	-
Share of agriculture in water abstractions (%)	58.3	61.1	46.6	49.7
Water stress indicator	0.5	0.8	8.3	7.4

Note: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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MAPA (2022), *Brazilian agricultural policy for climate adaptation and low carbon emission*. [4]

MAPA (2022), *Plano Safra 2022/2023*. [3]

OECD (2015), *Innovation, Agricultural Productivity and Sustainability in Brazil*, OECD Food and Agricultural Reviews, OECD Publishing, Paris, https://doi.org/10.1787/9789264237056-en. [1]

OECD (2005), *OECD Review of Agricultural Policies: Brazil 2005*, OECD Review of Agricultural Policies, OECD Publishing, Paris, https://doi.org/10.1787/9789264012554-en. [2]

7 Canada

Support to agriculture

Canada significantly reduced support to agriculture since the late 1980s. Producer support as a share of gross farm receipts halved from 1986-88 to 2000-02, largely because Market Price Support (MPS) to the grains industry was discontinued in 1995. This decline halted in recent years, with support stabilising over the last decade, averaging 9.4% of gross farm receipts in 2020-22, below the OECD average.

Despite past reductions, MPS continues to dominate support to producers, specifically targeting the dairy, poultry, and egg sectors. These commodities benefit from a supply-management system with tariffs, production quotas, and administered prices maintaining domestic prices above international prices. Milk received particularly high single commodity transfers in 2020-22, amounting to 32% of its gross-farm-receipts value. Average MPS was lower in 2022 than previous years due to higher border prices for eggs and poultry meat relative to domestic farm prices as a result of avian flu in the United States.

Canada also uses payments based on unconstrained use of variable inputs, notably fuel. Together with MPS, these potentially most-distorting support measures represented 47% of aggregated gross producer transfers in 2020-22, or 4% of gross farm receipts. Risk-management tools constitute the other main types of budgetary payments and played a more prominent role in the past two years due to adverse weather conditions. Other categories of payments represent a minor share of Canadian farm revenues.

Support to general services (General Service Support Estimate, GSSE) amounted to 3% of agricultural production value in 2020-22, slightly below the OECD average and down from 6% in 2000-02. Expenditures on inspection and control systems, and agricultural knowledge and innovation each accounted for about 40% of GSSE in recent years. The Total Support Estimate (TSE) represented 0.4% of Gross Domestic Product (GDP) in 2020-22.

Recent policy changes

The Sustainable Canadian Agriculture Partnership 2023-28 came into effect on 1 April 2023. This five-year policy framework includes CAD 500 million (USD 384 million) of additional funds, representing a 25% increase over the previous framework in the federal-provincial-territorial cost-shared envelope. This new framework has a strong focus on climate change and environment, including a political commitment to contribute to reducing greenhouse-gas (GHG) emissions in agriculture by 3 to 5 $MtCO_2eq$ – for a sector that emitted 55 $MtCO_2eq$ in 2020.

The 2030 Emissions Reduction Plan (ERP) launched in March 2022 announced additional funding of CAD 1 billion (USD 0.8 billion) over six years to support sustainable agriculture and encourage the sector to significantly reduce GHG emissions. Almost half of the additional budget is dedicated to on-farm programmes that help farmers adopt climate-change mitigation practices, including nitrogen management, cover cropping, and rotational grazing, by providing a combination of training, technical support, and

financial incentives. Another 30% will be devoted to supporting the development and adoption of clean technologies in the fields of green energy and energy efficiency, precision agriculture, and the bioeconomy.

Financial incentives for investment and direct payments in the dairy, poultry, and egg sectors were strengthened to compensate market losses from new market access granted to trade partners under recent regional trade agreements.

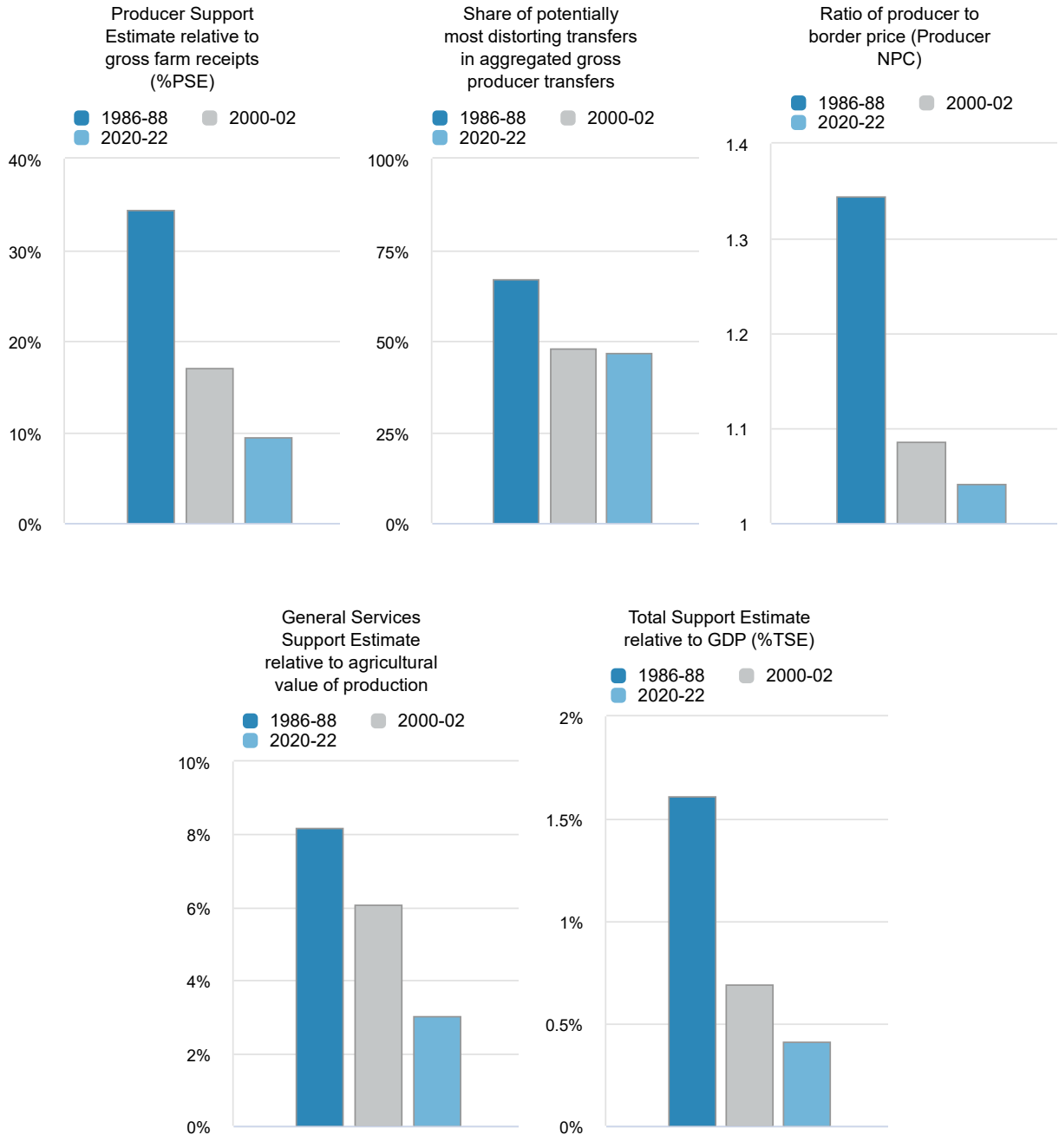
In response to the impacts of Russia's war of aggression against Ukraine, in particular the rise of input prices, Canada increased the interest-free limit on loans under its Advance Payment Program for 2022 and 2023, providing interest rate relief to participating producers.

Assessment and recommendations

- Canada's climate-change adaptation strategy outlines actions for the agricultural sector, ranging from short-term risk-management measures to medium-term support for adopting on-farm resilient management practices and long-term initiatives focused on research and innovation. Although all three levels of the resilience framework are addressed, measures focused on buffering the effects of climate change (particularly to support recovery from a climate event) play a major role in the policy architecture and budget. More attention and resources could be devoted to longer-term actions that enhance the adaptive capacity of farmers and the transformation of production systems. It will also be essential to monitor the progress of policy implementation.
- Canada strengthened efforts to reduce agricultural GHG emissions, including additional funding for mitigation actions and a political commitment to reduce emissions under the new agricultural policy framework. However, agriculture remains largely excluded from the carbon pricing scheme – an effective policy tool for achieving the country's targets. Wider coverage of agricultural emissions by the system could encourage adoption of practices that reduce emissions and increase soil carbon storage.
- The Canadian approach to risk management has evolved towards a more proactive policy framework – less reliant on ad-hoc policy responses to adverse events – which is a positive step towards increased agricultural resilience. The set of reviews of the Business Risk Management programmes will provide an opportunity to assess and further improve the risk-management policy toolkit, which accounts for almost half of total budgetary support. Evidence is needed to evaluate the system's effectiveness and the effects of cash transfers to farmers through low-interest loans, subsidised savings accounts, co-financed insurance premiums, and direct payments. Evidence-based assessment could enable wider adoption of the most cost-effective programmes, stimulate the development of market-based tools where the opportunity-costs of public support are higher, and encourage farmers to improve risk management at farm level. This holistic assessment should also consider the linkages and trade-offs between risk-management programmes and environmental outcomes, to maximise the sector's long-term resilience and minimise unintended negative effects, including potential forms of maladaptation to climate change (OECD, 2020[1]).
- The Canadian agricultural policy framework continues to provide significant general services support to the sector through programmes that target industry-led research and development, adoption of innovation, and inspection and control systems. The new policy framework should reinforce this focus, which accounts for almost a third of total budgetary support (well above the OECD average) to strengthen the sector's long-term competitiveness and sustainability.
- Potentially most-distorting transfers remain the main component of transfers to producers. The dairy, poultry, and egg sectors continue to be protected from international competition via market price support measures that distort production and trade and inflate domestic prices. Supply management for these commodities should be reduced by increasing production quotas and gradually declining price support for the dairy, poultry, and egg sectors. This would encourage

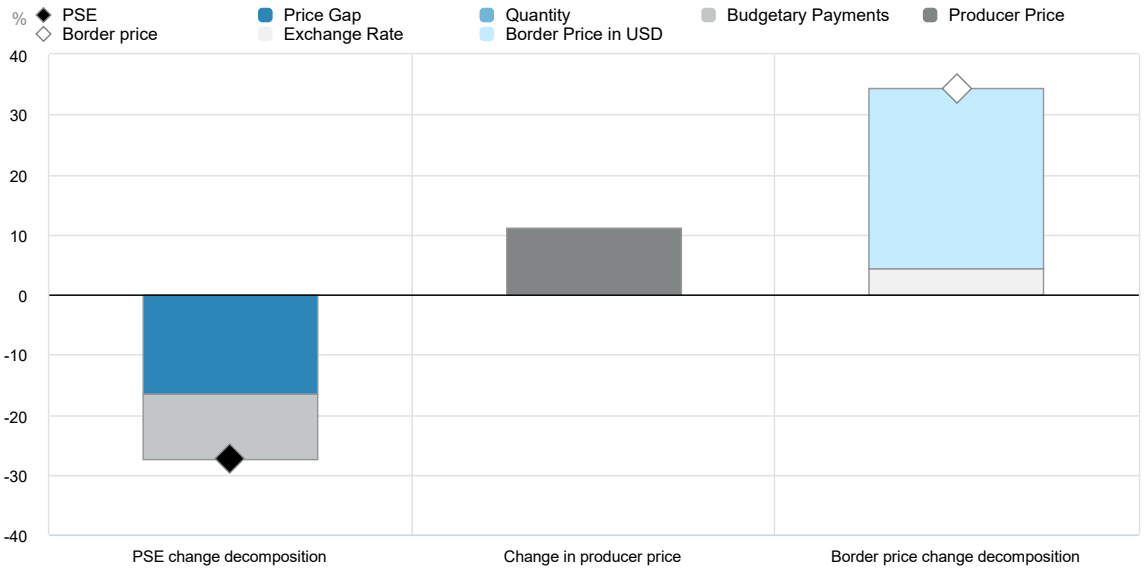
market responsiveness and stimulate innovation to increase efficiency and diversify towards higher-value products.

Figure 7.1. Canada: Development of support to agriculture



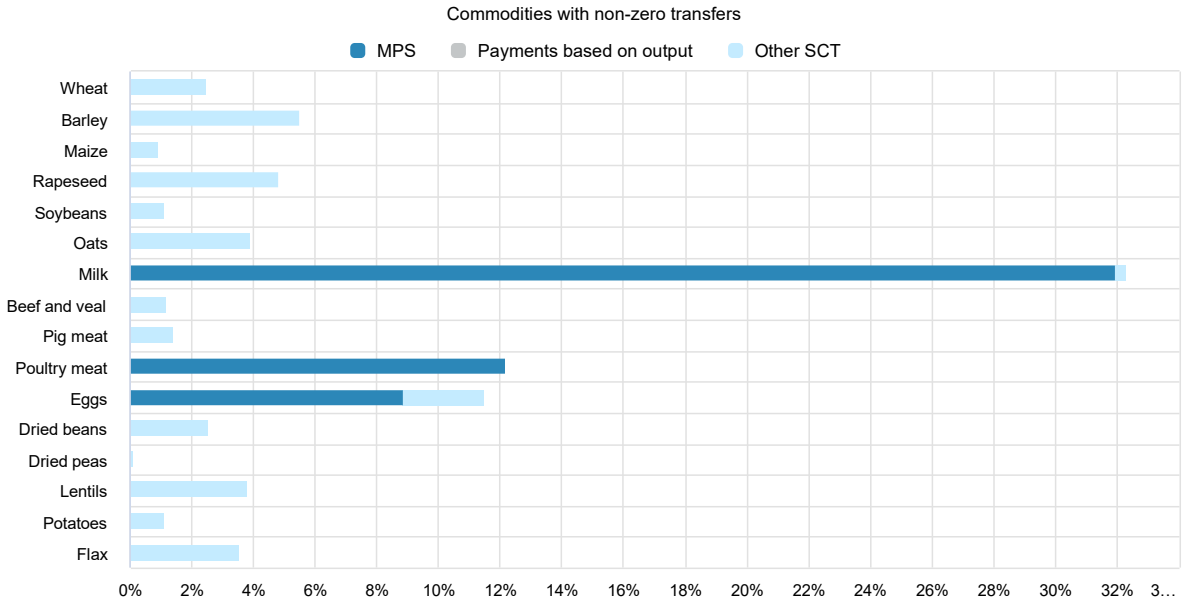
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 7.2. Canada: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 7.3. Canada: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 7.1. Canada: Estimates of support to agriculture

Million USD

	1986-88	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**14 083**	**20 696**	**60 242**	**51 198**	**61 602**	**67 926**
***of which:** share of MPS commodities (%)*	85.57	81.97	81.79	81.13	81.55	82.70
Total value of consumption (at farm gate)	**11 833**	**15 014**	**40 852**	**32 694**	**44 688**	**45 175**
Producer Support Estimate (PSE)	**5 855**	**3 897**	**6 000**	**4 727**	**7 808**	**5 465**
Support based on commodity output	3 214	1 629	2 383	2 378	3 059	1 712
Market Price Support[1]	2 851	1 608	2 383	2 378	3 059	1 712
Positive Market Price Support	2 997	1 608	2 383	2 378	3 059	1 712
Negative Market Price Support	-146	0	0	0	0	0
Payments based on output	364	20	0	0	0	0
Payments based on input use	1 091	368	619	583	606	667
Based on variable input use	622	242	415	422	396	427
with input constraints	0	0	8	0	0	24
Based on fixed capital formation	448	108	188	147	202	214
with input constraints	0	0	15	3	6	35
Based on on-farm services	20	18	16	14	8	25
with input constraints	0	0	8	0	0	24
Payments based on current A/An/R/I, production required	1 336	1 307	2 603	1 375	3 729	2 705
Based on Receipts / Income	467	586	634	581	550	770
Based on Area planted / Animal numbers	869	721	1 969	793	3 178	1 935
with input constraints	0	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	1	4	0	0
Payments based on non-current A/An/R/I, production not required	0	553	356	343	367	360
With variable payment rates	0	0	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
With fixed payment rates	0	553	356	343	367	360
with commodity exceptions	0	0	0	0	0	0
Payments based on non-commodity criteria	8	0	0	0	0	0
Based on long-term resource retirement	8	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0	0
Miscellaneous payments	206	41	38	45	47	22
Percentage PSE (%)	**34.44**	**16.95**	**9.36**	**8.83**	**11.77**	**7.62**
Producer NPC (coeff.)	**1.34**	**1.09**	**1.04**	**1.05**	**1.05**	**1.03**
Producer NAC (coeff.)	**1.53**	**1.20**	**1.10**	**1.10**	**1.13**	**1.08**
General Services Support Estimate (GSSE)	**1 153**	**1 260**	**1 821**	**1 746**	**1 940**	**1 778**
Agricultural knowledge and innovation system	483	536	676	645	675	708
Inspection and control	283	348	758	746	831	695
Development and maintenance of infrastructure	268	182	199	172	221	204
Marketing and promotion	85	179	133	121	152	126
Cost of public stockholding	0	0	0	0	0	0
Miscellaneous	34	15	56	62	61	45
Percentage GSSE (% of TSE)	**16.30**	**24.44**	**23.09**	**26.36**	**19.66**	**24.52**
Consumer Support Estimate (CSE)	**-2 533**	**-1 719**	**-2 660**	**-2 593**	**-3 435**	**-1 952**
Transfers to producers from consumers	-2 766	-1 602	-2 383	-2 378	-3 059	-1 712
Other transfers from consumers	-31	-117	-370	-365	-496	-248
Transfers to consumers from taxpayers	31	0	93	150	120	8
Excess feed cost	234	0	0	0	0	0
Percentage CSE (%)	**-21.54**	**-11.44**	**-6.52**	**-7.97**	**-7.71**	**-4.32**
Consumer NPC (coeff.)	**1.31**	**1.13**	**1.07**	**1.09**	**1.09**	**1.05**
Consumer NAC (coeff.)	**1.27**	**1.13**	**1.07**	**1.09**	**1.08**	**1.05**
Total Support Estimate (TSE)	**7 039**	**5 157**	**7 914**	**6 623**	**9 869**	**7 251**
Transfers from consumers	2 798	1 720	2 753	2 743	3 555	1 960
Transfers from taxpayers	4 273	3 555	5 531	4 245	6 810	5 540
Budget revenues	-31	-117	-370	-365	-496	-248
Percentage TSE (% of GDP)	**1.61**	**0.69**	**0.41**	**0.40**	**0.49**	**0.34**
Total Budgetary Support Estimate (TBSE)	**4 188**	**3 549**	**5 531**	**4 245**	**6 810**	**5 540**
Percentage TBSE (% of GDP)	**0.96**	**0.47**	**0.29**	**0.26**	**0.34**	**0.26**
GDP deflator (1986-88=100)	**100**	**138**	**213**	**196**	**212**	**230**
Exchange rate (national currency per USD)	**1.32**	**1.53**	**1.30**	**1.34**	**1.25**	**1.30**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Canada are: wheat, maize, barley, oats, soybean, rapeseed, flax, potatoes, lentils, dried beans, dried peas, milk, beef and veal, pig meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

Prior to the mid-1980s, Canada **heavily supported the agricultural sector** through measures such as import tariffs, export and production subsidies, and price and production controls. The dominant features of agricultural policy were supply management measures in the dairy and poultry sectors, collective marketing in grains and oilseeds (notably by the Canadian Wheat Board, or CWB), and income stabilisation programmes (Barichello, 1995[2]). Support varied between eastern and western provinces, partly due to Canada's decentralised political system, and the independence of provincial governments in policies such as marketing legislation (Anderson, 2009[3]).

In the mid-1980s, Canada began agricultural policy reform, particularly in the grain sector. In 1990, the Western Grains Stabilization Program, which was intended to stabilise net margins for major grains and oilseeds from western Canada, was terminated (Anderson, 2009[3]). This was replaced by the National Tripartite Stabilization Program (NTSP), which established federal-provincial cost-sharing of programmes (Antón, Kimura and Martini, 2011[4]). The Farm Income Protection Act of 1991 changed Canada's approach to supporting producers by moving from commodity-specific policies towards programmes supporting farm incomes. The Act established two safety-net programmes: (1) the Gross Revenue Insurance Plan (GRIP, 1991-1996/2002) to protect against reductions in revenues and yields; and (2) the Net Income Stabilization Account (NISA, 1991-2009) to subsidise savings accounts for individual producers (Anderson, 2009[3]; Klein and Storey, 1998[5]). Furthermore, compliance with the General Agreement on Tariffs and Trade (GATT) and free trade agreements of the early 1990s (NAFTA) accelerated the reform process, eliminating most commodity-based policies (e.g. NTSP) except those targeting supply-managed commodities (Antón, Kimura and Martini, 2011[4]). In 1995, transport subsidies to grains (the Western Grain Transport Assistance and the Feed Freight Assistance) were abolished (Anderson, 2009[3]), ending the period of high market price support[1] to these commodities (Figure 7.2).

The Agricultural Income Disaster Assistance (AIDA) programme introduced in 1998 was the first to comply with criteria for **income insurance and safety-net programmes** under the World Trade Organization Agreement on Agriculture. AIDA was established to serve as a core income stabilisation policy, reducing the need for ad hoc programmes. The "disaster" component was integrated into subsequent programmes: the Canadian Farm Income Program (CFIP, 2001-03); the Canadian Agricultural Income Stabilization (CAIS, 2004-08); and AgriStability (Anderson, 2009[3]; Statistics Canada, 2021[6]; Antón, Kimura and Martini, 2011[4]).

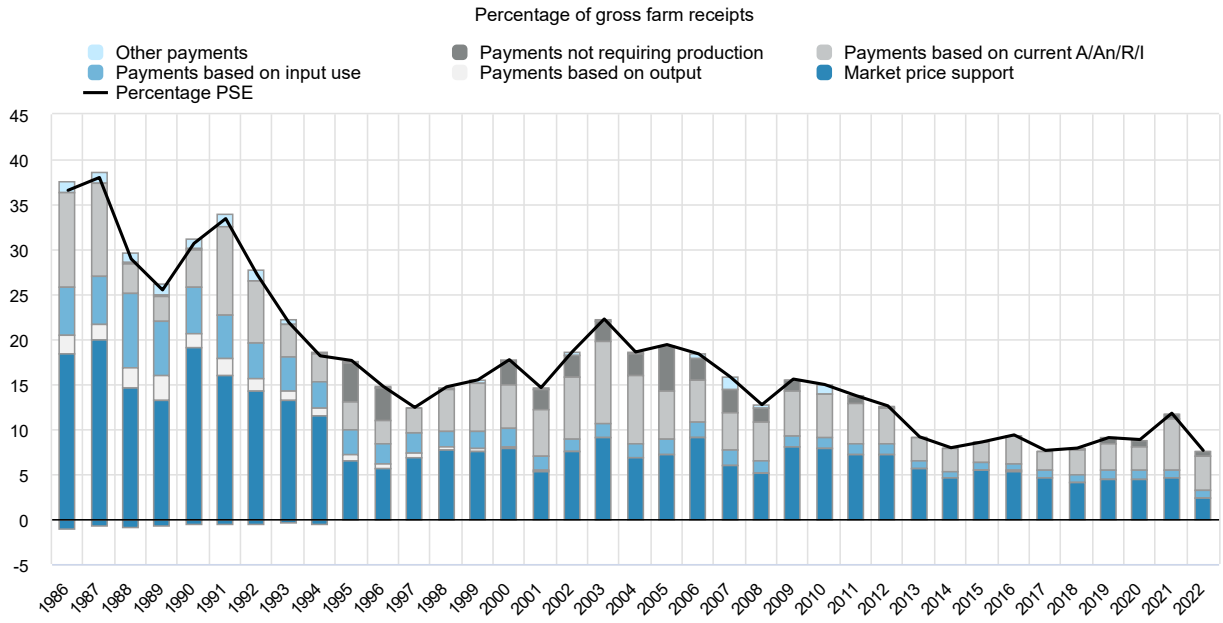
Since 2003, agricultural policy objectives and approaches are set out in longer-term **agricultural policy frameworks** developed through co-operation by federal, provincial and territorial (FPT) governments. The first framework covered five areas: (1) business risk management, (2) food safety and quality, (3) environment, (4) science and innovation, and (5) renewal (skills and training) (Agriculture and Agri-Food Canada, 2005[7]). Initially, the federal government delivered programmes directly. This evolved with the Growing Forward framework (2008-13) which transferred programme implementation to the provinces and territories, allowing for more flexibility and better adaptability to local needs (OECD, 2015[8]). During this time, the AgriStability and AgriInvest programmes replaced CAIS and NISA, respectively, continuing to provide farmers with income stabilisation products and subsidised saving accounts. The Growing Forward 2 framework (2013-18) strengthened the role of these programmes and incorporated additional initiatives, such as AgriInsurance (previously referred to as the Crop Insurance) and the AgriRecovery disaster programme framework (Anderson, 2009[3]; Statistics Canada, 2021[6]; Antón, Kimura and Martini, 2011[4]). Risk-management programmes have continued to evolve under the Canadian Agricultural Partnership (2018-23) and the Sustainable Canadian Agriculture Partnership (2023-2028) (see next section).

Table 7.2. Canada: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to 1985	Import barriers for competing imported products and support for traded products Domestic market control	Agricultural tariffs for competing imported products Import quotas/tariff-rate quotas Export subsidies for agricultural products Transportation subsidies for agricultural products Supply management for dairy and poultry products Grains policy featured by a one-desk selling marketing board and significant transportation subsidy Price controls for agricultural products using marketing boards such as the collective marketing of wheat and barley (CWB)
1985-2000	Gradual reforms and trade liberalisation Increasing emphasis on income and revenue support	Reduction of agricultural tariffs and quotas Diminishing reliance on marketing boards, supply management, price controls GATT, free trade agreements Dismantling of Western Grains Stabilization Program Termination of Western Grains Transportation Assistance and Feed Freight Assistance Gradual dismantling of payments coupled to production Introduction of "whole farm" income stabilisation programmes Introduction of insurance subsidies
2000-2020	Income stabilisation emphasis implemented through federal, provincial and territorial (FPT) co-operation	Continued supply management of the dairy, poultry and eggs sectors: price-setting mechanisms, production quotas and tariffs Privatisation of the CWB Agricultural policy frameworks developed through the cooperation of FPT governments Subsidies for farm income stabilisation Subsidies for farm savings Insurance subsidies Disaster relief framework
2020-present	Climate ambition and emphasis on sustainability	Fertiliser emissions reduction target of 30% below 2020 levels by 2030 Support to agricultural clean technologies and climate solutions Sustainable Canadian Agriculture Partnership (2023-2028)

Support to agricultural producers in Canada decreased over the last three decades, with government support declining from over 34% of farmers' revenues in the mid-1980s to around 9% in recent years (Figure 7.4). This resulted from the discontinuation of market price support to grains and oilseeds in the mid-1990s, and the reduction or phase-out of several programmes offering payments based on output (e.g. support to dairy farmers under the Agriculture Stabilization Act) and input use (e.g. Federal Fuel Tax Rebates) between the late 1980s and the early 2000s. Market price support for supply-managed commodities, particularly in the dairy sector, accounted for the largest share of transfers to producers up to 2020. Payments based on current production, including multiple risk-management programmes (e.g. AgriInsurance), were the second largest contributor. Over the past two years, this trend has been reversed. In 2021, the share of payments based on current production was particularly high due to a larger budget devoted to cope with the impacts of adverse weather conditions. In 2022, the share of market price support was lower than usual due to very high reference prices for certain supply-managed commodities, particularly egg prices – and to some extent poultry meat prices – in the United States, as a result of avian flu. Other categories of payments play a relatively minor role in Canadian farm revenues.

Figure 7.4. Canada: Level and PSE composition by support categories, 1986 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

Canada's agriculture is a shared jurisdiction between federal, provincial and territorial (FPT) governments who collaborate and co-ordinate on issues of mutual interest. This includes an agreed agricultural policy framework which reflects national priorities while providing flexibility for provinces and territories to design and deliver programmes that respond to their regional priorities. In addition, the federal government, provinces and territories can develop and fund their own agriculture programmes outside of this framework.

The structure of agricultural policy has remained largely unchanged over the past two decades. It is characterised by the separate treatment of supply-managed commodities (dairy, poultry and eggs), which are protected and oriented towards the domestic market, and other commodities (e.g. field crops, red meat, horticulture) that have less market interventions and are generally export-oriented.

The three protected sectors (dairy, poultry and eggs) benefit from a national **supply management system** that provides market price support through customs tariffs (import control) and production quotas (production control), tradable within provinces, combined with domestic price-setting according to production costs and consumer price index, among others (pricing mechanism). Supply managed commodities are governed by their own FPT agreements – the *national marketing plans* – and are administered by more than 80 provincial agricultural marketing boards operating in coordination with the national agencies.

General policies and programmes to support Canada's agriculture and agro-food sector are mainly provided through multilateral policy frameworks. The **Canadian Agricultural Partnership (CAP) 2018-23** (Agriculture and Agri-Food Canada, 2018[9]), which is superseded by the Sustainable CAP 2023-28, is a

five-year agreement between FPT governments and finances **business risk management programmes** along with **strategic initiatives** that are either federal programmes or cost-shared activities by FPT governments.

The **business risk management (BRM) programmes** support producers in managing risks that threaten the viability of their farm or are beyond their capacity to control and build on the backbone of programmes delivered during the previous frameworks. Their design attempts to balance *ex ante* and *ex post* measures and seeks to limit *ad hoc* forms of assistance. Under the CAP 2018-23, FPT governments jointly provide approximately CAD 1.5 billion (USD 1.15 billion) per year to finance the five following BRM programmes:

- *AgriStability*, an income stabilisation programme to support producers in years of significant whole-farm margin declines.
- *AgriInvest*, a savings tool that matches the contributions of producers who make annual deposits into an AgriInvest account, to help them manage moderate income declines, make investments in farming operations to mitigate risks or improve market income, although there is no restriction on withdrawing funds at any time and for any purpose.
- *AgriInsurance*, a federal-provincial-producer cost-shared insurance programme that makes production insurance more affordable by sharing the cost of premiums with producers and reduces the financial impact of production or asset losses due to natural hazards.
- *AgriRecovery*, a disaster relief framework to help producers with the cost of activities necessary to recover from natural disasters.
- *AgriRisk*, a programme to support the development of new risk-management tools by the private sector.

Additionally, the federal government provides support to the allocation of credits to farmers as well as to the marketing of farm products. For example, the **Advance Payments Program (APP)** is a financial loan guarantee programme under which the federal government guarantees cash advances of up to CAD 1 million (USD 770 000) to producers based on the anticipated value of their farm products. For each programme year, the government pays the interest on the first CAD 100 000 (USD 77 000) advanced to a producer, with preferential interest rates on amounts over this threshold. The APP seeks to help producers anticipate, mitigate and respond to market volatility by improving their cash flow and their ability to manage risks in commodity markets. Unlike Federal, Provincial and Territorial BRM programmes which are based on the *Farm Income Protection Act* (FIPA), the APP is fully federally funded outside the CAP budget and has the *Agricultural Marketing Programs Act* (AMPA) as its legislative base.

The **federal-**only **funded strategic initiatives** under CAP 2018-23 provide CAD 1 billion (USD 0.8 billion) for federal programmes that focus on three pillars:

- *Growing trade and expanding markets* through the *AgriMarketing* programme, which supports industry-led market development activities by helping the sector identify and seize domestic and international opportunities; and the *AgriCompetitiveness* programme, which helps the sector adapt to changing commercial and regulatory environments, share best practices, and provide mentorship opportunities.
- *Fostering innovative and sustainable growth in the sector* through the *AgriScience* programme, which supports innovation driven by industry research priorities, including pre-commercialisation activities and investments in cutting-edge research to benefit the agriculture and agro-food sector; and the *AgriInnovate* programme, which supports projects that accelerate the demonstration, commercialisation or adoption of innovative products, technologies, processes or services that increase the sector's competitiveness and sustainability.
- *Supporting diversity and a dynamic, evolving sector* through the *AgriAssurance* programme, which aims to foster public trust by helping industry develop and adopt systems, standards and tools to make verifiable claims about the health, safety and quality of Canadian agricultural products, and

the manner they are produced; and the *AgriDiversity* programme, which aims to increase the capacity of youth, women, Indigenous Peoples and persons with disabilities to better participate in the agricultural sector. It supports skills, leadership, and entrepreneurial development; and facilitates knowledge sharing and best management practices.

The **cost-shared strategic initiatives** are funded 60% by the federal government and 40% by the provincial/territorial governments, and provide CAD 2 billion (USD 1.5 billion) under current CAP 2018-23 for activities that focus on the following six priority areas:

- *Science, research and innovation* to help farmers, food processors and agri-businesses adopt innovative products and practices in order to improve resiliency and productivity through research, innovation and knowledge transfer.
- *Markets and trade* to facilitate the maintenance and expansion of domestic and international markets and help farmers and food processors improve their competitiveness through skills development and improved export capacity.
- *Environmental sustainability and climate change* to build the sector's capacity to protect natural resources, mitigate agricultural GHG emissions and adapt to the anticipated impacts of climate change by enhancing sustainable growth.
- *Value-added agriculture and agro-food processing* to foster continued growth by supporting targeted actions aiming to increase productivity and competitiveness.
- *Public trust* to build a firm foundation for the sector through improved assurance systems in food safety and plant and animal health, stronger traceability and effective regulation.
- *Risk management* to enable proactive and effective risk mitigation and adaptation and strengthen the resilience of the sector by ensuring comprehensive, responsive and accessible programmes.

These programmes are primarily based on cost-share funding i.e. the reimbursement of expenses, most often on a 50-50 basis between the grant and the applicant. Some also offer technical assistance and extension services.

Most **farm-level environmental programmes** are designed and administered by provincial and territorial governments. There are two programmes (cost-shared between federal and provincial governments) that are designed to advance environmentally sustainable agriculture: the *Environmental Farm Plans (EFP) Programs* and the *Environmental Stewardship Incentive Programs*. The EFP consists of an environmental assessment of farm management practices, and an action plan that details identified risks, and actions or practices to mitigate them. The Environmental Stewardship Incentive Programs provide cost-shared financial assistance to farms with an EFP to adopt specific beneficial management practices, such as nutrient management, manure storage and soil erosion controls (OECD, 2015[8]).

More recently, climate policies have come to complement agricultural policies in fostering the sector's contribution to achieving the country's ambitious climate goals. In its 2021 updated Nationally Determined Contribution (NDC) to the Paris Agreement, Canada committed to reducing national net GHG emissions 40-45% below 2005 levels by 2030, to achieving net-zero emissions by 2050 and to reaching a national fertiliser emissions reduction target of 30% below 2020 levels by 2030 (Government of Canada, 2021[10]). Canada also signed the Global Methane Pledge and committed to reducing its economy-wide methane emissions by 2030 (Environment and Climate Change Canada, 2021[11]). However, agricultural emissions remain largely excluded from Canada's main emissions reduction tool of pricing carbon pollution.

Building on the *Pan-Canadian Framework (PCF) on Clean Growth and Climate Change* established in 2016, the government of Canada created in 2020 its A *Healthy Environment and a Healthy Economy plan* (Environment and Climate Change Canada, 2020[12]), which contains **agriculture-specific actions** including:

- The *Agricultural Clean Technology (ACT)* initiative supports farmers and agro-food businesses in developing and adopting clean technologies. Two funding streams focus on achieving a low-carbon economy and promoting sustainable growth. The *Research and Innovation Stream* (2021 to 2028) supports the development and the spreading out of transformative clean technologies in three areas (green energy and energy efficiency, precision agriculture and bioeconomy). Support is provided in the form of non-repayable contributions up to 50% of the costs of research, development and demonstration projects and in the form of repayable contributions where activities involve commercialisation and scale-up. The *Adoption Stream* (2021 to 2026) aims to support farmers in the purchase and installation of commercially available clean technologies and processes, primarily those reducing GHG emissions and generating other environmental co-benefits. Green energy and energy efficiency, precision agriculture and bioeconomy solutions are eligible activities funded through non-repayable contributions up to 50% of the costs for for-profit and 75% for non-profit organisations.
- The *Agricultural Climate Solutions (ACS)* initiative supports the development and implementation of farming practices to tackle climate change (Government of Canada, 2021[13]), a multi-stream programme under the *Natural Climate Solution Fund*. While the *Living Labs Stream*, aims to co-develop, test and monitor beneficial management practices on farms that sequester carbon and mitigate GHG emissions, through regional collaboration hubs that bring together farmers, scientists, and other sector partners, the *On-Farm Climate Action Fund* (2021-2024) helps farmers adopt such practices, including nitrogen management, cover cropping and rotational grazing, providing a combination of training, technical support and financial incentives.

While the main focus of these measures is on green growth and climate mitigation, there are some cross-cutting approaches with climate adaptation and resilience that are developed in the following section.

Climate change adaptation policies in agriculture

The Government of Canada released its first National Adaptation Strategy: Building Resilient Communities and a Strong Economy in November 2022. This strategy presents a shared vision for climate resilience in Canada, resulting from the engagement of ministries, provincial and territorial governments, academia, national indigenous organisations, industry organisations, and other relevant stakeholders since 2021. It focuses on the following five priority areas (Government of Canada, 2022[14]):

- improving health and well-being (minimising climate-change risks to health, and better preparing the health system to manage increased demand for health services)
- building and maintaining resilient public infrastructure (regarding transportation, healthcare, utilities, communications, and trade)
- protecting and restoring nature and biodiversity
- supporting the economy and workers (generating incentives for adaptation and developing a skilled and resilient workforce)
- reducing the impacts of climate-related disasters

The strategy stands as a framework for measuring progress at the national level. Agriculture is one of the sectors most at risk from climate change, and actions related to the sector are embedded in the “economy and workers” priority area, with linkages to “disaster resilience”, “health and well-being”, and “nature and biodiversity”.

The Government of Canada Adaptation Action Plan (GOCAAP) released in 2022 outlines the federal government’s contributions to implementing the National Adaptation Strategy and provides a framework for organising federal adaptation actions going forward. The federal action plan complements the work and strategies of provinces, territories, and indigenous peoples on adaptation to climate change. In addition to

the federal plan, and separate provincial and territorial action plans aim to advance efforts on shared priorities, and Indigenous climate leadership will support self-determined action.

The six actions targeting the agricultural sector contained in the GOCAAP are all existing policy developments. The BRM) programmes, the AgriRecovery framework, the Living Labs initiative, the On-Farm Climate Action fund, the Environment and Climate Change cost-shared strategic initiatives, and the federal science and innovation programmes contribute to the sector's adaptation to climate change in complementary ways, described below (Environment and Climate Change Canada, 2022[15]).

Short-term measures can help farmers buffer the impact from a shock. The BRM programmes provide producers with protection against income and production losses, including losses from severe weather events (e.g. droughts, wildfires, and floods). They include the AgriRecovery Framework, designed to help agricultural producers recover from natural disasters when the assistance required for the agricultural sector to return to production exceeds what is covered by the other BRM programmes.

In the medium term, the Agricultural Climate Solutions (ACS) initiative supports development and implementation of practices that could tackle climate change, contributing to both mitigation and adaptation. The Living Labs stream is a 10-year, CAD 185 million (USD 138 million) programme establishing a Canada-wide network of farmers, scientists, and other partners to co-develop, test and monitor beneficial management practices on farms. This is complemented by the CAD 670 million (USD 515 million) On-Farm Climate Action fund that supports adoption of beneficial management practices (BMPs) that store carbon, reduce GHG emissions, and enhance climate resilience in three areas: (1) nitrogen management; (2) cover cropping; and (3) rotational grazing practices. While the main objective of these programmes is reducing GHG emissions (climate-change mitigation), secondary benefits relate to adaptation.

Environmental Sustainability and Climate Change is one of the six priorities of the Strategic Initiatives under the 2018-2023 Canadian Agricultural Partnership. Support provided under this partnership helps the sector adapt to anticipated impacts of climate change (e.g. changing growing conditions, extreme weather events, reduced or excess water availability, water quality, soil degradation, and new and increased pests and disease outbreaks). Funds support adoption of beneficial management practices that enhance climate resilience. The budget available for this priority over the five-year agreement represents 24% of total expenditures for the Strategic Initiatives, totaling CAD 438 million (USD 336 million).

On-farm actions are encouraged by the development of Environmental Farm Plans and supported by incentive programmes for the adoption of on-farm BMPs. A total of 10 263 BMP projects have been completed as of 31 March 2021, of which 2 961 (29%) are directly relevant to climate adaptation, including actions such as improved on-farm water supply and retention, more efficient irrigation equipment and management, and adopting soil health practices such as conservation and no-till seeding.

Long-term measures are contained in programmes such as AgriScience, with CAD 338 million (USD 260 million), AgriInnovate, with CAD 128 million (USD 98 million), and Foundational Science, with CAD 224 million (USD 172 million), which contribute to supporting the climate resilience and sustainability of the sector through science, research, and adoption of innovative practices and technologies.

Various initiatives at the provincial level complement the national climate adaptation framework. The British Columbia (BC) Government announced the Climate Preparedness and Adaptation Strategy in June 2022, which provides CAD 11 million (USD 8 million) in 2022-23 and 2023-24 for actions targeting food security and resilient local agriculture, among other things. Under this strategy, the Extreme Weather Preparedness for Agriculture programme helps BC farmers reduce risk from extreme weather by developing climate-change adaptation tools and projects. It also supports on-farm water infrastructure and irrigation equipment through the Agricultural Water Infrastructure Program and invests in weather monitoring and related decision-support tools (Government of British Columbia, 2022[16]).

The New Brunswick Government renewed its Climate Change Action Plan in September 2022. One identified action was to develop and implement a strategy to improve climate-change knowledge in the agricultural sector, increase adaptation capacity and resilience, improve soil health by increasing soil-carbon sequestration, reduce GHG emissions through technological and best-management solutions, improve energy efficiency, and increase renewable energy production. The Plan also targets a 40-80 $ktCO_2eq$ reduction of GHG emissions by 2027 (Government of New Brunswick, 2022[17]).

Quebec's Ministerial Initiative Program of Agri-Environmental Practices Reward (Programme d'Initiative ministérielle de rétribution des pratiques agroenvironmentales) entered into force in February 2022. Supporting accelerated adoption of agro-environmental practices such as crop diversification, off-season protection, reduced use of herbicides, use of seed not treated with insecticides, and developments favourable to biodiversity, this plan is a key measure of the 2020-2030 Sustainable Agriculture Plan that seeks to reduce GHG emissions and adapt to the repercussion of climatic changes (Government of Quebec, 2022[18]).

The Government of Nova Scotia announced the Season Extension Enhancement Program in December 2022, a CAD 5 million (USD 3.8 million) programme to support fruit and vegetable growers who invest in innovative and labour-saving technologies to extend their growing season, adapt to a changing climate, and open new market opportunities (Government of Nova Scotia, 2022[19]).

In Manitoba, the Watershed Ecological Goods and Services activity helped watershed districts work with farmers to implement sustainable environmental practices, including climate-change adaptation. (Government of Manitoba, n.d.[20]). Eligible projects include activities related to water retention and runoff management, wetland restoration and enhancement, soil health improvement, and land rehabilitation, among others.

Domestic policy developments in 2022-23

New agriculture policy framework

The 2022-23 fiscal year is the final year of the 2018-23 Canadian Agricultural Partnership (CAP). The *Sustainable Canadian Agriculture Partnership* (Sustainable CAP), the next five-year agricultural policy agreement, took effect on 1 April 2023. The Sustainable CAP includes CAD 500 million (USD 384 million) in additional funds, which correspond to a 25% increase in the cost-shared envelope under the 2018-2023 CAP (Government of Canada, 2023[21]).The new policy framework focusses on five priorities that were already part of the CAP agenda – climate change and environment; market development and trade; building sector capacity, growth and competitiveness; resiliency and public trust; science, research and innovation – with a stronger emphasis on the sustainability performance of the sector, its resiliency and the participation of underrepresented groups.

The Sustainable CAP reflects a more robust results-based strategy with improved data sharing, reporting on results and a commitment to achieve measurable outcomes over the duration of the new framework. Goals of the Sustainable CAP include contributing to the reduction of GHG emissions by 3 to 5 MtCO2eq, reaching CAD 250 billion (USD 192 billion) in sectoral revenues and CAD 95 billion (USD 73 billion) in sectoral export revenues by 2028, and increasing the proportion of funded recipients who are indigenous peoples, women and youth.

Climate change mitigation policies

The 2030 Emissions Reduction Plan (ERP), tabled on 29 March 2022, outlines the additional efforts the government of Canada is undertaking across all sectors to meet its 2030 GHG emissions target and lays the foundation for achieving net-zero emissions by 2050. In the Budget 2022, the government announced an investment of more than CAD 1 billion (USD 770 million) in new funding to support sustainable

agriculture and encourage the sector to significantly reduce GHG emissions, although without a specific target for the sector. This new funding is distributed as follows across four initiatives (Environment and Climate Change Canada, 2022[22]):

- CAD 470 million (USD 361 million) over six years starting in 2022-23 in addition to the CAD 200 million (USD 154 million) from the current *Agricultural Climate Solutions – On-Farm Climate Action Fund*, in order to complete funding for some of the current successful applicants, expand support for other key climate-change mitigation practices, extend the programme beyond its current end date of 2023/24, and support the adoption of practices that contribute to Canada's fertiliser emissions target and the Global Methane Pledge.
- CAD 330 million (USD 254 million) over six years starting in 2022-23 to triple the size of the *Agricultural Clean Technology* programme, which had initial funding of CAD 165.7 million (USD 127.3 million).
- CAD 150 million (USD 115 million) from the federal budget to contribute, as part of the next policy framework (2023-2028), to the cost-shared CAD 250 million (USD 192 million) *Resilient Agricultural Landscape* programme that seeks to support ecological goods and services provided by the agricultural sector.
- CAD 100 million (USD 77 million) over six years starting in 2022-23 to the federal granting councils to support post-secondary research in the development of technologies and crop varieties that enable net-zero emission agriculture.

The government expects GHG emissions from the agricultural sector to be reduced by 13 $MtCO_2eq$ once the ERP programmes are fully implemented and the national fertiliser emission reduction target is met (Environment and Climate Change Canada, 2022[22]).

Business risk management programmes

As part of the Sustainable CAP, some changes have been made to BRM programmes. The *AgriStability* compensation rate was raised from 70% to 80% providing up to CAD 72 million (USD 55 million) per year of additional income support to farmers (Government of Canada, 2022[23]). Eligibility rules for receiving the government *AgriInvest* contribution will become more restrictive from 2025, when participants with allowable net sales of CAD 1 million (USD 770 000) or more will be required to undergo an agri-environmental risk assessment (e.g. *Environmental Farm Plan*). This requirement will act as a cross-compliance tool to incentivise the sustainability performance of large-scale farms benefiting from the income stabilisation programme (Newswire, 2022[24]).

The new policy framework provides for reviews of the BRM programmes. A review within the first year of the Sustainable CAP will assess how to proactively integrate beneficial management practices that reduce production risks with *AgriInsurance* premiums. Based on the review, each province/territory will pilot an *AgriInsurance* premium project within the framework timeline. A broader review of how best to integrate climate risks into BRM programmes will also be carried out, using the information obtained through the *AgriInsurance* review (Realagriculture, 2022[25]).

Additional support was granted at provincial level to cope with the effects of the Hurricane Fiona that hit the country on 24 September 2022. In October 2022, the governments of Prince Edward Island (PEI) and of Nova Scotia announced a range of financial support to recover from the impacts of this natural disaster. The *Fiona Agriculture Support Program* of PEI and the *Fiona Agriculture Disaster Assistance Program* of Nova Scotia provide direct financial assistance to help producers cover extraordinary costs caused by the storm on equipment, infrastructure, crops, livestock, debris clean up, among others. The *On-Farm Electrical Interruption Assistance Program* implemented in both provinces assists farmers in the purchase and installation of a backup electrical generator, helping farms overcome food safety, biosecurity, and animal welfare issues that occur during extended electrical power interruptions. In Nova Scotia, the *Fiona*

Greenhouse Replacement Program helps farm owners build or buy new greenhouses and other related infrastructure and the *Farm Emergency Response Grant Program* provides a one-time grant of CAD 2 500 (USD 1 920) to registered farms in some specific areas of Nova Scotia that were most impacted by financial losses. (Government of Prince Edward Island, 2022[26]) (Government of Nova Scotia, 2022[27]; Government of Nova Scotia, 2022[28]; Government of Nova Scotia, 2022[29]; Government of Nova Scotia, 2022[30]).

Pest and disease management

In August 2022, a new CAD 45.3 million (USD 34.8 million) investment was announced to prevent African Swine Fever (ASF) from entering the country and prepare for a potential outbreak. Approximately half of the budget will go to the *African Swine Fever prevention and preparedness program* (ASFIPP) to address identified gaps in industry preparedness, developing tools, partnerships and activities to ensure early detection and effective emergency response. The other half will support the Canadian Food Inspection Agency's prevention and preparedness efforts and strengthen the control activities of the Canada Border Services Agency (Government of Canada, 2022[31]). In May 2022, the New Brunswick Government developed the *Swine Market Interruption Response Plan* to provide guidance and resource information to the New Brunswick pig meat industry and the provincial government in the event of a market interruption. The Plan was created specifically to address ASF and outlines considerations for depopulation and disposal of pigs during the initial six-month period following detection.

In February 2022, the governments of Canada and PEI announced details of the *Surplus Potato Management Response plan* to support PEI potato farmers affected by trade disruptions arising from discovery of potato wart, including CAD 28 million (USD 22 million) provided by federal budget and CAD 12.2 million (USD 9 million) provided by the Province (Government of Canada, 2022[32]). The plan diverts potatoes to domestic use to minimise the amount of surplus potatoes to be destroyed. Producers will also receive up to CAD 17.6 cents (USD 13.5 cents) per kg for environmentally-sound destruction of surplus potatoes. In May 2022, the PEI Government announced the *Soil Building for Seed Producers Project*, a CAD 3 million (USD 2.3 million) project to support seed potato producers in adapting to ongoing trade suspensions by planting soil-building crops, considered as a BMP (Government of Prince Edward Island, 2022[33]).

Supporting the wine sector

In November 2022, the government of Canada launched the *Wine Sector Support Program*, a two-year programme of CAD 166 million (USD 128 million), to provide short-term financial support to Canadian licensed wineries. Through non-repayable grants based on their production of bulk wine fermented in Canada from domestic and/or imported primary agricultural products, the government aims to support their transition and adaptation to current and emerging challenges affecting the financial resilience and competitiveness of the wine industry (Government of Canada, 2022[34]).

Compensatory measures for supply-managed commodities

Launched in March 2022, the *Supply Management Processing Investment Fund* provides non-refundable contributions to dairy, poultry and egg processors to mitigate the impacts of the *Canada-European Union Comprehensive Economic and Trade Agreement* (CETA) and the *Comprehensive and Progressive Agreement for Trans-Pacific Partnership* (CPTPP). The programme aims to compensate the processing sector for market losses due to new market access granted to imports for various goods in the dairy, poultry and egg sectors. The programme will provide CAD 292.5 million (USD 225 million) over six years to help existing processors – who buy domestic raw commodities in the supply-managed sectors – increase their competitiveness through the purchase of new automated equipment and technology. Each organisation who applies to this instrument can receive up to CAD 5 million (USD 3.8 million) subsidies over the life of the programme (Government of Canada, 2022[35]).

Through the 2022 Fall Economic Statement and Budget 2023, the government of Canada announced up to CAD 1.75 billion (USD 1.3 billion) in compensation to supply-managed sectors for the impacts of market access commitments made under of the *Canada-United States-Mexico Agreement* (CUSMA). Starting in 2023-24, these additional funds will be distributed through new and existing programmes over multiple years (Government of Canada, 2022[36]).

Promoting greater diversity in the sector

The government of Canada has developed policies, programmes and initiatives that promote diversity in the agricultural sector by enabling indigenous peoples and other underrepresented and marginalised groups to participate in the sector. It also works with Provincial and Territorial counterparts to improve data collection, monitoring, analysis and reporting on programmes. The *AgriDiversity Program (ADP)*, which aims to reduce barriers to participation and increase economic development opportunities through capacity building activities, will be renewed under the new Sustainable Canadian Agricultural Partnership. At provincial level, the new 2022 British Columbia's *Indigenous Food Systems and Agriculture Partnership* (IFSAP) programme supports First Nations and Indigenous communities, businesses and organisations in increasing food security and sovereignty over their food systems and funds activities related to agriculture, food processing, food systems planning, training and skills development, technological adoption, productivity and profitability improvements, and climate-change adaptation.

Relevant new regulations for the sector

In April 2022, the government announced the Temporary Foreign Worker (TFW) Program Workforce Solutions Road Map, which modifies the former TFW Program to respond to current labour and skill shortages affecting the agricultural and food sectors, among others. Approximately 50 000 to 60 000 foreign agricultural workers come to work in Canada each year, which accounts for more than 60% of all foreign workers entering Canada under the TFW Program. This new Road Map removes limits on the number of low-wage positions that employers in seasonal industries can fill through the TFW Program and increases the maximum duration of employment. Employers in food and beverage processing are now allowed to hire up to 30% of their workforce through the TFW Program for low-wage positions for one year (Government of Canada, 2022[37]).

In May 2022, Health Canada published an updated regulatory guidance to address the latest innovations in plant breeding, with the goal of improving the transparency, clarity and predictability of *Canadian novel food regulations*. By clearly defining which plant breeding products require a pre-market food safety assessment and by outlining an expedited service standard for products that are very similar to previously assessed products, this new guidance aims to create a predictable regulatory environment for the development of innovative agricultural products (Government of Canada, 2022[38]).

Domestic policy responses to Russia's war of aggression in Ukraine

In part to address higher input costs, the government of Canada increased the interest-free limit for advances under the *Advance Payment Program* from CAD 100 000 to CAD 250 000 (from USD 77 000 to USD 192 000) for the 2022 and 2023 programme years in June 2022. As a result, and taking into account recent interest rate increases, the government expects participating producers to save up to CAD 8 600 (USD 6 600) in interest costs over the next two years on average representing total savings of CAD 84 million (USD 65 million) over two years for some 11 000 producers (Government of Canada, 2022[39]).

Trade policy developments in 2022-23

In March 2022, Canada and India formally relaunched the negotiations of *the Canada-India Comprehensive Economic Partnership Agreement* (CEPA) and agreed to consider an interim agreement, the *Early Progress Trade Agreement* (EPTA), as a transitional step towards the CEPA. Both parties committed to strengthen trade and commercial ties through enhanced partnerships and co-operation in identified areas including agricultural and agri-food products. Market access for Canadian and Indian agri-food products is under discussion (Government of Canada, 2022[40]). The Canadian Government expects this agreement to help diversify its trade beyond the United States and the People's Republic of China (hereafter "China") (Asia-Pacific Foundation of Canada - Pia Rozario, 2022[41]).

In November 2022, the government of Canada unveiled its *Indo-Pacific Strategy* (IPS), which represents a whole-of-government shift in Canada's international focus. The Indo-Pacific comprises 40 countries and economies, including Australia, India, Japan, Korea, New Zealand, all ASEAN countries and China, among others. The government will invest CAD 2.3 billion (USD 1.8 billion) over five years to intensify regional engagement and deepen diplomatic, security, economic and sustainable development partnerships, including the establishment of an Indo-Pacific Agriculture and Agri-Food Office foreseen for 2023 to help Canadian farmers and producers diversify their exports and position Canada as a preferred supplier in those emerging markets (Government of Canada, 2023[42]).

Trade policy responses to Russia's war of aggression in Ukraine

In response to Russia's war of aggression against Ukraine, on 2 March 2022, Canada withdrew Most Favoured Nation (MFN) tariff treatment eligibility for virtually all products originating in Russia and Belarus, resulting in the application of the 35% General Tariff on these imports (Government of Canada, 2022[43]).

To address the exceptional circumstances of the war and its impact on the Ukrainian economy, on 9 June 2022, Canada also implemented a temporary one-year exemption from tariffs and countervailing duties on all imports originating in Ukraine (Government of Canada, 2022[44]). This time-limited exemption is independent of the extended market access for imports from Ukraine under the Canada-Ukraine Free Trade Agreement (CUFTA), as well as the ongoing modernisation of this agreement.

Contextual information

Canada is a large, wealthy country with a small population relative to its land area and has relatively abundant land and water available to the agricultural sector. Primary agriculture accounts for less than 2% of GDP and employment (Table 7.3) but contributes to a larger share of economic output in some of the country's regions. Crop production, concentrated in the western prairies – where the typical farm is twice as large as the national average – is highly productive and largely oriented to export. Most milk production is located in eastern Canada, which has relatively smaller farms and a larger variety of crops. Red meat industries are present across Canada, with beef cattle production being especially prominent in western Canada, and hog production concentrated in Quebec, Ontario and Manitoba.

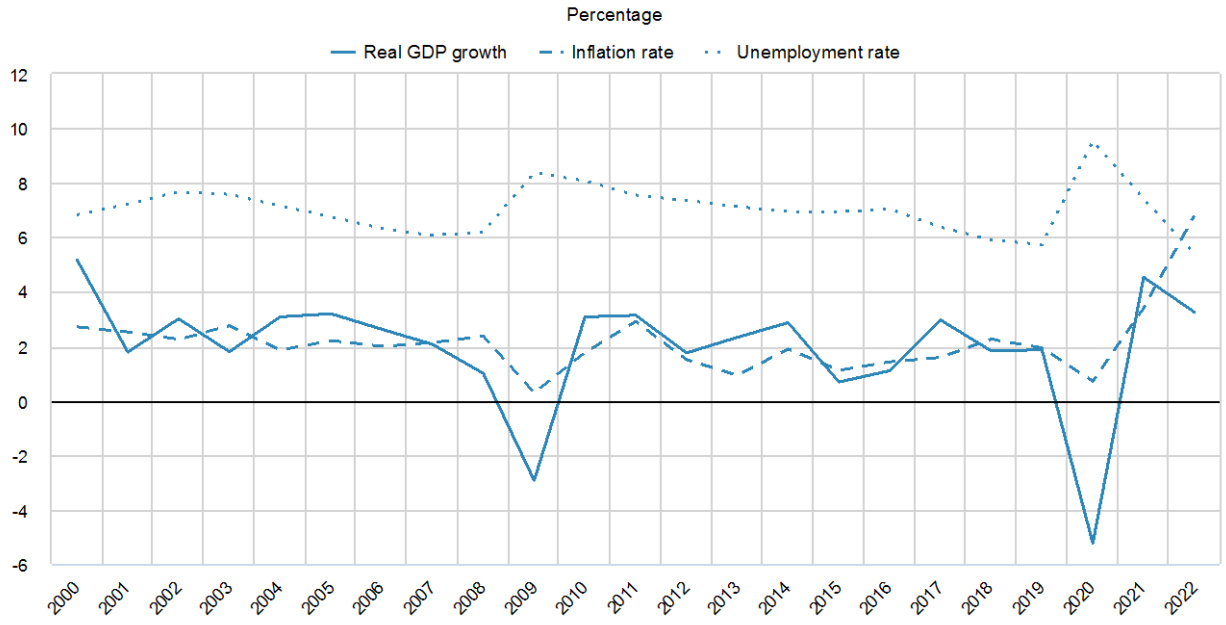
Table 7.3. Canada: Contextual indicators

	Canada		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	901	2 030	2.3%	1.7%
Population (million)	31	38	0.7%	0.7%
Land area (thousand km^2)	8 966	8 966	11.0%	10.9%
Agricultural area (AA) (thousand ha)	61 287	57 743	2.0%	2.0%
			All countries[1]	
Population density (inhabitants/km^2)	3	4	52	64
GDP per capita (USD in PPPs)	29 362	53 074	9 350	23 401
Trade as % of GDP	33.2	23.7	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	2.3	1.8	2.9	3.9
Agriculture share in employment (%)	3.3	1.7	-	-
Agro-food exports (% of total exports)	6.0	12.7	6.2	7.9
Agro-food imports (% of total imports)	5.0	8.7	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	43	61	-	-
Livestock in total agricultural production (%)	57	39	-	-
Share of arable land in AA (%)	67	66	32	34

Note: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

For most of the past two decades, with the exception in 2009 related to the financial crisis, Canada enjoyed a stable macroeconomic environment characterised by relatively low inflation rates, fluctuating around its 2% target, and positive economic growth. However, the economy has been heavily affected by the COVID-19 pandemic and related restrictions, which caused a recession in 2020. After a significant recovery in 2021, Canada's GDP growth declined slightly from 4.5% to 3.2% in 2022, remaining above pre-pandemic growth rates. Besides, the unemployment rate, which had declined from its 2020 peak in 2021, kept falling to reach 5.4%. However, inflation, which was already rising in 2021, doubled to 6.8% in 2022 (Figure 7.5).

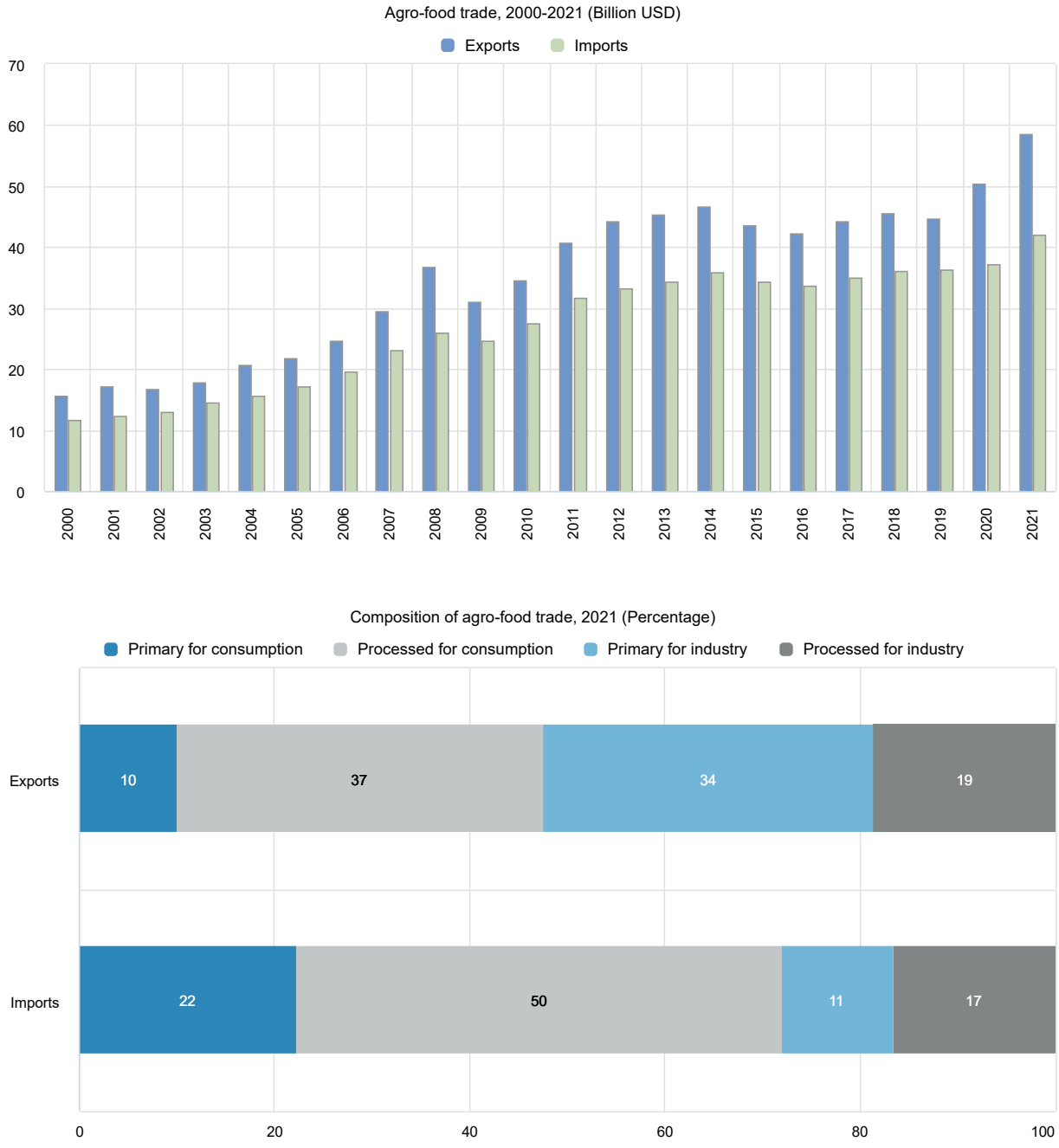
Figure 7.5. Canada: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Canada's economy is well integrated in international markets – as measured by the ratio of trade to GDP at 24% in 2021 (Table 7.3). Agro-food products represent 13% of total Canadian exports and 9% of imports. Canada is a large net exporter of agro-food products and access to export markets is highly important for the sector. More than half of Canada's agro-food exports are destined for the United States. Most of Canada's agro-food exports are either processed products intended for direct consumption (37%), or primary products for processing (34%). Canadian households' final consumption absorbs 72% of agriculture and food imports, of which two-thirds are processed goods (Figure 7.6).

Figure 7.6. Canada: Agro-food trade

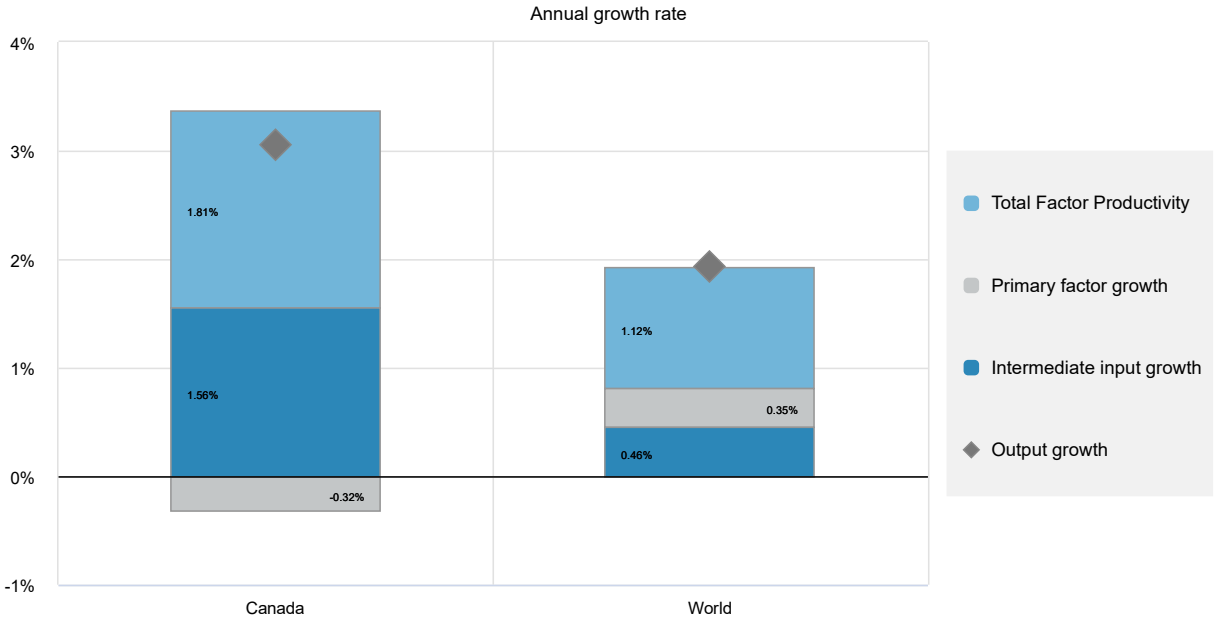


Note: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

At 3%, Canada's agricultural output growth over the decade 2011-20 was above the global average. It was driven by the rapid growth in Canada's agricultural productivity, as measured by total factor productivity (TFP), combined with further intensification in the use of intermediate inputs (Figure 7.7). The agricultural output growth over the past decade has been achieved without a clear relationship being established with the level of pressure exerted on natural resources, as shown by various environmental indicators. Average

nutrient surplus intensities have been increasing by 28% since 2000 for nitrogen and decreasing by 20% for phosphorous. The pressure on water resources is also very low, ten to twenty times lower than the OECD average (Table 7.4).

Figure 7.7. Canada: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 7.4. Canada: Productivity and environmental indicators

	Canada		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	2.4%	1.8%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	23.8	30.5	32.2	30.4
Phosphorus balance, kg/ha	1.5	1.2	3.3	3.0
Agriculture share of total energy use (%)	2.2	3.5	1.7	2.0
Agriculture share of GHG emissions (%)	7.0	8.2	8.6	10.5
Share of irrigated land in AA (%)	1.2	1.1	-	-
Share of agriculture in water abstractions (%)	9.7	8.6	46.6	49.7
Water stress indicator	..	0.9	8.3	7.4

Note: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Note

[1] Market price support to grains and oilseeds, which existed until the mid-1990s, resulted from the assistance provided to grain transportation which lower shipping costs for producers and consequently raised farm-gate grain prices. In 1989-90, the transportation subsidies covered about 70% of total freight costs with producers paying the remaining 30% (Doan, Paddock and Dyer, 2003[45]).

8 Chile

Support to agriculture

Chile's support to farmers is among the lowest of OECD countries with a Producer Support Estimate (PSE) of 2.7% of gross farm incomes in 2020-22, down from 7.3% in 2000-02. Since Chile reduced its tariff-based border protection in the 1990s, agricultural policies create very limited distortions to agricultural markets, with almost no Market Price Support (MPS) to the sector. Domestic producer prices fully align with world prices, as the ratio of average producer to border prices (National Nominal Coefficient, NPC) equalled 1 in 2020-22. Single Commodity Transfers (SCT) are small and limited to sugar and beef, for which they amount to 3.4% and 1.8% of respective gross farm receipts.

As MPS is almost non-existent, agricultural policies are based on budgetary transfers, and total support essentially goes through direct payments to farmers and to general services. Budgetary support to producers represented 42.4% of total support in 2020-22 and is mostly targeted to small-scale farmers. This support mainly includes payments for on-farm fixed capital formation, and on-farm services and variable input use.

Support for general services (General Service Support Estimate, GSSE) accounted for 55% of the total in 2020-22, and focused on off-farm irrigation infrastructure, inspection and control, land access, and agricultural knowledge and innovation systems. Expenditures for general services represented an average 3.4% of the agricultural value of production in 2020-22, slightly below the OECD average. Total agricultural support represented 0.3% of Gross Domestic Product (GDP) in 2020-22 – half the level in 2000-02.

Recent policy changes

A new administration took office in March 2022. The main priorities of the government are: (1) rural development and well-being; (2) strengthening of small-scale family farming; (3) water and climate emergency; (4) sustainability; (5) food security and sovereignty; and (6) international co-operation and trade.

The National Commission on Food Security and Sovereignty (CNSSA) was established in July 2022 to create the National Food Emergency Plan, and develop and implement measures for food security and sovereignty in the country.

The Sow for Chile (*Siembra por Chile)* programme implemented since mid-2022 provides direct payments for the purchase of agricultural variable inputs, such as agrochemicals, seeds, and fertilisers to small-scale and indigenous farmers. Payments are made by the agency responsible for small-scale agriculture (INDAP). The initiative also provides loans for medium-sized farms through a public bank (*Banco Estado*).

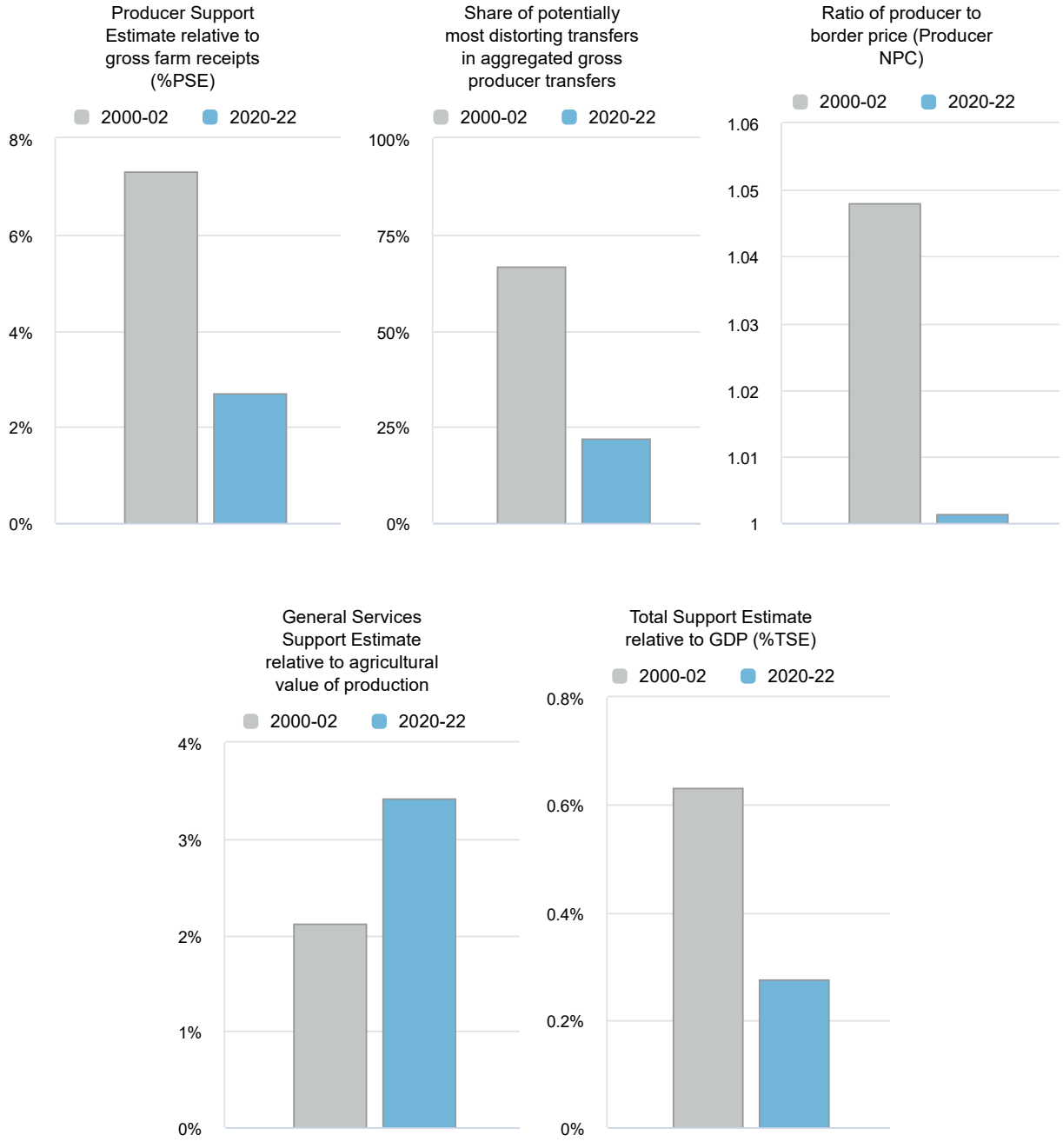
In January 2023, INDAP established the programme called Promotion and Strengthening of the Sustainable Production of Traditional Crops to increase sustainable grain and vegetable production. It provides payments to support the adoption of sustainable agricultural practices through acquisition of improved or certified seeds, and credit for the acquisition of these inputs at preferential rates.

The Inter-ministerial Committee for Just Water Transition was created at the beginning of 2023 to address ongoing severe drought, with 16 basin councils (one in each region of the country), marking the beginning of water-governance reform at the basin level, guided by principles of water security, inclusion, and decentralisation.

Assessment and recommendations

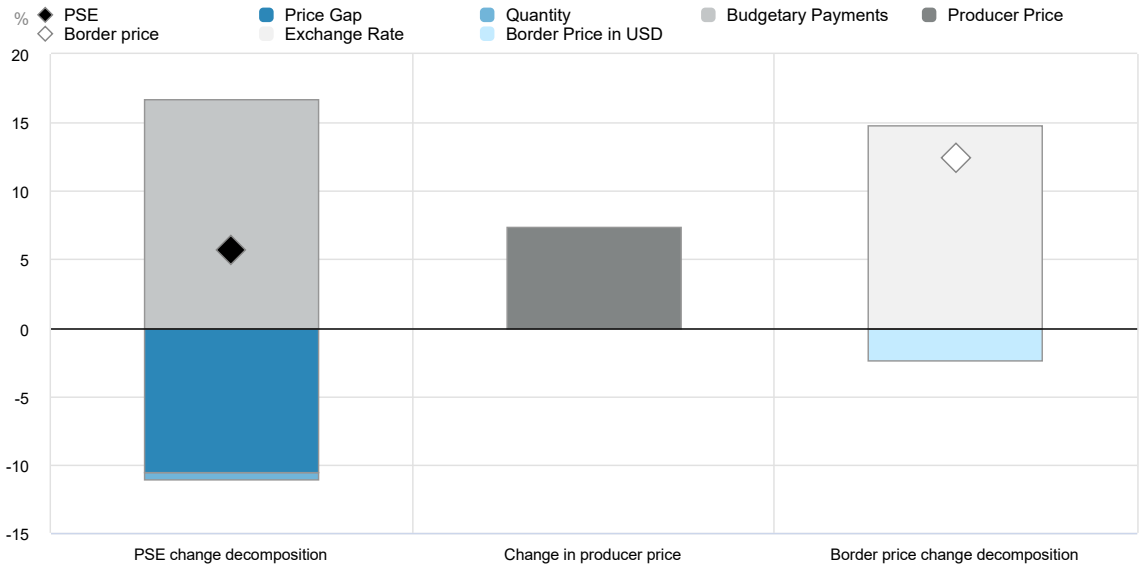
- Chile's National Adaptation Plan for agriculture includes measures to foster resilience in the agricultural sector. However, the country should take specific actions to facilitate the necessary transformation to more climate-resilient farming structures and production methods, in addition to shorter-term absorption of climate-related shocks. Chile should carefully monitor implementation of such policies and assess their effects on the sector. Moreover, the country must develop more sustainability actions and mainstream them into existing policy instruments for agriculture.
- Chile's commitment to achieving carbon neutrality by 2050 under the national strategy contains nine objectives and 63 goals for mitigation policies and practices linked to agriculture and forestry. However, the country does not have agriculture-specific mitigation targets, which can be helpful for measuring progress on reducing agricultural emissions.
- Expenditures for general services – focused on investments including irrigation infrastructure, inspection and control, and agricultural knowledge and innovation systems – remain low relative to the sector's size. Chile should consider scaling up public investments that help the sector become more sustainable, productive, and resilient. Additional and targeted investments in extension services, innovations favouring sustainable productivity growth, and climate-smart agriculture should be considered – particularly those favouring methane reduction to fulfil its commitment under the Methane Pledge. Investments in irrigation systems must account for the changing climate and use water management to ensure that they do not lead to increased water consumption.
- Payments to farmers are rightly tailored and targeted to small-scale farmers and vulnerable populations, such as indigenous and women farmers. Their effectiveness for improving productivity, competitiveness, and the recovery of degraded soils should be carefully assessed to allow for adjustments where current payments prove ineffective.
- Improved co-ordination across ministries and agencies that support the agricultural sector or rural populations will help ensure efficient use of public resources. Strong evaluation systems can help in this regard. Horizontal frameworks that bring together multiple ministries can also help.
- Moreover, given the increasing number of support programmes by regional governments targeting rural populations, improved co-ordination, communication, and accountability are needed between regional and national governments to avoid overlapping efforts and supports.

Figure 8.1. Chile: Development of support to agriculture



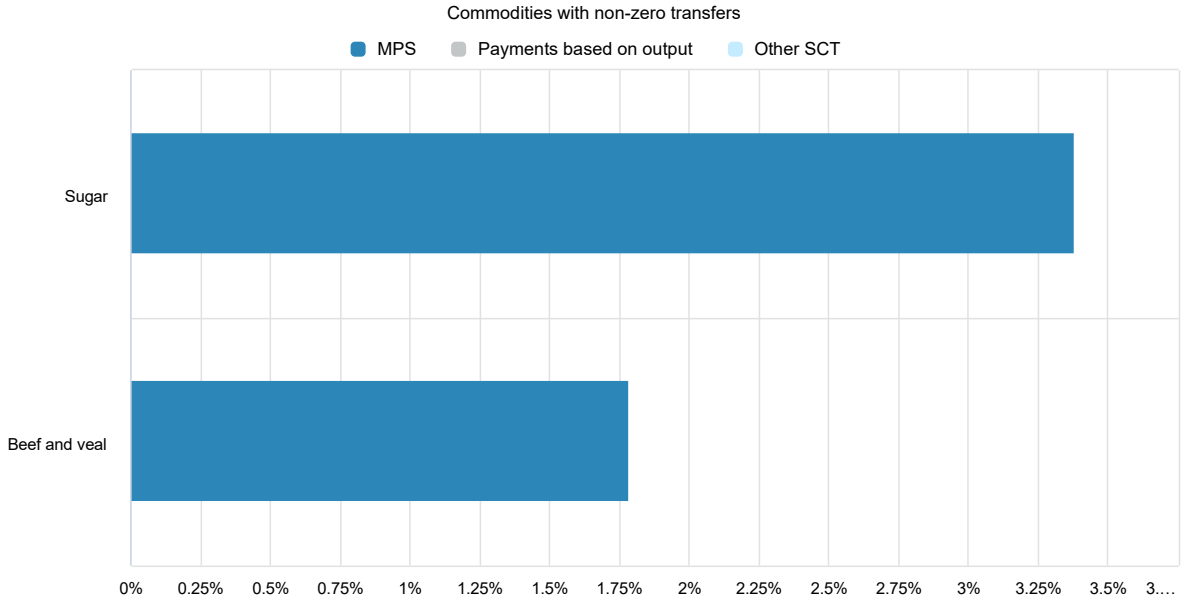
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 8.2. Chile: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 8.3. Chile: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Table 8.1. Chile: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**4 806**	**12 915**	**12 477**	**13 990**	**12 278**
***of which:** share of MPS commodities (%)*	72.86	77.67	74.05	78.32	80.63
Total value of consumption (at farm gate)	**4 118**	**11 111**	**9 835**	**12 424**	**11 074**
Producer Support Estimate (PSE)	**369**	**356**	**312**	**394**	**362**
Support based on commodity output	227	20	6	48	4
Market Price Support[1]	227	20	6	48	4
Positive Market Price Support	228	20	6	48	4
Negative Market Price Support	-1	0	0	0	0
Payments based on output	0	0	0	0	0
Payments based on input use	140	301	294	318	289
Based on variable input use	21	60	57	60	63
with input constraints	0	0	0	0	0
Based on fixed capital formation	85	164	161	179	153
with input constraints	66	81	77	91	77
Based on on-farm services	35	76	76	79	73
with input constraints	7	36	36	37	34
Payments based on current A/An/R/I, production required	1	36	11	27	69
Based on Receipts / Income	0	0	0	0	0
Based on Area planted / Animal numbers	1	36	11	27	69
with input constraints	1	36	11	27	69
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	0	0	0	0
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0
Percentage PSE (%)	**7.31**	**2.69**	**2.44**	**2.75**	**2.87**
Producer NPC (coeff.)	**1.05**	**1.00**	**1.00**	**1.00**	**1.00**
Producer NAC (coeff.)	**1.08**	**1.03**	**1.03**	**1.03**	**1.03**
General Services Support Estimate (GSSE)	**103**	**441**	**412**	**497**	**415**
Agricultural knowledge and innovation system	22	65	61	72	63
Inspection and control	3	107	109	109	101
Development and maintenance of infrastructure	67	261	234	306	242
Marketing and promotion	10	9	7	10	9
Cost of public stockholding	0	0	0	0	0
Miscellaneous	1	0	0	0	0
Percentage GSSE (% of TSE)	**22.00**	**55.29**	**56.93**	**55.79**	**53.40**
Consumer Support Estimate (CSE)	**-317**	**-61**	**-22**	**-135**	**-25**
Transfers to producers from consumers	-226	-20	-6	-48	-4
Other transfers from consumers	-92	-41	-16	-87	-21
Transfers to consumers from taxpayers	0	0	0	0	0
Excess feed cost	1	0	0	0	0
Percentage CSE (%)	**-7.51**	**-0.53**	**-0.22**	**-1.09**	**-0.23**
Consumer NPC (coeff.)	**1.08**	**1.01**	**1.00**	**1.01**	**1.00**
Consumer NAC (coeff.)	**1.08**	**1.01**	**1.00**	**1.01**	**1.00**
Total Support Estimate (TSE)	**472**	**797**	**724**	**891**	**777**
Transfers from consumers	318	61	22	135	25
Transfers from taxpayers	245	778	717	843	773
Budget revenues	-92	-41	-16	-87	-21
Percentage TSE (% of GDP)	**0.63**	**0.27**	**0.29**	**0.28**	**0.26**
Total Budgetary Support Estimate (TBSE)	**244**	**778**	**717**	**843**	**773**
Percentage TBSE (% of GDP)	**0.33**	**0.27**	**0.28**	**0.27**	**0.26**
GDP deflator (2000-02=100)	**100**	**262**	**243**	**262**	**281**
Exchange rate (national currency per USD)	**621.08**	**808.26**	**791.72**	**759.82**	**873.25**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Chile are: wheat, maize, apples, grapes, sugar, tomatoes, milk, beef and veal, pig meat, poultry, eggs, blueberries, cherries and peaches.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

Prior to 1973, agricultural policies in Chile followed an import substitution industrialisation model, with measures such as price and production controls for staples (e.g. wheat), import tariffs, and export restrictions. Longstanding institutions were created in this period, including the Institute for Agricultural Development (INDAP - the smallholders' agency), the Agriculture and Livestock Service (SAG -animal and plant health institute), INIA (agricultural innovation agency), and others. This period also saw land reforms that provided land to small-scale farmers and landless people (Anderson and Valdés, 2008[1]).

Economic and agricultural policies shifted in 1973 with the military coup. Chile was the first country in the developing world to adopt market oriented open-economy reforms and structural macroeconomic reforms. These reduced the role of government in the economy and liberalised trade (OECD, 2008[2]).

From 1973-83, general reforms such as macroeconomic stabilisation were advancing more rapidly than agricultural sector-specific reforms. However, marketing boards and price control agencies for agricultural products were dismantled, import tariffs were reduced and export restrictions were lifted. From the mid-1980s, the government took measures to improve competitiveness and stimulate production and exports, with general services to the sector playing a central role. Several agricultural institutions related to innovation and irrigation were created, but smallholder development, the environment and resource use received little attention (Anderson and Valdés, 2008[1]).

Since the restoration of democracy in 1990, agricultural policy focuses on three objectives: (1) increasing competitiveness, (2) achieving more balanced agricultural development by better integrating poorer, less-competitive, farmers into commercial supply chains, and (3) preserving the environment through sustainable use of resources. Tariffs were further reduced and numerous Regional Trade Agreements (RTAs) were signed, granting trade preferences to partners for agricultural products (OECD, 2008[2]). In 2022 the new government emphasised policies to address inequality issues in the sector, as well as on sustainability and water management (Table 8.2).

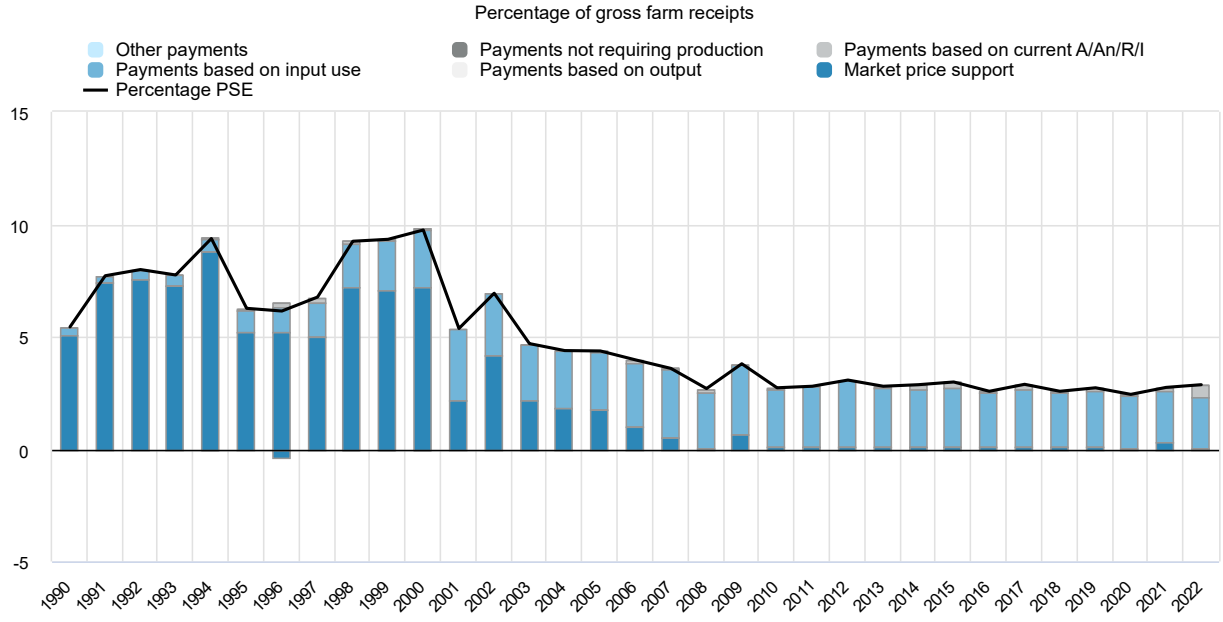
Table 8.2. Chile: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to 1973	Import substitution industrialisation model Closed economy	High import tariffs Price controls (e.g. minimum prices of main agricultural products such as wheat, fixed consumer prices, fixed marketing margins) Export quotas, licenses and export bans on main staple foods Subsidies to some producers (e.g. milk) Interventions in input markets Investments in agricultural infrastructure (e.g. slaughterhouses, storage and processing facilities, roads) Establishment of key agricultural institutions (e.g. INDAP, SAG, INIA, COTRISA) Land reform
1973-1990	Reforms for trade liberalisation	Removal of agricultural price controls Dismantling of marketing boards and price control agencies, except for wheat, milk and oilseeds Rapid tariff reduction on most imports Introduction of a uniform, non-discriminatory tariff system Elimination of export restrictions Establishment of price stabilisation mechanisms (price band systems) for imported products (wheat, sugar and oilseeds) Creation of further agricultural institutions (e.g. FIA, CNR)

Period	Broader framework	Changes in agricultural policies
1990-2022	Return to democracy continues with open markets model	Most Favoured Nation tariff reduction up to 1% by 2020 for all agricultural products Many free trade agreements signed Dismantling of the price band systems for sugar and oilseed Increase in budgetary allocation to support smallholders and for investments in general services
2022- present	More emphasis on inequality issues addressing small-scale agriculture, women, indigenous people and youth. Greater emphasis on sustainability and water management.	While the country continued with open markets, more emphasis on small-scale agriculture has taken place, by providing greater resources to INDAP. Law modifications on water management. Law modifications on soil programs. Development of National Strategy of Sovereignty for Food Security Agriculture sustainability programmes.

Following the near-elimination of market price support (MPS), producer support declined from close to 10% of gross farm receipts at the end of the 1990s to below 4% throughout the 2010s, and averaged 2.7% in the past three years. Support payments related to agricultural input use have partly replaced MPS, and these are targeted to small-scale agriculture. More funding is also provided for the provision of general services, which today account for half of Chile's total support estimate to agriculture.

Figure 8.4. Chile: Level and PSE composition by support categories, 1990 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

For Chile, developing small-scale agriculture, the improvement of sustainable productivity, competitiveness and the conservation of natural resources are the main policy focus. As MPS is inexistent, agricultural policies are only based on budgetary allocations. Half of these budgetary expenditures are

direct payments to small-scale farmers, which are provided for purchasing inputs, capital formation, credit at preferential interest rates, the Improving degraded soils and on-farm irrigation investments. The other half of the budget is spent in general services to the agricultural sector and is mainly for expanding and improving irrigation systems, access to land, agricultural research and development, sanitary and phytosanitary services and inspection services.

INDAP is the agency in charge of designing and implementing agricultural policies for small-scale farmers. Key programmes administered by INDAP are: 1) services for the development of poor areas, which gives subsidies for variable inputs such as seeds, fertilisers; subsidies for the creation of on-farm fixed capital formation such as equipment and machinery; and subsidies for on-fam services such as like technical assistance in 2022 this programme reach CLP 46.2 billion (USD 53 million); 2) territorial development programme for indigenous communities, that only provides subsidies for fixed capital formation in poor marginalised areas, budget for this programme was in 2022 CLP 35.9 billion (USD 41 million); 3) incentives for the development of agricultural investment which grants subsidies for variable inputs as well as for fixed capital formation on the farm, INDAP spent on this programme in 2022 CPL 26.3 billion (USD 30 million); 4) services for the development of productive and entrepreneurial capacities, that only provides different types of on-farm services, such as technical assistance, expenditures allocated to this programme in 2022 were CLP 16.8 billion (USD 19.2 million).

INDAP also provides credit to smallholders at preferential interest rates, the subsidy equivalent of this credit was CLP 12.6 billion (USD 14.5 million). INDAP has a crop insurance programme, which covers up to 50% of the premium.

Another important category of payments to farmers goes to the soil recovery programme. Around 70% of these resources were administered by INDAP and addressed to smallholders; the remaining 40% was administered by SAG (the animal and plant health agency) and given to medium and large-scale farmers. The programme aims to recover degraded soils and make them apt for agricultural practices, as well as soil conservation practices.

Subsides for irrigation is another important category that is managed by the national irrigation commission (CNR). This irrigation subsidy has both on-farm and off-farm components. On-farm support provides subsidies to farmers to improve or install a new irrigation system. On-farm subsidies represent 40% of spending, whereas 60% is used for community, regional or national investments.

GSSE is dominated (58%) by investments on infrastructure basically for irrigation and land and water rights for indigenous communities. Inspection services is another category with 24%, and lastly R&D and agricultural schools contributed with 15% of total budget to GSSE.

Chile's Nationally Determined Contribution (NDC) committed to carbon neutrality by 2050 and takes a carbon budgeting approach, although no specific target has been defined for agriculture. The LTCS strategy contains nine objectives and 63 goals linked to the agricultural and forestry sector. These goals are related to capacity building, agricultural R&D, agricultural extension services, reduction of greenhouse-gas (GHG) emissions, increasing carbon sequestration, and strengthening climate change governance.

Climate change adaptation policies in agriculture

In 2022, the Office of Agricultural Policies and Studies (ODEPA) developed an action plan to implement the Sustainability Strategy for the Chilean Agri-food Sector (launched in 2021), creating a system of indicators for monitoring and following-up targets and actions. Chile updated its National Adaptation Plan for agriculture over the course of 2022. Some key measures better integrating forestry, agricultural, and livestock management practices into techniques for adaptation to climate change; preserving and restoring natural ecosystems; implementing technologies that increase irrigation efficiency; and improving off-farm infrastructure and water management practices.

Since early 1990s, Chile has been implementing the soil recovery programme, which promotes soil health, recovery and conservation, and has been a key programme to increase the sector's adaptation. The operational rules and legislation for this programme are being updated and will be submitted for legislative debate during 2023. The new operational rules aim to reorient incentive payments to sustainable practices, including elements of agroecology, regenerative agriculture, organic agriculture, and purchase and development of agricultural bio-inputs.

The Chile Conscious Origin (*Chile Origen Consciente*) programme promotes the implementation of best agricultural practices in the Chilean agri-food sector. Established in 2022, it provides a framework for farmers to incorporate sustainability standards in their operations to help them verify their compliance through self-assessments and independent audits.

In 2022, INDAP developed the transition to sustainable agriculture programme, which promotes conservation of productive resources, resilience to climate change, and availability of and access to healthy food. This programme provides on-farm advisory services to help farmers adopt sustainable and agroecological management practices.

The Framework Law on Climate Change was published in June 2022. It is the first national legislation to address climate change as a state policy and introduces the legally binding target of economy-wide carbon neutrality by 2050. The legislation lays down new rules at the central, regional, and local levels. One of these is the first National Mitigation Plan for the Agri-food Sector, which contains measures and actions necessary to reduce GHG emissions in the sector. The first stages of inter-ministerial co-ordination of the plan began in the second half of 2022.

Domestic policy developments in 2022-23

In March 2022, a new administration took office. Its agenda is to accelerate the transformation of food systems, moving towards fairer, healthier, and more sustainable production. Key new priorities are: 1) rural development and well-being; 2) strengthening of small-scale family farming; 3) water and climate emergency; 4) sustainability; 5) food security and sovereignty; and 6) international co-operation and trade.

The Ministry of Agriculture implemented the "Sow for Chile" (*Siembra por Chile)* programme that provides direct payment for the purchase of agricultural variable inputs such as biochemicals, agrochemicals, seeds, and fertilisers, to small-scale and indigenous farmers through the agency responsible for small-scale agriculture (INDAP). The initiative also provides loans for medium-sized farmers through a public bank (*Banco Estado*). The Sow for Chile initiative provides direct payment for the purchase of inputs for farming traditional agricultural products such as grains and potatoes. The payments amount to CLP 219 thousand (USD 251) per hectare for a maximum of 5 hectares per farmer per year. Another element of Sow for Chile is the physical provision of fertiliser and grants for the purchase of fertilisers (mineral or organic). Crops eligible for this subsidy are fruits, legumes, vegetables, and potatoes.

In 2023, INDAP established the programme "Promotion and Strengthening of the Sustainable Production of Traditional Crops" that aims to increase sustainable grain and vegetable production. The programme provides payments to adopt sustainable agricultural practices through the acquisition of improved or certified seeds and also provides credit for the acquisition of these inputs at preferential rates. The programme has two pillars:

- **competitiveness** to address costs, productivity, and commercialisation
- **sustainability** to address soil protection and other practices that reduce greenhouse gas emissions and encourage carbon sequestration.

The National Commission on Food Security and Sovereignty (CNSSA) was established in 2022 to create the National Food Emergency Plan and develop and implement a set of measures for food security and sovereignty in the country. The plan will be implemented in 2023 and has ten main measures:

- Create a fund for the provision of loans to smallholders.
- Mitigate the lack of access to fertilisers through direct delivery of fertilisers.
- Create a security plan for strategic food zones to ensure food supply across the country.
- A new Irrigation Law that provides access to water to small-scale farmers and ensures environmental sustainability.
- Enhance inspections (food safety) in operations of the main port terminals.
- Promote the planting of traditional crops through credit.
- Create 70 micro-foodbanks nationwide to deliver fruits and vegetables to vulnerable populations.
- Implement a more efficient agricultural emergency responses for those production systems affected by climatic hazards, through the physical provision of inputs, such as material for on-farm irrigation systems, fertilisers, seeds, etc.
- Expand preferential credit with state loan guarantee by *Banco Estado*.
- Develop a price information system for seasonal food, to inform consumers of the cost of inexpensive and healthy food choices.

To address ongoing severe drought, the Inter-ministerial Committee for Just Water Transition was created at the beginning of 2023 with 16 basin councils, one in each region of the country, marking the beginning of a reform of water governance at the basin level, guided by principles of water security, inclusion, and decentralisation. The CNR represents the Ministry of Agriculture at this committee. The CNR is reforming its main legal instrument for water efficiency in the country, Act No. 18.450 for the promotion of private investment in irrigation works, directing public investment in small and medium agriculture, women, and indigenous peoples, while granting greater environmental sustainability through the application of this policy.

Moreover, the CNR will allocate more resources to diagnostic studies to improve basic information for better irrigation management and water security initiatives, project future irrigation works, and programmes to strengthen the technical and organisational capacities of users and other relevant stakeholders for water management in the basins. Finally, the institution is formulating a plan of small and medium-sized infrastructure projects to significantly increase public and private investment in irrigation works, including green infrastructure and nature-based solutions, to address the expected growing water scarcity. The plan will take into consideration regional particularities and the needs of those sectors most vulnerable to climate change. It will be framed within the principles of sustainable rural development.

The animal and plant health agency Agricultural and Livestock Service (SAG) the continues to work on strengthening sanitary and phytosanitary system of the country to support the sustainable and competitive development of the forestry and livestock sector. This work is carried out by promoting the use of new technologies and an ongoing review of technical and administrative regulations and procedures, following the recommendations of the international reference bodies. In 2022, the Digital Affidavit (DA) was put in place in 22 entry points, reaching 29% coverage at border controls nationwide. At the same time, the new organisational structure “Laboratory Network” was established. Priorities were defined for the period, with emphasis on budget management, aimed at improving efficiency, focusing on improving infrastructure, optimising expenses associated with processes on diagnostics or analyses.

The Foundation for Agrarian Innovation (FIA) promotes innovation through the promotion, articulation, development of capacities and technological diffusion of initiatives. During 2022, new strategic guidelines were defined that will be incorporated in the different project funding initiatives: (1) sustainable management of water resources, (2) adaptation and mitigation to climate change, and (3) sustainable food systems. These guidelines contribute to the sustainable development and competitiveness of Chile and its regions, with special emphasis on sustainable agro-food co-operatives (AgroCoopInnova Programme), youth (Innovative Rural Youth Programme), and women through the creation of the first Network of Innovative Rural Women in 2023.

Trade policy developments in 2022-23

In 2022, an agreement signed with the South Korean Health Authority was implemented and the transmission of electronic certificates began. With the United States, progress was made on a technical level with a view to an upcoming exchange of electronic certificates. With the Pacific Alliance countries, the electronic certificate exchange standard was defined and the work plan for its implementation was established in 2023. Technical tests were completed with the People's Republic of China (hereafter "China").

New countries adopted the modality of the paperless exchange process with Chile: Panama, Paraguay, Spain, and France, as well as the conduction of trials for the implementation of ePhyto with Bolivia, Ecuador, Guatemala, Thailand, Indonesia, Australia, and Korea. Regarding integration with SICEX (online platform for international market), in 2022 adjustments were made for integrating with the Postal System.

Negotiations to broaden the Partial Scope Agreement (PSA) with India and modernise the FTA with Korea finished in 2022. Negotiations with the European Union and the European Free Trade Association (EFTA) also concluded in 2022. The negotiations for an FTA with Paraguay were concluded in 2021 and were ratified by the Chilean Congress. During 2022, negotiations with Trinidad and Tobago continued for a Partial Scope Agreement (PSA). In 2022, Chile signed a Memorandum of Understanding (MoU) on agricultural co-operation with the Philippines and Thailand. Lastly, in February 2023 Chile ratified its membership to the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).

Contextual information

Real GDP growth in Chile has averaged around 4% since 2000 and made it become an upper middle-income country. Agriculture's weight in the economy is similar to the average of countries covered in this report, accounting for 3.7% of GDP and 6.4% of total employment in 2021. The sector has a dual structure, in which small-scale farms co-exist alongside a large-scale commercial farm sector. Chile is an open trade country, which has helped it to become an important producer and exporter of agricultural and food products such as fruits, vegetables, dairy products, poultry, pig meat and wine. Chile is a net exporter of agro-food products with a surplus of around USD 2.8 billion (excluding fish and forestry) in 2021. Agro-food products accounted for 14% of Chile's total exports, and for 11.4% of its imports.

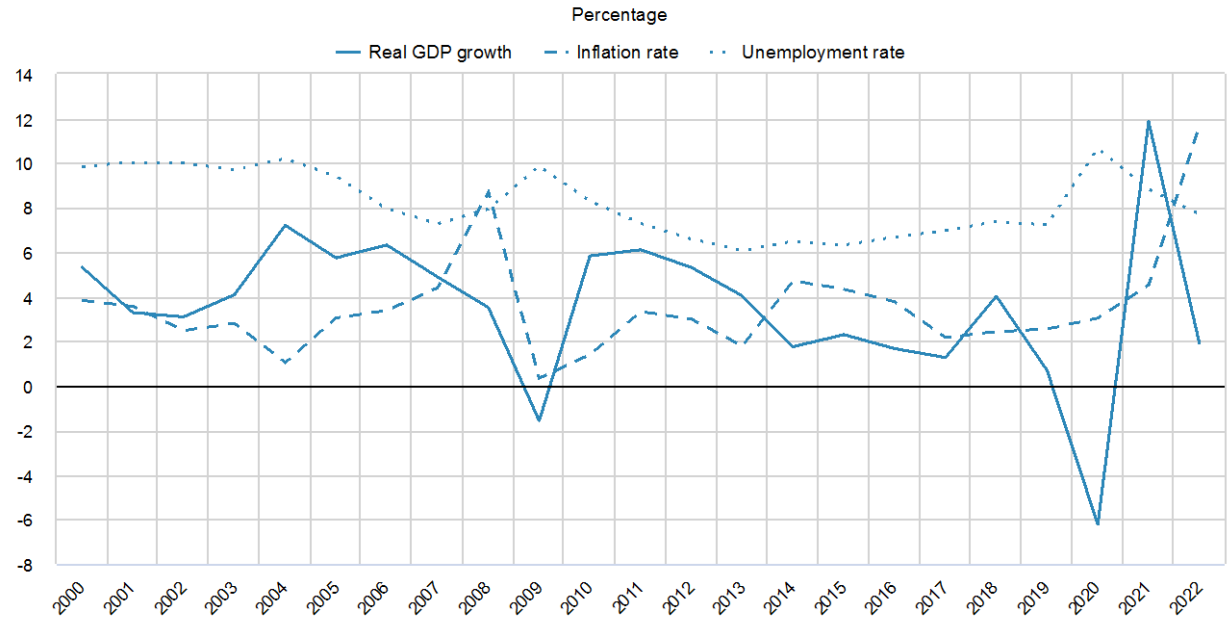
Table 8.3. Chile: Contextual indicators

	Chile		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	145	553	0.4%	0.5%
Population (million)	15	20	0.4%	0.4%
Land area (thousand km^2)	744	744	0.9%	0.9%
Agricultural area (AA) (thousand ha)	15 110	15 710	0.5%	0.5%
			All countries[1]	
Population density (inhabitants/km^2)	21	26	52	64
GDP per capita (USD in PPPs)	9 440	28 105	9 350	23 401
Trade as % of GDP	22.3	29.5	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	5.7	3.7	2.9	3.9
Agriculture share in employment (%)	14.1	6.4	-	-
Agro-food exports (% of total exports)	17.0	14.0	6.2	7.9
Agro-food imports (% of total imports)	7.7	11.4	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	68	61	-	-
Livestock in total agricultural production (%)	32	39	-	-
Share of arable land in AA (%)	12	8	32	34

Note: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

After a strong recovery in 2021 following the contraction due to the COVID-19 pandemic, Chile's economy grew by just 1.9% in 2022, similar to pre-pandemic rates. The country's unemployment rate decreased from 8.8% in 2021 to 7.7% in 2022. Inflation reached 11.6% in 2022, the highest in two decades.

Figure 8.5. Chile: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Chile's agricultural and agro-food sector has been successful in adding value to the production of primary commodities, by producing more differentiated products such as temperate fruits, and processed products such as wine. In 2021, 86% of agro-food exports were products for final consumption, both primary and processed, and only 14% were products for further industrial processing. Agro-food imports were mostly processed products for consumption with a 55%.

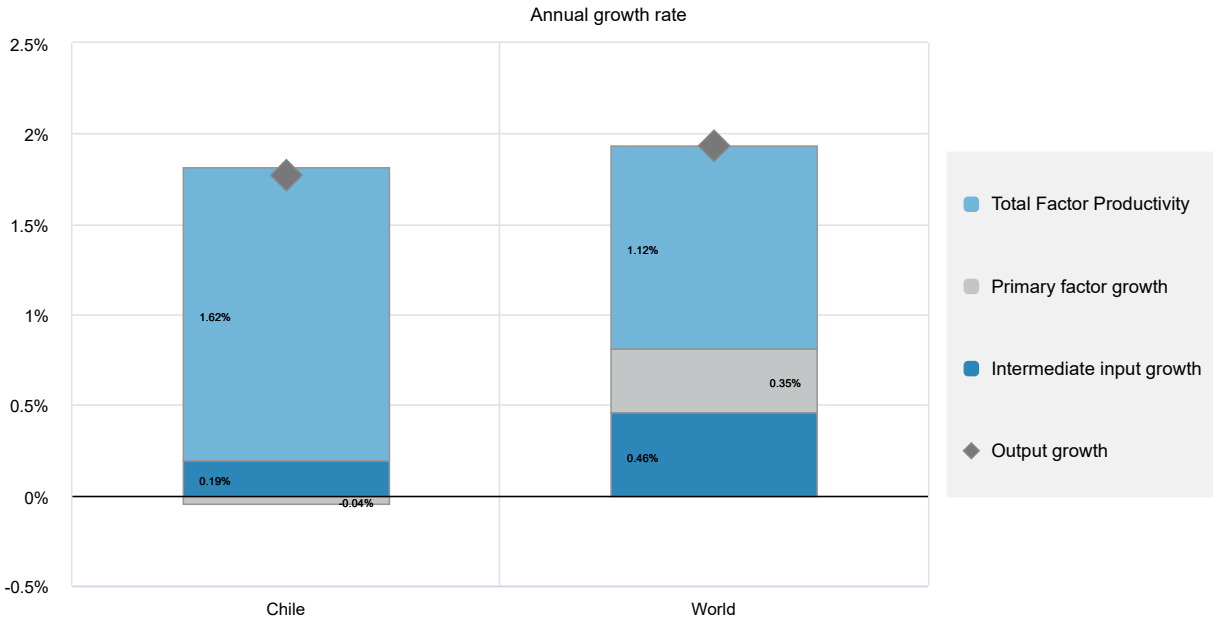
Figure 8.6. Chile: Agro-food trade



Note: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Productivity growth has been the dominant driver for Chile's growing agricultural production. Output growth averaged 1.8% over the period 2011-20, slightly below the global average, and has been mainly achieved by improvements in total factor productivity (1.6%), supported by some additional use of primary and intermediate inputs. Agriculture accounts for around 11% of Chile's GHG emissions, similar to the OECD average. Around 7% of the total agricultural land is irrigated.

Figure 8.7. Chile: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 8.4. Chile: Productivity and environmental indicators

	Chile		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	3.5%	1.6%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	..	..	32.2	30.4
Phosphorus balance, kg/ha	..	..	3.3	3.0
Agriculture share of total energy use (%)	..	1.5	1.7	2.0
Agriculture share of GHG emissions (%)	18.8	10.5	8.6	10.5
Share of irrigated land in AA (%)	7.0	7.0	-	-
Share of agriculture in water abstractions (%)	..	..	46.6	49.7
Water stress indicator	..	..	8.3	7.4

Note: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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9 China

Support to agriculture

The share of support to agricultural producers in the People's Republic of China (hereafter "China") averaged 14.4% of gross farm receipts in 2020-22. This is three times higher than in 2000-02 but remains on par with average support (14.2%) between 2016 and 2019, when market interventions were reformed for soybeans, rapeseed, cotton and maize, and minimum purchase prices for wheat and rice were reduced. These reforms helped stabilise support levels after two decades of steady growth.

Between 2021 and 2022, reference prices rose faster than domestic prices in a context of increasing world prices, particularly for wheat, maize, milk, pig meat, and other meat products. Against this backdrop, producer support fell to 13.4% in 2022, the same level as in 2019.

Area payments to maize and soybeans increased since 2020 to boost production in these sectors and meet higher demand for feed. Area payments in the Agricultural Production Development programme increased, to offset rising inputs and production costs in 2022, and contributed to the overall increase in budgetary support.

Payments based on area planted have consistently increased since 2014 because of the recent reforms. However, Market Price Support (MPS) remains the main form of support, generated through both domestic price support policies and various border measures on imports. Overall, more than two-thirds of support to producers is in the form of potentially most-distorting transfers, a consistent pattern since 2000-02.

Producers of imported commodities (such as pig meat, milk, wheat, rice, cotton, soybeans, and sugar) benefited from transfers equal to between 9% and 53% of commodity receipts in 2020-22. Prices received by farmers were 15% higher than world prices on average in 2020-22. Higher domestic producer prices on average indicate an implicit tax on consumers, with a percentage consumer support estimate of –12.7% in 2020-22.

General services support amounted to 11% of total support to agriculture in 2020-22. It covered three main categories of services: public stockholding; development and maintenance of infrastructure; and the agricultural knowledge and innovation system. The General Services Support Estimate (GSSE) represented 2% of the value of agricultural production. The Total Support Estimate (TSE) for agriculture as a share of Gross Domestic Product (GDP) remained stable and relatively high at 1.8% in 2020-22.

Recent policy changes

The 2023 No. 1 Central Document reiterates the objective of annual grain production of at least 650 million tonnes. It also prioritises increasing maize yields, expanding the soybean cultivated area, and reducing soybean meal usage. It highlights the need for regulation and supervision of state grain reserves, international trade-partner diversification, technological innovation to improve seeds and agricultural machinery, and promoting "green agricultural development".

As prices for grain and oilseeds increased following Russia's war of aggression against Ukraine, two key soybean-producing provinces in northeast China announced their objectives to increase soybean area compared to 2021. To meet these goals, provincial governments provided soybeans farmers with additional area payments while the Ministry of Agriculture and Rural Affairs (MARA) released guidelines for alternating crops of maize and soybeans.

China provided subsidies in three rounds throughout 2022 to stabilise farm incomes and compensate grain producers for the increasing costs of agricultural inputs: CNY 20 billion (USD 3 billion) in March 2022; CNY 10 billion (USD 1.5 billion) in May 2022; and CNY 10 billion (USD 1.5 billion) in August 2022.

In June 2022, China issued the National Strategy on Climate Change Adaptation 2035. It focuses on four areas: (1) greater emphasis on early-warning systems and risk management; (2) sectoral adaptation tasks for agriculture and food security; (3) greater integration of national and regional adaptation strategies; and (4) strengthening financial support, scientific and technological support, and international co-operation for climate change adaptation.

China issued a national drought emergency plan in August 2022 as record temperatures and low water levels affected much of the Yangtze River region, especially Sichuan, Chongqing, Hubei, and Jiangxi provinces. MARA allocated CNY 300 million (USD 44 million) to 13 provinces as agricultural production disaster-relief funds to facilitate flood control and drought relief.

Several measures were introduced in response to international market changes. China introduced a quota for phosphate fertilisers exports in August 2022. It limits exports of phosphate fertilisers to 3.16 million tonnes for the second half of 2022 to stabilise domestic prices. In September 2022, the National Development and Reform Commission (NDRC) implemented a programme releasing 0.2 million tonnes of pig meat from national, provincial, and municipal reserves to stabilise pig meat prices.

The General Administration of Customs of China (GACC) ended required PCR testing and disinfection measures for COVID-19 in December 2022 (effective January 2023), which had applied to imported cold-chain foods and non-cold-chain goods. At the same time, China removed the requirement for foreign trade operators to register at local commercial authorities. Entities applying for import and export permits and quotas, and state trading enterprises will no longer be required to provide a registration record.

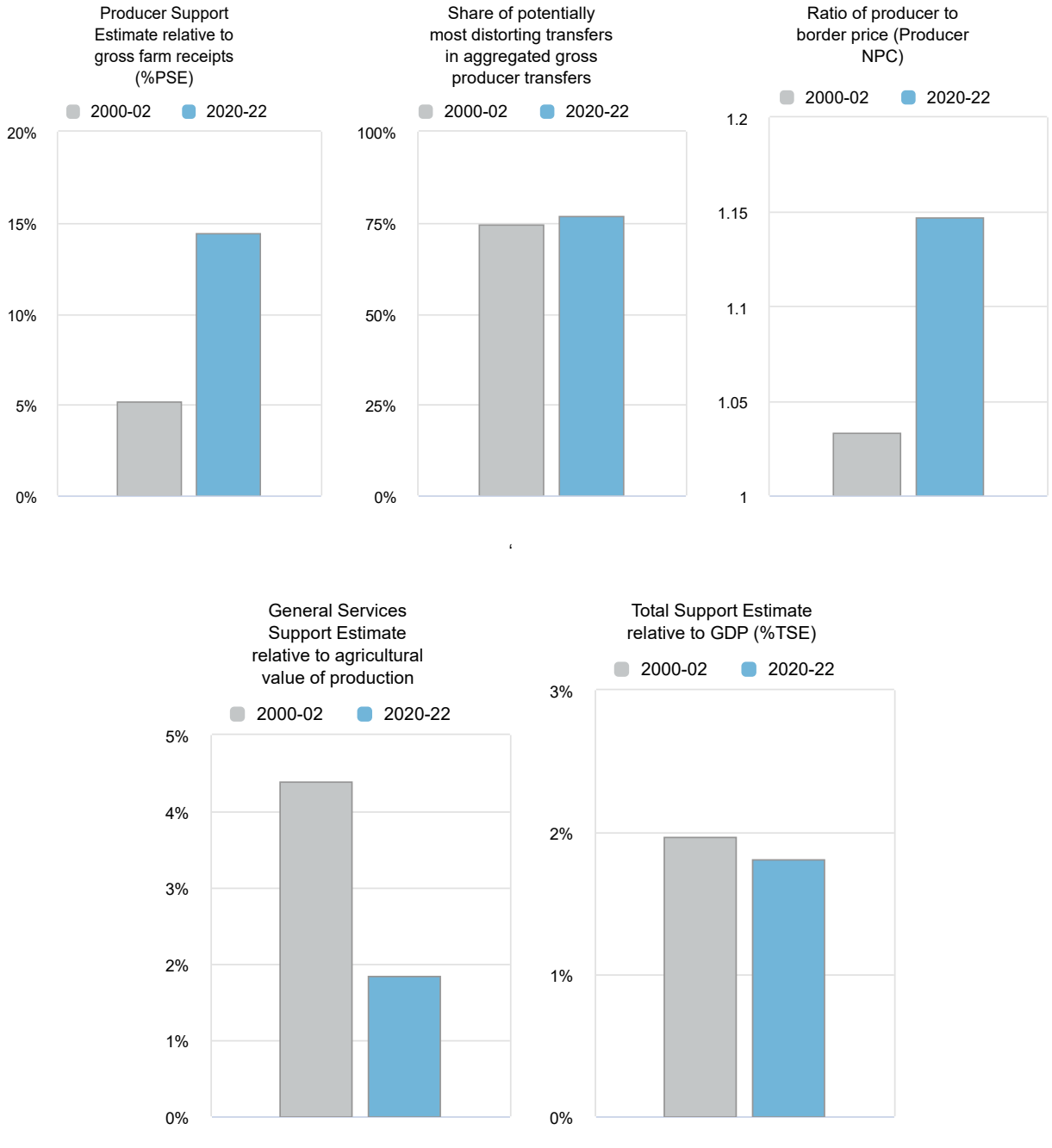
Assessment and recommendations

- Since early 2000s, several strategies, plans and programmes were put forward across institutions, including MARA and the Ministry of Ecology and Environment, to strengthen the sector's climate-change adaptation and mitigation actions. In this context, implementation of the National Agriculture Green Development Plan 2021-25 – a joint effort of various ministries and institutions – is a positive step towards mainstreaming and co-ordinating adaptation policy objectives across current and planned programmes, including better targeting of extension services for farmers.
- Overall, long-term adaptation efforts, such as collaborative planning and multi-disciplinary research, could be better integrated with efforts to help farmers accommodate climate risks in the short term, and those backing incremental changes in the medium term. China could consider additional efforts to measure adaptation outcomes, such as assessing adjustments in production practices done in demonstration areas.
- China's Nationally Determined Contribution (NDC) recognises agriculture's importance to its economy-wide emissions-reduction target (peak CO_2 emissions by 2030) and its objective to achieve carbon neutrality by 2060, but no targets have been set for agriculture. Nevertheless, several sector-specific policy efforts aim to mitigate greenhouse-gas (GHG) emissions, and the monitoring of their impacts on GHG emissions should be improved against programme-specific

targets. The National Agriculture Green Development Plan 2021-25 can play a role by providing the tools to monitor GHG mitigation practices at farm level and along the value chain.

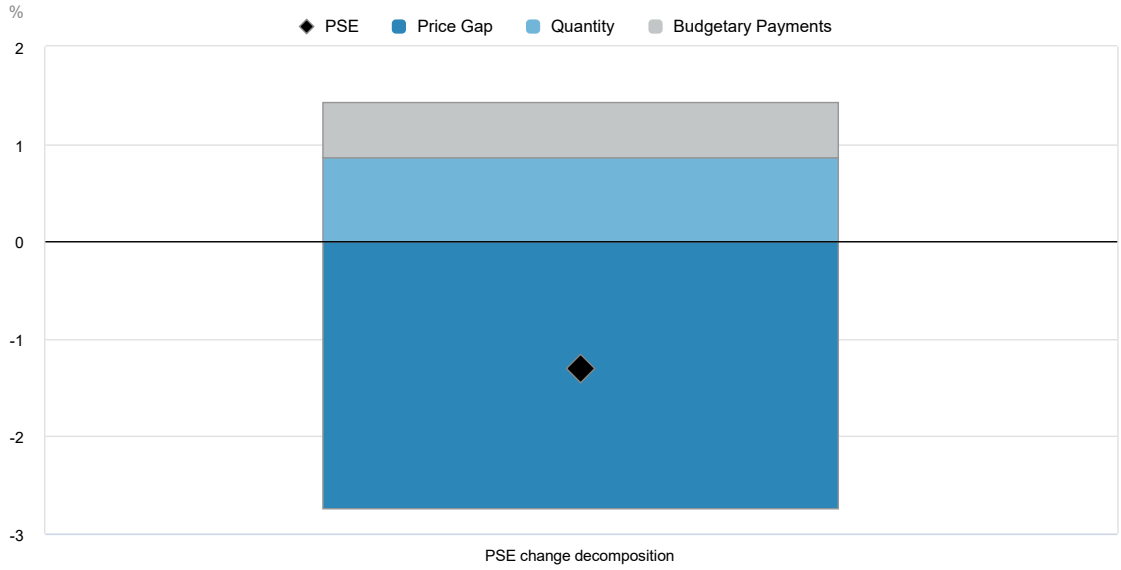
- Reforms introduced until 2016 to replace intervention prices for key crops with direct payments based on planted area are a step towards rebalancing the policy portfolio. This reflects China's increasing policy orientation towards long-term productivity growth and sustainability. Replacing the maize purchasing and storage system with direct payments eased the burden of public stockholding costs, although these remain the largest expenditure in general services support. Such reforms could be gradually extended to include wheat and rice. If direct payments to farmers are maintained over a longer-term, the link between these payments and production decisions should be loosened, for instance by providing payments on a historical area basis, and 'greened' by making them conditional on environmentally friendly production practices.
- To establish a solid framework for agri-environmental policies, China should define environmental targets adapted to local ecological conditions and strengthen monitoring mechanisms for the enforcement of environmental regulations. To this end, regular soil testing under the Soil Environmental Information Platform and Monitoring System (part of the 2019 Soil Pollution Prevention and Control Law) needs to be implemented and can set the stage for similar efforts relating to water use in agriculture. As water resource scarcity is projected to remain a major constraint to productivity growth in Chinese agriculture, further efforts are necessary to improve water management. More specifically, in implementing the 2021 regulation on groundwater conservation and protection, a comprehensive review of water governance could better define responsibilities, remove conflicts, and ensure effective policy implementation.
- Public expenditures on general services increased but at a slower pace than support to individual producers and these have not kept pace with sectoral growth. Restructuring public expenditure towards general services can be achieved by scaling down input subsidies such as those to purchase farm machinery, and by ensuring that support through direct payments has only a transitory role in supporting farmers' adjustment to a new market environment. Enhanced public investment in R&D can support more efficient use of variable inputs and reduce environmental harm. Further investments in sanitary inspection and control services will be necessary to implement the revised provisions of the Food Safety Law, the envisaged nationwide surveillance system for pests and diseases.
- Reforms to land-transfer rules have contributed to the emergence over the past decade of large family farms, co-operative farms, and farms run by agro-business companies. To continue improving agricultural productivity, increased investments in education and training, and enhanced access to financial services should complement these reforms.

Figure 9.1. China: Development of support to agriculture



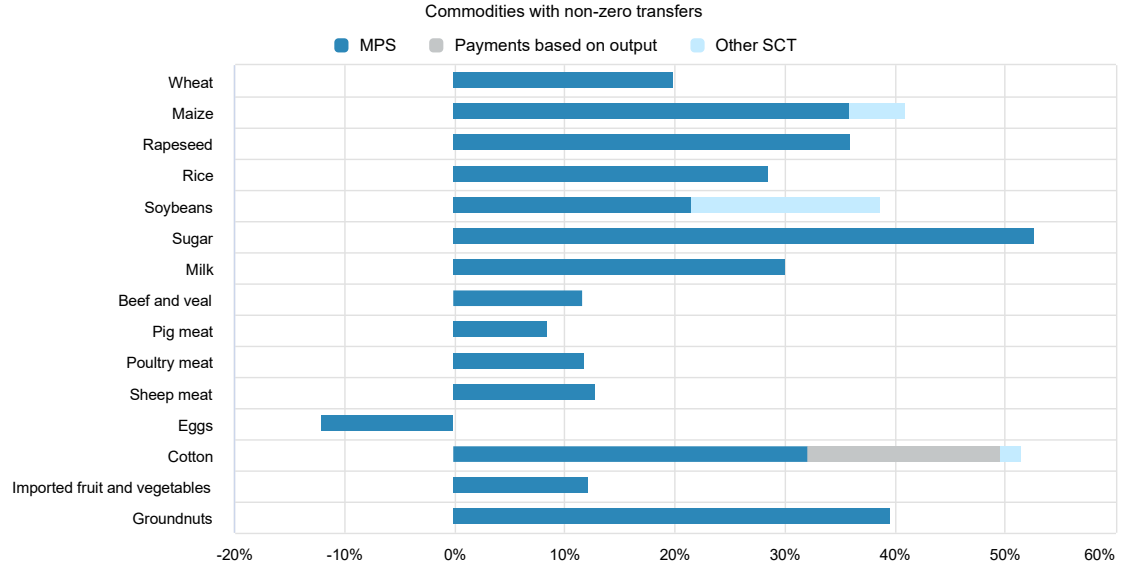
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 9.2. China: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency. The producer price change and the border price change are not calculated when both negative and positive market price support (MPS) occur at the commodity level for the previous year. Note that negative MPS estimates for livestock products may arise in cases of aligned product prices if there is positive MPS for feed commodities.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 9.3. China: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Table 9.1. China: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**270 118**	**1 809 299**	**1 622 587**	**1 832 931**	**1 972 378**
***of which:** share of MPS commodities (%)*	75.76	81.00	76.96	83.53	82.50
Total value of consumption (at farm gate)	**281 331**	**1 993 923**	**1 778 446**	**2 042 579**	**2 160 743**
Producer Support Estimate (PSE)	**14 354**	**271 068**	**250 277**	**289 292**	**273 634**
Support based on commodity output	7 329	201 852	181 496	219 163	204 897
Market Price Support[1]	7 329	198 421	177 960	215 751	201 551
Positive Market Price Support	11 162	203 783	182 519	222 072	206 757
Negative Market Price Support	-3 833	-5 362	-4 559	-6 321	-5 206
Payments based on output	0	3 431	3 536	3 413	3 346
Payments based on input use	5 684	18 643	19 087	18 609	18 232
Based on variable input use	1 414	4 302	3 960	4 524	4 422
with input constraints	0	0	0	0	0
Based on fixed capital formation	3 026	12 528	13 100	12 363	12 121
with input constraints	0	0	0	0	0
Based on on-farm services	1 244	1 813	2 027	1 722	1 689
with input constraints	0	0	0	0	0
Payments based on current A/An/R/I, production required	533	33 771	32 249	34 875	34 190
Based on Receipts / Income	533	1 464	1 681	1 370	1 342
Based on Area planted / Animal numbers	0	32 307	30 568	33 505	32 849
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	370	15 501	15 896	15 456	15 153
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	370	15 501	15 896	15 456	15 153
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	438	1 300	1 550	1 189	1 162
Based on long-term resource retirement	438	1 300	1 550	1 189	1 162
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0
Percentage PSE (%)	**5.18**	**14.40**	**14.77**	**15.17**	**13.38**
Producer NPC (coeff.)	**1.03**	**1.15**	**1.15**	**1.16**	**1.14**
Producer NAC (coeff.)	**1.05**	**1.17**	**1.17**	**1.18**	**1.15**
General Services Support Estimate (GSSE)	**11 861**	**33 136**	**35 360**	**32 335**	**31 713**
Agricultural knowledge and innovation system	1 347	5 044	6 102	4 538	4 492
Inspection and control	349	2 378	2 970	2 102	2 061
Development and maintenance of infrastructure	3 424	13 546	12 032	14 445	14 161
Marketing and promotion	0	466	548	429	421
Cost of public stockholding	6 741	11 703	13 708	10 822	10 579
Miscellaneous	0	0	0	0	0
Percentage GSSE (% of TSE)	**45.03**	**10.92**	**12.38**	**10.05**	**10.39**
Consumer Support Estimate (CSE)	**-8 512**	**-254 226**	**-240 634**	**-282 820**	**-239 224**
Transfers to producers from consumers	-8 688	-228 755	-202 594	-252 327	-231 344
Other transfers from consumers	-1 119	-49 566	-56 501	-59 849	-32 349
Transfers to consumers from taxpayers	128	0	0	0	0
Excess feed cost	1 167	24 096	18 461	29 356	24 469
Percentage CSE (%)	**-3.03**	**-12.74**	**-13.53**	**-13.85**	**-11.07**
Consumer NPC (coeff.)	**1.04**	**1.16**	**1.17**	**1.18**	**1.14**
Consumer NAC (coeff.)	**1.03**	**1.15**	**1.16**	**1.16**	**1.12**
Total Support Estimate (TSE)	**26 343**	**304 204**	**285 636**	**321 627**	**305 348**
Transfers from consumers	9 807	278 321	259 095	312 176	263 693
Transfers from taxpayers	17 655	75 449	83 042	69 300	74 003
Budget revenues	-1 119	-49 566	-56 501	-59 849	-32 349
Percentage TSE (% of GDP)	**1.97**	**1.81**	**1.95**	**1.81**	**1.69**
Total Budgetary Support Estimate (TBSE)	**19 014**	**105 783**	**107 676**	**105 877**	**103 797**
Percentage TBSE (% of GDP)	**1.42**	**0.63**	**0.73**	**0.60**	**0.58**
GDP deflator (2000-02=100)	**100**	**196**	**189**	**197**	**203**
Exchange rate (national currency per USD)	**8.28**	**6.70**	**6.90**	**6.45**	**6.73**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for China are: wheat, maize, rice, rapeseed, soybean, sugar, milk, beef and veal, sheep meat, pig meat, poultry, eggs, cotton, apples, groundnuts, peanuts, exported fruit and vegetables, and imported fruit and vegetables.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

The evolution of China's agricultural policy objectives reflects the changing role of agriculture at different stages of economic development. In the 1950s and 1960s, the agricultural sector was taxed to support the industrial sector's development. In the late 1970s, China initiated an important economic transformation process, implementing reforms towards a market-oriented economy including for the agricultural sector (OECD, 2005[1]; OECD, 2018[2]). More specifically, China implemented its first rural reform, the household responsibility system (HRS), during 1978-84. This dismantled the people's communes and contracted cultivated land to individual households, mostly based on the number of people or labourers in the household.[1]

Until the late 1990s, agricultural policies focused on increasing food production, particularly grains, through the provision of fertiliser and other input subsidies to farmers. At the same time, policy actions targeted deregulation and diversification of marketing channels. Central and local governments increased support for irrigation.

Liberalisation of international trade started in the early 1990s with the relaxation of trade restrictions and allowing private traders to play a role in agricultural commodity markets. In the context of China's WTO accession in 2001, the average import tariff for agricultural products fell from 42% in the early 1990s to 12% in the early 2000s.

In the 2000s, the growing income gap between urban and rural populations, and between developed and underdeveloped rural areas became an important policy issue. Increasing farmers' income was made a key policy objective together with food self-sufficiency in several of the *No. 1 Central Documents* during the 2000s.[2] Several new policies were introduced in this period to meet these objectives. These included minimum purchase prices for grains, and a system for temporary purchase and storage of production, as well as subsidies for agricultural materials, superior crop varieties, and agricultural insurance premiums.

Many of the *No. 1 Central Documents* also emphasised other policy goals, such as ensuring the quality of agricultural products and food safety, enhancing agricultural competitiveness, and protecting the agricultural ecosystem. In the early 2000s, China introduced agri-environmental payments under programmes such as "Grain for Green" (officially called the *Returning Farmland to Forests Programme*), converting grazing land to grassland, or Grassland Ecological Protection.

In 2014, land reforms clarified village collective landowner rights, individual household land contract rights, and land operation rights through the "three rights separation system". These reforms consolidated farm operations and spurred productivity growth. To control the conversion of farmland for non-agricultural use, a "red line" on arable land was set at no less than 124.3 million hectares in the 2016 *Adjusted Scenario of the Outline of the National Overall Planning on Land Use*.

The government-led temporary purchase and storage policy for cotton, soybeans and rapeseed at pre-determined prices was reformed in 2014-15, and in 2016 for maize. For cotton, this was replaced by deficiency payments covering the difference between pre-determined target prices and actual market prices. For soybeans and maize, it was replaced by direct payments based on area planted. In 2016 all subsidies on grain, seed and aggregate inputs were merged into a single general income support payment. While wheat and rice remained subject to the minimum price procurement programme, support prices were gradually reduced between 2015 and 2019. Since the COVID-19 pandemic, the minimum support price was increased again for indica rice and wheat.

A rural revitalisation strategy was introduced in 2017 to close the urban-rural development gap. This strategy relies on support to general services as a means to develop agri-food supply chains.

In March 2021, the Central Committee of the Communist Party of China (CCCPC) released the 14th Five-Year Plan 2021-25 for National Economic and Social Development. The plan outlines specific key priorities for agriculture modernisation:

- enhancing food security, including by safeguarding a minimum arable land area of 120 million hectares
- maintaining subsidies for grain producers and increasing minimum purchase prices for wheat and rice as appropriate
- implementing high-standard infrastructure and conservation projects, which could also advance the development of green agriculture
- investing in innovative farm technologies and smart agriculture systems, including with respect to seeds and animal breeding
- and improving pest and disease control systems.

In November 2021, the State Council issued the 14th Five-Year Plan for Promoting Agricultural and Rural Modernization 2021-25 setting the mid-term food security objective of maintaining annual production of grains at a minimum of 650 million tonnes and of meat at 89 million tonnes. The Plan also emphasises consolidating the achievements of poverty reduction in rural areas, supporting agricultural innovation and seed development, and conducting new surveys on agricultural production costs to adjust agricultural insurance programmes and subsidies.

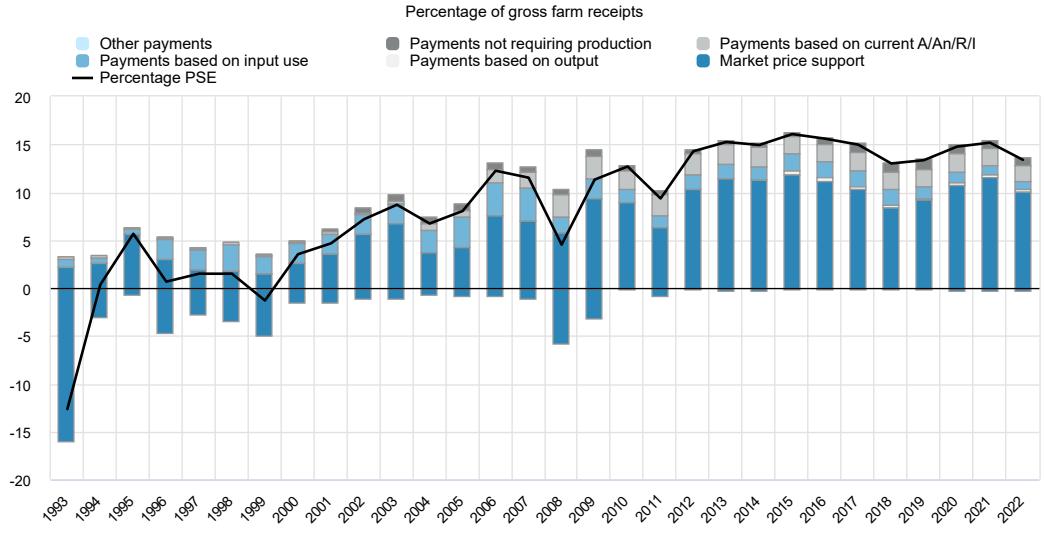
Table 9.2. China: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to 1978	Centrally planned economy	Centralised control of agricultural activities Collective and commune-farmer land systems Production, marketing and price controls, implicitly taxing agriculture Investments in irrigation systems and extension services State agricultural trading firms and high tariffs
1978-1999	Initial reforms to the centrally planned economy	Collective and commune land system dismantled, household responsibility system set up for land use Some deregulation of agricultural marketing State Grain Authority ensuring food availability and affordability to the population Public stockholding, food price subsidies to urban consumers Fertiliser and input subsidies
2000-2009	Improving farmers' incomes and food self-sufficiency key policy objectives Further trade liberalisation	Increase in spending on agricultural research and development Technical assistance services Input subsidies, implicit credit subsidies Increasing allocations to the "Grain for Green" conservation programme Input and output markets increasingly allowing participation of private traders WTO accession in 2001, free trade agreements signed, reduction of tariffs Minimum purchase price system for grains Temporary purchase and storage policy established for selected commodities
2010-2014	Increasing support to agriculture	Increasing minimum purchase prices, and larger set of commodities covered by the temporary purchase and storage system Agricultural insurance premium subsidies
Since 2014	Policy efforts to adjust the price support system and respond to agricultural productivity and sustainability challenges	Continued reforms in land transfer rules National Agricultural Sustainable Development Plan 2015-2030 Agricultural support and protection subsidy payments per area since 2015 (currently "Agricultural Production Development" programme) 2017 National strategy on "rural revitalisation" Dismantling of price support systems for cotton, soybeans, rapeseed,

Period	Broader framework	Changes in agricultural policies
		maize; introduction of direct payments based on area Gradual decrease in support prices for wheat and rice during 2015-19; increases since the COVID-19 pandemic in support prices for indica rice and wheat Enhanced focus on food security through the No. 1 Central Document since 2022

At the end of the 1990s, China's support to the agricultural sector mostly comprised budgetary allocations while market price support (MPS) was negative. Budgetary allocations went to input subsidies and general services to the sector. However, since 2002, MPS increased and became the main instrument to support agricultural producers. After 2009, China continued to increase its minimum support prices, leading to significant price gaps between domestic and international markets. Support to farmers increased until 2015, when reforms to commodities such as rapeseed, soybeans, cotton and maize contributed to lowering MPS. Fluctuations in producer support levels since 2019, particularly market price support (MPS), are linked to the evolution of international versus domestic prices. The increase in producer support from 2018 to 2021 was largely driven by a significant increase in MPS for grains and oilseeds against a backdrop of domestic prices rising faster than border prices. Minimum purchase prices for wheat and rice have gradually increased since the COVID-19 pandemic. Constraints in the supply of maize and soybeans for animal feed and groundnuts led to large increases in domestic prices and imports for these commodities in 2020 and 2021. In addition, domestic prices for livestock commodities such as beef or poultry meat have been increasing due to more demand for these products in response to tighter supplies of pig meat in these years. As reference prices increased faster than domestic prices in 2021-22, particularly for wheat, maize, milk, pig meat and other meat products, producer support decreased once again. MPS accounts for more than two-thirds of PSE, followed by budgetary support for payments based on current area and input subsidies (Figure 9.4).

Figure 9.4. China: Level and PSE composition by support categories, 1993 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

Market price support is the main form of support to Chinese farmers. It is provided through both domestic price policies, such as the minimum purchase prices for wheat and rice, and trade policies including tariffs, tariff rate quotas (TRQs) and state trading.

The minimum purchase prices for wheat and rice are set every year by the National Development and Reform Commission (NDRC) in consultation with the Ministry of Agriculture and Rural Affairs (MARA), and other government institutions. Their application is limited to major wheat and rice producing provinces. The minimum purchase prices for wheat and rice are announced before sowing seasons, and only apply for several months after the harvest. The central government mandates that state-owned China Grain Reserves Corporation (Sinograin) and other state-owned companies undertake intervention purchases in case market prices fall below specified minimums. Since 2018, only grain of national grade 3 or higher can be purchased at minimum prices.[3] However, in exceptional situations where there are large volumes of grain below grade 3, such as in cases of extreme weather events, provincial authorities can also purchase these under temporary reserves. Government procurement can begin only when the market price has fallen below the minimum price for three consecutive days and must be suspended when the market price rises above the minimum for three consecutive days. Ceilings on the volumes of grains procured at minimum purchase prices during a marketing year have been set at 37 million tonnes for wheat (since 2019) and at 50 million tonnes for rice (since 2020).

Budgetary transfers to specific commodities include compensatory and direct payments. Compensation payments cover the difference between pre-determined target prices and actual market prices for cotton producers and are a combination of output payments and area payments. Direct payments based on area planted are provided for soybeans and maize producers.

The “Agricultural Production Development” programme combines a subsidy paid per hectare with direct payments for grain producers, subsidies for agricultural inputs, and subsidies for improved seed varieties.[4] Subsidies are also available for purchases of agricultural machinery, land consolidation; irrigation, agricultural insurance, returning farmland to forests and excluding degraded grassland from grazing.

General services to the sector focus on public stockholding of grains and developing agricultural infrastructure (including irrigation and drainage facilities). Support to agricultural knowledge and innovation is also significant.

China ratified the Paris Agreement on Climate Change on 3 September 2016 and submitted its first NDC in 2016 and updated it in 2021. While there are no specific targets for the agriculture sector, the role of agriculture, land-use change, and forestry is recognised in it. The commitments covered by the updated NDC are to have CO_2 emissions peak by 2030 and carbon neutrality by 2060; to lower the carbon intensity of GDP to 65% below 2005 levels by 2030; to increase the share of non-fossil fuels to around 25% of primary energy consumption; to increase forest stock volume by 6 billion m^3 from the 2005 level; and to bring total installed capacity of wind and solar power to over 1.2 billion kW by 2030 (State Council, 2021[3]).

The 2016 NDC calls for achieving zero growth in fertiliser and pesticide use by 2020, which MARA reported as achieved in 2018. The NDC also sets broad objectives for controlling methane emissions from rice fields and nitrous oxide emissions from farmland, promoting efficient use of straw and agricultural waste (UNFCC, 2021[4]; Climate Action Tracker, 2021[5]).

The Soil Pollution Prevention and Control Law entered into force in 2019. The Law establishes systems for agricultural land classification management according to pollution levels and identified risks. The Ministry of Ecology and Environment together with the Ministry of Agriculture and Rural Affairs and the Ministry of Natural Resources are establishing a soil environmental monitoring system with regular soil examinations.

The 14th Five-Year National Agriculture Green Development Plan 2021-25, issued jointly by MARA, the NDRC, the Ministry of Science and Technology (MOST), the Ministry of Natural Resources (MONR), the Ministry of Ecology and Environment (MEE), and the State Forestry and Grassland Administration (SFGA) (State Council, 2021[6]), includes the following policy objectives and areas for action in the area of mitigation:

- Reduce usage of fertilisers and pesticides and increase application efficiencies.
- Build a green and low-carbon agricultural industry supply chain to improve agricultural production quality, efficiency and competitiveness by: setting up 800 green standardised agricultural product production bases, 500 standardised demonstration farms for livestock and poultry, and creating more than 1 800 agricultural brands; formulating and revising 1 000 industrial standards related to agricultural green production; supporting green, organic, and geographical indication certification of agricultural products (certified products should reach over 60 000 and the number of production enterprises should reach 27 000).
- Carry out research and apply agricultural green production technologies such as soil improvements, waste recycling, and green processing; and research and develop green inputs such as efficient and biological fertilisers, soil conditioners, high-efficiency, low-toxicity and low-residue agricultural and veterinary drugs, feed additives, and degradable mulching films.
- Improve compensation mechanisms for ecological protection and establish a price mechanism for green products.

Other policies and programmes targeting climate change mitigation in the agricultural sector include demonstrations of fertiliser reduction and efficiency enhancement, and research initiatives supporting GHG mitigation. Several forestry programmes, primarily involving increased afforestation and improved forest management, also support NDC objectives of increasing the forest stock volume and GHG emission reductions in the LULUCF sector. The Grain for Green programme, implemented since 2000, uses direct payments to incentivise farmers to re-establish forest and shrub vegetation on sloped cultivated land at risk of erosion.

A new regulation on groundwater use entered into force in December 2021. The regulation sets out specific rules for the use, conservation and protection of groundwater with the objective to enhance groundwater supervision and management. The regulation designates areas where the exploitation of groundwater is prohibited and entitles provincial-level authorities to address over-exploitation and pollution.

Climate change adaptation policies in agriculture

China's agricultural sector faces growing risks due to extreme weather and shifting planting conditions brought about by climate change. China's farming belts were hit by record temperatures and rainfall in 2022, with drought in the northern area of the country.

China implemented several climate change adaptation programmes starting in the mid-2000s. These programmes included support to implement water-saving techniques in arid areas; agricultural environment, water and soil conservation; water infrastructure for small agricultural plots; improved soil organic matter levels; animal genetic variety conservation; and conservation planting.

The 2014-20 National Strategy on Climate Change Adaptation introduced additional programmes and approaches for adaptation in agriculture. In the agro-food sector, the Strategy has focused on:

- National research and development plans to define climate zones, adjust sowing dates and select appropriate crop varieties. A total 3 564 agricultural climate zones at provincial city and county levels and 5 303 extreme-weather risk zones were delineated.
- Expanding irrigated area through the construction of irrigation systems, and small and medium-sized reservoirs.

- Capacity building for disaster prevention and mitigation, including early-warning systems for drought, floods, and zoonotic disease outbreaks.
- Water-conservation projects, including infrastructure to connect feeder canal systems and key irrigation projects, management of groundwater over-exploitation, promoting water conservation and control in agriculture in the Yellow River Basin, developing high-efficiency dry farming in arid and semi-arid areas, and improved flood storage and reservoirs.
- Better weather monitoring and alerts via a new agricultural climate-resources survey and defining regional climatic maps for agricultural production zones. The network layout of agricultural meteorological observation facilities was improved and provides disaster information by region and disaster type. The drought and flood disaster prevention system was improved, along with grass-roots-level monitoring and the early-warning network for animal and plant epidemics and pests.
- Technology transfer to promote "green development" of agriculture. This includes disseminating technologies that reduce agricultural inputs and improve efficiency, promoting water and fertiliser integration, and establishing a system for the collection and use of agricultural waste such as straw, agricultural film, pesticide packaging waste, and livestock and poultry manure.

A subsidy for insurance fees covers selected crops and livestock commodities. Under the programme, the cost of insurance is shared by the central government, local governments, and farmers. The programme covers rice, wheat, maize, oilseeds (rapeseed, groundnuts), cotton, potato, highland barley, sugar, hogs, cows, yak, and Tibetan sheep.

The National Agricultural Sustainable Development Plan 2015-2030 sets goals and approaches to protect natural resources and encourage sustainable farming practices. It targets improved production quality and efficiency by setting priorities for different zones according to their capacity for agricultural production, resource endowments, and ecological characteristics (Ministry of Agriculture and Rural Affairs, 2015[7]). Moreover, 220 high-standard dry-farming and water-saving agricultural demonstration areas were established in dry farming areas in north and northwest China to demonstrate and promote technologies such as: water storage and soil moisture conservation; rainwater harvesting and supplementary irrigation; ridge tillage and furrow irrigation; soil-moisture based on on-demand irrigation; water-saving irrigation; water and fertiliser integration; drought and stress resistance; and water-resource efficiency.

The Cotton Sustainable Development Programme was introduced in 2021. The programme provides online training to farmers and other stakeholders in the value chain on sustainable production standards.

The Ministry of Ecology and Environment, the NDRC, and MARA jointly issued the National Strategy on Climate Change Adaptation 2035 in June 2022. The strategy builds upon the 2014-20 adaptation strategy in four areas: (1) greater emphasis on early-warning systems and risk management; (2) sectoral adaptation tasks for agriculture and food security; (3) greater integration of national and regional adaptation strategies; and (4) strengthening financial support, science and technological support, and international co-operation on climate adaptation (State Council, 2022[8]). The national adaptation strategy considers geographic characteristics and spatial planning to ensure implementation is tailored to a variety of contexts. In this sense, the Strategy's implementation focuses on economic and ecological zones, including Beijing-Tianjin-Hebei; Guangdong-Hong Kong, China-Macao Greater Bay Area; the Yangtze River Delta; the Yangtze River Economic Belt; and the Yellow River Basin. The Strategy foresees the following areas for action:

- Optimise the pattern of agricultural resource use by adjusting and optimising the planting structure and crop variety distribution, and selecting and breeding high-yield, high-quality and stress-resistant crops.
- Strengthen the climate-change-adaptation and disaster-mitigation work system for agriculture by improving disaster monitoring and early-warning and response mechanisms, and disaster-diagnosis technologies and standards; preparing disaster-mitigation plans for different regions and

extreme events; and strengthening the training of agricultural producers in disaster prevention, mitigation, and adaptation techniques.

- Enhance the climate resilience of agricultural ecosystems through soil and water conservation, and ecological protection; conservation tillage in suitable areas; agro-forestry activities in mountainous areas, and intercropping systems; chemical fertilisers and pesticide reduction and efficiency; and construction of climate-change-adapted germplasm conservation bases and seed banks to protect endangered species of agricultural plants and animals.
- Establish a climate-change framework adapted to food security objectives by improving monitoring and forecasting of supply and demand, and risk-estimation systems for food production and production-potential in major areas; strengthening arable-land protection and quality; and improving the agricultural weather-service system and risk-sharing mechanisms, gradually promoting weather-index-based insurance, and exploring agricultural-insurance mechanisms.

Domestic policy developments in 2022-23

China released its *No.1 Central Document* for 2023 in mid-February 2023, focusing on continued rural revitalisation. The No.1 Central Document calls for more effort to stabilise production and ensure the supply of grain and key agricultural products, boost the construction of agricultural infrastructure, strengthen support for agricultural science, technology and equipment, reduce rural poverty, and to promote the development of rural industries.

Food security remains a top priority. The 2023 No.1 Central Document reiterates the objective for an annual production of grains of at least 650 million tonnes. It also prioritises increasing maize yields, expanding the soybean cultivated area, and reducing soybean meal usage. The document highlights the need for:

- regulation and supervision of state grain reserves
- international trade partner diversification
- infrastructure development related to soil and water conservation and disaster and animal disease prevention
- technological innovation, including biotechnology, to improve seeds and agricultural machinery
- promoting “green agricultural development”. In this sense, it notes for the first time in a key policy document the need to “establish a monitoring system for agri-environmental protection” and to “issue regulations on compensation for ecological protection”.

Early March 2022, China allocated CNY 1.6 billion (USD 253 million) to promote winter wheat cultivation in the five main producing regions as well as other regions that were most recently affected by delayed planting caused by heavy rainfall. At the end of March 2022, the Ministry of Finance allocated another CNY 2 billion (USD 315 million) to support the cultivation of its winter wheat crop in 11 main production provinces.

In April 2022, China suspended wheat auctions one month earlier than in 2021 due to tighter supplies. In 2022, it released overall 0.5 million tonnes of wheat per week from reserves in weekly auctions, compared with 4 million tonnes per week in 2021. In March 2023, China restarted auctions of old rice crop stocks for feed use to rotate out older stocks, to provide alternatives to maize as feed grain supplies remain tight, and to temper rising feed grain prices. The estimated volume of old stock rice to be auctioned is of 18 million tonnes, less than half the amount on offer in 2021 and 2022. The grain state-owned enterprise Sinograin announced it plans to increase its grain storage capacity by 30 million tonnes from 2021 to 2023, boosting the company’s capacity by one-third. Moreover, in September 2022, China instructed farmers to reduce the soybean use in animal feed by 30 million tonnes, or opt for other feeding alternatives, to reduce pressure on soybean import costs and curb inflation.

The State Council approved for 2022 an increase in the minimum support price (MSP) for wheat by CNY 40 (USD 6.3). This is consistent with increases in MSPs for wheat since the COVID-19 pandemic, in support of domestic grain production.

In July 2022, to assist ginners holding high-priced inventories, China initiated a purchase plan of cotton produced in Xinjiang for state reserves. As of August 2022, the government purchased 45% of the quantity available.

In September 2022, the NDRC implemented a programme releasing 200 000 tonnes of pig meat from national, provincial, and municipal level reserves with the objective to stabilise pig meat prices. Since 8 September 2022, the NDRC auctioned more than 127 000 tonnes of frozen pig meat reserves at the national level.

In June 2022, the provincial government of Yunnan issued a three-year plan (covering 2022-24) to modernise its agri-food industry. For sugar, the plan foresees maintaining Yunnan's sugar cane acreage at around 3.5 million mu (233 333 hectares), achieving sugar cane production of 17 million tonnes, and achieving a sugar production of 2.5 million tonnes by 2024. Various support programmes are provided for inputs such as seeds and mechanical equipment, as well as for sugar cane millers to increase profitability by enhancing the use of by-products. In September 2022, the provincial government of Guangxi announced continuing the three-year programme introduced in 2020 providing subsidies to sugar cane planting and harvesting, seed development, field management, pest and disease control. The programme will also provide support to crop insurance, sugar futures trading, as well as sugar cane transportation and sugar processing.

In August 2022, China issued a national drought emergency plan as record temperatures and low water levels affected the region spanning much of the Yangtze River, with Sichuan, Chongqing, Hubei and Jiangxi provinces reporting severe impacts. Although none of the affected regions are major soybean producing areas, the extreme heat and drought are expected to lower soybean yields. On 16 August 2022, MARA allocated CNY 300 million (USD 44 million) to 13 provinces as agricultural production disaster relief funds to facilitate flood control and drought relief.

The Agricultural Development Bank of China issued CNY 2.14 trillion (USD 297 billion) of loans in the first three quarters of 2022. This includes loans for the purchase of summer and autumn grains seeds, seed developments and upgrade of farmlands.

Domestic policy responses to Russia's war of aggression in Ukraine

As prices for grain and oilseeds increased following Russia's war of aggression against Ukraine, two leading soybean-producing provinces in north-east China, Heilongjiang and Inner Mongolia, announced plans to increase soybean area by 10 million mu (0.7 million hectares) and 4.3 million mu (0.3 million hectares), respectively, compared to 2021. To meet these objectives, provincial governments provided soybeans farmers additional subsidies of CNY 2 000 per mu (USD 19 per hectare). MARA also released guidelines for alternating crops of maize and soybeans, targeting different regions, and set an objective of reaching 1 million hectares covered by 2023. Henan and Shandong provinces are providing subsidies of CNY 3 000 per mu (USD 29 per hectare) to incentivise intercropping.

China provided subsidies in three rounds throughout 2022 to stabilise farm incomes and compensate grain producers for the increasing costs of agricultural inputs: CNY 20 billion (USD 3 billion) in March 2022; CNY 10 billion (USD 1.5 billion) in May 2022; and CNY 10 billion (USD 1.5 billion) in August 2022. Similar to initiatives addressing impacts from the COVID-19 pandemic in 2020-21, these programmes would be implemented as part of the "Agricultural Production Development" subsidy, paid per hectare.

Trade policy developments in 2022-23

In 2022, the General Administration of Customs of China (GACC) announced that under the China-New Zealand free trade agreement (FTA), China would remove special safeguard measures on imports of New Zealand milk, butter, and cheese starting in 2022.

In February 2022, MARA signed a phytosanitary protocol with Myanmar for expanding maize exports to China. In March 2022, GACC granted market access to Mongolian dairy products, including milk, cheese, and whey powder. In the summer of 2022, the GACC also lifted a ban on cattle imports from Lao PDR that had been in place due to lumpy skin disease.

In June 2022, GACC published the announcement regarding the "Implementation of Conditional Retrieval Facilitation Measures for Imported Seed". This allows qualified importers to retrieve seeds at customs for storing in approved facilities prior to the official release of quarantine laboratory test results.

In September 2022, China published an updated Agricultural Product Quality and Safety Law, which entered into force on 1 January 2023. This covers a range of issues relating to risk management and standard development, places of origin, production, sales, supervision and administration, and legal liabilities. It removes references to geographic indications. Producers and operators engaged in the cold chain logistics of agricultural products must follow regulations and relevant agricultural product quality and safety standards, strengthen the innovation and application of cold chain technology, and quality and safety control, and implement regulations on cold chain logistics, agricultural products and their packaging, means of transportation, and operating environments.

On 30 December 2022, China removed the requirement for foreign trade operators to register at local commercial authorities. Entities applying for import and export permits, quotas, and state trading enterprises will therefore no longer be required to provide a registration record.

Building on the results of pilot programmes, GACC, NDRC, and the Ministry of Commerce (MOFCOM) implemented from 1 January 2023 the electronic data online verification of three quota certificates: the "Agricultural Products Import Tariff Quotas Certificate of the People's Republic of China", "Fertiliser Import Tariff Quota Certificate" and "Non-tariff Quota Preferential Tariff Rate Quota for Imported Cotton". The NDRC and MOFCOM will no longer issue paper quota certificates, but instead issue electronic quota certificates, and transmit the electronic data to customs. The applicant goes through the import customs procedures with the electronic quota certificate, and customs verifies this by comparing the electronic data of the quota certificate and the electronic data of the customs declaration form.

On 29 December 2022, the State Council Tariff Commission (SCTC) announced its annual tariff adjustment plan for 2023. As of 1 January 2023, China will calculate MFN tariffs on certain frozen poultry products by applying a tariff on the import value (i.e. *ad valorem*) rather than by volume. China will also temporarily lower import tariff rates for various cheese products (from 12% to 8%), various types of nuts (new tariffs ranging between 5% and 12%), and sunflower seed (from 15% to 9%). The temporary applied MFN import tariff rate for cashew nuts will be further lowered to 5% in 2023. The temporary import tariff rates for orange juice, which had been previously raised to 18% in 2022, increased again in 2023 to 20%.

On 3 October 2022, China restricted the export of maize starch owing to concerns about local supplies. In this context, the government required companies to suspend shipments with the objective to stabilise prices and contain inflationary pressures.

Trade policy responses to Russia's war of aggression in Ukraine

On 25 May 2022, the GACC and the Ministry of Agriculture in Brazil signed a Protocol on Phytosanitary Requirements to allow maize imports from Brazil. This follows China's strategy in diversifying its import sources for key commodities.

In August 2022, China introduced a quota limiting total phosphate exports to 3.16 million tonnes for the second half of 2022. In October 2021, state-owned enterprises producing phosphate were required to stop exports until at least June 2022. In addition, China implemented a quota limiting total phosphate exports to 5.5 million tonnes for the second half of 2021. In October 2021, China also restricted exports of all fertilisers by introducing a new requirement for inspection certificates to ship fertilisers.

Trade policy responses to the COVID-19 pandemic

Between September and December 2022, in order to promote epidemic prevention and control for non-cold chain goods at the port, the GACC adjusted the completion requirements for relevant items of the "Customs Declaration Form for Imported Goods of the People's Republic of China" and the "Recording List of Imported Goods at Customs of the People's Republic of China": a newly added declaration item of "preventive disinfection" was included (i.e. disinfection of places and items that may be contaminated by pathogenic microorganisms when there is no clear source of infection).

On 28 December 2022, GACC removed PCR testing requirements and disinfection measures for COVID-19 that had been applied to imported cold-chain foods and non-cold chain goods. This change took effect on 8 January 2023.

Contextual information

China has the world's largest population and the second largest land area. It is an upper-middle income economy, with a GDP per capita – adjusted by PPP – close to 83% of the average of countries covered by this report (Table 9.3). However, while counting almost 20% of the world's population, it has only 7% of the world's potable water and 10% of the world's agricultural land. China is thus a resource scarce country, which results in severe competition between agriculture and other users of land and water resources.

Agriculture remains an important part of China's economy. It accounts for 24.4% of employment, but its 7.6% share of GDP indicates that labour productivity is significantly lower than in the rest of the economy. Even if rural incomes are growing at high rates, they remain at around one-third of those in urban areas.

Crop production represents 66% of total agricultural output and its composition has changed significantly over the last decades, driven by the shift towards higher value-added agricultural products such as fruit and vegetables. While the average farm size remains less than one-hectare, large-scale production has been developing rapidly, including among co-operative and corporate farms. North and northeast provinces have seen more rapid farm consolidation than other regions, as increased labour mobility and the transfer of land among farmers over the past three decades have led to adjustments in the farm structure. Livestock production originates mostly from larger-scale commercial units (OECD, 2018[2]).

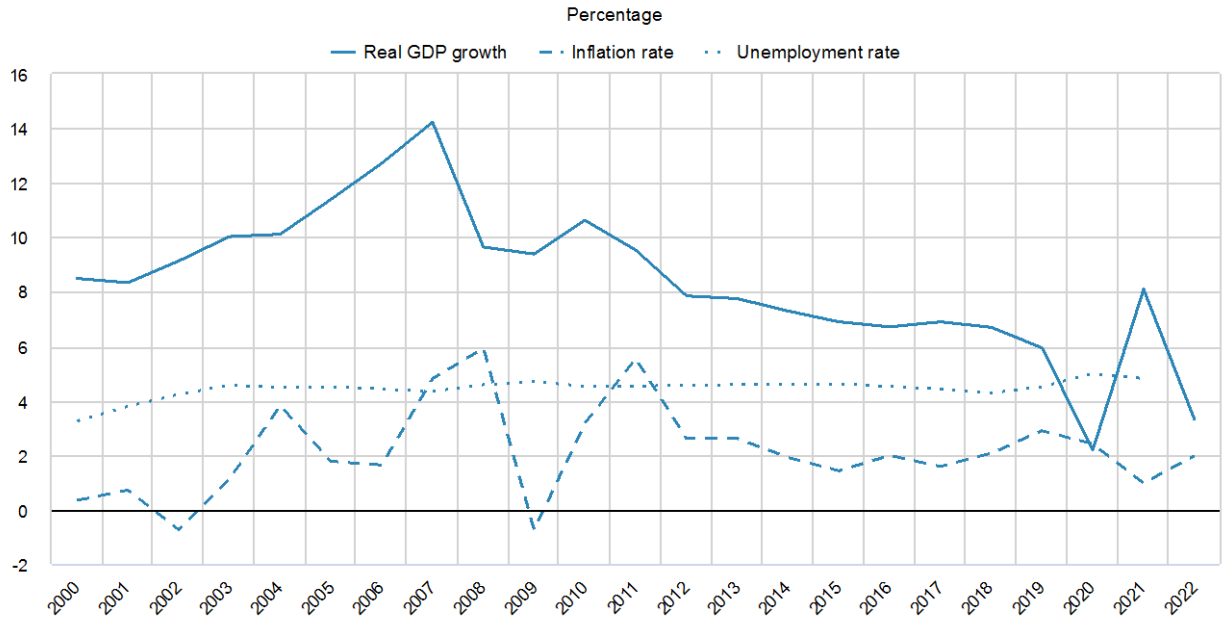
Table 9.3. China: Contextual indicators

	China		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	3 683	27 313	9.2%	22.2%
Population (million)	1 264	1 426	29.5%	27.2%
Land area (thousand km^2)	9 425	9 425	11.5%	11.4%
Agricultural area (AA) (thousand ha)	523 731	528 508	17.4%	18.0%
			All countries[1]	
Population density (inhabitants/km^2)	132	149	52	64
GDP per capita (USD in PPPs)	2 917	19 338	9 350	23 401
Trade as % of GDP	19.3	16.6	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	14.9	7.6	2.9	3.9
Agriculture share in employment (%)	50.0	24.4	-	-
Agro-food exports (% of total exports)	4.8	1.9	6.2	7.9
Agro-food imports (% of total imports)	4.7	8.2	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	64	66	-	-
Livestock in total agricultural production (%)	36	34	-	-
Share of arable land in AA (%)	23	23	32	34

Note: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

Real GDP growth averaged 4.6% in 2020-22 (Figure 9.5). After the COVID-19 crisis and following a period of gradual slowdown in economic growth since 2012, China experienced one of the strongest economic growth rates among G20 economies, supported by strong industrial activity and a boost in exports against a backdrop of increasing demand in other major economies. Despite those signs of improvement, economic growth decelerated to around 3% in 2022, as activity in China was held back by continued lockdowns and a wave of COVID-19 infections. Unemployment only slightly increased since 2020, as the economy was supported by the COVID-19 fiscal support policies. Following inflation above 2% in 2019 and 2020, when food inflation was driven by higher pig meat prices due to the African swine fever outbreak and related supply constraints, inflation rose again in 2022 against a background of increasing international commodities price and increasing input costs.

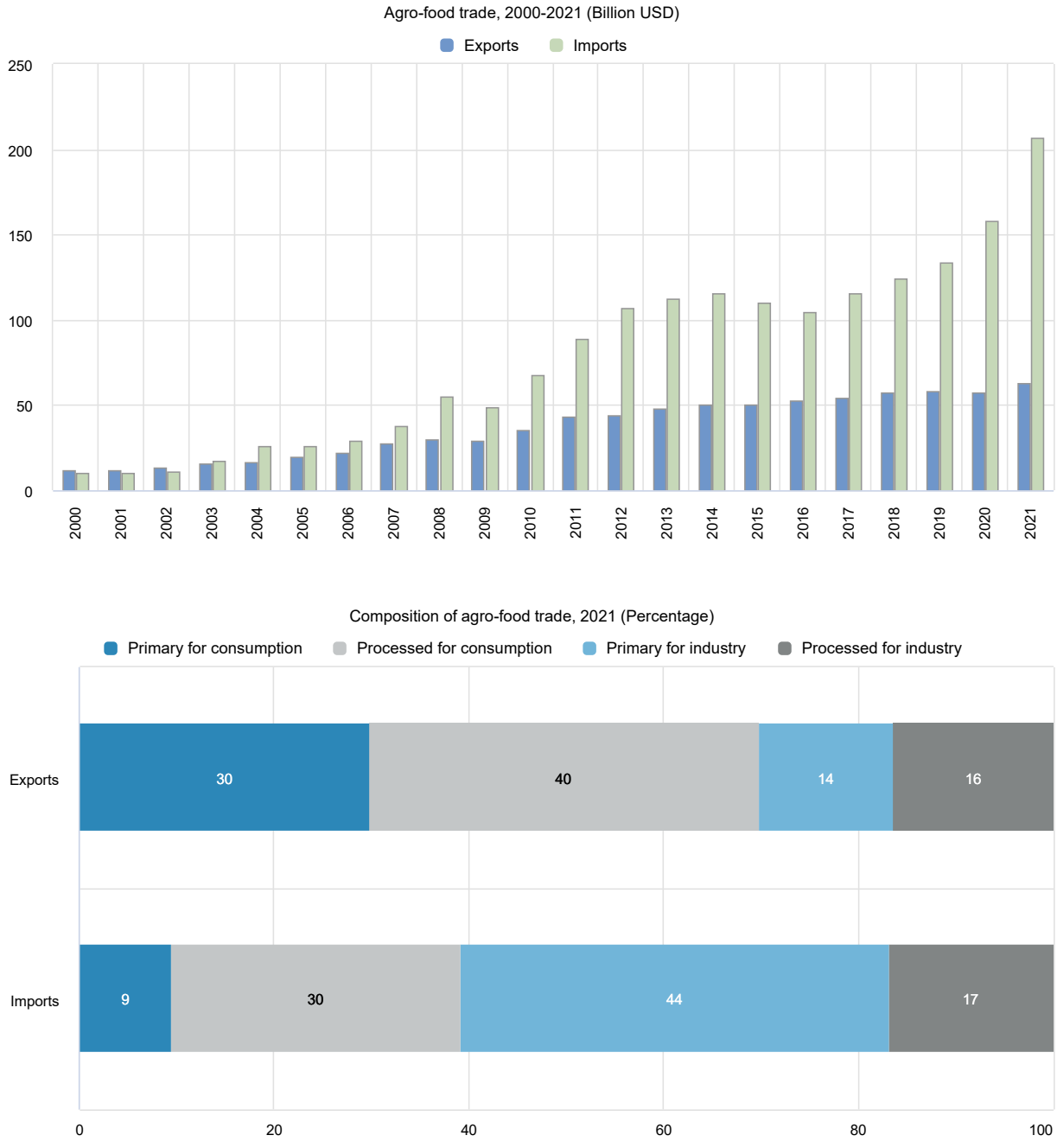
Figure 9.5. China: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

China has consistently and increasingly been a net agro-food importer since 2003, but agro-food exports have been growing over the last two decades. While agro-food exports stabilised since 2018, agro-food imports have been increasing at a higher rate during this period. The significant increase in agro-food imports since 2020 has been driven by higher imports of grains and oilseeds, particularly maize and soybeans, as well as higher pig meat imports. Primary products used as inputs in the domestic food industry dominate China's agro-food imports, representing 44% of the total in 2021. In turn, primary and processed products for final consumption are key export categories, accounting for 70% of total agro-food exports (Figure 9.6). Over the last two decades, China has developed into the largest importer of agricultural products in the world. With rising consumption and limited capacity to increase its domestic production due to arable land and water scarcity, China increasingly meets its demand through imports. In this context, its agricultural policy setting – including price and storage measures for some commodities – can have important impacts on world prices.

Figure 9.6. China: Agro-food trade

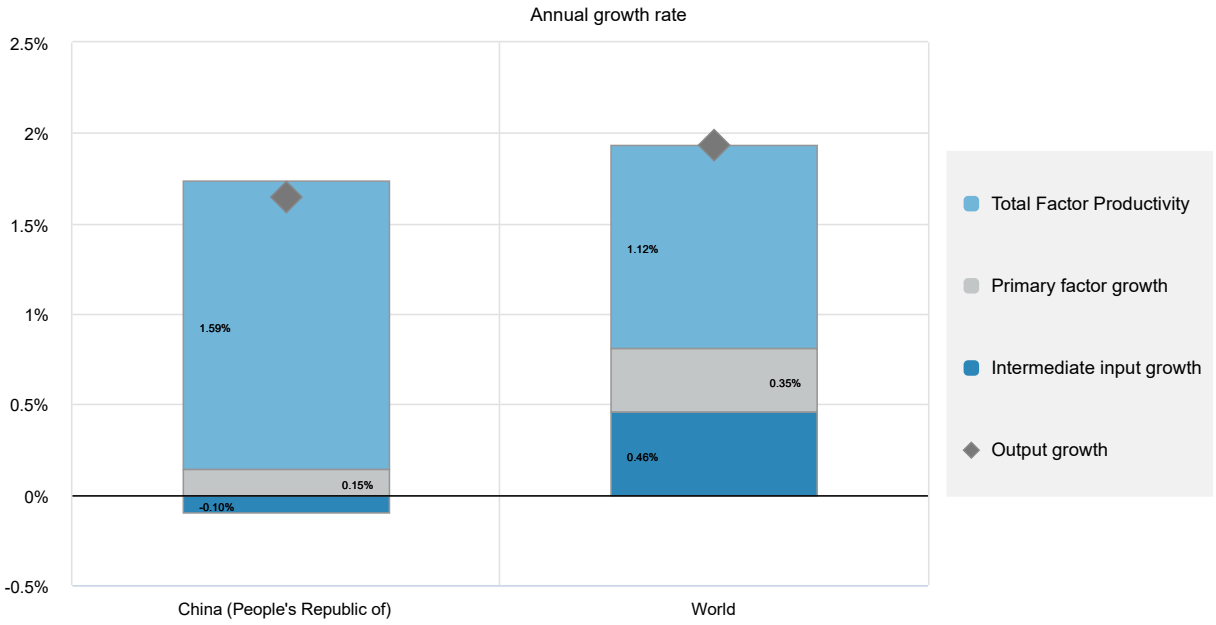


Note: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Agricultural output growth in China averaged 1.7% in 2011-20, on par with the world average (Figure 9.7). This has been driven by growth in total factor productivity (TFP) of 1.6% per year, higher than the global average and largely attributed to farm consolidation and increased mechanisation of production. The contribution of primary factor growth to agricultural output growth (0.2%) is slightly lower than the world average (0.4%).

The sustained growth in agricultural output is exerting pressures on natural resources such as land and water. While nutrient surplus intensities for nitrogen and phosphorus have been declining over the past two decades, these remain at high levels, particularly for phosphorus relative to the OECD average (Table 9.4). Agriculture remains the main user of water, accounting for 61.6% of total water abstraction, well above the OECD average. Water stress is more than twice as high as the OECD average.

Figure 9.7. China: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 9.4. China: Productivity and environmental indicators

	China		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	4.4%	1.6%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	41.4	30.4	32.2	30.4
Phosphorus balance, kg/ha	9.8	9.5	3.3	3.0
Agriculture share of total energy use (%)	2.4	2.0	1.7	2.0
Agriculture share of GHG emissions (%)	9.8	6.7	8.6	10.5
Share of irrigated land in AA (%)	10.3	13.1	-	-
Share of agriculture in water abstractions (%)	68.8	61.6	46.6	49.7
Water stress indicator	19.3	20.7	8.3	7.4

Note: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Notes

[1] Although ownership of land remained collective, control and income rights belonged to individuals under the HRS, with a land contract term of 15 years. When this ended in the late 1990s, the second term was extended to 30 years.

[2] Self-sufficiency was interpreted to mean that China should produce 95% of its own grain requirements. The Chinese self-sufficiency rate for grains is defined as the total production of wheat, coarse grains and rice divided by total domestic consumption of these crops (OECD, 2005[1]). The No. 1 Central Document is the most important policy document in China, issued jointly by the Central Committee of the Communist Party of China (CCCPC) and the State Council. This document determines the most important policy issues and focus of the year. Issues related to agriculture, farmers and rural areas have consistently been selected as the topic of this document since 2004.

[3] The quality grade standard is divided into five grades plus a 'sub-standard' category.

[4] This programme was previously called the "agricultural support and protection subsidy".

10 Colombia

Support to agriculture

Agricultural producer support in Colombia averaged 6.1% of gross farm receipts during 2020-22, well below the OECD average, and 25% lower than in the early 2000s. Producer support experienced a sharp decrease over the past two years due to the temporary suspension of the Andean Price Band System (SAFP) for some agricultural commodities and the reduction on import tariffs of key agricultural products.

Despite this reduction, Market Price Support (MPS) continues to be the dominant type of support, accounting for 83.5% of the Producer Support Estimate (PSE) in 2020-22. MPS for a range of agricultural products is driven by border measures, such as tariffs, and represents the only form of Single Commodity Transfers (SCT). SCT are particularly high for rice, but still sizable for eggs, maize, sugar, and pig meat. Prices received by farmers were an average 5% higher in 2020-22 than those observed in world markets.

Budgetary transfers to farmers accounted for the remaining 16.5% of PSE in 2020-22. This type of support is mostly based on input use. It includes measures such as preferential interest rates for credit, subsidised agricultural insurance premiums, and subsidies for the acquisition of inputs like fertiliser and seeds. Subsidies are also provided for on-farm services and for on-farm fixed capital formation such as machinery and equipment.

Budgetary allocations to general services for the sector (General Service Support Estimate, GSSE) were relatively small. Their average share in the value of agricultural production was 1.1%, a decrease from 1.5% in 2000-02 and less than one-third of the OECD average. Support for general services focuses on agricultural research and knowledge transfer; infrastructure, particularly for irrigation; and farm restructuring (e.g. land formalisation, rights, and access). Overall, total support to the sector (Total Support Estimate, TSE) corresponded to 0.6% of GDP.

Recent policy changes

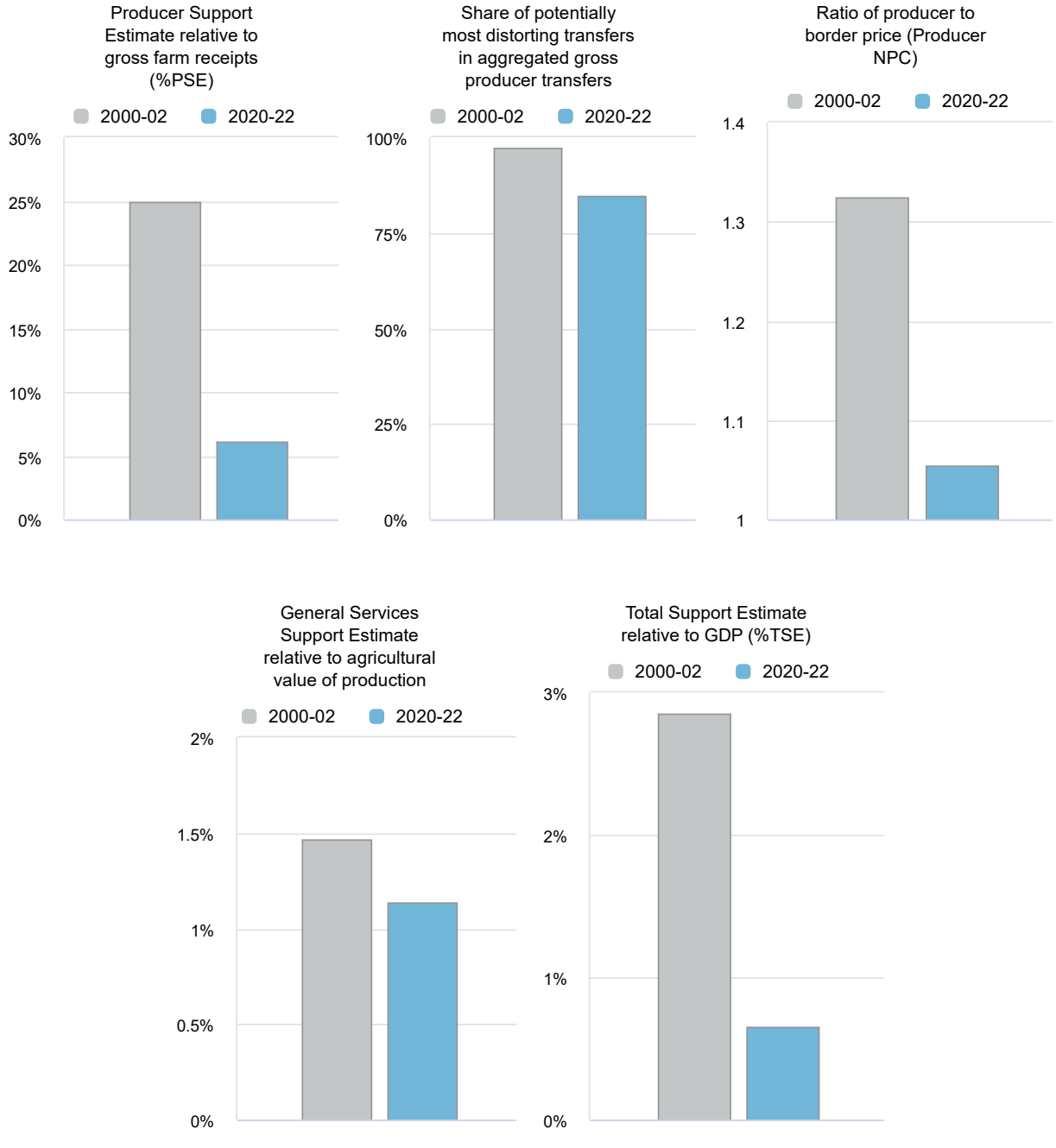
The administration that took office in August 2022 introduced an agricultural development plan for 2022-26, called “Towards Agriculture for Life” (“*Hacia Una Agricultura Para La Vida*”). The plan focuses on five strategies: (1) comprehensive land reform; (2) addressing inequalities facing indigenous, black, women, and young people in the sector; (3) environmental protection and sustainability; (4) market inclusion in agricultural value chains; and (5) a territorial approach considering the social, economic, and environmental characteristics of rural areas. Adjustments to policies will be reflected during 2023.

To mitigate domestic price increases caused by the COVID-19 pandemic and exacerbated by the war in Ukraine, Colombia set the tariffs on agricultural inputs at 0%, and prolonged the suspension of the SAFP for some products and the decrease of import tariffs such as the established fixed tariffs for rice (80%), milk powder (98%), white corn (40%), whey (94%), and wheat (0%) until December 2023. The March 2022 reduction to 0% of import tariffs on 163 products that are part of the basic household basket was also extended until December 2023. A new programme within the Fund for Access to Agricultural Inputs (FAIA) approved in 2022 provides a partial refund of producers’ agricultural input expenditures.

Assessment and recommendations

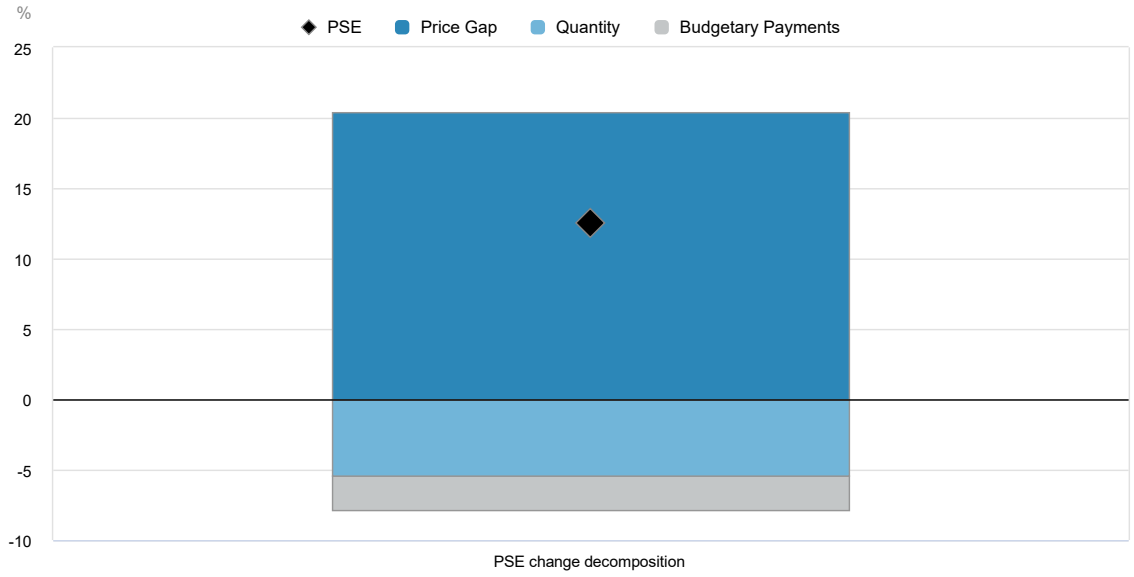
- Colombia's efforts in climate-change adaptation concentrate on emergency relief, planning, and strategies. However, these are insufficient for the sector to become more climate resilient. The government must define more specific actions for climate-change adaptation as part of existing policy frameworks and guidelines, with the objective of fostering long-term sector resilience.
- Colombia's Nationally Determined Contribution (NDC) commits to reducing total greenhouse gas (GHG) emissions by 51% with respect to the baseline scenario by 2030, and black-carbon emissions by 40% compared to 2014 levels in 2030, with the long-term objective of carbon neutrality by 2050. Given agriculture's role as a major contributor to the country's GHG emissions, it will need to reduce its emissions significantly. Setting specific emission-reduction targets and a mitigation plan for the sector would help progress. Furthermore, the government should promote the adoption of low-emission production systems.
- More broadly, the environmental-sustainability performance of the sector, including biodiversity, water use, and deforestation, are challenges to consider more systematically in policy design. This includes the environmental effects of agricultural policy instruments and the provision of public goods and services. Agriculture sustainability is particularly important because Colombia is one of the most biodiverse countries in the world. Additionally, even though efforts of focalisation and territorial targeting have taken place, the government could consider using land-management instruments like zoning to define which products can be grown, depending on the soil, water, and agroclimatic conditions, which is crucial for ongoing efforts at land reform.
- Colombia's agricultural sector faces structural challenges and could increase support to key general services to overcome these challenges. Public investment should focus on strategic areas that improve productivity and competitiveness, and ensure the sector's sustainable development. They include land-tenure rights, improved hydrological infrastructure for irrigation; transport infrastructure; digital infrastructure, research, development, and innovation capacity; animal and plant health protection and control services; promotion of the sustainable use of natural resources; and national and functional extension, training, and technical assistance systems that foster technology adoption and promote farmer co-operatives.
- Under the framework of the Peace Agreement, Colombia made progress in the provision of rural public goods. However, short-term responses to problems faced by agricultural producers (mainly in the form of input subsidies) divert scarce resources from developing an enabling environment to facilitate the sector's sustainable growth. Further re-orientation of support from input subsidies to general services is needed to foster more inclusive and sustainable agricultural growth.
- Efforts in land reform must be accompanied by broader provision of public goods. As more than 50% of land ownership is informal, an inclusive land-access policy framework would promote rural and sectoral development. Implementation of the multi-purpose cadastre policy should accelerate. Upgrading the cadastre system and speeding the registration and allocation of land rights are crucial for the sector. Land rights contribute to long-term growth in the agricultural sector by stimulating private investment, and help promote the development of rural areas.
- The government should assess the impact of policy instruments and agricultural-support programmes. Current programmes have broad scope and are implemented through a bundle of policy instruments with unclear combined impact. A review could redefine and re-organise policy instruments based on evidence of the costs and benefits of individual measures and policy packages. Such a revision could consider equity, social and environmental outcomes.

Figure 10.1. Colombia: Development of support to agriculture



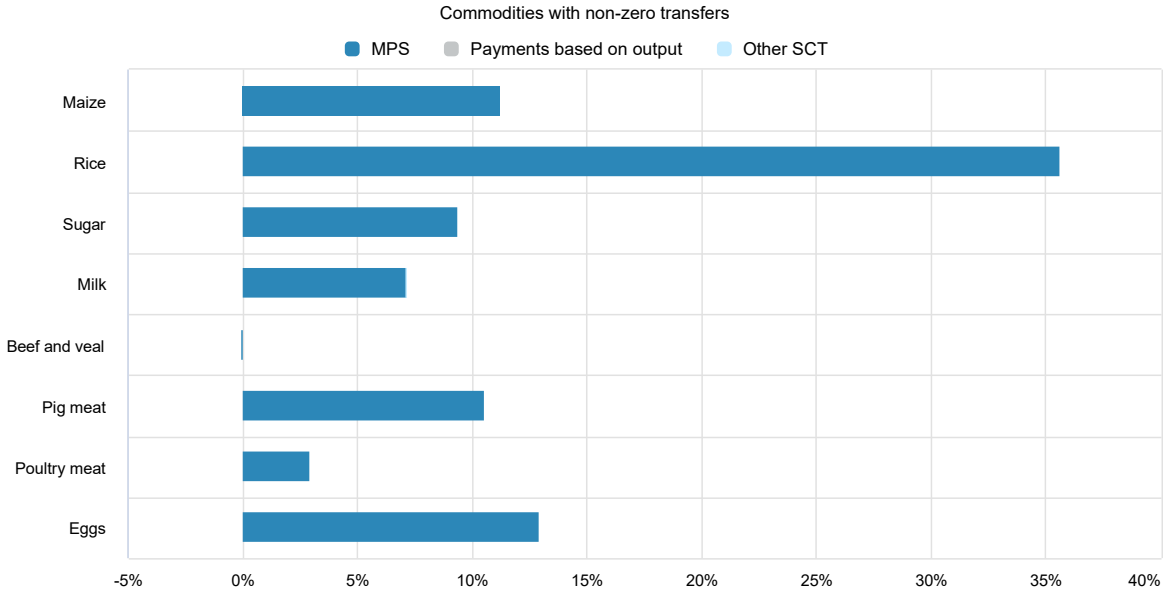
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 10.2. Colombia: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency. The producer price change and the border price change are not calculated when both negative and positive market price support (MPS) occur at the commodity level for the previous year. Note that negative MPS estimates for livestock products may arise in cases of aligned product prices if there is positive MPS for feed commodities.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 10.3. Colombia: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 10.1. Colombia: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**10 565**	**27 356**	**27 434**	**27 149**	**27 487**
***of which:** share of MPS commodities (%)*	80.75	79.61	66.47	80.90	91.45
Total value of consumption (at farm gate)	**7 938**	**22 388**	**22 047**	**21 956**	**23 159**
Producer Support Estimate (PSE)	**2 630**	**1 719**	**2 666**	**1 253**	**1 239**
Support based on commodity output	2 544	1 432	2 420	911	967
Market Price Support[1]	2 544	1 432	2 420	911	967
Positive Market Price Support	2 550	1 438	2 422	914	977
Negative Market Price Support	-6	-5	-2	-3	-11
Payments based on output	0	0	0	0	0
Payments based on input use	86	287	246	342	273
Based on variable input use	53	175	151	199	177
with input constraints	36	152	132	163	161
Based on fixed capital formation	16	50	46	68	36
with input constraints	3	24	24	30	19
Based on on-farm services	17	62	50	75	60
with input constraints	5	40	31	45	44
Payments based on current A/An/R/I, production required	0	0	0	0	0
Based on Receipts / Income	0	0	0	0	0
Based on Area planted / Animal numbers	0	0	0	0	0
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	0	0	0	0
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0
Percentage PSE (%)	**24.96**	**6.13**	**9.63**	**4.56**	**4.47**
Producer NPC (coeff.)	**1.32**	**1.05**	**1.10**	**1.04**	**1.04**
Producer NAC (coeff.)	**1.33**	**1.07**	**1.11**	**1.05**	**1.05**
General Services Support Estimate (GSSE)	**154**	**320**	**307**	**512**	**141**
Agricultural knowledge and innovation system	49	133	105	270	24
Inspection and control	9	28	33	33	19
Development and maintenance of infrastructure	95	141	151	187	86
Marketing and promotion	0	17	18	21	11
Cost of public stockholding	0	0	0	0	0
Miscellaneous	1	0	0	0	0
Percentage GSSE (% of TSE)	**5.51**	**15.55**	**10.33**	**29.01**	**10.19**
Consumer Support Estimate (CSE)	**-2 318**	**-1 871**	**-3 322**	**-1 155**	**-1 137**
Transfers to producers from consumers	-2 087	-1 422	-2 437	-918	-910
Other transfers from consumers	-248	-461	-902	-244	-236
Transfers to consumers from taxpayers	0	0	0	0	0
Excess feed cost	16	11	18	7	9
Percentage CSE (%)	**-29.49**	**-8.17**	**-15.07**	**-5.26**	**-4.91**
Consumer NPC (coeff.)	**1.42**	**1.09**	**1.18**	**1.06**	**1.05**
Consumer NAC (coeff.)	**1.42**	**1.09**	**1.18**	**1.06**	**1.05**
Total Support Estimate (TSE)	**2 784**	**2 039**	**2 973**	**1 765**	**1 380**
Transfers from consumers	2 335	1 883	3 339	1 162	1 146
Transfers from taxpayers	697	618	536	847	470
Budget revenues	-248	-461	-902	-244	-236
Percentage TSE (% of GDP)	**2.85**	**0.65**	**1.10**	**0.56**	**0.41**
Total Budgetary Support Estimate (TBSE)	**240**	**607**	**553**	**854**	**414**
Percentage TBSE (% of GDP)	**0.25**	**0.19**	**0.20**	**0.27**	**0.12**
GDP deflator (2000-02=100)	**100**	**274**	**251**	**267**	**304**
Exchange rate (national currency per USD)	**2 297.17**	**3 899.51**	**3 695.61**	**3 744.32**	**4 258.61**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Colombia are: maize, rice, sugar, milk, beef and veal, pig meat, poultry, eggs, bananas, plantains, coffee, palm oil and flowers.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

The agricultural sector has played an important role in Colombia's economic growth. Commercial agriculture began a phase of rapid expansion in the 1960s. Growth, especially in the 1960s and 1970s, was partly a response to policy incentives to mechanise and intensify the use of modern inputs, and partly a consequence of the sector's protection from imports. The coffee booms of the 1970s and the 1980s coincided with strong growth in agricultural and total GDP. Until the beginning of the 1990s, agriculture was the largest productive sector of Colombia. Over this period, import substitution policies were used, including tariffs, quantitative restrictions, state marketing enterprise, subsided credit and minimum prices (Anderson and Valdés, 2008[1]).

At the beginning of the 1990s, Colombia experimented with more open trade. The government monopoly on agricultural marketing was eliminated and private banks were encouraged to lend to farmers and agricultural exporters. To diversify the markets for Colombian agro-food products, the government negotiated trade agreements with Mercosur, the United States, Central America, Chile, Canada, and the European Union (OECD, 2015[2]).

This economy-wide programme of trade liberalisation was combined with deregulated foreign exchange rates and labour markets. Quantitative trade restrictions were abolished, and import tariffs reduced and replaced by *ad valorem* tariffs. The role of IDEMA (*Instituto de Mercadeo Agropecuario*), the agricultural marketing institute that had a monopoly over grain imports, was reduced and its operation limited to poor areas with less access to markets. Minimum guaranteed prices were established for some staple commodities, with international prices used as a benchmark (Anderson and Valdés, 2008[1]).

However, this liberalisation was too rapid for farmers to adjust, putting the sector in crisis. Then, towards the end 1990s, and under pressure from farmers, the government implemented policies to protect the sector and stabilise producer incomes in the face of price fluctuations in world markets. A price band system for six agricultural commodities, along with their substitutes and derivatives was introduced, covering 112 products in total. This eventually evolved into the Andean Price Band System (*Sistema Andino de Franjas de Precios* - SAFP) and incorporated more products. The construction of the price bands, which fixed the floor and ceiling prices, raised the protection of domestic goods against imports.

Moreover, the Price Stabilisation Funds (*Fondos de Estabilización de precios*, FEPs) originally created for cocoa and cotton, were expanded to also cover palm oil, sugar cane, beef, and milk. The FEPs make payments to producers when the selling price of a product falls below a minimum (floor) price. When the sales price of a product is higher than an established maximum (ceiling) price, producers contribute to the FEPs. While these funds currently do not represent government outlays, the government provided the initial capital for their set-up.

After 56 years of conflict between the government, paramilitary groups and guerrilla groups, a peace agreement was signed in 2016 by the government and the Revolutionary Armed Forces of Colombia (FARC). The peace negotiations resulted in an agreement with a common vision for rural development. It sets out a long-term plan for the sector focusing on the use of land and water resources, increased productivity and competitiveness, improved infrastructure and other public goods for the agricultural sector, and a redefined institutional architecture to design and implement policy (OECD, 2015[2])

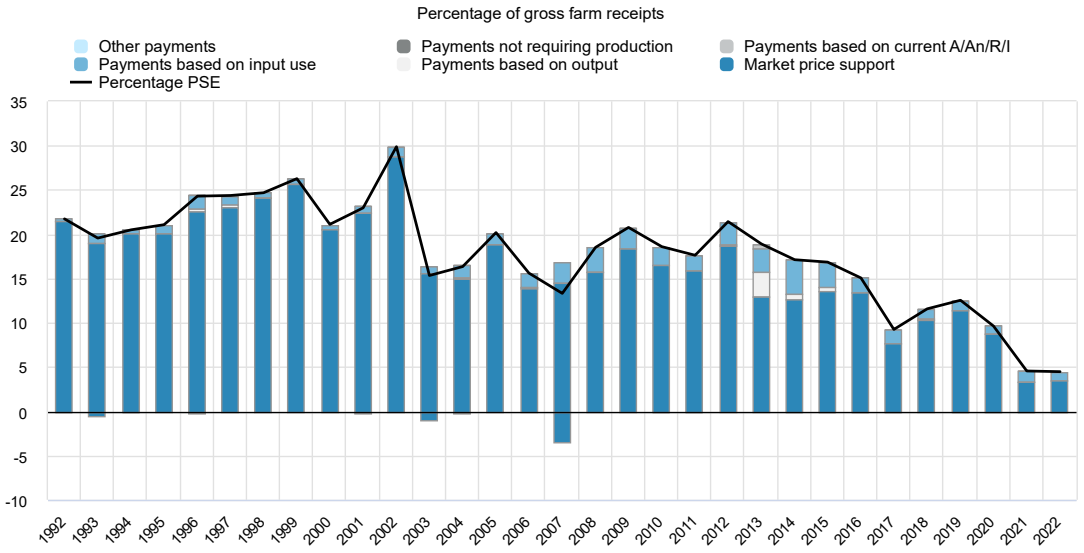
Colombia's support to agricultural producers relative to gross farm receipts changed little during 1992-2013, but trended downwards since 2014. Market price support is the predominant category. Since 2007, there was a clear trend towards increasing budgetary support to the sector, particularly in 2013 when outlays more than doubled. This trend reversed since 2016, and budgetary allocations have fallen considerably in both absolute and relative terms (Figure 10.4).

Table 10.2. Colombia: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to 1990s	Import substitution policies	Tariffs on agricultural inputs and outputs Other border measures establish tariff rate quotas (TRQs) Minimum prices Export promotion and subsidies for traditional crops (coffee, sugar) State marketing agency (government purchases of agricultural products) Subsided agricultural credit Export taxes
1990-2013	Back and forth changes to trade liberalisation and measures to offset economic crisis Changes to trade liberalisation and some protection measures	Role of the state marketing company reduced and later increased for marketing cereals and oilseeds Reduction of tariffs for both agricultural outputs and inputs Export subsidies Several FTAs signed The price band system extends and becomes the Andean Price Band System covering in total 154 products and by-products Quantitative import restrictions created Direct payments introduced Expansion of price stabilisation funds to other crops
2013-2022	Peace negotiations and agreement	Focus on agricultural innovation and public goods Focus on productivity, competitiveness, and rural development Efforts to improve the land tenure system
2022-present	Agrarian reform Agricultural inequalities	Emphasis on land rights, land restitution, land access Emphasis on small-scale farmers

Colombia's support to agricultural producers relative to gross farm receipts changed little during 1992-2013 but trended downwards since 2014. Support is predominantly provided through market price support; however this support has sharply been reduced in 2021 and 2022 due to reduction of key import tariffs and the suspension of the Andean Price Band System for agricultural products as consequence of COVID-19 and the war. In terms of budget, since 2016 budgetary allocations have fallen considerably in both absolute and relative terms (Figure 10.4).

Figure 10.4. Colombia: Level and PSE composition by support categories, 1992 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

Agricultural policy in Colombia is shaped by both the National Development Plan (PND) and the agricultural plan, where each new administration defines the emphasis. However, two key agricultural policy instruments have been used over the past two decades and focus on import cost and income stabilisation, contributing to market price support. One is the Andean Price Band System (SAFP) stabilises import costs for 13 commodities: rice, barley, yellow maize, white maize, soybeans, wheat, unrefined soybean oil, unrefined palm oil, unrefined sugar, refined sugar, milk, chicken cuts, and pig meat. The system also applies to first stage processed products derived from these commodities. However, over the past two years, due to COVID-19 Colombia has suspended the use the Andean Price Band System for rice, milk, white maize, and wheat.

The other instrument is the Price Stabilisation Funds (FEPs) which are designed for income stabilisation. Seven products use the FEPs, which are financed and administered by producer associations: cotton, cocoa, palm oil, sugar, beef, milk, and coffee. FEPs make payments to producers when the selling price of a product falls below a minimum (floor price). When the sales price of a product is higher than an established maximum (ceiling price), producers contribute to the FEPs. The ceiling and floor prices are established by a Council formed by stakeholders and government, this price use based on selected international prices for each product. FEPs are funded through producer levies and function as price-setting mechanisms that make domestic producer prices higher than international prices. The ceiling and floor prices are established based on selected international prices for each product, while the transfers and compensations take into account a reference price indicator at which the products reach the market.

In addition to these two measures, the country also provides preferential interest rates for agricultural credit, through the Financing Fund for the Agricultural Sector (FINAGRO), a second-tier bank, and provides credit for working capital, marketing, and investment. Agricultural risk management instruments include

agricultural insurance, where the government subsidises up to 80% of the cost of insurance premiums; farmers pay the remaining 20% and the VAT.

Many agricultural programmes provide input subsidies. For example, subsidies for farm improvements are provided through the programme *Competitive Improvements*, these subsidies are given mostly for fixed capital formation such as investments related to drainage and on-farm irrigation infrastructure, among others. The Fund for Agricultural Promotion (*Fondo de Fomento Agropecuario-FFA)* gives subsidies for the purchase different inputs including variable (e.g. seeds and fertilisers), as well as services and farm equipment and fixed capital formation. *Productive Alliances* programme also provides all kinds of input subsidies but are only directed to small-scale farmers. Lastly, subsidies for the services of animal and plant control health are given to farmers.

Public expenditures for investments on general services are mostly destined to farm restructuring and agricultural research and extension services, as well as inspection and control. Moreover, efforts under the framework of the Peace Agreement on the provision of rural public goods and services have increased the amount of land with formal tenure, improved irrigation-drainage, and provided technical assistance.

In terms of climate change on Colombia's NDC aims to reduce GHG emissions by 51% in 2030, as well as to reduce black carbon by 40% compared to 2014 levels. Colombia's long-term objective is to achieve carbon neutrality by 2050. The country also is a participant in the Global Methane Pledge, which reaffirms its commitments to mitigation measures. Furthermore, the country created a National Appropriate Mitigation Action (NAMA) for coffee 2016, for livestock in 2017 and for panela (raw sugar) in 2018.

Climate change adaptation policies in agriculture

Policy efforts in Colombia aim to simultaneously address adaptation, mitigation, environmental protection, and conservation. Climate Action Law 2169 passed in December 2021 establishes goals to achieve carbon neutrality, climate resilience, and low-carbon development in the country in the short, medium, and long terms within the framework of Colombia's international commitments on climate issues. In agriculture, the law calls for considering climate change adaptation and mitigation in planning instruments for the agricultural sector (PIGCCS) by 2030, and for implementing adaptation actions under the National Plan for Adaptation to Climate Change.

Colombia's NDCs commit to actions on adaptation related to agriculture, such as improving technical capacities or production methods related to main crops (e.g. rice, maize, potato, livestock, dairy, sugar cane, cocoa, bananas, and coffee) to adapt to climate change. Improved availability of agroclimatic information is meant to aid farmers' decision making. These actions rely on international co-operation funds.

The Green Climate Fund was created in November 2022 with the Development Bank of Latin America (CAF). The Fund implements the project "Climate-smart initiatives for climate change adaptation and sustainability in prioritised agricultural production systems" (CSICAP), with the objectives to:

- implement digital agriculture systems and climate services to modernise agricultural extension services and provide adaptation and mitigation recommendations that support the reduction of agroclimatic risks and crop loss while stimulating a low-emission sector
- develop, validate, and scale technologies such as genetic improvements or crop management to increase resilience and low-carbon agriculture
- strengthen the capacity of producers, technicians, and institutions to adopt new technology and business models that take into account environmental, social, and gender considerations.

The Law "Immediate climate crisis on floods" signed in 2022 aims to provide better and more efficient relief assistance during flooding in rural areas. Colombia also introduced GANABOSQUES, a digital platform that monitors GHG emissions from deforestation and forest degradation. This platform measures risk

associated with deforestation in specific regions such as natural national parks, and verifies cattle movements in deforested areas and strategic ecosystems.

The Integral Program for the Productive Reconversion of Livestock (PIRPAG) was created in 2022. This programme aims to improve the efficiency and sustainability of livestock production in regions associated with deforestation, based on agricultural zoning that defines appropriate areas for beef and milk cattle ranching. Moreover, the sustainable cattle policy guidelines published in 2022 propose short-, medium-, and long-term actions to ensure the growth and competitiveness of cattle ranching. The cattle guidelines have three areas: (1) sustainability, productivity, and markets; (2) governance and institutions; and (3) finance and incentives. The guidelines encourage farmers to adopt sustainable practices to shift extensive cattle production systems to semi-intensive and sustainable models that are economically viable and do not involve deforestation.

The Comprehensive Agricultural Sector Climate Change Management Plan (PIGCCS) passed in 2021 includes adaptation activities organised along three axes: (1) strengthening the country's capacity to manage agro-climatic information; (2) adapting the productive systems of the agricultural, fishing, and forestry sectors to climate change; and (3) strengthening the institutions of the agricultural sector in their actions related to adaptation to climate change.

Lastly, guidelines were developed and passed in 2021 for low-impact agricultural activities and the conservation of natural resources in paramos land. The guidelines have conservation measures such as protecting underground and superficial water sources, promoting the use of green and living fences, and protecting wild plant species located on paramos, as well as sustainable measures such as the use of bio-inputs or bio-fertilisers, and no-till or minimum-till practices.

Domestic policy developments in 2022-23

The new administration, which took office in August 2022, introduced a new agricultural development plan for 2022-26 called Towards Agriculture for Life (*Hacia Una Agricultura Para La Vida*). This plan focuses on five key strategies:

1. a comprehensive land reform
2. addressing inequalities facing indigenous, black, women, and young people in the sector
3. environmental protection and sustainability
4. market inclusion on agricultural value chains
5. territorial approach considering the social, economic, and environmental characteristics of rural areas

Adjustments to current policies, as well as new policies and their implementation, will be reflected during 2023. However, as part of the new development plan, the agrarian reform started to be implemented with the identification of 20 million hectares of fertile land that can be acquired by the government at market prices, with the plan for the next four years is to distribute 3 million hectares to farmers.

Domestic policy responses to Russia’s war of aggression in Ukraine

A new programme within the framework of the Fund for Access to Agricultural Inputs (FAIA), approved in 2022, provides a partial refund of producers’ agricultural input expenditures. The programme benefits small-scale farmers producing poultry, livestock, banana, potato, rice, pig, corn, sheep, cassava, sugar cane for panela production, mango, orange, onion, lemon, banana, tomato, pineapple, carrot, beans, strawberry, and blackberry. Twenty percent of expenditures for variable inputs such as fertilisers, seeds are refunded to mitigate the impacts of higher input prices due to the war and the COVID-19 pandemic.

Trade policy developments in 2022-23

Trade policy responses to Russia's war of aggression in Ukraine

Several measures have been applied to mitigate the impact of high food prices due to COVID-19 and exacerbated by the war. In 2023, the Andean Price Band System continues to be suspended and is replaced by fixed tariffs for rice (80%), milk powder (98%), white corn (40%), and whey (94%). In addition, import tariffs of wheat and peanut were reduced to zero for two years, until July 2024.

Tariffs for other agricultural commodities are applied at reduced levels, for example for crude soybean oil, soybean and crude palm oil up to a maximum level of 40%, wheat up to a maximum level of 35%, white and raw sugar up to a maximum level of 70%, roosters and chickens fresh or refrigerated, frozen without cutting up to a maximum level of 92%. Seasoned and frozen pieces of turkey, preparations and preserves of meat, offal or blood, of rooster or hen, in seasoned and frozen pieces, and other seasoned and frozen pieces of poultry up to a maximum level of 70 %.

In March 2022, Colombia set to zero import tariffs for 163 products[1] that are part of the basic household basket, this measure is in force until December 2023. Lastly, import tariffs on all agricultural inputs, including fertilisers were reduced to zero to mitigate domestic price increases, this measure remains in force until May 2024.

Contextual information

Colombia has a surface of 1.1 million km^2; it is the only South American country that borders both the Atlantic and Pacific Oceans. Colombia has abundant agricultural land and fresh water, is very biodiverse and is rich in natural minerals and fossil fuels. Agriculture continues to be an important sector for the economy – accounting for 7.4% of employment and 15.3% of GDP in 2021. Colombia has a dualistic distribution of land ownership where traditional subsistence smallholders co-exist with large-scale commercial farms. Even if the relative weight of agro-food exports in total exports has declined over the years, the sector continues to make a significant contribution to the country's exports, with agro-food exports accounting for a quarter of all exports in 2021 (Table 10.3).

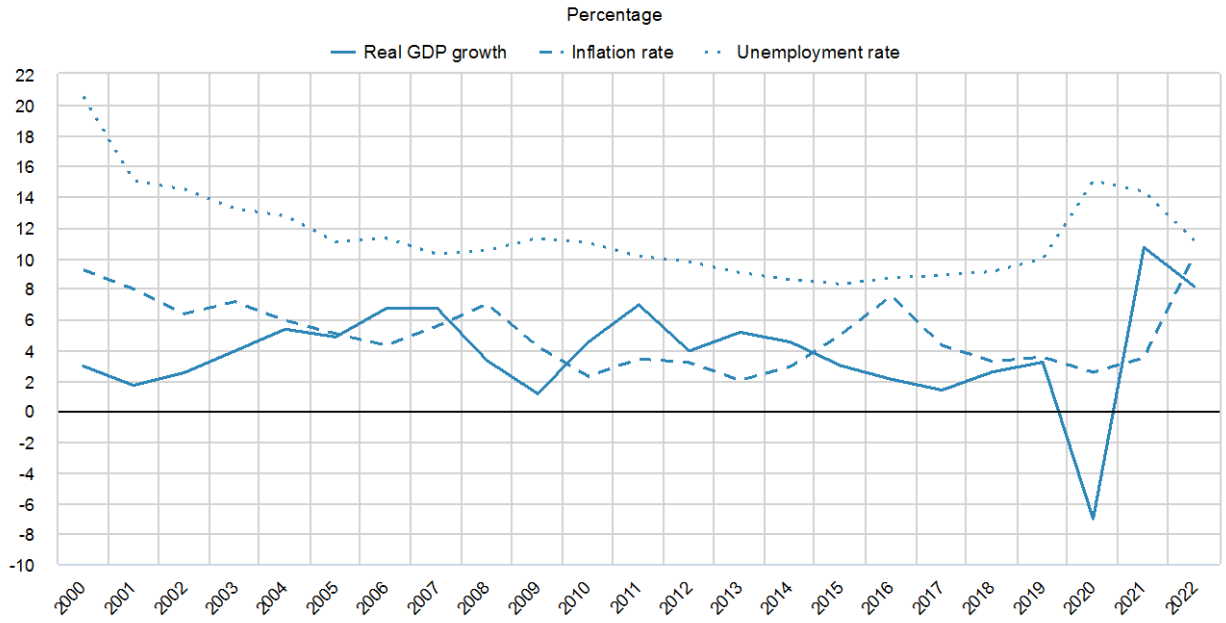
Table 10.3. Colombia: Contextual indicators

	Colombia		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	265	866	0.7%	0.7%
Population (million)	38	50	0.9%	1.0%
Land area (thousand km^2)	1 110	1 110	1.4%	1.3%
Agricultural area (AA) (thousand ha)	44 859	48 243	1.5%	1.6%
			All countries[1]	
Population density (inhabitants/km^2)	35	46	52	64
GDP per capita (USD in PPPs)	6 753	16 819	9 350	23 401
Trade as % of GDP	12.5	16.3	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	8.3	7.4	2.9	3.9
Agriculture share in employment (%)	22.3	15.3	-	-
Agro-food exports (% of total exports)	22.3	22.4	6.2	7.9
Agro-food imports (% of total imports)	12.8	13.6	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	59	62	-	-
Livestock in total agricultural production (%)	41	38	-	-
Share of arable land in AA (%)		10	32	34

Note: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

In 2022, Colombia saw its real GDP growth decrease to 8% after its significant recovery from the recession in 2020, caused by the COVID-19 pandemic. Still, growth in 2022 remained well above the rates seen in the first two decades of the 21st century. Employment, which had suffered from the pandemic, experienced a small recovery with unemployment falling to 13.8% from the 15.4% rate observed in 2020. However, inflation rose to 10% in 2022, up from 3.5% in 2021, which is related to the COVID-19 pandemic and the economic impacts of the war in Ukraine (Figure 10.5).

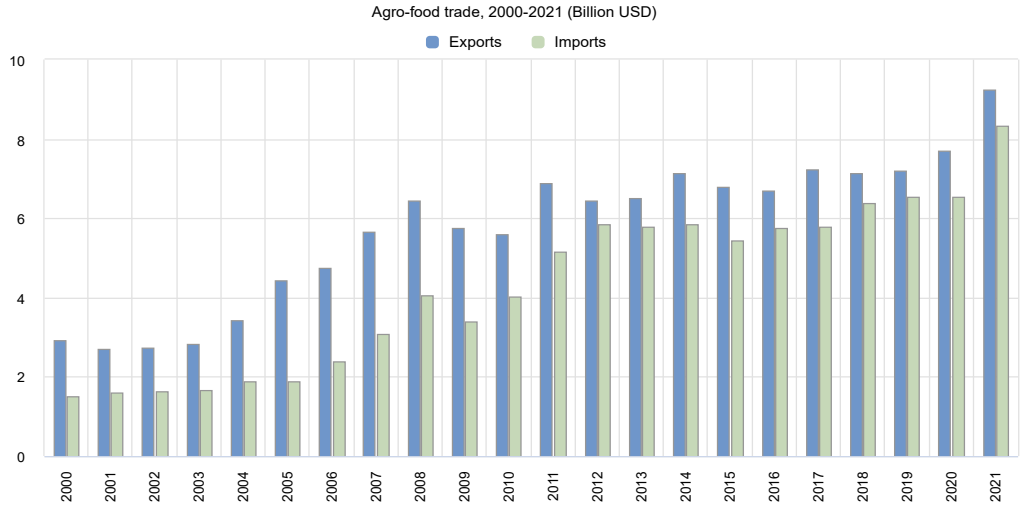
Figure 10.5. Colombia: Main economic indicators, 2000 to 2022

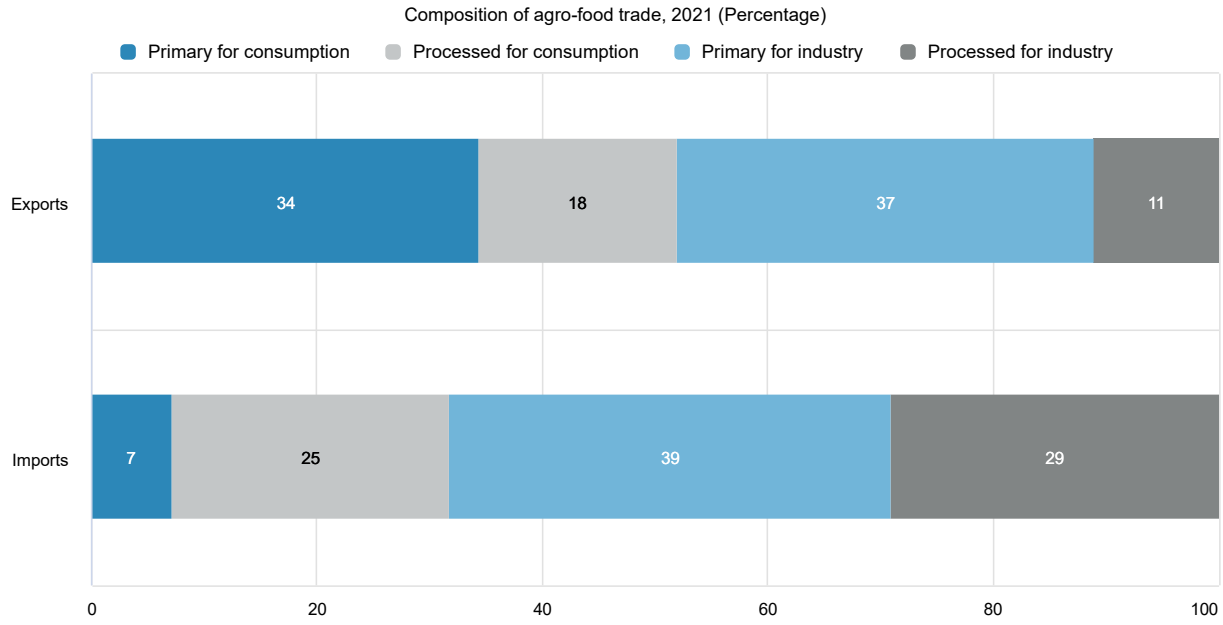


Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

The country has been a net exporter of agricultural and food products with a net surplus of USD 1 billion in 2021. Colombia's agro-food exports are almost equally split between those destined for final consumption (52%) and those that are sold as intermediate inputs (48%) for use in manufacturing sectors in foreign markets. In contrast, the majority of agro-food imports (68%) are in the form of intermediates for further processing in the country (Figure 10.6).

Figure 10.6. Colombia: Agro-food trade

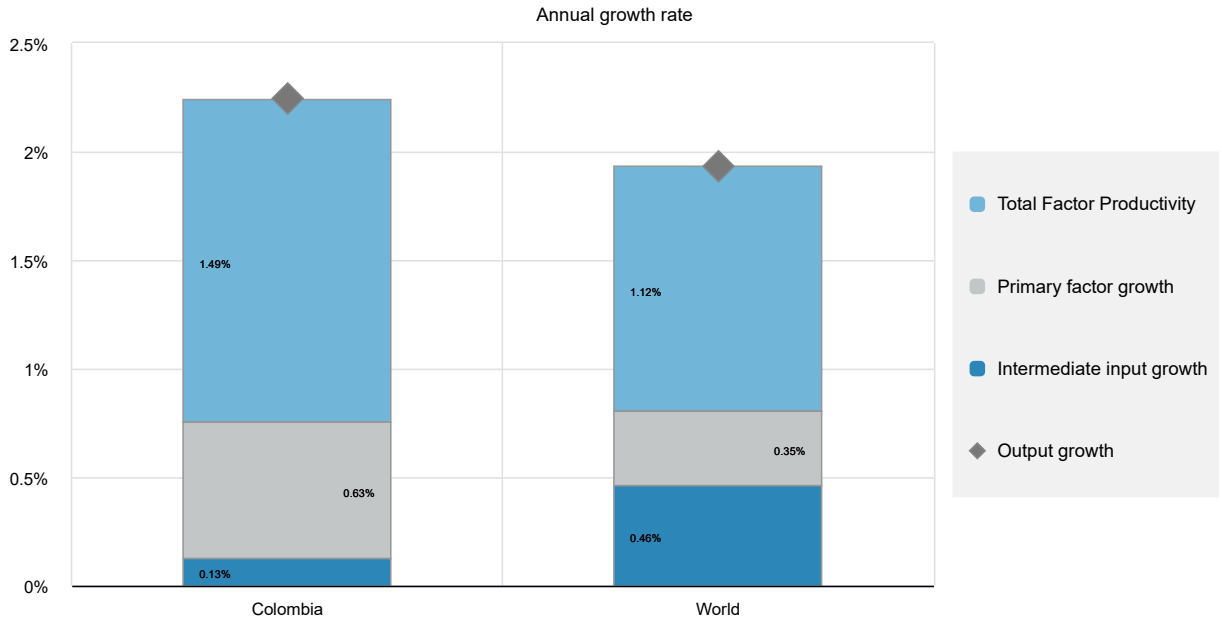




Note: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Colombia has witnessed an output growth of 2.24% p.a. for the period 2011-2020. This growth is mostly due to Total Factor Productivity (TFP) growth, which was 1.49% over the same period, far above the world average. Primary production factors use growth (0.63%) and, to a lesser extent rising use of intermediary inputs (0.13%), contributed to output growth. Agriculture is the main water user with a share of 59.4% total water use, above the OECD average. Furthermore, agriculture contributed with 31.4% of GHG emissions. In contrast, nitrogen balance (10.8) is much lower than the OECD average (30.4). (Figure 10.7 and Table 10.4).

Figure 10.7. Colombia: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 10.4. Colombia: Productivity and environmental indicators

	Colombia		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	0.8%	1.5%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	9.9	10.8	32.2	30.4
Phosphorus balance, kg/ha	5.8	6.9	3.3	3.0
Agriculture share of total energy use (%)[1]	5.9	1.5	1.7	2.0
Agriculture share of GHG emissions (%)	35.7	31.4	8.6	10.5
Share of irrigated land in AA (%)	..	2.2	-	-
Share of agriculture in water abstractions (%)	60.2	59.4	46.6	49.7
Water stress indicator	..	..	8.3	7.4

Note: * or closest available year.
1. Data are not directly comparable between time periods due to change in methodology in 2013.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Note

1

https://dapre.presidencia.gov.co/normativa/normativa/DECRETO%20307%20DEL%203%20DE%20MARZO%20DE%202022.pdf (in Spanish).

11 Costa Rica

Support to agriculture

Agricultural support for producers (Producer Support Estimate, PSE) in Costa Rica amounted to 4% of gross farm receipts in 2020-22, well below the OECD average and down from 8% in 2000-02. Agricultural support comes almost entirely (89%) from market price support (MPS), one of the most trade- and production-distorting forms of support, generated through border measures (tariffs) and domestic measures (minimum reference prices). Products with price support notably include rice, pig meat, poultry meat, and sugar. On average, border protection and price interventions inflated producer prices by 4% relative to international prices in 2020-22. The remaining producer support (worth 0.4% of gross farm receipts) comes through credit at preferential rates for the agricultural sector, input subsidies for agricultural equipment and machinery, payments for environmental services, and support to organic production, among others.

Spending on general services (General Services Support Estimate, GSSE) was equivalent to 1.3% of the value of agricultural production in 2020-22, a small increase from 2000-02. Nevertheless, this share remains well below the OECD average. In 2020-22, GSSE expenditures were mainly allocated to three areas: (1) the agricultural knowledge and innovation system, particularly extension services; (2) inspection and control; and (3) development and maintenance of irrigation and rural roads infrastructure. Total support to the sector (Total Support Estimate, TSE) corresponded to 0.4% of Gross Domestic Product (GDP) in 2020-22, a significant decline from 1.2% in 2000-02.

Recent policy changes

Costa Rica undertook reforms to the price system and import tariffs for rice in 2022. These are part of the Rice Path: a new strategy to promote greater competition in the rice market and improve the quality of local production. As the first actions under this plan, the reference price scheme was dismantled, and the most-favoured-nation (MFN) import tariffs for paddy and milled rice were reduced from 35% to 4.5% and 5%, respectively. The Rice Path includes actions to promote research and technology transfer, and provide training on topics such as proper crop management, sustainable use of natural resources, and improvement and reduction in the use of agrochemicals. Technical assistance and training will also be available for producers who need to change activities.

A public policy for the agricultural sector for 2023-32 was launched in January 2023. It aims to improve the sector's competitiveness; foster the creation of value-added; generate employment; and improve the population's living conditions through actions to increase productivity, sustainability and resilience, and adaptation to climate change. The policy foresees measures to modernise the numerous institutions governing the sector, strengthen their co-ordination, and improve the quality of their services.

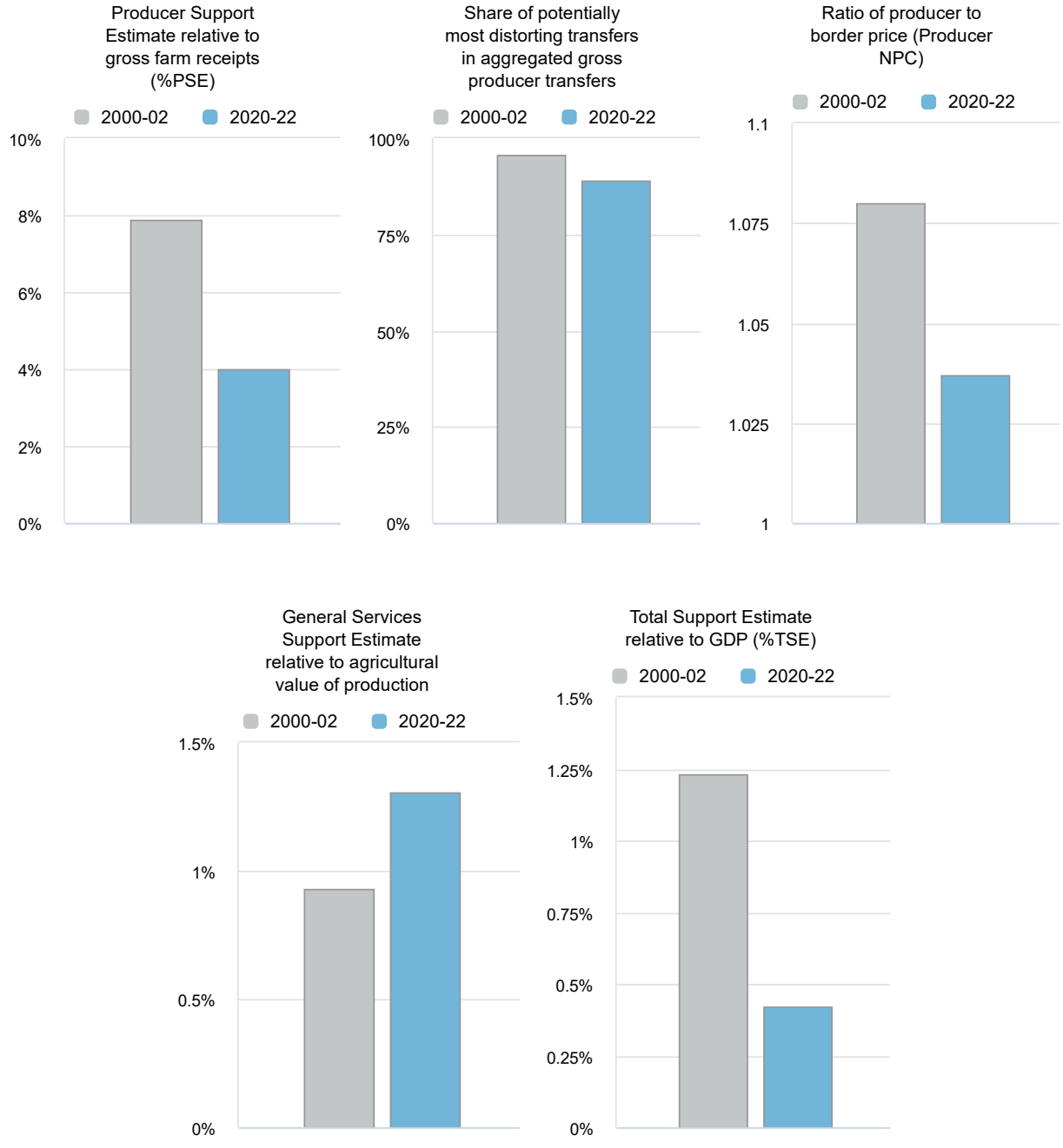
Costa Rica signed a Trade Association Agreement with Ecuador in March 2023, expected to enter into force in 2024. It aims to consolidate and improve market access for Costa Rican exports and create a legal framework to continue promoting and developing investments and strategic alliances between the

countries. Once in force, it will add to the network of agreements under which Costa Rica conducts most of its agro-food trade.

Assessment and recommendations

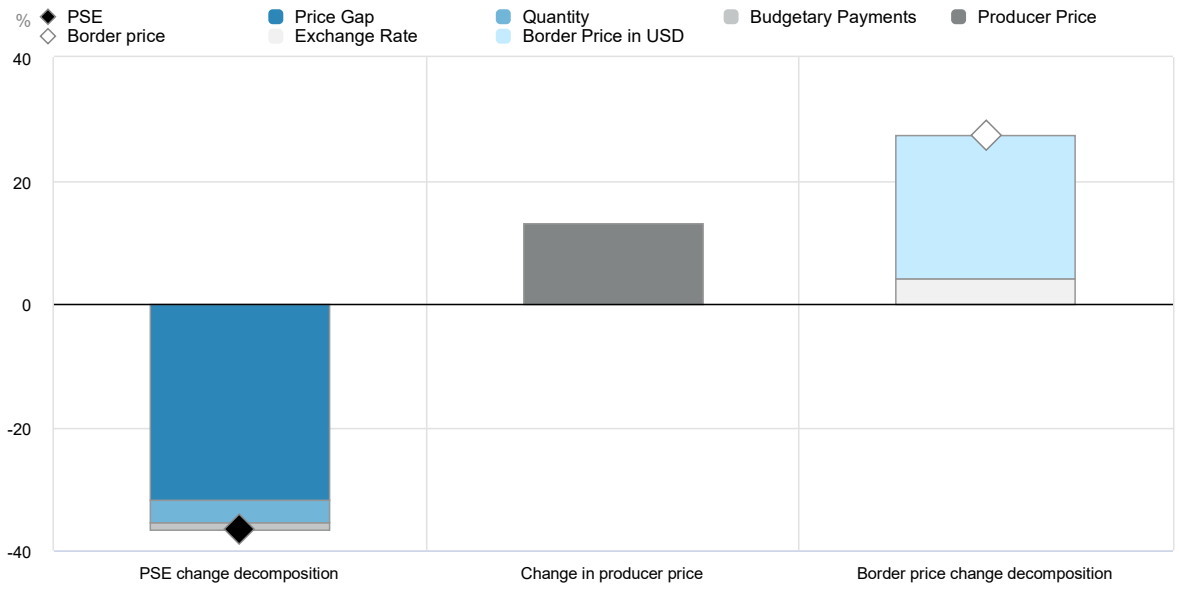
- The National Climate Change Adaptation Plan 2022-26 is a step towards adopting a longer-term perspective to align with climate change goals and improving institutional co-ordination, as recommended by the OECD (2017[1]). While the plan includes numerous measures to improve the adaptation of agriculture, many are contingent on external funding. This uncertainty might impede implementation of new initiatives or affect the continuity of existing programmes. The government should prepare a contingency plan in case external funds are not forthcoming in a timely manner.
- The new public policy for the agricultural sector for 2023-32 sets a general framework for the sector's climate adaptation. A more detailed outlining of concrete actions foreseen under this policy will be key to assessing its potential impact. This is an opportunity for Costa Rica to better align agricultural and climate policies, and to implement OECD recommendations such as linking existing voluntary programmes and direct payment schemes with adaptation, integrating adaptation into existing technical assistance programmes and extension services, and systematically monitoring and evaluating adaptation efforts.
- Despite the relatively large contribution of agriculture to greenhouse gas (GHG) emissions, Costa Rica has not established a sector-specific mitigation target. The agricultural Nationally Appropriate Mitigation Actions (NAMAs) have achieved GHG emission reductions in the coffee and livestock sectors. There are plans to develop NAMAs for other sectors, such as rice and bananas, but their progress depends on the availability of external funding. Implementing additional agricultural NAMAs could mitigate GHG emissions and promote the adoption of good practices in important agricultural activities.
- Recent reforms of the reference price and import tariffs for rice – following OECD recommendations – are important steps towards improving the affordability of a basic staple food. To promote a transition to more sustainable and resilient production, and protect farmers' livelihoods, the government must ensure that all measures included in the Rice Path are adequately implemented. This includes providing technical assistance to small and medium-sized rice producers, helping small-scale farmers who wish to cease rice production, and actions to use water more efficiently and reduce the use of agrochemicals.
- Beyond rice, price transfers (measured by market price support) continue to account for the largest share of producer support. For example, several agro-food products are subject to higher-than-average import tariffs. Costa Rica should continue its efforts to reduce transfers that distort domestic markets and trade, constrain competition, productivity and competitiveness, and risk harming the environment.
- Support to general services has increased in the last two decades, including investments in the agricultural innovation system. However, relative to the value of agricultural production it continues to be below the OECD average. The low expenditure, a fragmented research agenda, and limited information sharing with extension services constrain innovation. Strengthening investment in innovation and knowledge transfer could create an enabling environment to improve productivity and unlock untapped potential in Costa Rican agriculture.
- The estimated agricultural Total Factor Productivity (TFP) decreased on average 2% per year in 2011-20. Streamlining the institutional structure governing the sector could improve the delivery of public policies and contribute to improving productivity (OECD, 2023[2]). The new sector policy for 2023-32 represents an opportunity in this regard. Investments are also required to reduce the infrastructure gaps that limit the sector's competitiveness, such as the poor quality of rural roads.

Figure 11.1. Costa Rica: Development of support to agriculture



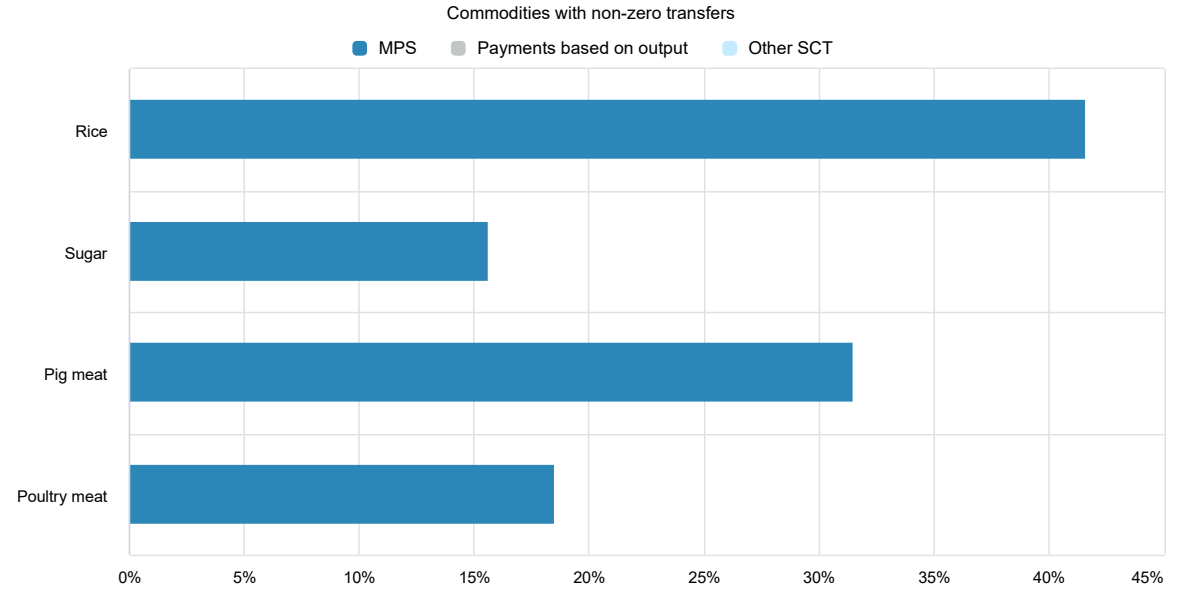
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 11.2. Costa Rica: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 11.3. Costa Rica: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 11.1. Costa Rica: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**2 209**	**5 217**	**5 086**	**5 259**	**5 305**
***of which:** share of MPS commodities (%)*	79.20	89.28	85.37	89.93	92.54
Total value of consumption (at farm gate)	**1 114**	**2 329**	**2 210**	**2 257**	**2 520**
Producer Support Estimate (PSE)	**175**	**212**	**301**	**207**	**127**
Support based on commodity output	164	189	278	183	106
Market Price Support[1]	164	189	278	183	106
Positive Market Price Support	164	189	278	183	106
Negative Market Price Support	0	0	0	0	0
Payments based on output	0	0	0	0	0
Payments based on input use	10	22	23	23	20
Based on variable input use	4	10	11	10	9
with input constraints	1	10	11	10	9
Based on fixed capital formation	1	7	7	7	6
with input constraints	0	1	1	1	1
Based on on-farm services	5	5	6	5	5
with input constraints	3	0	0	0	0
Payments based on current A/An/R/I, production required	0	0	0	0	0
Based on Receipts / Income	0	0	0	0	0
Based on Area planted / Animal numbers	0	0	0	0	0
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	0	0	0	0
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	1	1	1	2	1
Based on long-term resource retirement	0	1	1	2	1
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	1	0	0	0	0
Miscellaneous payments	0	0	0	0	0
Percentage PSE (%)	**7.90**	**3.98**	**5.90**	**3.92**	**2.38**
Producer NPC (coeff.)	**1.08**	**1.04**	**1.06**	**1.04**	**1.02**
Producer NAC (coeff.)	**1.09**	**1.04**	**1.06**	**1.04**	**1.02**
General Services Support Estimate (GSSE)	**20**	**68**	**65**	**74**	**66**
Agricultural knowledge and innovation system	10	28	31	27	25
Inspection and control	3	19	12	23	22
Development and maintenance of infrastructure	7	20	20	23	18
Marketing and promotion	0	1	1	1	1
Cost of public stockholding	0	0	0	0	0
Miscellaneous	0	0	0	0	0
Percentage GSSE (% of TSE)	**10.47**	**24.65**	**17.67**	**26.34**	**34.30**
Consumer Support Estimate (CSE)	**-189**	**-239**	**-334**	**-233**	**-149**
Transfers to producers from consumers	-156	-172	-252	-171	-93
Other transfers from consumers	-34	-67	-83	-62	-57
Transfers to consumers from taxpayers	0	0	0	0	0
Excess feed cost	0	0	0	0	0
Percentage CSE (%)	**-16.93**	**-10.10**	**-15.12**	**-10.30**	**-5.93**
Consumer NPC (coeff.)	**1.20**	**1.11**	**1.18**	**1.11**	**1.06**
Consumer NAC (coeff.)	**1.20**	**1.11**	**1.18**	**1.11**	**1.06**
Total Support Estimate (TSE)	**195**	**280**	**366**	**281**	**193**
Transfers from consumers	189	239	334	233	149
Transfers from taxpayers	40	108	114	110	100
Budget revenues	-34	-67	-83	-62	-57
Percentage TSE (% of GDP)	**1.23**	**0.42**	**0.59**	**0.44**	**0.28**
Total Budgetary Support Estimate (TBSE)	**32**	**91**	**88**	**98**	**87**
Percentage TBSE (% of GDP)	**0.20**	**0.14**	**0.14**	**0.15**	**0.12**
GDP deflator (2000-02=100)	**100**	**368**	**354**	**361**	**389**
Exchange rate (national currency per USD)	**331.77**	**616.93**	**584.68**	**621.35**	**644.77**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Costa Rica are: rice, sugar, milk, beef and veal, pig meat, poultry, bananas, coffee, palm oil and pineapple.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en.

Description of policy developments

Overview of policy trends

Costa Rica's agricultural policy has developed in three phases (Table 11.2). Up to the 1980s, the country pursued import substitution, supported by government market interventions and capitalising on its natural comparative advantages through the export of traditional products such as coffee, bananas, sugar and bovine meat.

Between the mid-1980s and the mid-2000s, Costa Rica followed an outward-oriented growth strategy, which influenced the development of agricultural support policies. Market intervention decreased significantly, combined with continued domestic reforms and trade liberalisation, marked by Costa Rica's accession to the General Agreement on Tariffs and Trade (GATT) in 1990 and, subsequently, to the World Trade Organization (WTO) in 1995. Price controls were eliminated (except in the case of rice), export taxes removed and import tariffs lowered. Costa Rica entered into free trade agreements that granted duty-free treatment for imports from many trading partners, although tariffs still apply to some agricultural products (OECD, 2017[1]).

The food price crisis of 2007-08 fuelled food security concerns, leading to the establishment of programmes seeking to increase productivity of staple foods, particularly through extension services targeting small-scale farmers. The administered price for rice that had been maintained for decades was reformed in 2015 and converted to a minimum reference price, which was eliminated in 2022 together with tariff reductions on rice imports. Costa Rica's policies continue to emphasise export-oriented agriculture, which has resulted in some asymmetries between exporters and producers for the local market. In addition, greater policy focus is now directed at promoting sustainable productivity with an emphasis on small-scale farmers (OECD, 2017[1]).

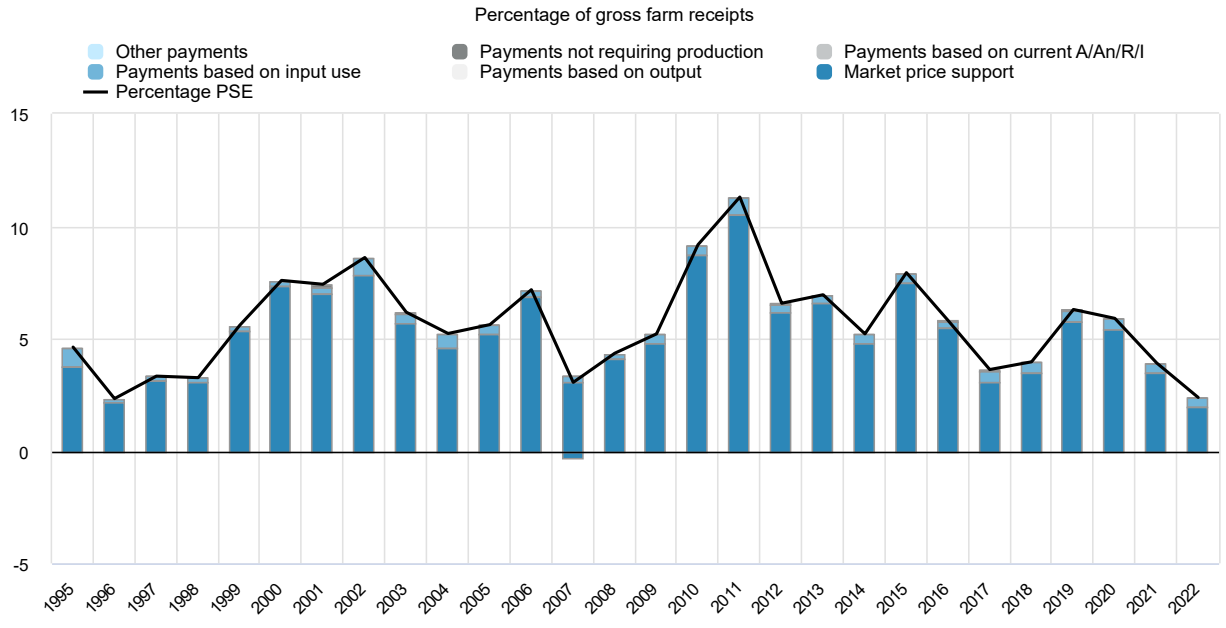
Table 11.2. Costa Rica: Agricultural policy trends

Period	Framework	Changes in agricultural policies
Prior to 1980s	Closed economy	Import substitution approach; price interventions on agricultural products, particular emphasis on guaranteed price for rice; high tariffs on agricultural imports Creation of the National Production Council (CNP) in the 1940s to promote agricultural and industrial production, control agricultural prices and own public infrastructure for the collection, storage, transport and distribution of grains
1980s-2007/08	Gradual shifts to open the economy	Dismantling price interventions (but minimum price for rice continued) Reduction of trade barriers (import and export tariffs) Reforms to CNP end most functions, keeping only the Institutional Supply Programme (PAI), which purchases food from small and medium farms for consumption in public institutions Strengthening agricultural exports via product diversification and development of destination markets; several FTAs signed; incentives (including in agriculture) to domestic and foreign companies to attract FDI, such as the Free Trade Zone Regime (FTZ) providing tax benefits and preferential port rates Creation of agricultural institutions for animal health (SENASA), plant health (SFE), agricultural innovation (INTA) Creation of the Rural Development Institute (IDA/INDER)
Since 2008	Open economy with a focus on sustainability and small-scale farmers	Emphasis on extension services for small-scale farms; promotion of good agricultural practices Small and limited payments to farmers for environmental services Import tariffs persist for some agricultural products Major rice policy reforms in 2022: elimination of the reference price and lower tariffs

Producer support has fluctuated between 2% and 11% of gross farm receipts over the last decades. This volatility can be partly explained by fluctuations in export and import unit values or in the international reference prices for some MPS commodities. Costa Rica's PSE consists mainly of market price support

(MPS), which accounts for around 90% and concentrates on rice and livestock products. In contrast, budgetary support to producers is limited and has changed little over time (Figure 11.4). Around 75% of total budgetary allocations are in the form of general services to the sector. Agricultural research and development (R&D), extension services, inspection and control, and rural infrastructure account for most of these expenditures. Costa Rica does not provide budgetary transfers to consumers.

Figure 11.4. Costa Rica: Level and PSE composition by support categories, 1995 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

Until the end of 2022, the agricultural policy framework of Costa Rica was guided by the 2019-22 Policy Guidelines for the Agricultural, Fishing and Rural Sector, which sought to improve the well-being of people employed in agriculture, achieve a competitive and sustainable agriculture, and strengthen the sector's resilience, with a cross-cutting axis of climate action and risk management. A new public policy for the agricultural sector (*Política pública para el sector agropecuario costarricense 2023-2032*) was unveiled in January 2023 (see below).

Market Price Support (MPS) is the most important component of overall agricultural support. Costa Rica maintains a wide range of border measures, including tariffs and sanitary and phytosanitary (SPS) measures. The average applied most-favoured-nation (MFN) tariff on agricultural imports in 2021 was 11.6%, above the 4.6% faced by non-agricultural products. Certain sectors face significantly higher MFN average rates, such as dairy (50.9%), animal products (20.8%) and sugars (18.9%) (World Trade Organization, 2022[3]).

Budgetary policy instruments predominantly focus on providing general services to agriculture, including extension services, research and development (R&D), and plant and animal health services, with a significant emphasis on environmental protection. The National Institute for Innovation and Transfer of Agricultural Technology (INTA) manages agricultural research, development and innovation. Together with the MAG's National Directorate of Agricultural Extension, INTA also operates technology transfer and extension services to farmers. The National Animal and Health Service (SENASA) and the National Phytosanitary Service (SFE) are in charge of animal and plant health services.

Farmers also receive a number of specific payments and subsidies, including implicit subsidies through credit at preferential interest rates, and some subsidies for fixed capital formation mostly directed to small-scale farmers.

The National Seed Policy for 2017-30 is implemented by the National Seed Office with the participation of stakeholders from the seed production sector. The strategic actions of this policy include the development of varieties, the production of seeds and the assurance of their quality, the extension of seeds' use, the development of seed-producing companies, and ensuring security in the supply of seeds.

The National Groundwater, Irrigation and Drainage Service (SENARA) constructs and manages irrigation infrastructure, and maintains and upgrades existing infrastructure. It carries out actions such as:

- Providing training and assistance to producers for the proper use of water resources.
- Construction works for drainage and flood control in the regions with the highest levels of rainfall. This regulates soil moisture, which favours production and prevents losses from flooding.
- A programme for research and management of groundwater resources, generating information on the availability of water for its sustainable use.

Costa Rica has committed to a completely decarbonised economy by 2050 and established annual goals for reducing greenhouse gas (GHG) emissions. The overall goal is composed of two objectives: (1) maximum 9.11 $MtCO_2eq$ net emissions, with emissions per capita of 1.73 net tonnes by 2030; and (2) absolute maximum net emissions of 106.53 $MtCO_2eq$ for 2021-30 (OECD, 2022[4]). While agriculture contributes 21% to the country's GHG emissions, almost twice the OECD average, the country does not have an agriculture-specific target.

Nationally Appropriate Mitigation Actions (NAMAs) for agriculture were developed in collaboration with public institutions, producer organisations, the private sector and academia, supported by international co-operation funds. Currently, two agricultural NAMAs are active for coffee and livestock. Low-emission production of coffee is done on an estimated 24 770 hectares, which has led to a reduction of 71 763 tonnes of CO_2eq between 2014 and 2022. The livestock sector reduced emissions by 175 000 tonnes of CO_2eq in the same period, and overall captured more GHGs than it generates. While the planning and development of additional NAMAs for other sectors such as bananas and rice has started, their implementation is highly dependent on the availability of international co-operation funding.

Costa Rica's agri-environmental policy also includes the Payment for Environmental Services Programme. Its projects on agroforestry services provide financial compensation to small and medium-sized agricultural or livestock producers who plant trees interspersed with crops or pastures. This programme seeks to maintain, recover, and develop forest ecosystems, increase carbon sequestration, improve the rural landscape and the environmental conditions of cattle farms, and generate additional economic resources through the sale of wood from the trees planted.

The Recognition of Organic Environmental Benefits programme, managed by the Department of Organic Production of the Ministry of Agriculture and Livestock, consists of a direct payment for producers that are certified organic or in the transition period. The incentive is provided in a base amount per year for a maximum of three years.

Costa Rica has entered into 16 free trade agreements (FTAs) with trading partners across the world. Most trade is conducted under these agreements: as of 2017, FTAs covered almost 93% of the country's total exports and 83% of imports (Ministerio de Comercio Exterior, 2017[5]). An important policy to promote agricultural exports is the DESCUBRE programme, operated through a public-private partnership led by the Ministries of Agriculture and Foreign Trade and the export promotion agency PROCOMER. DESCUBRE links farmers to export markets and value chains and promotes investments in rural and coastal areas. Its activities include providing seed funding and technical assistance to help small producers become providers of larger exporting companies in selected agro-food value chains.

Climate change adaptation policies in agriculture

The National Climate Change Adaptation Plan 2022-26 was presented in April 2022. This plan defines the actions required to implement the National Climate Adaptation Policy (launched in 2018). It is closely linked to Costa Rica's updated Nationally Determined Contribution (NDC), submitted at the end of 2020, which includes a National Communication on Adaptation that sets concrete guidelines and goals. The adaptation plan covers six areas: (1) knowledge management; (2) territorial planning; (3) ecosystem management; (4) public services; (5) productive systems; and (6) investment and financial security. It includes 232 concrete adaptation actions to be undertaken by 49 institutions.

Most actions that concern the agricultural sector in the national adaptation plan are grouped under its Axis 5, "Adapted and eco-competitive production systems". Some examples include: developing a strategy for rainwater-harvesting and irrigation technologies in productive agricultural systems; developing a programme for training and technology transfer in practices that strengthen resilience and promote ecosystem-based adaptation at different scales (small, commercial, and agro-industrial); and establishing a seed bank with crop varieties from different Costa Rican regions. Many of the proposed actions are contingent on external funds.

In 2021-22, the National Seed Office implemented the Project for Strengthening Capacities in Seed Production for Adaptive and Resilient Agriculture, supported by international co-operation funds. This project seeks to improve the capacities of family farms producing seed, promote the use of superior-quality seeds, and increase the productivity of these systems while taking climatic variables into consideration. It also contributes to the National Biodiversity Strategy (2016-25) by promoting the management and conservation of seeds of native species for food and reforestation by indigenous people and local communities.

The NAMAs for the coffee and livestock sectors also include adaptation actions. The NAMA-coffee aims to improve resource-use efficiency in production and processing. Work is being done to implement the National Coffee Strategy for Low Emissions and Resilience to Climate Change. Other actions include training model farms, producers, and public and private extension professionals in sustainable production, and planting trees in agroforestry systems in coffee farms. Coffee processors also receive financial incentives to reduce their emissions and their electricity and water use.

In the case of the NAMA-livestock, the National Institute for Innovation and Transfer of Agricultural Technology (INTA) provides research support covering topics such as: Voisin Rational Grazing[1] and its potential to improve productivity and re-carbonise soil in pastures; developing bovine genetics adapted to the country's climate and production scales; the rational use of nitrogen in the fertilisation of pastures and the use of fertigation techniques with slurry in pastures; and fodder conservation systems.

During 2022, the National Directorate of Agricultural Extension provided incentives for climate change adaptation and mitigation in farms. The Recognition of Benefits for Good Agricultural and Livestock Practices programme grants a monetary incentive to agricultural producers, covering 20% to 30% of investments with a positive environmental effect, such as live fences, fodder banks, biodigesters, or organic waste-treatment systems. In addition, the Ecological Blue Flag (*Bandera Azul*) for the agricultural

sector is a voluntary programme recognising farmers that implement practices in areas such as water management, soil conservation, consumption of agricultural inputs, fossil fuels and electricity, and actions to improve climate adaptation and resilience.

Domestic policy developments in 2022-23

A new public policy for the agricultural sector for the period 2023-32 was launched in January 2023. It aims to improve the competitiveness of the sector (including crops, livestock, fisheries, and agro-industry) through actions oriented to increase productivity, sustainability and resilience, and adaptation to climate change, to improve the international competitiveness of Costa Rican products, create employment and improve living conditions in rural areas (Ministerio de Agricultura y Ganadería, 2023[6]). The policy identifies four major action areas:

- Modernising and strengthening the sector institutions and improving co-ordination, using technology to simplify procedures and improve regulations.
- Improving competitiveness through the availability of information for producers and decision-makers, better infrastructure and plant and animal health services, and improved access to financing and insurance.
- Improving productivity and sustainability through the promotion of good agricultural practices and technologies that optimise resource use, the development of economic incentives for producers who implement actions that contribute to the decarbonisation goals, the implementation of the National Adaptation Plan for agriculture, and the promotion of research and knowledge transfer.
- Improving value added and marketing channels through the promotion of value addition and production linkages, identifying new market niches, and developing physical and virtual marketing channels. This action area also includes a food and nutritional security component that seeks to promote the access and availability of balanced foods for the population, and actions for the management and use of waste.

A new strategy for the rice sector was presented in the second half of 2022. The strategy, known as the “Rice Path”, was developed by an inter-institutional team that included the vice-president and the ministers of agriculture, economy, and foreign trade. The strategy proposes actions to improve the quality of production and promote greater market competition. The first actions under this strategy were to eliminate the reference price scheme and reduce the MFN import tariffs on paddy rice from 35% to 4.5% and on milled rice from 35% to 5%.[2] This reform follows past OECD recommendations to Costa Rica about the reduction of market price support for rice, which highlighted the need to address the perverse incentives created for rice production and the policy’s negative impact on poor households (OECD, 2017[1]). It is expected that this reform will help reduce the cost of the basic goods basket (OECD, 2023[2]).

The Rice Path strategy also includes research and technology transfer, promoting the use of seeds and supplies suitable for the country's conditions, and training farmers on topics such as proper crop management, sustainable natural resource use, and rationalising agrochemical use. Technical assistance and training will also be provided to producers who need to change activities. These actions will be developed by the Ministry of Agriculture and Livestock (MAG) and the National Institute for Innovation and Transfer of Agricultural Technology (INTA) starting in 2023. They are expected to benefit about 490 small and medium-size rice producers.

In 2022, Costa Rica established the legal framework for the cultivation, production, industrialisation, and trade of cannabis for medical and therapeutic purposes and of hemp for food and industrial uses. It regulates and allows the production and use of psychoactive cannabis and its derivatives (exclusively for medical and therapeutic uses), as well as the production, industrialisation, and commercialisation of hemp for industrial and food uses. The framework gives the MAG the authority to issue licences and authorisations for cultivation, production, and related activities, and to provide technical assistance to small

and medium producers for the development of crops. Both activities are expected to promote economic and social development in rural areas.

A reform to the registration process of new agrochemicals entered into force in February 2023. The new regulation allows to homologate the registration of Technical Grade Active Ingredients (TGAI) with OECD members and other adherents to the OECD System for Mutual Acceptance of Chemical Safety Data. This reform eliminates a bottleneck that had delayed the registration of new molecules for decades. It is expected to significantly reduce the time needed for registration and modernise the agrochemicals authorised in the country, making available newer molecules that are more friendly to the environment and human health (Servicio Fitosanitario del Estado, 2023[7]).

Trade policy developments in 2022-23

In March 2023, Costa Rica and Ecuador signed a Trade Association Agreement. It aims to consolidate and improve market access for Costa Rican exports and create a bilateral legal framework to continue promoting and developing investments and strategic alliances between both countries. The agreement is expected to enter into force in 2024.

In May 2022, Costa Rica lifted the restrictions on imports of fresh avocados from Mexico that had been the subject of a WTO dispute initiated in 2017. The panel found that Costa Rica's restrictions were inconsistent with the Agreement on Sanitary and Phytosanitary Measures. To bring the measures into conformity with its legal obligations, Costa Rica repealed the resolutions that had been found incompatible with WTO provisions (Servicio Fitosanitario del Estado, 2022[8]).

Several developments related to agricultural import tariffs took place in 2022. They include lower tariffs on paddy and milled rice approved in August, and the expiration in March of an antidumping measure consisting of additional import duties on unrefined crystal white sugar imports from Brazil (World Trade Organization, 2022[9]).

A safeguard measure increasing the import tariff on refined white sugar, which was in force since August 2020 (OECD, 2021[10]), expired in August 2023. Following concerns raised by Brazil and its decision to suspend concessions by raising tariffs on certain agricultural products from Costa Rica (World Trade Organization, 2020[11]), in October 2022 Costa Rica opened a tariff rate quota of 4 437 metric tonnes of refined sugar from Brazil not subject to the safeguard duty, in exchange for Brazil ending the tariff increase on Costa Rican products.

Contextual information

Costa Rica is a small country with a population of 5.2 million. Its long democratic tradition and political stability have underpinned its economic progress and the development of its agricultural sector. Agriculture still plays a relatively important role in the economy, contributing 12% to employment. While the share of agriculture in GDP is above the average of covered countries, it has halved in the last two decades, reflecting the diversification of the economy. Costa Rica's GDP per capita almost tripled between 2000 and 2021 and is now close to the average across all countries covered by this report (Table 11.3).

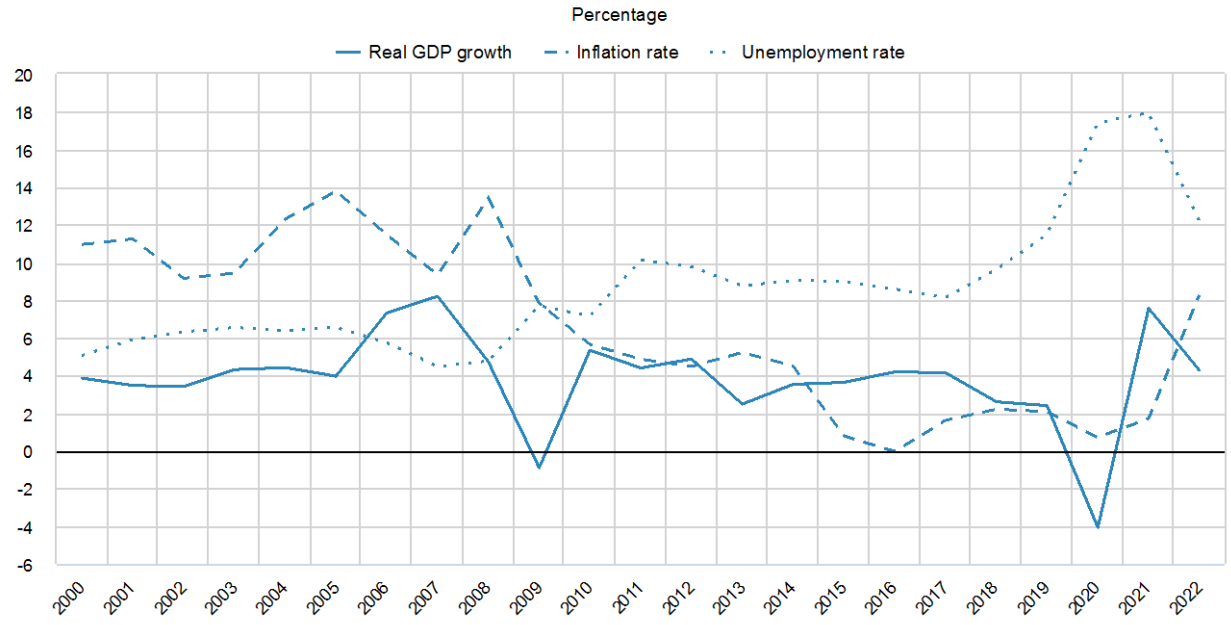
Table 11.3. Costa Rica: Contextual indicators

	Costa Rica		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	32	117	0.08%	0.10%
Population (million)	4	5	0.09%	0.10%
Land area (thousand km^2)	51	51	0.06%	0.06%
Agricultural area (AA) (thousand ha)	1 840	1 762	0.06%	0.06%
			All countries[1]	
Population density (inhabitants/km^2)	78	101	52	64
GDP per capita (USD in PPPs)	7 796	23 320	9 350	23 401
Trade as % of GDP	38.2	25.3	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	10.2	4.7	2.9	3.9
Agriculture share in employment (%)	16.3	11.7	-	-
Agro-food exports (% of total exports)	31.0	37.2	6.2	7.9
Agro-food imports (% of total imports)	7.6	13.3	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	76	73	-	-
Livestock in total agricultural production (%)	24	27	-	-
Share of arable land in AA (%)	11	14	32	34

Note: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

After a marked recovery from the economic contraction associated with the COVID-19 pandemic, real GDP growth in 2022 declined to 4.3%, closer to typical pre-pandemic growth rates. Despite this lower growth, unemployment declined between 2021 and 2022, although it remains above its pre-COVID-19 levels. After years of fluctuating between zero and 2%, inflation had an important increase in 2022, reaching 8% (Figure 11.5).

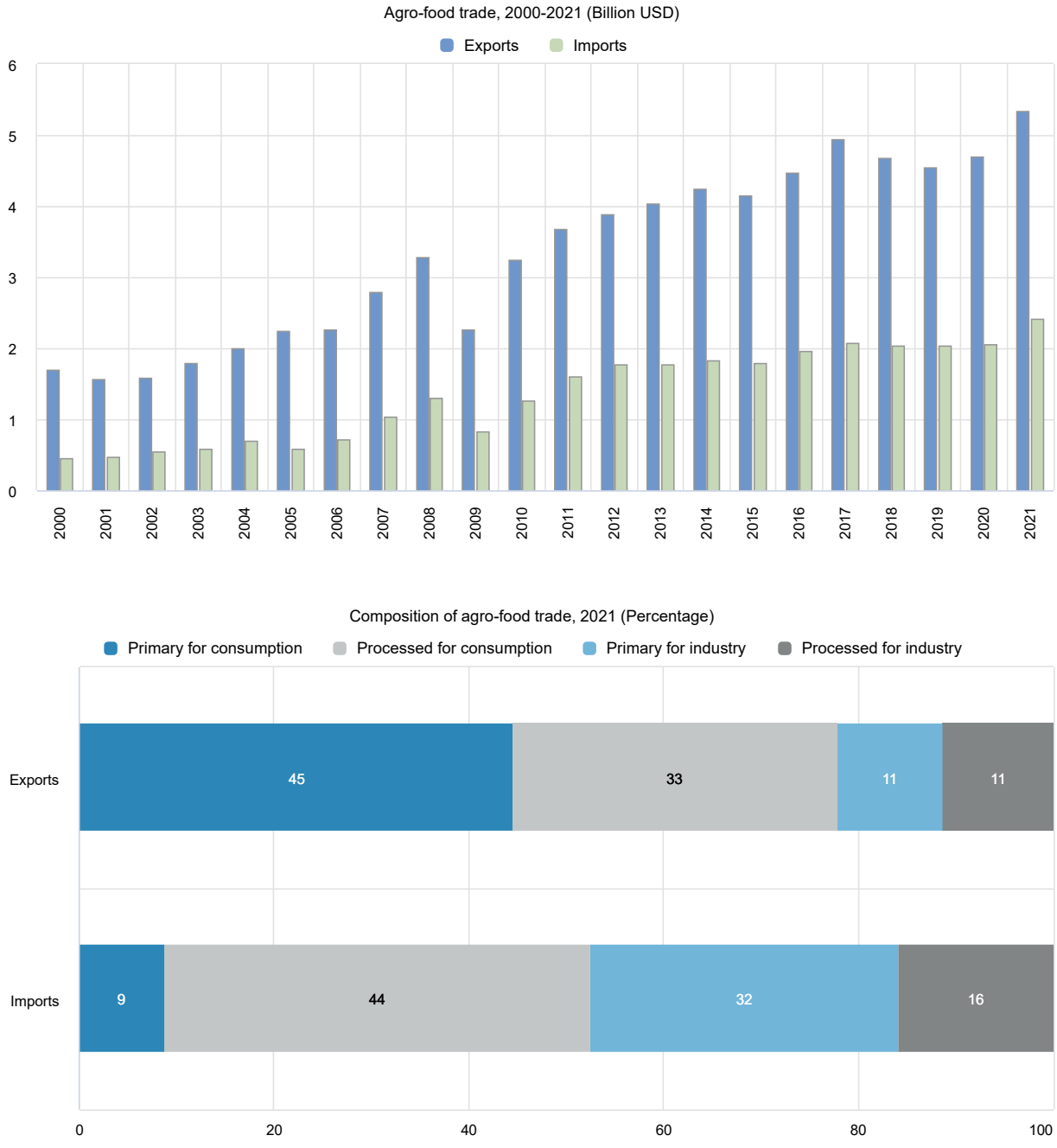
Figure 11.5. Costa Rica: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Costa Rica is a net exporter of agro-food products, which accounted for 37% of the 2021 value of goods exports. Around 45% of Costa Rica's agricultural exports are primary crops for final consumption, such as bananas and pineapples, while a third of exports are processed products for final consumption. Agro-food imports are almost equally distributed between products for final consumption and products for industry (Figure 11.6).

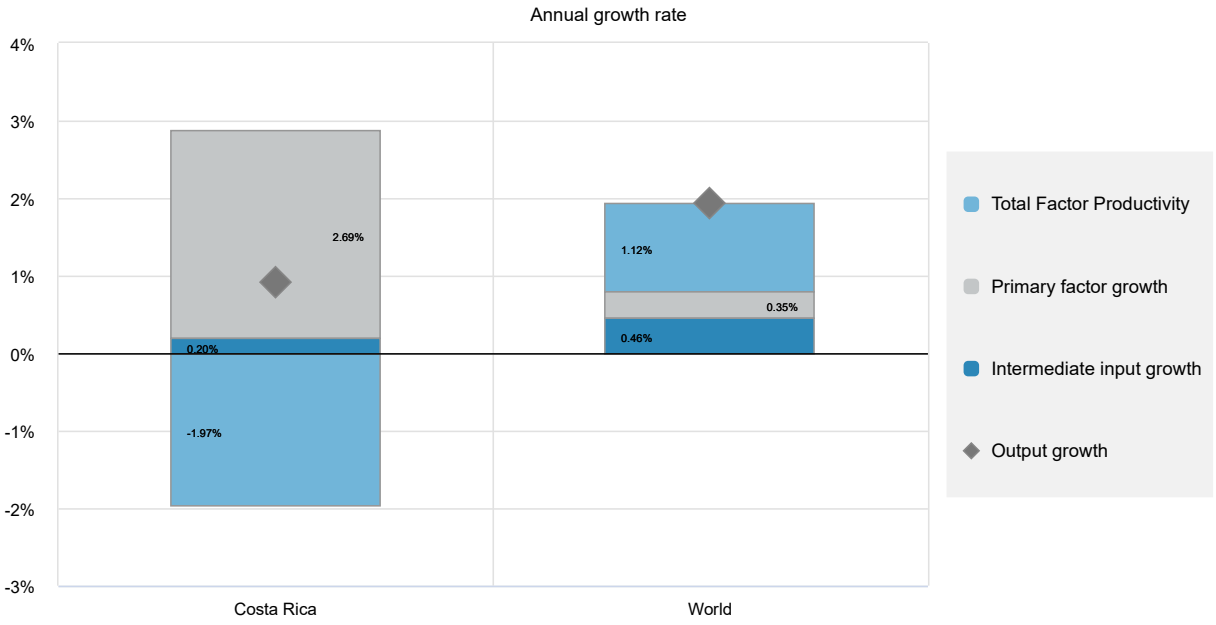
Figure 11.6. Costa Rica: Agro-food trade



Note: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Costa Rica's estimated Total Factor Productivity (TFP) decreased by 2% per year during 2011-20. The output growth of 1% p.a. between 2011 and 2020 resulted from the increasing use of primary factors and, to a lesser extent, variable inputs (Figure 11.7). Area expansion into less productive land, ongoing farm fragmentation and limited financial and physical infrastructure were among the key contributing factors to the TFP decline.

Figure 11.7. Costa Rica: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Agriculture is the main user of water resources. It accounts for almost two-thirds of total freshwater abstractions, a share that has doubled in the last two decades. The overall water stress indicator (intensity of freshwater resource use) increased[3] between 2000 and 2021, although it remains well below the OECD average. In the last two decades, there have been improvements in some agri-environmental indicators such as the nutrient balances and the sector's share in total energy use and GHG emissions (Table 11.4). However, the share of agricultural GHG emissions and the phosphorus balance are above the OECD average. Environmental regulations have led to an important increase in the country's forest cover, which is approaching 60% (World Bank, 2022[12]). As of 2022, 26% of the country's land area is protected (OECD, 2023[13]).

Table 11.4. Costa Rica: Productivity and environmental indicators

	Costa Rica		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	0.8%	-2.0%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	36.0	33.7	32.2	30.4
Phosphorus balance, kg/ha	12.1	9.9	3.3	3.0
Agriculture share of total energy use (%)	6.6	2.0	1.7	2.0
Agriculture share of GHG emissions (%)	29.2	20.5	8.6	10.5
Share of irrigated land in AA (%)	5.6	9.0	-	-
Share of agriculture in water abstractions (%)	32.5	66.2	46.6	49.7
Water stress indicator	0.1	2.8	8.3	7.4

Note: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Notes

[1] This grazing-management approach was proposed by French biochemist André Voisin in the 1950s. It comprises four principles: (1) allowing grass to recover between grazing intervals; (2) setting occupation periods short enough to keep cattle from grazing the same grass a second time; (3) allowing animals with the highest nutritional requirements to harvest large quantities of the best-possible quality grass; and (4) maximising milk yields by moving cows to a different paddock after a maximum of three days.

[2] MFN tariffs for imports into Costa Rica reflect the sum of an *ad valorem* duty (*Derecho Arancelario a la Importación* - DAI*) a*nd a 1% import tax (Law 6946). The reduction for paddy and milled rice applies to the DAI, which decreased to 3.5% and 4% respectively.

[3] The large variation between 2000 and 2020 is partly explained by the use of a more accurate data source (public water supply operators) starting in 2016. Nevertheless, total freshwater abstraction in Costa Rica grew at an average yearly rate of 3.5% between 2016 and 2021.

12 European Union

Support to agriculture

Policy reforms undertaken in the European Union (EU)[1] in the 1990s and early 2000s substantially reduced support to agriculture and shifted its composition to less production- and trade-distorting measures. EU support to producers as a share of gross farm receipts stabilised since 2010 and stood at 16% in 2020-22, close to the OECD average.

While trade-protection measures remain in effect for several sectors – including import and export licensing, Tariff Rate Quotas (TRQs), and special safeguards – market-distorting price transfers declined substantially over the last two decades. In 2020-22, Market Price Support (MPS) accounted for 16% of support to producers, down from 46% in 2000-02.

Most support to producers is budgetary, largely in the form of decoupled direct payments. On average, nearly half of budgetary support in 2020-22 was based on historical entitlements, while around 29% was based on current area or animal numbers requiring production, and 20% on input use. Moreover, 61% of payments to producers were contingent on mandatory environmental constraints, and an additional 12% came from voluntary agri-environmental schemes with conditions beyond mandatory requirements.

Expenditures for general services to the sector (General Service Support Estimate, GSSE) in 2020-22 averaged 12.9% of total support, or 2.8% of the value of agricultural production – a decrease compared to 2000-02 and below the OECD average. Expenditures on agricultural knowledge and innovation systems have increased over the past two decades and their share of GSSE rose from 42% in 2000-02 to 52% in 2020-22. Relative to the value of production, these expenditures remained at 1.5%, above the OECD average. The contribution of expenditures on marketing and promotion also rose, while the share of support for development and maintenance of infrastructure and public stockholding decreased over the same period.

Total support to the sector declined in relative terms over the past 20 years. In 2020-22, total support was estimated at 0.6% of Gross Domestic Product (GDP), compared to 1.0% in 2000-02.

Recent policy changes

The Common Agricultural Policy (CAP) 2023-27 entered into force in January 2023. The new CAP defines a new delivery model, with more flexible implementation by Member States compared to previous CAP reforms. The CAP 2023-27 is built around ten specific objectives, which form the basis for EU Member States to design their CAP Strategic Plans (CSPs). The CSP approval process was the focus of much agricultural policy activity in 2022. After bilateral consultations between the European Commission and each Member State, the 28 CSPs[2] were revised and formally approved between August and December 2022. CSPs include interventions under the two CAP pillars and are expected to devote 32% (close to EUR 98 billion or USD 103 billion) of total public CAP funding to deliver specific environmental benefits for climate, water, soil, air, biodiversity, and animal welfare.

EU policies in 2022 also focused on mitigating the impacts of rising food prices and input costs for farmers and consumers, accelerated by Russia's war of aggression against Ukraine. A raft of measures was implemented at the EU-level, including flexibilities under the CAP, exceptional market measures, direct support, and two successive temporary state-aid frameworks. In addition, EU Member States introduced their own measures, such as tax concessions, investment assistance, and allowances to consumers and farm households, to help farmers and agro-food businesses cope with the financial impacts. Finally, the European Commission and national governments, drawing on recent experiences with COVID-19 and the war in Ukraine, have undertaken a number of actions to strengthen the overall resilience of the agriculture and food sector against potential future crises. In addition, as a part of the solidarity response to Ukraine, the European Union implemented trade-facilitating measures, accounting for a significant share of Ukraine's cereal exports, with some implementation problems in some neighbouring Member States due to the increased trade volumes.

In 2022, the European Union concluded negotiations for a comprehensive and ambitious trade agreement with New Zealand and a modernised Association Agreement with Chile. They are the first two agreements to include a dedicated chapter on sustainable food systems.

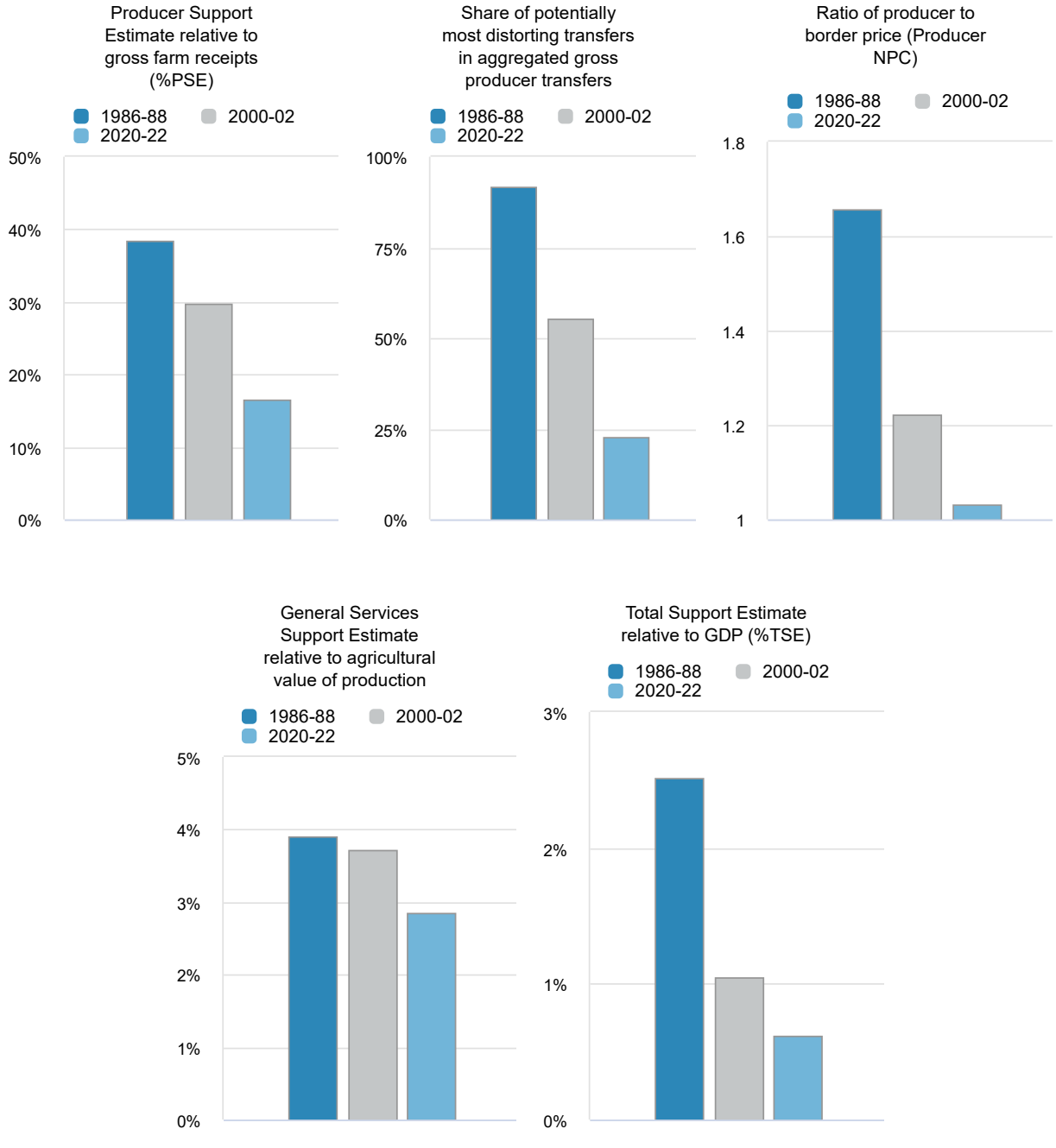
Assessment and recommendations

- Adoption of the EU Strategy on Adaptation in 2021 was a step towards improving knowledge of the impacts of climate change and adaptation solutions in the European Union. Unlike the policy framework for mitigation, there are no adaptation targets or requirements for Member States, which makes it difficult to monitor efforts. Synergies should be sought between the broader range of EU policies (i.e. flood-risk management policies) and agricultural policies. Adaptation measures in the European Union tend to focus on actions that directly benefit farm businesses (e.g. support for more efficient irrigation systems) and would benefit from actions towards wider preparedness and public benefits (e.g. land management practices that reduce flood risks).
- While CAP measures rarely make explicit reference to climate adaptation, several can contribute to agriculture's adaptation to climate change. CAP support's effectiveness in responding to adaptation challenges could be improved by prioritising measures that target knowledge transfer and preventive ecosystem restoration actions, responding to the challenges identified in the EU Strategy on Adaptation.
- Efforts have been made to improve fairness and to better distribute direct payments to farmers. However, they do not target low-income farm households and are not always the most efficient tool to achieve productivity and socio-economic objectives. Income support objectives should be met with more targeted payments to low-income farm households, not only to be more effective, but also to free up more funds for voluntary payments for environmental services, and for investment in innovation and resilience.
- Several environmental conditions are attached to direct payments with the objective of ensuring that EU farmers adopt sustainable agricultural practices. However, certain aspects of their design and implementation, such as weaknesses in monitoring and the use of many exemptions, limit the effectiveness of these mechanisms in promoting public goods or reducing environmental externalities. Efforts should be made to improve the targeting of measures aimed at environmental sustainability. Voluntary schemes should be transformed into multi-annual, results-based payments for environmental services, to increase policy performance and offer farmers additional sources of revenue.
- Despite substantial progress on policy reforms, potentially most-distorting forms of support still represent nearly a quarter of support to producers. While the CAP 2023-27 includes promising new approaches and priorities, meeting the ambitious objectives of the European Green Deal will

require further reforms, including phasing out remaining market price support and payments with strong potential to harm the environment and to distort markets and trade.

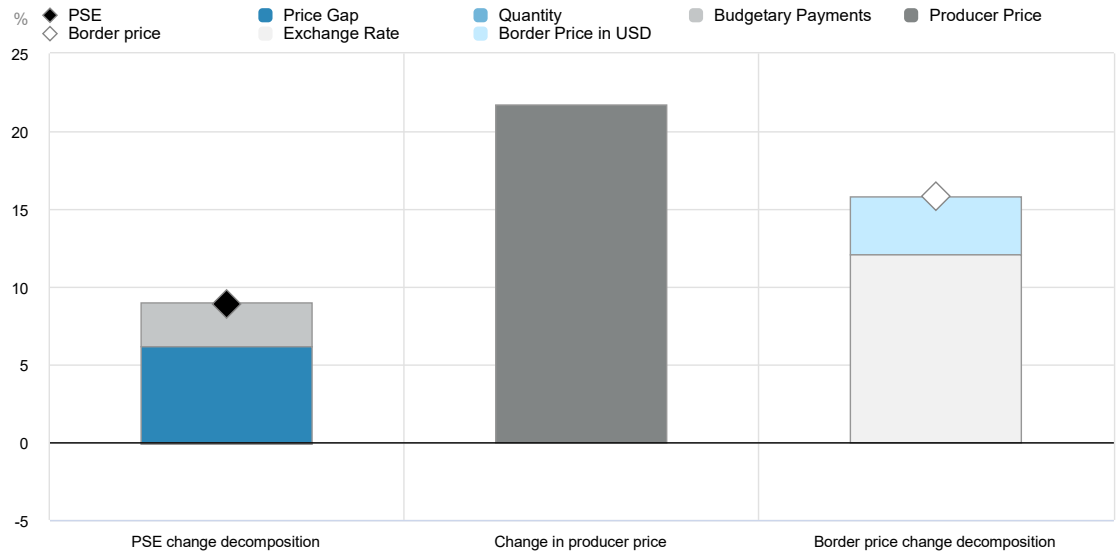
- Agriculture productivity growth remains moderate, and innovation represents a low share of CAP expenditure, though some developments point to growing emphasis on innovation and knowledge exchange. The creation of new European Partnerships relevant to farming and food systems under Horizon Europe, and the inclusion of specific sections on Agricultural Knowledge and Innovation Systems (AKIS) in all the CSPs under the CAP 2023-27 are positive steps. Nevertheless, the sector could benefit from increasing the share of support to innovation in the agricultural policy mix, and from steering agricultural innovation efforts towards environmental sustainability.
- The European Union and its Member States acted quickly to reduce the economic impact of the war in Ukraine on the EU agro-food sector. Most support was provided in the form of direct payments to farmers to absorb the shock, but there are also examples of actions adopted to strengthen the long-term resilience of EU food supply chains. These include ongoing mapping of risks and vulnerabilities, undertaken by the European Food Security Crisis Preparedness and Response Mechanism (EFSCM), and on-farm investment support provided by EU Member States to reduce the dependence of agricultural businesses on inputs such as energy and fertilisers. While Russia's war of aggression against Ukraine has elevated food-security issues to the top of the political agenda, the European Union should ensure that derogations from environmental rules do not become a permanent solution and do not hamper environmental objectives.
- Recent crises highlight the need to monitor Member States' supply chains and markets, and co-ordinate long-term actions. Policy packages should be balanced, considering the EU's broader food-system objectives, and far-sighted, beyond relief measures, creating incentives for agro-food business to adapt and transform, and consequently improve resilience against future shocks.

Figure 12.1. European Union: Development of support to agriculture



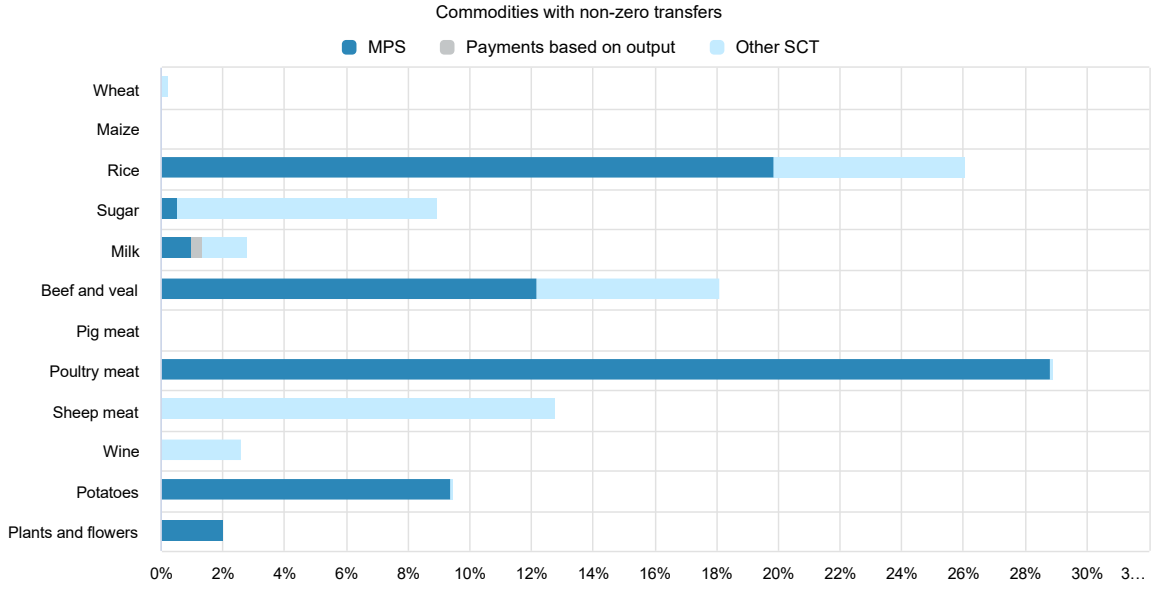
Note: European Economic Community (EEC) with 12 members for 1986-88, EU15 for 2000-02, EU28 for 2018-19, EU27 and the United Kingdom for 2020 and EU27 from 2021.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 12.2. European Union: Drivers of the change in PSE, 2021 to 2022



Note: EU27. % change of nominal Producer Support Estimate expressed in Euro.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 12.3. European Union: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Note: EU27.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Table 12.1. European Union: Estimates of support to agriculture

Million USD

	1986-88	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**233 558**	**225 093**	**482 391**	**452 748**	**481 338**	**513 086**
***of which:** share of MPS commodities (%)*	74.95	73.34	73.85	72.98	72.98	75.58
Total value of consumption (at farm gate)	**212 900**	**226 789**	**477 225**	**445 464**	**464 490**	**521 721**
Producer Support Estimate (PSE)	**95 385**	**79 781**	**92 669**	**97 971**	**91 467**	**88 567**
Support based on commodity output	86 308	40 997	14 671	16 738	11 815	15 458
Market Price Support[1]	80 672	37 067	14 405	16 434	11 552	15 230
Positive Market Price Support	81 784	37 067	14 405	16 434	11 552	15 230
Negative Market Price Support	-1 112	0	0	0	0	0
Payments based on output	5 637	3 930	265	305	263	228
Payments based on input use	5 056	6 833	15 264	15 318	15 581	14 894
Based on variable input use	960	3 047	6 353	6 767	6 392	5 901
with input constraints	0	0	45	38	53	43
Based on fixed capital formation	2 986	2 259	6 146	5 833	6 285	6 321
with input constraints	0	94	121	68	162	135
Based on on-farm services	1 109	1 527	2 765	2 718	2 904	2 671
with input constraints	90	274	8	10	14	1
Payments based on current A/An/R/I, production required	3 587	31 196	22 963	23 490	23 384	22 013
Based on Receipts / Income	147	99	1 599	1 403	1 977	1 418
Based on Area planted / Animal numbers	3 440	31 097	21 363	22 087	21 407	20 595
with input constraints	940	13 953	19 165	19 900	19 696	17 900
Payments based on non-current A/An/R/I, production required	0	0	9	7	12	8
Payments based on non-current A/An/R/I, production not required	0	10	38 312	41 108	39 022	34 807
With variable payment rates	0	0	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
With fixed payment rates	0	10	38 312	41 108	39 022	34 807
with commodity exceptions	0	0	0	0	0	0
Payments based on non-commodity criteria	478	1 078	1 200	1 040	1 367	1 193
Based on long-term resource retirement	476	846	303	145	440	324
Based on a specific non-commodity output	2	176	804	798	827	786
Based on other non-commodity criteria	0	57	93	97	99	83
Miscellaneous payments	-43	-334	250	271	286	194
Percentage PSE (%)	**38.43**	**29.77**	**16.49**	**18.34**	**16.30**	**15.10**
Producer NPC (coeff.)	**1.66**	**1.22**	**1.03**	**1.04**	**1.03**	**1.03**
Producer NAC (coeff.)	**1.62**	**1.42**	**1.20**	**1.22**	**1.19**	**1.18**
General Services Support Estimate (GSSE)	**9 144**	**8 355**	**13 814**	**14 603**	**14 559**	**12 281**
Agricultural knowledge and innovation system	1 814	3 492	7 176	6 791	7 802	6 935
Inspection and control	194	281	1 251	1 303	1 246	1 202
Development and maintenance of infrastructure	1 331	2 222	2 075	2 082	2 317	1 825
Marketing and promotion	1 210	996	3 261	4 368	3 149	2 265
Cost of public stockholding	4 571	1 294	32	42	22	33
Miscellaneous	24	69	20	16	22	21
Percentage GSSE (% of TSE)	**8.31**	**9.12**	**12.89**	**12.91**	**13.68**	**12.14**
Consumer Support Estimate (CSE)	**-69 408**	**-33 000**	**-13 633**	**-14 519**	**-11 271**	**-15 109**
Transfers to producers from consumers	-80 268	-36 084	-13 624	-14 886	-11 112	-14 876
Other transfers from consumers	-1 699	-717	-435	-128	-598	-581
Transfers to consumers from taxpayers	4 992	3 537	427	495	438	348
Excess feed cost	7 567	264	0	0	0	0
Percentage CSE (%)	**-33.38**	**-14.75**	**-2.87**	**-3.26**	**-2.43**	**-2.90**
Consumer NPC (coeff.)	**1.63**	**1.19**	**1.03**	**1.03**	**1.03**	**1.03**
Consumer NAC (coeff.)	**1.50**	**1.17**	**1.03**	**1.03**	**1.02**	**1.03**
Total Support Estimate (TSE)	**109 521**	**91 672**	**106 910**	**113 069**	**106 465**	**101 196**
Transfers from consumers	81 967	36 801	14 060	15 014	11 709	15 457
Transfers from taxpayers	29 253	55 589	93 285	98 183	95 353	86 320
Budget revenues	-1 699	-717	-435	-128	-598	-581
Percentage TSE (% of GDP)	**2.51**	**1.04**	**0.62**	**0.63**	**0.62**	**0.62**
Total Budgetary Support Estimate (TBSE)	**28 849**	**54 606**	**92 504**	**96 635**	**94 912**	**85 966**
Percentage TBSE (% of GDP)	**0.66**	**0.62**	**0.54**	**0.54**	**0.55**	**0.52**
GDP deflator (1986-88=100)	**100**	**152**	**204**	**201**	**207**	**..**
Exchange rate (national currency per USD)	**0.91**	**1.09**	**0.89**	**0.88**	**0.85**	**0.95**

.. Not available

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
European Economic Community (EEC) with 12 members for 1986-88; EU15 for 2000-02; EU27 and the United Kingdom for 2020; and EU27 from 2021.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for the European Union are: wheat, maize, barley, oats, rice, rapeseed, sunflower, soybean, sugar, milk, beef and veal, sheep meat, pig meat, poultry, eggs, potatoes, tomatoes, plants and flowers, and wine.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

In the European Union the policy setting affecting the agricultural sector is mainly driven by an overarching framework established at EU level, which allows for policy space at Member State level. Whereas the first two sections on Overview of policy trends and Main policy instruments focus solely on policies at EU level, the following sections on Climate change adaptation policies in agriculture and Domestic policy developments discuss both EU and Member State level.

Overview of policy trends

The Common Agricultural Policy (CAP) has been the European Union's agricultural policy framework since its institution in 1962, although the mix of policy instruments has evolved substantially over time (Table 12.2). The Treaty of Rome that established in 1957 the European Economic Community defined common policies on agriculture and trade (OECD, 2011[1]; European Parliament, 2021[2]). Agriculture made up a much larger share of Europe's economy at the time, and the income gap between urban and rural households was increasing. Moreover, the region was a net food importer with concerns about securing adequate food supplies during the Cold War (Grant, 2020[3]). In this context, the Treaty of Rome laid down five main objectives for the CAP:

1. To increase agricultural productivity by promoting technical progress and ensuring the optimum use of the factors of production, in particular labour
2. To ensure a fair standard of living for farmers
3. To stabilise markets
4. To assure the availability of supplies
5. To ensure reasonable prices for consumers

CAP measures targeting these objectives were financed from the European Agricultural Guidance and Guarantee Fund (EAGGF), split into separate Guidance and Guarantee sections. Different rules governed the two: the Guidance section financed operations related to structural policy and development of rural areas, while the Guarantee section funded expenditures on market and price policies (European Parliament, 2021[4]).

For more than three decades until the 1990s, support prices under the CAP were high compared to world market prices, with an unlimited buying guarantee. As a result, European farmers produced increasing surpluses and the cost of managing stocks and subsidising exports grew accordingly. In response, by the 1980s the European Union introduced quantitative production restrictions in the form of quotas on milk production.

The CAP's first major reform occurred in 1992, in conjunction with negotiations on the General Agreement on Tariffs and Trade (GATT) and following the result from the US-EU soya GATT panel. The **MacSharry Reform** brought a major shift in the delivery of the CAP. Instead of supporting production (through market intervention and export subsidies), the regime shifted the bulk of support to supporting producer incomes directly through area and headage payments, aiming to close the gap between supply and demand and reduce overall expenditures (European Parliament, 2021[5]). This wide-ranging reform reduced cereal intervention prices, introduced compensatory payments per hectare for cereals or per head for livestock, and introduced a mandatory set-aside scheme to take land out of production. In conjunction with the reform of budgetary support measures through the MacSharry package, market price support (MPS) also declined thanks to EU commitments under the 1995 Uruguay Round Agreement on Agriculture. Namely, bound tariffs were gradually reduced, and variable import levies were replaced with *ad valorem* or specific tariffs and tariff rate quotas (OECD, 2011[1]).

Subsequent reforms built on the foundation of the MacSharry Reform, reducing distortive support to the agricultural sector or changing how support is delivered. The **Agenda 2000** reform focused on aligning EU and world prices, offsetting the reduction of price support with increased direct aid to producers under the now called Pillar 1 (European Parliament, 2021[5]). In addition, the Rural Development Regulation was introduced as Pillar 2 of the CAP. Finally, this package instituted two types of environmental cross-compliance conditions: an optional measure linked to the direct payment in Pillar 1, and the so-called "Good Farming Practice" requirements for the agri-environmental schemes in Pillar 2.

The 2003 **Fischler Reform**[3] further developed and consolidated these measures, decoupling most support from production through the introduction of the single payment scheme (SPS) (European Parliament, 2021[5]). Furthermore, in this reform cross-compliance became obligatory and was extended to include not only environmental issues but also public, animal and plant health and animal welfare issues. Cross-compliance rules were enforced through a set of Statutory Management Requirements (SMR) and "Minimum Requirements for Good Agricultural and Environmental Condition" (GAEC). This package also introduced modulation, allowing Member States to transfer funds between the two pillars to reinforce rural development objectives. The reform also prioritised financial discipline, freezing the budget of Pillar 1 (covering the SPS and market measures) and imposing annual compulsory ceilings. This coincided with the splitting of the CAP budget into the European Agricultural Guarantee Fund (EAGF) to finance Pillar 1 and the European Agricultural Fund for Rural Development (EAFRD) to finance Pillar 2 from 2007. Additionally, this round of reform introduced the single common market organisation (CMO) in 2007, which codified the regulation mechanisms of the existing CMOs. Reform programmes for specific commodities (cotton, hops, olive oil, tobacco, sugar, fruits and vegetables, and wine) were introduced from 2003 to 2008, with the aim of reducing distortive payments, restoring market-based incentives and aligning them with the SPS (OECD, 2011[1]). Through the different rounds of CAP reform, as result of budgetary payments replacing MPS, but also as result of the additional Member States joining the European Union, the absolute budget figure for the CAP more than doubled from 1990 to 2010.

Measures taken under the 2009 **Health Check** sought to continue the direction of the 2003 reform. Namely, decoupling of aid continued and nearly all payments (with the exception of suckler cow, sheep and goat premia) were included into the decoupled direct payments scheme - SPS. It also further reduced market intervention for a number of products, abolished set-aside and introduced phase-out of milk quotas. Additional flexibility for direct payments was introduced as well (OECD, 2011[1]). The Health Check also resulted in changes to both SMR and GAEC of cross-compliance, with the addition of two water management standards.

The **2013 Reform** set out a more global, integrated approach to agricultural support for the programming period 2014-20, undertaken through four lines of action (European Parliament, 2021[5]):

1. Converting decoupled aid into a multifunctional support system with aid directed toward specific objectives. Accordingly, the SPS was replaced by a system of multi-purpose payments with seven components: (1) a basic payment; (2) a greening payment for environmental public goods; (3) an additional payment for young farmers; (4) a "redistributive" payment for first hectares of farmland; (5) support for areas with specific natural constraints; (6) aid coupled to production; and (7) a simplified system for small farmers. Direct payments were still subject to cross-compliance rules, which were confirmed and simplified.
2. Consolidating the two CAP pillars, with mostly decoupled direct aid and market measures funded through Pillar 1, and rural development funded through Pillar 2, which continued to be co-financed by the Member States.
3. Consolidating CMO tools into safety nets in case of market disruption or price crisis, and ending other supply control measures, namely the sugar and milk quotas.
4. A more integrated, targeted and territorial approach to Pillar 2 through rural development plans, simplifying the range of available instruments to focus on certain core objectives.

During the negotiations of the new CAP post 2020, a political agreement between the European Parliament and the EU Member States in the Council was reached on **transitional rules for the CAP for 2021-22** on 27 November 2020. These transitional rules were based on the principle of continuity of the 2014-20 CAP rules, while also including new elements to ensure a smooth transition.

In January 2023, the European Commission and the European Union Member countries began to implement the new **CAP 2023-27**. Although with a similar annual budget as the transitional period, the new CAP entails a new delivery model (NDM), in which Member States play a critical role in designing and implementing their CAP Strategic Plans (CSPs), which include both Pillar 1 and Pillar 2 measures (the NDM and CSPs are covered later in the chapter).

While CAP budget has remained relatively stable in nominal terms since 2010, CAP expenditures as a share of the total EU budget declined sharply, from 65.5% in 1980 to 33.1% in 2021 (EP, 2022[6]).

Table 12.2. European Union: Agricultural policy trends

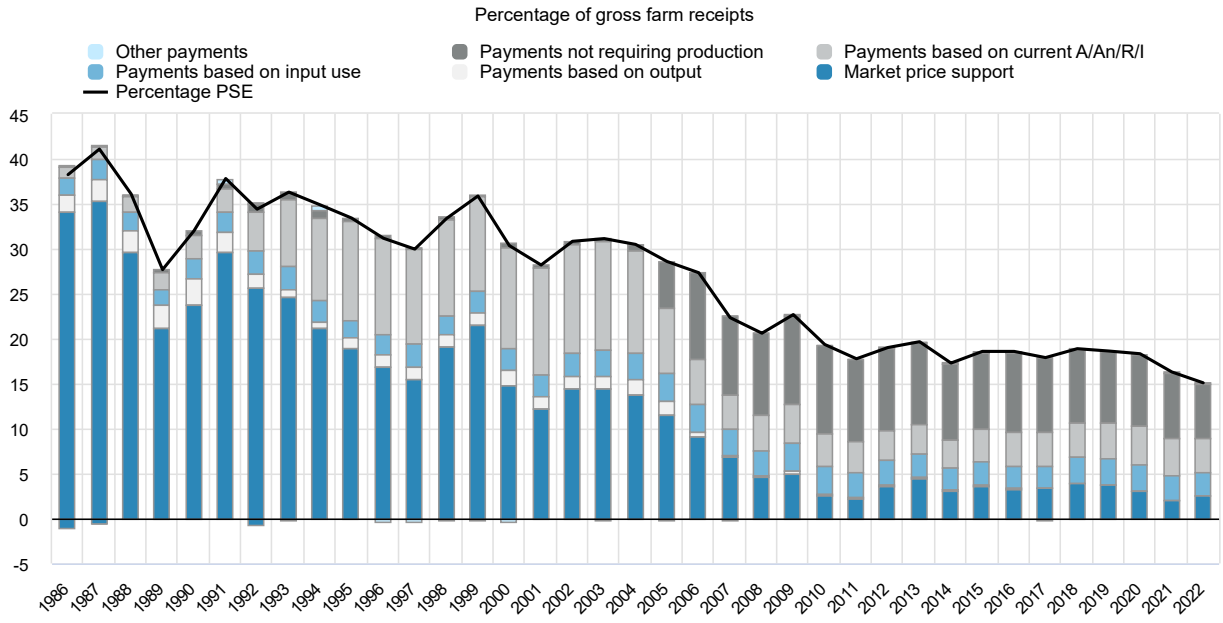
Years	Main Milestones	Key Policy Features
pre-1992	**Coupled support phase**: CAP financed by the European Agricultural Guidance and Guarantee Fund (EAGGF), European Economic Community with 12 members[1]	Support prices greater than world prices Unlimited buying guarantee Production quotas for certain products, including dairy and sugar
1992-1999	**MacSharry Reform**: CAP, EU Expansion 1995 (Austria, Finland, Sweden), Uruguay Round Agreement on Agriculture	Shift from product support through prices to producer support through income-supporting measures, with the reduction in intervention prices compensated by increased direct aid per hectare or livestock headage payments Establishment of set-aside payments to encourage land retirement Tariffication of border measures and gradual reductions in bound tariffs
2000-2002	**Agenda 2000 CAP Reform**: CAP divided into Pillar 1 and Pillar 2 (Rural Development)	Further reduction of EU market support prices in closer alignment with world prices, partly offset by direct aid to producers in the form of increased area or headage payments First introduction of environmental cross-compliance Introduction of Rural Development Regulation as a second pillar of the CAP
2003-2008	**Fischler Reform**: CAP Pillars 1 (financed by EAGF) and 2 (financed by the European Agricultural Fund for Rural Development EAFRD), EU Expansion 2004 (Malta, Cyprus, Estonia, Latvia, Lithuania, Poland, Czech Republic, the Slovak Republic, Slovenia, Hungary) and 2007 (Bulgaria and Romania)	Decoupling much of CAP support from volume of production, with fixed single farm payment (SPS) introduced based on historical references Cross-compliance for environmental and public health objectives compulsory for receiving full payments. Introduction of Statutory Management Requirements (SMR) and 'Minimum Requirements for Good Agricultural and Environmental Condition' (GAEC) Single common market organisation (CMO) introduced Reform programmes initiated for cotton, hops, olive oil, tobacco, sugar, fruit and vegetable and wine regimes
2009-2013	**Health Check**: CAP Pillars 1 and 2	Further reduction of EU market intervention for certain products Phasing out of milk quotas initiated Abolition of set-aside Integration of nearly all payments into SPS New cross-compliance requirements introduced
2013-2020	**2013 Reform**: CAP Pillars 1 and 2, EU Expansion 2013 (Croatia) and Contraction 2020 (United Kingdom)	Decoupled aid converted to multifunctional support (including basic payment, greening payment, small farmer payment, etc.) Consolidation of two pillars of CAP, with direct payments and market measures under Pillar 1 Consolidation of CMO tools, abolition of supply control measures (including ending milk and sugar quota schemes) External and internal convergence, with payment envelopes gradually adjusted to move toward a uniform minimum per hectare payment

Years	Main Milestones	Key Policy Features
2021-2022	**Transitional rules**	Continuity of the 2014-2020 CAP rules, while also including new elements to ensure a smooth transition
2023-2027	**CAP 2023-27** Introduction of new delivery model and CAP Strategic Plans	The new delivery model requires Member States to programme both CAP Pillar 1 and Pillar 2 expenditures within the context of their CAP Strategic Plans. New cross-compliance requirements (enhanced conditionality) and eco-schemes were introduced.

1. When the Maastricht Treaty establishing the EU was signed in 1992: Belgium, Denmark, France, Germany, Ireland, Italy, Greece, Luxembourg, the Netherlands, Portugal, Spain and the United Kingdom were part of the Union.
Source: European Parliament (2021[5]) and OECD (2011[1]).

Total support to the agricultural sector as percentage of agricultural gross value-added in the European Union largely comes from budgetary allocations. Market price support declined significantly from 1986 through the 2000s but has remained mostly unchanged since around 2010. The most substantial change to PSE composition began in the mid-2000s after the Fischler reform decoupled most payments to farmers from production (Figure 12.1, Figure 12.4).

Figure 12.4. European Union: Level and PSE composition by support categories, 1986 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
European Union refers to EEC12 for 1986-94, EU15 for 1995-2003, EU25 for 2004-06, EU27 for 2007-13, EU28 for 2014-19, EU27 and the United Kingdom for 2020, and EU27 from 2021.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

The **Common Agricultural Policy** (CAP) is the agricultural policy framework of the European Union. The new CAP 2023-27 entered into force on 1 January 2023.[4] In addition to the CAP, Member States may implement measures funded from national or sub-national budgets that target specific agricultural sectors or objectives. These measures must comply with the European Union's state aid rules and not distort competition within the common market (OECD, 2017[7]).

The CAP is currently organised in two pillars: the European Agricultural Guarantee Fund finances Pillar 1, and the European Agricultural Fund for Rural Development and EU Member States jointly co-finance[5] rural development measures under Pillar 2. Member States deployed Rural Development Plans (RDPs) for Pillar 2 over the seven-year CAP period 2014-20.

Usually, each CAP reform covers a seven-year period coinciding with the EU multi-annual financial framework. Programming for CAP 2014-20 ended in 2020. However, as for the 2021-27 programming period, the CAP 2014-20 structure remained in place also for 2021-22 under transitional rules while negotiations for the new CAP were concluded. This period will be referred to here and the support estimates reported as CAP 2014-22. CAP 2023-27 will refer to the support estimates from 2023.

The overall budget for the CAP during the years 2014-20 was EUR 408 billion (USD 465 billion), 76% of which was initially allocated to Pillar 1 (covering market related expenditure and direct payments), and the remaining 24% to Pillar 2 (rural development spending, including agri-environmental payments). The CAP 2014-20 allowed Member States to transfer up to 15% of each envelope[6] between the two pillars and the transitional rules made available this option also for the years 2021 and 2022. Over the whole 2014-22 period, fifteen countries transferred amounts between the two pillars and net transfers from the first pillar to the second stood at some EUR 4 billion (USD 4.6 billion) (EP, 2022[8]).

Pillar 1 defines and funds **market measures** under the common market organisation, as well as **direct payments** that may or may not be connected to specific commodities but whose recipients must be active farmers. **Rural development policy** is supported by **Pillar 2**. Contrary to Pillar 1, which is entirely financed by the European Union, Pillar 2 programmes are co-financed by the Member States.

Direct payments make up the bulk of CAP spending: in 2022, they accounted for two-thirds of the CAP expenditures (Table 12.3). These payments are largely decoupled from production as they are based on farm area, and do not depend on current production decisions. They represent an important part of farm income (OECD, 2023[9]).

Table 12.3. EU expenditure on agriculture by source and use, 2022

		Share in CAP expenditure
Pillar 1	Direct Payments	67.0%
Pillar 1	Interventions in agricultural markets CMO	5.7%
Pillar 2	Rural Development – EU funding	27.2%
Pillar 1 and 2	Administrative expenditure	0.01%

Note: Estimated funding. Numbers may not add up to 100 due to rounding.
Source: OECD calculations based on European Commission, EUR-Lex budget 2023.

Direct payments under Pillar 1

The Basic Payment Scheme (**BPS**) and the Single Area Payment Scheme (**SAPS**) made up 50% of the EU Pillar 1 direct payments envelope in 2022 (Table 12.4).[7] The proportion spent by Member States on these two schemes varies significantly and reflects their spending choices on optional measures under Pillar 1.

Table 12.4. Direct payments budget under Pillar 1, 2022

	Budget (EUR million)	Share in direct payments	Share in decoupled direct payments
Direct payments; of which:	37 126	100.0%	
Decoupled direct payments; of which:	31 761	85.5%	*100.0%*
Basic Payment Scheme (BPS)	*14 192*	*38.2%*	*44.7%*
Single Area Payment Scheme (SAPS)	*4 495*	*12.1%*	*14.2%*
Greening	*10 931*	*29.4%*	*34.4%*
Redistributive payment	*1 661*	*4.5%*	*5.2%*
Young farmers	*477*	*1.3%*	*1.5%*
Areas with Natural Constraints	*5*	*0.01%*	*0.02%*
Voluntary Coupled Support	4 088	11.0%	
Small Farmers Scheme	595	1.6%	
POSEI	444	1.2%	
Other	246	0.7%	

Note: The 2023 EU fiscal year (November to October) is attributed to year 2022 in the PSE system. Numbers may not add up to 100 due to rounding.
Source: OECD calculations based on European Commission, EUR-Lex budget 2023.

In the ten Member States that apply the SAPS, **Transitional National Aid** (TNA) may be granted from national budgets up to 50% of the level of SAPS. TNA is mostly disbursed as decoupled payments even if limited commodity specificity is allowed. In claim year 2020 (the most recent year for which these data are available), the TNA was paid in all SAPS Member States except for Latvia, with 15% of this amount paid as coupled support (EC, 2022[10]). It may apply on a per area basis to arable land, hops and starch potatoes; a volume basis to milk; and a headage basis to livestock. Member States may review TNA budgets and supported commodities on an annual basis.

Both the BPS and the SAPS required **cross-compliance** with environmental and other standards, though exceptions apply. In the CAP 2014-22 cross-compliance requirement were set out in 13 SMRs and 7 GAEC standards.[8] Non-compliance with these standards and requirements could lead to a reduction in CAP payments to the farmer. Additional environmental conditions were attached to the per-hectare **greening payment**, that accounted for 29% of the Pillar 1 direct payments budget. Both cross-compliance and greening leave many details of design and implementation to the discretion of individual EU Member States (OECD, 2023[9]).

Ten Member States or regions have chosen to grant higher payments to the first hectares[9] under the so-called **redistributive payment**, using 4.5% of the European Union's direct payments envelope.

Under the so-called "**degressivity**", Member States had to reduce by at least 5% BPS payments to individual farms which exceeded EUR 150 000 (USD 170 932). These funds were transferred to Pillar 2 and used to fund the Member State's RDPs. In 2021, twenty-one Member States[10] applied the reduction of payments: thirteen Member States[11] applied the minimum reduction, and eight[12] chose to cap the BPS at levels varying from EUR 150 000 (USD 170 932) to EUR 300 000 (USD 341 864). Ten Member States[13] also used the option to increase the amount exempt from the 5% reduction by the value of salaries paid. Despite all these corrective measures, in some Member States a high share of direct payments still goes to larger farms with higher than average levels of income per farm (OECD, 2023[9]).

A top-up **payment to young farmers** (under 40 years old) in addition to the BPS and SAPS applied in all Member States. In 2022, this payment accounted for 1.3% of the European Union's direct payments envelope, as reported in the general budget. Member States chose to implement this measure in different ways. Some offered recipients a flat payment rate on a limited number of hectares, while others applied a payment proportional to the BPS or SAPS received. In addition to this compulsory young farmer scheme,

25 Member States chose to attribute a portion of their rural development envelopes to support young farmers, representing 4.5% of total planned rural development expenditures (ENRD, 2016[11]). The bulk of this spending was directed toward business development and investments.

Denmark and Slovenia implemented the Pillar 1 direct payment to **Areas with Natural Constraints** (ANC). Under this payment, ANC were defined based on eight biophysical criteria.[14] Denmark used 0.3% and Slovenia 1.6% of their national direct payments envelope for ANC payments (EC, 2021[12]). A payment targeted to areas with natural or other specific constraints can also be budgeted under the RDP. It is implemented in 25 Member States and accounts for 23% of Pillar 2 public expenditure funds (including Member States' contributions from national budgets) in 2022.

In the CAP 2014-22, Member States could choose to allocate part of their direct payments envelope to commodity-specific payments within defined ceilings (up to 13%) and under defined conditions. This **voluntary coupled support** (VCS) could be granted to create an incentive to maintain current levels of production in the sectors or regions concerned, with the objective of safeguarding specific types of farming or specific agricultural sectors that are particularly important for economic, social or environmental reasons. Choices of Member States on take-up of the VCS varied greatly, both in terms of the level of support and the commodities supported. All except Germany choose to offer some VCS, using 11% of the EU direct payments budget in 2022.

Fifteen Member States chose to offer the **Small Farmers Scheme** that waived requirements attached to the greening payment and cross-compliance.[15] The payment could not exceed EUR 1 250 (USD 1 424) per farm and depending on the method chosen by the Member State the overall envelope was limited to 10% of national direct payments.[16]

The **POSEI scheme** (*Programmes d'Options Spécifiques à l'Eloignement et à l'Insularité*) supports farming in the European Union's outermost regions by using production-related payments. The scheme supports access to food, feed and inputs for local communities as well as the development of local agricultural production. It represented 1% of the direct payments envelope in 2022.

Market measures under Pillar 1

Pillar 1 also funds **market support measures**, representing 5.6% of the overall agriculture and rural development budget in 2022 (Table 12.3). These cover mainly the fruit and vegetables and wine sectors, while other market-related expenditures include the POSEI and Smaller Aegan Islands (excluding direct payments), promotion of agricultural products, apiculture and school schemes.

Part of the Pillar 1 budget is held back each year as a **crisis reserve** in case of emergency. If unused, the envelope reverts for distribution as Pillar 1 direct payments in the same year. This emergency fund was activated for the first time in 2022 to fund EUR 350 million of the EUR 500 million (USD 368 million of the USD 526 million) package to support agricultural producers in sectors affected by market disturbance due to the war in Ukraine (see section on Domestic policy responses to Russia's war of aggression in Ukraine).

Fruits and vegetables are supported through market intervention measures implemented through producer organisations. There is also an entry price system (minimum import price) for some products and *ad valorem* duties, but no export subsidies. Member States can provide co-financed support to the fruit and vegetables sector, and the olive oil and table olives sectors. This funds a wide range of actions from production planning, quality measures, market withdrawal and harvest insurance to training, promotion and communication. Some of these measures apply at farm level while others are provided to producer organisations or the sector at large. For olive oil and flax fibre private storage may be activated as an optional scheme. In the CAP 2014-22, recognition of producer and inter-branch organisations expanded beyond fruits and vegetables. Compensation may be greater when producers claim support via producer groups, as was the case with compensation payments related to Russia's embargo on imports.

The “School Schemes” programme promotes consumption of fruits and vegetables by school children. It covers consumption of fresh and processed fruits and vegetables and banana products. The budget for this was EUR 175 million (USD 184 million) in 2022.

In the dairy sector, intervention prices are used for butter and skimmed milk powder (SMP), while import tariffs are applicable to all milk and dairy products. Intervention purchases cannot exceed 50 000 tonnes for butter, and 109 000 tonnes for SMP, respectively representing 2% and 7% of production in 2021. Above those limits, purchase is made by tender. Intervention purchases were opened for both products as a response to sector shocks due to COVID-19, prior to which no intervention purchases had been made for butter since 2009, while the last intervention purchases for SMP prior to the pandemic had taken place in 2019.

Livestock production benefits from certain market supports. For the beef market, this is in the form of floor prices, tariffs and TRQ support.[17] Import protection is provided for pig meat. The market support regime for sheep meat comprises tariffs and TRQs, with most country-specific TRQs subject to a zero customs duty. TRQs also support the poultry and eggs markets.

During times of low market prices, the EU can provide support to private sector operators by paying for the cost of storage of their products for a determined period of time. Private storage may be activated as an optional scheme for butter, SMP, certain cheeses, beef, pig meat, sheep meat and goat meat. This opportunity was opened for butter, SMP, cheese, beef and sheep meat in 2020-21 in response to the COVID-19 emergency and for pig meat in 2022 in response to the war in Ukraine (see Domestic policy responses Russia’s war of aggression in Ukraine).

Since January 2016, new vine planting for wine is limited to 1% of the planted vine areas per year. The wine sector is also supported through promotional measures in both the European Union and third countries, restructuring and conversion of vineyards; compensation for green harvesting; setting up of mutual funds; investment in tangible and intangible capital; income insurance; development of new products, processes and technologies; and distillation of by-products.

Rural development programmes under Pillar 2

The Rural Development fund EAFRD is part of the EU-level Common Strategic Framework covering all support from European Structural and Investment (ESI) funds in Member States through partnership agreements.[18] The EAFRD-financed **Pillar 2** of the CAP 2014-22 covers six priority areas implemented through national (or regional) rural development programmes (**RDPs)**. RDPs also supported projects using the **LEADER** approach (*Liaison Entre Actions de Développement de l’Économie Rurale*) based on a multi-sectoral approach and local partnerships to address specific local problems.

Table 12.5. Rural Development, total public expenditure by priority area (estimated 2022)

	Share in total public expenditure
Rural Development EU funding	68.4%
Rural Development national funding	31.6%
Priority 1: Fostering knowledge transfer and innovation	Allocated through other priorities
Priority 2: Enhancing competitiveness of all types of agriculture and the sustainable management of forests	21.2%
Priority 3: Promoting food chain organisation, including processing and marketing, and risk management	9.6%
Priority 4: Restoring, preserving and enhancing ecosystems	49.2%
Priority 5: Promoting resource efficiency and the transition to a low-carbon economy	4.9%
Priority 6: Promoting social inclusion, poverty reduction and economic development in rural areas	12.4%

Note: Measures M20 (Technical assistance), M113 (Early retirement) and M131 (Meeting standards based on Community legislation), which together accounted for 2.8% of total public expenditure on Rural Development in 2022, do not contribute directly to any of the six priorities listed in the table.
Source: OECD calculations based on European Commission, EUR-Lex budget 2023 (for EU funding) and EAFRD financial execution (for Rural Development and allocation to priorities). Total public expenditure comprises EU funding and Member States national funding of Rural Development.

Member States develop RDPs covering the entire CAP cycle based on a menu of 19 measures to meet the six priority areas of Pillar 2.[19] At the aggregate, nearly 60% of the RDP budget for the period 2014-22 was allocated to just three of these measures: Areas with Natural Constraints; Investments; and Agri-environment and Climate. Of these, "investments" was a top-three measure in terms of expenditure in most Member States. At least 30% of rural development funding from the EU budget must be spent on measures related to the environment and climate change adaptation (including forestry and investments in physical assets) and another 5% must be spent on the LEADER approach.

Knowledge and innovation

The Pillar 2 of the CAP and the Horizon Europe programme are the two main EU funding streams supporting knowledge and innovation in EU agriculture. However, the vast majority of allocated resources (over 90%) is earmarked by individual Member States from national budgets, including non-agricultural budget lines (OECD, 2023[9]).

There were three main measures in RDPs for 2014-22 that target agricultural innovation: knowledge transfer, advice, and co-operation. Uptake of these measures was slower and more limited than other rural development measures (OECD, 2023[9]). The share of knowledge- and innovation-related spending in total public expenditure on agricultural support measures under Pillar 2 was around 2% in recent years.

The agriculture-relevant aspects of Horizon Europe fall under Cluster 6 on “Food, Bioeconomy, Natural Resources, Agriculture and Environment”. This cluster is important for the European Green Deal, with regard to the “Farm to Fork” Strategy, as well as for climate, circular economy and zero-pollution objectives. With an estimated budget of EUR 9 billion (USD 10 billion) over the seven-year programming period, it offers funding to stimulate public and private investment in research and innovation and fosters multi-actor projects and partnerships across EU countries.

“EU Missions” are a new element of Horizon Europe. These are a portfolio of collective actions like research projects, policy measures or legislative initiatives. There are five Missions in different thematic areas, of which “A Soil Deal for Europe” will help the agricultural sector by developing concrete solutions for restoring soil functions.

The European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI) is the main EC policy tool bringing together CAP and Horizon funding for bottom-up multi-actor agricultural innovation projects. These projects tackle practical problems through a co-creation process involving farmers, researchers and other relevant actors.

Climate change mitigation policies

The European Climate Law codifies the goal set out in the European Green Deal for Europe's economy and society to become climate-neutral by 2050.[20] It also sets the intermediate target of reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. This package is part of the EU's revised nationally determined contributions (NDCs).[21] Although agriculture was not specifically mentioned in the European Climate Law, proposals on legislative tools to deliver on the targets include both agriculture and the land use, land use change and forestry (LULUCF) sectors.

Mitigation efforts for non-CO_2 GHGs emitted by all sectors outside the Emission Trading System (ETS), including transport, buildings, small industry outside the ETS, waste and agriculture sectors are covered under the 2018 EU's Effort Sharing Regulation, which was amended in April 2023. The new regulation[22] lays down obligations on Member States with respect to their minimum contributions for the period from 2021 to 2030 to fulfilling the Union's target of reducing its greenhouse gas emissions by 40% below 2005 levels. EU Member States now have emission reduction targets ranging from 10% to 50% compared to 2005 levels.

CO_2 emissions relating to forestry, wetlands, cropland and grassland management are addressed primarily under the European Union's LULUCF Regulation,[23] which establishes a legislative framework for accounting emissions and removals from the land-use sectors between 2021 and 2030. Under the current framework, Member States must ensure that accounted CO_2-eq emissions from the LULUCF sector are entirely compensated by an equivalent removal of CO_2-eq from the atmosphere through action in the LULUCF sector.

Climate change adaptation policies in agriculture

The policies in place to support climate-change adaptation in the EU agricultural sector is complex and involves interaction of the general EU policy framework with more specific programmes and adaptation measures implemented at various geographical scales (EEA, 2019[13]):

- The EU Policy Framework on adaptation sets objectives for action based on a range of strategies and policies, including the EU Strategy on Adaptation to Climate Change, the CAP, and EU laws, regulations, and directives (e.g. Climate Law, Water Framework Directive, Floods Directive).
- Programmes supporting adaptation include EU programmes such as LIFE+, Copernicus, INTERREG, and Horizon Europe; and national or regional programmes such as rural development programmes, River Basin Management Plans, and Natura 2000 plans. Such programmes provide a framework for action at farm level and can provide knowledge and/or financial support.
- The programmes supporting adaptation offer opportunities to introduce specific adaptation measures that can be implemented at national or regional level (e.g. farm advisory systems, irrigation infrastructure, flood prevention), and at farm level (e.g. risk management, early-warning systems, education, and awareness raising).

The sections below provide an overview of the EU's and Member States' main policies and programmes on climate-change adaptation in agriculture, including a selection of measures put in place by Member States since 2021 to adapt the agricultural sector to various climate pressures.

The EU policy framework and programmes

In the context of the European Green Deal, the European Climate Law (Article 5) states that the European Commission needs to adopt a Union strategy on adaptation to climate change in line with the Paris Agreement. In February 2021, the Commission adopted the Communication "Forging a climate-resilient Europe – the new EU Strategy on Adaptation to Climate Change" (EC, 2021[14]).

The new Strategy aims to improve knowledge of climate impacts and adaptation solutions, stepping up adaptation planning and climate risk assessments, accelerating adaptation action, and helping strengthen climate resilience globally. This strategy builds on the 2013 Climate Change Adaptation Strategy (EC, 2013[15]). Unlike the policy framework for mitigation, the European Union's adaptation strategy does not set binding targets or requirements for Member States.

The European Climate Adaptation Platform (Climate-ADAPT) is part of the EU adaptation strategy. It is a partnership between the European Commission and the European Environment Agency to gather more and better data on climate-related risks and losses, and help users access and share data and information on the impacts of climate change and on EU, national, and transnational adaptation strategies and actions (EC and EEA, 2023[16]).

The CAP is the main policy instrument to stimulate adaptation solutions and improve the resilience of EU agriculture to climate risks. Climate action (including adaptation) was a cross-cutting objective of the CAP 2014-22, and the European Commission deemed a quarter of CAP spending as contributing to climate mitigation and adaptation (European Commission, 2019[17]). However, the CAP contains no legally binding or concrete, quantified objectives for adaptation and few CAP measures make explicit reference to climate adaptation.

CAP 2014-22 aimed to encourage climate adaptation of agriculture through both Pillar 1 and Pillar 2 measures. In Pillar 1, this was through the implementation of green payments and cross-compliance, especially those that helped maintain diverse farming systems (e.g. crop diversification, introduction of Ecological Focus Areas, protection of permanent grassland and landscape features). For Pillar 2, support for knowledge transfer, preventive or restoration actions, agro-forestry, co-operation, and risk management could all aid adaptation.

The new CAP 2023-27 can contribute to climate-change adaptation through enhanced conditionality, eco-schemes and agri-environment-climate commitments (AECCs). New conditionality rules related to climate have been introduced, notably GAEC 2 requiring protection of wetland and peatland, while GAEC 7 requires more-ambitious crop rotations and GAEC 8 requires larger areas beneficial for biodiversity.

The CAP 2023-27 requires stronger efforts for environmental and climate-change mitigation and adaptation within the new Common Market Organisation aid schemes for the fruit and vegetables sector. This attributes 15% of expenditure on operational programmes to such actions, and 5% of expenditure to strengthen research, development, and innovation (EC, 2023[18]). Overall, the European Commission estimates that 40% of CAP spending between 2021 and 2027 will contribute to climate mitigation and adaptation.

Other EU environmental policies that stimulate adaptation action and contribute to disaster-risk reduction include the EU biodiversity strategy, the Water Framework Directive, and the Floods Directive (EEA, 2019[13]). These set EU-wide objectives for outcomes that can improve the resilience of agricultural landscapes. The LIFE Climate Action Sub-programme supports projects for renewable energy, energy efficiency, farming, land-use planning, and peatland management. The INTERREG Europe Programme helps local, regional, and national governments across Europe develop and deliver better policy. Moreover, one of Horizon Europe's missions for 2021-2027 focuses on supporting EU regions, cities, and local authorities in their efforts to build resilience against the impacts of climate change (EC, 2023[19]).

Adaptation measures in EU Member States

By the end of 2021, all EU Member States had issued a national adaptation strategy or plan, and all of them explicitly include agriculture as a priority sector. In addition, various Member States (e.g. Malta and Romania) mainstreamed climate change adaptation into national agricultural policies, and several Member States (e.g. Slovenia) developed specific adaptation strategies for the agricultural sector (EEA, 2019[13]).

In Finland, the cross-sectorial climate-change adaptation strategy was revised in 2022 and the Ministry of Agriculture and Forestry is responsible for co-ordinating the overall national adaption policy.

Most short-term measures help manage extreme climate events (drought and floods), and most countries adopted programmes to tackle drought events. *Croatia* established a EUR 13.3 million (USD 14 million) programme in December 2022 to mitigate drought damage for agricultural producers, which aimed to reach 20 000 farmers. Similarly, *Slovenia*'s Ministry of Agriculture activated several national measures for farmers affected by drought. In 2022, *Austria* finalised the National Water Management and Flood Risk Management Plans to be published every six years. As response to the flood events of 2021, *Germany* provided damage compensation, liquidity programmes and tax-relief measures, and suspended loan repayments by up to two years. In 2021, *Hungary* put in place an Agricultural Crisis Insurance Scheme to stabilise farm revenues and partially compensate farmers for the loss of revenue caused by extreme weather events affecting crop production. In the *Netherlands* farmers can be reimbursed for a maximum of 64% of weather-based insurance premiums, aiming to cover 4 400 participants by 2027.

Measures and programmes to support incremental changes in the medium- and long-term include measures for the green transition of agriculture, monitoring and decision-support tools, investments in infrastructure, and dedicated R&D investments, as described below.

Programmes in *Bulgaria* encourage crop rotation, especially with nitrogen-fixing crops to prevent soil erosion and support carbon sequestration. In *France*, several actions to facilitate the transition towards sustainable and climate-resilient agriculture were undertaken as part of the recovery plan after COVID-19. The plan will add 7 000 km of hedgerows to limit soil erosion, store carbon, and increase resilience against wind. In 2021, EUR 24.5 million (USD 29 million) was invested to plant 2 800 km of hedgerows. The Good Carbon Diagnostic measure is also used to support a portfolio of adaptation actions for farmers, including improved management of organic matter. *Portugal*'s National Plan for Recovery and Resilience provides resources for adaptation to climate change to increase water-efficiency management in agriculture.

Several Member States adopted early-warning systems and decision-support tools to reduce risks for farmers. *Estonia* launched the Big Data Project in 2022 to connect public and private datasets to digital decision-making tools that help agricultural producers adopt climate- and environmentally friendly measures and technologies. *Portugal*'s Climate Portal platform disseminates climate data, and the National Adaptation Roadmap Project 2100 analyses the impacts of climate change and assess investments for adaptation and the costs of inaction. *Romania*'s updated 2021-30 climate-change adaptation strategy includes a dedicated knowledge platform (RO-ADAPT) following the model of the EU Climate-ADAPT platform. A frost warning app introduced in *Greece* alerts farmers to upcoming frost events, while *Slovenia*'s online tool Sušomer monitors drought. In the *Czech Republic* an online anti-erosion calculator was launched to support decision-making regarding soil erosion.

Infrastructure investments include modernising existing irrigation networks in *Greece* and a fund in *Lithuania* for investment in no-till farming. In *Latvia*, the implementation of projects on the restoration of 109 km of drainage systems in agricultural land was completed in 2022. *Sweden*'s Local Nature Conservation Initiative grants support to different kinds of nature-based solutions for climate adaptation, including the construction of wetlands and the restoration of watercourses. Spain is investing in the modernisation of irrigation infrastructure using a combination of European and national funds to further implement its irrigation policy, with the objective of improving the efficiency and sustainability of water use and ensuring the good quantitative and qualitative status of water resources.

Targeted R&D can improve the resilience of the farming sector to climate change. Ongoing collaborative research projects in *Finland* support and monitor adaptation measures on farms. *Ireland* recently funded five research projects relevant to climate change adaptation in agriculture, focusing on wheat and barley genetic diversity, soil biodiversity, soil health and climate-smart soil management. *Slovenia* financed programmes for new plant varieties that are better-adapted to new climate conditions.

RDP measures supporting climate change adaptation

Implementation of adaptation measures is supported by national (or regional) rural-development programmes (RDPs). As of October 2022, *Croatia*'s RDP had financed 19 irrigation system projects covering an around 8 200 hectares, at a total value of around EUR 104.8 million (USD 110.2 million). RDP funding has been used in *Greece* for "active systems" investments to protect against frost, hail, and rain in vineyards and orchards (e.g. hail protection nets). In *Poland*, Pillar 2 is financing the management of rainwater in river catchments on agricultural land through the modernisation of existing water and hydro-technical facilities. *Portugal*'s RDP provided EUR 1.75 billion (USD 1.84 billion) for the adaptation of agriculture and forestry to climate change (54.5% of total funding to agriculture and forests). In the *Slovak Republic*, 13 RDP calls totalling EUR 363 million (USD 382 million) were launched during 2014-22 to support investment, resilience, and preventive actions against fires, natural disasters, and catastrophic events.

In the CAP 2023-27, Pillar 2 and sectoral interventions include measures to support investments that target environmental and climate-related objectives – both, "productive" investments (which also bring economic gain) and "non-productive" investments (which bring primarily environmental and climate-related benefits). Half of the investment interventions proposed in Member States' CSPs target environmental and climate-related objectives (EC, 2022[20]). Examples of "productive" green investment interventions include those in manure management, production of renewable energy (explicitly including biogas in the case of *Austria*, *Cyprus*, *Denmark*, *Finland*, *Greece*, *Italy*, *Latvia*, *Poland*, *Romania*, *Slovenia*, and *Spain*), and more-efficient irrigation. In several plans, the latter is the only intervention planned specifically for adaptation purposes. The 28 proposed CSPs included investments worth around EUR 3.4 billion (USD 3.6 billion), which will mostly support renewable energy for 2023-27. "Non-productive" examples include investments in establishing landscape features, restoring dry stone walls, restoring wetlands and peatlands, restoring habitats and landscapes, and establishing protection against large predators.

Overall, the 28 CSPs include 59 agri-environment management commitments from 21 Member States linked to climate-change adaptation (EC, 2023[18]). Almost 180 000 farms (around 2% of all EU farms) will receive support for investments contributing to climate-change mitigation and adaptation and to the production of renewable energy or biomaterials. CSPs will finance afforestation or agroforestry restoration on almost 623 000 hectares, and 25% of Natura 2000 areas will be covered by specific, additional, focused actions to protect habits and species. The share of EU-utilised agricultural area under additional action for climate adaptation (result indicator 12 of the CSP EU Regulation 2021/2115) totals 25% (EC, 2022[21]).

Domestic policy developments in 2022-23

Overall spending

The EU budget for agriculture and rural development in 2022 was EUR 55.4 billion (USD 58.3 billion), an increase of EUR 0.4 billion (USD 0.4 billion) compared to 2021. Total expenditure under Pillar 1 was EUR 40.3 billion (USD 42.4 billion) (76.8%), with EUR 15.1 billion (USD 15.9 billion) (23.2%) allocated under Pillar 2.

The 2023-2027 CAP Reform

The European Commission presented its proposal for the post 2020 CAP reform in 2018, aiming to modernise and simplify the European Union's policy on agriculture. Following extensive negotiations between the European Parliament, the Council of the European Union and the European Commission, agreement was reached, and the new CAP was formally adopted on 2 December 2021 (EC, 2021[22]).

The CAP 2023-27 entered into force in January 2023 and is built around ten specific objectives: to ensure a fair income for farmers; to increase competitiveness; to improve the position of farmers in the food chain;

climate change action; environmental care; to preserve landscapes and biodiversity; to support generational renewal; vibrant rural areas; to protect food and health quality; fostering knowledge and innovation.

Member States implemented the CAP 2023-27 with new CAP Strategic Plans[24] designed at national level (see Box 12.1). CSPs are expected to devote 32% (close to EUR 98 billion or USD 103 billion) of public CAP funding to specific environmental benefits for climate, water, soil, air, biodiversity, and animal welfare and to encourage practices that go beyond the conditionality. Twenty-four per cent of direct payments are dedicated to eco-schemes designed by each Member State and 48% of rural development spending from EU funds is earmarked for environment and climate.

CSP development started in 2020 with European Commission recommendations on specific issues to be addressed, including European Green Deal-related climate and environmental objectives and specific national values[25] for Farm to Fork (F2F) and Biodiversity strategy targets at national level (EC, 2020[23]). The European Commission provided observation letters commenting on each Member State's draft CSP. After bilateral consultations, CSPs were revised and formally approved in August 2022.

In September 2022, a Commission Implementing Regulation set out rules for the evaluation of the CSPs and their monitoring and evaluation (EP, 2022[24]). This regulation provides technical support for Member States and the relevant stakeholders and some common rules to ensure data availability for monitoring and evaluation. It includes standards of good agricultural and environmental conditions of land (GAEC), rules on Local Action Groups (LAGs) and data on European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI) operational groups.

The new CAP introduces the concept of social conditionality (i.e. farmer payments are linked to compliance with certain labour laws), while environmental sustainability is addressed through a new "green architecture". Greening payments were replaced by stricter environmental requirements in cross-compliance (enhanced conditionality), while eco-schemes were introduced to incentivise the adoption of specific farming practices with additional environmental benefits. Eco-schemes, as part of Pillar 1, are fully financed by the EU budget and the related payments are granted per hectare in two forms: either as compensation for additional costs incurred or income foregone, similar to the agri-environmental support schemes of Pillar 2, or as fixed top-up payments in addition to decoupled direct payments.

Member States can use eco-schemes to make their area-based rural development support more targeted in terms of area or issue addressed (EC, 2022[20]) and customise them to specific national environmental and climate needs. CSPs differ greatly in their level of environmental ambition and 158 eco-schemes have been developed across the 27 Member States (EC, 2023[18]). Among the 158 eco-schemes, 18% provide payments that go beyond the annual area-based decoupled payment,[26] while the remaining 82% provide payments intended to compensate the additional costs and income loss (and possible transaction costs) incurred by farmers due to these commitments. While most Member States designed several eco-schemes, each of which is relatively specific to a given objective, six countries (the *Czech Republic*, *France*, *Hungary*, *Ireland*, *the Netherlands* and the *Slovak Republic*) adopted only one multi-dimensional eco-scheme that includes a package of options. Two CSPs (the *Netherlands* and *Hungary*) put forward points-based eco-schemes, with a scoring or weighting of the different practices according to their expected positive environmental impact, and some countries (e.g. *Lithuania*, *Ireland* and *Portugal*) request farmers to adopt more than one eco-scheme or a minimum number of practices.

Box 12.1. The 28 CAP Strategic Plans

The new CAP entails a new delivery model in which Member States play a critical role in designing and implementing their CAP Strategic Plans (CSPs). Each CSP combines a wide range of targeted interventions, with the view of delivering tangible results in relation to EU-level objectives, while contributing to the ambitions of the European Green Deal (EC, 2019[25]). The Commission asked EU countries to determine specific national values for these European Green Deal targets and align their CSPs with them.

This programming approach applies to interventions under both pillars of the CAP and not only to rural development interventions as in the Rural Development Plans (RDPs) of the CAP 2014-22. There is one CSP for each Member State (except for *Wallonia* and *Flanders* in *Belgium*, which each has their own one), a total of 28 plans compared to 118 RDPs that included regional plans in several countries (e.g. *France*, *Germany*, *Italy*, and *Spain*). The European Commission published a preliminary overview of the 28 CSPs in December 2022 (EC, 2022[21]), and a more detailed analysis of the approved Plans in April 2023, including the key elements and choices set out by the Member States (EC, 2023[18]).

Member States were required to carry out a thorough assessment of their territory and agro-food sector, based on a strengths, weaknesses, opportunities and threats (SWOT) analysis. Each CSP must include the following sections:

- the assessment of needs, based on a SWOT analysis
- the intervention strategy, including targets and related milestones for each of the 10 specific CAP objectives
- the elements common to several interventions, such as relevant definitions (e.g. status of "active farmer", "eligible area", etc.)
- interventions: direct payments (including eco-schemes), sectoral interventions and rural development measures
- target and financial plans, with Member States' allocations for each type of intervention
- the governance and co-ordination system and integrated administration and control system (IACS)
- the elements that ensure modernisation of the CAP, and in particular how the CSP will contribute to foster and share knowledge, innovation and digitalisation in agriculture and rural areas
- a description about the Member State's national and regional set-up, and in particular which elements are established at national and at regional level
- annexes (ex-ante evaluation, SWOT analysis, consultation process with partners, etc.).

Under the CAP 2023-27, EU Member States were required to include one or more eco-schemes in their CSPs and to integrate their regional Agricultural Knowledge and Innovation Systems (AKIS). The decision on the selection of actions and dedicated budget for knowledge and innovation lies with the Member States.

Agri-environmental sustainability

The European Green Deal aims to "boost the efficient use of resources by moving to a clean, circular EU economy and stop climate change, revert biodiversity loss and cut pollution, through a just and inclusive transition" (EC, 2019[26]). Key actions in 2022 relating to the roll-out of the European Green Deal, included proposals to modernise **EU industrial emissions rules** (EC, 2022[27]) to steer large industry in long-term

green transition, including more large-scale intensive livestock farms; a **Nature protection package** (EC, 2022[28]), including a proposal for Nature Restoration Law, with quantified targets, indicators and milestones that the 27 Member States will be required to meet; an EU-wide voluntary framework to reliably certify **high-quality carbon removals** (EC, 2022[29]), focusing on innovative carbon removal technologies and sustainable carbon farming solutions, including those affecting agriculture and forestry sectors. As of 30 April 2023, all these proposals were under negotiations and not yet approved.

The Farm-to-Fork and Biodiversity Strategies, both adopted in May 2020, are part of the European Green Deal aim at transforming the EU food system into a global standard for sustainability and halting biodiversity loss (EC, 2020[30]). Key initiatives in 2022 included:

- An **Integrated Nutrient Management Action Plan** (EC, 2022[31]) to help achieve the European Green Deal's 2030 target of reducing nutrient losses by 50%, while ensuring no deterioration in soil fertility.
- Proposals for a **new Regulation on the Sustainable Use of Plant Protection Products** (EC, 2022[32]), including legally binding targets at EU level to reduce by 50% the use and the risk of chemical pesticides as well as the use of the most hazardous pesticides by 2030.[27]
- A proposal for a new regulation on **Geographical Indications** (GIs) and other quality schemes for agricultural products, to increase the uptake and the level of protection, especially online (EC, 2022[33]).

In the EU Biodiversity Strategy, the EU and its Member States committed to implement more than 100 actions to halt and reverse **biodiversity** loss by 2030. As of 30 April 2023, a total of 47 actions were completed.[28] In addition, *Ireland* launched a EUR 5 million (USD 5.3 million) pilot Farm Environmental Study to provide an opportunity for farmers to learn more about farmland habitats and to have habitats and biodiversity on their land surveyed. These surveys are intended to establish baseline habitat and biodiversity data, as well as a baseline for future targeting of agri-environmental schemes. *Croatia* adopted a support programme for farmers using agricultural land protected as cultural heritage, which provides compensation for their loss of income due to the obligation to comply with the regulations on cultural heritage protection. *Hungary* launched an RDP initiative devoted to the "ex situ or in vitro" conservation of genetic resources of protected indigenous and endangered agricultural animal breeds and advisory activities to prevent genetic erosion.

Several Member States adopted new regulatory measures to reduce the environmental impacts of **agricultural inputs**. In *Austria*, the Ammonia Reduction Directive entered into force, setting requirements for the timely incorporation of fertilisers and the addition of urease inhibitors on nitrous fertilisers, as well as the coverage of storage facilities for liquid manure and digestate. *Austria* also launched a new Nitrate Action Programme focusing on improved fertiliser measurement, optimisation of the storage and spreading of farm manure.[29] *Spain* updated its regulation on nitrates, which established action programmes in nitrate vulnerable zones, as well as codes of agricultural good practices related to fertiliser use and manure management. *Spain* also established standards for sustainable nutrients management in agricultural soils accompanied by a Digital Farm Notebook, which will register fertilisation practices in the farm. *Poland* revised its Nitrate Action Programme, allowing the use of a flexible spring fertilisation date and updated the production coefficients for natural fertilisers and the related nitrogen contents. The *Czech Republic* introduced an obligation for agricultural entrepreneurs farming more than 20 hectares of agricultural land to keep electronic records of fertilisers to help create a tool to calculate nutrient balances. Regarding plant protection products, *Croatia* adopted a new act on the sustainable use of pesticides. *France* temporarily permitted neonicotinoid use as seed coating in sugar beet fields in 2022, while launching a EUR 7 million (USD 7.4 million) research programme to identify alternatives. *Romania* released its first Code of Good Agricultural Practices regarding water protection against pollution caused by nitrates from agricultural sources.

With the aim to promote the development of **renewable energy** on farmland, *Greece* enacted two new regulations on renewable energy source licensing and on photovoltaic power stations in highly productive agricultural lands, *Ireland* included the aid for installation of Solar PV technology along with battery storage in its Targeted Agricultural Modernisation Schemes, and *Estonia* launched a EUR 28.8 million (USD 30.3 million) fund to support investment in biogas and biomethane production plants in addition to the EUR 20 million (USD 21 million) available under the framework of REPowerEU.[30] *Poland* adopted the Energy for Rural Areas scheme with a budget of EUR 214 million (USD 225 million) from the Modernisation Fund to provide rural communities, including farmers, with grants and loans for the use of renewable sources.

Through the Farm to Fork and the Biodiversity strategies, the European Commission has committed to reach the target of 25% of the EU's agricultural land being under **organic farming** by 2030. Building upon the EU Organic Action Plan launched in 2021 (OECD, 2022[34]), *Austria* included in its Organic Farming Action Plan 2023 the EU targets and measures, as well as the new ambition to expand its organic area up to 30% of its agricultural area by 2027. *Poland* updated its Framework Action Plan for Organic Food and Farming 2021-2030*,* committing to have at least 7% of agricultural area under the organic production scheme by 2030, i.e. doubling compared to 2019. *Croatia*'s National Action Plan for the Development of Organic Agriculture 2023-2030 covering a wide range of areas was sent out for public consultation. In 2022 *Estonia* developed an action plan containing various targets to promote organic farming for the period 2023-2030. Under this plan, it started to support organic food supply in educational institutions to compensate additional costs and raise children's awareness through a budget of EUR 0.8 million (USD 0.8 million) in 2022 that increased to EUR 10.2 million (USD 10.7 million) in 2023. *France* accelerated support to the organic food supply chain through more funding for the Agence Bio in charge of studying the reasons behind the reducing demand, a new promotion campaign for organic products, and revised eligibility criteria of the Avenir BIO Fund to finance more projects. *France* also reinforced the requirements for granting the "high environmental value" (HVE) level of its national environmental farm certification scheme, including more rigorous biodiversity protection, lower use of phytosanitary products and better management practices for fertiliser use. Finally, most Member States have indicated a national value for organic area in their national CAP Strategic Plan for 2023-27, as a contribution to the corresponding Green Deal target.

Member States' CSPs include several measures related to **climate mitigation**, including support for investments in biogas production, manure management and genetic improvement and optimised feeding to reducing methane and ammonia emissions (EC, 2022[21]). Among the most recent initiatives outside the CAP, *Ireland* published its Climate Action Plan 2023 including core agriculture measures to achieve its sectoral GHG emission reduction goal, such as the reduction of chemical nitrogen use to a maximum of 300 000 tonnes, reducing the first calving age of suckler beef cows, and the upscale on carbon farming in line with the EU's proposal to develop a new regulatory framework for the certification of carbon removals. *Germany* provided additional support to implement the ten measures in its Immediate Climate Action Programme for 2022. On the production side measures focus on increased fertiliser efficiency, conversion of animal husbandry and the promotion of natural carbon sinks through appropriate management practices. On the consumption side measures focus on promoting plant-based diets and the reduction of food waste. *Spain* set out a legal basis for a computer tool that verifies the implementation of best available techniques (BATs) and support the calculation, monitoring and reporting of emissions at the farm level by establishing a general registry for BATs. *Austria* launched its Moor Strategy Austria 2030+, which guides actions to protect peatlands and peat soils throughout Austria until 2030.

In the period 2022-23, the European Commission has adopted various measures and proposals under the framework of its 2020 **Circular Economy** Action Plan. Among those most directly affecting the agro-food sector are the proposals to empower consumers in the green transition and for a Directive on green claims, adopted in March 2023. Both initiatives aim to combat misleading claims and greenwashing, as well as to increase consumer confidence in environmental labelling. Meanwhile, in 2022, *Greece* adopted its National

Road Map for Circular Economy 2021-2025, which shows alignment with the goals and commitments of the 2020 EU Circular Economy Action Plan and covers various issues including reducing food waste actions and pesticide packaging management, among others.

Animal health and welfare

In the context of the Farm to Fork Strategy, the European Union is expected to review and evaluate the existing **animal welfare legislation**, including on animal transport and slaughter, by the last quarter of 2023. Without waiting for the next EU framework to be developed, *Austria* and *France* enacted **animal welfare legislation** to end the culling of male chicks in egg-laying hen production units as of January 2023, becoming the second countries after *Germany* to do so. *Germany* introduced new rules on the transport of calves, which must be at least 28 days old to be transported within the country. *Spain* also established new regulations on animal health and protection standards during transport in November 2022, as well as for the management of bovine farms in December 2022. These basic rules determine the minimum conditions for infrastructure, equipment and handling, biosecurity, hygiene and sanitation, and environmental requirements, among others.

Regarding **support to farmers**, *Austria* increased subsidy rates for animal welfare investments from 25% to 35% for pigs and to 30% for turkeys. In February 2023, *Romania* introduced a compensatory payment for income losses and additional costs incurred by farmers implementing pig and poultry welfare, which takes the form of a fixed annual payment per livestock unit. In the frame of its RDP, in 2022 *Croatia* implemented payments for animal welfare in cattle breeding, pig breeding, poultry farming, goat and sheep breeding, while *Hungary* announced several new calls for applications in 2022 with animal welfare components in the sheep and goat, poultry and dairy sectors. In *Hungary*, a new RDP call was also opened aiming to improve the ecosystem serving capacity of bee colonies by providing support to ensure hygienic and animal protection conditions for the welfare of bees.

Animal and plant disease

The **Avian Influenza** epidemic, which started in October 2021, continued during 2022 and affected wild birds, poultry or captive birds in 25 EU Member States. Overall, the 2021-22 epidemic has been the largest observed in the European Union so far as it has been difficult to rapidly contain the spread of the virus once it entered areas with high concentration of poultry establishments. Several large clusters have developed in certain parts of France, Italy and Hungary. However, the epidemiological situation started to improve during the second quarter of 2022.

Affected Member States introduced specific measures in response to the outbreak of pathogenic avian influenza. The *Czech* authorities stated a ban on outdoor poultry farming as of 12 December 2022 and launched an information campaign for farmers, veterinarians and hunters on disease detection, prevention and reporting. In addition, the *Czech Republic* launched an avian influenza vaccination campaign targeting genetically valuable geese. In July 2022, *France* established a new avian influenza plan that complements its action plan approved in 2021: two sets of compensatory payments were made available with an overall budget of EUR 1.5 billion (USD 1.6 billion), vaccination against avian influenza was launched on a pilot basis on 10 May 2022 and integrated into an action plan on 22 December 2022. In December 2022, *Poland* implemented a EUR 34 million (USD 35.8 million) exceptional compensation scheme targeting poultry and egg producers whose holdings were located in protection zones established due to outbreaks of avian influenza between December 2019 and July 2021. More broadly, *Hungary* amended its national legislation regarding the support for the prevention and control of animal diseases, enabling a more targeted use of resources while introducing stricter conditions for aid.

With regard to **Plant Health**, several initiatives have been put in place. Since 2023 in *Austria*, forecasting models for the rape pests in spring have been available free of charge for more than 40 sites throughout the country. Regarding the Xylella emergency, in September 2022 *Italy* established the criteria and

methods for granting contributions for the replacement of olive trees damaged by the bacterium. Under its Development Sectoral Programme (2021-25), *Greece* has provided funding for the improvement of laboratory infrastructure in the field of sanitary and phytosanitary standards. In *Hungary*, from 1 January 2023, farmers with agricultural land of more than 10 hectares will have to keep up-to-date records of insecticide treatments for arable crops on the electronic spray register interface provided by the authority. Finally, *Croatia* adopted the Act on Amendments to the Plant Health Law, which aims to protect the territory from harmful organisms and consequently reducing the use of plant protection products.

Food safety, health and traceability

As of March 2022 in *France*, country-of-origin labelling became mandatory for all meats served in restaurants. Similarly, by mid-2023 in *Austria* country-of-origin labelling is compulsory for meat, eggs and milk in collective catering such as hospitals, retirement homes, schools and companies.

Institutional arrangements were also developed. In December 2022, *Croatia* inaugurated its Food Safety and Quality Centre. In March 2022, the *Czech* Government approved the Action plan for the implementation of the Food Safety and Nutrition Strategy 2030. Since 2021 Belgium, France, Germany, Luxembourg, the Netherlands, Switzerland and Spain form part of a transnational co-ordination mechanism to facilitate the use of the front-of-pack nutrition label Nutri-Score. In July 2022 and March 2023, these countries adopted the modifications of the Nutri-Score algorithm proposed by the scientific committee to strengthen the effectiveness of this label in classifying products in accordance with the dietary guidelines of the various countries, with the aim of guiding consumers towards healthier food choices.

Addressing **antimicrobial resistance** (AMR) was also part of the agenda. Following up on the EU legislative package on veterinary medicinal products and medicated feed,[31] which came into force on 28 January 2022, *Hungary* began implementing mandatory collection and reporting of data on antimicrobial use in food-producing animals via a verified online platform, while *France* banned all imports of meat and meat products from animals that received antibiotic growth hormones as of 22 April 2022. Meanwhile, *Malta* has been implementing its Strategy and Action Plan for the Prevention and Containment of Antimicrobial Resistance and *Portugal* has set up an eco-scheme under its CAP Strategic Plan 2023-27 focused on promoting a more rational use of antimicrobials. Finally, four Member States, the *Czech Republic*, *France*, *Malta* and *Poland*, have indicated a national value for the use of antibiotics in their CAP Strategic Plan for 2023-27 as a contribution to the corresponding Green Deal target.

In March 2022, the *French* Presidency of the Council of the European Union organised a High-Level One Health Ministerial Conference on Antimicrobial Resistance (AMR) during which the Trio Presidency of the Council of the EU, constituted by *France*, the *Czech Republic* and *Sweden*, presented a Declaration on antimicrobial resistance,[32] underlining that AMR will be a priority of the three presidencies from January 2022 to June 2023, suggesting possible work options on the topic at the EU Level.

Market infrastructure and institutions

Several Member States have implemented measures to strengthen their market infrastructure. *Croatia* is investing EUR 81.8 million (USD 86.0 million) in the construction of logistics distribution centres for fruits and vegetables under its National Recovery and Resilience Plan 2021-2027. *Malta* has undertaken a reform of its Ta' Qali' Fruit and Vegetables Market, to improve its governance, legislative framework and overall infrastructure. In early 2023, *Ireland* adopted the Agriculture and Food Supply Bill establishing a new independent statutory body, *An Rialálaí Agraibhia*, to promote fairness and transparency in the agro-food supply chain. The agro-food regulator will have powers to levy fines of up to EUR 10 million (USD 10.5 million) on buyers, including retailers, food producers and processors, who engage in unfair trading practices with farmers and other suppliers.

Land tenure policies

Hungary introduced new legislation in 2022 prohibiting the creation of more undivided common property and strengthens the right of farmers in the case of purchases and usufructuary leases following property inheritance. Meanwhile, *Malta* has undertaken the reform of its legal framework for the protection of Maltese agricultural land, which aims to strike a balance between the public interest and the landowner's interest.

Risk management

In 2022, various Member States' risk management policies focused on supporting producers in coping with **disaster related impacts**. In *Poland*, two disaster schemes were introduced to assist agricultural producers who suffered damage from adverse weather events, including drought. The first disaster aid scheme of EUR 100 million (USD 105 million) targeted crop producers affected in 2021. The level of aid granted to each farmer depends on the area of arable land affected and the extent of yield losses. The second disaster aid scheme with a budget of EUR 130 million (USD 137 million) provided a lump-sum to families at risk of losing their financial liquidity due to damage to farms caused by natural disasters in 2022. The payment depends on the extent of damage to the farm's agricultural production and the number of applicants. The *Slovak Republic* has implemented exceptional disaster aid for specific sub-sectors; EUR 5.7 million (USD 6.0 million) was paid to 1 800 fruit and winegrowers to compensate for the consequences of frost damage and EUR 4.4 million (USD 4.6 million) was granted to 9 500 livestock farmers who suffered from fodder shortages due to drought and high feed prices in 2022. *Croatia* provided EUR 13.3 million (USD 14.0 million) to 20 000 producers to mitigate the effects of drought on corn, soybeans, sunflowers, fruits, vegetables, sugar beets and tobacco, EUR 3.3 million (USD 3.5 million) to alleviate the effects of hail from June 2022 and EUR 160 000 (USD 168 265) for beekeepers who suffered damage from Colony Collapse Disorder in 2022. Additional funds were dedicated to longer-term investments in the restoration of agricultural land affected by natural disasters, adverse weather conditions and catastrophic events. *France* announced EUR 76 million (USD 80.0 million) to support farmers affected by the April 2022 frost, mainly in the arboriculture sector, with payments starting in November 2022, and EUR 1.8 million (USD 1.9 million) to compensate for damage caused by the May 2022 hailstorms. Feeding of grazing animals in the *Czech Republic* was exceptionally allowed on species-rich pastures, based on a notification of force majeure – drought in 2022.

In parallel, several Member States continued to grant **insurance premium subsidies**, including *Croatia*, *Romania*, and the *Slovak Republic,* among others. In 2022, Spain increased the budget for insurance subsidies by 30% with respect to 2016-20, which allows to finance new subsidies for farms in shared ownership by couples and for newcomers. Reforms to strengthen the reinsurance scheme and stabilisation reserves were also introduced. In February 2022, *France* adopted the reform of the harvest insurance, which establishes a universal coverage against climatic risks, accessible to all farmers. Entering into force on 1 January 2023, this reform doubles the budget envelope to EUR 600 million (USD 631 million) per year.

Support to specific groups of farmers

To advance **gender equality**, a National Dialogue on Women in *Irish* Agriculture was convened on 1 February 2023, providing an opportunity for stakeholders to provide input on how to increase the visibility and status of women in agriculture. In their CSP for the 2023-27 CAP, the majority of Member States recognised the importance of gender issues and the need to increase the participation of women in farming and to improve the socio-economic situation of rural women. The *Czech Republic, Italy*, *Portugal,* and *Spain* introduced conditions for selection or access to support that target the involvement of women in farming. *Spain* also increased the complementary direct payment for young farmers if the beneficiary is female and owns or co-owns the farm (EC, 2023[18]).

Most Member States plan additional income support and installation aid for **young farmers** in their CSP. Several countries, including *Cyprus*, the *Czech Republic*, *France*, the *Netherlands*, *Portugal* and the *Slovak Republic,* propose to provide investment support at higher rates as part of an intervention exclusively for young farmers, while more Member States provide for higher support rates for young farmers as part of a general investment intervention.

Innovation and knowledge

In 2022, the European Commission presented its final proposals of four new European Partnerships with particular relevance to farming and food systems: the "Accelerating Farming Systems Transition: Agroecology living labs and research infrastructures" partnership (EC, 2022[35]), the "Agriculture of Data" partnership (EC, 2022[36]), the "Animal Health and Welfare" partnership (EC, 2022[37]) and the "Sustainable Food Systems for People, Planet and Climate" (EC, 2022[38]) partnership. EU partnerships are key implementation tools of Horizon Europe, the Research and Innovation Framework Programme for 2021-27.

At the country level, *France* amended its roadmap for innovation, digitalisation and investment in the agro-food supply chain. Four actions are foreseen: (1) digitalisation of product information for quality and consumer confidence, (2) development of proteins of the future, including from leguminous plants, by providing start-up support and additional help, (3) R&D to support the supply chain and enhancement of the value of ferment banks, and (4) the "Pass Industry" approach to develop solutions to skills needs in companies.

The *Flemish Government* (*Belgium*) dedicated EUR 2 million (USD 2.1 million) to **research and innovation** on drought-resistant crops and innovation-driven water efficiency in agriculture and horticulture. It also made available EUR 2.8 million (USD 2.9 million) for agriculture and horticulture projects that bring together companies and research centres to tackle water and drought problems, climate change, sustainable energy and more efficient management of natural resources. *France* awarded the National Research Institute for Agriculture, Food and Environment (INRAE) the first public contract since the establishment of INRAE in 2020[33] to support research, innovation, expertise in agriculture, food and environment and improving INRAE's impacts. *Greece* decided to support crop restructuring and animal genetic improvement projects under the National Recovery and Resilience Plan "Greece 2.0". *Ireland*, together with New Zealand, launched a new research initiative for 2022-24. The Joint Research Mechanism (JRM) will fund collaborate on projects in the areas such as reduction of greenhouse gas emissions and enhanced carbon sequestration in ruminant, and pasture-based production systems.

In the *Netherlands*, the educational subsidy vouchers programme *Subsidieregeling Agarische Bedrijfsadvisering en Educatie* (SABE) has been extended to allow farmers to apply for **knowledge transfer** courses about nature-inclusive farming and precision farming from 2022 onward. For 2021-22, SABE also subsidised demonstration farms and business plans for sustainable fundamental business transition of farmer's operations.

Data and digitalisation

The European Commission has taken further steps in the process of converting the Farm Accountancy Data Network (FADN) to become a Farm Sustainability Data Network (FSDN). In June 2022, a regulation amendment (EC, 2022[39]) was proposed with the aim to reinforce the relevance of the network for policy-making, research, evaluation and policy analysis. The basic legislative act for the establishment of the FSDN is projected to enter into force in 2023, with the secondary legislation foreseen to be finalised in 2023 or 2024. The FSDN aims to introduce new environmental and social variables to their data collection. The first FSDN data set will reflect 2025 data and will be publicly available in 2026 or 2027 (EC, 2022[40]).

In 2022, the European Commission presented two major data-related initiatives in the context of the European strategy for data: the Data Governance Act (DGA), in force from September 2023, and the Data

Act (EC, 2022[41]) still to be adopted. The DGA promotes sharing of non-open access data in a variety of sectors, including agriculture, by establishing safeguards and reducing technical barriers to use the data (European Parliament and European Council, 2022[42]). The Data Act proposes a set of rules to determine who can use and access data generated via connected devices. For the EU agricultural sector this helps to address the transfer of data generated by farm machinery to the manufacturer, who could use the information about the farm's performance to their advantage (EC, 2022[43]).

Several Member States have introduced **new digital tools** to support the development and implementation of their agri-food policies. *Belgium* has developed an application with the use of geotagged photos to monitor compliance with CAP direct payments requirements. On 22 September 2022, *France* launched the digital platform "*Ma cantine*" to help collective catering services, such as canteens, achieve the Egalim law target of 50% sustainable and quality food, including 20% from organic farming.[34] *Croatia* has implemented two projects aiming at digitising the food donation process and the food waste prevention system. *Poland* has created the *Agrophage Signalling Platform* to provide access to up-to-date plant protection programmes. In *Spain*, *Digital Farm Notebooks* that record on farm practices such as fertilisation, are expected to come into use in mid-2023 for larger irrigated farms. Finally, *Romania* and *Poland* set up the issuance of electronic phytosanitary certificates to facilitate trade in agricultural products in July 2022.

To **promote the digitalisation** of the agricultural sector, *Croatia* has invested EUR 9.6 million (USD 10.1 million) for the acquisition of equipment for precision agriculture, software solutions for data collection, GIS technologies and automatic equipment, and plans further investment in digital public services under its National Recovery and Resilience Plan 2021-26. Likewise, *Greece* has included funding for precision agriculture projects under its 2021-25 Development Sectoral Programme. In *Italy*, producers of organic wines and wines with a protected designation of origin or geographical indication (PDO/PGI) benefited from a contribution to invest in digital systems. Meanwhile, *France* has presented a roadmap on "Agriculture and Digitalisation" around seven priorities for *French AgriTech* and has planned to invest EUR 3 million (USD 3.1 million) in public support to the digitisation of product information for quality and consumer confidence through the *Numalim* platform. In *Bulgaria*, more than 8% of farms are expected to receive financial support for introducing digital farming technologies under the new CAP 2023-27.

Tools to monitor the digitisation of the sector have also been developed. In 2022, *Spain* made progress in implementing its *Digitalisation Observatory*, which aims to assess the degree of penetration and adoption of new technologies in the agro-food sector and the situation of the sector's digitisation. Six Member States, the *Czech Republic*, *Finland*, *Ireland*, *Latvia*, *Poland,* and *Spain*, have indicated a national value – or non-binding target under F2F – for fast broadband in rural areas in their CAP Strategic Plan for 2023-27, as a contribution to the corresponding Green Deal target. *Malta* has indicated a target already attained.

Rural Development Policy

In June 2021, the European Commission published its communication, "A long-term vision for the European Union's rural areas – Towards stronger, connected, resilient and prosperous rural areas" (EC, 2021[44]) to create a debate on the future of rural areas and the role they have to play in our society. In January 2022, the European Committee of the Regions (2022[45]) adopted its opinion on the long-term vision for the European Union's rural areas, recognising it as a crucial step towards the sustainable development of rural areas and territorial cohesion but regretted that its publication came after the conclusion of negotiations on the CAP 2023-27. In March 2022, the European Economic and Social Committee adopted its opinion (EESC, 2022[46]) on the rural vision: it broadly welcomed the long-term vision but found it unclear what the implications of the design and content of the Commission's new CAP and CSPs for each Member State will be for the long-term vision, and how the Commission should ensure consistency and added value between the CAP and other policies. On 13 December 2022, the European Parliament adopted a resolution on the rural vision (EP, 2022[47]), which welcomed the Commission's

communication on a long-term vision for the European Union's rural areas and agreed with its general aims and emphasised that the development of rural areas must remain high on the EU agenda.

Domestic policy responses to the COVID-19 pandemic

Under the *Temporary Framework for State aid measures to support the economy in the current COVID-19 outbreak* (2020/C 91 I/01) of 19 March 2020, the European Commission allowed Member States to provide time-bound aid from their own budget to sectors confronting economic difficulties due to the coronavirus outbreak. The Temporary Framework came into force in March 2020 and its duration was extended until 30 June 2022. Under this umbrella, most EU Member States continued with the implementation of their COVID-19 pandemic measures expiring in 2022, although some new regimes were established in 2022.

In March 2022, *Greece* implemented two new state aid measures targeting the vulnerable sectors of potatoes, mandarins, lavender cultivation, dried figs and table olives, the fur and pig sectors, and agricultural co-operatives. Also in March 2022, *Hungary* introduced an aid scheme granting income support for the rearing of breeding sows. *Poland* also established new schemes to assist producers of pig sows and hops producers. In April 2022, *Romania* adopted an Emergency Ordinance to support the activity of breeders in the cattle, pig and poultry sectors and in May 2022 it announced support for agri-food entities in the form of micro-grants and working capital grants. In April 2022, *Lithuania* provided aid to chicken broiler producers, while *Malta* introduced support to recognised swine co-operatives and *Luxembourg* notified the third part of an aid scheme directed to the pig sector. In May 2022, *Cyprus* announced aid to cheesemakers, after supporting pig, poultry, cow and rabbit farmers. In February 2022, *France* notified a new aid scheme to support more than 10 000 pig farmers. Moreover, under its Recovery plan to the COVID-19 pandemic "France 2030", *France* launched in 2022 new calls for applications and measures to encourage innovation in natural fermentation techniques, protein source diversification, food packaging, digital technologies and territorial food projects.

Domestic policy responses to Russia's war of aggression in Ukraine

The war in Ukraine accelerated rising food prices and input costs in 2022, such as energy, fertilisers and animal feed. As stated in the Commission Communication entitled "Safeguarding food security and reinforcing the resilience of the food systems" (EC, 2022[48]), there was no immediate threat to food security in the European Union. However, the European Union remains a considerable net-importer of specific products, such as feed protein, sunflower oil and fertilisers. Hence, the main impact of the war lies in the increase of costs throughout the food supply chain.

At the European Union level, the main areas of interventions included: CAP flexibilities, exceptional market measures, direct support to farmers and rural areas, and actions to foster the overall resilience of the sector. Within this framework, Member States chose which measures to implement, based on their own specific circumstances. Member States also put in place their own regulatory flexibilities, tax concessions, investment assistance, and allowances to consumers and farm households to help farmers and agro-food enterprises cope with the financial impacts. Moreover, as discussed in Chapter 2, the European Union provided assistance to Ukraine's agriculture and food security, as well as employment for its citizens.

On **CAP flexibilities**, in March 2022, the Commission adopted an exceptional and temporary derogation to allow the production of any crops for food and feed purposes on fallow land, while maintaining the full level of the greening payment for farmers in 2022 (EC, 2022[49]). This derogation, aimed at enlarging the European Union's production capacity, was taken up by several Member States, including *Austria, Belgium (Wallonia), the Czech Republic, France, Germany (partly), Italy, Latvia, Luxembourg,* and *Poland*. Subsequently, in July 2022, the Commission authorised the derogation of the application of Good Agricultural and Environmental Conditions (GAEC) Standards 7 and 8 required under the CAP 2023-27 (EC, 2022[50]). In practice, farmers could keep producing the same crop on a specific plot of land in 2023

– except for maize and soybeans – and not take the compulsory 3% or 4% of their land[35] out of production for biodiversity purposes until 2024. Almost all Member States used derogations for both GAECs.

To increase the cash flow of farmers, Member States were allowed to increase the **advances for direct payments** from 50% to 70% and for certain rural development measures from 75% to 85%. Countries taking advantage of the direct payment advance include *the Czech Republic, Spain* and *Poland*, while advanced RDP payments were applied in *Poland.* Farmers started receiving these advances from mid-October.

On **exceptional market measures**, in April 2022, the European Commission granted private storage aid for pig meat (EC, 2022[51]). The scheme provides financial support to cover part of the cost of storing pig meat withdrawn from the market for a period of between two and five months. This flexibility was intended to alleviate the prolonged economic difficulties of the European pork sector by limiting the available pig meat supply and thus rebalancing the market.[36] The EC regulation argues that Russia's invasion of Ukraine has created additional market disturbance and caused a sharp drop of export demand for certain pig meat products.

Member States also introduced regulatory flexibilities at the national level to allow certain products to remain on the market. *Belgium* introduced temporary packaging and labelling exception measures to make it easier for food producers to replace ingredients affected by supply shortages. *Italy* put in place derogations in the wine production regarding the percentage of grapes harvested outside the Protected Denomination of Origin (PDO) or the Protected Geographical Indication (PGI) areas.

In March 2022, a support package of up to EUR 500 million (USD 526 million) was made available to Member States to provide direct support to agricultural producers most affected by the war in Ukraine (EC, 2022[52]). This funding included EUR 350 million (USD 368 million) from the crisis reserve under the CAP, which had never been used before. Member States could supplement this funding with national aid up to a maximum of 200% of the amount set out for each country (Table 12.6). This prioritised farmers who engage in environmentally sustainable practices. Member States distributed these direct payments either among all farmers, as in the case of Denmark, or more often to producers of targeted crops or animal products (or both), including but not limited to, poultry, dairy, pig meat, greenhouse crops and horticulture.

Table 12.6. Exceptional adjustment aid to agricultural producers available to EU Member States

Member State	EU envelope (EUR)	Sectors												
		All agricultural sectors	Livestock	Beef	Dairy	Eggs	Pig meat	Poultry	Rabbit meat	Sheep and/or goat (milk and/or meat)	Fruits and vegetables	Hops	Live flowers and ornamental foliage	Wine
Austria	8 998 887										x			
Belgium	6 268 410					x	x	x		x	x		x	
Bulgaria	10 611 143						x	x			x			x
Croatia	5 354 710				x	x	x	x						
Cyprus	632 153						x							
Czech Republic	11 249 937				x		x	x			x			
Denmark	10 389 359	x												
Estonia	2 571 111				x		x			x				
Finland	6 872 674						x	x			x			
France	89 330 157		x											
Germany	60 059 869						x	x			x	x		x
Greece	26 298 105										x			

Member State	EU envelope (EUR)	Sectors												
		All agricultural sectors	Livestock	Beef	Dairy	Eggs	Pig meat	Poultry	Rabbit meat	Sheep and/or goat (milk and/or meat)	Fruits and vegetables	Hops	Live flowers and ornamental foliage	Wine
Hungary	16 939 316						x	x						
Ireland	15 754 693						x				x			
Italy	48 116 688			x	x									
Latvia	4 235 161						x	x			x			
Lithuania	7 682 787					x	x	x						
Luxembourg	443 570	x												
Malta	69 059										x			
Netherlands	8 097 139						x	x						
Poland	44 844 365						x				x			
Portugal	9 105 131			x	x	x	x	x						
Romania	25 490 649						x	x			x			x
Slovak Republic	5 239 169				x		x			x				
Slovenia	1 746 390				x									
Spain	64 490 253			x				x	x	x	x			
Sweden	9 109 115				x			x						
Total	**500 000 000**													

Source: Authors' representation based on EC (2022[52]; 2022[53]).

A new rural development measure (Measure 22) was introduced in June 2022 to ensure the continuity of business activities in response to the impact of the war in Ukraine (European Parliament and European Council, 2022[54]). A one-off lump sum is provided to farmers and for small and medium-sized enterprises (SMEs) active in processing, marketing or development of agricultural products. Member States providing this support had to include the measure in the rural development programmes via a programme modification. The payment is financed by EAFRD appropriations under the 2023 budget, offset by a corresponding reduction in payments in subsequent years (EU Monitor, 2022[55]). For instance, *Croatia* decided to provide EUR 31.7 million (USD 33.3 million) to agricultural holdings with an economic size of more than EUR 3 000 (USD 3 155) that implement agri-environmental climate measures or are beneficiaries of support for organic production. These farms are awarded payment between EUR 1 000 to EUR 15 000 (USD 1 052 to USD 15 775). Processors of organic products can receive support of EUR 3 000 to EUR 25 000 (USD 3 155 to USD 26 291) depending on the reduction in their incomes in 2022 compared to 2021. *Greece, Bulgaria and Poland* have also made use of this measure to support Greek livestock farmers, such as goat, sheep, cattle, poultry and pig breeders, Bulgarian small and medium-sized enterprises in the cereals, oilseeds, medicinal and essential oil crops, potatoes, dairy products, honey, fruit and vegetables sectors, and Polish pig farmers, respectively.

The third direct support measure was a new self-standing Temporary Crisis Framework (TCF) allowing Member States to use state aid flexibilities to cushion the economic impact of the war in Ukraine, adopted in March 2022 and originally due to expire in December (EC, 2022[56]). In the face of the continued war, the Commission prolonged and amended the Temporary Crisis Framework three times, with the latest changes and the creation of the new Temporary Crisis and Transition Framework (TCTF) adopted in March 2023. Successive frameworks allow financial assistance from national budgets to farmers affected by significant increases in input costs and for energy-intensive undertakings such as fertiliser production. Member States can grant liquidity support, including State guarantees and subsidised loans, and aid for increased gas and electricity prices. The temporary support can be also provided to facilitate the rollout of

renewable energy and decarbonisation of the industrial processes. While measures to mitigate impacts of the war in Ukraine should be phased out by the end of 2023, the aid for fostering transition towards a net-zero economy is planned to be available for an additional two years.

Under the TCF (and TCTF), most Member States granted subsidies or direct payments to mitigate the impact of increased input prices. For instance, *Austria* introduced the electricity cost subsidy, which is provided to all farms as a lump-sum payment per area or number of animals. Particularly energy-intensive businesses can apply in a second stage for a subsidy based on their actual electricity consumption, taking into account the deduction of the flat-rate grant awarded in the first stage. *France* proposed a subsidy for agricultural and agro-food businesses for which electricity or gas exceeded 3% of turnover in 2021 and which faced a doubling of gas or electricity prices compared to 2021. It also allocated EUR 400 million (USD 421 million) to support breeders heavily dependent on animal feed. In December 2022, *Croatia* adopted energy support measures, worth over EUR 26.5 million (USD 27.9 million), for processors of agricultural commodities. Further measures for alleviating input price rises were taken by *Greece, Poland, and Spain,* which provided support for the purchase of fertilisers. While in the case of *Greece* the level of support was around 11% of fertiliser purchases, in the latter countries it was granted in the form of payments per hectare. *Ireland* provided a EUR 56 million (USD 59 million) Fodder Support Scheme to grow sufficient grass and conserve fodder for the winter in the form of a direct payment for up to a maximum of 10 hectares. *Latvia* provided assistance to producers of selected agricultural products to partially (70%) offset the increase in expenses on feed (pig and poultry sector), fertilisers (selected vegetables sector), diesel, electricity and heating in the period from July to October 2022 (compared to the same period of 2021). To cope with rising input and electricity costs, *Sweden* introduced a EUR 154 million (USD 162 million) state-aid scheme, providing direct payments per farmed animal and per heated square metre of greenhouse used for the production of fruits, berries, vegetables, mushrooms, sprouts, spices or ornamental plants.

Within the TCF and TCTF, a number of Member States have also introduced specific financial measures for the agro-food sector. The *Czech Republic* provided EUR 10 million (USD 10.5 million) in direct payments to reduce the outstanding principal of operating loans to SMEs active in food production. *Hungary*, *Italy*, *the Netherlands* and *Estonia* opted to provide aid in the form of guarantees on loans. EUR 226 million (USD 238 million) was available to support Hungarian SMEs active in agriculture, food production and the bioeconomy, EUR 180 million (USD 189 million) to support Italian SMEs in the agriculture, forestry, fisheries and aquaculture sectors, EUR 70 million (USD 74 million) to support Dutch SMEs in the field of greenhouse production and horticulture, and EUR 15 million (USD 15.8 million) to support Estonian primary producers of agricultural products, fisheries and aquaculture operators.

Several EU Member States complemented their intervention by implementing tax measures to mitigate the rise in agricultural input prices. Some of these measures had been introduced earlier to cope with high inflation and were extended in the wake of the crisis caused by Russia's war of aggression in Ukraine. *Austria*, *the Czech Republic, Estonia* and *Luxembourg* granted a flat-rate tax allowance of EUR 0.06 to EUR 0.08 per litre (USD 0.06 to USD 0.08) for diesel used for agricultural purposes. *Poland* increased the limits for the reimbursement of excise duty on the consumption of diesel used for farm work from 100 litres to 110 litres per hectare of utilised agricultural area and from 30 litres to 40 litres per annual average livestock unit (cattle). *Italy* put in place a tax credit for the purchase of fuel for agricultural activities. Temporary reductions in VAT rates were also implemented for other affected agricultural inputs, such as fertilisers, animal feed and plant protection products, as for instance in *Greece*, *Portugal,* and *Poland*. Other tax flexibilities were also reported: *Spain* established exceptional income tax reductions for the purchase of fertilisers, *France* granted social contribution rebates for farms facing significant higher costs and *Italy* postponed the deadline for payment of tax and administrative duties for young farmers.

On **consumer policies**, some Member States, such as *Croatia*, intervened in the retail prices of certain basic foodstuffs, and others, such as *Poland* and *Spain*, temporarily reduced VAT on selected food

products. *The Czech Republic* increased the budget to support the operation of food banks. *Portugal* provided an additional EUR 60 (USD 63) for the most vulnerable households.

On **resilience of the sector**, starting in March, the expert group on the European Food Security Crisis preparedness and response Mechanism (EFSCM)[37] met eleven times in 2022 with the aim to ensure a better flow of information throughout the food supply chain, co-ordinate responses at all levels and identify priorities. The work of the EFSCM continues in 2023, with the mapping of risks and vulnerabilities expected to be completed in the last quarter of the year.

Under the EFSCM, in December 2022, the Commission launched a dashboard on food security in the European Union. The dashboard presents a wide range of indicators affecting food supply and food security in the European Union, such as weather and drought events, freight and energy costs, development of animal diseases and possible trade restrictions, as well data on self-sufficiency rates of the most significant agricultural commodities, import dependency for these commodities and for fertilisers; and monthly rates of food inflation (EC, 2022[57]). Additionally, a dashboard on the "Impact of Russia's invasion of Ukraine on selected agricultural sectors" was developed and is constantly updated.

In addition to initiatives at EU level, national governments continued to strengthen their preparedness in various ways. *France* elaborated its resilience plan for agriculture. *Denmark* revised its contingency plans. Member States have been also monitoring market mechanisms and security of food supply. *Finland* committed additional resources to reinforce the information systems of the Finnish Food Authority. *Portugal* created the Price Observatory "National is Sustainable" to monitor the impact of market disruptions on consumer prices.

EU Member States have also been promoting investments contributing to the green transition of the sector, including by making farms more energy self-sufficient. For instance, *Finland* provided aid for on farm investment in renewable energy and biofuels. It also introduced investment support, e.g. in advanced processing techniques for biogas digestates; in nutrient recycling and carbon sequestration; as well as in the start-up of the production of fertilising products when the starting material for production is manure or waste from biogas plants. *Italy* approved further measures for agricultural and agro-food companies to increase the production capacity of electricity from renewable sources. *Portugal* introduced subsidies for the installation of photovoltaic panels.

In its Communication on "Ensuring availability and affordability of fertilisers" of 9 November 2022, the Commission outlined the various actions available to help farmers to optimise their fertiliser use and reduce their dependency while safeguarding yields (EC, 2022[58]). In the area of research and innovation, Horizon Europe continues to invest, among others, in projects aiming to substitute the use of synthetic fertilisers. Also, the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI) supports operational projects across Europe, e.g. on improving nitrogen efficiency (*Germany*), developing the production process of bio-fertilisers (*Italy*), integrating cover crops into the field crop rotation (*Slovenia*) (EC, 2022[59]).

Trade policy developments in 2022-23

The European Union's trade policy plays an important role in supporting the European agricultural sector, through the use of a number of measures. On 22 June 2022, the Commission presented a communication on "The power of trade partnerships: together for green and just economic growth" (EC, 2022[60]), to further strengthen the implementation and enforcement of Trade and Sustainable Development chapters of the EU's trade agreements.

In June 2022, the Commission also published a report entitled "Application of EU health and environmental standards to imported agricultural and agri-food products" (EC, 2022[61]). The conclusion was that: there is some scope to extend EU production standards to imported products provided this is done in full respect of the relevant WTO rules; and it is essential to make a case-by-case assessment before applying

production standards to imports. This report assessed the legal and technical feasibility of doing this via multilateral, bilateral or autonomous instruments the constraints that apply, and the wide range of areas where the European Union has already extended to imported products its domestic production standards. The prohibition on the import of beef produced with growth hormones is an early example of the application of reciprocity measures to imported agricultural products and, more recently, the European Union has stated that it will not permit the import of meat where antibiotics have been used for growth promotion.

Trade agreements

On 30 June 2022, the **European Union and New Zealand** concluded negotiations for a trade agreement (EC, 2022[62]). For the first time ever in an EU trade agreement, the deal has a dedicated sustainable food systems chapter[38] covering: closer co-operation on animal welfare standards; initiatives to phase out the use of antimicrobial agents as growth promoters and to reduce the use of antimicrobial agents in animal production; and co-operation on food loss and waste, pesticides and fertilisers, and on the security and resilience of food supply chains.

On 9 December 2022, the **European Union and Chile** announced the finalisation of their modernised Association Agreement (EC, 2022[63]), which, regarding agro-food trade, includes a chapter on Sustainable Food Systems, with the goal of building more sustainable and resilient food supply chains, and a dedicated Trade and Gender chapter.

On 11 October 2022, the Commission published its annual **Report on Implementation and Enforcement of EU Trade Agreements** (EC, 2022[64])**.** According to this report, EU agro-food trade with the 74 preferential partners grew by 4.7% in 2021, thus more modestly than agro-food trade between the European Union and all trading partners (which grew by 7.2%). On the other hand, the inclusion of the United Kingdom among the European Union's preferential partners also led to an increase in the European Union's trade surplus with preferential partners in goods, which grew from EUR 124 billion (USD 141 billion) in 2020 to EUR 208 billion (USD 246 billion) in 2021, albeit on a much-reduced level of trade because of COVID-19. Around 20% of the surplus with preferential partners can be attributed to agro-food.

Trade policy responses to Russia's war of aggression in Ukraine

In May 2022, the European Parliament and the Council (2022[65]) suspended for one year import duties on all Ukrainian exports to the European Union and granted Ukraine zero tariff, zero quota access to the EU market. This step was designed to help boost Ukraine's exports to the European Union and to help to alleviate the difficult situation of Ukrainian producers and exporters in the face of Russia's military invasion.

Also in May 2022, as part of the European Union's solidarity response with Ukraine, the Commission presented a set of actions to help Ukraine export its agricultural produce (EC, 2022[66]). Following Russia's invasion of Ukraine and its blockade of Ukrainian ports, Ukrainian grain and other agricultural goods could no longer reach their destinations. The situation was threatening global food security and there was an urgent need to establish alternative logistics routes using all relevant transport modes. Based on an action plan set out by the Commission, the European Union established "EU-Ukraine Solidarity Lanes" to ensure Ukraine can export grain, but also import needed goods such as animal feed and fertilisers. The export of Ukrainian commodities was resumed first via road, rail and inland water ways through neighbouring countries thanks to the Solidarity Lines, and then from August 2022 via maritime routes thanks to the Black Sea Grain Initiative. [39]

The implementation of measures facilitating the imports of Ukrainian agricultural produces into the European Union resulted in part of the cereals intended for transit being marketed in neighbouring countries. The price of cereals and farmers' incomes in these Member States were affected. In this context, in March 2023, the European Commission approved further schemes supporting the wheat and maize

producers (EC, 2023[67]) under the State aid Temporary Crisis and Transition Framework (discussed in the section above). On 15 April 2023, *Poland* unilaterally introduced a temporary complete import ban on a range of agricultural products from Ukraine (Minister of Development and Technology, 2023[68]). The transit ban was lifted six days later (Minister of Development and Technology, 2023[69]; Minister of Finance, 2023[70]). Similar import restrictions on imports from Ukraine were announced by *Hungary* (15 April), the *Slovak Republic* (17 April) and *Bulgaria* (19 April), two of which also border Ukraine. As of 30 April 2023, negotiations are ongoing between these Member States, *Romania*, and the European Commission on additional support measures for affected agricultural producers.

On 9 November 2022, the European Commission presented the Communication on "Ensuring availability and affordability of fertilisers" (EC, 2022[59]) highlighting the need to diversify the supply sources of fertilisers and intermediate products. The European Commission has reached out to alternative suppliers of fertilisers to compensate for shortfalls from Russia and Belarus.[40] On 12 December 2022, an amendment to the regulation was announced suspending until 17 June 2023 tariffs on inputs used for the production of nitrogen fertilisers for all countries except Russia and Belarus (EC, 2022[71]; European Council, 2023[72]). The objective of this amendment was to increase the stability and diversification of supply, thereby alleviating costs for EU fertiliser producers and EU farmers.

Specific temporary flexibilities to existing import requirements on animal feed were adopted to contribute to alleviating the pressure on the feed market. Regulatory flexibilities were also implemented to facilitate the import of certain agricultural inputs. As an example, *Spain* relaxed the Maximum Residue Limits (MRLs) for pesticides in maize destined exclusively for animal feed imported from Brazil or Argentina for the period between March and September 2022.

Contextual information

The European Union is the largest economic region covered in this report, accounting for 18% of the economic activity of all countries covered herein. Although the contribution of agriculture to both GDP and employment has declined since 2000, the share of agriculture in the region's exports has increased by approximately 50% during this period (Table 12.7). More than 40% of the region's landmass is dedicated to agriculture, of which nearly 60% is dedicated to arable land use. Crops (including cereals, oilseeds, fresh fruit and vegetables, and plants and flowers) predominate in agricultural output, accounting for 61% of total production, although large differences exist across Member States. Livestock products – including dairy, beef and veal, pig meat, sheep meat, poultry and eggs – account for the remainder.

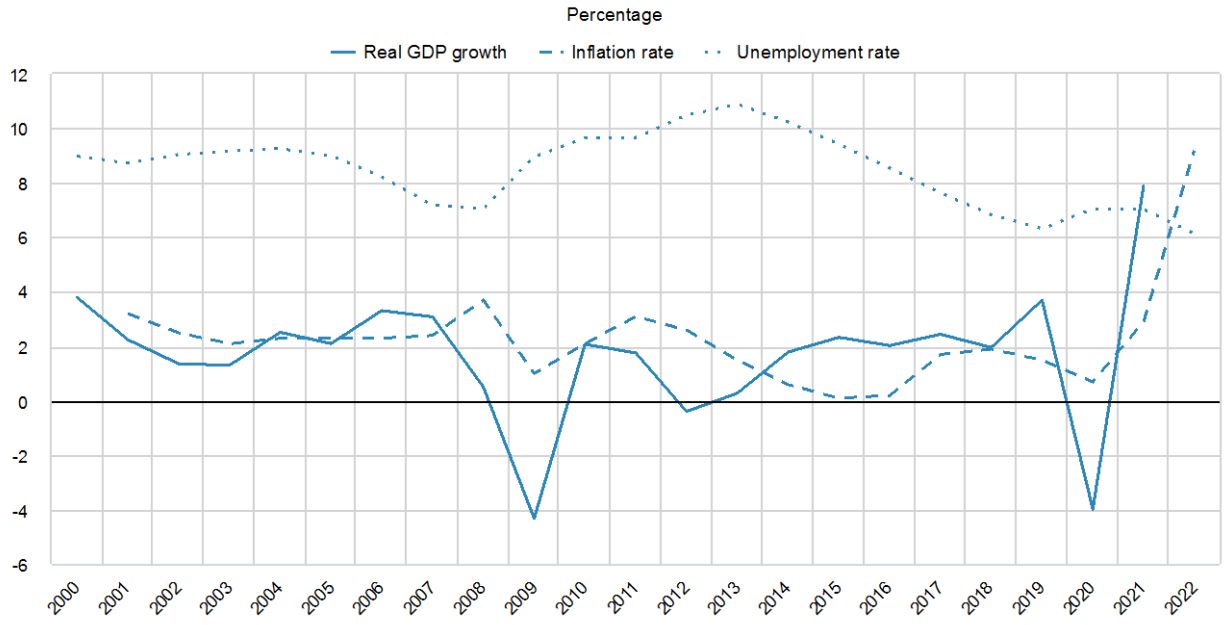
Table 12.7. European Union: Contextual indicators

	European Union		International comparison	
	2000* (EU15)	2021* (EU27)	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	9 933	21 901	24.8%	17.8%
Population (million)	378	447	8.8%	8.5%
Land area (thousand km^2)	3 124	3 996	3.8%	4.8%
Agricultural area (AA) (thousand ha)	140 395	163 962	4.7%	5.6%
			All countries[1]	
Population density (inhabitants/km^2)	114	106	52	64
GDP per capita (USD in PPPs)	26 302	48 900	9 350	23 401
Trade as % of GDP	10.9	15.5	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	2.2	1.6	2.9	3.9
Agriculture share in employment (%)	4.3	3.8	-	-
Agro-food exports (% of total exports)	6.0	8.9	6.2	7.9
Agro-food imports (% of total imports)	5.8	5.9	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	54	61	-	-
Livestock in total agricultural production (%)	46	39	-	-
Share of arable land in AA (%)	52	58	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

Real GDP in the region rebounded strongly in 2021 after the contraction of economic activity due to the fallout of the COVID-19 emergency in the previous year. Prior to 2020, GDP growth had been positive since 2013 (Figure 12.5). A sharp rise in inflation under the pressure of energy, food and other commodity prices hit the European Union economy in 2021-22. Geographical proximity to war and dependence on imports of fossil fuels make the European Union one of the most exposed economies in this respect. The unemployment rate returned in 2022 to pre-covid level (6%).

Figure 12.5. European Union: Main economic indicators, 2000 to 2022



Note: EU28 for 2000-19 and EU27 (excluding the United Kingdom) from 2020.
Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

The European Union has been the world's largest agro-food exporter since 2013, and remains one of the largest importers as well (Figure 12.6). The region is a net food exporter, with agro-food products accounting for 8.9% of all EU exports and 5.9% of all EU imports. The region's agro-food exports are overwhelmingly composed of processed goods for final consumption (61%), while imports are more evenly distributed among the four categories shown in Figure 12.6, with processed goods for final consumption accounting for the largest share of imports (26%).

Figure 12.6. European Union: Agro-food trade



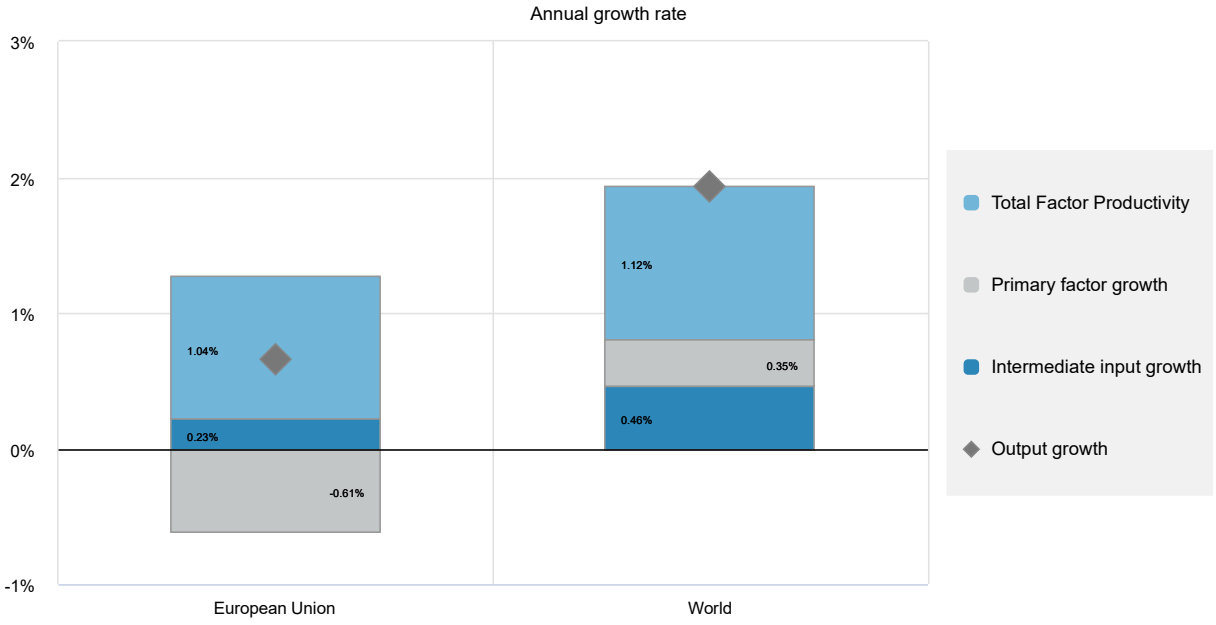
Notes: Numbers may not add up to 100 due to rounding. Extra-EU trade: EU15 for 2000-2003; EU25 for 2004-06; EU27 for 2007-13, EU28 for 2014-19 and EU27 (excluding the United Kingdom) from 2020. The exclusion of the United Kingdom contributed to the rise of EU export since 2020.
Source: UN Comtrade Database.

At 0.66%, agricultural output growth in the European Union over the period 2011-20 was significantly below the world average of 1.9% (Figure 12.7). Total Factor Productivity (TFP) growth was also below the world

average over the period at 1.04% on average, but it was still sufficient to more than offset the impact of reduced primary factor input use, including labour, land, livestock and machinery, on agricultural output.

The moderate TFP growth has been achieved in the sector along with a reduction of certain environmental pressures, as illustrated through various environmental indicators (Table 12.8). From 2000 to 2021, the region's nitrogen balance fell by more than 35%, the phosphorous balance declined by nearly 80%, while the share of agriculture in water abstractions fell by 13 percentage points. At the same time, although the European Union has achieved reductions in these indicators, some still remain high by comparison. For example, the region's nitrogen balance is nearly 50% higher than the OECD average, with some Member States with nitrogen surpluses more than three times above the EU average. While the region achieved improvements in most environmental indicators, agriculture's GHG emissions as a proportion of total European Union GHG emissions increased over the period, from 8.8% in 2000 to 11.6% in 2021.

Figure 12.7. European Union: Composition of agricultural output growth, 2011-20



Note: EU27. Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 12.8. European Union: Productivity and environmental indicators

	European Union		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	1.1%	1.0%	1.7%	1.1%
			OECD average	
Environmental indicators	2000* (EU15)	2021* (EU27)	2000*	2021*
Nitrogen balance, kg/ha	68.4	44.0	32.2	30.4
Phosphorus balance, kg/ha	7.3	1.5	3.3	3.0
Agriculture share of total energy use (%)	2.0	2.9	1.7	2.0
Agriculture share of GHG emissions (%)	8.8	11.6	8.6	10.5
Share of irrigated land in AA (%)	..	..	-	-
Share of agriculture in water abstractions (%)[1]	41.7	28.4	46.6	49.7
Water stress indicator	..	..	8.3	7.4

Notes: * or closest available year. EU27 for TFP annual growth rate. 1. Due to the data availability, the EU15 aggregate does not include Austria, Germany, Ireland, Italy and the United Kingdom; while the EU27 aggregate does not include Austria, Croatia, Finland, Hungary, Ireland and Italy.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Notes

[1] For 2020, estimates include the United Kingdom. Although the United Kingdom withdrew from the European Union on 31 January 2020, the UK budget for agricultural expenditures in 2020 continued to be sourced largely from the European Commission, and the United Kingdom remained part of the Common Market in 2020.

[2] There is one CSP for each of the 27 EU Member States, except for Wallonia and Flanders in Belgium, which each has their own one, for a total of 28 plans.

[3] Also referred to as the June 2003 reform or the 2003 "Luxembourg" reform.

[4] This section provides an overview of the main policy tools in place; the new elements of the CAP 2023-27 framework and its implementation are described later in the domestic policy developments section.

[5] Co-financing rates vary by measure and by Member State.

[6] Member States with average direct payment per hectare below 90% of the EU average can transfer up to 25% of rural development funds to direct payments.

[7] The SAPS was an alternative to the BPS in place in most Member States that joined the European Union after 2000. It offered a uniform decoupled per hectare payment rate. The SAPS applies to all Member States joining since 2004 except Slovenia, Malta, and Croatia, which implement the BPS with the EU15.

[8] These standards were designed to: establish buffer strips along water courses (GAEC 1); comply with authorisation on water for irrigation (GAEC 2); protect ground water from pollution (GAEC 3); ensure minimum soil cover (GAEC 4) and minimum land management practices (GAEC 5); maintain soil organic matter level (GAEC 6); ensure the retention of landscape features (GAEC 7) (EC, 2015[81]).

[9] Payments are granted on a maximum number of hectares, which varies by country or region: Belgium (Wallonia), 30 ha; Bulgaria, 30 ha; Croatia, 20 ha; France, 52 ha; Germany, 46 ha with a higher per hectare payment rate for the first 30 ha; Lithuania, 30 ha; Poland, from 3 to 30 ha (with no payment below 3 ha); Portugal, 5 ha as from claim year 2017; Romania, 30 ha with a smaller per hectare payment rate for the first 5 ha; and the Slovak Republic, 28 ha with different hectare payments for 3 size ranges (below 4.99 ha, from 5 to 14.99 ha, above 15 ha).

[10] Member States that implemented the redistributive payment with more than 5% of the national ceiling allocated to the scheme could opt-out of this mechanism and the following six Member States and regions used this option: Belgium (Wallonia), Croatia, France, Germany, Portugal, and Romania.

[11] The Czech Republic, Denmark, Cyprus, Estonia, Finland, Latvia, Luxemburg, Malta, the Netherlands, Slovenia, the Slovak Republic, Spain, and Sweden.

[12] Austria, Belgium (Flanders), Bulgaria, Ireland, Greece, Hungary, Poland and Portugal.

[13] Austria, Bulgaria, Estonia, Greece, Italy, Latvia, Luxembourg, Portugal, Slovenia and Spain.

[14] The criteria are low temperature, dryness, excess soil moisture, limited soil drainage, unfavourable texture and stoniness, shallow rooting depth, poor chemical properties, and slope.

[15] The fifteen Member States that opted for the SFS were: Austria, Bulgaria, Germany, Estonia, Greece, Spain, Croatia, Italy, Latvia, Hungary, Malta, Poland, Portugal, Romania, and Slovenia. No strict definition of “small farmer” was provided for under the scheme, which was available to the farmers eligible under the basic payment scheme (BPS) or the single area payment scheme (SAPS) and wishing to participate in the scheme.

[16] Member States could choose their preferred method to calculate their SFS payments: lump-sum payment (an equal amount to all farmers in the scheme); payment due each year (individual farmers receive a single payment equivalent to what would have been due under other payment schemes); and payment due in 2015 (individual farmers received a single payment that depends on the amount that would have been due in 2015). Member States that opted for the “payment due each year” method were not subject to the 10% maximum, provided they did not round up lower payment amounts to EUR 500 (USD 570). For more information, see (EC, 2017[80]).

[17] If the average market price in an EU country or in a region of an EU country drops below EUR 2 224 (USD 2 339) per tonne over a representative period, the European Commission may use public intervention to support beef prices (EC, n.d.[79]).

[18] In addition to the EAFRD, these include the European Regional Development Fund (ERDF), Cohesion Fund, European Social Fund (ESF), and the European Maritime and Fisheries Fund (EMFF).

[19] Exceptional temporary support was added to the list in response to the COVID-19 outbreak (2020[76]) and the impact of Russia's invasion of Ukraine (2022[54]).

[20] Regulation (EU) 2021/1119.

[21] The European Unions' National Determined Contribution covers all 27 of its Member States.

[22] Regulation (EU) 2023/857.

[23] Regulation (EU) 2018/841.

[24] Rules on support for CSPs are established by EU Regulation 2021/2115 (EP, 2021[73]), which also sets the rules on the Performance Monitoring and Evaluation Framework (PMEF), which applies for the CAP from 2023 until 2027.

[25] EU Member States have been encouraged to set non-binding national targets – referred to as "national values" – in relation to the EU-level targets from the Farm to Fork (F2F) and Biodiversity strategies.

[26] In the CAP 2023-27 the Basic payment scheme has been renamed as Basic income support for sustainability (BISS).

[27] In both cases, the trend would be compared to a three-year baseline, comprising the average of 2015 to 2017.

[28] Progress can be monitored online via the "EU Biodiversity Strategy Actions Tracker" (EC, 2022[74]) providing regular updates on the implementation of the strategy.

[29] All EU Member States are required to produce and periodically update Nitrate Action Programmes as part of the Nitrates Directive.

[30] REPowerEU is the European Commission's plan to make Europe independent from Russian fossil fuels well before 2030, in light of Russia's invasion of Ukraine (https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/repowereu-affordable-secure-and-sustainable-energy-europe_en).

[31] Regulations (EU) 2019/6 and (EU) 2019/4.

[32] Trio Presidency of the Council of the European Union France, the Czech Republic and Sweden: Declaration on antimicrobial resistance (March 2022).

[33] The National Research Institute for Agriculture, Food and Environment (INRAE) was established in 2020 from the merger of the National Institute of Agricultural Research (INRA) and the National Research Institute of Science and Technology for Agriculture and Environment (IRSTEA).

[34] The EGalim law, is actually called "law for the balance of commercial relations in the agricultural and food sector and a healthy, sustainable and accessible food for all". As of 1 January 2022, it requires public catering to offer at least 50% sustainable and quality products, including at least 20% organic products (Ministère de l'Agriculture et de la Souveraineté Aimentaire, 2022[77]).

[35] GAEC 8 requires a minimum share of 4% of arable land to non-productive areas but the share to be attributed to compliance with this GAEC is 3 % when at least 7% of arable land is devoted to non-productive areas under an eco-scheme.

[36] The pig meat industry has been experiencing difficulties due to the slowdown in exports to the People's Republic of China, the spread of African swine fever among EU Member States, the impact of COVID-19 restrictions and Russia's war of aggression in Ukraine.

[37] The European Food Security Crisis preparedness and response Mechanism (EFSCM) was established following the adoption of the "Contingency plan for food supply and food security in times of crisis" under the Farm to Fork Strategy (EC, 2021[75]). Its aim is to improve co-operation between the public and private sectors and evaluate risks when crises arise. It relies on a dedicated group of experts, and stakeholders from the food supply chain.

[38] From 2021, all future trade agreements with the European Union are expected to include a chapter on sustainable food systems as stated in the European Commission's Communication "Trade Policy Review: An Open, Sustainable and Assertive Trade Policy" (EC, 2021[82]).

[39] The "Solidarity Lanes" and the Black Sea Grain Initiative allowed the export of about 25 million tonnes of Ukrainian grain, oilseeds and related products between May 2022 and the end of October 2022 (EC, 2022[78]).

[40] Oman, Turkmenistan and Qatar were identified as alternative sources of nitrogen fertilisers, while imports from Egypt and Algeria have already increased.

13 Iceland

Support to agriculture

Iceland has seen limited reform to agricultural policies and support remains among the highest in the OECD. The Producer Support Estimate (PSE) was more than three times the OECD average in 2020-22, at 50% of gross farm receipts. Market price support measures account for 47% of producer support, principally tariffs that maintain high domestic prices relative to world prices and cause a large transfer from consumers to agricultural producers. Payments coupled with production factors complement market price support. Output payments for milk producers and largely decoupled payments to sheep meat producers represent most of the remaining support to farmers. About 70% of farm support is potentially most-distorting to production and trade.

Effective prices received by farmers have declined over time on average as the Producer Nominal Protection Coefficient (NPC) declined but remain almost double those in world markets. Market price support is especially high for poultry and egg products, where it accounts for 100% of Single Commodity Transfers (SCT). SCT represent 95% of total PSE.

Expenditures for general services (General Service Support Estimate, GSSE) represent 4% of total support to agriculture (Total Support Estimate, TSE), much lower than the 14% OECD average. These expenditures decreased from 8% of the value of agricultural production in 1986-88 to 3% in 2020-22 because the value of production increased 18% while expenditures decreased around 56%. Inspection and control represent 63% of GSSE and much of the rest is devoted to public stockholding. TSE as a share of Gross Domestic Product (GDP) declined significantly, from 5% in 1986-88 to 0.8% in 2020-22.

Recent policy changes

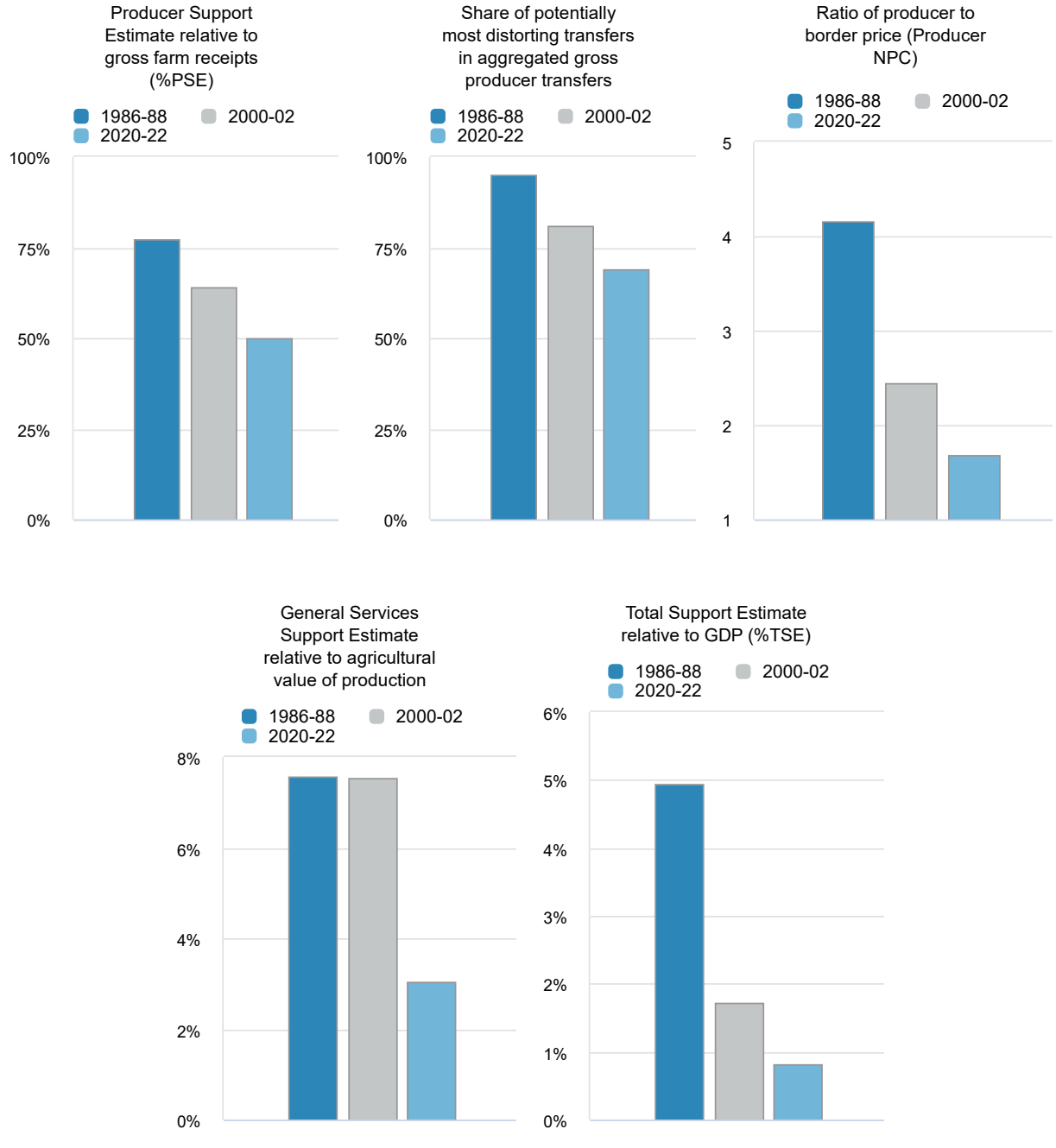
A Ministry of Food, Agriculture and Fisheries was established at the beginning of 2022, placing food in the foreground to emphasise the food context as one comprehensive chain of value-creation and resource-utilisation. The policy goals are to promote high-quality food production along with responsible and sustainable use of land and oceanic resources, and support innovation and product development.

Discussions towards a comprehensive policy for agriculture and other industries responsible for food production continued in 2022, leading to a draft to be presented in Parliament in 2023 for expected adoption before the end of the year. A dedicated agricultural policy will also be presented to Parliament for the first time in 2023; the policy was previously included only in the regulatory framework and agricultural agreements between the government and farmers' association. The major components of the agricultural policy include food security, climate-change mitigation and adaptation, biodiversity, land use, sustainable circular economy, research, and development. These policies are expected to be adopted by Parliament in 2023 and in force until 2040.

Assessment and recommendations

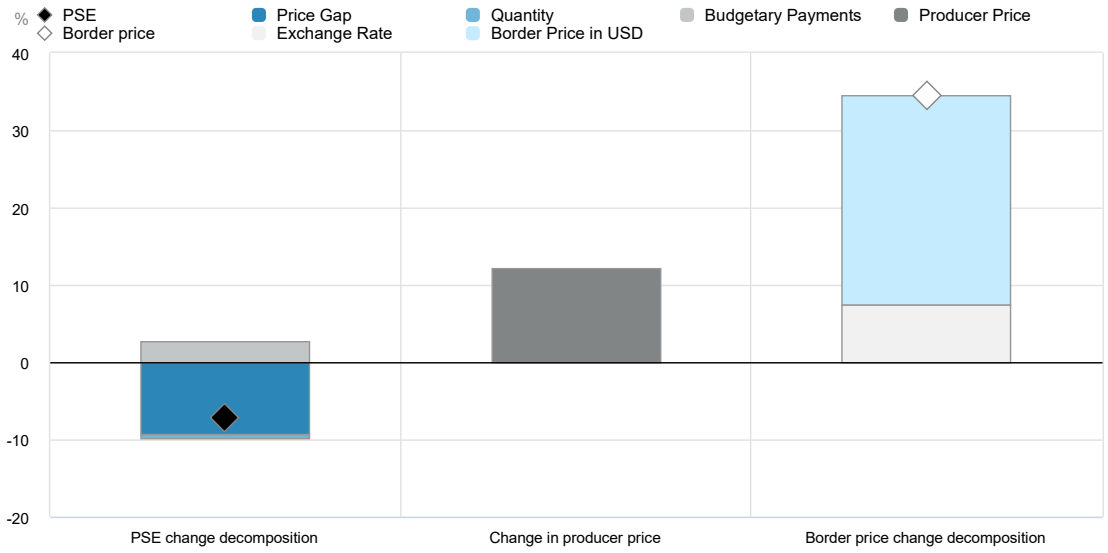
- Climate change has had positive impacts on crop and grass yields. However, warmer climatic conditions also bring new pests and insects that might reduce future yields. The agriculture sector is assumed to play a significant role in the national action plan for social adaptation to climate change being finalised by mid-2023, but a comprehensive climate-change adaptation policy and measures for agriculture have not been implemented. It will be important to move from adaptation strategies to policy implementation, supported by monitoring and measurement of progress. It will also be important that adaptation policy supports the shift from coping and incremental adaptation strategies towards transformative adaptation of production systems.
- Agriculture plays a central role in Iceland's climate-mitigation policy and efforts to reach carbon-neutrality, mainly due to the size of the livestock sector. Measures to reduce greenhouse-gas (GHG) emissions from agriculture will be important to reach the challenging goal of carbon-neutral agriculture by 2040. However, current agricultural support measures – especially market price support and output payments for ruminant products such as milk and wool – counteract and reduce the effectiveness of GHG-mitigation measures in agriculture.
- Progress in agricultural policy reforms has been limited, and Iceland's support to farmers remains well above that of most OECD countries. Given that agricultural support policies remain dominated by market price support and output payments, Iceland's support to agriculture continues to be production- and trade-distorting, contributing to inflated agricultural and food prices, and risks adding to environmental pressures.
- Producer support should be decoupled from agricultural production and favour less production- and trade-distorting and less environmentally harmful forms of support. Re-instrumentation of producer support from production-coupled support measures towards decoupled support payments with environmental cross-compliance requirements and towards specific agri-environmental measures (including GHG-mitigation) would contribute to reaching agriculture's carbon-neutrality target by 2040.
- The re-instrumentation and reform of agricultural support policies could contribute to adaptation too. Reducing market price support and payments targeted at specific commodities would contribute to climate-change adaptation, as farmers would not be locked into producing subsidised commodities under changing climatic conditions.
- In addition, shifting budget expenditure from producer support towards Iceland's agricultural innovation systems and other general services could increase innovations to enhance environmentally sustainable productivity growth and contribute to climate-change mitigation and adaptation.

Figure 13.1. Iceland: Development of support to agriculture



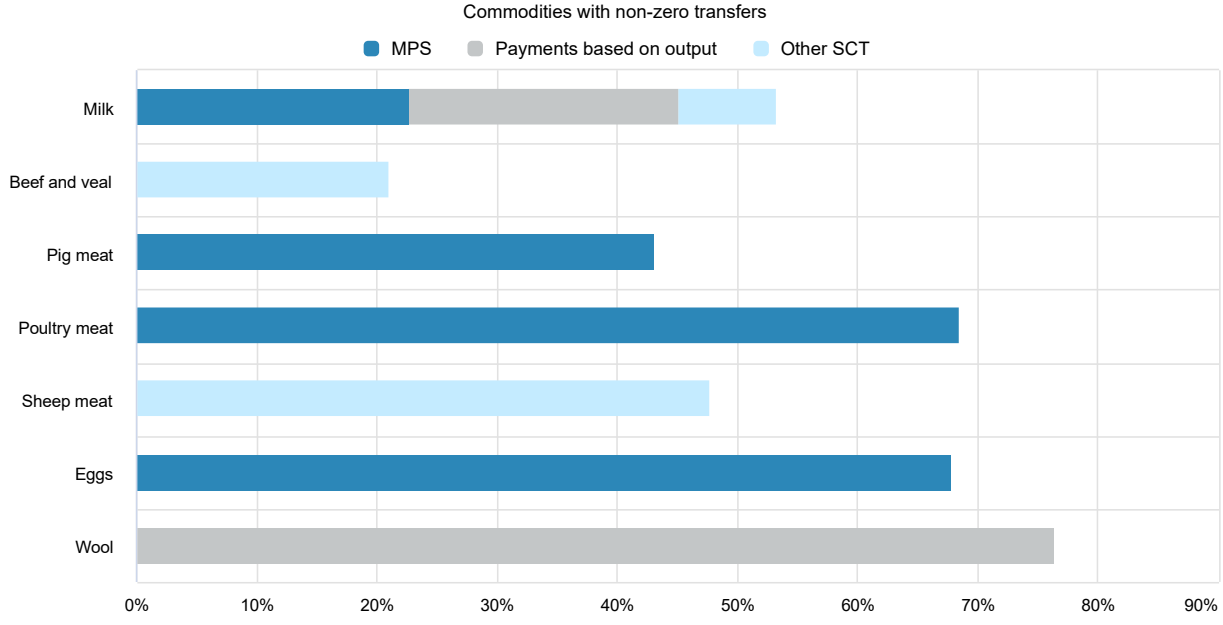
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 13.2. Iceland: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 13.3. Iceland: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 13.1. Iceland: Estimates of support to agriculture

Million USD

	1986-88	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**236**	**150**	**278**	**256**	**283**	**296**
***of which:** share of MPS commodities (%)*	80.32	82.11	85.03	84.12	84.69	86.27
Total value of consumption (at farm gate)	**205**	**136**	**249**	**224**	**252**	**270**
Producer Support Estimate (PSE)	**193**	**139**	**191**	**198**	**201**	**175**
Support based on commodity output	180	113	129	132	141	115
Market Price Support[1]	179	72	89	95	98	73
Positive Market Price Support	179	72	89	95	98	73
Negative Market Price Support	0	0	0	0	0	0
Payments based on output	2	40	41	37	43	42
Payments based on input use	13	4	18	26	14	14
Based on variable input use	3	0	3	3	3	3
with input constraints	0	0	0	0	0	0
Based on fixed capital formation	6	2	11	19	7	7
with input constraints	0	0	0	0	0	0
Based on on-farm services	4	2	4	4	4	3
with input constraints	0	0	0	0	0	0
Payments based on current A/An/R/I, production required	-1	-3	12	10	12	12
Based on Receipts / Income	-1	-3	0	0	0	0
Based on Area planted / Animal numbers	0	0	12	10	12	12
with input constraints	0	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	20	33	29	34	34
Payments based on non-current A/An/R/I, production not required	1	5	0	0	0	0
With variable payment rates	0	0	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
With fixed payment rates	1	5	0	0	0	0
with commodity exceptions	1	5	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0	0
Percentage PSE (%)	**77.19**	**63.98**	**50.16**	**55.12**	**52.04**	**43.98**
Producer NPC (coeff.)	**4.16**	**2.44**	**1.68**	**1.82**	**1.76**	**1.52**
Producer NAC (coeff.)	**4.38**	**2.78**	**2.01**	**2.23**	**2.09**	**1.78**
General Services Support Estimate (GSSE)	**18**	**11**	**8**	**9**	**8**	**8**
Agricultural knowledge and innovation system	5	5	1	1	1	1
Inspection and control	1	2	5	5	5	6
Development and maintenance of infrastructure	2	1	0	0	1	0
Marketing and promotion	1	1	0	0	1	1
Cost of public stockholding	9	2	2	3	1	1
Miscellaneous	0	0	0	0	0	0
Percentage GSSE (% of TSE)	**6.94**	**7.39**	**4.25**	**4.54**	**3.75**	**4.46**
Consumer Support Estimate (CSE)	**-112**	**-65**	**-82**	**-87**	**-90**	**-69**
Transfers to producers from consumers	-157	-66	-83	-88	-91	-70
Other transfers from consumers	-1	-2	0	0	0	0
Transfers to consumers from taxpayers	46	3	0	0	1	1
Excess feed cost	0	0	0	0	0	0
Percentage CSE (%)	**-70.44**	**-48.30**	**-33.14**	**-39.09**	**-35.93**	**-25.76**
Consumer NPC (coeff.)	**4.38**	**1.98**	**1.50**	**1.64**	**1.56**	**1.35**
Consumer NAC (coeff.)	**3.38**	**1.93**	**1.50**	**1.64**	**1.56**	**1.35**
Total Support Estimate (TSE)	**257**	**153**	**200**	**207**	**209**	**184**
Transfers from consumers	158	68	83	88	91	70
Transfers from taxpayers	100	87	117	120	119	114
Budget revenues	-1	-2	0	0	0	0
Percentage TSE (% of GDP)	**4.94**	**1.72**	**0.81**	**0.96**	**0.82**	**0.68**
Total Budgetary Support Estimate (TBSE)	**78**	**81**	**112**	**113**	**111**	**110**
Percentage TBSE (% of GDP)	**1.52**	**0.91**	**0.45**	**0.52**	**0.44**	**0.41**
GDP deflator (1986-88=100)	**100**	**264**	**656**	**618**	**655**	**695**
Exchange rate (national currency per USD)	**40.94**	**89.37**	**132.54**	**135.38**	**126.95**	**135.27**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Iceland are: milk, beef and veal, sheep meat, wool, pig meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

Iceland's agricultural policy focuses on food security, safety and quality; strengthening rural activity; environmental sustainability; and maintaining farm income.

Iceland supports agriculture heavily and reforms over time have been limited. Support consists mainly of price support sustained with border measures and quotas. Dairy producers receive payments based on output. In 1996, support to sheep meat producers changed from price support to direct payments based on historic entitlements. A regional scheme for sheep farmers implemented in 2008 provides additional direct payments based on historic entitlements. Individual non-transferrable quotas for milk producers were introduced in 1980 and went through a number of reforms. In 1992, the current system of freely transferable quotas was introduced, and production-based payments were linked to the quota, paid directly to the farmer.

Since the mid-1990s, tariffs on agricultural products were reduced. However, tariffs on several agriculture product groups, particularly meat, dairy and flowers, remain high and complicated. Many compound duties with both *ad valorem* and specific duties apply. Export subsidies for agricultural products have not been provided since the early 1990s.

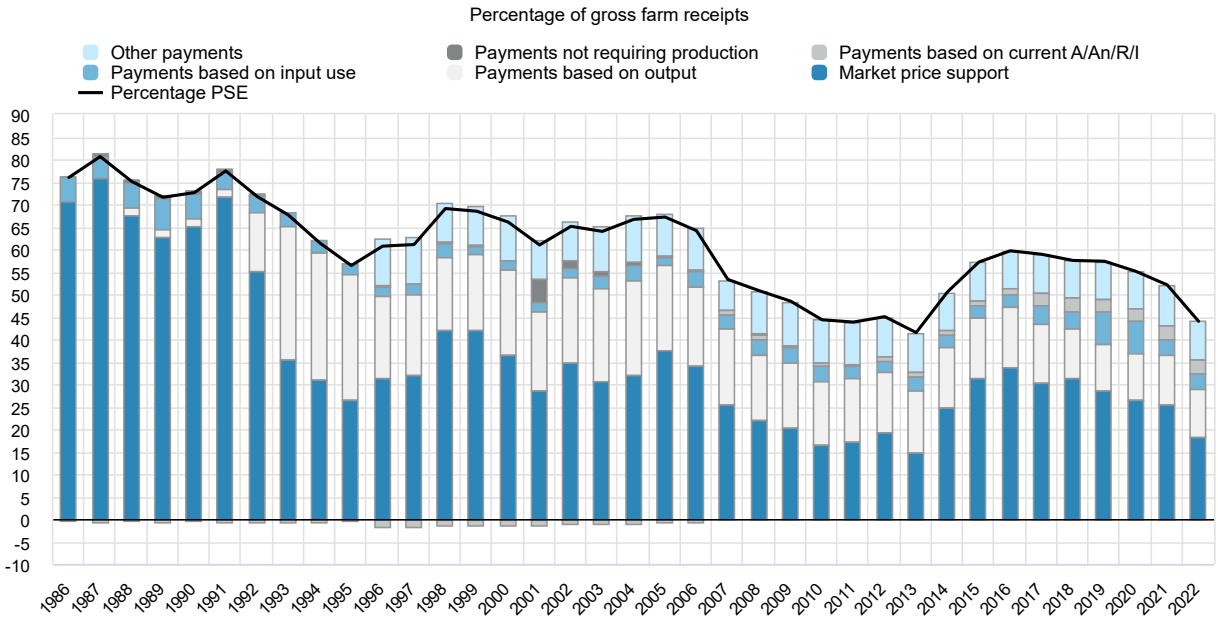
Table 13.2. Iceland: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to mid-1990s	Closed economy	Minimum prices Agricultural tariffs and non-tariff measures Consumer subsidies
Mid-1990s-2016	Gradual reforms to open market	EFTA, EEA Phase out of administered prices (except milk) Decoupled payments introduced to substitute price support measures Act Production, Pricing and Sale of Agricultural Products No. 99/1993 Act on Agriculture No. 70/1998
2017-present	Continuation of gradual reforms	Revisions of agreements for sheep and cattle farmers Several FTAs signed EEA agreement enhanced Reduction of agricultural tariffs

The policy mix remains dominated by production- and trade-distorting measures. Iceland continues to provide agricultural support through market price support maintained by border measures, and through direct payments based on entitlements directly or indirectly coupled with production.

Support to producers declined since the mid-1980s. An important reduction in market price support took place at the beginning of the 1990s, but market price support still accounts for 42% of total support to agriculture. Two-thirds of producer support is provided based on prices (Figure 13.4). TSE has declined over time, averaging 0.8% of the country's GDP in recent years, with PSE being the dominant component at 95%. The remaining TSE is financing for GSSE of which 70% comprises expenditures for inspection, with public stockholding expenditures responsible for much of the remainder.

Figure 13.4. Iceland: Level and PSE composition by support categories, 1986 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

The objective of Iceland's agricultural policy is to maintain and strengthen a diverse agricultural sector to the extent that physical and marketing conditions allow. The key goals are to: meet domestic demand where realistically possible; maintain sustainable production of high-quality, healthy products; improve efficiency and competitiveness; improve farmers' incomes; foster innovation and create job opportunities; and sustain livelihoods in rural areas.

Agricultural policies in Iceland are based on two legal instruments. First, the policy concerning production and marketing of agricultural products (laid out in the Act on the Production, Pricing and Sale of Agricultural Products No. 99/1993) establishes objectives for Iceland's agricultural policy and provides the framework for Icelandic agriculture and its regulation. The second legal instrument concerns policies for the provision of support to farm construction projects, livestock improvement and extension (advisory) services (laid out in Act on Agriculture No. 70/1998).

The government negotiates with the Farmers' Association concerning the general framework for support and production control in the cattle, sheep, and horticultural sectors. There is also an agreement on so-called horizontal support, such as advisory services, breeding, animal welfare, environmental protection, sustainable land management, organic farming, and land cultivation. The current agreements cover 2017-26, with extensive reviews in 2019 and again in 2023. These agreements have traditionally set the foundation of the support system for agriculture. These agreements are normally revised twice during their term of validity and the latest revision will take place in 2023 and is expected to focus on issues related to food security, environment, and climate change.

Iceland's agricultural support comes through price support (maintained by border measures), and direct payments based on payment entitlements coupled with production factors. Price support is provided for all livestock products and some horticultural products. Direct payments are provided to cattle (mainly dairy) and sheep producers, and on a smaller scale, to certain greenhouse producers.

For dairy, direct payments depend on the size of a producer's quota and the current number of animals. Headage payments are provided for up to 180 dairy cows and 260 beef cows per farm, with full payment for each of the first 50 dairy cows and 200 beef cows, then at a declining rate for each additional cow. The Ministry of Fisheries and Agriculture sets a national dairy production quota divided among producers based on their annual quotas for the preceding year. Annual dairy quotas also determine entitlements for direct payments. Production in excess of quotas is permitted, provided all such production is for export. Wholesale prices are regulated for approximately half of all dairy products based on the volume of raw milk required. A government-chaired committee representing both the Farmers' Association and the labour union (acting on behalf of consumers) determines the guaranteed minimum prices for milk delivered within production quotas on an annual basis. Trade in support entitlements (basic payments to all active dairy and cattle farmers) between entitlement holders is allowed with quantity limitations and takes place in a market operated by the government. Dairy producers also benefit from support for breeding, land cultivation and development programmes.

For sheep, direct payments link to entitlements based on historical production. However, eligibility to receive full payments requires keeping a minimum number of winter-fed sheep on the farm. Additional payments to sheep farmers relate to a quality-control scheme for lamb meat based on animal welfare, product quality, traceability and sustainability criteria. Premium payments are provided at the wholesale level for purchasers of wool, and to farmers to co-operate in increasing added value for sheep products.

Imports of meat, dairy products, and some vegetables that compete with domestic production are subject to tariffs, often compound duties with an *ad valorem* component of 30% and a specific duty that varies from ISK 5/kg (USD 0.04/kg) to ISK 1 462/kg (USD 2/kg). However, products originating in partner countries of the European Economic Area (EEA) or in one of the 41 countries with which Iceland has free trade agreements may carry lower tariffs. The agreement for the cattle sector includes a provision to change the specific duties for certain cheese and milk powder products based on changes in the Special drawing rights to Krona (SDR/ISK) exchange rate from 1995 to 2016, effective 1 March. Since then, the specific component was adjusted annually to the 12-month evolution of SDR/ISK.

Iceland is a member of the European Economic Area (EEA) and of the European Free Trade Association (EFTA). While the EEA Agreement does not apply to most trade in agricultural goods, it opens trade in several processed agricultural products and encourages bilateral agreements on primary commodities.

As a member of EFTA, Iceland is also party to several Free Trade Agreements (FTAs), including with countries in Southeast Europe, North Africa and the Middle East, Latin America, and Asia, as well as with the South African Customs Union. In addition, Iceland has bilateral FTAs with the Faroe Islands, Greenland, and the People's Republic of China.

Efforts are being made to strengthen environmental consultation within the agricultural sector, to implement green accounting for farmers and increase the number of participating farmers in programmes related to environmentally friendly agriculture. The agricultural sector has set a goal of carbon neutrality by 2040. Iceland's 2020 Climate Action Plan contains several actions for agriculture. These include, for example, improved utilisation and handling of fertilisers by reducing the use of mineral fertilisers; improved livestock feeding to reduce enteric fermentation; increased domestic vegetable production; and carbon neutrality in cattle breeding. Another main action is an ongoing programme around climate friendly agriculture which is based on the co-operation of several ministries and institutions in the field of environment, food and agriculture. The main goal is to reduce GHG emissions from agriculture, improve feed and resource use, optimise land use and to preserve and increase carbon in soils and vegetation.

The climate action plan further aims at improved treatment of livestock manure and utilisation of synthetic fertilisers, aquaculture waste and other nutritious by-products that can be used for land cultivation or land reclamation. Emphasis is on improving farmers' access to practical information and consultation regarding how they can best reduce GHG emissions from their operations. Efforts that reduce emissions intensity of production, that is GHG emissions per kg of product, are considered of importance since Icelandic agriculture primarily serves the domestic market. Furthermore, efforts are being made to increase domestic production of vegetables, cereals and organic farming.

The agricultural agreements between government and farmers will be revised in 2023 and the common goal between the contracting parties is that all changes will be climate friendly. There is also a comprehensive strategy and implementation plan for land reclamation and forestry, where the focus is on diverse ecosystems, nature-based solutions in climate issues, sustainable land use, knowledge, co-operation and public health.

Climate change adaptation policies in agriculture

A national action plan for social adaptation to climate change is being prepared, expected to be finalised in mid-2023. It will be based on existing policies and goals set by the government. The agricultural system will play a significant role in the plan, such as addressing how the agricultural system needs to respond to changing conditions and how land cultivation should adapt to changing climate conditions.

Domestic policy developments in 2022-23

In the beginning of 2022, a new Ministry of Food, Agriculture and Fisheries was established following elections. The Ministry is based on its predecessor, but focal points and goals have been adjusted and some portfolios transferred to other ministries. Food is now in the foreground of the title as it is emphasised to view food in a broad context as one comprehensive chain of value creation and resource utilisation. The main policy goals are to promote high quality food production along with responsible and sustainable use of land and oceanic resources, and to support innovation and product development.

An ongoing effort has been made to formulate a comprehensive policy in the field of agriculture and other industries responsible for food production. A draft of a comprehensive food policy will be presented to the parliament in the spring of 2023 and is expected to be adopted before the end of the year. A dedicated agricultural policy will also be presented for the first time to the parliament in the spring of 2023. The policy has previously only been expressed as part of the regulatory framework and in agricultural agreements between the government and the farmers' association.

The policy was developed after widespread consultations throughout the country. Its major components include food security, climate change mitigation and adaptation, biodiversity, land use, sustainable circular economy, research, and development. These policies are expected to be adopted by Parliament in 2023 and to be in force until 2040. Factors of food security will be monitored more closely in near future and there the government have been preparing implementation of monitoring food security and other strategic reserves. The Agricultural University of Iceland has prepared comprehensive proposals for increased food security in Iceland. One of the main concerns is the lack of cereal production which has been limited in Icelandic agriculture in modern times but was once widespread. In 2023 the government started an action plan which aims to increase cereal production significantly by investing in infrastructure and plant breeding.

Domestic policy responses to Russia's war of aggression in Ukraine

In early February 2022, prior to Russia's invasion to Ukraine, the government decided to grant a one-time support to address the effects of rising costs (almost doubled) of fertiliser imports due to rising natural gas prices and other inputs. The support was meant to compensate farmers, at least partly, for the cost increase of around ISK 650 million (USD 4.8 million), and to strengthen domestic food security and

farmers' willingness to maintain production. Additionally, ISK 50 million (USD 0.37 million) was granted for long-term projects related to better nutrient use efficiency and environmental issues.

As with the war the impacts on markets for agro-food products and inputs became more significant, a working group established by the government identified significant additional challenges for farmers due to rising costs of fertiliser, feed, oil and other inputs, with implications differing between sectors. During the spring 2022, the financial basis of farmers and the willingness to maintain production were found to be significantly weakened. In response, the government designed and implemented a special support programme of ISK 2.5 billion (USD 18.5 million) to accommodate increased production costs. The support measures are divided into four parts and most of them are in the form of added funding to ongoing direct support payments, while also aiming to increase agricultural resilience and ensure domestic food security. The four support measures are: 1) 65% increase of support payments on land cultivation and farmland payments (ISK 517 million; USD 3.8 million); 2) around ISK 1.3 billion (USD 9.6 million) additional payments on existing support for sheep, dairy, cattle, and goat farming; 3) ISK 140 million (USD 1.03 million) contribution to horticulture farmers; and 4) ISK 450 million (USD 3.3 million) to poultry, swine, and egg farmers to accommodate increased feed prices. Additionally, it was proposed to continue monitoring the development of food security issues and necessary supplies of various inputs.

Trade policy developments in 2022-23

Trade policy responses to Russia's war of aggression in Ukraine

A new provisional law was passed by parliament and took effect on 15 June 2022, which temporarily abolished all tariff duties on imports of products, including all agricultural goods, originated in Ukraine. The law will be valid through May 2023, unless further extended by parliament.

Contextual information

Iceland is a small, sparsely populated country with a GDP per capita above the OECD average. Agriculture contributes about 5% of GDP and 4% of employment. Conditions for agriculture in Iceland are limited by the country's geographical conditions. The growing season is short – around four months – yields are low, and production and transport costs are high. Approximately one-fifth of the total land area of Iceland is agricultural land, mostly suitable for fodder production and livestock raising. Only around 6% of agricultural land area is arable land.

Livestock-rearing is the main farm activity, with milk and sheep meat being the most important products. Livestock production is mostly grassland-based and most farm animals are native breeds. The main crops are hay, cereals for animal feed and vegetables – the latter are cultivated primarily in greenhouses heated with geothermal energy. The main agricultural exports are pure-bred horses for breeding, sheep meat products and fur skins. The range of Iceland's agricultural products is limited and meets approximately 50% of total domestic food requirements. Consequently, Iceland is a net importer of agricultural products (excluding fishery goods), mainly for final consumption. Imports are more diversified than exports and have increased steadily in recent years.

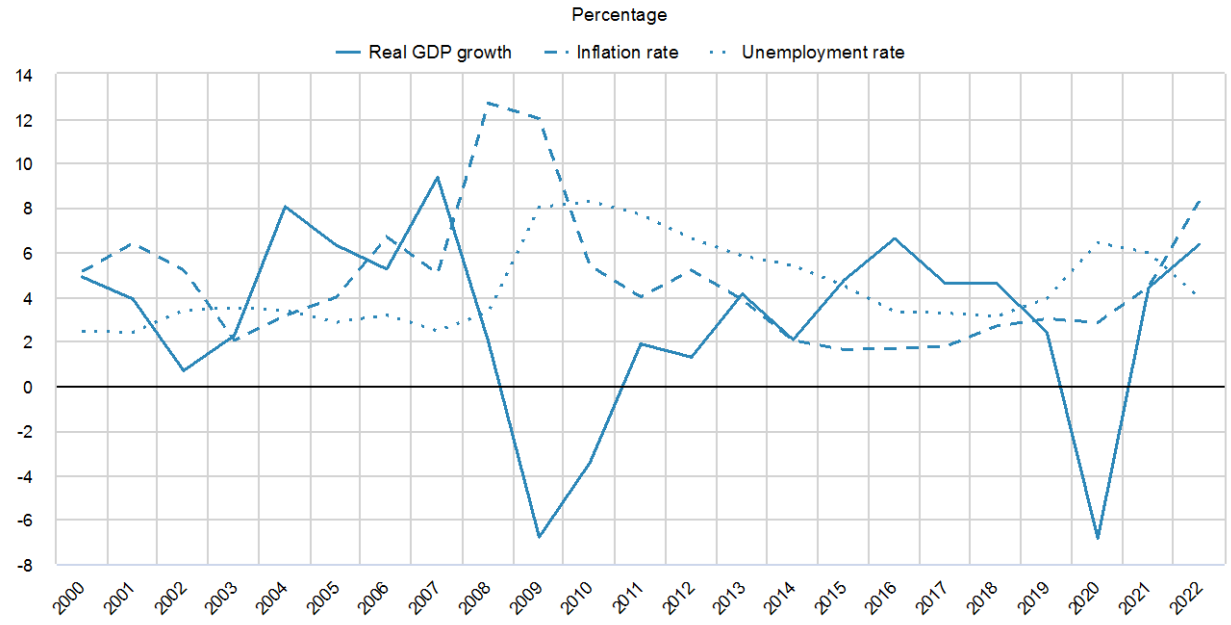
Table 13.3. Iceland: Contextual indicators

	Iceland		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	8	22	0.02%	0.02%
Population (million)	0.3	0.4	0.01%	0.01%
Land area (thousand km^2)	100	101	0.12%	0.12%
Agricultural area (AA) (thousand ha)	1 889	1 872	0.06%	0.06%
			All countries[1]	
Population density (inhabitants/km^2)	3	4	52	64
GDP per capita (USD in PPPs)	29 784	58 297	9 350	23 401
Trade as % of GDP	24.9	27.0	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	8.1	5.1	2.9	3.9
Agriculture share in employment (%)	8.3	4.1	-	-
Agro-food exports (% of total exports)	7.9	4.9	6.2	7.9
Agro-food imports (% of total imports)	7.3	10.1	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	15	13	-	-
Livestock in total agricultural production (%)	85	87	-	-
Share of arable land in AA (%)	7	6	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

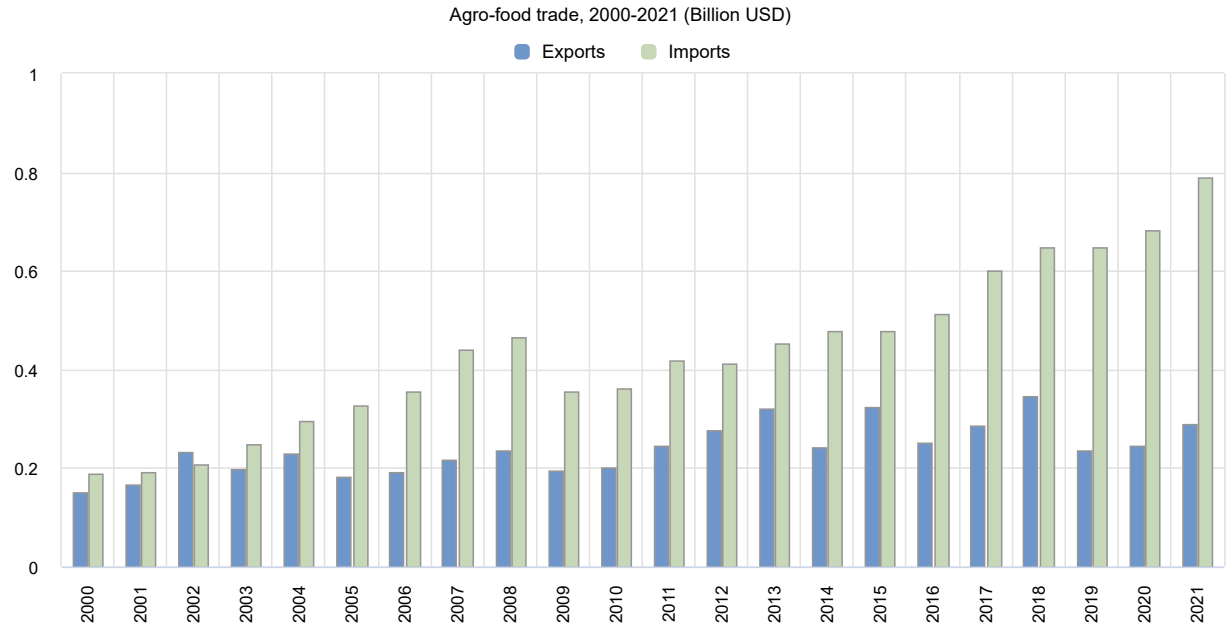
Iceland's economy is recovering from a deep recession caused by the COVID-19 pandemic. The economy is projected to grow by 4.2% in 2022 and 2.8% in 2023**,** driven by buoyant goods and services exports, and the unemployment rate is expected to be around 4.5% in 2022 (OECD, 2022[1]). Iceland's prosperity has been built on the sustainable management of its abundant natural resources, including the comprehensive fisheries management system based on individual transferable quotas, renewable energy (geothermal and hydro) and carbon sequestration opportunities (afforestation, revegetation).

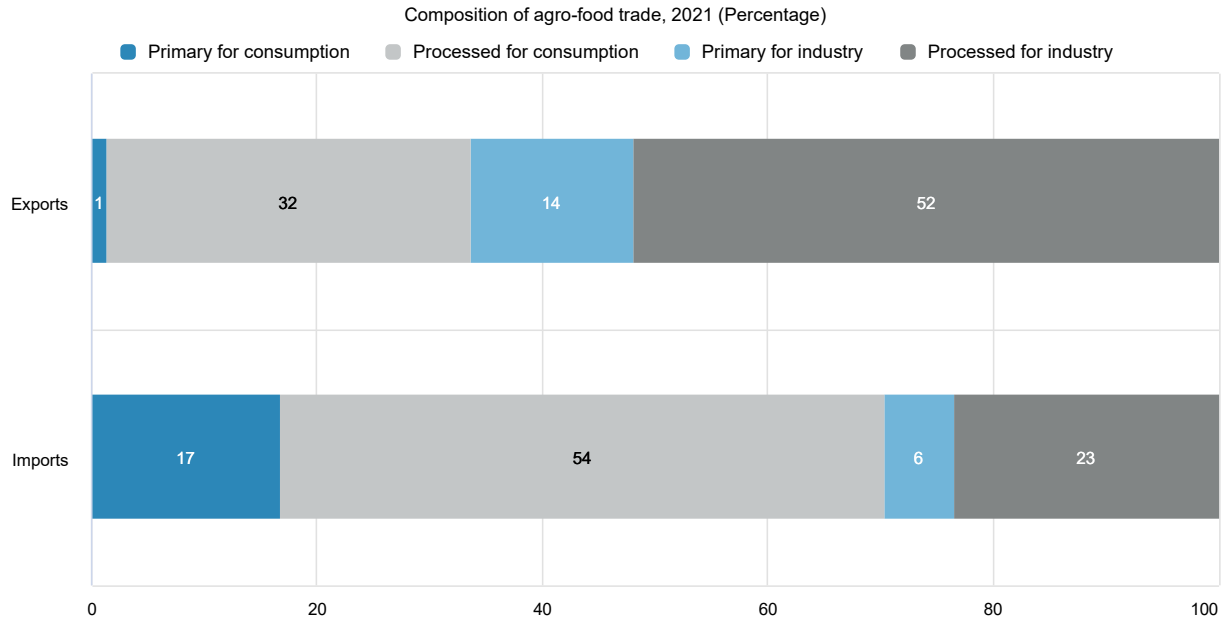
Figure 13.5. Iceland: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Figure 13.6. Iceland: Agro-food trade



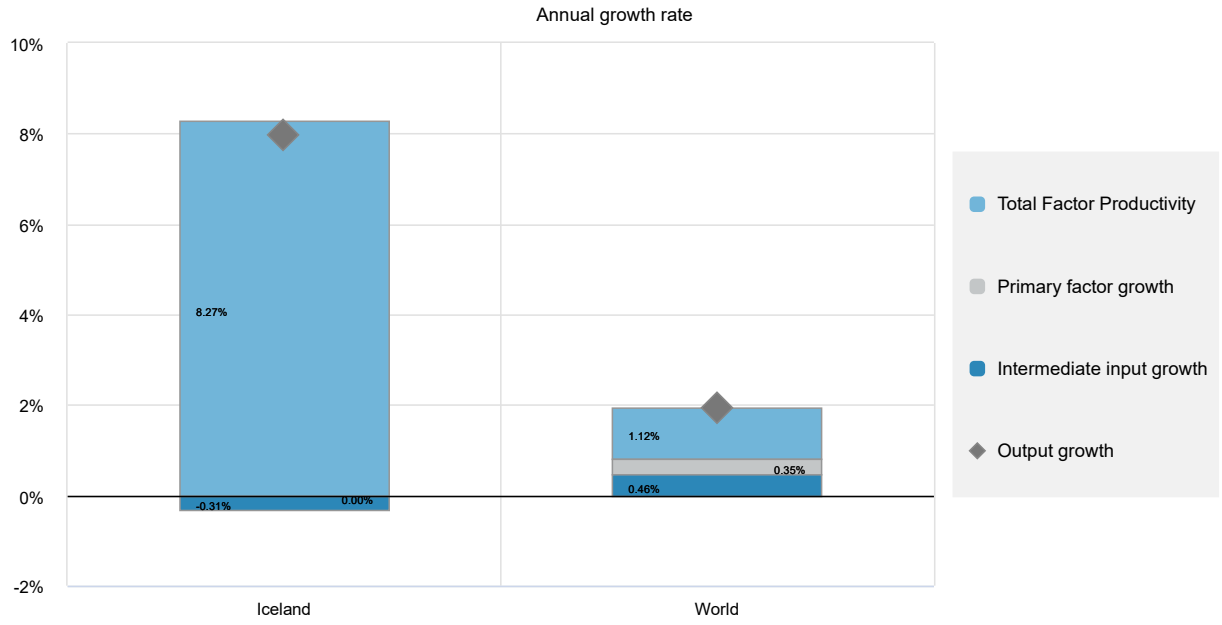


Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Output growth in agriculture (8%) has clearly outpaced the global average (2%) over the 2011-20 period, which has been driven by commensurately robust growth in total factor productivity (TFP) of over 8% per year – which was also much higher than the global average rate of 1.1%. This is mostly related to a significant output growth in aquaculture and much less so in crop and animal output. At the same time input growth has decreased.

A harsh climate, lack of suitable land, small average farm size, and the narrow genetic base for traditional livestock present significant constraints to the sector. Due to its relatively low livestock densities, Iceland's nutrient balances show a comparatively small surplus of both nitrogen and phosphorus. Iceland has the lowest pesticide sales per hectare in the OECD area and the sector's share of energy use has fallen over time. Agriculture continues to represent a significant share in the country's total GHG emissions – well above the OECD average – mainly due to the importance of the ruminant livestock sector. Emissions of CH_4 emissions from enteric fermentation and manure management, and N_2O emissions from manure management and fertilisers have historically accounted for over 99% of the total emissions from agriculture, with less than 1% arising from CO_2. With abundant water and a small population, total water abstraction in Iceland is less than 1% of total available freshwater resources. This is one of the lowest intensities of water resource use in the OECD, although the freshwater abstractions per capita are the highest in the OECD area (OECD, 2019[2]). The share of agriculture in total water abstractions has decreased over the past two decades.

Figure 13.7. Iceland: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 13.4. Iceland: Productivity and environmental indicators

	Iceland		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	0.1%	8.3%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	8.0	7.6	32.2	30.4
Phosphorus balance, kg/ha	1.8	1.0	3.3	3.0
Agriculture share of total energy use (%)	1.9	1.3	1.7	2.0
Agriculture share of GHG emissions (%)	15.2	13.7	8.6	10.5
Share of irrigated land in AA (%)	..	..	-	-
Share of agriculture in water abstractions (%)	42.9	22.3	46.6	49.7
Water stress indicator	0.1	1.8	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

References

OECD (2022), *OECD Economic Outlook*, OECD Publishing, https://doi.org/10.1787/62d0ca31-en. [1]

OECD (2019), "Water: Freshwater abstractions (Edition 2018)", *OECD Environment Statistics* (database), https://doi.org/10.1787/09a848f4-en (accessed on 7 April 2022). [2]

14 India

Support to agriculture

Net support to producers in India has been negative throughout the last two decades, but fluctuates markedly. Domestic producers have been implicitly taxed on average, as budgetary payments to farmers did not offset the price-depressing effect of complex domestic marketing regulations and trade policy measures. Virtually all gross producer transfers (whether positive or negative) come in potentially most production – and trade-distorting forms – a consistent pattern since the early 2000s, the period for which support data are available.

Support to producers in 2020-22 includes budgetary transfers corresponding to 11% of gross farm receipts, positive Market Price Support (MPS) of +1.8% of gross farm receipts for commodities that are supported and negative MPS of as much as -27.5% for those that are taxed. Overall, this led to negative net support of -15% of gross farm receipts in 2020-22, against a backdrop of increasing prices at the border for many of the exported commodities covered, particularly wheat, maize, and milk. Export restrictions apply since 2022 to various types of rice, wheat, sugar, and related products (e.g. wheat flour).

Single Commodity Transfers (SCT) are mainly composed of MPS but vary by commodity. Most commodities were implicitly taxed in 2020-22, effectively reducing receipts by half for products such as banana or mango. Commodities with positive SCTs – ranging between 8% and 30% of commodity receipts in the same period – include sugar, chickpeas, other pulses, and poultry meat.

Budgetary transfers to producers are dominated by large subsidies for variable input use, such as fertilisers, electricity, and irrigation water. However, budgetary allocations to the direct income transfer programme, PM-KISAN, have been increasing since its implementation in 2018 and now represent 7.2% of budgetary spending.

Public expenditures financing general services to the sector (General Service Support Estimate, GSSE), mainly related to investments in off-farm irrigation systems, are around half the level of subsidies for variable input use. Expenditures for GSSE increased to 4% of the value of agricultural production in 2020-22, from 3% in 2000-02.

Policies that affect farm prices provide implicit support to consumers. Food subsidies provided through the Targeted Public Distribution System, whose allocations increased substantially during the COVID-19 pandemic, also reduce costs for consumers. The consumer support estimate is 44% of expenditure on average across all commodities in 2020-22.

Recent policy changes

Following annual increases in Minimum Support Prices (MSP) in June 2022, the government of India (GoI) increased MSPs for several summer-planted crops, including rice and maize. Similarly, it raised MSPs for several winter-planted crops in October 2022, including rapeseed, wheat, and lentils.

The Department of Fertilizers of the Ministry of Agriculture and Farmers' Welfare (MAFW) increased fertiliser subsidies in April 2022 and November 2022 for summer- and winter-planted crops in response to rising international fertiliser prices. This includes support for domestically produced fertilisers through freight subsidies to cover transport from producer states to other parts of the country.

Several programmes introduced in 2022 focus on digitalisation and agri-environmental measures. The Agricultural and Processed Food Products Export Development Authority signed a Memorandum of Understanding with the National Research Development Corporation in April to implement the Agri-Export Policy and strengthen commodities' export value chains by disseminating technologies to promote climate-resilient agriculture. In May, the GoI introduced new support for the use of drones in agricultural activities, particularly to assess the state of crops and spray fertilisers and pesticides, and for digitising land records.

India introduced export restrictions for several commodities in 2022 with an open-ended timeframe and the objective of stabilising fluctuations in domestic prices following Russia's war of aggression against Ukraine. Commodities affected by export bans, duties, or permits include various types of rice, wheat, sugar, and related products (e.g. wheat flour).

In November 2022, the Ministry of Consumer Affairs removed the oilseeds and oil stock limits previously imposed on wholesalers and traders. The measure had been introduced in 2021 to address rising domestic prices for edible oils by discouraging stockholding and monitoring consumption.

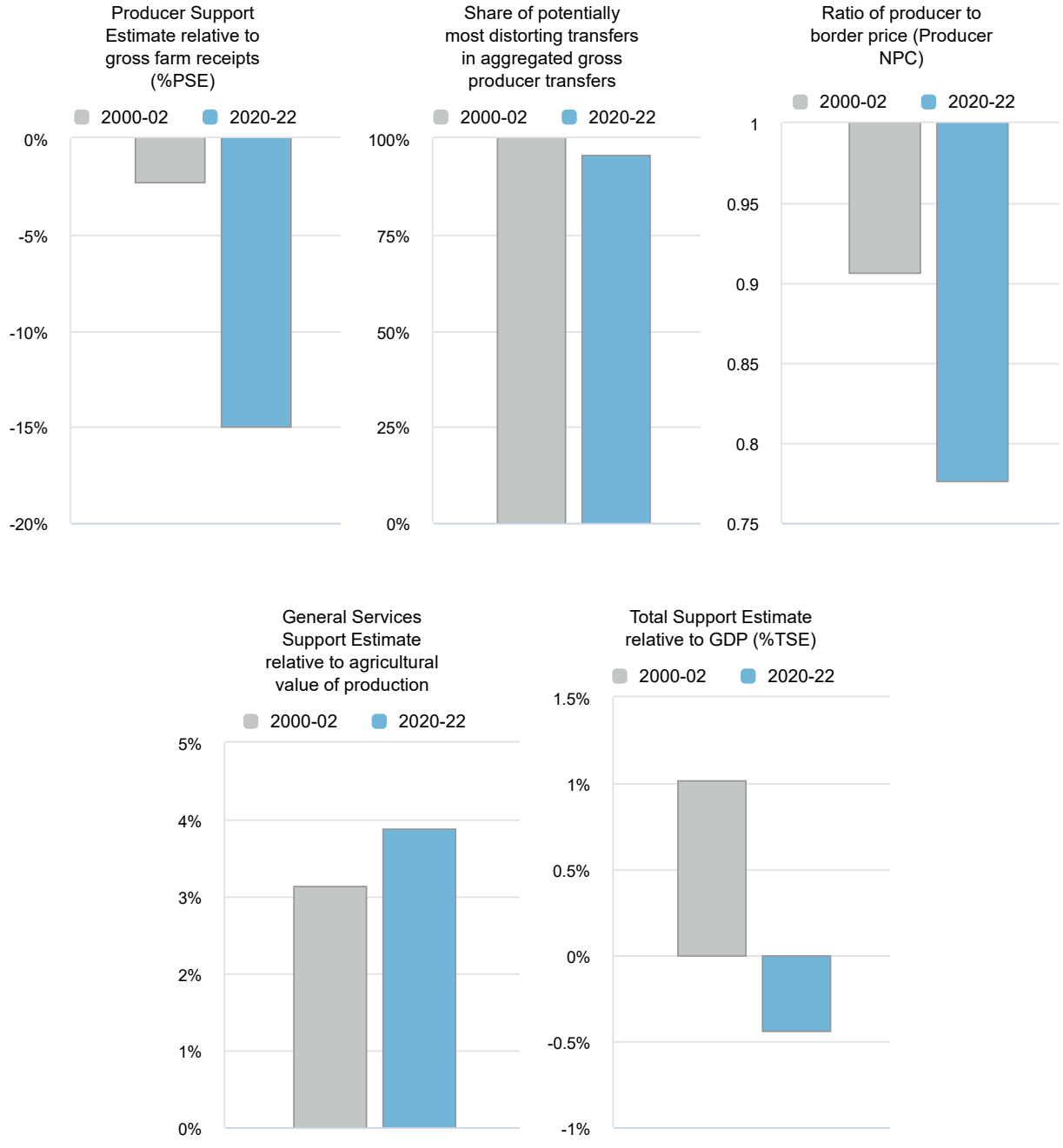
Assessment and recommendations

- Environmental sustainability and resilience measures in agriculture – particularly for climate-change adaptation – have been gaining prominence in India, mainly through programmes focused on conserving water, altering crop-management practices, investing in technologies for crop production and developing new cultivars. This is a commendable response to increased environmental pressures and rising threats from climate change.
- However, agricultural support could further align with climate-change mitigation and adaptation efforts. In particular, scaling back variable input subsidies (fertiliser, irrigation water and electricity) can directly lower greenhouse gas (GHG) emissions and increase flexibility to adjust production systems in response to a changing climate. These funds could be used to train farmers in more efficient and sustainable input use by ensuring that extension systems focus on climate change, sustainability, digital skills, and resilience.
- India's Nationally Determined Contribution (NDC) includes an economy-wide emission-intensity-reduction target, but no sector-specific targets. Nonetheless, several sector-specific programmes aim to mitigate GHG emissions by promoting energy conservation, alternative fuels from renewable technologies, water conservation, afforestation, land and waste management, increased fertiliser efficiency, crop diversification, lower-methane-emission rice production, and by avoiding crop residue burning. These efforts should be enhanced and monitoring their impacts on GHG emissions improved through well-defined targets.
- As general services continue to focus on irrigation expansion, any new investments in irrigation should be better co-ordinated with water management objectives and help reduce water consumption in dry or groundwater depleting regions. Overall, long-term transitional efforts could focus on enhanced collaborative planning and multi-disciplinary research that accounts for India's regional diversity.
- Greater emphasis on general services can boost needed investment in agricultural research and development and innovation. In particular, increased investments in the agricultural knowledge system and knowledge transfer through Farmer Producer Organisations could ensure sustained and sustainable productivity growth. Promoting new technologies and production practices is

important for GHG emission reduction in the livestock sector – the primary contributor to GHG emissions in India.

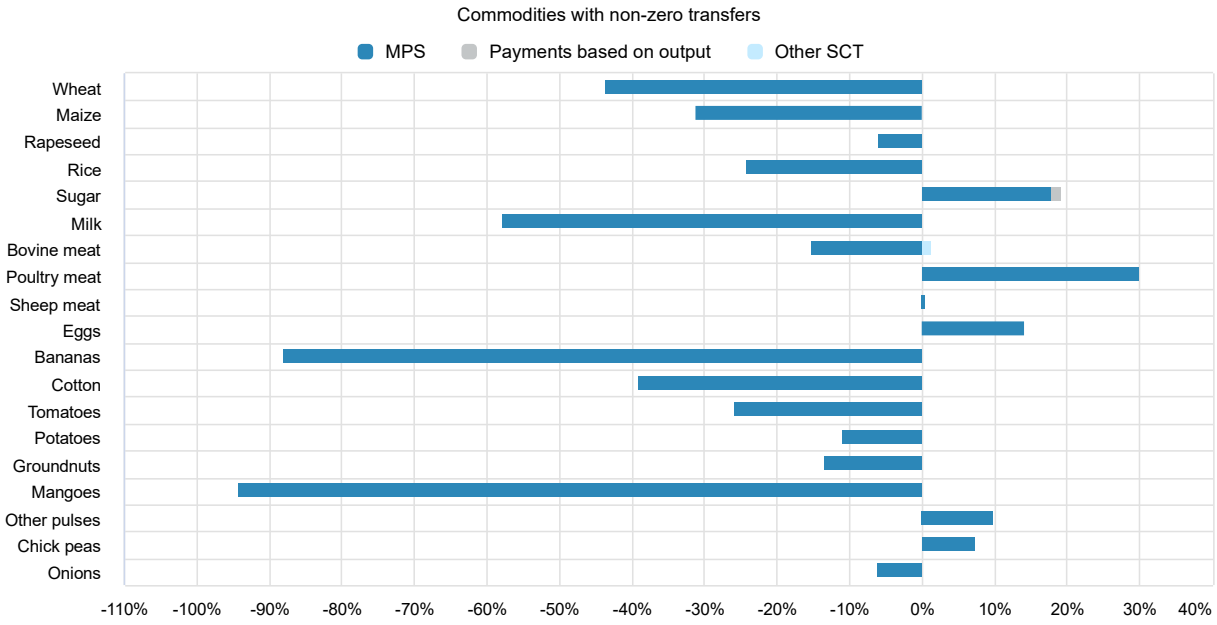
- Restrictive domestic marketing policies and border measures reduce prices below those on international markets over most of the period reviewed. Developing the electronic National Agricultural Market (e-NAM) set up in 2016 should remain a priority to foster efficient markets and competitive agro-food supply chains across states. In addition, the 2017 model Agricultural Produce and Livestock Marketing (Promotion and Facilitation) Act should be implemented in a more harmonised and consistent way across states, and synchronised with reforms to the MSP system through coherent plans. Complementing these programmes with investments in transport infrastructure, marketing, training, and other general services to agriculture will help farmers reap the benefits in productivity and income. Budgetary allocations for rural infrastructure and digitalisation in agriculture in the 2021 and 2022 Union Budgets are positive steps in this direction.
- The large share of employment in agriculture compared to its GDP contribution reflects the persistent labour-productivity gap relative to other sectors and translates into low farm incomes. In the short-to-medium term, direct cash transfers (such as through PM-KISAN) can support the poorest farmers' livelihoods and adjustment to new market conditions. In the longer term, policies focused on education and financial services are needed to facilitate significant structural adjustments, including the transition of farm labour to other activities and consolidation towards farm operations sufficiently large to exploit economies of scale.
- India is an important agro-food exporter. The Agricultural Export Policy (AEP) framework adopted in 2018 helped reduce uncertainty and transaction costs throughout supply chains by easing export restrictions on organic and processed agricultural products. However, recent export restrictions on products such as rice, wheat, sugar, onions, and related products directly affect India's reliability as a supplier, and exacerbate the persistent challenge of low farm incomes. An extension of the AEP to all agri-food products should be considered to create a stable and predictable market.
- Recent reductions in tariffs and relaxation of quantitative restrictions on selected pulses, albeit temporary, are additional positive steps towards improving food security and diversifying diets. Together with domestic marketing reforms, easing export and import restrictions would make the market more predictable and increase incentives for producers and traders to invest in supply chains.
- India made significant progress eliminating inefficiencies in the food-distribution system in the period before the COVID-19 pandemic, and these efforts should continue. The experimental replacement of physical grain distribution with direct cash transfers could be gradually expanded, including by drawing on recommendations made by the High-Level Commission on Restructuring the Food Corporation of India, which suggested focusing initially on cities with populations over 1 million, followed by grain surplus states.

Figure 14.1. India: Development of support to agriculture



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 14.2. India: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 14.1. India: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**112 282**	**445 545**	**439 502**	**457 177**	**439 957**
of which: *share of MPS commodities (%)*	64.75	76.38	75.79	75.59	77.75
Total value of consumption (at farm gate)	**109 060**	**391 773**	**372 704**	**404 752**	**397 862**
Producer Support Estimate (PSE)	**-2 709**	**-73 926**	**-40 665**	**-80 792**	**-100 323**
Support based on commodity output	-11 243	-126 253	-87 818	-133 431	-157 511
Market Price Support[1]	-11 243	-126 570	-88 466	-133 731	-157 513
Positive Market Price Support	3 583	9 787	7 749	9 274	12 339
Negative Market Price Support	-14 827	-136 357	-96 215	-143 005	-169 852
Payments based on output	0	317	648	301	2
Payments based on input use	8 519	43 839	38 698	43 304	49 514
Based on variable input use	8 519	43 372	38 245	42 828	49 041
with input constraints	0	0	0	0	0
Based on fixed capital formation	0	394	399	386	398
with input constraints	0	0	0	0	0
Based on on-farm services	0	73	54	89	75
with input constraints	0	0	0	0	0
Payments based on current A/An/R/I, production required	0	0	0	0	0
Based on Receipts / Income	0	0	0	0	0
Based on Area planted / Animal numbers	0	0	0	0	0
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	8 231	8 232	8 975	7 488
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	0	8 231	8 232	8 975	7 488
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	15	257	223	361	187
Percentage PSE (%)	**-2.31**	**-14.98**	**-8.34**	**-15.84**	**-20.18**
Producer NPC (coeff.)	**0.91**	**0.78**	**0.83**	**0.77**	**0.73**
Producer NAC (coeff.)	**0.98**	**0.87**	**0.92**	**0.86**	**0.83**
General Services Support Estimate (GSSE)	**3 526**	**17 278**	**16 623**	**17 662**	**17 550**
Agricultural knowledge and innovation system	402	1 217	1 096	1 274	1 281
Inspection and control	25	415	379	334	531
Development and maintenance of infrastructure	2 021	14 687	14 189	15 085	14 788
Marketing and promotion	14	19	6	12	39
Cost of public stockholding	1 044	931	947	953	894
Miscellaneous	21	9	6	4	17
Percentage GSSE (% of TSE)	**..**	**..**	**..**	**..**	**..**
Consumer Support Estimate (CSE)	**14 692**	**152 834**	**150 272**	**144 600**	**163 629**
Transfers to producers from consumers	10 856	110 386	76 711	116 574	137 873
Other transfers from consumers	-224	-89	-19	-80	-167
Transfers to consumers from taxpayers	4 222	44 105	74 446	29 855	28 013
Excess feed cost	-163	-1 568	-866	-1 749	-2 090
Percentage CSE (%)	**14.12**	**43.96**	**50.38**	**38.57**	**44.24**
Consumer NPC (coeff.)	**0.91**	**0.78**	**0.83**	**0.78**	**0.74**
Consumer NAC (coeff.)	**0.88**	**0.69**	**0.67**	**0.72**	**0.69**
Total Support Estimate (TSE)	**5 040**	**-12 543**	**50 404**	**-33 274**	**-54 760**
Transfers from consumers	-10 632	-110 297	-76 692	-116 494	-137 706
Transfers from taxpayers	15 896	97 842	127 115	83 299	83 113
Budget revenues	-224	-89	-19	-80	-167
Percentage TSE (% of GDP)	**1.02**	**-0.44**	**1.89**	**-1.05**	**-1.57**
Total Budgetary Support Estimate (TBSE)	**16 283**	**114 027**	**138 870**	**100 457**	**102 753**
Percentage TBSE (% of GDP)	**3.33**	**3.65**	**5.21**	**3.16**	**2.95**
GDP deflator (2000-02=100)	**100**	**191**	**174**	**185**	**215**
Exchange rate (national currency per USD)	**47.26**	**76.31**	**74.23**	**74.50**	**80.20**

.. Not available

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.

1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for India are: wheat, maize, rice, soybean, rapeseed, groundnuts, chick pea, other pulses, potatoes, onion, tomatoes, mango, bananas, sugar, cotton, milk, bovine meat, sheep meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en.

Description of policy developments

Overview of policy trends

Food security has been an important objective of agricultural and trade policy since India's independence in 1947. Food shortages in the early 1960s made crop productivity and farm output a key policy ambition. While scope to further expand the area under cultivation was limited, the advent of the "green revolution" in the mid-1960s raised crop productivity through improved technologies and seed varieties. This was accompanied by expanded extension services and increased use of fertilisers, pesticides, and irrigation.

The government of India (GoI) introduced several marketing regulations affecting the sale, stocking and trading of agricultural commodities. The Essential Commodities Act (ECA) introduced in 1955 provided for the control of production, supply, distribution, and pricing of essential commodities. During the 1960s and 1970s, most states also enacted and enforced Agricultural Produce Markets Regulation (APMR) Acts, with the first point of sale of agricultural products occurring at regulated market yards (*mandis*) under the responsibility of Agricultural Produce Market Committees (APMC). Two institutions were set up in 1965 to manage prices and distribution of wheat and rice, namely the Food Corporation of India (FCI) and the Agricultural Prices Commission, later renamed the Commission for Agricultural Costs and Prices (CACP). These institutions introduced complex domestic marketing regulations and border measures that increasingly penalised Indian farmers who often received less than international prices for their products.

In the 1970s, several government programmes were set up to increase production, covering industrial organisation, research, finance, and trade. In the case of milk production and processing, this took place at three different levels:

- At the farm-level, dairy farmers were organised into co-operatives and provided with advanced technologies, such as animal breeds that produced more milk.
- At the district level, co-operative unions were formed, who owned and operated milk processing plants as well as storage and transport equipment and provided animal health services.
- At the state level, state federations conducted and co-ordinated the nation-wide marketing of milk.

Government funding for agricultural research and extension increased, and many State Agricultural Universities (SAU) were set up. Institutional lending to farmers expanded by directing commercial banks (nationalised from 1969) to provide credit to agriculture. New financial institutions were established, such as the National Bank for Agriculture and Rural Development (NABARD) in 1982 and regional rural banks. Import competition was highly restricted to allow domestic agricultural production to increase.

In the 1980s and 1990s, yield-enhancing "green revolution" techniques were increasingly used, reaching new regions and crops such as pulses, oilseeds, and coarse grains. Broader economic deregulation at that time largely bypassed agriculture, in part because of the prevalence of state regulations in agriculture. From 1980 to 1999, budgetary support to agriculture increased more than tenfold.

In the 2000s, agricultural policies focused increasingly on enhancing productivity and farmers' incomes. The National Agricultural Policy (NAP), formulated in 2000, prioritised increasing cropping intensity on existing agricultural land, developing rural infrastructure, and developing and disseminating agricultural technologies. The National Policy for Farmers (NPF), approved in 2007, identified a need to focus more on the economic well-being of farmers rather than just on production.

The Eleventh Five-Year Plan 2007-12 focused on bringing technology to farmers, improving the efficiency of investments, improving access for the poor to land, credit and skills and addressing water management concerns. The Twelfth Five-Year Plan 2012-17 was articulated around more budgetary support to agriculture and to infrastructure along with an aim to improve the functioning of markets, more efficient use of natural resources, and improved delivery of government services such as credit and animal health.

The 2012-17 plan established the Targeted Public Distribution System (TPDS) to replace the previous Public Distribution System (PDS, established in 1997). The new system aimed to reduce the amount of grain released from government stocks for distribution that did not reach intended beneficiaries.[1] In addition, the plan redirected some food subsidies to other welfare schemes to better target the poor, introduced policies specific to individual states or areas, and redefined the definition of "poor" for the purpose of the TPDS. The 2013 National Food Security Act (NFSA) further addressed these concerns.

In 2016, the GoI set the target of doubling farmers' income by 2022-23 and by 2018 five-year plans were replaced by a framework of three-year action agendas. These agendas were prepared by the National Institution for Transforming India (NITI Aayog, the erstwhile Planning Commission of India), a policy think-tank of the government of India. The Agriculture Export Policy framework was established at the end of 2018, aiming to double agricultural exports by 2022-23 and boost the value-added of agricultural exports. To address farm indebtedness, several states implemented support packages for farm loan waivers between 2017 and 2020.

The only output support payments were introduced between 2018 and 2021 for clearing of arrears for sugar cane deliveries. The subsidies were provided directly to sugar cane farmers. These were replaced in 2022 by a support scheme for first-stage buyers of sugar cane (the scheme for providing assistance to sugar mills for expenses on marketing costs and other processing costs).

Marketing regulations under the Agricultural Produce Market Committees (APMC) Acts were progressively amended in 2003, 2007 and 2017. This was to address concerns around highly fragmented markets, inadequate physical marketing infrastructure, large numbers of intermediaries in supply chains and insufficient remuneration to farmers. Even though state governments were encouraged to adopt similar reforms, implementation of agricultural marketing reforms remained highly differentiated across India's states.

In June 2020, the GoI initiated reforms to domestic agricultural marketing regulations as part of a COVID-19 support package. The proposed reforms included a set of ordinances to deregulate major food crops from the 1955 ECA, allow farmers to sell their agricultural products outside of government-regulated markets and allow barrier-free inter- and intra-state trade of agricultural commodities. The central government had also proposed providing a legal framework for farmers to facilitate contract farming schemes with processors and other market actors in supply chains to reduce price risk. However, on 29 November 2021, the Parliament approved a bill withdrawing the three laws. Moreover, in December 2021, the GoI set up a committee to review the legal framework for the MSP system.

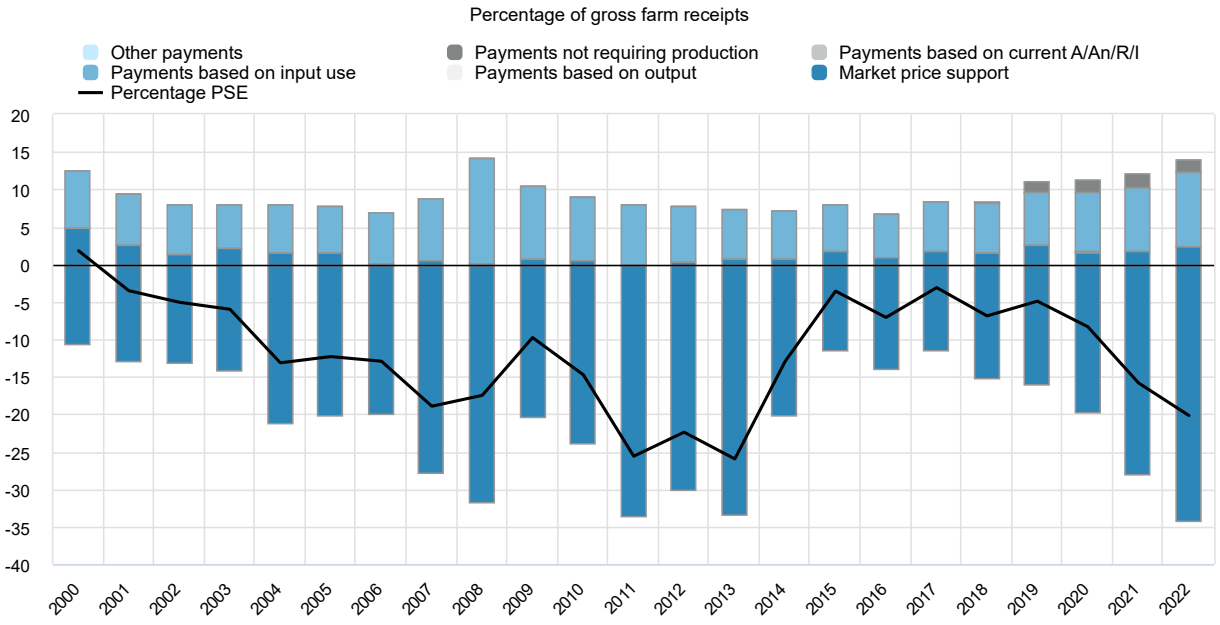
Table 14.2. India: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
1950-1965	Expansion of agricultural area was the main source of output growth	Agrarian reforms (abolition of intermediary landlordship, imposition of land ceiling) Strengthening of co-operative credit institutions Essential Commodities Act 1955
1965-1980	Increase in productivity main was the source of growth "green revolution"	Promoting the adoption of technological breakthroughs in rice and wheat production Policy support for marketing, research and credit Introduction and formalisation of lending to priority sectors, including agriculture New institutions, e.g. State Agricultural Universities, Food Corporation of India, Agricultural Prices Commission Programmes to increase production and processing of milk (support to breeds producing more milk, producer organisations, and processing and transport equipment) Minimum support prices
1980s	Widespread use of technology in major crop areas	Some delicensing and deregulation Increase in subsidies to agriculture

Period	Broader framework	Changes in agricultural policies
1990s	Economic and trade liberalisation in agriculture lags behind general economic reforms	Cautious relaxation of trade protection in some products, e.g. sugar, cotton, edible oils, wheat, rice Increases in input subsidies Targeting of beneficiaries of public distribution system of food grains
2000s	Demand-driven shift towards producing more fruit, vegetables and livestock products Increasing price gaps between international and domestic prices for producers	Alternate tightening and loosening of market and trade regulations (including export restrictions) Agricultural marketing regulations influencing pricing, procuring, stocking, and trading of commodities Large increases in input subsidies, including credit Support to high productivity seeds particularly cotton
Since 2010	Major participant in world markets for some commodities Continued price gaps between international and domestic prices taxing producers Increasing direct payments to producers Increasing support to consumers	More structured interaction between central and state level authorities Expansion of food subsidies and 2013 National Food Security Act Pilots to replace physical distribution of grains with cash transfers in selected states and Union Territories Agriculture Export Policy framework aimed at ensuring processed and organic products are not subject to export restrictions Doubling Farmers' Income by 2022-23 action plan State-level support packages for farm loan waivers Direct income transfer programme PM-KISAN Changes to domestic agricultural marketing regulations initiated in 2020 as part of the COVID-19 economic support package; withdrawal of reforms at the end 2021 Export restrictions applied to several commodities in 2022 (rice, wheat, sugar, and related products)

Over the past two decades, producer support was composed of negative market price support (MPS), and budgetary allocations, including almost exclusively input subsidies. India's percentage PSE fluctuated markedly, registering a high of zero in 2000, a low of -31% in 2007, followed by large swings before increasing negative support in 2021-22 (Figure 14.4). These variations were driven primarily by changes in the relative levels of domestic and international prices underlying MPS, while input subsidies followed a more steadily increasing trend. The particularly large absolute size of negative MPS in 2011-13 (and to some extent in 2007 and 2008) coincides with periods of high international commodity prices not or only partially transmitted to the domestic market, due at least in part to India's use of export-impeding measures (for example, export restrictions or export bans applied in several of those years to wheat, non-basmati rice, chickpea, sugar and milk). The negative value of the PSE reflects that, on average, domestic producers were implicitly taxed, as the increasing budgetary payments to farmers did not offset the price-depressing effect of complex domestic regulations and trade policy measures. Payments not requiring production have been increasing since 2018, driven by higher budgetary allocations to the direct income transfer programme *Pradhan Mantri Kisan Samman Nidhi* (PM-KISAN). Against a backdrop of increasing reference prices for the exported commodities covered since 2020, MPS has been higher than during 2015-19.

Figure 14.3. India: Level and PSE composition by support categories, 2000 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

Agriculture and food is governed via six major policy channels: 1) managed prices and marketing channels for many farm products; 2) subsidised farm inputs; 3) general services for the agricultural sector as a whole; 4) making certain food staples available to selected groups of the population at government-subsidised prices; 5) regulated border transactions through trade policy; and more recently, 6) the income support scheme PM-KISAN (OECD/ICRIER, 2018[1]; ICRIER, 2022[2]; Gulati, Kapur and Bouton, 2020[3]).

States have constitutional responsibility for many aspects of agriculture, but the central government sets national approaches to policy and provides the necessary funds to implement programmes at state level. The central government (Union Cabinet) is responsible for some key policy areas, notably international trade policies, and for implementation of the National Food Security Act (NFSA) of 2013.

Policies governing the marketing of agricultural commodities in India – for both producers and the food chain – include the national Essential Commodities Act (ECA) and the state-level APMC Acts. These acts regulate the pricing, procuring, stocking, and trading of commodities. Farmers bring their produce to sell in regulated wholesale markets (or *mandis*). This infrastructure is also used for government procurement under the minimum support price system. Differences exist among states in the status of their respective APMC Acts and in how these acts are implemented.[2] The electronic portal (electronic National Agricultural Market, e-NAM) set up in 2016 and the 2017 model Agricultural Produce and Livestock Marketing (Promotion and Facilitation) Act were shared with state governments as a recommendation for adoption.[3] E-NAM currently integrates 1 000 APMC markets in 18 states and 3 Union Territories (UTs); almost 17 million farmers and 150 000 traders are registered on the e-NAM platform (Government of India, 2021[4]).

Based on the recommendations of the CACP, the central government establishes a set of minimum support prices (MSP) for 23 commodities each year. The CACP bases its recommendations on the average cost of production at both the actual covered cost of production and the imputed value of family labour. State governments may also provide a bonus payable over and above the MSP for some crops. National and state-level agencies operating on behalf of the Food Corporation of India (FCI) can buy wheat, rice and coarse grains as well. Several other agencies can buy pulses, oilseeds and cotton at MSP – including through the *Pradhan Mantri Annadata Aay Sanrakshan Yojna* (PM-AASHA) programme introduced in 2018 – and some horticulture commodities without MSP are also procured. However, procurement under the price support scheme effectively operates mainly for wheat, rice and cotton, and only in a few states.

Input support policies enable agricultural producers to obtain farm inputs at subsidised prices. Policies governing the supply of fertilisers, electricity and water are the largest of these. Other supported inputs are seeds, machinery, credit, and crop insurance. State-level loan debt waivers where local governments compensate lending institutions for forgiving debt to farmers are increasingly used. About 30% of agricultural loans continue to come from non-institutional sources (e.g. moneylenders), as opposed to financial institutions such as commercial banks (Reserve Bank of India, 2019[5]).

General services policies focus on programmes for the development and maintenance of infrastructure, particularly related to irrigation. Budgetary support is also significant for public stockholding and for agricultural knowledge and innovation.

Public distribution of food grains is done under the joint responsibility of the central and state governments. The TPDS operates under the NFSA in all states and UTs. Other Welfare Schemes (OWS) also operate under the NFSA. The central government allocates food grains to state governments and the FCI transports food grains from surplus states to deficit states. State governments distribute the food grain entitlements by allocating supplies within the state, identifying eligible families, issuing ration cards, and distributing food grains mainly through Fair Price Shops.

India's Foreign Trade Policy is formulated and implemented by the Directorate General of Foreign Trade (DGFT) and announced every five years. It is reviewed and adjusted annually in consultation with relevant public agencies. The Basic Customs Duty (BCD), also known as the statutory rate, is agreed at the same time as the approval of the annual budget. In contrast to previous five-year Foreign Trade Policy frameworks, the latest Foreign Trade Policy 2023 – effective as of 1 April 2023 – does not include an end date.

Agricultural exports have been managed for several decades through a combination of export restrictions, including export prohibitions, licensing requirements, quotas, taxes, minimum export prices,[4] and state trading requirements. Whether these restrictions are enforced or not may change several times per year, according to domestic supplies and prices. The 2018 Agriculture Export Policy framework includes three main areas for action. First, ensuring that processed agricultural products and organic products are not subject to export restrictions. Second, undertaking consultations among stakeholders and Ministries to identify those essential food security commodities to which export restrictions may be applied under specific market conditions. Third, reducing import barriers applied to agricultural products for processing and re-exporting.

The Agricultural and Processed Food Products Export Development Authority (APEDA) is under the responsibility of the Ministry of Commerce and Industry (MoCI). It provides financial assistance to exporters in the form of transport support.[5]

The PM-KISAN scheme provides an annual direct income transfer of INR 6 000 (USD 84) per farmer to all farmers with land titles. The payment does not require farmers to produce, is irrespective of the farm size, and may be used for any need.

India ratified the Paris Agreement on Climate Change on 2 October 2016. India updated its Nationally Determined Contribution (NDC) in August 2022. The 2022 NDC comprises eight goals, three of which are

quantitative targets to be achieved up to 2030: to reduce the emissions intensity of the GDP by 45% from the 2005 level; to achieve about 50% cumulative electric power installed capacity from non-fossil fuel-based energy resources; and to create an additional carbon sink of 2.5 billion to 3 billion tCO_2eq through additional forest and tree cover.

Mitigation efforts to reduce GHG emissions from agriculture are largely through production techniques that improve emissions intensity (e.g. initiatives such as horticulture land extension, increased rice intensification systems, direct-seed rice cultivation, solar pumps, micro-irrigation, neem coated urea scheme, bio-fertilisers, balanced feedstock, and bypass protein for livestock). The Union Budget 2022-23 promotes "chemical-free natural farming" throughout the country. Initially, the focus is on farmers' land in 5 km wide corridors along the Ganga river.

Climate change adaptation policies in agriculture

India's agricultural sector is highly vulnerable to the effects of climate change and extreme weather events. Since the mid-1950s, India has experienced a rise in average temperatures, a decrease in monsoon precipitation, increased frequencies of extreme temperature, rainfall and drought events, an increase in the intensity of severe cyclones, and other changes in the monsoon system (Ministry of Earth Sciences, 2020[6]).

Environmental sustainability and resilience measures in agriculture – and climate-change adaptation measures in particular – have been gaining prominence, notably through programmes called "missions". India's 2008 National Action Plan on Climate Change (NAPCC) included four missions focused on adaptation efforts: (1) sustainable habitats; (2) optimising water-use efficiency; (3) creating ecologically-sustainable climate-resilient agricultural production systems; and (4) safeguarding the Himalayan glaciers and mountain ecosystems. These missions include initiatives related to water usage, disaster management, biodiversity conservation, and ecosystem protection. In addition, India implements specific schemes that promote organic farming, efficient irrigation systems, watershed management, and improved soil health and climate-resilient agro-ecological systems.

The National Mission for Sustainable Agriculture (NMSA) within the NAPCC became operational in 2014-15, promoting soil and moisture conservation measures; comprehensive soil health management; efficient water management practices, and mainstreaming rain-fed technologies. "Farm Water Management" was implemented as one of the components of NMSA with the objective of enhancing water use efficiency by promoting technological interventions such as drip and sprinkler technologies, efficient water application and distribution systems, and secondary storage. Thereafter, these activities have been subsumed under the "Per Drop More Crop (PDMC)" component of the *Pradhan Mantri Krishi Sinchayee Yojana* (PMKSY) scheme in 2015-16. This scheme prioritises water conservation and its management in agriculture with the objective to extend the area under irrigation while preserving water resources.

Also under the NMSA, "Rainfed Area Development" focuses on Integrated Farming Systems to enhance productivity and minimise risks associated with climatic variability. Under this system, crops and cropping systems are integrated with other activities such as horticulture, livestock, fisheries, agro-forestry, and beekeeping to support farmers by providing additional income opportunities and mitigate the impacts of droughts, floods, or other extreme weather events. The Mission for Integrated Development of Horticulture (MIDH) includes a sub-component focused on "Creation of water resources", while the National Food Security Mission (NFSM) includes components such as "Water Carrying Pipes" and "Mobile Rain Gun" focused on hydrological infrastructure and water-use efficiency.

"Soil Health Management" is another component under the NMSA. It promotes integrated nutrient management through targeted use of mineral fertilisers, including secondary and micro-nutrients, in conjunction with organic manures and bio-fertilisers to improve soil health and productivity. It also improves soil and fertiliser testing facilities, providing soil test-based recommendations to farmers for improving

fertility. The Soil Health Card implemented in 2015 provides information to farmers about the nutrient status of their soil and recommends the appropriate dosage of nutrients to improve its health and fertility.

India is implementing specific schemes to promote organic farming, including the Organic Value Chain Development for North-East Region and the MIDH component “Adoption of Organic Farming” (in addition to the above-noted Paramparagat Krishi Vikas Yojana Mission). Missions such as the National Mission on Agricultural Extension and Technology aim to improve soil health and climate-resilient agro-ecological systems through technical assistance.

The GoI has been covering part of the premium for crop insurance through crop insurance schemes since 2000. These include the National Agricultural Insurance Scheme, the Modified National Agricultural Insurance Scheme, the Weather Based Crop Insurance Scheme, the Coconut Palm Insurance Scheme, the National Crop Insurance Program, the Restructured Weather Based Crop Insurance Scheme, and most recently, the Pradhan Mantri Fasal Bima Yojna (PMFBY) scheme. PMFBY, introduced in 2016, provides insurance to farmers for crop losses due to monsoon fluctuations or other extreme weather events.

Public-sector research focuses on developing new crop varieties and management practices to improve yields and tackle pests/diseases for various agro-climatic conditions. The Indian Council of Agricultural Research (ICAR) launched the National Innovations in Climate Resilient Agriculture (NICRA) project in 2011 to enhance the resilience of Indian agriculture to climatic variability and climate change through strategic research and technology demonstration in crops, livestock, and fisheries. The project focuses on selected commodities, such as wheat, rice, maize, pigeon pea, groundnut, tomato, mango, banana, cattle, buffalo, and small ruminants. Major research themes include assessing the vulnerability of major production zones; assessing the impacts of and developing varieties tolerant to climatic stresses (e.g. drought, heat, flooding) in grain and horticulture crops; evolving adaptation and mitigation strategies through enhanced water- and nutrient-use efficiency and conservation agriculture; studying changes in pest dynamics, pest- and pathogen-crop relationships, and emergence of new pests and pathogens under climate change. The emphasis on new varieties and new technologies translates into programmes such as Crop Science, Horticulture Science, and Plant Science. The MIDH also includes the “Promotion of Integrated Pest Management” programme. The Livestock Health and Disease Control Programme focuses on disease control in the livestock sector and was launched in 2021.

Ongoing agro-climatic research includes the development of drought- and heat-tolerant genotypes in chickpea, pigeon pea, and mung bean and the development of drought-tolerant onions and other horticultural crops. India’s research institutions have also developed flood- and drought-tolerant rice varieties and early-maturing wheat varieties for late-sowing areas to avoid terminal heat stress at the time of maturity. The National Agricultural Research System (NARS) is developing location-specific wheat varieties with traits addressing crop duration, varied soil conditions, and improved grain qualities while increasing grain yield levels through traditional breeding.

ICAR and various state agricultural universities (SAU) are targeting research to develop response mechanisms through early planting and short-duration varieties to mitigate potential climate-change risks. The NFSM includes components focused on capacity building, namely “Cropping-system-based training” and “Demonstrations on improved package for rice”, while the MIDH includes “Technology dissemination through demonstration” and “Good Agriculture Practices”. Several programmes focus on improving production practices, such as the “National Innovations in Climate Resilient Agriculture” (NICRA), “Drought and heat tolerant genotypes”, or “Agronomic management - Early planting”.

The GoI introduced new extension services for rice farmers in May 2022. These focus on disseminating agricultural production practices that help producers use less water and chemical fertilisers. In July 2022, the GoI also introduced extension and advisory services for farmers about mitigating extreme weather conditions and adverse impacts on agricultural production, using climate-resilient seed varieties, including rice and maize. This includes providing local weather information, including alerts and related agro-

meteorological advisories using e-services launched by the Ministry of Earth Sciences. India first set up its National Monsoon Mission to improve weather forecasts for farmers in 2012.

India's 2022 updated NDC focuses on adapting to climate change by enhancing investments in development programmes for sectors vulnerable to climate change, particularly agriculture, water resources, the Himalayan region, coastal regions, and health and disaster management.

Domestic policy developments in 2022-23

In June 2022, the GoI increased the minimum support price (MSP) for several summer planted (*kharif*) crops, including rice (5.2% increase) and maize (4.9%). In October 2022, the GoI raised the MSP for several winter planted (*rabi*) crops, including rapeseed (7.9%), wheat (5.5%) and lentils (9%).

In July 2022, India added maize and rice to the list of products subject to the 5% Goods and Services Tax. The two commodities were previously excluded from this list.

To address rising inflation, the Securities and Exchange Board of India (SEBI) extended in December 2022 by one year the suspension of futures trading of derivatives in several agricultural products, including wheat, rice, and soybeans. The measure was initially introduced in January 2021.

In November 2022, the Ministry of Consumer Affairs removed the oilseeds and oil stock limits previously imposed on wholesalers and traders. The measure had been introduced in 2021 to address rising prices for edible oils by controlling stock quantities and monitoring consumption.

In January 2023, the GoI announced the release of 3 million tonnes of wheat into the domestic market between January and March 2023, to help control rising wheat prices. The Food Corporation of India (FCI) offered wheat through e-auctions to local millers and bulk buyers at a maximum volume of 3 000 tonnes per buyer per action. In addition, wheat was offered to state governments for their food security programmes, and public sector organisations and co-operative federations at a concessional rate of INR 23 500 (USD 287) per tonne on the condition that the wheat be converted to flour and supplied to consumers at INR 29 500 (USD 360) per tonne.

In May 2022, the GoI introduced new support for the use of drones in agricultural activities, particularly for assessing the state of crops, spraying of fertilisers and pesticides, as well digitising land records. The support provides a maximum of INR 533 000 (USD 6 454) in subsidies to small farmers, as well as women in farming and farmers located in the north-eastern states, to buy drones. Other farmers would be eligible for financial assistance up to a maximum of INR 426 000 (USD 5 164).

In April 2022, the Agricultural and Processed Food Products Export Development Authority (APEDA) in India signed a Memorandum of Understanding with the National Research Development Corporation to implement the Agri-Export Policy and strengthen commodities' export value chains by disseminating technologies to promote climate-resilient agriculture, zero carbon emission farming, and residue- and carbon-free food for exports. The key areas of co-operation include developing farm machinery for low-cost, user-friendly, and energy-efficient tools for small scale farmers, as well as promoting and supporting agricultural start-ups.

In May 2022, the GoI amended the 2018 National Biofuels Policy that incorporated various advancements in biofuels production and accelerated the E20 mandate to April 2025. The amendment i) allows more feedstocks for production of biofuels, ii) introduces a set of measures which facilitate the blending target of 20% ethanol in gasoline, iii) promotes the production of biofuels, and iv) grants permission for the export of biofuels in specific cases, such as exports of biofuels from special economic zones and export-oriented units for fuel purposes.

In December 2022, the GoI announced that under the NFSA it will continue to provide free food grains for approximately 813.5 million beneficiaries in 2023,[6] but it did not extend beyond 2022 the *Pradhan Mantri Garib Kalyan Ann Yojana* (PMGKAY) programme, launched in April 2020 as a relief measure due to the

COVID-19 pandemic. This follows a 60% reduction in the wheat allocation and a 50% increase in the rice allocation within the PMGKAY programme for May-September 2022.

The Union Budget 2023-24, released in February 2023, increases the budget allocation to agriculture by 4.7% compared to the previous financial year. It emphasises credit to agricultural producers, digitalisation, and improving production practices. Some specific elements are:

- Investing INR 25.2 billion (USD 300 million) for the digitalisation of 63 000 agricultural credit societies.
- Further developing Public-Private Partnerships (PPPs) for cotton producers, including collaboration between farmers and private sector for input supplies, extension services, and marketing promotion.
- Launching the *Aatmanirbhar* Clean Plant programme of INR 22 billion (USD 300 million) to boost availability of disease-free, quality planting material for high-value horticultural crops.
- Promoting the Indian Institute of Millets Research to a centre for excellence, to support the development of millet production.
- Setting up an agricultural accelerator fund to fund start-ups by entrepreneurs in rural areas.
- Setting up a National Cooperative database to extend coverage of co-operatives in villages where these currently do not exist.
- Encouraging 10 million farmers to adopt “natural farming”. Ten thousand bio-input resource centres will be set up, creating a national level micro-fertiliser and pesticide manufacturing network. Moreover, the PM-PRANAM scheme will be initiated to incentivise states to bring down the use of mineral fertilisers. The *Gobardhan* scheme will also promote 200 compressed natural gas plants using cow-dung and other agricultural and livestock waste.

Domestic policy responses to Russia’s war of aggression in Ukraine

In April 2022 and November 2022, the Department of Fertilizers of the Ministry of Agriculture and Farmers’ Welfare increased fertilisers subsidies for both the summer plants (*kharif*) and winter planted (*rabi*) crops in response to rising international fertiliser prices. This includes support for domestically produced fertilisers through freight subsidies to cover transport from producing states to other parts of the country.

In December 2022, India revised the 2015 gas procurement rules under which fertiliser companies were required to buy 80% of their gas through long-term contracts. Fertiliser plants are now able to source more gas through the domestic spot market (Indian Gas Exchange) or inter-company contracts.

Trade policy developments in 2022-23

In March 2022, the Ministry of Commerce and Industry (MoCI) extended the unrestricted import policy for pigeon peas and black gram lentils until 31 March 2023. These pulses can thus be imported without any quantitative restrictions but remain subject to existing import duties. Moreover, in July 2022, the MoCI issued a notification to increase imports of these pulses from Malawi, Mozambique, and Myanmar through 2026.

In May 2022, the MoCI introduced export restrictions for raw, refined, and white sugar. As of 1 June 2022, exports of these products require a special permit from the Ministry of Consumer Affairs, Food and Public Distribution/Department of Food and Public Distribution/Directorate of Sugar. The restriction is not applicable to sugar exports destined to the United States and the European Union falling under tariff rate quotas (TRQ). In October 2022, India extended the export restrictions for sugar until October 2023.

To address rising domestic prices of edible oils and food inflation, the MoCI introduced in May 2022 duty-free TRQs of 2 million tonnes for crude soybean oil and 2 million tonnes for crude sunflower oil until 2024.

Also in May 2022, the MoCI reintroduced a TRQ of 0.55 million tonnes for soybean meal, including meal from genetically engineered (GE)-soybean varieties, to alleviate high livestock feed costs. India also removed the 5% Agriculture Infrastructure and Development Cess (AIDC)[7] on these edible oils. However, in January 2023, the MOCI announced that the TRQ for crude soybean oil would only apply until the end of 2023.

In October 2022, the Department of Food and Public Distribution extended until 31 March 2023 the application of reduced tariff rates for crude palm oil; refined, bleached, and deodorised (RBD) palm olein; RBD palm oil; and crude soybean oil.

In April 2022, the MoCI eliminated the 5% tariff rate and the 5% AIDC on cotton not carded or combed. This applied between April and September 2022.

In October 2022, the MoCI authorised export-oriented units and firms set up in Special Economic Zones to export flour made from imported wheat with the objective to facilitate exports of value-added products. Food processors are thus allowed to import duty-free wheat against a commitment to export flour.

In January 2023, the Food Safety and Standards Authority of India (FSSAI) issued a notification that introduces a list of 79 designated ports-of-entry for certain imports of food products considered to be of high-risk. The products include milk and milk products; egg powder; meat and meat products, including poultry, fish and fish products; infant foods; health supplements; foods for dietary uses, probiotic and prebiotic foods; and foods for special medical purposes.

In January 2023, FSSAI introduced a notification setting new standards for basmati rice. The standards foresee that imported basmati rice should “possess natural fragrance characteristic of basmati rice and be free from artificial colouring and fragrance, and polishing agents.”

In April 2022, Australia and India signed an Economic Cooperation and Trade Agreement (ECTA) encompassing various market access policy dimensions for goods and services. India will benefit from preferential access to Australia's market for all its exports, including agri-food products. Around 96.4% of India’s exports by value will enter Australia duty-free. Around 85% of Australia’s goods exports will benefit from duty-free treatment in India and an additional 5% will see tariffs eliminated over a 10-year period. However, products deemed sensitive by India, such as wheat, rice, sunflower seed oil, oil cake and maize, remain excluded from any tariff concessions.

Trade policy responses to Russia’s war of aggression in Ukraine

On 13 May 2022, the MoCI prohibited indefinitely exports of all types of wheat. The MoCI’s notification of the export ban referenced the steep increase in global wheat prices and consequent risk to the food security of India, neighbouring and other vulnerable countries. The notification also specified exemptions to the ban for pending export shipments with an irrevocable letter of credit issued on or before the date of notification. Exports were also allowed, with the GoI’s permission, to other countries to meet their food security needs and based on requests from these governments. The MoCI issued on 14 May 2022 a trade notice regarding the implementation of the export ban notification saying that exports of wheat on humanitarian grounds as assistance between governments would be allowed on a case-by-case basis. Subsequently, on 17 May 2022 the MoCI issued another trade notice allowing exports of wheat consignments that had been handed over to customs for examination or registered into their systems on or before 13 May 2022, whether or not they were tied to a specific letter of credit or other financial instrument.

On 6 July 2022, India introduced export licensing requirements on wheat flour effective 12 July 2022. The measure aimed to stabilise fluctuations in domestic prices and control the quality of exports as carried out by the Export Inspection Council. Wheat flour had been excluded from the wheat export ban implemented in May.

On 9 September 2022, India imposed a 20% export duty on non-basmati rice (except for parboiled rice) to boost domestic supplies amid a fall in area planted with paddy in the *kharif* (summer planted) season, also within an open-ended timeframe. Furthermore, exports of broken rice have been banned to ensure adequate availability for the domestic poultry industry, other animal feedstock, as well as ethanol production. Due to loading in progress, exceptions to the rice export ban were allowed until 15 October 2022. In November 2022, the MoCI lifted however the ban on exports of organic non-basmati rice including broken rice.

In August 2022, the Plant Quarantine Division of the MAFW published the Plant Quarantine Order. The amended order grants expanded market access for cherries from the northwest United States.

Contextual information

India is the seventh largest country in the world by land area and became the most populous country worldwide in 2023. While the share of urban population continued to increase over the past decade, about two-thirds of the population still lives in rural areas. At just 0.15 hectare per capita, agricultural land is very scarce.

Agriculture continues to be an important part of India's economy. The sector accounts for 16.8% of GDP, but the estimated 44% share of employment indicates that labour productivity remains significantly lower than in the rest of the economy (Table 14.3). The productivity gap is also reflected in the evolution of farm incomes, which have increased by less than one-third that of non-agricultural incomes in recent years. Agriculture's weight in the economy has gradually declined, mostly in favour of services, which have led economic growth over the last two decades and played a more important role in India's economic development than in most other major emerging economies.

Indian agriculture is continuing to diversify towards livestock and away from grain crops. While grains and milk remain dominant, there has been a gradual change in the composition of production to other crops – such as sugar cane, cotton, fruit and vegetables – as well as certain meat sub-sectors. The livestock sector has seen faster and less volatile growth than the crop sector. The agricultural sector continues to be dominated by a large number of small-scale farmers, as the national average farm size has been in steady decline.

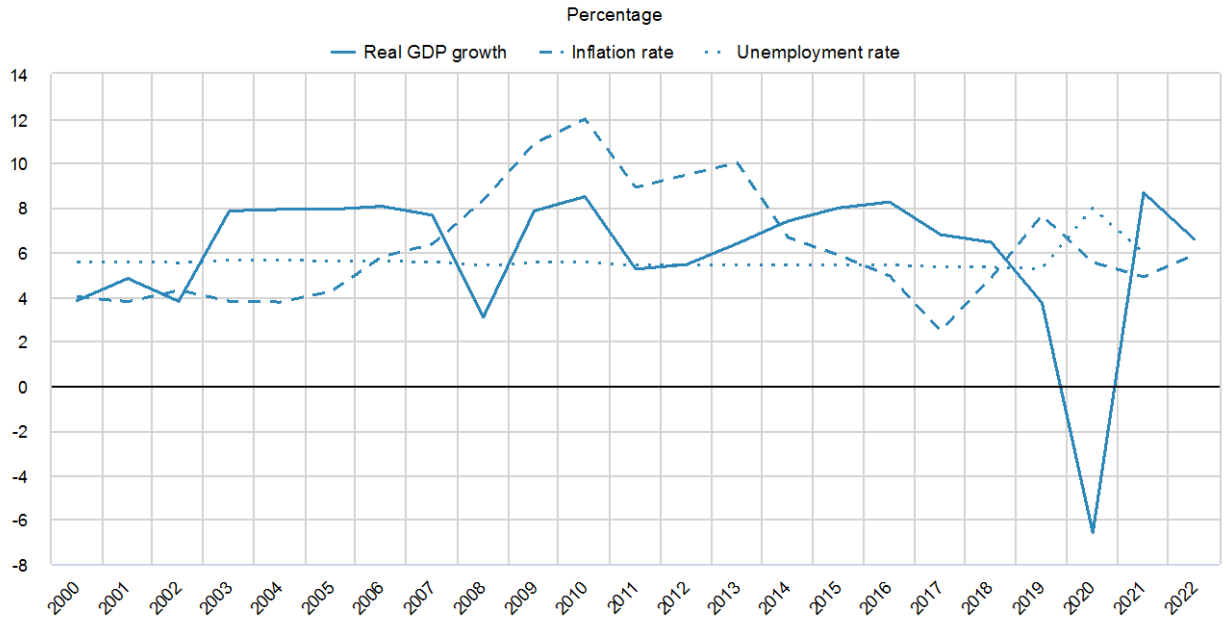
Table 14.3. India: Contextual indicators

	India		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	2 212	10 194	5.5%	8.3%
Population (million)	1 060	1 408	24.7%	26.8%
Land area (thousand km^2)	2 973	2 973	3.6%	3.6%
Agricultural area (AA) (thousand ha)	180 975	179 045	6.0%	6.1%
			All countries[1]	
Population density (inhabitants/km^2)	356	473	52	64
GDP per capita (USD in PPPs)	2 087	7 242	9 350	23 401
Trade as % of GDP	10.2	15.1	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	21.6	16.8	2.9	3.9
Agriculture share in employment (%)	59.6	44.0	-	-
Agro-food exports (% of total exports)	10.9	10.9	6.2	7.9
Agro-food imports (% of total imports)	5.6	5.5	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	73	63	-	-
Livestock in total agricultural production (%)	27	37	-	-
Share of arable land in AA (%)	89	87	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

Real GDP growth has been fluctuating between 4% and 8% over the last two decades, highlighting remaining structural bottlenecks in areas such as labour markets or the business environment. The COVID-19 pandemic and related restrictions led to a 7% drop in GDP, but growth rebounded to an average of 7.3% in 2021-22, placing India again among the fastest growing G20 economies. Growth moderated, however, in 2022 against a backdrop of Russia's war of aggression against Ukraine, supply chain disruptions, and rising energy and food prices. Unemployment has increased since the COVID-19 pandemic, but the relatively low unemployment figure (averaging about 6.7% in 2019-21) hides significant informal employment. Against a background of higher international prices and rising domestic wholesale prices for selected food items, inflation reached 6% in 2022 (Figure 14.4).

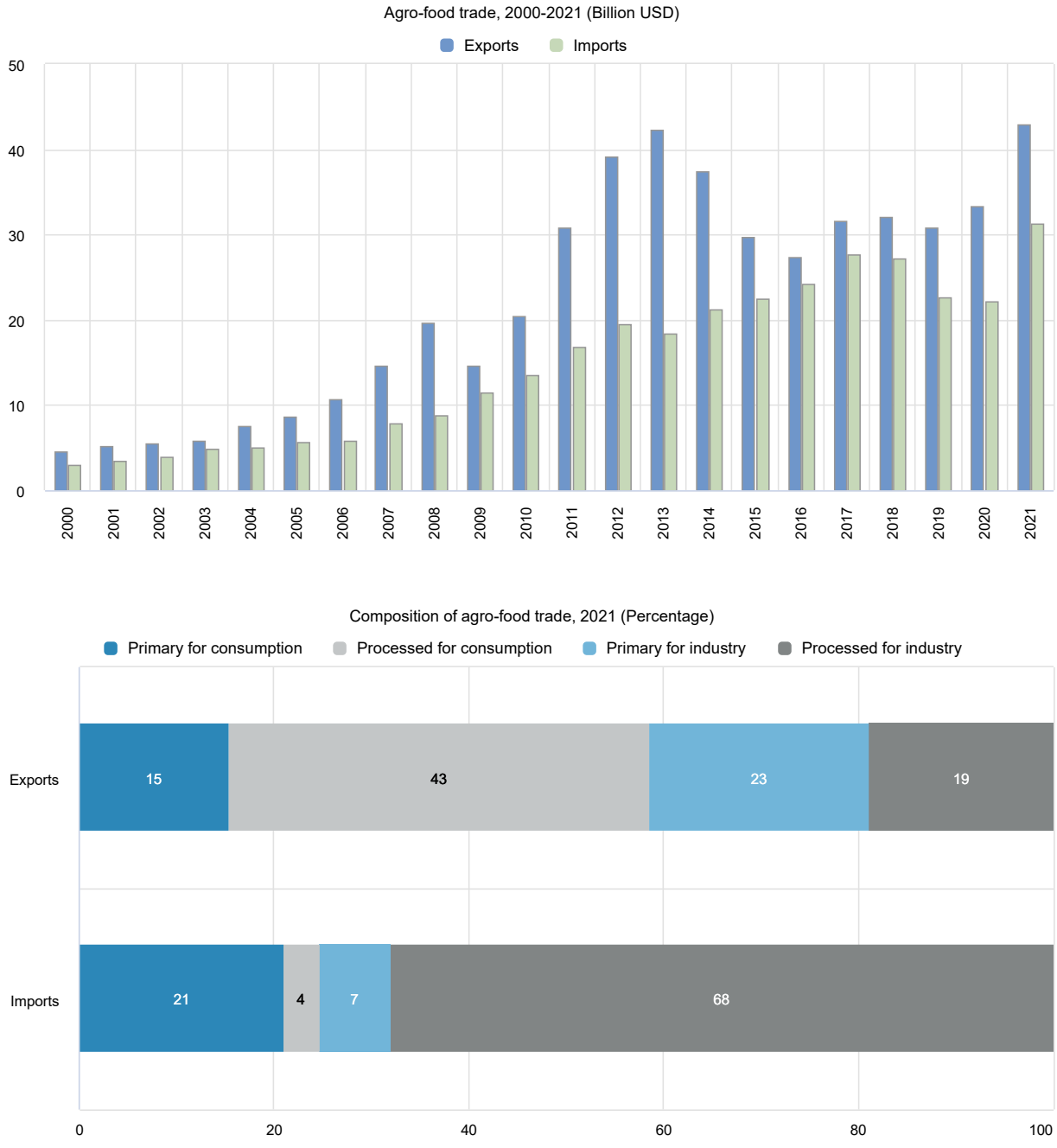
Figure 14.4. India: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

India is a consistent net agro-food exporter and the importance of agro-food products in total trade has been increasing over the past two decades, with a share of 11% in 2021. However, agro-food imports have until recently been growing faster than exports. Products for direct consumption – of low value, raw or semi-processed, and marketed in bulk – dominate agro-food exports, representing 58% of the total in 2021. Processed products for further processing by domestic industry are the main import category, accounting for 68% of total agro-food imports (Figure 14.5).

Figure 14.5. India: Agro-food trade

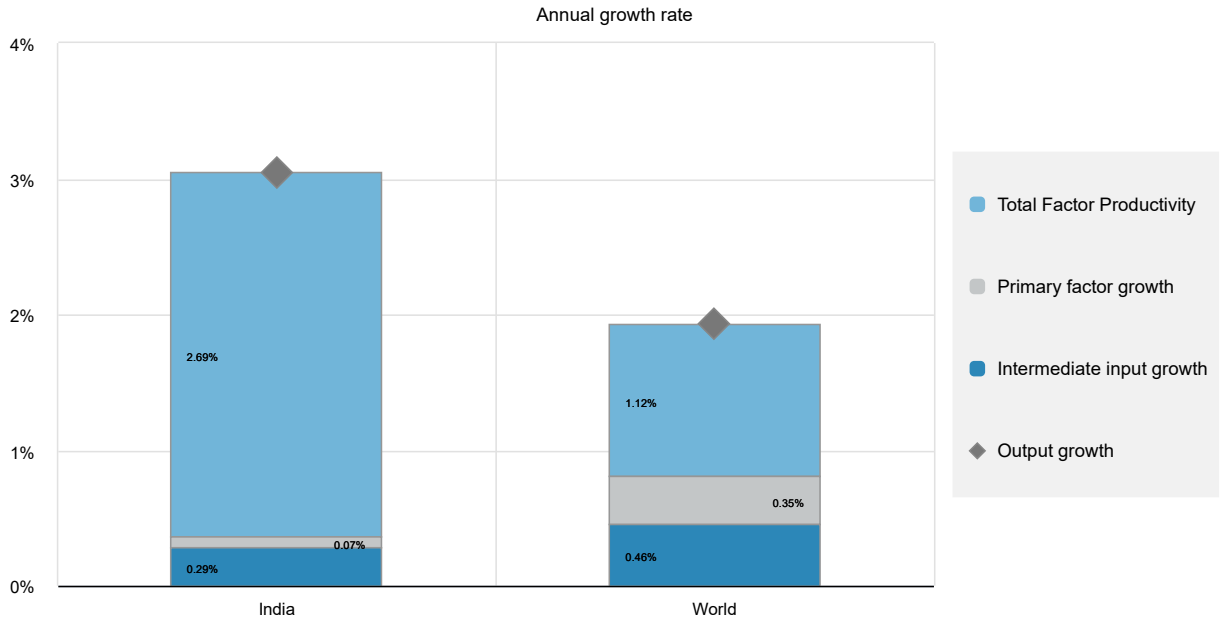


Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Agricultural output growth in India averaged 3% in 2011-20, well above the world average (Figure 14.6). This has been driven mainly by a significant increase in total factor productivity (TFP) which grew at 2.7% per year, backed by technological progress in the form of improved seeds and better infrastructure (including irrigation coverage, road density, and electricity supply).

However, the sustained growth in agricultural output and fertiliser use have put mounting pressures on natural resources, particularly land and water. This is reflected in the nutrient surplus intensities at the national level, which have grown over time and are much higher than the average for OECD countries (Table 14.4). About 80% of total water abstractions are by the agricultural sector. The share of agriculture in total GHG emissions is also higher than the OECD average, partly due to the weight of the agricultural sector in the Indian economy. Livestock rearing is the main source of GHGs.

Figure 14.6. India: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 14.4. India: Productivity and environmental indicators

	India		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	0.7%	2.7%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	91.0	135.0	32.2	30.4
Phosphorus balance, kg/ha	20.7	29.5	3.3	3.0
Agriculture share of total energy use (%)	5.3	4.8	1.7	2.0
Agriculture share of GHG emissions (%)	23.3	14.4	8.6	10.5
Share of irrigated land in AA (%)	33.4	39.3	-	-
Share of agriculture in water abstractions (%)	..	80.0	46.6	49.7
Water stress indicator	..	..	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Notes

[1] The Targeted Public Distribution System (TPDS) plays the same role as the Public Distribution System (PDS) before the TPDS but with a special focus on the poor.

[2] In the seven states or UTs that do not have an APMC act, procurement can take place outside *mandis*.

[3] Agriculture marketing also covers the futures market governed by the Securities and Exchange Board of India (SEBI), with the largest value of agricultural commodity trade taking place through the National Commodity Derivative Exchange (NCDEX). In addition, the Negotiable Warehouse Receipt System (NWRS) – established under the Warehousing Development and Regulatory Authority (WDRA) – aims to support farmers by storing products in warehouses. However, farmers, especially small and marginal, do not directly trade in agri-futures market in India.

[4] This represents the price below which exporters are not allowed to export a specific commodity. A minimum export price is set taking into consideration concerns about domestic prices and supply of that specific commodity.

[5] A Ministerial Decision on Export Competition at the WTO Ministerial Conference held in Nairobi in 2015 put an end to the subsidisation of agricultural exports, which for India would occur at the end of 2023 (https://www.wto.org/english/thewto_e/minist_e/mc10_e/l980_e.htm).

[6] Under the NFSA, around two-thirds of the Indian population were beneficiaries, entitled to 5 kg food grains per person every month for those people under the priority households (PHH) and 35 kg per household under *Antyodaya Ann Yojana* (poorest of the poor). Prior to the announcement, food grains were supplied at subsidised prices of INR 3 per kg for rice, INR 2 per kg for wheat, and INR 1 per kg for coarse grains. Under the PMGKY scheme, the GoI provided an additional 5 kg of food grain free of cost to about 800 million beneficiaries for the period April 2020 to December 2022.

[7] The AIDC is a tax that the GoI levies on commercial agricultural production in the country.

15 Indonesia

Support to agriculture

Support as a share of gross farm receipts in Indonesia declined to 8.0% in 2020-22 after peaking at 26.2% in 2015. The largest component is Market Price Support (MPS) to producers, in line with the government's focus on food sovereignty and self-reliance. Prices received by farmers were 4% higher than world prices on average. Staple products targeted by programmes aimed at self-sufficiency (e.g. sugar, maize, poultry, rice, and eggs) had the highest single-commodity transfers relative to their gross farm receipts, all above 22%.

The share of potentially most-distorting producer transfers was 93% in 2020-22, reflecting the prominence of MPS (including large negative price support due to increasing export taxes on palm oil) and payments based on unconstrained variable input use (particularly fertilisers) in the Indonesian policy mix.

Indonesia's food assistance programme (BPNT) supports poor consumers through electronic vouchers. However, this budget transfer is smaller than the support transferred from consumers to producers via price support measures. Therefore, consumers are penalised by agricultural policies with a Consumer Support Estimate (CSE) of -14.2% of consumer expenditures measured at the farm-gate level.

Expenditures on general services to the sector (General Service Support Estimate, GSSE) focus on irrigation infrastructure and public stockholding, and are small compared to producer support, at 10% of the Total Support Estimate (TSE). Expenditures for GSSE relative to the value of agricultural production were 1.1%, lower than in other emerging economies such as the People's Republic of China (hereafter "China") or India. TSE decreased from 1.5% of Gross Domestic Product (GDP) to 1.1% in the last two decades. However, this decline was due to increasingly negative MPS for some commodities (notably palm oil), whereas positive support to the sector increased from 1.8% to 2.2% of GDP over the same period.

Recent policy changes

The government adjusted the fertiliser subsidy scheme in response to high global prices. This policy has the objectives of benefiting poor farmers and improving productivity, but an increasing price disparity between subsidised and non-subsidised fertilisers began to challenge its implementation. Maximum prices of subsidised fertilisers were increased, partially following world markets. Furthermore, the scheme was restricted in 2022 to only three types of fertilisers and nine commodities, compared to all fertilisers and 70 commodities in 2021. Stricter supervision by law-enforcement agencies is in place to control the allocation and distribution of subsidised fertilisers, and limit the sale of counterfeit fertilisers.

A letter from the Ministry of Agriculture on strengthening food security and uptake of domestic production confirms self-sufficiency as a policy objective to achieve food security. The letter justifies and promotes import-tariff protection for food-security objectives. Consistent with this, a new regulation from the recently created National Food Agency (NFA) requires government food reserves to equal up to 5% of domestic consumption needs for 11 staple commodities, doubling the previous 2.5% target.

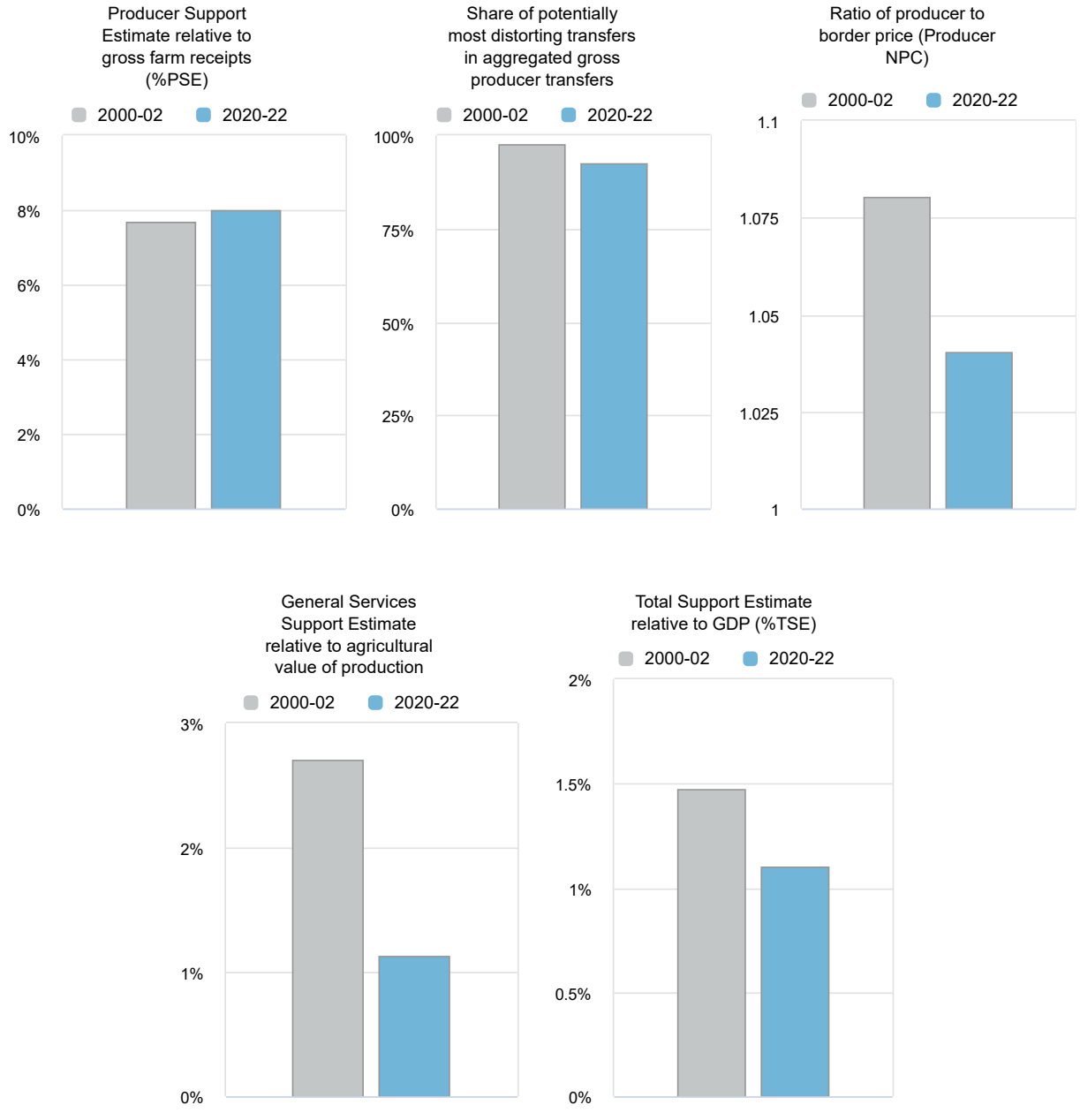
A foot-and-mouth disease (FMD) outbreak was declared in East Java in May 2022 after more than 30 years of being FMD free. A new task force on FMD mitigation is leading control measures, including decontamination, vaccination, and strengthened surveillance in areas that have not been infected.

Assessment and recommendations

- To contribute to the resilience and adaptation of the agricultural sector, the recently established National Research and Innovation Agency (BRIN) should prioritise climate-change adaptation strategies in agriculture. There are already policies targeting the adoption of new technologies, but they should focus on helping farmers develop capacity to adapt to the extent possible, rather than on specific practices, to ensure incentives and capacities to find the best solutions for the specific context of individual farmers. In particular, the knowledge and capacity building of agencies such as the Indonesian Agency of Agricultural Research and Development could be strengthened to ensure co-working between researchers, advisors, and farmers.
- To improve the contribution of the agricultural sector to climate-change mitigation, the government should assess whether the recent carbon tax bill and carbon-emission-rights mechanisms for coal power plants could be extended to the sector. Indonesia could lower emissions from agriculture, forestry and other land use (AFOLU) via measures to increase the adoption of climate-smart agricultural practices, such as those identified in the Long-Term Strategy for Low Carbon and Climate Resilience. Emissions could be reduced with improved management of agricultural land, avoiding burning, and through active reforestation policies. Biofuel mandates and subsidies must be evaluated from the perspective of potential negative spill-over onto land use and food access.
- Indonesian agricultural policy focuses on self-sufficiency and trade measures to achieve food self-reliance. This creates large price gaps between domestic and international markets for imported products such as maize, poultry, and rice. The impact will likely work against objectives that underpin the Food Law of 2012, including affordable prices for consumers who are penalised by positive MPS, and diversification in production and diet, which is undermined by the concentration of support to a few staple commodities.
- Export restrictions on crude palm oil should be phased out as they reduce the prices for domestic producers, including small holders, and require frequent adjustments. This policy change should be accompanied by reinforced regulations against deforestation. The recurrent changes in export taxes and domestic market obligations in 2022 have created market uncertainty, conflicting signals to farmers, and bottlenecks in the chain.
- The BPNT electronic food voucher system in place since 2019 represents an important improvement in the effectiveness of the food assistance programme. Further steps could be taken to improve food security, particularly combining the vouchers with a reduction in positive MPS to staple commodities, which harms net food consumers.
- Fertiliser subsidies are costly and can lead to inefficient use. Use must consider local soil and production conditions to be effective and avoid negative environmental impacts. The fertiliser subsidy scheme is unsustainable in the context of high global fertiliser prices, which increase budgetary costs and generate potential for hoarding and counterfeiting. Converting subsidies into payments per unit of land would make the support more efficient in transferring income to farmers.
- Policies should stimulate investment in infrastructure and innovation. Savings from reduced input subsidies could be re-allocated to Indonesia's Agricultural Innovation System. Investing in knowledge transfer and advice to farmers would improve decisions on the allocation of inputs such as fertilisers to local production needs. Advice could focus on improving farmers' skills to manage production and natural resources on their farms, contributing to long-term agricultural productivity growth and poverty reduction.

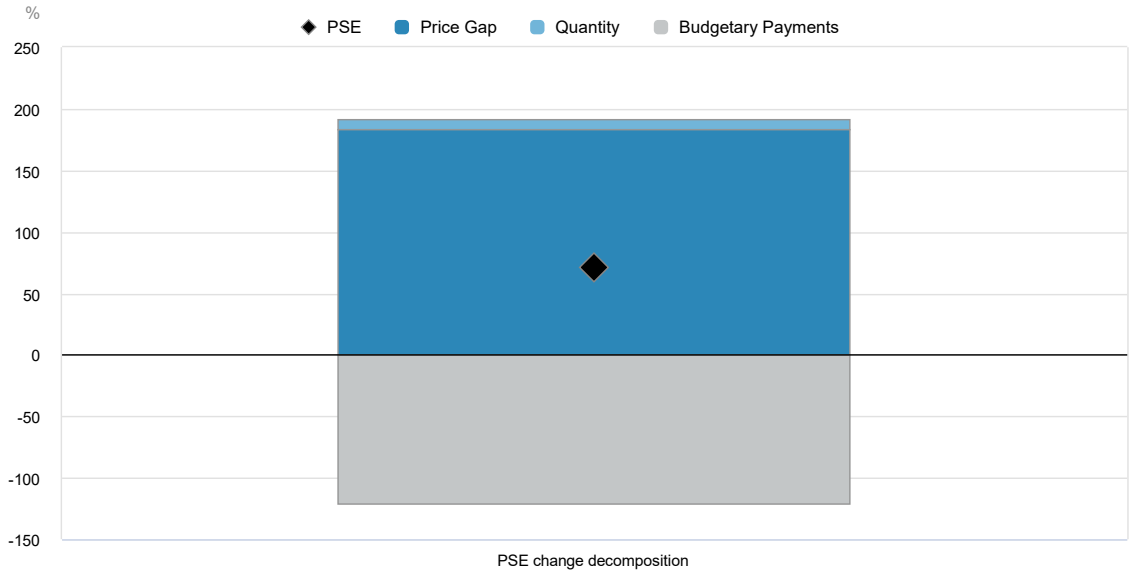
- Administrative requirements for agri-food imports related to food safety, quarantine, product standards, and labelling have multiplied in Indonesia. Combined with uneven enforcement and poor transparency due to changing rules, these requirements add to trade costs. Indonesia should clarify and strengthen the scientific basis of these requirements, and improve consistency in their implementation and co-ordination with other countries, such as in the ASEAN region.

Figure 15.1. Indonesia: Development of support to agriculture



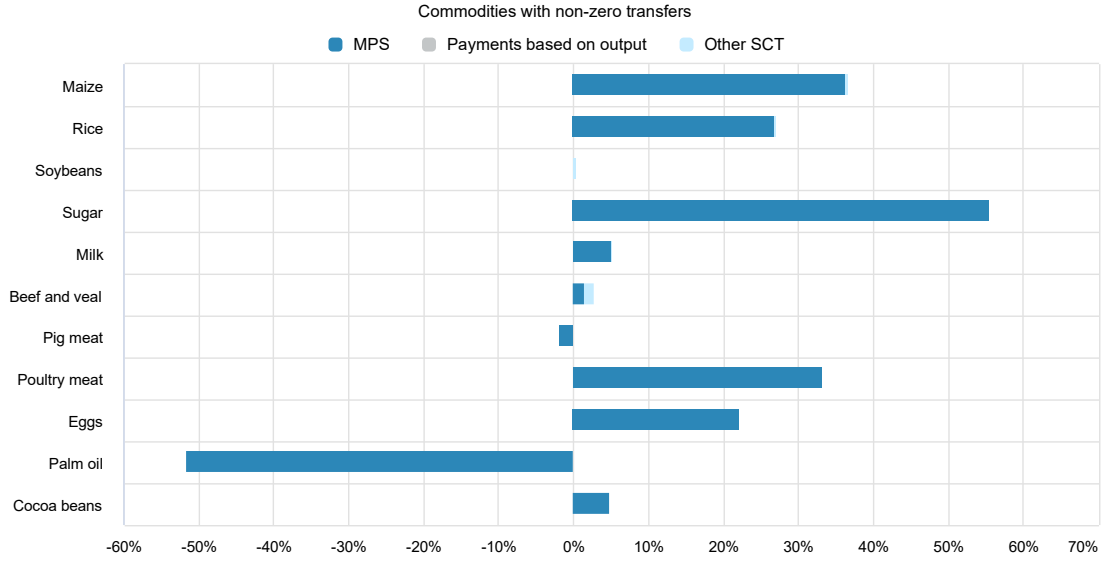
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 15.2. Indonesia: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency. The producer price change and the border price change are not calculated when both negative and positive market price support (MPS) occur at the commodity level for the previous year. Note that negative MPS estimates for livestock products may arise in cases of aligned product prices if there is positive MPS for feed commodities.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 15.3. Indonesia: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 15.1. Indonesia: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**23 813**	**114 236**	**106 905**	**120 654**	**115 148**
***of which:** share of MPS commodities (%)*	71.96	78.76	78.40	79.54	78.34
Total value of consumption (at farm gate)	**22 684**	**76 080**	**73 140**	**76 086**	**79 013**
Producer Support Estimate (PSE)	**1 856**	**9 647**	**16 771**	**4 598**	**7 573**
Support based on commodity output	1 763	3 120	13 983	-6 681	2 059
Market Price Support[1]	1 763	3 120	13 983	-6 681	2 059
Positive Market Price Support	2 360	15 833	17 384	13 789	16 327
Negative Market Price Support	-597	-12 713	-3 400	-20 471	-14 268
Payments based on output	0	0	0	0	0
Payments based on input use	82	6 513	2 775	11 265	5 501
Based on variable input use	19	3 922	2 294	6 189	3 284
with input constraints	0	0	0	0	0
Based on fixed capital formation	59	2 058	410	4 066	1 699
with input constraints	1	0	0	0	0
Based on on-farm services	4	532	70	1 009	517
with input constraints	0	0	0	0	0
Payments based on current A/An/R/I, production required	11	14	13	15	13
Based on Receipts / Income	11	14	13	15	13
Based on Area planted / Animal numbers	0	0	0	0	0
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	0	0	0	0
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0
Percentage PSE (%)	**7.68**	**8.01**	**15.29**	**3.49**	**6.28**
Producer NPC (coeff.)	**1.08**	**1.04**	**1.16**	**0.96**	**1.04**
Producer NAC (coeff.)	**1.08**	**1.09**	**1.18**	**1.04**	**1.07**
General Services Support Estimate (GSSE)	**623**	**1 284**	**1 840**	**565**	**1 446**
Agricultural knowledge and innovation system	45	61	84	35	65
Inspection and control	14	58	38	83	52
Development and maintenance of infrastructure	323	606	967	177	675
Marketing and promotion	0	5	3	7	5
Cost of public stockholding	240	554	749	264	649
Miscellaneous	0	0	0	0	0
Percentage GSSE (% of TSE)	**22.96**	**9.83**	**9.19**	**6.79**	**13.20**
Consumer Support Estimate (CSE)	**-2 001**	**-10 449**	**-12 718**	**-5 009**	**-13 620**
Transfers to producers from consumers	-2 034	-12 610	-13 634	-8 356	-15 841
Other transfers from consumers	-318	-1 158	-1 309	-753	-1 413
Transfers to consumers from taxpayers	328	2 167	1 415	3 154	1 932
Excess feed cost	22	1 152	809	946	1 702
Percentage CSE (%)	**-8.90**	**-14.21**	**-17.73**	**-6.87**	**-17.67**
Consumer NPC (coeff.)	**1.12**	**1.22**	**1.26**	**1.14**	**1.28**
Consumer NAC (coeff.)	**1.10**	**1.17**	**1.22**	**1.07**	**1.21**
Total Support Estimate (TSE)	**2 807**	**13 098**	**20 026**	**8 317**	**10 951**
Transfers from consumers	2 352	13 768	14 942	9 109	17 254
Transfers from taxpayers	773	488	6 393	-39	-4 890
Budget revenues	-318	-1 158	-1 309	-753	-1 413
Percentage TSE (% of GDP)	**1.47**	**1.10**	**1.89**	**0.70**	**0.82**
Total Budgetary Support Estimate (TBSE)	**1 044**	**9 978**	**6 043**	**14 998**	**8 892**
Percentage TBSE (% of GDP)	**0.56**	**0.83**	**0.57**	**1.26**	**0.67**
GDP deflator (2000-02=100)	**100**	**376**	**348**	**369**	**409**
Exchange rate (national currency per USD)	**9 322.08**	**14 582.21**	**14 593.09**	**14 307.82**	**14 845.71**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Indonesia are: maize, rice, soybean, sugar, milk, beef and veal, pig meat, poultry, eggs, bananas, cassava, cocoa beans, coffee, palm oil and rubber.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en.

Description of policy developments

Overview of policy trends

Indonesia's economy was relatively closed to trade for almost three decades from the 1960s to the 1980s. Trade liberalisation started only in the 1990s with the signature of agreements that created the WTO and the ASEAN Free Trade Area (AFTA).

Over the past 30 years, the main priorities of Indonesia's agricultural policy have been food self-sufficiency, food diversification, value added, competitiveness, and farmers' welfare. Agricultural producers benefit from a wide range of input subsidies for fertilisers, seeds, and credits, among others. The number and cost of these programmes grew rapidly starting in the mid-2000s. Since 1998, the government has increased the minimum producer price of rice, while targeted food assistance for the poor (via subsidised rice under the programme Raskin) was introduced, increasing expenditure on food assistance programmes.

Raskin went through a number of changes in the last decade and was eventually renamed as Rastra. These programmes allowed the Food Logistics Agency BULOG to distribute about 10 kg of rice per poor family per month. By 2019, this was replaced by the current BPNT programme that has grown to become a large-scale programme to provide an electronic food voucher, replacing physical rice distribution.

Tariffs fell significantly, with the average for agriculture (excluding alcoholic beverages) dropping from 20% in 1990 to 5% in 2010. Import monopolies, licensing requirements and export restrictions on agricultural products were removed in 1997-98. However, quantitative import restrictions were introduced, notably for rice, sugar and beef. Import requirements imposed for sanitary, phytosanitary and religious or cultural reasons (i.e. halal certification) are significant and potentially stringent. Export taxes were introduced in 1994 on crude palm oil (CPO) and its derivatives, and on cocoa in 2010. These and other export restrictions to CPO persist with adjustments over the years.

Indonesia's current agricultural policies are framed in the 2012 Food Law, which establishes the objectives of "food self-reliance and food sovereignty" (*kemandirian pangan dan kedaulatan pangan*). In practice, the goal is achieving self-sufficiency on staple and strategic commodities (rice, maize, soybean, sugar, and beef). The country provides subsidies for input use, particularly fertilisers and seeds.

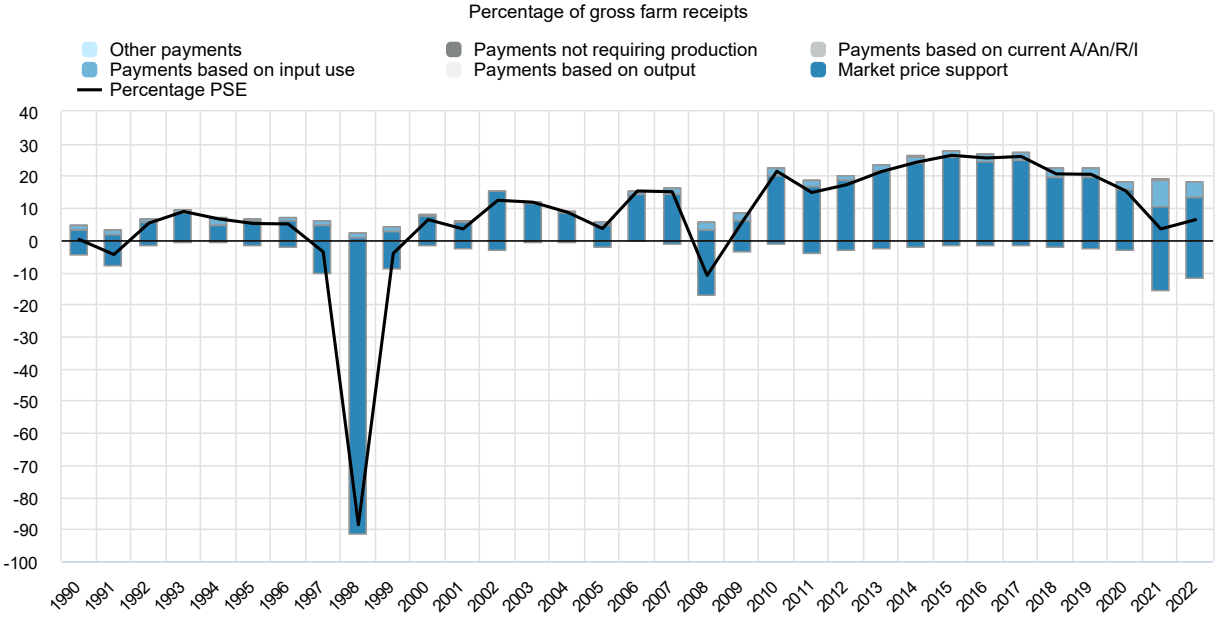
Table 15.2. Indonesia: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
1960s to 1980s	Closed economy Production expansion to avoid social unrest, rise in oil prices and green revolution	Food Logistics Agency (BULOG) established in 1967 and its marketing role expanded Subsidised inputs such as fertilisers, pesticides and credit Significant spending on infrastructure Increased import tariff rates Quantitative control of exports and imports Export taxes on palm oil and its derivatives
1980s – 1996	Trade liberalisation	Abolishment of tariffs, general tariffs reduction programme Trade agreements (URAA, AFTA, APEC) New legislation on export tax on palm oil and its derivatives in 1994 Phase out of input subsidies
1997-1999	Market reform Asian financial crisis	Reduction of BULOG's monopoly powers, particularly in rice markets Reduction of fertiliser subsidy Introduction of targeted rice distribution programme (OPK/Raskin) Tariffs replace import licensing arrangements for sugar Abolishment of local content requirements for dairy and soybeans Temporary removal of export taxes on palm oil and its derivatives

Period	Broader framework	Changes in agricultural policies
2000-2012	Measures to revitalise the agricultural sector in response to poor productivity	Reinstated fertiliser subsidy Increased expenditures in extension services R&D and irrigation Increased tariffs on rice and sugar Quantitative controls on trade in rice, sugar and beef More stringent non-tariff measures Variable export tax on palm oil and its derivatives, and on cocoa
2012-present	2012 Food Law, policy focus on self-sufficiency of staple food (rice, maize, soybeans, sugar and beef)	Increased role of BULOG in rice imports and domestic market Distribution of rice at low prices, first through Raskin programme, then Rastra and finally BPNT electronic vouchers organising rice distribution More input subsidies for fertilisers, seeds and credit. Grant for machineries to targeted farmers' groups New initiative on food estate

Indonesia's producer support estimate has been mostly positive over the past 30 years, mainly due to market price interventions (tariffs and minimum prices). The only exception occurred during the financial crisis in 1998 and the food crisis in 2008. Export taxes imposed on palm oil and cocoa result in negative support for those commodities. The negative price support to palm oil quintupled in 2021 and 2022 due to skyrocketing world prices not fully transmitted to local consumers for which palm oil is a staple commodity. Budgetary transfers to producers (input subsidies) and consumers (food aid), are smaller than the support to the price of other staple commodities such as sugar, maize, poultry, rice and eggs, and have been stable over the past decade.

Figure 15.4. Indonesia: Level and PSE composition by support categories, 1990 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

The Food Law of 2012 shapes Indonesia's current agricultural policy and set of core objectives. It sets out the principles of food self-reliance (*kemandirian pangan*) and food sovereignty (*kedaulatan pangan*) as the applied approach to food security. The law stipulates that domestic food demand be fulfilled by imports if local food sources are insufficient (USDA FAS, 2019[1]). The same principles are manifest in the Strategic Plan of the Ministry of Agriculture 2020-24: achieving self-sufficiency in the production of selected staple-food commodities (rice, maize, soybeans, sugar and beef) to assure food security; ensuring food prices are affordable for consumers across the archipelago; diversifying production and consumption away from carbohydrates (rice and wheat) towards animal-based products, and fruits and vegetables (particularly root vegetables); raising the competitiveness of agricultural production and value-added processing; increasing the availability of raw materials for bio-industry and bioenergy; and improving the welfare of farmers through higher incomes as a way to reduce the level of rural poverty (OECD, 2012[2]).

Indonesia pursues its policy objectives through both domestic and trade measures. Domestic policy measures include minimum purchase prices for rice and sugar; substantial budgetary allocations for input support; and provision of services to the agricultural sector as a whole, especially for irrigation, research and development, and marketing and promotion.

Indonesia transformed the former Food Security Agency (FSA/BKP) under the Ministry of Agriculture in July 2021, establishing the National Food Agency (NFA/Bapanas). NFA manages government food reserves and, through BULOG, manages public interventions in the domestic market and imports. It is also responsible for market operations aimed at stabilising domestic prices. BULOG can only buy rice from farmers when the market price is lower than or equal to the minimum price and must maintain a minimum year-end stock of 2 million tonnes, about 2.5% of annual consumption (USDA FAS, 2019[1]). Only BULOG can import medium-quality rice with a maximum of 25% broken grains. However, private companies can import specialty rice such as jasmine and basmati (USDA FAS, 2018[3]). In 2017, Indonesia introduced ceiling prices on medium- and premium-quality rice at the retail level, which vary across regions. When the retail price exceeds the ceiling, BULOG releases rice from stocks to the market. The state-owned food holding ID FOOD also plays a role in food-related policies, e.g. by facilitating the distribution of cooking oil.

In May 2019, the Rastra food assistance programme was replaced by the BPNT, co-ordinated by the Ministry of Social Affairs (Ministry of Social Affairs (Kementerian Sosial), 2019[4]). Under the BPNT, eligible households receive IDR 150 000 (USD 10.3) per month on a purchasing card that can be used to buy rice at the market price from selected retailers.

A wide range of input subsidies – on fertilisers, seeds and credit – support agricultural producers. The percentage of subsidy varies across fertiliser types, with urea receiving the highest, at 67.2% of the market price (Sudaryanto, 2018[5]). Subsidies are paid to fertiliser manufacturers who are mandated to sell fertilisers to farmers at a reduced price. Before the beginning of the planting season, the Ministry of Agriculture (MoA) issues a decree on the estimated demand for different types of fertilisers by province, along with the reference retail price of fertilisers. Based on this information, governors of the corresponding provinces break down the demand for fertiliser by district. The decree also serves as a reference for fertiliser companies to distribute fertilisers in the corresponding regions. In addition to the subsidy, the MoA also directly distributes fertilisers to food crop farmers in selected regions.

The MoA encourages small and medium-scale farm businesses through partnerships between the private sector and community investment that support Micro Business Credit. One large-scale programme focuses on the development of regional food production centers: the programme, called the Food Estate (FE), integrates upstream to downstream activities.

The government of Indonesia invests in irrigation infrastructure. According to the Ministry of Public Works, approximately 84% of Indonesian harvested rice area is irrigated, while the remaining 16% is rain fed (USDA FAS, 2019[1]). Facilitated by savings from reduced fuel subsidies since 2015, the government has

pushed to improve irrigation infrastructure, mainly for rice production. Investments in infrastructure complement exemptions in place for water transportation costs: farmers are not charged for the cost of delivering water from the source to the tertiary system via primary and secondary canals.

Indonesia restricts imports of strategic commodities (those associated with self-sufficiency targets: rice, maize, soybeans, sugar and beef). The Food Law sets out the principles that underpin food trade. It contains provisions restricting staple food exports and imports, such as "state food export can only be implemented after fulfilling National Food Reserve and staple food consumption necessity" and "food imports can only be implemented if domestic food production is not sufficient" (Articles 34 and 36). Trade policy includes both tariff and non-tariff measures. The trade weighted average of applied most favoured nation (MFN) import tariff on agro-food products was 5.6% in 2020. Rice and sugar have higher specific tariffs. Quantitative import restrictions and licensing are in place, notably for rice, sugar and beef. Those import requirements imposed for food safety and religious reasons are becoming more stringent. The MFN tariff schedule is updated every five years by the Ministry of Finance (*Buku Tarif dan Kepabeanan*).

Since 2008, importing companies must receive Ministry of Trade approval as registered importers for a range of processed products manufactured from meat, cereal, sugar and cocoa. Similar restrictions were placed on imports of animals in 2011. In line with the Ministry of Trade regulation, "On the Import and Export of Animals and Animal Products" issued in September 2011, these imports can only be carried out if the domestic production and supply are not sufficient to meet consumer demand at an affordable price.

A variable export tax on cocoa and palm oil was put in place in 2010 and 2015, respectively (OECD, 2012[2]). The tax rate on crude palm oil depends on reference prices and is zero for prices below USD 750 per tonne. When reference prices exceed this level, the tax is imposed on a sliding scale between USD 3 and USD 200 per tonne. Since 2015, the government collects an additional export levy for crude palm oil on top of the variable export tax to finance subsidies to biodiesel, infrastructure, research and development projects on palm oil, replanting in small farms, market promotion and human resource development.

To reduce dependency on fossil fuels, government policy focused in the last two decades on shifting from fossil fuel consumption to the use of biofuels mainly from palm oil, with the first regulation on biofuel development introduced in 2006. The Ministry of Energy and Mineral Resources (MERM) led the research and development process and started a mandate to use biofuels in transportation in 2008. Indonesian biodiesel mandates expanded in 2015 with MERM Regulation 12/2015, which establishes a 10% biofuel blending requirement. Since then, the biofuel blending rate has been progressively increased to its current level of 35% for biodiesel across all uses (Halimatussadiah et al., 2021[6]). To ensure the success of the blending mandate, the Indonesia Oil Palm Estate Fund (BPDP) provides a subsidy to biofuel producers. The BPDP collects the additional export levy and redistributes it to producers of biofuels who sell their products domestically. In 2021, 16% of palm oil production was dedicated to biofuels, 94% of which were consumed domestically. A moratorium on the issuance of licenses for new palm oil plantations entered into force in 2018, to combat palm oil-driven deforestation and loss of peatland, followed by a Presidential Instruction on National Action Plan on Indonesian Sustainable Palm Oil 2019-2024.

Indonesia submitted its updated Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC) in July 2021. It aims to reduce greenhouse gas (GHG) emissions by 29% by 2030 compared to a business-as-usual (BAU) scenario, or by 41% of the BAU contingent on sufficient international financial support. [1] The NDC also states Indonesia's plans to reach peak GHG emissions in 2030 and net-zero GHG emissions by 2060 or sooner (WRI, 2021[7]). Indonesia's Long-Term Strategy for Low Carbon and Climate Resilience (LTS-LCCR) 2050 aims to contribute to global mitigation goals while achieving national development, and finding a balance between objectives for emissions reduction, economic growth, justice and climate-resilience. Even though there is not an agriculture-specific target for GHG mitigation, according to this strategy, the AFOLU sector could become a net sink by 2050. The LTS-LCCR suggests technologies to apply to the agricultural sector but does not include quantitative targets. These suggestions include: (1) adoption of low-emission varieties

and water-saving cultivation systems in paddy fields; (2) utilisation of manure for biogas, and livestock feed improvement in livestock management; and (3) reduced use of synthetic fertiliser.

The government of Indonesia has issued several regulations to reduce agricultural GHG emissions, obliging farmers to implement environmentally sustainable practices. Activities such as the production of inputs, irrigation, and the use of cultivation equipment must also comply with these regulations (Bapenas, 2021[8]). A Presidential Regulation in 2021 focused on the Implementation of Carbon Economic Value to Achieve Nationally Determined Contribution Targets and Control of Greenhouse Gas Emissions in National Development (Government of Indonesia, 2021[9]). This regulation defines a universal approach to measurement of the effort in reducing emissions, to be reflected in targets that are set at the national level. The economic value of carbon is used by the government to select the most efficient mitigation actions to contribute to national targets and to manage the trade-off between environmental sustainability and productivity. This is particularly the case for subsidised inorganic fertilisers and conventional irrigation systems, which increase food production, but are also the largest contributors to GHG emissions from agriculture in Indonesia.

Indonesia is a member of the Association of Southeast Asian Nations (ASEAN), Asia-Pacific Economic Cooperation (APEC), and World Trade Organization (WTO). It participates in trade liberalisation between ASEAN members and their major trading partners in the region, including China, Japan, India, Korea, Australia, and New Zealand. The ASEAN economies committed in 2015 to complete the formation of the ASEAN Economic Community by 2025. This is intended to develop a single market and production base, a highly competitive economic region, a region of equitable economic development, and a region fully integrated into the global economy (ASEAN Secretariat, 2017[10]).

Climate change adaptation policies in agriculture

Indonesia's plan on Low Carbon and Climate Resilient Development 2050 is based on striking a balance between future emissions reductions and economic development (Government of Indonesia, 2021[11]). The plan implies mitigation, but also adaptation by improving crop productivity and cropping intensity, implementing integrated farming systems, optimising the use of unproductive or idle land, and reducing food loss and waste (Government of Indonesia, 2021[12]). To increase productivity, the strategy envisages revitalising agricultural extension services; providing sufficient space for the private sector, research agencies and universities to engage in empowering farmers; and improving agricultural vocational education. Expanding value-chain financing schemes and credit schemes for farmers is also part of this strategy to facilitate technology adoption.

Adaptation of Indonesian agriculture to the impacts of climate change is facilitated by programmes and support to farmers that include insurance to buffer against shocks in the short term, technical support to improve practices and technologies in the medium term, and investment in infrastructure to support long-term transformation (MoA, 2018[13]).

Buffer against shocks in the short term

Agricultural insurance against production losses protects farmers' income with respect to the increased incidence of floods, droughts, and pests and diseases. Since 2015, Indonesia offers rice-farming insurance (AUTP) and cattle and buffalo insurance (AUTS/K) in collaboration with the insurance company PT Jasindo. PT Jasindo provides this insurance through a digital application, Protan (Proteksi Pertanian), since 2021. For 2022, the MoA targeted coverage of 1 million hectares under crop insurance and of 120 000 heads under cattle insurance. Government subsidies cover 80% of the annual crop insurance fee.

Support incremental changes in the medium term

The integrated planting calendar information system, Katam, provides farmers with spatial information on specific shocks and local conditions based on climate information and forecasts. This information includes seasonal forecasts, estimates for optimal planting dates and cropping patterns, potential planting area, drought and flood-prone areas, recommended doses, and the appropriate composition of fertilisers.

As part of their adaptation policy, the ministry releases crop varieties that are tolerant to dry climate, such as for rice and soybeans. Some rice varieties are tolerant to increasing salinity, supporting adaptation to rising sea levels in coastal areas.

Technical support focuses on the use of adapted practices and technologies, particularly on water management and double cropping. Rainwater harvesting is an alternative water-management technology that follows the principle of collecting excess water during the rainy season to use during the dry season for crop irrigation. This technology has been applied in line with infrastructure development, particularly ditches (*embung*) and dams being built with government support. Ratoon rice farming refers to the production of a second rice crop from the stubble after the harvest of the main crop, and is suitable for certain rice production systems impacted by climate in Indonesia. These technologies are promoted through technical provisions, such as irrigation systems, and non-technical aspects, including support to extension workers, which motivate farmers' adoption.

A long list of other technologies and practices are promoted to adapt to climate change: soil- and water-conservation technology; balanced fertilisation and use of soil-enhancing organic fertiliser; integration of crops and livestock through a zero-waste approach; planting in household gardens; use of varieties that are adapted to climate change; *Minapadi* (rice-fish) technology, where feasible; agricultural mechanisation; maps and information systems; no-burn technology; integrated pest management (IPM); and control and management of animal diseases.

Support long-run transformation

Certain technologies for irrigation or direct seeding require investment in infrastructure development. These investments aim to meet the water needs of plants when water availability is limited. Direct seed planting methods without the use of nurseries is an adaptation to reduced water availability but requires significant transformation of the production system. Investments into these methods are supported and implemented together with other modern agricultural technology, improved varieties, balanced fertilisation, biological fertilisers, compost, and integrated pest control.

Domestic policy developments in 2022-23

Institutional changes

The National Food Agency (NFA/Bapanas), along with related ministries, has issued a regulation on the Management of Government Food Reserves (Government of Indonesia, 2022[14]) and is in the process of drafting a guideline for accelerating food diversification based on local resources and culture. The regulation requires the establishment of government food reserves of up to 5% of domestic consumption needs for 11 staple commodities, doubling the previous target of 2.5%. The new rules also seek to ensure adequate food supplies to low-income communities and to that end reserves are released in case of shortages, price spikes, natural disasters, supply chain disruptions and other emergencies. Food reserves will be amassed through the purchase of domestically produced goods at specific reference purchase prices set by the NFA. In a first phase, several institutions are involved in preparing technical procedures under the supervision of the State Logistics Agency (BULOG) to lay out detailed technical regulations on the planning, procurement and distribution targets for national and regional stocks of rice, maize and soybeans (AMIS, 2022[15]).

A new Agricultural Instrument Standardization Agency (*Badan Standardisasi Instrument Pertanian*, BSIP) was created in 2022 by Presidential Decree. This agency was created via the transformation of the Indonesian Agency for Agricultural Research and Development (IAARD) whose research and development functions were integrated into the National Research and Innovation Agency (BRIN). BSIP has a mandate to formulate, implement and harmonise agricultural instrument standards (Government of Indonesia, 2022[16]). Agricultural items covered by this standardisation agency include materials, equipment, methods, documents, infrastructure and facilities used in the agricultural sector. Examples of items within the purview of the agency are seeds and seedlings, fertilisers, pesticides, land and soil, water and standard operating procedures of agricultural technologies. Integration of IAARD research functions into BRIN may create uncertainty on the delivery of its former function to disseminate agricultural technology to small farmers as BRIN is more focused on technology development than on the adoption of innovations. BSIP at the provincial level may need to take over the function of providing advice to farmers, as well as the dissemination and adoption of technology.

Animal health

A foot and mouth disease (FMD) outbreak took place in the province of East Java in May 2022, which had been declared free from FMD since 1986. The disease spread to several other areas of Indonesia. The affected area contributes about three-quarters of the national production of beef cattle and dairy cows (MoA, 2022[17]). The estimated economic loss from the disease is USD 1.37 billion, with the most severe impact on small-scale farmers (Jakarta Post, 2022[18]) (Beazley, 2022[19]). These losses are due to reduced milk productivity, slower growth rate of beef cattle, declining fertility and slowing of pregnancy, mortality and culling of chronically infected livestock (Ristiani, 2022[20]). Moreover, supply chains are disrupted due to restrictions on livestock transportation.

Indonesia has implemented a multilevel strategy to limit the spread of the epidemic across regions and country borders. First, the Head of the National Disaster Mitigation Agency (NDMA) determined the Emergency Status due to FMD, allowing the heads of regional governments to trigger and accelerate protection measures in their respective regions, financed by the central government budget (NDMA, 2022[21]). Second, a Circular Letter of the Minister of Agriculture on Control and Management of FMD in Livestock triggers contingency plans to prepare for and control FMD (MoA, 2022[22]). Third, a Decree of the Minister of Agriculture creates a Task Force for mitigating FMD impacts on animal health, the environment and other economic and social aspects (MoA, 2022[23]). Fourth, a Decree of the Director General of Livestock and Animal Health Services specifies standard operating procedures for control and management of FMD outbreaks (DGLAH, 2022[24]).

Biosecurity standards are applied through the Animal Health Posts on the ground, including decontaminating or destroying cages, equipment, vehicles, and other materials. A massive vaccination programme is underway, together with strengthened surveillance in areas that have not been infected. A zone-based biosecurity system was applied to the archipelagic structure of the country, where islands are separated by sea, to slow or stop the spread of disease.

Fertiliser subsidies

In 2022, the Indonesian fertiliser subsidy budget was IDR 25 trillion (USD 1.67 billion), which was provided to 16 million farmers (MoA, 2022[25]). An October 2022 Regulation by the Minister of Agriculture (MoA, 2022[26]) set the highest retail price (HET) of subsidised fertiliser and allocated subsidies to 9 million tonnes of fertiliser. Beneficiaries must be registered on-line through the e-RDKK platform that supports national food security.

Under the new fertiliser policy programme, subsidies are restricted to three types of fertilisers (urea, NPK and NPK special formula) and to nine commodities, compared to 70 commodities previously. The highest

retail price of urea has significantly increased from IDR 1 800 (USD 0.12) per kilogramme to IDR 2 250 (USD 0.15) per kilogramme, following to some extent the global price of fertiliser.

Domestic policy responses to Russia's war of aggression in Ukraine

In response to the high market price conditions created by the war in Ukraine, the government of Indonesia took steps to tighten and better target the distribution of subsidised fertilisers, by preparing data on beneficiaries using digital technology and strengthening supervision. Despite the increase in the highest retail price, the disparity in prices between subsidised and non-subsidised fertilisers has grown significantly. The price of non-subsidised fertilisers in Indonesia has significantly increased compared to previous years (CMEF, 2022[27]).

The large disparity in the prices of subsidised and non-subsidised fertilisers creates challenges due to the hoarding of subsidised fertilisers and fertiliser counterfeiting. New non-subsidised fertilisers have emerged with trademarks very similar to those of subsidised fertilisers, such that some farmers have received low-quality products that generate sub-optimal plant growth and increase the prevalence of pests and diseases. Consequently, more strict supervision by law enforcement agencies has been implemented to control the allocation and distribution of subsidised fertilisers.

Other policies

A Presidential Directive by the NFA set a reference selling price for soybeans at around IDR 10 000 (USD 0.67) per kilogramme and required state-owned enterprises to buy soybeans from local farmers. Soybean subsidy programmes were launched in April and October 2022, involving BULOG and Kopti (the tempeh and tofu producer's co-operative). Kopti's members are eligible to purchase soybeans from BULOG with a government subsidy of IDR 1 000 (USD 0.07) per kg (FAS-USDA, 2022[28]). However, only a fraction of these sales took place in practice due to difficulties in administering the programme. An additional budget of IDR 400 billion (USD 26 000) has been earmarked for expanding the soybean planting area (AMIS, 2022[29]).

The Palm Oil Plantation Fund Management Agency (BPDP-KS) finances actions to increase production levels and the productivity of palm oil production systems, including through the programme for replanting for small plantations (PSR). From 2017 to 2022 the programme facilitated replanting of 278 200 hectares of palm, or almost 10% of the total area (MoA, 2023[30]).

Trade policy developments in 2022-23

To strengthen food security and prioritise the uptake of domestic food production, the following policy directions, emphasising self-sufficiency policies, have been proposed (MoA, 2022[31]):

- Controlling the import of high quality rice, which can be produced domestically, and to prioritise demand for Indonesian farmers' production.
- Clearly distinguishing food corn from feed corn to be able to apply higher tariff rates to the former.
- Substituting imported wheat products with domestically produced sorghum and cassava, and also better identifying food and feed wheat trade flows.
- Imposing import duties on corn, soybean, and wheat in accordance with WTO provisions, using the tariff revenue to support corn, soybean, sorghum, and cassava farmers in Indonesia.
- Using import controls to achieve food security objectives.

The export policies on palm oil have been adjusted in response to market conditions, in particular high market prices for cooking oil (FAS-USDA, 2022[28]). In January 2022, the government subsidised the price of simple-packed cooking oil with funds taken from the export levy (CPO fund) for two weeks. In February, a new policy of Domestic Market Obligation (DMO) was enacted requiring all exporters to sell at least 20%

of planned exports in the domestic market (with an increase to 30% starting in March). In April, the Ministry of Trade banned palm oil exports to safeguard domestic availability and affordability of cooking oil. Up to that date, increased rates of export levies – on top of an export tax of USD 200 per tonne – had been applied when the reference price reached USD 1 050 per tonne (AMIS, 2022[32]). A ministerial regulation extended the export ban to crude palm oil, red palm oil, palm oil mill effluent, refined bleached deodorised palm oil as well as used cooking oil. Tariff revenues were used to subsidise bulk cooking oil sales (approx. 202 million litres per month) through the Oil Palm Plantation Fund Management Agency that continues the distribution of bulk cooking oil to vulnerable communities. In June and August 2022, Indonesia relaxed rules to allow more companies to export palm oil and reduce high palm oil inventories that prevented refiners from buying more palm fruits from farmers (AMIS, 2022[33]). In February 2023, Indonesia announced that only 33% of palm oil export permits would be granted until 1 May, a temporary restriction aiming to secure short-run domestic supply ahead of Ramadan (AMIS, 2023[34]).

Contextual information

Indonesia is the fourth most populous country in the world with 274 million inhabitants, with rapid population growth and high population density. Indonesia is also one of the world's largest agricultural producers. Despite a reduction of the share of the sector in the economy in the last two decades, it still accounts for 13% of GDP. The reduction in the share of the work force employed in the agricultural sector has been proportionally much larger, declining from 45% in 2000 to 29% in 2021, with an increase in the average production per employed person in the sector.

Indonesia is a net agro-food exporter and the share of its total exports that come from the sector have tripled in the last two decades to 22% in 2021. The country is also a large importer of agro-food products. Total agricultural area in Indonesia has increased by almost one-third in the last two decades and currently represents 2.1% of the agricultural land in all countries covered in this report. While food crop production is predominantly based on small family farms, there are large commercial farms producing perennial crops, particularly palm oil.

Table 15.3. Indonesia: Contextual indicators

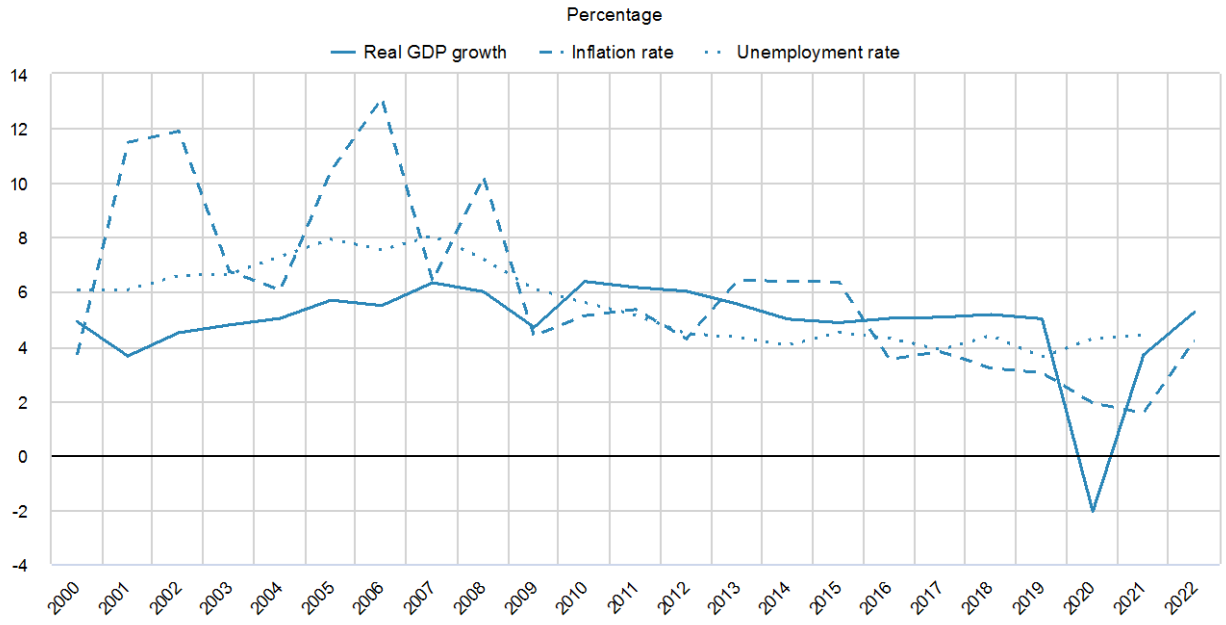
	Indonesia		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	1 097	3 566	2.7%	2.9%
Population (million)	205	274	4.8%	5.2%
Land area (thousand km^2)	1 878	1 878	2.3%	2.3%
Agricultural area (AA) (thousand ha)	47 177	62 300	1.6%	2.1%
			All countries[1]	
Population density (inhabitants/km^2)	112	143	52	64
GDP per capita (USD in PPPs)	5 346	13 027	9 350	23 401
Trade as % of GDP	26.3	18.0	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	15.6	13.3	2.9	3.9
Agriculture share in employment (%)	45.3	29.0	-	-
Agro-food exports (% of total exports)	6.8	22.3	6.2	7.9
Agro-food imports (% of total imports)	12.7	12.5	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	84	77	-	-
Livestock in total agricultural production (%)	16	23	-	-
Share of arable land in AA (%)	43	42	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

Indonesia's economy has grown at around 5% per year between 2000 and 2019, more than doubling the real income per capita. In 2020, GDP decreased as a consequence of the COVID-19 pandemic and related restrictions, but economic growth was back to 5.3% in 2022. The inflation rate has been steadily decreasing from almost 10% in the 2000s to 1.6% in 2021, rebounding to 4.2% in 2022. The rate of unemployment has remained stable for year slightly above 4%.

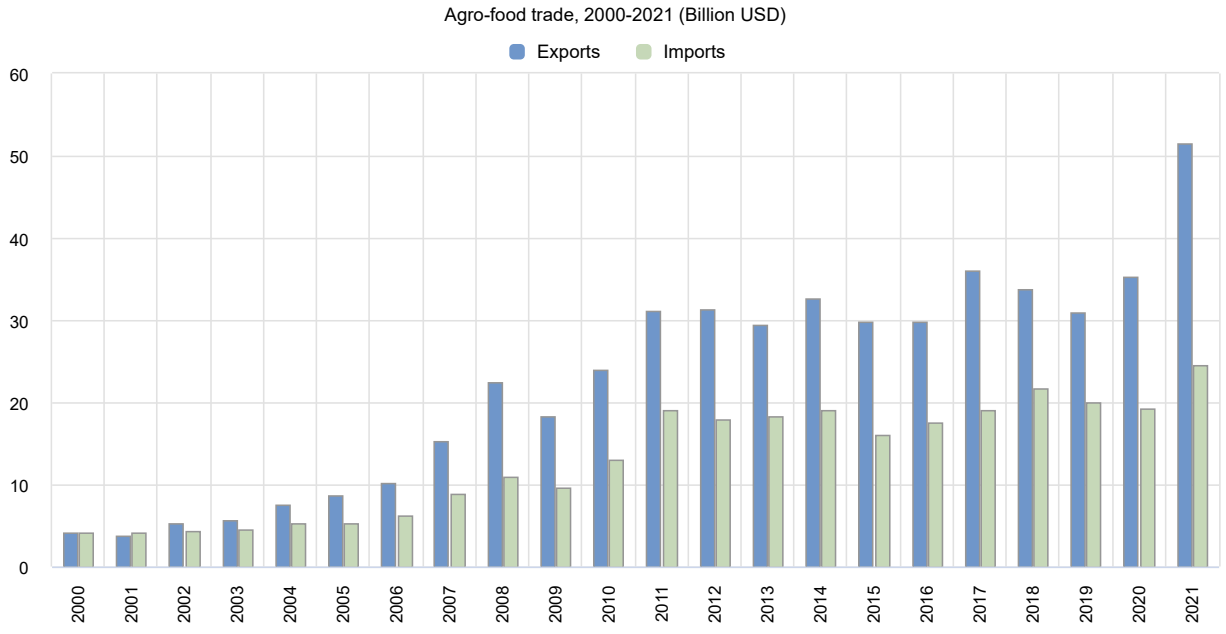
The value of agro-food exports has oscillated around USD 30 billion in the last decade but strongly increased to USD 51.6 billion in 2021 driven by a large increase in palm oil export value due to a peak of world prices for palm oil. Imports reached USD 24.5 billion in the same year. Around 79% of agro-food exports are processed products to be further transformed by industries in other countries such as rubber and palm oil. A similarly significant share of agro-food imports (72%) is destined for further processing in Indonesia.

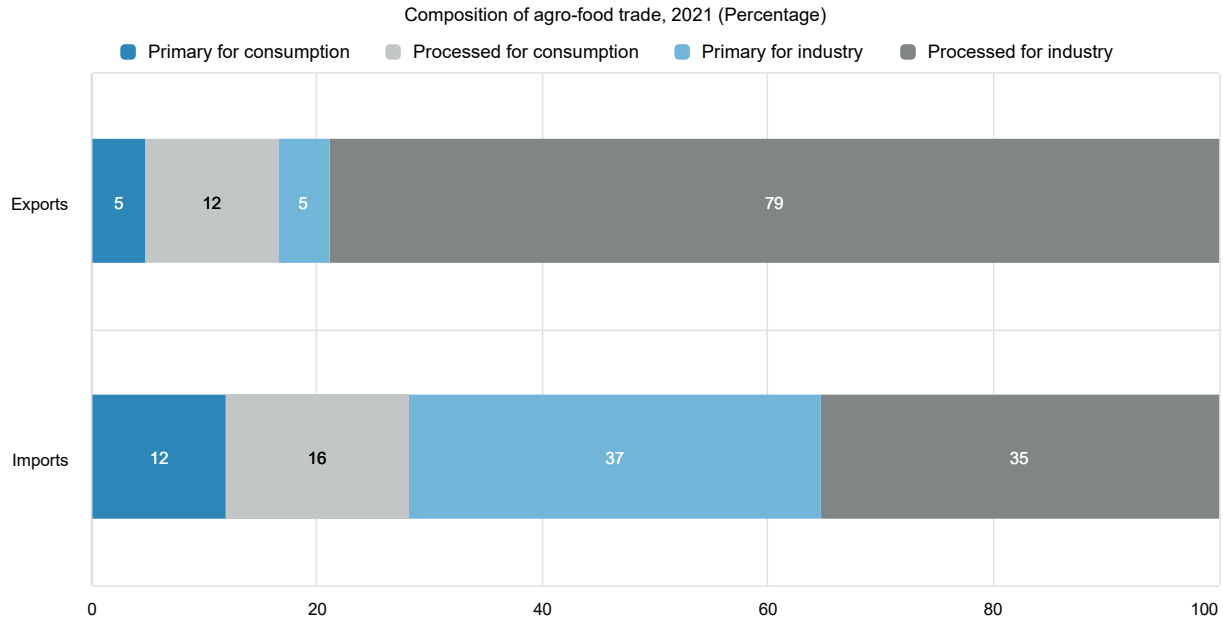
Figure 15.5. Indonesia: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Figure 15.6. Indonesia: Agro-food trade



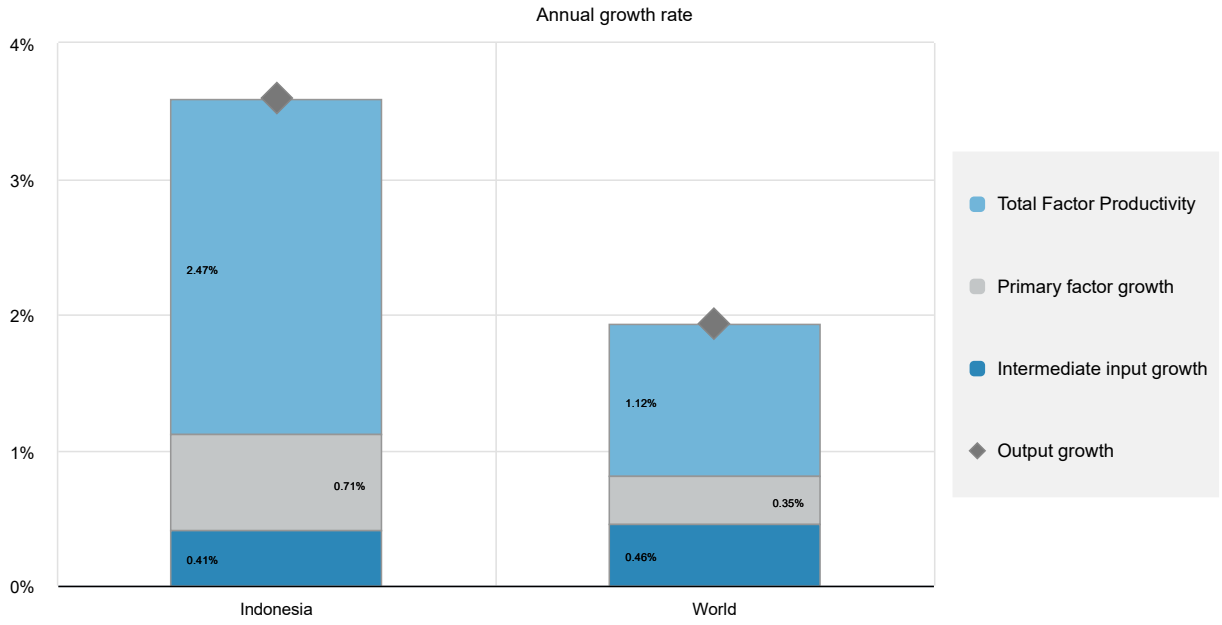


Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Indonesia's agricultural production increased at an annual rate of 3.6% in 2011-20, well above the global average. Most of this growth is productivity driven: Total Factor Productivity (TFP) has increased by 2.5% per year, also above the world's average and representing technological improvements and improved efficiency to combine different production factors. Additional primary factors, including land, and intermediate inputs have contributed an additional 0.7 and 0.4 points to the production growth, respectively. Unlike in the 1990s, Indonesia's growth in output and TFP has significantly outperformed the global averages during the last 10 years.

Indonesian agriculture accounts for an increasing share of national water extractions, which was 85.2% in 2021. However, the sector's shares of energy used has fallen since 2000 to 0.6% in 2021, while the share of GHG emissions has remained relatively stable at 13.3% in 2021, while the whole of agriculture, forest and other land use -in particular deforestation and forest degradation- have represented more than half of Indonesian emissions in 2000-18. The country's phosphorous balance is below the OECD average, while the nitrogen balance has decreased in the last two decades to significantly negative levels in 2021.

Figure 15.7. Indonesia: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 15.4. Indonesia: Productivity and environmental indicators

	Indonesia		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	-0.1%	2.5%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	17.9	-68.3	32.2	30.4
Phosphorus balance, kg/ha	1.5	0.4	3.3	3.0
Agriculture share of total energy use (%)	2.4	0.6	1.7	2.0
Agriculture share of GHG emissions (%)	13.2	13.3	8.6	10.5
Share of irrigated land in AA (%)	11.5	10.8	-	-
Share of agriculture in water abstractions (%)	81.9	85.2	46.6	49.7
Water stress indicator	..	..	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Note

[1] The Business as usual scenario (BAU) implies an increase in GHG emissions of 115% higher than the level of emissions in 2010 (see Table 1 in (Government of Indonesia, 2021[35]).

16 Israel

Support to agriculture

The share of producer support in gross farm receipts (Producer Support Estimate, PSE) amounted to 13.5% in 2020-22, under the OECD average and below the 2000-02 level of 19%, but above levels seen in the early 2010s. At the same time, the 89% share of potentially most-distorting forms of support remained twice as high as the OECD average. This can be explained by the persistence of domestic price support and border measures in favour of several meat and dairy products, and selected fruits and vegetables, even though some are in the process of gradual reform. Poultry producers benefit from the largest share of market price support, accounting for 45% of the total producer support in 2020-22.

Single Commodity Transfers (SCT) represented 84% of the PSE in 2020-22. Market price support is the main component of SCT: poultry, tomatoes, apples, eggs, and grapes have the highest share of SCT in commodity gross farm receipts.

The share of the General Services Support Estimate (GSSE) in total support amounted to 2.9% of the value of the agriculture production in 2020-22, slightly below the OECD average, and just under the proportion in 2000-02. These expenditures focused mostly on hydrological infrastructure and agricultural innovation. The Total Support Estimate (TSE) amounted to 0.3% of Gross Domestic Product (GDP) in 2020-22, half the share of the OECD average.

Recent policy changes

The government approved tariff cuts on a wide range of fruits, vegetables, and agricultural inputs starting in 2022. This follows Decision no. 213 of August 2021, which aimed to reduce customs duties on fresh produce and to ease phytosanitary import restrictions while proposing direct payments to farmers and support for investment and innovation in agriculture. Other elements of the decision are on hold pending the new government's position.

Important sector reforms were finalised for egg, dairy, and beef production. In the case of eggs, the reform sets up the progressive elimination of production quotas by 2033, and halves existing tariffs. A second new dairy agreement postpones the change of the target price mechanism to 2025, reduces the expected increase in the price of milk, and lowers custom duties for specific cheeses. The beef sector agreement eliminates the import tariff on chilled beef, with direct payments offered to producers in compensation along with investment in domestic branding of beef products.

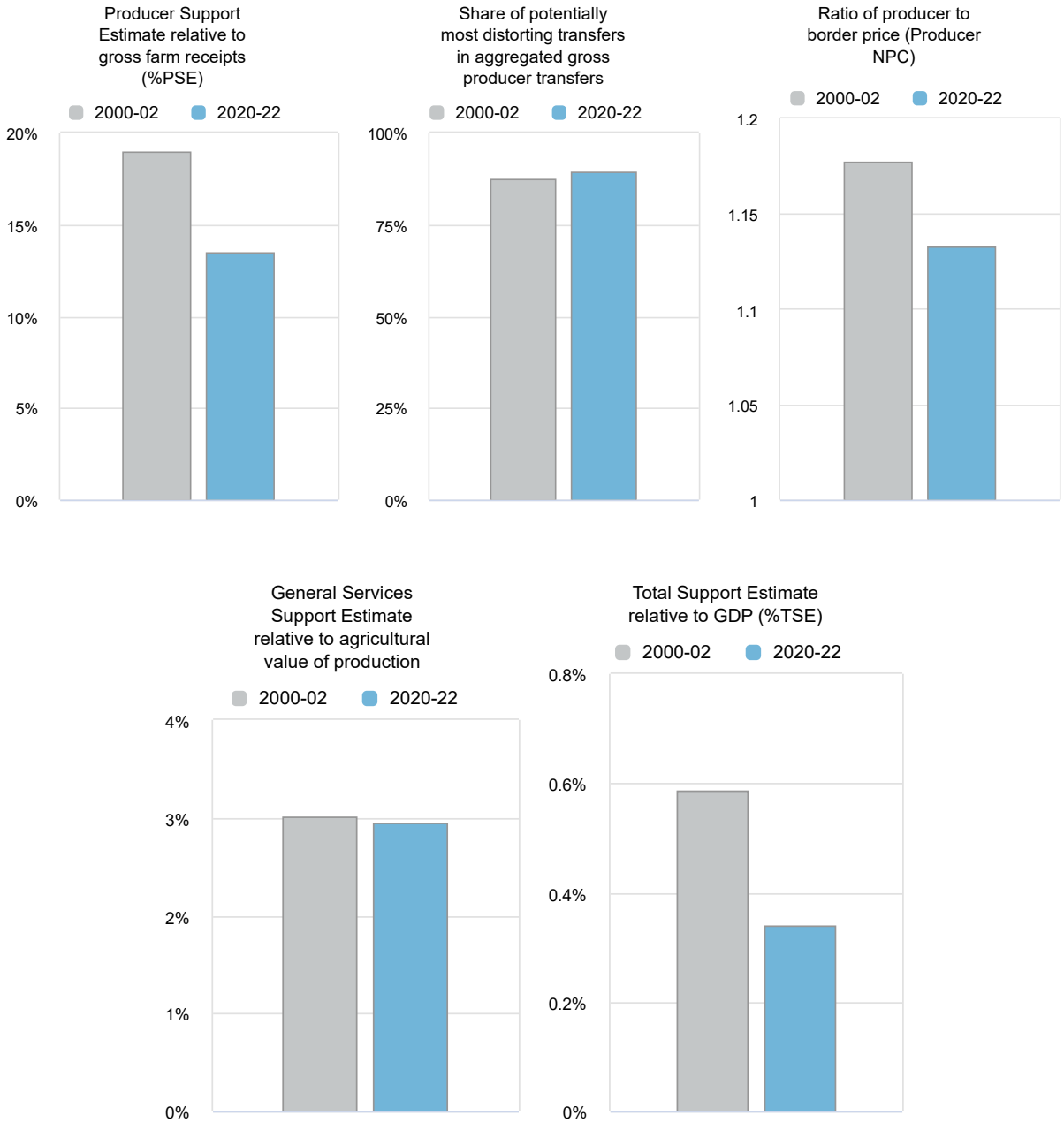
In response to the Russian war of aggression in Ukraine, Israel sought alternative suppliers of wheat, and extended the duration of marketing of imported eggs in 2022.

The Free Trade Agreement with Korea entered into force in 2022. Israel also introduced electronic phytosanitary certificates for fresh herbs and cut flowers exported from Israel to the European Union (EU), and a computerised system for the management of plant imports.

Assessment and recommendations

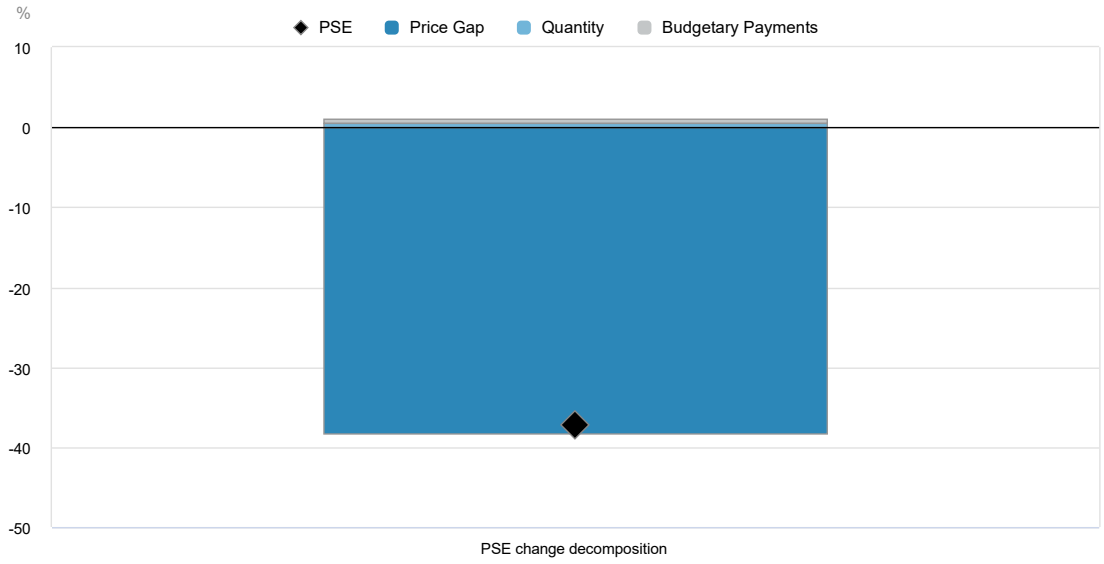
- Israel made some important steps to assist the agricultural sector in adapting to climate change, including by setting up an inter-ministerial government plan, conducting an in-depth climate-change-impact assessment, research and development efforts, and adjusted insurance systems. Continued efforts in co-ordination with farmers will be required to facilitate their transformative adaptation to more volatile climatic conditions.
- Water management has long been a priority and will continue to play a central role for Israel to adapt to extreme water risks in a changing climate. Israel should maintain its investment path towards alternative water sources (treated wastewater and desalinated water) and continue to improve its water policies. A new Farmer Agreement should be pursued to ensure that producers contribute appropriately to their improved water security by charging water prices in line with the marginal costs of supplying water. The government could also facilitate water trading among irrigating farmers and other water users and compensate farmers not using their entire water quotas in severely dry years.
- Israel accelerated its reforms of agricultural support in several sectors in 2022, covering selected dairy and meat products, fruits, and vegetables. While the 2022 decline in market-distorting support can be attributed mostly to international market conditions, implementing these reforms will limit pressures on food prices and potentially on the environment.
- Several commodities remain subject to high levels of border protection. Israel maintains high tariffs for goods such as poultry meat, sheep meat, and certain fruits and vegetables. These tariffs could be gradually removed and replaced by decoupled temporary payments on a transitional basis. The tariff system for agriculture should also be simplified, avoiding non-ad-valorem tariffs.
- Expenditure on agricultural knowledge and innovation systems recovered in 2022 after two years of decline and should continue to grow to improve the sector's productivity and environmental performance. Limited production growth from 2011 to 2020 was driven by rising input use rather than innovation, as measured by Total Factor Productivity (TFP), which is not sustainable in the long term. Additional funding could be made available by redirecting market-distorting subsidies – which amounted to about ILS 334 million (USD 100 million) annually during 2020-22 – towards agriculture knowledge and information systems for sustainable productivity growth.
- The government should build on recent initiatives to limit the sector's greenhouse-gas (GHG) emissions and the very high and rising nitrogen surplus associated with agriculture production. Adopting a target for GHG emissions in the sector could ignite more mitigation efforts, including for methane emissions generated by livestock. Regional agri-environmental programmes should be scaled up and complemented by targeted policies and regulations that incentivise better environmental performance, particularly in the case of nitrogen emissions. Research and development (R&D), and agriculture extension activities should encourage sustainable productivity improvements. Continuing reforms of support for animal production would also help.

Figure 16.1. Israel: Development of support to agriculture



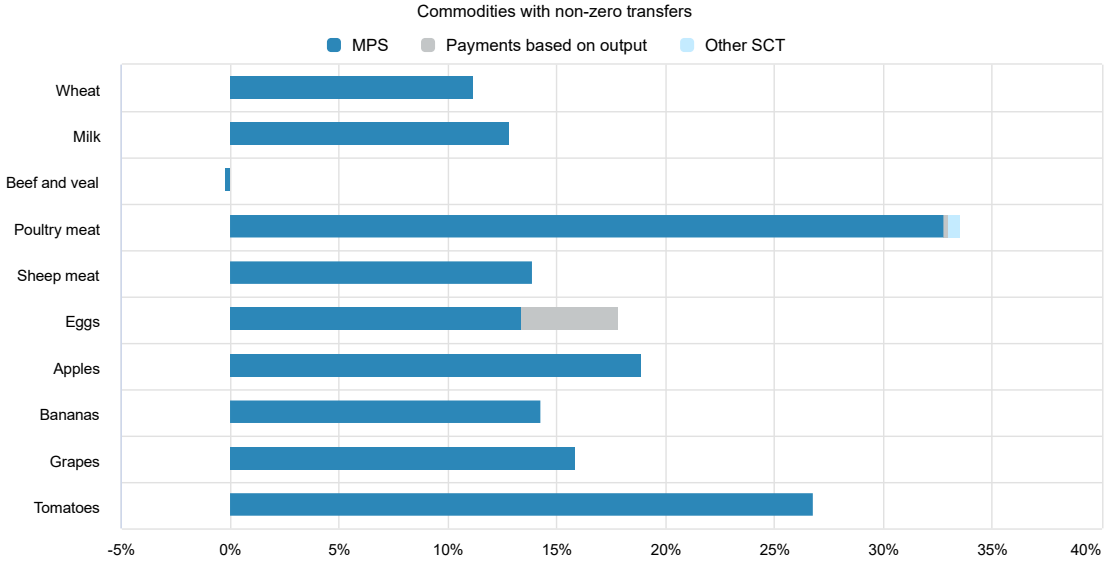
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 16.2. Israel: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency. The producer price change and the border price change are not calculated when both negative and positive market price support (MPS) occur at the commodity level for the previous year. Note that negative MPS estimates for livestock products may arise in cases of aligned product prices if there is positive MPS for feed commodities.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 16.3. Israel: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 16.1. Israel: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**3 337**	**9 573**	**8 956**	**10 018**	**9 744**
***of which:** share of MPS commodities (%)*	58.28	58.84	57.51	58.07	60.94
Total value of consumption (at farm gate)	**3 635**	**11 904**	**11 164**	**12 873**	**11 675**
Producer Support Estimate (PSE)	**680**	**1 324**	**1 388**	**1 612**	**973**
Support based on commodity output	485	1 101	1 178	1 382	744
Market Price Support[1]	475	1 084	1 162	1 364	726
Positive Market Price Support	489	1 087	1 163	1 365	734
Negative Market Price Support	-14	-3	0	-1	-7
Payments based on output	10	17	16	19	17
Payments based on input use	160	115	112	126	106
Based on variable input use	106	83	82	96	70
with input constraints	0	0	0	0	0
Based on fixed capital formation	42	13	16	11	13
with input constraints	0	0	0	0	0
Based on on-farm services	12	19	14	18	23
with input constraints	0	0	0	0	0
Payments based on current A/An/R/I, production required	25	101	91	97	116
Based on Receipts / Income	21	81	73	78	93
Based on Area planted / Animal numbers	4	20	18	19	23
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	8	7	7	7	7
With variable payment rates	5	7	7	7	7
with commodity exceptions	0	0	0	0	0
With fixed payment rates	2	0	0	0	0
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	1	0	0	0	0
Percentage PSE (%)	**19.02**	**13.48**	**15.12**	**15.70**	**9.74**
Producer NPC (coeff.)	**1.18**	**1.13**	**1.15**	**1.16**	**1.09**
Producer NAC (coeff.)	**1.23**	**1.16**	**1.18**	**1.19**	**1.11**
General Services Support Estimate (GSSE)	**100**	**281**	**304**	**272**	**267**
Agricultural knowledge and innovation system	51	108	109	103	113
Inspection and control	16	29	29	25	33
Development and maintenance of infrastructure	10	122	143	121	102
Marketing and promotion	11	1	2	1	1
Cost of public stockholding	12	11	12	11	11
Miscellaneous	0	9	9	11	8
Percentage GSSE (% of TSE)	**12.96**	**17.55**	**17.96**	**14.42**	**21.56**
Consumer Support Estimate (CSE)	**-612**	**-1 562**	**-1 493**	**-2 086**	**-1 106**
Transfers to producers from consumers	-446	-1 100	-1 171	-1 386	-743
Other transfers from consumers	-172	-466	-324	-705	-369
Transfers to consumers from taxpayers	0	0	0	0	0
Excess feed cost	5	4	2	5	5
Percentage CSE (%)	**-16.60**	**-13.08**	**-13.37**	**-16.21**	**-9.48**
Consumer NPC (coeff.)	**1.20**	**1.15**	**1.15**	**1.19**	**1.11**
Consumer NAC (coeff.)	**1.20**	**1.15**	**1.15**	**1.19**	**1.10**
Total Support Estimate (TSE)	**781**	**1 605**	**1 692**	**1 884**	**1 240**
Transfers from consumers	617	1 566	1 495	2 091	1 112
Transfers from taxpayers	335	505	521	497	497
Budget revenues	-172	-466	-324	-705	-369
Percentage TSE (% of GDP)	**0.59**	**0.34**	**0.41**	**0.39**	**0.24**
Total Budgetary Support Estimate (TBSE)	**305**	**521**	**530**	**520**	**514**
Percentage TBSE (% of GDP)	**0.23**	**0.11**	**0.13**	**0.11**	**0.10**
GDP deflator (2000-02=100)	**100**	**134**	**131**	**133**	**139**
Exchange rate (national currency per USD)	**4.34**	**3.34**	**3.44**	**3.23**	**3.36**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Israel are wheat, cotton, groundnuts, peanuts, tomatoes, peppers, potatoes, avocados, bananas, oranges, grapefruit, grapes, apples, carrots, easy peelers, dates, milk, beef and veal, sheep meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en.

Description of policy developments

Overview of policy trends

Agriculture policy in Israel during its early years was driven by three main factors. First, the state needed to settle undeveloped areas of the country for geopolitical security. Second it wanted to avoid food shortages, due in part to an inability to import agricultural products from surrounding countries. Third, it needed to provide employment and livelihoods for new immigrants to Israel (OECD, 2010[1]). Its objectives are still to improve food supply and self-sufficiency in agricultural products that can be produced locally, expand existing export markets, and maintain the rural population, particularly in the peripheral areas.

Over the past 30 years, Israel has reformed the way it provides subsidies, reduced central planning of agricultural industries, and changed the way production quotas, price controls and import protection are implemented. Major reforms in the agricultural sector began in the early 1990s with trade and market reforms to limit the role of the state in agricultural markets. Reforms continued into the 2000s with a focus on competitiveness and gradual efforts to limit interventions in the dairy and beef sectors. Over the course of 2021 and 2022 the government renewed its impetus to reform in order to lower food prices. In particular, in March 2022, a schedule of price reduction was approved for selected fruits and vegetables, in parallel to agreements on egg, dairy and beef (Table 16.2).

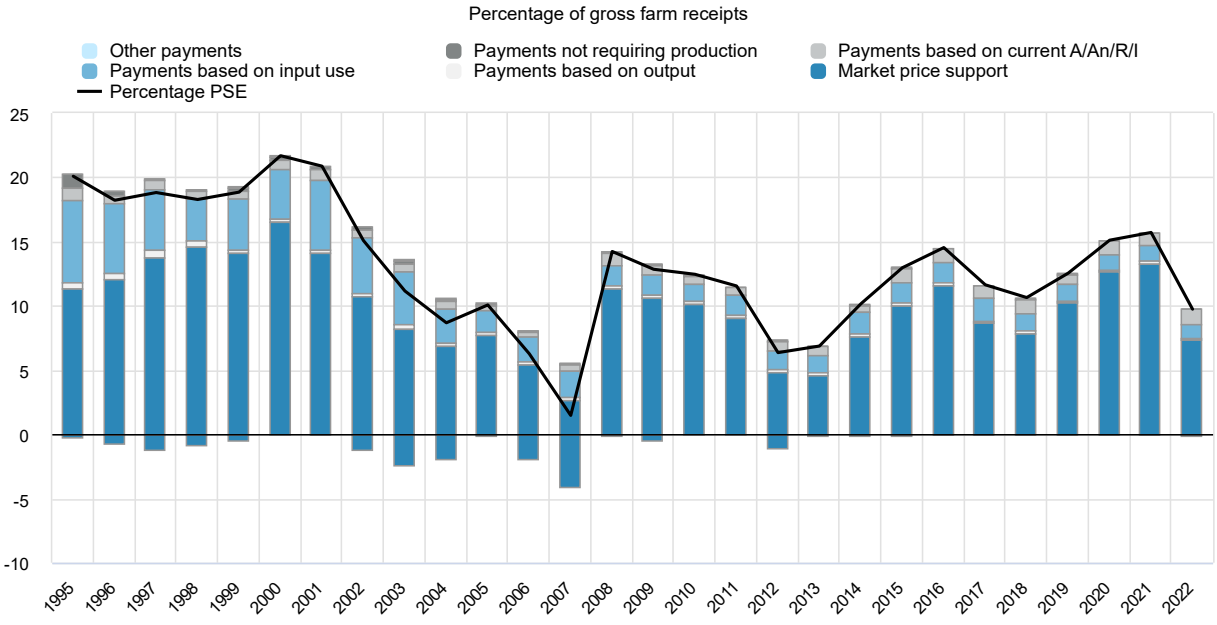
Table 16.2. Israel: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
1985-1990	Trade liberalisation General economic reforms	Economic stabilisation programme Privatisation of state-owned enterprises Dismantling of state grain trading (imports) agency Dismantling of regional co-operatives Debt restructuring and write offs Fruit and vegetable production quotas abolished
1991-1994	Market and trade reforms (export liberalisation)	Gradual abolition of state monopoly of fruits and vegetables exports State meat trading replaced with the Kosher Meat Import Law Consumer price controls removed (except milk, eggs and flour) Reform of agricultural production and marketing boards (diminishing functions) Changes in water pricing Uruguay Round Agricultural Agreement
1995-1999	Trade reforms (import liberalisation)	Non-tariff barriers removed and ceiling binding Broiler sector reformed Reduction of 40% of fresh water use for agriculture FTAs signed
2000- 2010	Focus on competitiveness	Foreign exchange controls abolished Dairy sector reform Abolished minimum prices and surplus removal for fruit and vegetables Abolition of broiler production quotas Farmers' agreement on water charges and water supplies FTAs signed
2010-2022	Continued efforts to reform key sectors	Reform agreement in the beef sector opening import quotas Dairy sector planning law 2011, second dairy agreement in 2022 Egg sector agreement and reform Measures to improve the agriculture marketing systems Water price reforms for equity reasons Tariff reductions for specific fruits and vegetables FTAs signed, use of electronic instruments to facilitate import inspections

Over the last 20 years, the trend in producer support in Israel, expressed as percentage of gross farm receipts, unrolled in four main phases: (1) a steady reduction until the food crisis of 2007-08; (2) a rapid

rebound in support after this crisis, leading to a plateau in 2008-11; then (3) a fall and new increase in support from 2012-16; and (4) fluctuating levels since 2016. Fluctuations in agricultural support are largely attributable to market price support (and to input support early-on), as budgetary support to producers remained relatively stable. The market price support results largely from guaranteed minimum prices and import tariffs, while budgetary support is mostly provided based on current production and input use Stronger increase in world prices than in domestic prices and the initial effects of gradual market-oriented reforms contributed to significantly lower total support to agriculture in Israel in 2022 (Figure 16.4).

Figure 16.4. Israel: Level and PSE composition by support categories, 1995 to 2022



Notes: A/An/R/I: Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

The government is involved in **allocating key factors of production**, including land, water and foreign labour. Land and water resources are almost entirely state-owned. Land is allocated to farmers for a nominal fee and is not tradeable. Water is allocated to farmers through a quota system; all water consumption is metered and charged. The government also applies a yearly quota of visa for foreign workers with permits to work in agriculture. Both the overall quota and the allocation of workers to individual farmers are regulated. After adding about 6 000 new visas to be implemented between 2021 and 2023, the total number of foreign worked visas under quotas reached about 31 000 in early 2023. In practice, not all visas are used due to technical issues.

Some commodities are supported by **guaranteed prices and production quotas**. Guaranteed prices for milk are based on the average cost of production and, while updated regularly, they diverge considerably from the level and evolution of prices on international markets. Minimum prices are also guaranteed for wheat, based on the Kansas market price, adjusted for quality and transportation costs. Egg production

quotas and recommended prices have been applied together with border protection as an instrument to provide price support to producers and are the basis for calculating maximum retail prices (though the system is under reform). At the same time, consumer price controls are applied for a range of basic food products, including bread, milk and dairy products, and salt. Egg and poultry producers in "peripheral areas" at the northern border receive payments based on output levels for egg producers and encompassing a mixture of payments decoupled from production and output payments for poultry producers (OECD, 2010[1]).

Farmers who participate in the **investment support** scheme receive capital grants for investments as well as income tax exemptions and accelerated depreciation. Since 2009, an investment support programme has been in place to reduce demand for foreign workers in the agricultural sector, but the budget for this programme has declined in recent years.

The Insurance Fund for Natural Risks in Agriculture (Kanat) provides subsidised **insurance schemes**. The government covers 80% of the cost of the total insurance premium in the case of the multi-risk insurance schemes and 35% in the case of the insurance schemes against natural hazards. Since 2010, revenue insurance is available for rain-fed wheat and barley to protect against a loss of revenue caused by price falls, low yields or both.

In 2015, a **credit fund** was launched to help establish or expand small farms that specialise in crop production. The government guarantees 85% of the value of bank loans to ensure that small farms with insufficient collateral can access loans.

Israel's economy is characterised by a transparent and open trade regime overall. However, border tariff protection on agri-food products remains an important tool to support agricultural producers. Israel's average applied Most Favoured Nation (MFN) tariff on agricultural goods (WTO definition) was 11.9% in 2021, down from 27.7% in 2012 but higher than the 2.2% average for non-agricultural goods (WTO, ITC and UNCTAD, 2022[2]; WTO, 2019[3]). Israel has WTO tariff rate quotas (TRQs) for wheat, fats and oils, walnuts, prunes, maize, citrus juices, sheep meat and various dairy products (WTO, 2019[3]). Most of Israel's preferential trade agreements also include tariff-quota commitments for agricultural products, often with reduced out-of-quota tariffs. In total, Israel implements over 250 preferential TRQs for agricultural goods.

Israel's **tariff profile** for agricultural products remains uneven. There are high or prohibitive tariffs for goods such as dairy products, eggs, and certain fruits and vegetables (though under reforms), and low or zero tariffs for other commodities such as certain coarse grains, sugar, oilseed, coffee and tea. The tariff system on agriculture is complicated, involving specific, compound or mixed duties (WTO, 2019[3]); in 2021, 17% of imported agricultural products were subjected to non-ad valorem rates, compared to around 3% for all goods (WTO, ITC and UNCTAD, 2022[2]). At the same time, half of agriculture imports entered Israel duty-free, mostly through MFN access and preferential agreements (notably with the European Union and the United States). With the exception of beef, poultry, and mutton, and products thereof, there is no legal requirement that imported food and agricultural products be kosher, although imported, non-kosher products are rarely accepted by local marketing chains.

Budgetary allocations for **research and development** account for over 20% of the agricultural budget in recent years. During 2020-22, ILS 358 million (USD 107 million) was allocated annually to agriculture research and development, of which ILS 70 million (USD 21 million) was used for a competitive research fund. Together with effective transmission of innovation to the farm level through a public extension service, this allowed Israel to become a world leader in agricultural technology, particularly for farming in arid and desert conditions.

While it has been actively supporting climate change adaptation in agriculture (see section below), Israel has no sector-specific target for climate change mitigation in agriculture, which accounts for a limited share of the country's total GHG emissions (2.6% in 2019). Agriculture does not feature in Israel's Nationally

Determined Contribution or national mitigation plan, and GHG emission reduction potential in Israeli agriculture has yet to be quantified. The government has facilitated the development and adoption of a number of agriculture practices and technical measures to reduce GHG emissions in addition to generating other environmental and economic benefits (OECD, 2022[4]).

Climate change adaptation policies in agriculture

Israel is involved in multiple programmes to support adaptation to climate change. The Ministry of Agriculture and Rural Development (MARD) views the sector as one of the most vulnerable and sees effective adaptation policy as necessary to support a climate-smart and resilient agricultural sector.

Israel's significant dependence on global and local food systems, and the projected climate-change impacts on regional food availability and food security make climate-readiness relevant for all areas of its food policy. An inter-ministerial committee was established in 2022 to prepare an implementation plan for adapting food systems to climate change, including actions to mitigate climate-change impacts on the agricultural sector and decrease GHG emissions from agricultural activities. The plan was scheduled to be finalised at the beginning of 2023 and presented to the new government.

Efforts to assist farmers in buffering the impact from shocks in the short term

The agricultural insurance scheme has been enlarged to help farmers cope with climate-change risk. As an initial step, agricultural insurance subsidies were increased and are expected to grow further.

The pest-monitoring system was improved and communications with other countries regarding pest vectors were enhanced. Further efforts are ongoing, including R&D and an improved Pest Risk Assessment (PRA) system.

Measures to support incremental changes in the medium term

A climate-change risk and opportunity assessment was initiated to better understand the possible climate-change impacts and the vulnerability of the agricultural sector. The assessment was launched for ten products: wheat, potatoes, carrots, tomatoes, bananas, olives, avocados, apples, citrus, and dairy milk. It includes a survey of the implications of climate change and potential solutions for each product, a literature review, and crop and economic modelling. The complete risk assessment is expected to be completed by January 2024.

A farmers' climate-smart agriculture toolkit is being developed through two funded research programmes that aim to identify climate-smart practices. These programmes started in 2022 with expected finalisation by 2024.

Efforts to support transformations that create a fundamentally new system in the long term

Research efforts have been engaged in climate-change adaptation. The MARD Chief Scientist established a new research programme on science infrastructure for improved adaptation to climate change. Two multidisciplinary research centres have been established with a view to support adaptation within the National Agriculture Research Organisation (NARO):

- The Center for Agriculture Adaptation under Climate Change has a broad research agenda, covering field crops and vegetables, fruit trees, plant protection, and animal sciences. The Center will also work on climate projections and modelling, and on improving breeding methods towards the development of breeds adapted to climate change. The expected deliverables will include new varieties highly adapted to different environmental stresses, and state-of-the-art technologies and practices for Israeli farmers in a changing Mediterranean climate.

- The Center for Sustainable Agriculture covers five research areas: (1) precision irrigation and fertilisation; (2) biological pest control; (3) soil conservation practices; (4) soil health and carbon sequestration; and (5) GHG mitigation in mixed crop-livestock farming. The centre aims to use innovative technologies (including biotechnology), models, and data and decision-support systems, including artificial intelligence, to progress towards its objectives. These approaches are intended to be adopted alongside more traditional methods, such as reduced tillage, the use of compost, and crop rotation.

At the international level, Israel declared at the end of 2022 its intention to join the UN International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). Israel joined the OECD Co-operative Research Programme on Sustainable Agricultural and Food Systems (CRP), with effective entry on 1 January 2023.

In addition to climate-change programmes, continued efforts are being undertaken to improve water infrastructure and management so that farming can continue under scarce water conditions. On the water supply side, this includes building desalination plants, extended use of treated wastewater, and canal construction and maintenance, along with investments in precision irrigation by farmers. On the demand side, Israel has a unique water-management system that combines different levers, including annual water quotas and an evolving water pricing system (Gruère, Ashley and Cadilhon, 2018[5]; OECD, 2021[6]).

Domestic policy developments in 2022-23

Overall policy reforms

Actions are underway to implement the August 2021 Decision 213 “Increasing competition in agriculture and streamlining regulation processes in the field of imports”, which aims to reduce custom duties on agricultural fresh produce and to ease phytosanitary import restrictions, while at the same time proposing direct payments to farmers and support for investment and innovation in agriculture (OECD, 2022[4]).

The schedule for the reduction of custom duties was published and implemented as of March 2022 (Customs Tariff Order, 16.3.2022). Custom duties were abolished with immediate effect for certain vegetables and fruits (e.g. garlic, pineapple, avocado, mango) and agricultural inputs (plant propagation material, fertilisers and pesticides). Custom duties for selected additional fruit and vegetables will be decreasing gradually over a 5-year period to 10% of their January 2022 levels. The custom duties for eight other major vegetables and fruits will also be lowered over time, but to a lesser extent (Table 16.3).

Table 16.3. Scheduled reduced custom duties on specific vegetables and fruits

Proportion of custom duty applied compared to the January 2022 rate

	2022[1]	2023	2024	2025	2026	From 2027
Potatoes	85%	75%	65%	55%	50%	50%
Carrots	85%	75%	65%	55%	45%	45%
Onions	85%	70%	60%	50%	40%	40%
Sweet potatoes	85%	70%	60%	50%	40%	40%
Capsicum	85%	70%	60%	50%	40%	40%
Tomatoes	85%	70%	60%	50%	40%	30%
Cucumbers	85%	70%	60%	50%	40%	30%
Apples	85%	70%	60%	50%	40%	30%

Notes: 1. Reduction applied as of April 2022 compared to the January 2022 tariff rate.
Source: Ministry of Agriculture and Rural Development (MARD).

Following the dissolution of the Knesset in June 2022 and the announcement of a new election in November 2022 the reform process was stalled. The coalition negotiations of the new government led to an agreement that envisages a new reform of the agricultural sector, aiming for the "right balance" between lower consumer prices and strengthening the agricultural sector. Until an agreement is reached on the outline and details of the new reform, the reforms initiated by the previous government are halted (except the above-presented declining custom duties).

Sector specific reforms

In June 2022, an agreement with the egg growers' organisation was signed and turned into a legislation reforming the **egg sector** support. The agreement includes abolishing the production quotas within ten years (by 29 June 2033) with an option to extend the period for another three years. During the transition period, the Minister of Agriculture can increase the total egg production quota each year by a maximum of 6% (a larger increase is possible with the permission of the Knesset's Economic Affairs Committee). At the same time, the government will provide grants of ILS 380 million (USD 113 million) for the construction of chicken coops and ILS 100 million (USD 30 million) to redeem quotas from growers who choose to leave the industry. These quotas will be reallocated in competitive tenders. Quotas allocated in 2022 do not qualify for compensation and cannot be commercialised. In addition, custom duties on eggs were reduced by 50% as of July 2022.

In June 2022, the Knesset's Education, Culture and Sports Committee approved a regulation that will prohibit housing egg-laying hens in cages starting in 2037. The new regulation also bans cages in any new chicken shed, with immediate effect, and provides for a phased removal of existing cages.

In August 2022, after intensive negotiations of the Ministry of Finance, MARD and Milk producers, the Board of Directors of the Milk Board approved a second new **Dairy Agreement** complementing the one adopted in 2021. According to this agreement, the target price mechanism remains unchanged until 2025 (instead of 2024 as initially discussed). From May 2023, the update procedure of the controlled consumer prices will be automatic, based on a formula taking into account the development of input prices without the need of minister's approval. The agreement postpones the price increase and reduces it for consumer price-controlled milk products from 14% to 4.9%. The 2022 agreement also includes custom duty reduction for various cheeses (cheese for spreading, mozzarella, haloumi, gorgonzola, jameed) in addition to those on the 2021 agreed list of tariff reduction.

In June 2022, a new agreement was signed with the **beef** growers' association, abolishing the remaining import tariff for chilled beef, parallel to an increase in the annual support for grazing beef growers. The total direct support for beef growers will reach ILS 348 million (USD 104 million) by 2029. In addition, the

government supported branding and marketing actions for domestic beef with ILS 5 million (USD 1.5 million) and provided grants to improve the efficiency of beef production (ILS 2 million, USD 0.6 million).

Support for the Jewish Shmita (Sabbatical) Year

The Hebrew year 5782 (September 2021 to September 2022) was a Sabbatical Year. Sabbatical Year (Shmita) is Jewish traditional law, which occurs every seven years. It applies only to the biblical land of Israel and forbids the cultivation of agricultural land for one (Jewish) year, unless under specific circumstances.

MARD allocated ILS 93 million (USD 28 million) for special Shmita grants to about 600 farmers, who declared in advance of the Shmita year (during 2021) their intention to refrain from cultivating their farms during the Shmita year. About one-third of these farms eventually decided to operate their farms, which revoked their right to Shmita grants. The remaining close to 400 farmers received grants after their non-cultivated fields and plantations were inspected during the Shmita year. The majority of the unused budget returned to the treasury. Some Shmita entitlements were enlarged, in accordance with updated MARD procedures. Ultimately, ILS 70 million (USD 21 million) of the planned ILS 93 million (USD 28 million) were granted by the MARD to non-cultivating farmers.

In addition to the Shmita grants, the government allocated ILS 8 million (USD 2.4 million) to wheat and wine farmers who encountered kosher requirements related to the Shmita rules. Furthermore, a total of ILS 7 million (USD 2.1 million) was approved for 2021-22 investments in establishing new greenhouses in the non-Jewish production area b) converting to soil-less beds and hydroponics (a “specific circumstance” that allows cultivation during the Sabbatical Year).

The majority of the Jewish agricultural sector in Israel (more than 7 000 farmers) chose a different solution for the Shmita year (“sale permits”). In the Sabbatical year, the land “is sold” to whoever is not Jewish and thus it can be farmed in a similar way as a normal year. The Chief Rabbinate Office – a state institution – is handling the sale permits (contracts, legal fees etc.) (OECD, 2022[4]).

Regulatory oversight

In pursuing the application of OECD recommendations and government resolutions 2118/2014 and 4398/2018, the Israeli Knesset passed the Law of Fundamentals of Regulation in November 2021 (as part of the Arrangements Law for the 2021–2022 State Budget). The law entered into force on 1 January 2022 and established the Regulatory Oversight Body (ROB).

The role of ROB is to co-ordinate the government’s efforts to improve existing and new regulations. ROB will oversee the procedures for issuing new regulations, optimise the development process of new regulations and revise and streamline excessive ones. The law defines what an optimal regulation is, as well as what must be considered in determining one. It anchors various principles to ensure optimal regulation procedures – including examining considerations and alternatives, analysing data, and engaging in public discussion. Based on the law, new regulations and changes in existing policy require regulatory impact assessment (RIA) processes.

Several agriculture and food policy changes from the 2016 Burden Reduction Program were examined during the 2022 review processes by MARD. The ministry decided to streamline registration procedures for pesticides imported from authorised countries and to allow the transfer of about 75% of the work of constructing residue decline curves to private laboratories by facilitating the recognition process. In addition, MARD examined and decided to compare Israel’s policy related to breeding conditions of laying hens with the policies practiced in other developed countries.

Crop insurance against pest and diseases

To address concerns regarding the possible entry and establishment of new pests and diseases as markets become more open, the government launched in early 2023 a special compensation fund. This provides government-funded compensation for plant growers whose crops may need to be destroyed to prevent the spread of new diseases and pests.

Credit fund expansion

The scope of the state-guarantee credit fund for small or expanding farms was enlarged in 2023 to include livestock farmers. The government guarantees can be leveraged up to a maximum of ILS 125 million (USD 37 million). In addition, a new loan option is now available, offering credits of up to ILS 1 million (USD 0.3 million) for ten years to eligible farmers.

Water management

The year 2022 was the fifth year in a row with higher than average precipitation, exceeding the 80% forecast to reach 111% of the multi-year average precipitations. Most aquifers remain above acceptable sustainable level, as defined by the Water Authority. The Sea of Galilee maintained its high water level and low salinity. Water supply in northern rivers started the winter season at an above average level though low precipitation led to decreases in their levels between October and December 2022. In the southern part of the country, the level of precipitation has been below average, which resulted in increased water consumption from the national system.

The year 2023 precipitation forecast is 80% of the multi-year average. Water allocations for most of the country have remained unchanged compared to 2022. If the precipitation exceeds the multi-year average, the amount of water to farmers will be increased proportionally.

The work of connecting the Galilee and eastern valleys to the national system has been completed. Though its use is not foreseen for 2023, it will be possible to be used in the future. There is also progress in the Sorek Desalination Plant, and a new Desalination Plant in the Galilee is in its early phase.

The scheduled water price increases for farmers, as set out under the 2006 Farmers Agreement, ended in June 2022. The Water Authority is expected to increase water prices for all uses in 2023, although discussions continue between the Water Authority, the Ministry of Finance and the farmers representatives regarding the price schedule and compensation for farmers in the coming years.

Trade policy developments in 2022-23

In 2022 the Plant Protection and Inspection Services began using the IPPC GeNS (Generic ePhyto National System) for issuing electronic phytosanitary certificates for fresh herbs and cut flowers exported from Israel to the European Union. The e-Phyto certificate replaces the Phytosanitary Certificate that was dispatched manually and printed on dedicated paper. The certificate is issued under the international ISPM12 standard. During 2023 the use of e-Phyto in a computerized system for the management of plant import will begin.

In 2022, the Plant Protection and Inspection Services launched the “Ye’ela system”, a computerised system for the management of plant imports, including issuing import permits and clearance of consignments at the port of entry. The system aims to provide convenient and efficient access to all relevant information. Through the system, importers can receive the required service online, without the need to physically come to the office. The “Ye’ela system” also enables interfaces with other systems, such as e-Phyto, and the customs systems “Sha’ar olami” and “Maslul.”

The free trade agreement (FTA) with Korea, which was signed in 2021, entered into force in December 2022. The comprehensive economic partnership agreement (CEPA) with the United Arab Emirates is in ratification process and expected to enter into force in early 2023. Negotiations on new FTAs with the People's Republic of China, Viet Nam, Guatemala, India, and a new comprehensive economic partnership agreement (CEPA) with Bahrain are at varying stages of progress. Revised FTAs with MERCOSUR and the United Kingdom are under negotiation.

Trade policy responses to Russia's war of aggression in Ukraine

In response to the war in Ukraine, Israel has been seeking to diversify import sources, especially of primary commodities. This particularly relevant for wheat, where the MARD actively investigated alternatives to diversity its wheat resources, when price increased by 26% in the month following the launch of the Russian war.

The Russian war in Ukraine impacted egg imports to Israel, as Ukraine had supplied 30% of egg imports.[1] To ensure the appropriate supply of eggs, whose consumption increases by about 10% in preparation of the Jewish holiday of Passover, Israel extended the permitted duration for the marketing of imported eggs from 21 days to 28 days following the day of laying in the country of origin. In return, the government also shortened the consumption period for eggs from 30 days after this marketing deadline in refrigerated conditions to 18 days, as approved by the Ministry of Health's Food Service.

Contextual information

Israel's economy is relatively small but has been growing rapidly and its GDP per capita more than doubled over the last two decades, even as the population increased by 50%. The share of agriculture in total employment has been halved to under 1%, while the share of agriculture in GDP declined to 1.4% of during the same period.

Israel is unique among developed countries in that land and water resources are nearly all state-owned. Jewish rural communities, principally the kibbutz and moshav, dominate agricultural production, accounting for about 80% of agricultural output. Partly due to this structure, total agricultural area has moderately increased over the past twenty years. While the agricultural sector is relatively diversified, most of the value of production and exports is generated by high value fruits and vegetables.

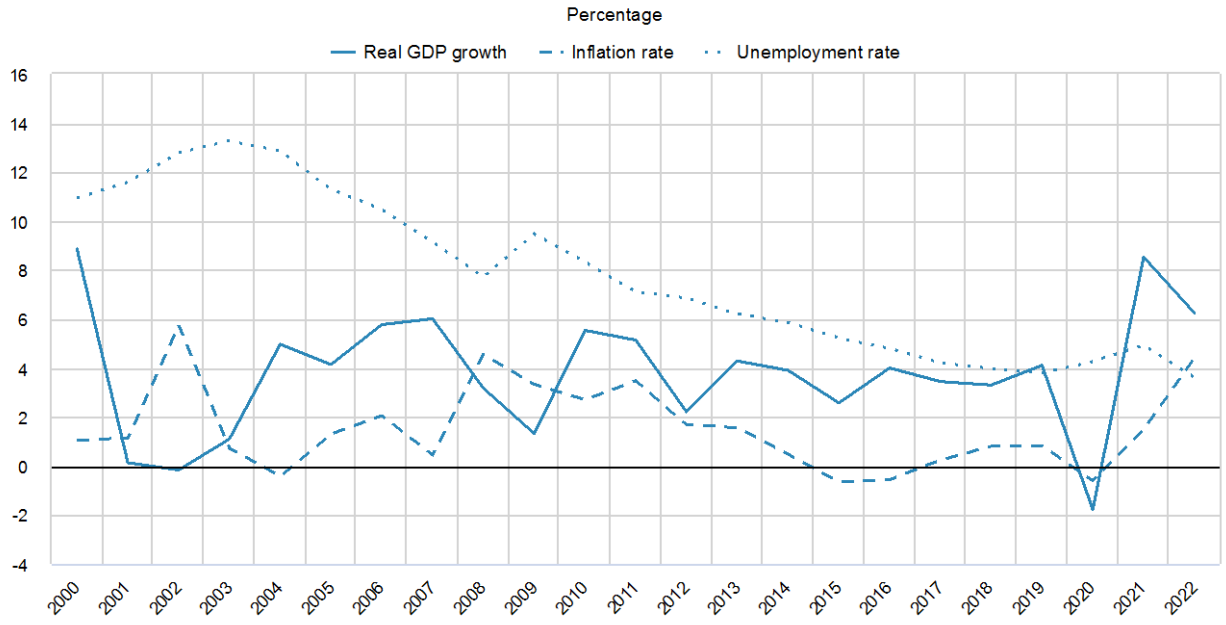
Table 16.4. Israel: Contextual indicators

	Israel		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	162	413	0.40%	0.34%
Population (million)	6	9	0.15%	0.18%
Land area (thousand km^2)	22	22	0.03%	0.03%
Agricultural area (AA) (thousand ha)	566	646	0.02%	0.02%
			All countries[1]	
Population density (inhabitants/km^2)	290	426	52	64
GDP per capita (USD in PPPs)	25 628	44 061	9 350	23 401
Trade as % of GDP	24.7	15.6	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	1.7	1.4	2.9	3.9
Agriculture share in employment (%)	2.2	0.8	-	-
Agro-food exports (% of total exports)	3.1	4.2	6.2	7.9
Agro-food imports (% of total imports)	5.3	8.9	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	55	58	-	-
Livestock in total agricultural production (%)	45	42	-	-
Share of arable land in AA (%)	60	59	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

Israel has maintained robust GDP growth exceeding 3% per year on average and close to full employment from 2017 to 2019. Its economy contracted in 2020 due to the COVID-19 pandemic and associated lockdown measures, but recovered quickly in 2021-22, while unemployment remained relatively low. At the same time inflation went up in 2021 to reach 4 % in 2022 after multiple years of fluctuations around zero (Figure 16.5).

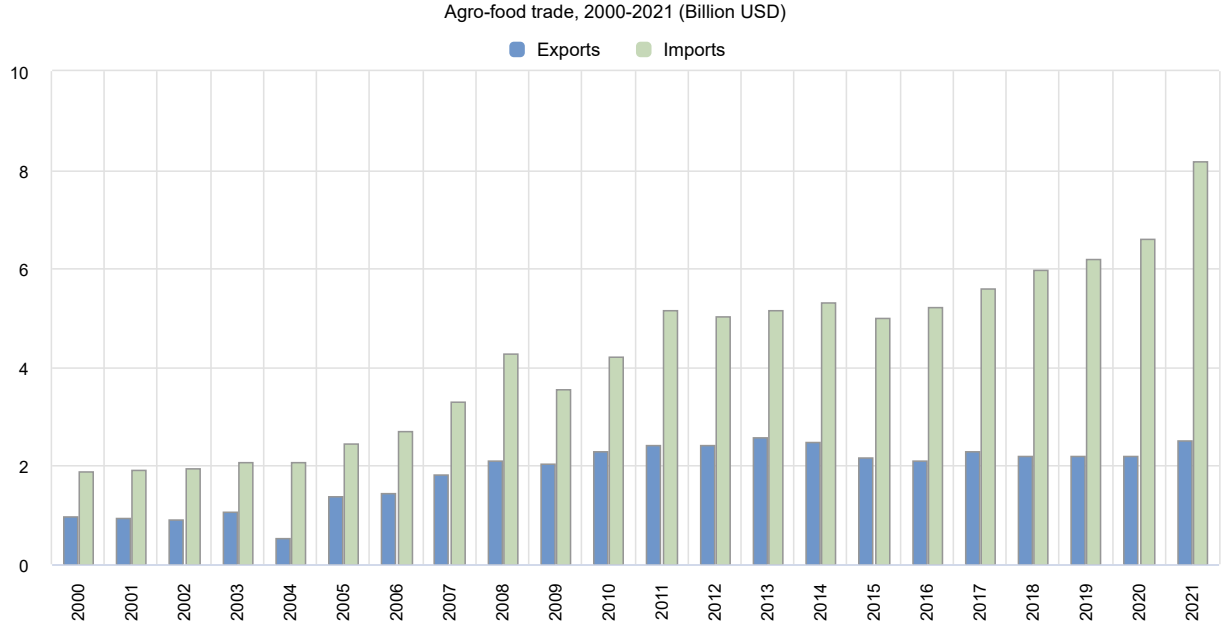
Figure 16.5. Israel: Main economic indicators, 2000 to 2022

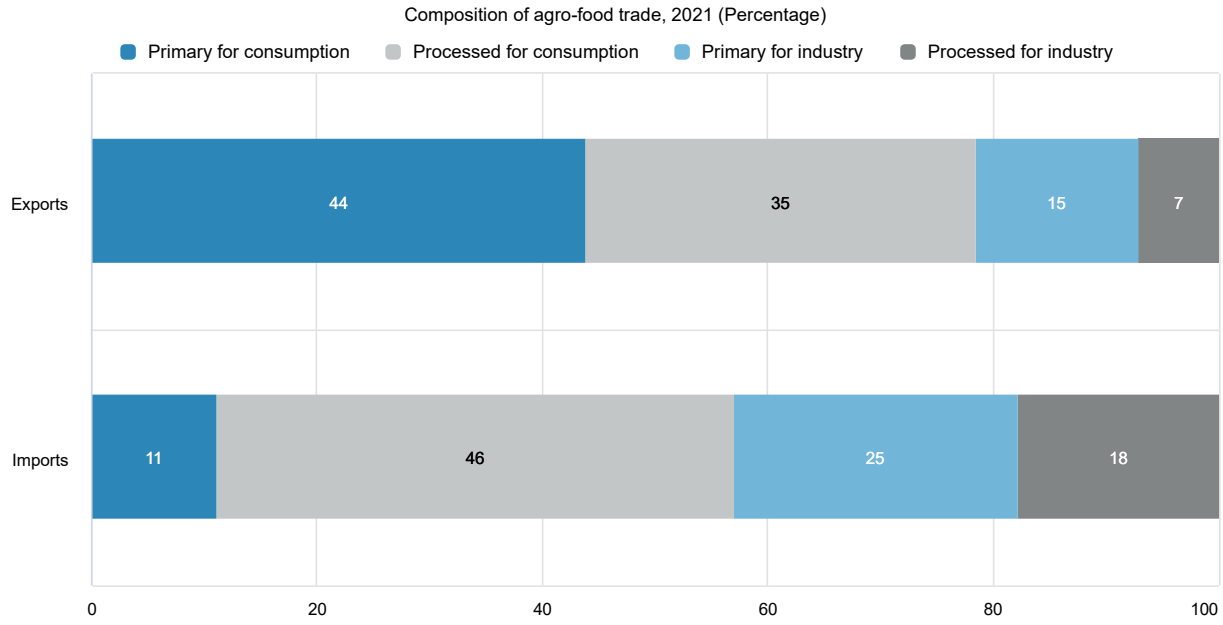


Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

The agriculture trade balance of Israel continued to decline in 2021, with the value of imports of mostly processed food products exceeding the value of exports of mainly products for final consumption (Figure 16.6). This gradual shift may be partly influenced by the relative appreciation of the Israeli currency compared to the US dollar and the Euro since 2015.

Figure 16.6. Israel: Agro-food trade



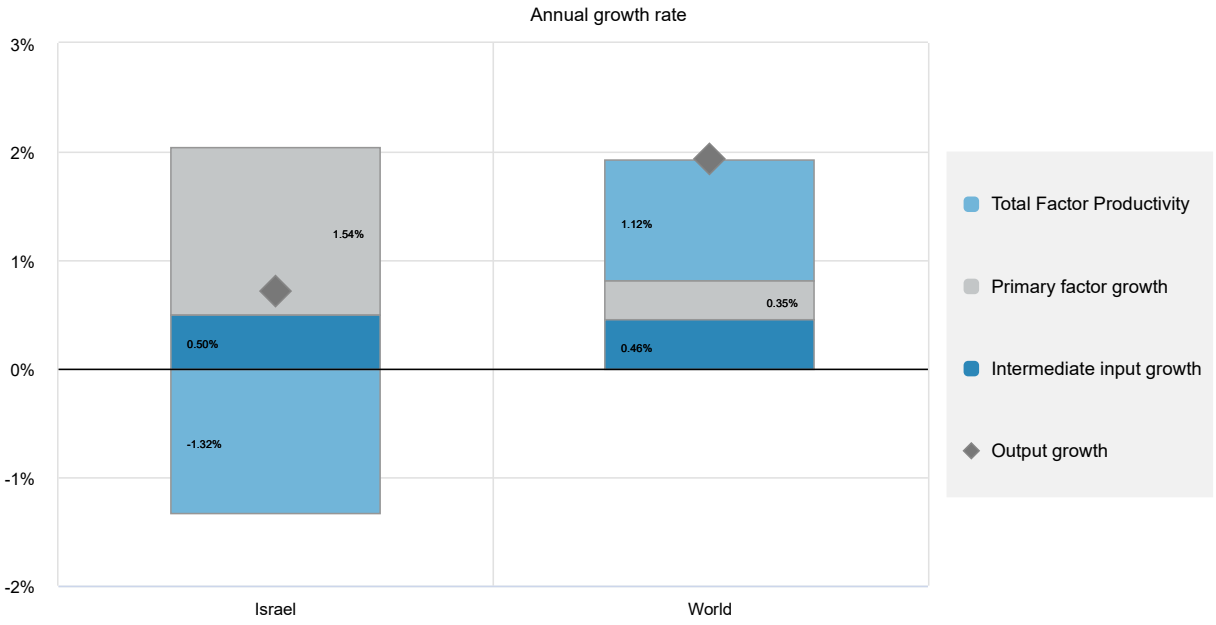


Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Despite investments in agriculture innovation, the overall productivity of Israeli agriculture, measured by total factor productivity (TFP), has been declining between 2011-20. The modest agriculture output growth in this period can be attributed to the increased use in inputs, particularly land and the use of farm machinery, and intermediate inputs such as animal feed (Figure 16.7).

Agriculture's water use performance has improved. Despite a significant increase in irrigation area, agriculture's share of freshwater abstraction has declined by 46%, largely due to changes in water management, encompassing the use of recycled water, efficient irrigation technologies and water demand policies. Beyond water use, the environmental performance of Israel's agriculture has deteriorated since 2000. Nutrient surpluses have grown over time, particularly due to the increase in the use of fertilisers, to reach a level over seven times the OECD average levels for nitrogen and over twenty times for phosphorus (Table 16.4).

Figure 16.7. Israel: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 16.5. Israel: Productivity and environmental indicators

	Israel		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	2.3%	-1.3%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	188.8	224.4	32.2	30.4
Phosphorus balance, kg/ha	65.7	69.9	3.3	3.0
Agriculture share of total energy use (%)	1.2	2.1	1.7	2.0
Agriculture share of GHG emissions (%)	3.3	2.8	8.6	10.5
Share of irrigated land in AA (%)	43.4	69.7	-	-
Share of agriculture in water abstractions (%)[1]	64.0	34.8	46.6	49.7
Water stress indicator	61.0	45.1	8.3	7.4

Notes: * or closest available year.
1. Share of agriculture fresh water abstraction in total fresh water abstraction.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Note

[1] Other countries are also important providers. In particular, imports from Spain have increased in recent years and, in 2021, it exported about 61 million eggs to Israel, which constitutes about 35% of all imported eggs.

17 Japan

Support to agriculture

Despite notable reductions, support to producers in Japan remains among the highest in OECD countries. The Producer Support Estimate (PSE) equalled 38% of gross farm receipts in 2020-22, down from 54% 20 years earlier but still twice the OECD average.

Market Price Support (MPS) remains the main element of Japan's agricultural support. It is largely sustained by border measures, particularly for rice, pork, and milk. MPS fell from 2021 to 2022, mainly due to a narrowing gap between domestic and border prices, particularly for rice and pork. Slightly lower domestic prices and rising border prices, together with a depreciation of the Japanese yen (JPY) have contributed to this evolution. Still, producer prices for many commodities remain well above world prices, and the resulting MPS generally represents the main part of single-commodity transfers (SCT).

Budgetary support to producers consists mostly of payments based on area, income, or output. Payments based on variable input use increased drastically in 2022 due to introduction of support schemes to alleviate the effects of price surges for raw materials. The share of potentially most-distorting support (i.e. MPS, support based on output and variable input use without input constraint) declined but still accounted for 81% of PSE in 2020-22.

Expenditures for general services (General Service Support Estimate, GSSE) account for 23% of Japan's total support to the sector (2020-22). GSSE corresponds to almost 12% of the value of agricultural production, higher than the OECD average but lower than in the 2000s. About 80% of the GSSE goes to developing and maintaining agricultural infrastructure (particularly irrigation), while 11% goes to financing the agricultural knowledge and innovation system. The Total Support Estimate (TSE) for the agricultural sector represented 0.9% of Japan's Gross Domestic Product (GDP) in 2020-22, most of which was directed to individual producers.

Recent policy changes

The Act to Promote Low Environmental Impact Business Activities for the Establishment of Environmentally Harmonized Food Systems (the MIDORI Act) was passed in April 2022 to facilitate the implementation of the strategy MIDORI. The act requires that prefectural and municipal governments jointly develop a "Basic Plan" that includes the introduction and implementation of environmental measures (focused on improving soil health, reducing use of chemical pesticides and fertilisers, and reducing greenhouse-gas (GHG) emissions) suited to the natural, economic, and social conditions of their regions. The act establishes a certification system to encourage the adoption of environmentally-friendly practices and technologies. Producers can have their environmentally-friendly activities certified if they develop an activity plan in co-ordination with the "Basic Plan" of their region. Business operators who offer innovative technologies to reduce the environmental impact of agriculture are also eligible for certification. Certified producers and business operators can enjoy several tax and financial benefits as well as other services such as simplified administrative procedures to facilitate their business development.

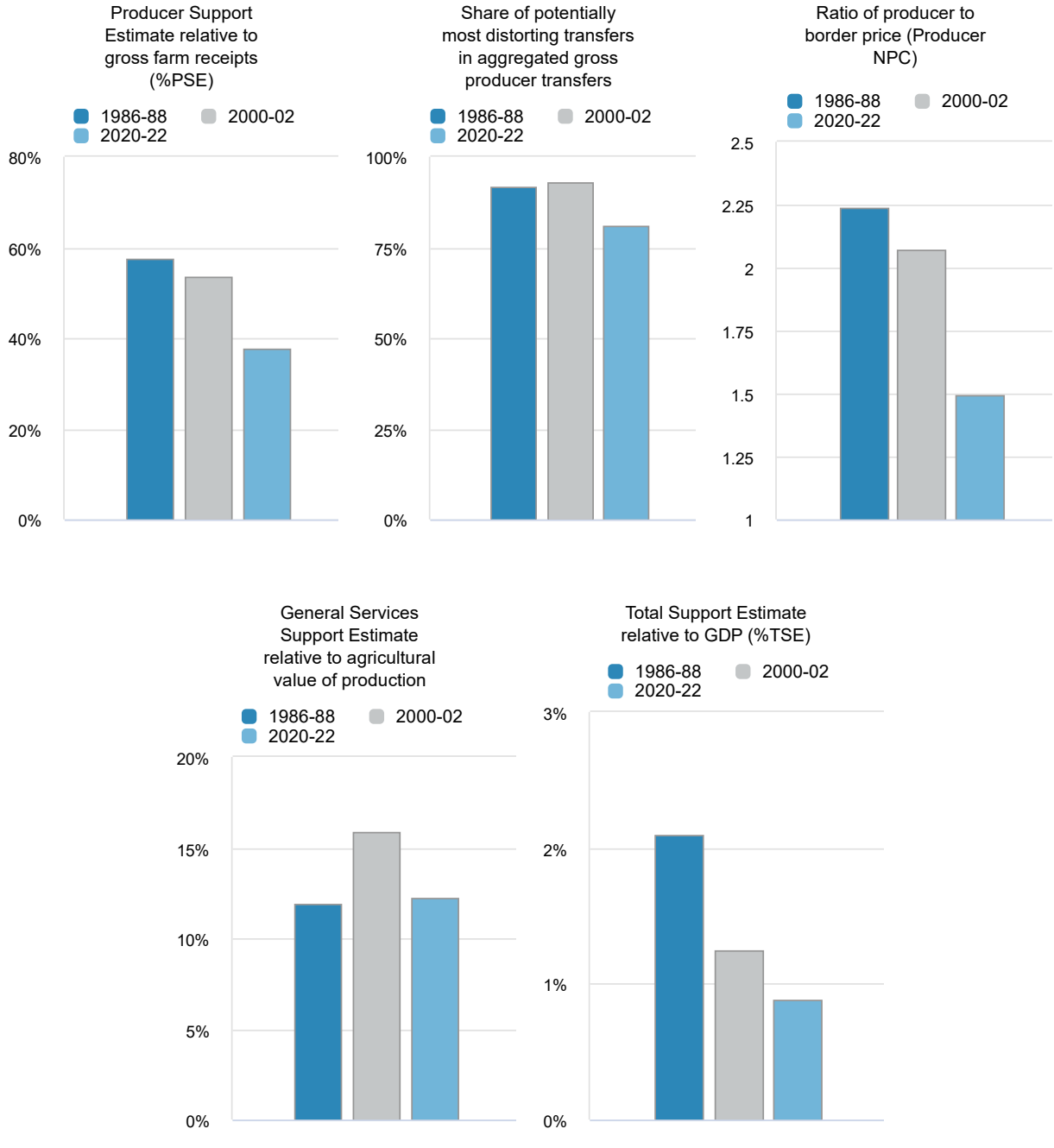
The Japanese Cabinet approved a cross-sector emergency relief package of JPY 6.2 trillion (USD 47 billion) in April 2022 to cushion the economic blow from rising raw-material costs. Within this package, JPY 75.1 billion (USD 571 million) was allocated to the Ministry of Agriculture, Forestry and Fisheries (MAFF) for several measures to alleviate the effects of price surges for food and raw materials. MAFF provided payments to compensate livestock farmers for higher feed costs and subsidised the costs of food producers to aid in development, manufacturing, and material sourcing of new food products. MAFF also subsidised transportation and storage costs for fertiliser manufacturers to compensate for costs associated with changing suppliers.

MAFF allocated JPY 164.2 billion (USD 1.25 billion) in December 2022 to strengthen food security, with an emphasis on reducing import dependence by increasing domestic production of agricultural products and inputs. The main measures include support payments to facilitate organic fertiliser production, increased support for forage crop production, and the establishment of domestic supply chains. The Japanese Government also released the Food Security Reinforcement Policy Framework, which presents a roadmap to ensure a stable food supply and sets several 2030 targets, such as doubling manure compost and sewage sludge use for fertiliser, increasing production areas of wheat, soybeans and feed crops, and halving food loss and waste in the food industry businesses.

Assessment and recommendations

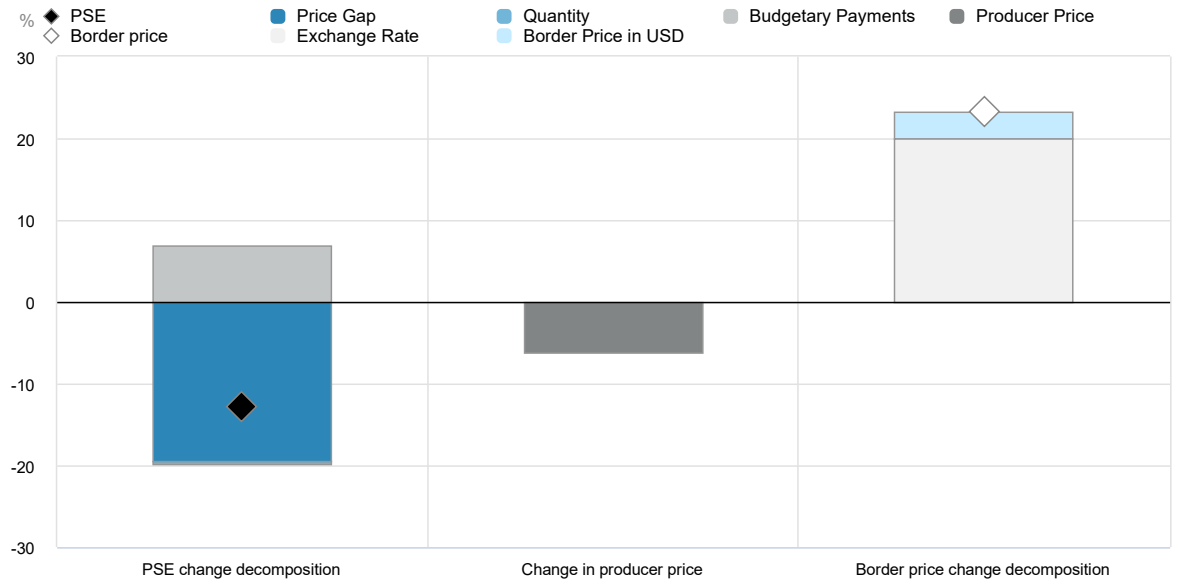
- Japan's agricultural sector is particularly vulnerable to climate change and has already experienced its negative effects on production and product quality. Japan's approach – of promoting development and dissemination of suitable production technologies and varieties, and improving preparedness and response to disasters caused by extreme weather events – is promising. Due to its diverse climatic conditions and farming systems, these adaptation measures should be tailored locally and implemented through co-operation between national and local governments.
- Japan has made progress in reforming agricultural support policies since the early 2000s but support to producers remains twice the OECD average and continues to be dominated by MPS, which distorts markets and contributes to high food prices. Moreover, MPS and other commodity-specific support can create barriers to changing production systems, limiting its ability to adapt to climate change. Further improvements should be envisaged to reduce MPS and eliminate measures impeding climate-change adaptation.
- The annual value of agriculture, food, forestry, and fishery exports continued to increase. While this signals a move towards a more competitive agricultural sector, the exclusion of key products from trade agreements limits the economic gains of opening the country to international trade. A gradual reduction of trade barriers on agricultural products would contribute to structural change and productivity growth in the Japanese agro-food sector.
- Japan's food system policy, the strategy MIDORI, is a promising sector-wide initiative to increase the sustainability and productivity of its food systems. In particular, the new certification system under the MIDORI Act could facilitate the adoption of environmentally-friendly practices and technologies by farmers and other stakeholders. This initiative should be complemented by further efforts in promoting R&D, networking, capacity-building, strategic advice, and multi-actor partnerships.
- Japan's agricultural sector is facing major challenges, with surging raw-material and ingredient costs. The policy response should be proportionate and targeted in order not to hamper Japan's other food-system objectives, including environmental sustainability.

Figure 17.1. Japan: Development of support to agriculture



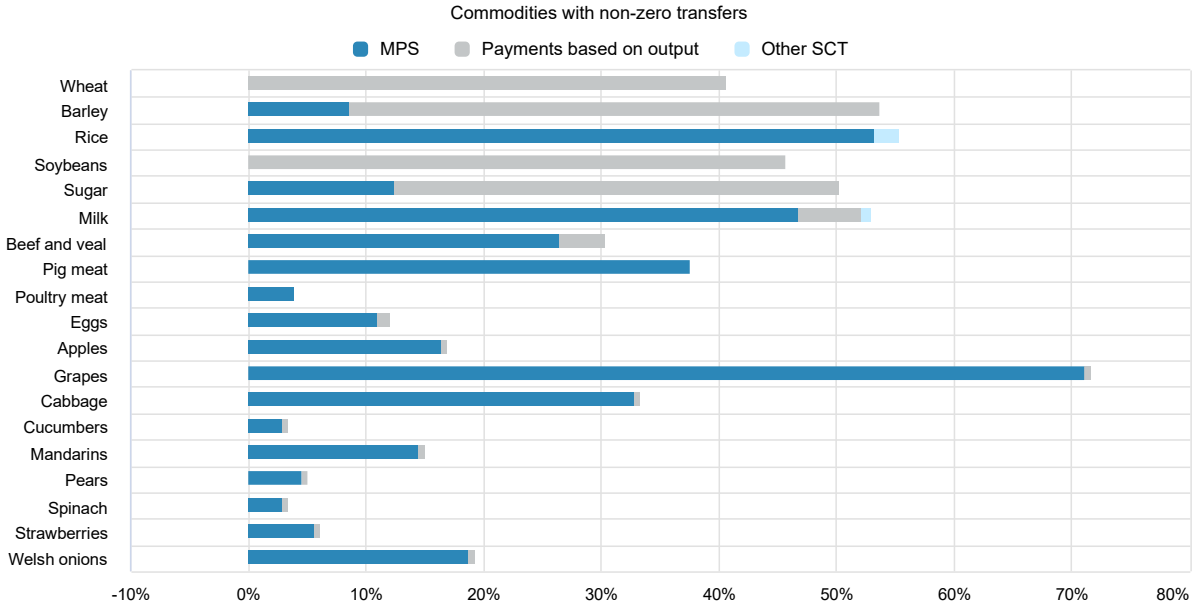
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 17.2. Japan: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 17.3. Japan: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 17.1. Japan: Estimates of support to agriculture

Million USD

	1986-88	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**72 767**	**76 354**	**77 290**	**83 709**	**80 521**	**67 639**
***of which:** share of MPS commodities (%)*	68.36	63.81	67.63	67.85	67.31	67.71
Total value of consumption (at farm gate)	**94 458**	**107 904**	**110 276**	**120 368**	**117 575**	**92 886**
Producer Support Estimate (PSE)	**44 611**	**43 964**	**32 503**	**40 267**	**33 121**	**24 122**
Support based on commodity output	40 996	40 837	26 072	33 609	27 277	17 331
Market Price Support[1]	39 458	38 480	24 136	31 049	25 519	15 841
Positive Market Price Support	39 458	38 480	24 136	31 049	25 519	15 841
Negative Market Price Support	0	0	0	0	0	0
Payments based on output	1 539	2 358	1 936	2 560	1 758	1 491
Payments based on input use	1 434	976	1 138	1 007	737	1 670
Based on variable input use	403	85	358	8	9	1 055
with input constraints	403	85	0	0	0	0
Based on fixed capital formation	890	724	504	732	391	390
with input constraints	403	85	0	0	0	0
Based on on-farm services	142	167	276	267	336	226
with input constraints	0	0	0	0	0	0
Payments based on current A/An/R/I, production required	621	613	2 250	2 820	1 990	1 940
Based on Receipts / Income	0	0	236	183	178	348
Based on Area planted / Animal numbers	621	613	2 014	2 637	1 813	1 593
with input constraints	0	0	1 582	2 168	1 356	1 222
Payments based on non-current A/An/R/I, production required	0	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	1 560	1 538	3 030	2 831	3 118	3 142
With variable payment rates	0	0	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
With fixed payment rates	1 560	1 538	3 030	2 831	3 118	3 142
with commodity exceptions	1 560	1 257	2 806	2 593	2 883	2 943
Payments based on non-commodity criteria	0	0	13	0	0	38
Based on long-term resource retirement	0	0	13	0	0	38
Based on a specific non-commodity output	0	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0	0
Percentage PSE (%)	**57.42**	**53.62**	**37.55**	**43.33**	**37.59**	**31.77**
Producer NPC (coeff.)	**2.24**	**2.07**	**1.50**	**1.66**	**1.52**	**1.34**
Producer NAC (coeff.)	**2.35**	**2.16**	**1.60**	**1.76**	**1.60**	**1.47**
General Services Support Estimate (GSSE)	**8 769**	**12 141**	**9 514**	**12 424**	**8 661**	**7 456**
Agricultural knowledge and innovation system	514	861	1 017	1 060	1 047	943
Inspection and control	55	66	108	119	111	92
Development and maintenance of infrastructure	7 747	10 620	7 558	10 276	6 685	5 713
Marketing and promotion	152	248	715	843	702	600
Cost of public stockholding	301	345	116	126	115	108
Miscellaneous	0	0	0	0	0	0
Percentage GSSE (% of TSE)	**16.29**	**21.66**	**22.68**	**23.58**	**20.73**	**23.61**
Consumer Support Estimate (CSE)	**-53 525**	**-49 487**	**-34 685**	**-43 316**	**-36 280**	**-24 460**
Transfers to producers from consumers	-38 964	-38 469	-24 539	-31 181	-26 280	-16 157
Other transfers from consumers	-14 520	-11 104	-10 667	-12 686	-10 697	-8 619
Transfers to consumers from taxpayers	-108	35	5	6	5	5
Excess feed cost	68	51	516	546	691	311
Percentage CSE (%)	**-56.73**	**-45.82**	**-31.14**	**-35.99**	**-30.86**	**-26.34**
Consumer NPC (coeff.)	**2.31**	**1.85**	**1.46**	**1.57**	**1.46**	**1.36**
Consumer NAC (coeff.)	**2.31**	**1.85**	**1.45**	**1.56**	**1.45**	**1.36**
Total Support Estimate (TSE)	**53 272**	**56 139**	**42 022**	**52 697**	**41 788**	**31 582**
Transfers from consumers	53 485	49 573	35 206	43 867	36 977	24 776
Transfers from taxpayers	14 308	17 670	17 483	21 516	15 508	15 425
Budget revenues	-14 520	-11 104	-10 667	-12 686	-10 697	-8 619
Percentage TSE (% of GDP)	**2.10**	**1.24**	**0.88**	**1.05**	**0.85**	**0.76**
Total Budgetary Support Estimate (TBSE)	**13 814**	**17 659**	**17 886**	**21 648**	**16 268**	**15 741**
Percentage TBSE (% of GDP)	**0.54**	**0.39**	**0.38**	**0.43**	**0.33**	**0.38**
GDP deflator (1986-88=100)	**100**	**105**	**97**	**98**	**97**	**97**
Exchange rate (national currency per USD)	**147.09**	**118.19**	**115.99**	**106.76**	**109.77**	**131.43**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Japan are: wheat, barley, soybean, rice, sugar, milk, beef and veal, pig meat, poultry, eggs, apples, cabbage, cucumbers, grapes, mandarins, pears, spinach, strawberries and Welsh onions.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en.

Description of policy developments

Overview of policy trends

Agricultural land reform was implemented immediately after World War II, transferring farmland ownership from landlords to previously tenanted farmers in order to improve their economic and social position. It restricted sales of farmland to non-farmers and strongly protected farmers' rights. This policy applied until 2009, when the Agricultural Land Act was revised to allow non-agricultural companies to lease farmland. Japan also invested in agricultural research, extension services, and land infrastructure to recover from the devastation of the war. At the same time, the government kept controls on rice procurement – from production to distribution to consumers – under the Food Management Law in order to secure food supply.

To address the rising disparity in living standards and productivity between agriculture and other sectors, Japan implemented the Agricultural Basic Act in 1961 to increase farmers' incomes by promoting the modernisation of agriculture. From the mid-1950s to the mid-1990s, agricultural policies focused on price and marketing control, including tariffs for key products, particularly rice, to ensure affordable food prices for consumers while increasing farm income in rural areas.

In 1993, at the conclusion of the Uruguay Round trade negotiations, Japan agreed to a preferential quota on rice imports. The Food Management Law was repealed in 1995, introducing market mechanisms for rice distribution. Following the replacement of the GATT with the WTO in1995, Japan converted non-tariff border measures to tariff rate quotas (TRQs) for major commodities, including rice.

Rapid globalisation of the economy, together with the continued decline in farming population and farmland area adversely impacted Japanese farming communities. In response, the Agricultural Basic Act was replaced by the Food, Agriculture and Rural Areas Basic Act in 1999 to establish four basic principles: 1) a stable food supply; 2) the desired multifunctional roles of agriculture; 3) sustainable development of agriculture; and 4) development of rural areas. Under the act, ten-year agricultural policy plans, named the Basic Plan for Food, Agriculture and Rural Areas, have been formulated since 2000.

Recent agricultural policy reforms have been aimed at helping the sector become more competitive and resilient. The government-administered rice production quota system was abolished in 2018, and other pro-competitiveness reforms have encouraged farmland consolidation and re-organising agricultural co-operatives. In 2019, non-product specific revenue insurance was introduced to diversify farmers' risk-management tools. The strategy "MIDORI" was introduced in 2021; this is a sector-wide initiative to improve environmental, social, and economic outcomes throughout supply chains by 2050.[1]

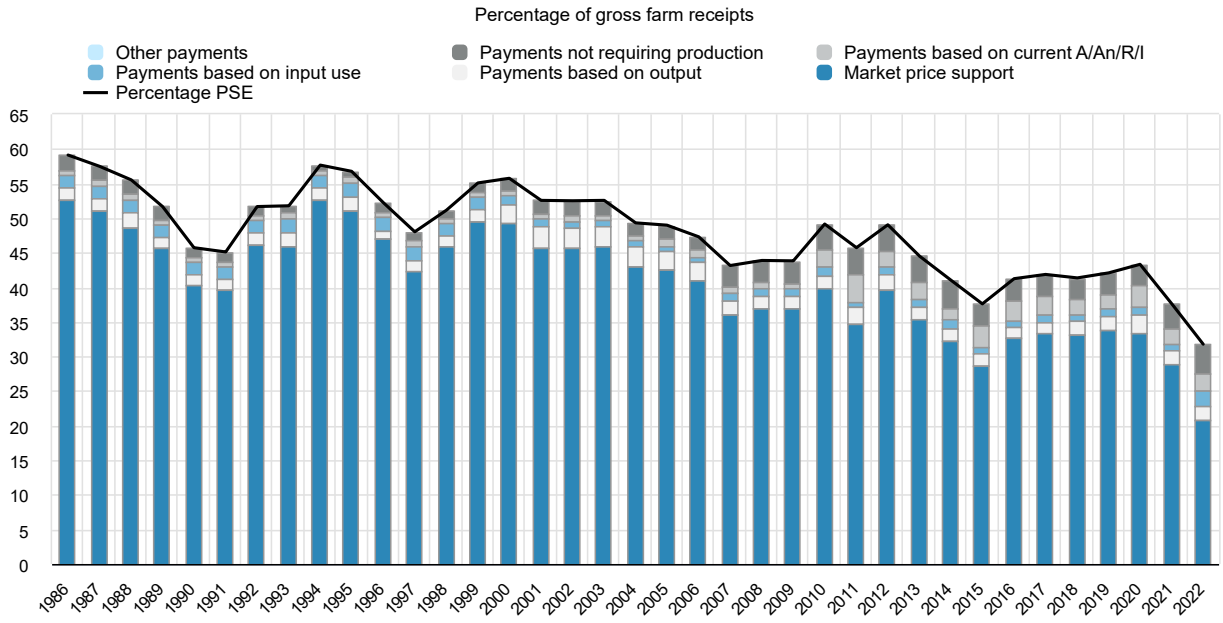
Promoting agricultural and food exports has also become a key policy goal, as demand for Japanese food products increases. Japan improved market access through large-scale trade agreements in recent years, including the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) in 2018, the Japan-EU Economic Partnership Agreement (Japan-EU EPA) in 2019, the Japan-US Trade Agreement in 2020, and the Regional Comprehensive Economic Partnership (RCEP) in 2022.

Table 17.2. Japan: Agricultural policy trends

Period	Policy directives	Changes in agricultural policies
Prior to1960	Eradication of rural poverty and securing food supply	Agricultural land reform implemented to help farmers own farmland Arrangements to increase food production (Agricultural Co-operatives Act of 1947, Agricultural Disaster Compensation Act of 1947, Agricultural Land Act of 1957) Policy priority given to increasing rice production to solve serious food shortage (Food Management Law of 1942, Five Year Food Production Increase Plan of 1952)
1960-1980	Reduction of income disparities between agriculture and other industries	Basic Agricultural Act (1961) to increase farmers' income by increasing farm size, improving farmland, adopting agricultural machinery and technology and shifting from rice and wheat-based production to livestock, vegetables and fruits. Rice policy goal changed from increasing rice production to managing quantity as full self-sufficiency achieved in 1967 Rice production adjustment control introduced in 1971
1980-2010	Adjusting towards internationalisation, bringing market principles to the agricultural sector, and integrating concepts of 'rural area' and 'food' into agricultural policies	Agricultural Management Framework Reinforcement Act (1993) systematises support for qualified farmers Act on Stabilization of Supply, Demand and Prices of Staple Food (1994) changes the role of government in rice state trading; government only purchases for stockpiling purposes Quantitative quotas of rice replaced by tariff rate quota (1999) Act on Food, Agriculture and Rural Areas (1999) aims to establish stable agricultural structure in the new economic and social conditions; food self-sufficiency goal and direct payments for farmers in mountainous areas introduced
2010-Present	New agricultural reforms to enhance competitiveness and resilience	Farmland reforms (2009 revision of Agricultural Land Act to allow leases, 2013 Act on Promotion of Agricultural Land Intermediary Management to facilitate agricultural land consolidation) Amendment of Agricultural Co-operatives Act (2015) Abolition of rice production quota system (2018) Introduction of the revenue insurance programme (2019) Large-scale trade agreements (CPTPP, Japan-EU EPA, Japan-US Trade Agreement, RCEP) and export promotion of agricultural and food products Formation of the strategy MIDORI with sustainability and food related goals (2021)

Support to farmers declined from close to 57% of gross farm receipts in the mid-1980s to less than 32% in 2022. The share of market price support also declined but, while Japan provides a range of budgetary forms of producer support, higher domestic prices continue to provide the majority of transfers to producers, accounting for close to 80% of PSE in 2020-22 (Figure 17.4).

Figure 17.4. Japan: Level and PSE composition by support categories, 1986 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

The Basic Plan for Food, Agriculture and Rural Areas revised in 2020 (hereafter the 2020 Basic Plan) sets Japan's agricultural policy direction for the next decade. The 2020 Basic Plan aims to ensure a stable food supply and improved food self-sufficiency and continues necessary agricultural policy reforms both to make the sector competitive and manage issues facing the sector, while putting an increased emphasis on rural communities, smart agriculture and digitalisation, and risk management (e.g. with respect to natural disasters.

The 2021 strategy MIDORI defines the path to transform Japan's food systems and increase the agriculture and food systems' sustainability and productivity potential until 2050. This strategy involves: 1) enhancing engagement of stakeholders all along the food supply chain; and 2) promoting innovation to reduce environmental pressures. It defines 14 Key Performance Indicators (KPI) and a roadmap for developing and implementing innovative technologies and production methods by 2050. More specifically, the agriculture-related KPIs include:

- Zero CO_2 emission from fossil fuel combustion in agriculture, forestry and fisheries
- 50% reduction in risk-weighted use of chemical pesticides[2] by increased use of Integrated Pest Management and newly-developed alternatives that will be available by 2040
- 30% reduction in chemical fertiliser use
- Increase of land under organic farming to 1 million ha (equivalent to 25% of farmland)
- At least 30% enhancement in productivity of food manufacturers (by 2030)
- Sustainable sourcing for import materials (by 2030)

In June 2022, the 14 KPIs for 2050 were complemented by an additional nine intermediate KPIs with a 2030 time horizon. The new agriculture-related KPIs for 2030 include:

- 10% reduction in risk-weighted use of chemical pesticides
- 20% reduction in chemical fertiliser use (-720 000 tonnes)
- Increase of land under organic farming from 25 000 hectares in 2020 to 63 000 hectares in 2030
- 50% of horticultural facilities (by heated area) use hybrid heating system with heat pumps and fossil fuel heaters.

Japan maintains a system of high border protection and domestic price support for key agricultural products. Average tariffs on agricultural products were 14.9% in 2021, compared to 2.5% for non-agricultural products. However, agricultural tariffs vary considerably. More than 35% of tariff lines are duty-free, but 2.9% of them are above 100% (ad valorem equivalent), while 13.3% of agricultural tariff lines have non-ad valorem tariffs (WTO, 2022[1]). Tariff rate quotas with high out-of-quota tariffs apply to some commodities, like starch and dairy products.

Rice imports are managed by a state trading enterprise, fulfilling Japan's minimum-access commitment under the WTO Agreement on Agriculture. A TRQ of 682 200 tonnes (milled) applies. The maximum mark-up (collected by the government when importing and selling on domestic markets) for rice imports is set at JPY 292 (USD 2.2) per kg, and the out-of-quota tariff-rate is JPY 341 (USD 2.6) per kg.

A revenue-based payment is available for farmers meeting certain requirements who produce rice, wheat, barley, soybean, sugar beet and starch potato. The payment covers 90% of the difference between current revenue and a benchmark based on the previous five years' revenues, with the cost shared between the government (75%) and the farmers' reserve fund (25%).

The direct support payment for upland crops (wheat, barley, soybean, sugar beet, starch potato, buckwheat and rapeseed) is based on both area and output. The area-based payments are based on current planting, and output-based payments according to the volume of sales and the quality.

A crop diversification payment goes to farmers who switch their use of paddy fields from table rice production to other crops (wheat, soybeans, or rice for feed and processing). This payment is area-based, but output is also taken into account for rice for feed and flour. Within this crop diversification programme, a payment is also provided to municipal governments if the production area employs high-yield rice variety for feed and processing, or cultivates buckwheat or rapeseed.

The Livestock Stabilisation Programme, known as Marukin, provides support payments to beef cattle and hog producers when the standard sales price falls below the standard production cost. Ninety per cent of the difference between costs and sales prices are paid to producers, to which the government contributes 75% and the rest are provided by the producers' reserve fund. Apart from the Marukin, output-based compensation goes to producers of raw milk used for dairy processing.

Agricultural mutual aid is a form of commodity insurance that is voluntary and available for a range of commodities (rice, wheat, barley, livestock, fruit, and other field crops) and horticultural facilities. It covers yield losses, damage to facilities from pests and natural disasters, losses caused by death or culling of livestock and veterinary expenses. Crop quality losses are also insured for some agricultural products including rice, wheat, barley, and fruit. Government support covers around 50% of the insurance premium.

In 2019, Japan launched the non-product specific revenue insurance programme. The programme compensates the loss of farm revenue stemming from both market and natural causes, relative to a benchmark based on the previous five years' revenues. The government supports 50% of the insurance premium and 75% of the reserve fund. Farmers must choose between participating in the agricultural mutual aid programme or revenue insurance programme to avoid duplicate payments.

Japan provides financial support to young farmers (under 50 years old) during a training period and initial operation period. Annual subsidies are also available for agricultural management entities to employ and train young farmers.

The Agricultural Land Act establishes Agricultural Committees in municipalities to manage agricultural land use. Purchasing, selling and leasing of agricultural land need to be approved by the Committee. In 2014, Farmland Banks were established in all prefectures to reinforce the intermediary role of the government in land transactions.[3] The banks improve farmland conditions and infrastructure (e.g. enlarging plot size and investment in drainage facilities) if necessary and then lease the consolidated farmland to business farmers. Subsidies are provided to landowners and regional authorities that lease farmland to the banks.

Public investment in rural and agricultural infrastructure is a core agricultural policy, including agricultural roads, dams and irrigation, and drainage facilities. The government also invests natural disaster preparedness and restoring farm infrastructure, as well as constructing public health and recreational facilities associated with agriculture.

About 40% of both total agricultural land and total agricultural output take place in hilly and mountainous areas. Area-based direct payments go to farmers in these areas to compensate for the physical disadvantages of these locations for agricultural production in order to avoid the abandonment of agricultural land. Other payments are available to support collective engagement of local stakeholders in maintaining the multifunctional roles of agriculture.

In line with the strategy MIDORI, Japan has defined an agricultural greenhouse gas (GHG) emissions reduction target of 49.5 $MtCO_2eq$ by 2030. GHG mitigation efforts in agriculture are conducted mostly via support payments, grants, credits or non-financial services. For instance, direct payments for environmentally-friendly agriculture are provided to farmers who conduct GHG mitigation activities, such as applying compost and extending midseason drainage in paddy field. These activities must be in conjunction with synthetic fertilisers and pesticides use that less than half of that of conventional farming practices in the region. The government provides investment support for farmers using climate-smart technologies such as renewable energy and biomass-based greenhouse heating systems in horticulture. In addition, the government is setting up a labelling system of agricultural products that visualises farmers' efforts of GHG reduction to effectively appeal to consumers.

Japan currently has 20 Economic Partnership Agreements (EPAs) and other trade agreements with Singapore, Mexico, Malaysia, Chile, Thailand, Indonesia, Brunei Darussalam, the Association of Southeast Asian Nations (ASEAN), the Philippines, Switzerland, Viet Nam, India, Peru, Australia, Mongolia, CPTPP, the European Union, the United States, the United Kingdom and RCEP. In addition, Japan is engaged in EPA negotiations with Colombia, with Türkiye, and with the People's Republic of China and Korea for the plurilateral free trade agreement.

Climate change adaptation policies in agriculture

Japan's agricultural sector is vulnerable to climate change and is already experiencing its negative effects on production and product quality. The scale of recent typhoons and heavy rains has been unprecedented, causing major damage to the economy and to the agricultural sector specifically (Shigemitsu and Gray, 2021[2]). High temperatures have resulted in less quality and yields of rice. They also affect fruit production, such as by discolouring apples and grapes, increasing mandarin sunburn, and causing flowering disorders among Japanese pears.

The 2018 Climate Change Adaptation Act is Japan's legal foundation for adaptation measures. It mandates the establishment of Japan's Climate Change Adaptation Plan, with monitoring and updates every five years. The National Climate Adaptation Plan was last revised in October 2021. In parallel, Japan submitted its adaptation communication to the UNFCCC, outlining the latest impacts of climate change and expanding its adaptation intentions to areas such as agriculture, disaster-risk reduction, and health.

The 2021 Plan includes strategies to co-ordinate and collaborate on adaptation policies across relevant ministries; develop climate research and an information infrastructure; disseminate climate information; implement local adaptation measures; improve public awareness; promote adaptation actions in the business sector; and provide aid for climate-change adaptation in developing countries.

MAFF formulated its first Climate Change Adaptation Plan for the agriculture, forestry, and fisheries sector in August 2015. The Agriculture Adaptation Plan deals with managing climate risks, such as by developing and utilising new plant varieties and natural-disaster-resilient infrastructure, and envisions taking advantage of opportunities that could arise. Due to the long, narrow north-south orientation of the country and consequently diverse climatic conditions and farming systems, the plan emphasises that adaptation measures should be tailored locally and implemented through co-operation between national and local governments.

The subsequent 2021 Agricultural Adaptation Plan was developed to respond to the 2020 Assessment Report on Climate Change Impacts in Japan and designed to be coherent with the strategy MIDORI. The Plan comprises six strategies: (1) developing plans to respond accurately and effectively to the impacts of climate change in the next 10 years; (2) promoting development and dissemination of stable production technologies and varieties adapted to climate change; (3) maintaining and improving prevention of and response to disasters caused by extreme weather events; (4) exploiting opportunities such as the northward shift of some horticultural products to favourable temperature zones; (5) facilitating collaboration and sharing information among stakeholders; and (6) promoting initiatives by continuously reviewing and optimising the plan.

Adaptation measures for agricultural production are being undertaken under MAFF's guidance. These include research into ongoing climate-change impacts and facilitating knowledge transfer, such as demonstration projects and reports that make producers aware of new adaptive technologies and heat-tolerant varieties. MAFF published an "innovative technology catalogue" in November 2022 to collect and promote 167 available technologies and 81 to be developed by 2030, which can contribute to achieving the strategy MIDORI's KPI.

In co-operation with all 47 prefectural governments, MAFF monitors the impacts of global warming on crops and livestock production. The results of this exercise, together with adoption rates of adaptive technologies and heat-tolerant varieties, are disseminated in the annual "Global Warming Impact Survey" and via the MAFF website.

The 2021 Agricultural Adaptation Plan focuses on adaptive actions for paddy rice, fruit production, and crops damaged due to pests and diseases, identified as "facing particularly significant climate change impacts" and "requiring high urgency of response" in the 2020 Assessment Report on Climate Change Impacts in Japan, published by the Ministry of the Environment. These actions include:

- Promoting high-temperature-resistant varieties of rice to farmers and advising them to plant rice varieties with various ripening periods. High-temperature-resistant varieties were used in 35 out of 47 prefectures and covered 12.4% of total paddy rice production area in 2021. This will limit the impact of high temperatures during the rice grain ripening period.
- Promoting the introduction of superior-coloured cultivars, or yellow-green cultivars for apples and grapes, and encouraging growers to switch from satsuma mandarin to medium-late maturing citrus to limit the impact of climate change on fruit. MAFF also distributes guidance documents for apple, grapes, and mandarin growers. At the same time, MAFF promotes opportunities created by climate change for agriculture, notably the expansion of suitable areas for fruit production. Peaches, blood oranges, and tropical fruits (e.g. avocado and atemoya) are some of the high-value crops that can now be grown in new areas of Japan.
- Promoting a pest-forecasting service to control pests within appropriate time periods, and early-detection and control systems for invasive pests and diseases.

Agricultural infrastructure in rural areas faced unprecedented levels of damage and loss due to typhoons and heavy rain events in recent years. Following the 2018 Fundamental Plan for National Resilience and the Basic Plan for Food, Agriculture and Rural Areas, MAFF manages agricultural infrastructure using different types of measures. They include extending the service life of agricultural irrigation facilities; renovating high-risk agricultural reservoirs; and creating hazard maps and contingency plans for agriculture-related facilities (Shigemitsu and Gray, 2021[2]).

Two types of subsidised insurance programmes are available for farmers to mitigate climate risks (Shigemitsu and Gray, 2021[2]). The agricultural mutual-aid programme and the non-product specific revenue insurance programme (described above) provide risk protection for natural hazards.

To achieve greater resilience in rural areas, MAFF's rural development policy supports economic diversification and innovation. For instance, Support for Innovations from Rural Areas is a scheme launched in 2022 to create new businesses and added value by using local resources. The scheme supports those who seek diversification by facilitating investment and building platforms among entrepreneurs. Having multiple sources of income can stabilise incomes and provide new opportunities. Income sources could include farm tourism, food processing, and renewable-energy production. Inter-sectoral collaboration is key for these to succeed.

Domestic policy developments in 2022-23

Food systems sustainability

In April 2022, the Diet (the Japanese parliament) enacted the "Act to Promote Low Environmental Impact Business Activities for the Establishment of Environmentally Harmonized Food Systems" (hereinafter the MIDORI Act) to facilitate the implementation of the strategy MIDORI. The act entered into force on 1 July 2022. The MIDORI Act sets out principles for the environmentally sustainability of Japan's food system, in which producers, consumers, and other stakeholders work in partnership to reduce the environmental impact of food production and supply chains.

The MIDORI Act stipulates that local governments are responsible for setting and implementing environmental measures (improving soil health, reducing use of chemical pesticides and fertilisers, and reducing GHG emissions) suitable to the natural, economic, and social conditions of their regions. MAFF promotes prefectural and municipal governments to develop a "Basic Plan" to set targets for improving environmental outcomes in their respective regions.

The MIDORI Act establishes a certification system for environmentally-friendly practices and technologies. Producers (including farmers, fishers, or foresters) can have their environmentally-friendly activities certified if they develop an activity plan in co-ordination with the "Basic Plan" of their region. Business operators, including food manufacturers, processors, distributors, input manufacturers, machinery manufacturers, seed developers, plant breeders, and extension service providers who offer innovative technologies to reduce the environmental impact of agriculture are also eligible for certification. Certified producers and business operators can enjoy several tax and financial benefits as well as other services such as simplified administrative procedures to facilitate their business development. In particular, the Japan Finance Corporation offers certified producers an extension of two years for their interest-free loans. It also offers low-interest and long-term loans for certified machinery, input, and materials manufacturers.

In application of the MIDORI Act, MAFF allocated a total of JPY 11.7 billion (USD 89 million) to the Green Food System Strategy and Environment Program in 2022. About JPY 8.4 billion (USD 64 million) was invested to support R&D and demonstration programmes for "Smart Agriculture", pelletised composted-manure application, and data-based soil management.[4] The remaining JPY 3.3 billion (USD 25 million) was spent to facilitate the reduced use of chemical fertilisers and pesticides on farms and organic farming.

As of November 2022, a total of 318 projects were initiated. To accelerate the progress, MAFF plans to allocate JPY 12.3 billion (USD 93.6 million) to the same programme in 2023.

The strategy MIDORI also puts high priority on organic farming. In addition to direct payments for environmentally-friendly agriculture, MAFF also supports organic agriculture through the establishment of model areas for organic farming clusters, and marketing promotion and sales channel expansion for organic products including their use in school lunch programmes.

To reach the 2030 strategy MIDORI's target of a 10% reduction in risk-weighted use of chemical pesticides, MAFF encourages the adoption of Integrated Pest Management (IPM) systems and the application of advanced pest control technologies, such as precision pesticide spraying by drone and early detection technology for pests and diseases using Artificial Intelligence.

Innovation and digitalisation

Accelerating the implementation of Smart Agriculture and digitalisation is one of the key objectives of the 2020 Basic Plan. In June 2022, MAFF published an updated version of the 2020 Smart Agriculture Promotion Comprehensive Package. The document identifies specific measures necessary to reach the digital agriculture target of having "most of principal farmers in Japan practice data-driven agriculture by 2025." These measures include conducting pilot studies and providing training opportunities. The revisions are aligned with the strategy MIDORI and clarify the roles of smart agriculture for stable and sustainable domestic food production.

In December 2022, the "Digital Garden City Nation Initiative" was established to promote regional development. It focusses on digitalisation in rural areas as a way to eliminate the digital divide between urban and rural regions. MAFF also provides financial support to Region Management Organization for rural areas (RMO) that work to support communities and preserve rural areas. The goal of these actions is to increase the number of people moving from the Tokyo area to rural regions to 10 000 per year by Japanese fiscal year (JFY) 2027, and to increase the number of municipalities engaging in digitisation to 1 500 nationwide.

Risk management

A series of torrential rains hit Japan in July and August 2022. They triggered severe flooding especially in northeast Japan, leaving extensive damage to agriculture, forestry and fisheries. Total estimated damages were JPY 118.3 billion (USD 826 million). In September, typhoons Nanmadol and Talas caused JPY 75.2 billion (USD 554.7 million) in damage to agriculture. The record snowstorm in 2022-23 also caused damage costing JPY 65.3 billion (USD 401.7 billion) to the sector. The government earmarked a total budget of JPY 72.1 billion (USD 549.3 billion) for restoration efforts in the sector, mostly intended to support the recovery of farmland and agricultural facilities.

Domestic policy responses to Russia's war of aggression in Ukraine

On 26 April 2022, the Japanese Cabinet approved an emergency relief package to cushion the economic blow from rising raw material costs. The JPY 6.2 trillion (USD 47 billion) relief package, funded mostly by the Supplementary Budget for the JFY2022 and reserves set aside under the JFY2022 budget, included subsidies to gasoline wholesalers and support payments to low-income households with children, among others. Within this package, JPY 75.1 billion (USD 571 million) was allocated to MAFF to alleviate the effects of price surges for food and raw materials through several measures as discussed in this section.

To address high fertiliser prices, JPY 10 billion (USD 76.1 million) was allocated to help fertiliser manufacturers to diversify suppliers of raw materials, by covering additional transportation and storage costs of fertiliser raw materials associated with changes in supplying countries. The support payments were available to cover fertiliser materials imported until autumn 2022.

MAFF also helped livestock farmers with feed costs. JPY 43.5 billion (USD 331 million) was allocated to compensate the additional payments of the compound feed price stabilisation funds to livestock farmers. The compensation is activated when the average import price in a given quarter exceeds 115% of the average import price for the previous 12 months.

About JPY 10 billion (USD 76.1 million) was provided to food producers facing high raw materials costs. This support was available to cover the cost of developing and manufacturing new food products and sourcing costs when alternative raw materials were required for new food products.

MAFF distributed JPY 2.5 billion (USD 19 million) to incentivise farmers to increase wheat production. Financial supports were available to wheat producers who increased wheat planting or who purchased or adopted new machinery and practices. MAFF also supported groups of local producers seeking to enlarge wheat production on a collective basis. Investment supports were offered to flour mills and distributors to build storage facilities for domestic wheat.

To help low-income households confront surging food prices, MAFF allocated JPY 123 million (USD 0.9 million) to urgently promote the dispatch of experts to help food banks secure food supply sources and to strengthen their activities. Upon requests from food banks all over the country, the experts support in expanding the amount of food that food banks can handle, matching food providing companies with e.g. children's dining rooms, and providing the necessary know-how for formulating activity plans.

On 9 September 2022, the government announced an additional relief package to alleviate rising food and energy costs, funded through the JFY2022 reserve fund. The package includes measures to keep the import wheat selling price from rising, payments to livestock farmers to compensate for the increased cost of compound feed, support to mitigate rising fertilisers costs, and grants to localities to support local inflation countermeasures.

In line with MIDORI strategic objectives, MAFF also encouraged the reduction in mineral fertiliser use, by covering 70% of the increased fertiliser costs compared to the previous year to farmers who adopt measures to reduce chemical fertiliser use at least 20%. Approved measures include use of livestock manure and sewage sludge compost, cover crops, and fertiliser application based on soil analysis. The support payments are applicable to fertiliser applications in autumn 2022 and in spring 2023.

On 2 December 2022, MAFF allocated JPY 164.2 billion (USD 1.25 billion) from the JFY2022 supplementary budget to strengthen food security, with an emphasis on reducing import dependence, by increasing domestic production of agricultural products and inputs. The main measures include support payments to livestock farmers and compost manufacturers to partially cover costs for building facilities for the manufacture and pelletisation of compost. MAFF also provided support to cover the costs of pilot projects for the use of domestic materials such as sewage sludge in fertiliser. Support payments were also increased for forage crop production and the establishment of domestic supply chains for domestic forage. Some of the programmes will continue to be funded under the JFY2023 annual budget.

On 27 December 2022, the Japanese Government released the “Food Security Reinforcement Policy Framework” which presents a roadmap to ensure a stable food supply. The Policy Framework sets several targets to facilitate the structural transformation by increasing production and utilisation of domestic resources, such as:

- Doubling manure compost and sewage sludge use for fertiliser and increasing the ratio of domestic materials (e.g. nitrogen from livestock manure and phosphorus from sewage sludge) in fertiliser use (on a phosphorus basis) from 25% in 2021 to 40% by 2030.
- Increasing production areas by 9% for wheat, 16% for soybeans, and 32% for feed crops compared to 2021 levels by 2030.
- Halving food loss and waste in the food industry businesses to 2.7 million tonnes by 2030 from 2000 levels.

Trade policy developments in 2022-23

Japan's agriculture, food, forestry and fishery exports reached a new record of JPY 1.4 trillion (USD 10.7 billion) in 2022. To build on this trend and reach the objectives of JPY 2 trillion by 2025 and JPY 5 trillion by 2030, Japan renewed the 2020 Strategy of Export Expansion of Agricultural, Forestry, Fishery Products and Food in December 2022.

In May 2022, MAFF revised the Act on Facilitating the Export of Agricultural, Forestry and Fishery Products and Food to incorporate the certification system for export promotion associations covering major commodities. The export promotion associations bring together stakeholders within a marketing chain to develop overseas markets. Certified export promotion associations are expected to create standards, set quality standards and production methods and unify sales strategies for specific Japan-made products. These groups can seek advice from Japan External Trade Organization (JETRO) and Food and Agricultural Materials Inspection Centre (FAMIC). By the end of December 2022, MAFF certified seven associations, including "All Japan Trade Association of Confectionery Manufactures", "Japan Sake and Shochu Makers Association", "Japan Rice and Rice Industry Export Promotion Association" and "Japan Fruit and Vegetables Export Promotion Council".

Contextual information

Japan is the world's third largest economy after the United States and China with relatively small land area and high population density (Table 17.3). Agriculture constitutes 1% of GDP and 3% of employment in 2021, but the agriculture and agro-food sector as a whole accounts for 9% of GDP if all food-related industries are considered (MAFF, 2023[3]). Livestock accounted for more than one-third of the total agricultural production value in 2021, followed by vegetables (24%), rice (16%) and fruits (10%) (MAFF, 2023[4]).

Two-thirds of the country area is covered by mountains, leaving only 12% of the total land area for agriculture, more than half of which are rice paddy fields. Total agricultural land has decreased from 4.8 million hectares in 2000 to 4.3 million hectares in 2021 (MAFF, 2021[5]) due to the abandonment and conversion of farmland to non-farm uses (e.g. residential, industrial, or commercial uses). The agricultural workforce declined by more than half since 1980 to 1.9 million in 2021, and the pace of this decline has accelerated in the last decade (SBJ, 2022[6]). The average farm size increased from 1.4 hectares to 3.2 hectares between 1990 and 2021 (MAFF, 2021[7]), but still remains small compared to other OECD countries. The average age of farmers was 67.9 years in 2021 and about 70% of farmers in Japan are over 65 years old (MAFF, 2022[8]; MAFF, 2021[9]).

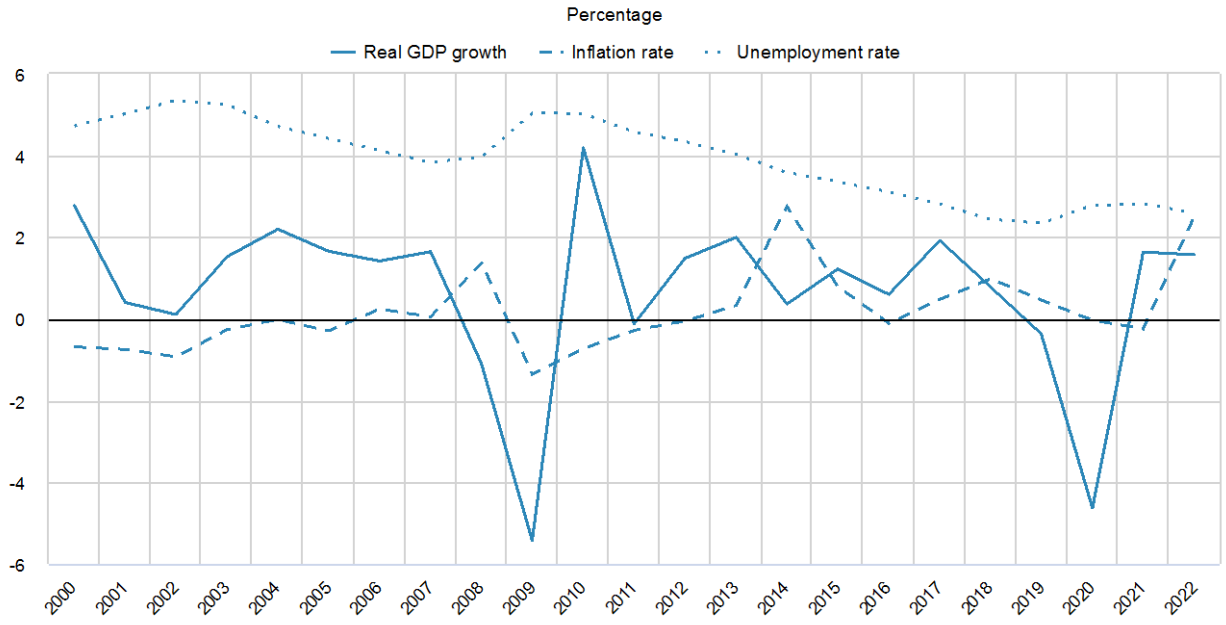
Table 17.3. Japan: Contextual indicators

	Japan		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	3 461	5 300	8.6%	4.3%
Population (million)	127	126	3.0%	2.4%
Land area (thousand km^2)	365	365	0.4%	0.4%
Agricultural area (AA) (thousand ha)	4 830	4 372	0.2%	0.1%
			All countries[1]	
Population density (inhabitants/km^2)	340	336	52	64
GDP per capita (USD in PPPs)	27 290	42 230	9 350	23 401
Trade as % of GDP	8.7	15.5	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	1.5	1.0	2.9	3.9
Agriculture share in employment (%)	5.0	2.9	-	-
Agro-food exports (% of total exports)	0.3	1.0	6.2	7.9
Agro-food imports (% of total imports)	9.7	8.3	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	74	61	-	-
Livestock in total agricultural production (%)	26	39	-	-
Share of arable land in AA (%)	93	94	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

The country has experienced slow economic growth and deflation for most of the past two decades, but has one of the lowest unemployment rates among OECD countries (Figure 17.5). Since the Russian aggression against Ukraine, the energy shock has pushed up inflation, hurting economic growth around the world, as well as Japan. Energy and food prices remain the biggest driver of headline consumer price inflation in Japan, which reached 3% in August and September 2022 (OECD, 2023[10]).

Figure 17.5. Japan: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Japan is one of the world's largest importers of agro-food products, and the United States is the biggest source of agricultural imports. The food self-sufficiency rate was 38% in 2021 on a calorie basis, meaning that more than 60% of Japanese calorie supply depended on imports. Agro-food exports are much smaller than imports, but the export value in 2021 increased by 22.7% from 2020, reaching its highest level at JPY 804 billion (USD 6.1 billion). It is about five times higher than that of 2000 (MAFF, 2021[11]). Most of Japan's agro-food exports are directed at final consumers (Figure 17.6). Processed food products such as alcohol and beverages, sauces and seasonings, and snacks account for the majority of Japan's agro-food exports. Among unprocessed products, apples, beef and green tea are the most exported.

Figure 17.6. Japan: Agro-food trade



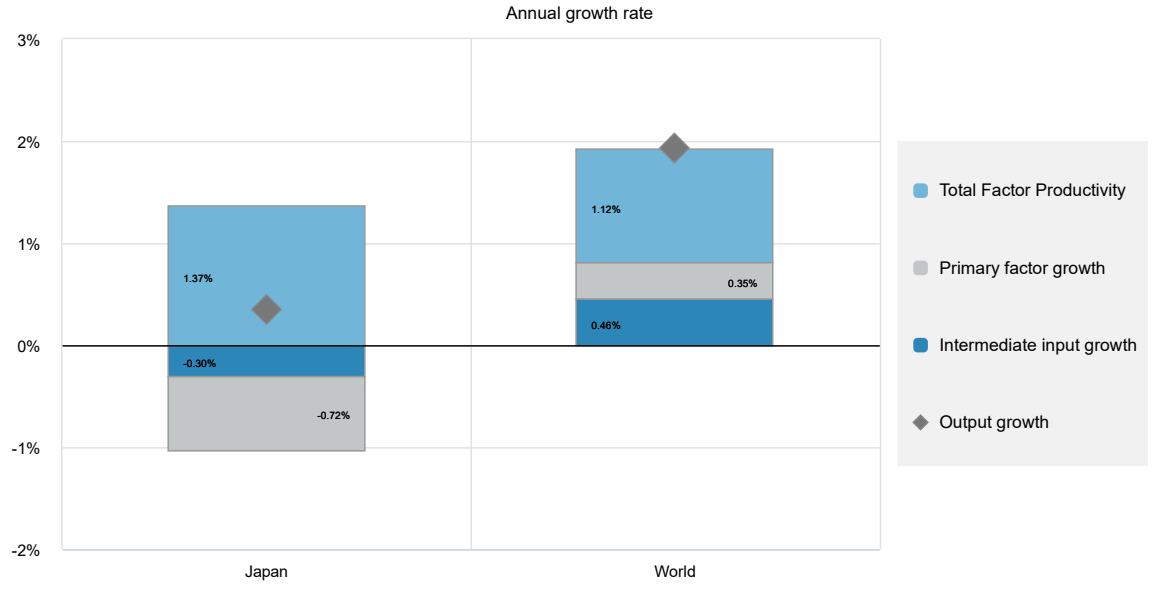
Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Japan's agricultural Total Factor Productivity (TFP) growth averaged 1.4% a year between 2011 and 2020, which is slightly above the global average and twice the growth estimated for 1993-2002 (Figure 17.7, Table 17.4). Recent TFP growth in Japan's primary agriculture has allowed some modest output growth, offsetting reductions in the use of primary production factors, in particular labour, and intermediate inputs.

Japan's nitrogen and phosphorus balance remain among the highest in OECD countries (Table 17.4). The high and increasing nitrogen balance is due to a combination of high fertiliser use and livestock production

on limited pasture land. The high phosphorus balance, in contrast, is partly a result of soil characteristics (OECD, 2019[12]; Shindo, 2012[13]). Agriculture's share of total energy use is below the OECD average, as is its share in GHG emissions – partly a consequence of the sector's below-average contribution to the national GDP. The volume of agricultural water use has remained stable for the past few decades. In 2019, the Japanese agricultural sector used 67.9% of water of which over 90% was directed for paddy field irrigation (MLIT, 2022[14]). While average water stress in Japan has fallen somewhat, it remains much higher than the OECD average.

Figure 17.7. Japan: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 17.4. Japan: Productivity and environmental indicators

	Japan		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	0.7%	1.4%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	170.8	179.3	32.2	30.4
Phosphorus balance, kg/ha	72.0	56.8	3.3	3.0
Agriculture share of total energy use (%)	1.2	1.3	1.7	2.0
Agriculture share of GHG emissions (%)	2.6	2.8	8.6	10.5
Share of irrigated land in AA (%)	54.7	54.4	-	-
Share of agriculture in water abstractions (%)	65.8	67.4	46.6	49.7
Water stress indicator	20.7	18.8	8.3	7.4

Notes: * or closest available year. Data for nutrients balance refer to the year 2016.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Notes

[1] Originally named the MeaDRI Strategy, based on an abbreviation of “Measures for Achievement of Decarbonisation and Resilience with Innovation”. “MIDORI” means “Green” in Japanese.

[2] The risk-weighted use of chemical pesticides is estimated on the Acceptable Daily Intake (ADI) level of a chemical in humans.

[3] Officially called the Public Corporations for Farmland Consolidation to Core Farmers through Renting and Subleasing.

[4] According to MAFF, Smart Agriculture uses robot technology and ICT to achieve ultra-labour-saving and high-quality production.

18 Kazakhstan

Support to agriculture

Support to producers in Kazakhstan has been volatile for most of this century, accounting for 4.5% of Gross Farm Receipts (GFR) in 2020-22, compared to 8.6% in 2000-02. The share of potentially most-distorting producer transfers fell from an average of 98% in the early 2000s to 59% in 2020-22, mostly based on Market Price Support (MPS) and variable input use without constraints. On average, domestic prices were lower than world prices for several agricultural commodities, generating aggregate MPS worth about -2.4% of GFR in 2020-22, as negative MPS worth -3.9% of GFR more than outweighs smaller positive MPS worth 1.4% of GFR. Single Commodity Transfers (SCT) in 2020-22 were negative for rice, sunflower, and maize, reflecting individual commodity price gaps. SCTs with the largest positive transfers were barley, poultry, and cotton.

Support based on variable input use and fixed capital formation account for most budgetary transfers to producers. Together with limited other forms of payments, budgetary producer support amounted to 7.0% of GFR in 2020-22.

Support to general services (General Service Support Estimate, GSSE) accounted for 16% of budgetary support to agriculture in 2020-22 and corresponded to 0.6% of the value of agricultural production. Of this, spending on inspection and control accounted for 55% and spending on infrastructure (mostly irrigation and drainage, and the establishment of a digital land cadastre) accounted for 21%. Total agricultural support (Total Support Estimate, TSE) declined from 1.7% of Gross Domestic Product (GDP) in the early 2000s to 0.6% in 2020-22.

Recent policy changes

Developments in 2022 focused on land management and digitalisation, following priorities defined in the 2021 National Project and Concept. State land-control functions were centralised in a single body. The government launched the “JerInSpectr” platform across the country to improve institutional efficiency and identify issues related to unused agricultural land. It uses remote-sensing data for improved land-resource management without on-site visits.

A new Unified State Information System for Subsidies (USISS) launched in early 2023 to combat corruption by automating many of the functions of subsidy delivery. These include registration for and distribution of subsidies, checking subsidy recipients’ compliance with obligations, and keeping track of which subsidies were paid to applicants.

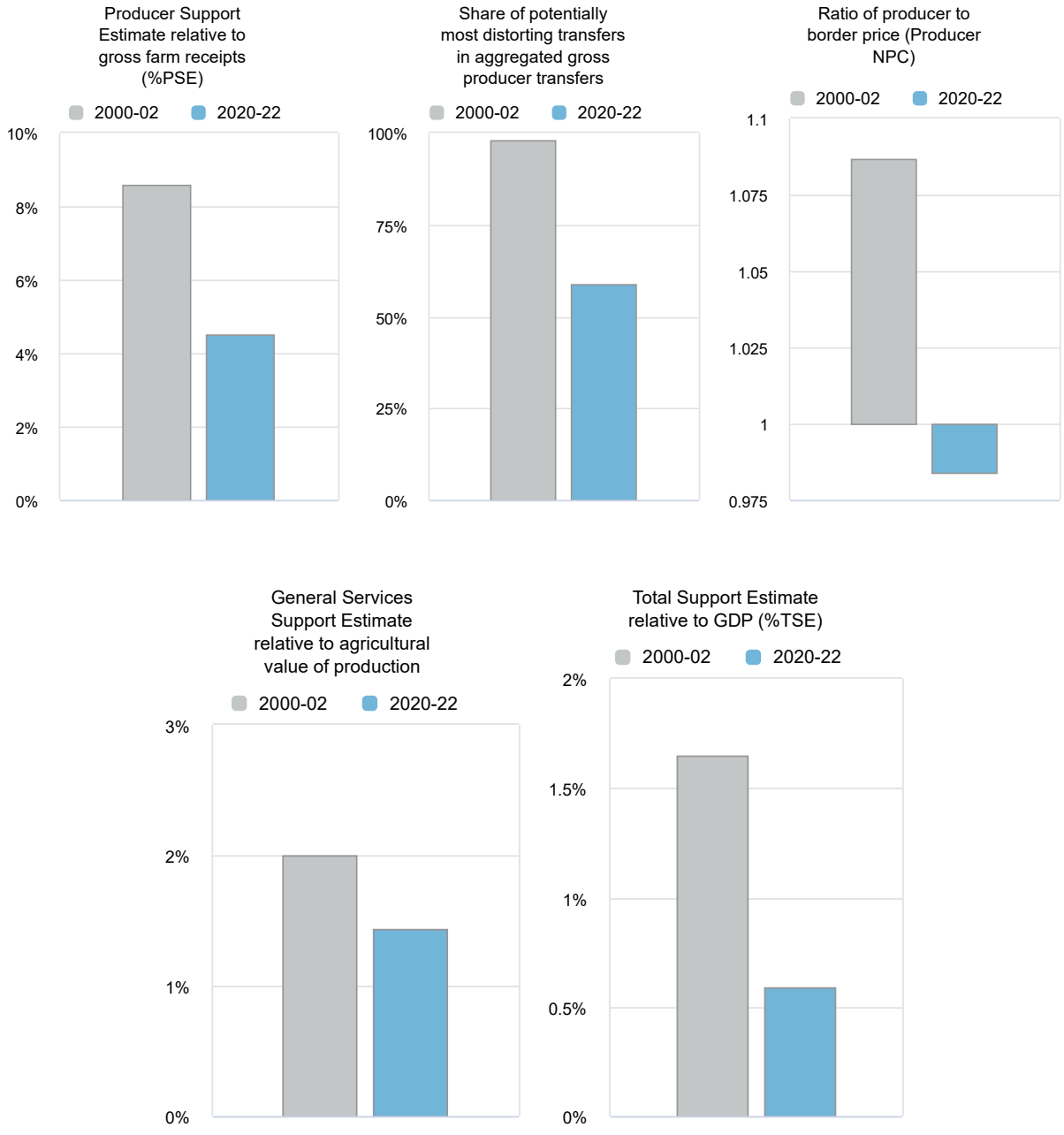
Baiterek Holding, the state-owned national development institution, was reorganised, allowing agricultural producers to apply for loans in a “one-stop shop” process. Existing financing conditions were not changed.

An amendment to the Tax Code in 2022 doubles the tax rate on unused agricultural land. This change is intended to encourage land to be put into productive use.

Assessment and recommendations

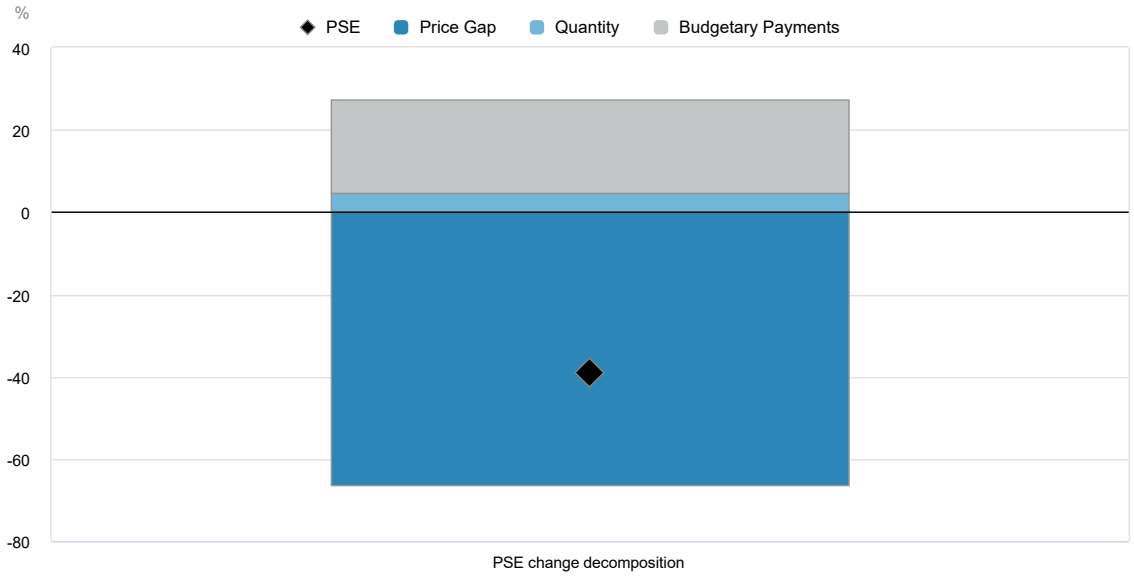
- Limited effort has been made to facilitate the adaptation of the agricultural sector to a changing climate, despite adaptation's mention among the government's priorities in the national Concept framework, and the sector's vulnerabilities to the effects of climate change. Steps were taken to develop state and regional action plans through the ministry's "Rules of organisation and implementation of the process of adaptation to climate change". However, Kazakhstan should look to move beyond planning and begin implementing adaptation-specific policy. This should be done with a co-ordinated effort across levels of government to monitor and measure progress.
- Adverse weather conditions, pests and diseases, and price volatility pose challenges for farmers and agribusiness firms, and responding to these can strain government finances. Kazakhstan should enhance the resilience of its agricultural sector by adopting a broader, more integrated approach to risk management, replacing ad-hoc, ex-post emergency responses to local disasters, ensuring that disaster assistance does not impede the development of on-farm strategies and market solutions, such as insurance.
- Agriculture is the second largest emitter of greenhouse gases (GHG) after the energy sector, and Kazakhstan should specify targets and approaches to reduce agricultural emissions to meet the country's overall emission-reduction commitments.
- While total support to agriculture is small relative to the economy, most producer support is provided in forms that are potentially most-distorting to agricultural production and trade, and likely to exacerbate pressures on natural resources. Subsidies for inorganic fertilisers, chemical inputs and industrial feed have strong potential to harm the environment. Kazakhstan should consider phasing out such types of support. Freed funds could be used for needed services for the sector, notably the relatively underfunded agricultural knowledge and innovation system, and advisory services. Giving strategic priority and incentives to orient innovation and growth towards reducing environmental pressures could keep the pace of productivity growth while ensuring a more environmentally sustainable path.
- Positive developments in land management have been observed, such as the introduction of digital monitoring of land use. Kazakhstan should clarify its land-use objectives with respect to production, adaptation and conservation. The doubling of taxation on unused land and the commitment to increase labour productivity 2.5 times demonstrates Kazakhstan's ambition to increase production, but should not neglect the potentially harmful environmental effects of over-production.
- The introduction of a digital system to register and distribute subsidies is an important step towards improving transparency and the accuracy of monitoring.

Figure 18.1. Kazakhstan: Development of support to agriculture



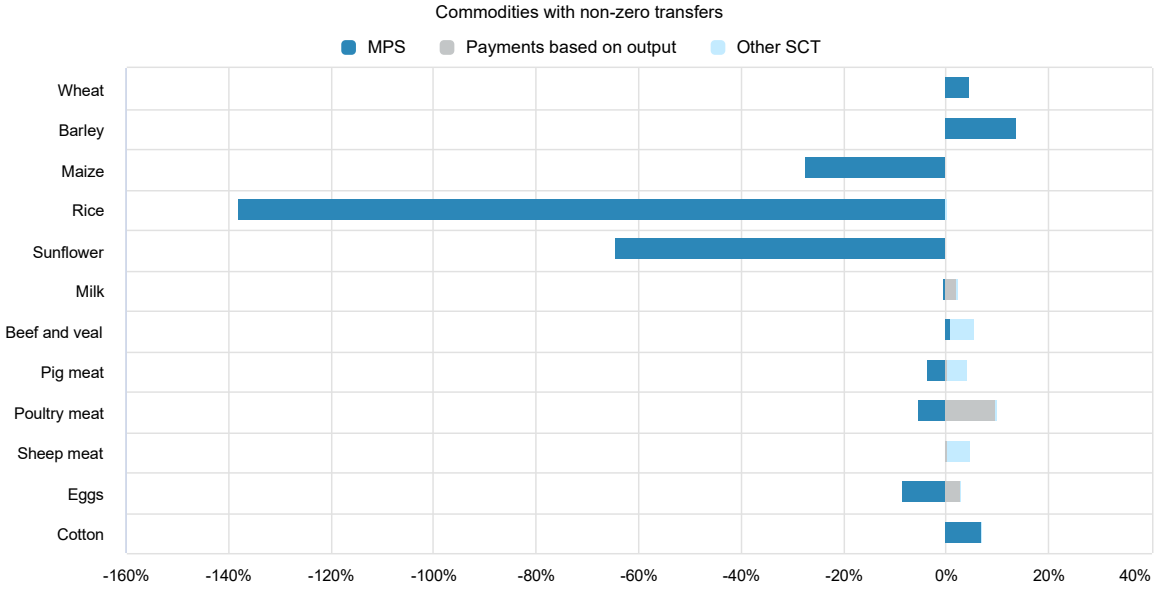
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 18.2. Kazakhstan: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency. The producer price change and the border price change are not calculated when both negative and positive market price support (MPS) occur at the commodity level for the previous year. Note that negative MPS estimates for livestock products may arise in cases of aligned product prices if there is positive MPS for feed commodities.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 18.3. Kazakhstan: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 18.1. Kazakhstan: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**3 367**	**17 668**	**15 301**	**17 614**	**20 088**
***of which:** share of MPS commodities (%)*	76.61	61.58	61.78	59.46	63.48
Total value of consumption (at farm gate)	**2 933**	**15 374**	**13 083**	**15 212**	**17 828**
Producer Support Estimate (PSE)	**290**	**870**	**1 028**	**1 012**	**570**
Support based on commodity output	272	-373	-93	-236	-789
Market Price Support[1]	272	-463	-176	-330	-882
Positive Market Price Support	372	268	336	420	47
Negative Market Price Support	-100	-731	-513	-750	-929
Payments based on output	0	90	83	94	93
Payments based on input use	18	1 218	1 081	1 228	1 344
Based on variable input use	8	286	264	284	310
with input constraints	0	0	0	0	0
Based on fixed capital formation	10	927	814	938	1 029
with input constraints	0	0	0	0	0
Based on on-farm services	0	5	4	6	6
with input constraints	0	0	0	0	0
Payments based on current A/An/R/I, production required	0	13	22	10	5
Based on Receipts / Income	0	0	0	0	0
Based on Area planted / Animal numbers	0	13	22	10	5
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	0	0	0	0
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	0	12	18	10	10
Percentage PSE (%)	**8.61**	**4.51**	**6.23**	**5.34**	**2.65**
Producer NPC (coeff.)	**1.09**	**0.98**	**1.00**	**1.00**	**0.96**
Producer NAC (coeff.)	**1.09**	**1.05**	**1.07**	**1.06**	**1.03**
General Services Support Estimate (GSSE)	**67**	**255**	**300**	**215**	**251**
Agricultural knowledge and innovation system	3	37	37	40	36
Inspection and control	29	140	140	140	141
Development and maintenance of infrastructure	28	54	113	28	23
Marketing and promotion	0	4	4	4	3
Cost of public stockholding	5	19	7	3	48
Miscellaneous	1	0	0	1	0
Percentage GSSE (% of TSE)	**18.76**	**22.13**	**21.87**	**16.82**	**30.02**
Consumer Support Estimate (CSE)	**-316**	**448**	**241**	**314**	**791**
Transfers to producers from consumers	-291	343	132	136	762
Other transfers from consumers	-21	0	0	0	0
Transfers to consumers from taxpayers	0	37	44	51	15
Excess feed cost	-4	68	65	126	14
Percentage CSE (%)	**-10.80**	**2.98**	**1.85**	**2.07**	**4.44**
Consumer NPC (coeff.)	**1.12**	**0.98**	**0.99**	**0.99**	**0.96**
Consumer NAC (coeff.)	**1.12**	**0.97**	**0.98**	**0.98**	**0.96**
Total Support Estimate (TSE)	**357**	**1 162**	**1 372**	**1 278**	**836**
Transfers from consumers	312	-343	-132	-136	-762
Transfers from taxpayers	65	1 505	1 504	1 414	1 597
Budget revenues	-21	0	0	0	0
Percentage TSE (% of GDP)	**1.65**	**0.59**	**0.80**	**0.65**	**0.39**
Total Budgetary Support Estimate (TBSE)	**85**	**1 624**	**1 548**	**1 608**	**1 718**
Percentage TBSE (% of GDP)	**0.39**	**0.84**	**0.91**	**0.82**	**0.81**
GDP deflator (2000-02=100)	**100**	**858**	**802**	**914**	**..**
Exchange rate (national currency per USD)	**147.38**	**433.41**	**413.36**	**426.03**	**460.85**

.. Not available

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.

1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Kazakhstan are: wheat, rice, maize, barley, sunflower, potatoes, cotton, milk, beef and veal, pig meat, sheep meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en.

Description of policy developments

Overview of policy trends

In the Soviet era, all sectors of Kazakhstan's economy, including agriculture, were regulated by central planning. Production, the marketing of agricultural inputs and outputs, and processing and distribution of food were controlled by state enterprises. Agriculture was supported by high administered prices and considerable input and output price subsidies, in addition to policies such as cheap energy and transport, which were not agriculture-specific.

Kazakhstan became an independent country in 1991 following the collapse of the Soviet Union. Stabilisation and transition to a market economy were its main economic challenges. During the transition, the agricultural sector was affected by economic shocks, land reform and reduced government support. The main agricultural policies were geared towards decreasing food import-dependency and increasing domestic food production (Baubekova, Tikhonova and Kvasha, 2021[1]).

Agricultural products and inputs became exposed to market forces post-independence in the 1990s. After this early period of market reform, Kazakhstan made little progress in pursuing further trade liberalisation. It was not until its accession to the WTO in 2015 that the country restarted trade liberalisation measures. However, Kazakhstan continues to apply a range of border and domestic price intervention measures such as tariff rate quotas and non-tariff measures. They have also imposed export restrictions in times of global uncertainty or high prices, such as 2008, 2020 and 2022.

The State Programme of Agro Industrial Complex Development for 2017-2021 (hereafter, "the 2021 State Programme") provided the main agricultural policy framework in Kazakhstan up until the end of 2021. While maintaining the principles of the previous framework (Agribusiness-2020 Programme), the 2021 State Programme put a stronger emphasis on the development of, and support to, individual household plots and small farms, agricultural producer co-operatives and agriculture supporting services and infrastructure. In addition, some input subsidies including on seed, fertiliser and pesticides were increased.

Table 18.2. Kazakhstan: Agricultural policy trends

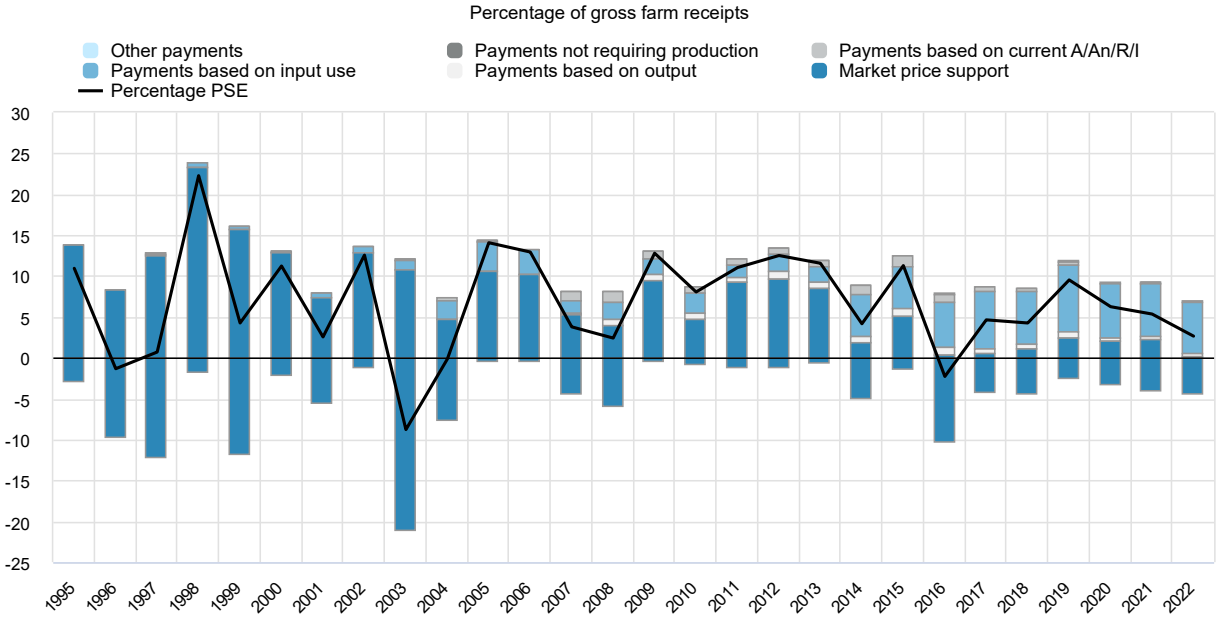
Period	Broader framework	Changes in agricultural policies
Prior to 1992	Soviet era Closed economy	Government control of the agricultural economy through regional trade controls, input supply controls, and the continuation of soft budget constraints Taxation of the agricultural sector to support the industrial sector Tariffs Low administrated prices on energy and transport
1992-1997	Initial structural reforms towards an open economy	Price liberalisation of agricultural products and inputs Emergence of new policy institutions
1998-2002	Economic crisis Stabilisation measures	Debt rescheduling Limited support to the sector Agrarian Credit Corporation created as main agricultural lender (credit at preferential rates) Restructuring agricultural enterprises
2003-2015	Agriculture as part of economic diversification	Price support Support for import-competing products Tariff protection for meat Taxation of agricultural exports

Period	Broader framework	Changes in agricultural policies
2015-present	Reforms to trade liberalisation	WTO accession 2015 EAEU membership in 2015 Elimination of payments per hectare for priority crops Promotion of agricultural co-operatives Increase in land tax rates Debt restructuring programme Introduction of investment subsidies Introduction of interest concessions Agricultural insurance reform

Source: (OECD, 2013[2]; Baubekova, Tikhonova and Kvasha, 2021[1]).

Producer support in Kazakhstan tends to vary considerably between years. Levels of support from price interventions have declined over time in favour of budgetary support. The %PSE fluctuated considerably between 1995 and 2020. In some years, negative support provided through depressed market prices for some products offset budgetary allocations and positive support provided through higher domestic prices for others. However, net producer support was positive in most years (Figure 18.4), due to increasing support related to the use of production inputs, in particular credit, over the past ten years. Overall, total budgetary support to agriculture increased relative to the size of the economy and is now about 2.6% of gross farm receipts.

Figure 18.4. Kazakhstan: Level and PSE composition by support categories, 1995 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

The National Project for the Development of Agriculture for 2021-2025 (hereafter "the National Project") and the Concept for the Development of Agriculture for 2021-2030 (hereafter "the Concept") provide overarching policy frameworks for the development of the agricultural sector. The National Project was endorsed in October 2021 while the Concept was endorsed in December 2021.

The National Project sets out four goals to be achieved in the next five years:

- Increasing labour productivity by 2.5 times compared to 2019.
- Increasing the supply of locally produced basic food products.
- Doubling food exports compared to 2019 and raising the share of processed foods in total food exports to 70%.
- Generating higher and more stable incomes for 1 million rural people by establishing 7 sustainable food value chains (meat, fruits, vegetables, sugar, dairy, grains, and oilseeds) and related investment projects.

To achieve these goals, the National Project develops and expands existing state support measures including:

- lending and leasing programmes for agribusiness
- agricultural insurance
- financing of crop cultivation through short and long-term loans
- subsidy mechanisms and introduction of new forms of state support
- forward contracting of agricultural products to stimulate the cultivation of priority crops
- maintenance of reserve stocks of grain, a forage fund, and stabilisation funds for socially significant food products
- improvements to the taxation system
- R&D measures and build capacity for agro-industrial production.

The Concept sets out a number of key priority areas including:

- ensuring food security and improving quality of food
- adjusting support mechanisms to focus on competitive products
- industry development based on manufacturing, digitalisation, sustainability and development of human capital
- commercialisation and knowledge transfer; development and strengthening of phytosanitary and veterinary services
- more efficient land use systems and water use for the production of agricultural products
- growth of incomes and social support systems for the rural population, development of rural infrastructure
- the creation of production and distribution chains.

The Concept also sets goals to build on those of the National Project by setting more ambitious targets for productivity and exports, while also expanding its set of development goals to also include for agro-industrial investments and food availability.

Kazakhstan applies a range of border and domestic price intervention measures. Border measures are implemented within the Customs Union of the Eurasian Economic Union (EAEU) and include tariff rate quotas (TRQs) and non-tariff measures. TRQs apply to imports of lower-grade beef and of poultry products.

Intervention in domestic markets is twofold. The State Commission for the Modernisation of the Economy undertakes intervention purchases of grains to support domestic producer prices. At the same time, consumption price stabilisation is in place for 29 commodities.

Purchases of mineral fertiliser and high-quality seeds are supported by subsidies per unit of input. Administered prices below market prices apply to diesel fuel sold to agricultural producers for pre-determined volumes during sowing and harvesting periods.

Investment subsidies, together with concessional credit, represent the principal forms of support to agriculture. Concessional credit comes through numerous channels. Several credit agencies provide loans at reduced interest rates under the umbrella of the state company Baiterek Holding, which has absorbed the subsidiaries and functions of KazAgro Holding since 2021. Along with agricultural producers, food processors benefit from concessional credit and leasing of machinery and equipment from credit agencies of Baiterek Holding.

For crops, output payments go to oilseeds, rice, sugar beet and cotton used for processing. Headage and output payments support the livestock sector. Large commercial livestock producers receive most of these as they account for the largest shares of production and herd size. Other forms of support to livestock are silage and fodder subsidies, support to artificial insemination and to the purchase of young cattle for feedlots.

The current interest rate subsidy applies to loans issued by financial institutions with a nominal interest rate not exceeding 17% per annum. The interest rate subsidy reduces nominal rates by 10% for loans for the purchase of agricultural machinery, equipment and farm animals, purchase of fixed assets and construction; by 7% for replenishment of working capital; and by 9% for spring field work and harvesting.

There are separate terms for interest rate subsidies for loan agreements concluded under the Economy of Simple Things programme, designed by the Ministry of National Economy to raise domestic production and reduce imports of consumer products such as of food, textiles, and furniture. These loans are targeted towards production and processing of products deemed of strategic importance. The programme is financed by the National Bank and applies to loans with a nominal interest rate not exceeding 15% per annum. For this programme, the interest rate subsidy is transferred through the Damu Entrepreneurship Development Fund and local governments, and reduces the nominal interest rate by 10% for loans for investment purposes, by 9% for loans to replenish working capital and for spring field and harvesting work.

The Credit guarantee system is a mechanism for guaranteeing loans from second-tier banks through the Damu Entrepreneurship Development Fund.[1] The terms of the guarantee provide for the issuance of a loan of up to KZT 3 billion (USD 7 million) at a rate of no more than 17% per annum, for a period of up to 10 years. The commission for guaranteeing is 30% of the amount of the guarantee, of which 29.9% is paid by the local executive body and 0.1% is paid by the agricultural producer. The guarantee is provided for the implementation of investment projects in all types of activities in agriculture, as well as in the field of food production. At the same time, within the framework of the guarantee, there are priority investment areas, which are supported with higher guarantee rates.

Land tax applies since 2015. Individual farms of less than 3 500 hectares can pay an alternative Single Land Tax set as a percentage of the cadastral value of land owned or used, which replaces the land tax and five other business taxes. Finally, since 2015, individual farms pay a 10% income tax for physical persons on an income above KZT 150 million (USD 0.3 million).

Kazakhstan is a member of the Treaty on the Eurasian Economic Union (EAEU) established in 2015, together with Armenia, Belarus, Kyrgyzstan and the Russian Federation. Kazakhstan’s border measures are implemented within the Customs Union of the EAEU and a number of national responsibilities in the area of custom regulations are transferred to the EAEU, including SPS and technical regulations.

Kazakhstan is a party to the Paris Agreement on Climate Change. Through its Nationally Determined Contribution (NDC), Kazakhstan set an economy-wide target starting in 2021 to reduce GHG emissions by 15% compared to 1990 by 2030. This target covers all emissions, including from agriculture. Specific targets or reduction plans for the agricultural sector were not defined.

There are no mitigation policies directed at the agricultural sector. There are however cross-compliance requirements linked to some support payments that could help lower GHG emissions from agriculture. For example, some interest rate subsidies provided to livestock producers require rehabilitation of pasture lands.

Climate change adaptation policies in agriculture

While no policies specifically target climate adaptation, one of the government's 2030 agricultural development priorities in the Concept is the "Establishment of a sustainable, intensive crop sector with stable and high yields and profitability that is adapted to climate change". Measures relevant to adaptation undertaken by the government include support for the development of irrigation, crop diversification, and research and development in drought-resistant species. The country is also working with the Food and Agriculture Organization (FAO) on a National Action Plan to Combat Desertification.

In 2021 the Ministry of Ecology, Geology and Natural Resources endorsed the "Rules of organisation and implementation of the process of adaptation to climate change". This document outlines the process for developing and implementing climate-change adaptation measures by central and local executive bodies in regions and cities. It emphasises the need to assess vulnerabilities, establish clear and measurable goals, and prioritise adaptation measures based on efficiency, feasibility, cost, financing availability, and implementation timeline. Involvement of interested parties is encouraged through focus-group discussions, and measures are to be integrated into state and regional programs. Co-ordination, monitoring, and evaluation among various executive bodies are crucial to ensuring adaptation to climate change. However, no active steps have been taken in this direction.

Domestic policy developments in 2022-23

Forward contracting and price stabilisation

In 2022, the financing amount for forward contracting by the Food Contract Corporation was doubled to KZT 80 billion (USD 174 million). The list of purchased crops was expanded to ten items, including soft wheat, hard wheat, barley, oats, sunflower seed, soybeans, flax, rapeseed, buckwheat, and corn. In 2022, agricultural products were delivered to the Food Corporation's funds under forward purchasing with a total amount of KZT 125.9 billion (USD 273 million).

In mid-2022, two new developments were introduced on forward contracts. The first involves new forward contracting of vegetables to ensure their sale in the off-season. This is provided a year in advance to guarantee timely sowing and subsequent market supply during off-season periods. The second involves the provision of working capital to processing plants for raw material purchases. Currently, sugar refineries receive working capital financing under a memorandum between the Integrated Tariff Information System, regional authorities, and sugar refineries. Additional forward contracting for buckwheat, rice, and sunflower producers through processing plants is under consideration.

Subsidy delivery

Harnessing information technologies is part of Kazakhstan's long-term strategy to simplify, facilitate control, and improve the transparency and effectiveness of government support to agriculture. Starting from 1 January 2023 all subsidy applications are now accepted through the "Unified State Information System for Subsidies," (USISS) replacing the previous Qoldau platform. The main distinction of the new

platform is that farmers no longer need to pay a subscription fee for its use. The subsidy database is maintained by the Ministry of Agriculture.

An electronic mechanism was established for allocating and distributing diesel fuel to agricultural work within the USISS. This mechanism is designed to ensure transparency in the distribution of diesel fuel and enable effective monitoring and control. This is implemented via amendments to the Law on State Regulation of Production and Circulation of Certain Types of Petroleum Products

Merging of KazAgro Holding with Baiterek Holding

On 25 July 2022, Baiterek Holding, a state-owned finance corporation, transferred 100% of its subsidiary KazAgroFinance (KAF) shares to the Agrarian Credit Corporation (ACC). KAF, will continue its core activities of providing leasing for agricultural machinery and equipment as a subsidiary of ACC. This follows from a series of restructurings of other state-owned corporations in 2021 that saw Baiterek absorb KazAgro Holdings and three of its subsidiaries. The reorganisation will provide a "one stop shop" to agricultural producers for loans through the large branch network of the ACC. Conditions for financing agribusiness are otherwise unchanged.

Digitalisation of agriculture

Efforts began in October 2022 to digitise records of agricultural lands, covering 205.4 million hectares, or 75% of the republic's total territory. A digital agricultural map is expected to be completed by the end of 2024. Work is also underway to create the "Unified State Real Estate Cadastre" information system.

Trade policy developments in 2022-23

The National Project sets the objective to double food exports and raise the share of processed food in agro-food exports to 70%. Some of the new measures include developing a network of trade and logistics infrastructure, wholesale distribution centres, eliminating trade barriers, and harmonising veterinary and phytosanitary requirements. These measures will be implemented through negotiations with potential importers, foreign partners, as well as participation in the work of international organisations (WTO, OIE, IPPC, Codex Alimentarius Commission, FiBL and IFOAM).

On 24-25 July 2022, a Protocol on sanitary and technical requirements for the import of Kazakh beef and mutton into Saudi Arabia was signed. The signed protocol opens up opportunities for Kazakhstan beef and mutton producers to expand their market and further enhance co-operation in the agricultural sector.

In January 2023 Kazakhstan introduced a three-month ban on onion exports. This was associated with an increase in demand for domestic vegetables from third countries. In accordance with the Order, territorial inspectors have suspended the issuance of phytosanitary certificates for exports. As of 31 December 2022, the Ministry of Agriculture introduced new regulations for the export of live animals. The regulations introduce quota limits of 60 000 bulls and 120 000 lambs.

Trade policy responses to Russia's war of aggression in Ukraine

Kazakhstan did not introduce any policies specifically in response to the war in Ukraine. However, in May 2022, following the outbreak of the war and resulting volatility in global agricultural markets, the Ministry of Agriculture issued the "On some issues of exporting white sugar and raw cane sugar" to prevent the possibility of mass sugar export. This comes in response to a decline in sugar production volumes in the Eurasian Economic Union countries. The order imposes a temporary ban on the export of white sugar and raw cane sugar for a period of six months. Similarly, an export quota of 550 000 tonnes for wheat was introduced from April to September 2022.

Contextual information

Kazakhstan has the ninth largest land area in the world and is one of the least densely populated countries. It has the second-highest per-capita availability of arable land in the world. Kazakhstan is also an important exporter of fossil fuels. The country is an upper middle-income economy and the richest country in Central Asia, but its economy remains highly dependent on oil and commodity markets. Its high share of trade in GDP (25%) highlights the strong focus on international markets.

Although the contribution of agriculture to the economy has declined sharply since the early 1990s, agriculture remains an important economic sector, contributing to 5% of GDP and 15% of national employment. Over 75% (or 214 million hectares) of the country's territory is suitable for agricultural production, but only about half of that is currently under agricultural production. Kazakhstan is one of the top ten grain exporters in the world, exporting to over 70 countries. The country's major crops are wheat, barley, cotton and rice, with wheat exports a major source of foreign currency. Livestock products, including dairy, leather, meat and wool also comprise an important share of agricultural output.

The farm structure is dualistic: with large-scale and often highly vertically integrated operations dominating the production of the sector, while rural and subsistence-farming households account for the majority of farms. Kazakhstan's agricultural sector is particularly vulnerable to the effects of climate change, as increasingly frequent hot weather and severe droughts reduce water availability.

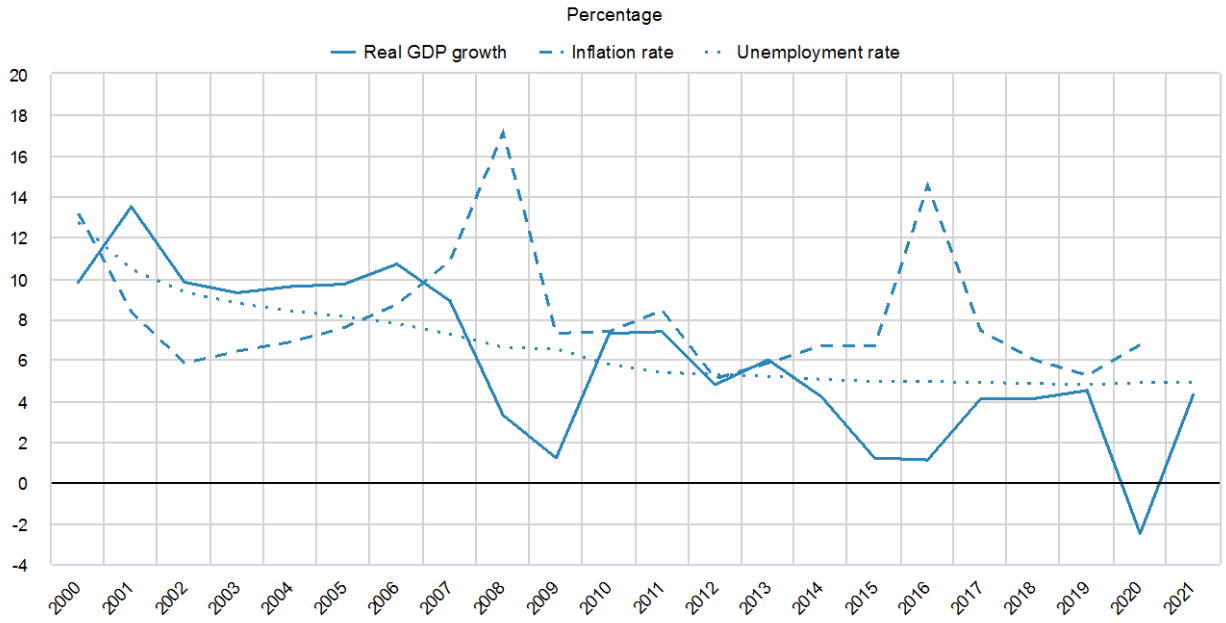
Table 18.3. Kazakhstan: Contextual indicators

	Kazakhstan		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	115	545	0.3%	0.4%
Population (million)	15	19	0.4%	0.4%
Land area (thousand km²)	2 700	2 700	3.3%	3.3%
Agricultural area (AA) (thousand ha)	215 393	214 003	7.2%	7.3%
			All countries[1]	
Population density (inhabitants/km²)	6	7	52	64
GDP per capita (USD in PPPs)	7 725	28 685	9 350	23 401
Trade as % of GDP	37.4	24.9	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	8.1	5.0	2.9	3.9
Agriculture share in employment (%)	36.2	15.0	-	-
Agro-food exports (% of total exports)	2.0	7.0	6.2	7.9
Agro-food imports (% of total imports)	0.7	10.4	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	56	58	-	-
Livestock in total agricultural production (%)	44	42	-	-
Share of arable land in AA (%)	14	14	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

Kazakhstan's GDP grew by 4.3% in 2021 coming out of the COVID-19 pandemic. The pandemic hit the economy more than the crises in 2008 and 2015-16. The recovery in 2021 was also more muted than that following the 2008 crisis, but in line with that of 2015-16. Economic data is not yet available to describe the Kazakh economy following the outbreak of war in Ukraine.

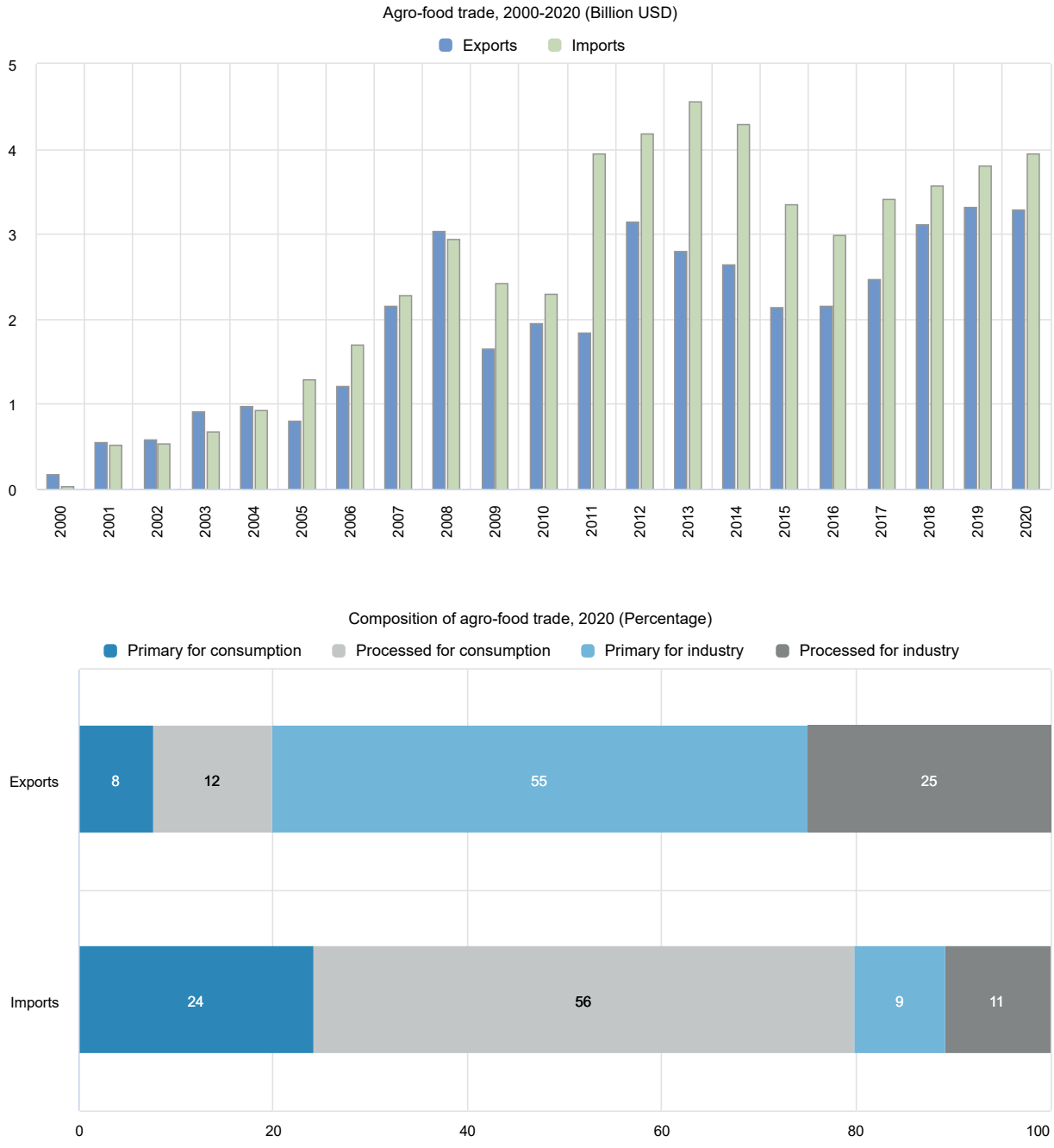
Figure 18.5. Kazakhstan: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Kazakhstan has been a net agro-food importer since the mid-2000s, yet the country remains one of the world's largest wheat exporters. More than 60% of agro-food exports are in primary commodities, the vast majority of which goes to processing by industry. More than 60% of agro-food imports are processed commodities, the bulk of which are for final consumption.

Figure 18.6. Kazakhstan: Agro-food trade

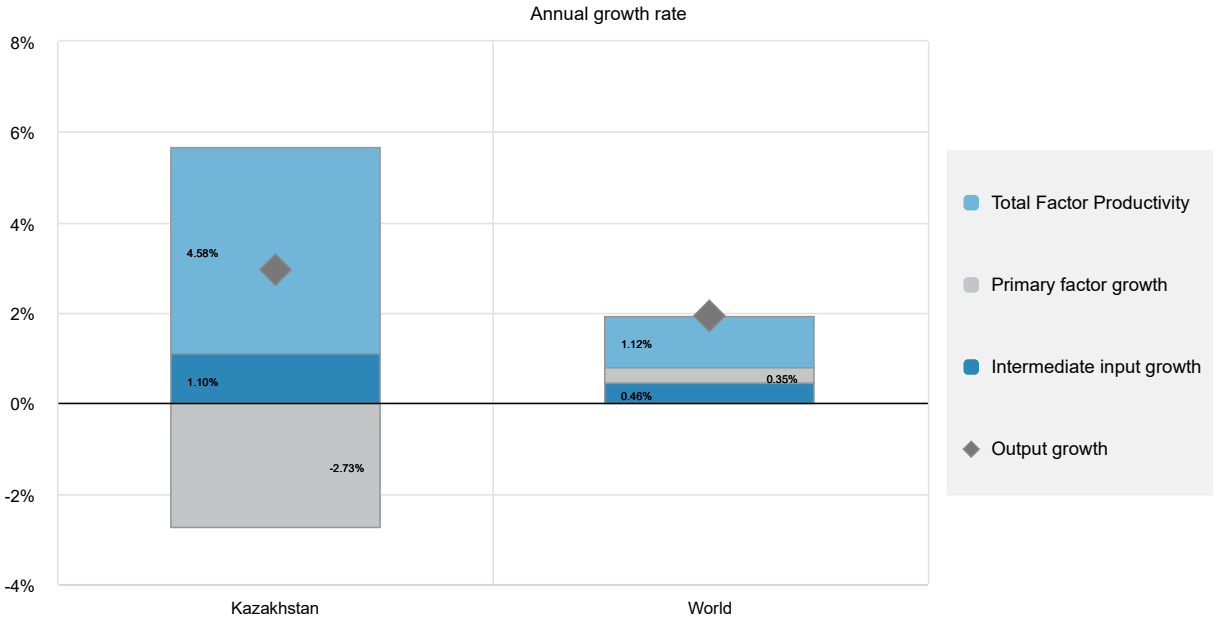


Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Agricultural output grew very rapidly in Kazakhstan in the decade 2011-20, at an annual average rate of 2.9%. Intermediary inputs grew at only 1.1% and agricultural labour force fell with labour moving out of agriculture to other sectors. The strong output growth was only possible because of high productivity gains of 4.58% per year, well above the world average.

The persistent negative average nutrient balances suggest that soil fertility is being eroded which will have a negative impact on yields and output. Studies indicate that there is a high degree of land degradation in Kazakhstan and that soils are very poor in nitrogen and phosphorus, particularly in the rangelands (Shpedt and Aksenova, 2021[3]; Hu, Han and Zhang, 2020[4]). Agriculture's share of energy use and agriculture's share of GHG emissions have both declined and appear to be converging with OECD averages. The share of agriculture in abstracted water has increased slightly, and remains much higher than the OECD average.

Figure 18.7. Kazakhstan: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 18.4. Kazakhstan: Productivity and environmental indicators

	Kazakhstan		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	1.8%	4.6%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	-14.8	-13.9	32.2	30.4
Phosphorus balance, kg/ha	-2.7	-2.3	3.3	3.0
Agriculture share of total energy use (%)	4.0	2.1	1.7	2.0
Agriculture share of GHG emissions (%)	12.1	11.9	8.6	10.5
Share of irrigated land in AA (%)	0.9	0.7	-	-
Share of agriculture in water abstractions (%)	66.7	67.2	46.6	49.7
Water stress indicator			8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Note

[1] The Damu Entrepreneurship Development fund took over the provision of credit guarantees from the Fund for Financial Support to Agriculture in 2021.

19 Korea

Support to agriculture

Producer support for agriculture (Producer Support Estimate, PSE) in Korea amounted to 46% in 2020-22, down from 53% in 2000-02, but still much higher than the OECD average. Market Price Support (MPS) is the dominant form of producer support, representing 87% of support to farmers in 2020-22 and covering key imported commodities, from rice and soybeans to animal products and selected vegetables. These market-distorting transfers result from the maintenance of Tariff Rate Quotas (TRQs) with high out-of-quota tariffs. On average, domestic producer prices are 70% higher than comparable world prices.

Most remaining producer support was in the form of direct payment programmes, agricultural insurance schemes and subsidies based on variable input use. These payments accounted for 13% of overall producer support in 2020-22.

General services expenditures (General Service Support Estimate, GSSE) grew in absolute terms but declined in relative terms to 13% of the Total Support Estimate (TSE) in 2020-22. The majority (53%) of GSSE went to developing and maintaining infrastructure, particularly irrigation facilities, with most of the remainder going to agricultural knowledge generation (20%), public stockholding (10%), and inspection and control (10%). TSE declined from 7.6% of Gross Domestic Product (GDP) in 1986-88 to 1.6% in 2020-22, still higher than the OECD average, and dominated by producer support.

Recent policy changes

The Ministry of Agriculture, Food and Rural Affairs (MAFRA) was reorganised in December 2022 to respond to the objectives set by the new government, including sustainable growth, carbon neutrality, food security, a safety net for farms, improved rural spaces, and enhanced animal welfare. As part of the reorganisation, MAFRA established the Agricultural Innovation Policy Office and set up the Animal Welfare and Environment Policy Directorate to promote innovation, animal welfare, and carbon neutrality.

The laws and regulations for the direct payment system were amended in October 2022 to relax the requirement related to farming, allowing some additional farm households to receive direct payments. A new direct payment system for strategic crops was introduced in January 2023. It aims to increase the production of major grain crops and enhance food security by providing additional direct payments to farms that grow some crops, such as soybeans and coarse fodders.

The Act on Rural Support for Restructuring and Regeneration was enacted in March 2023 to institutionalise rural-area planning. The Act introduced the concept of specialised rural districts that facilitate the systematic and efficient use of rural spaces. The central government must set out a long-term vision for the development of rural spaces every ten years and review it every five years. Local governments use this to formulate their basic plans and comprehensive implementation plans.

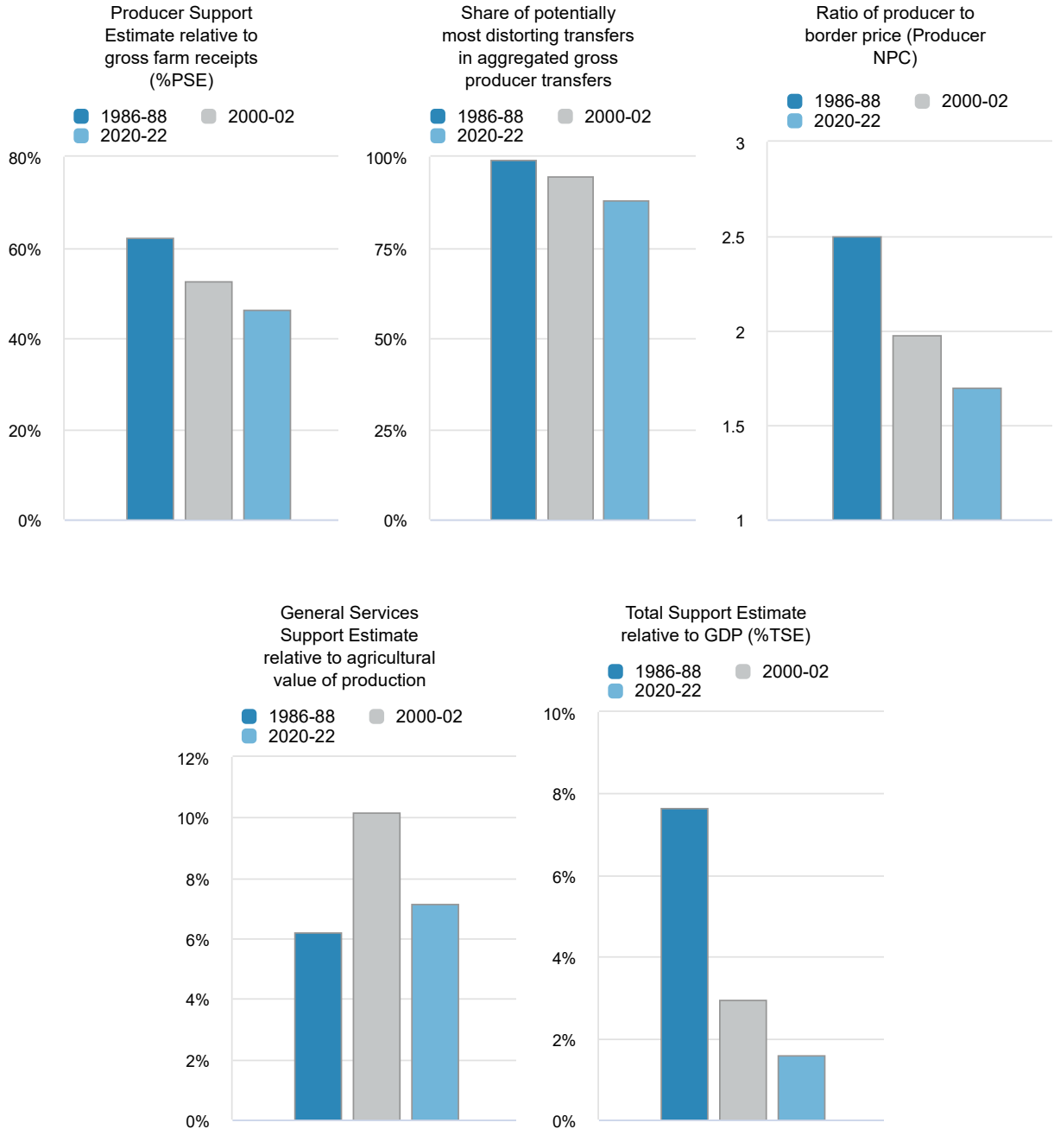
In January 2023, MAFRA announced measures to improve the distribution of agricultural products. These expand the scale of distribution, facilitate the digitalisation of trade in agricultural products, and create a

competitive distribution system. The government plans to establish 100 smart Agricultural-product Processing Centres (APCs) in major production areas by 2027. An online wholesale market for agricultural products will be launched in 2023, starting with vegetables and fruits.

Assessment and recommendations

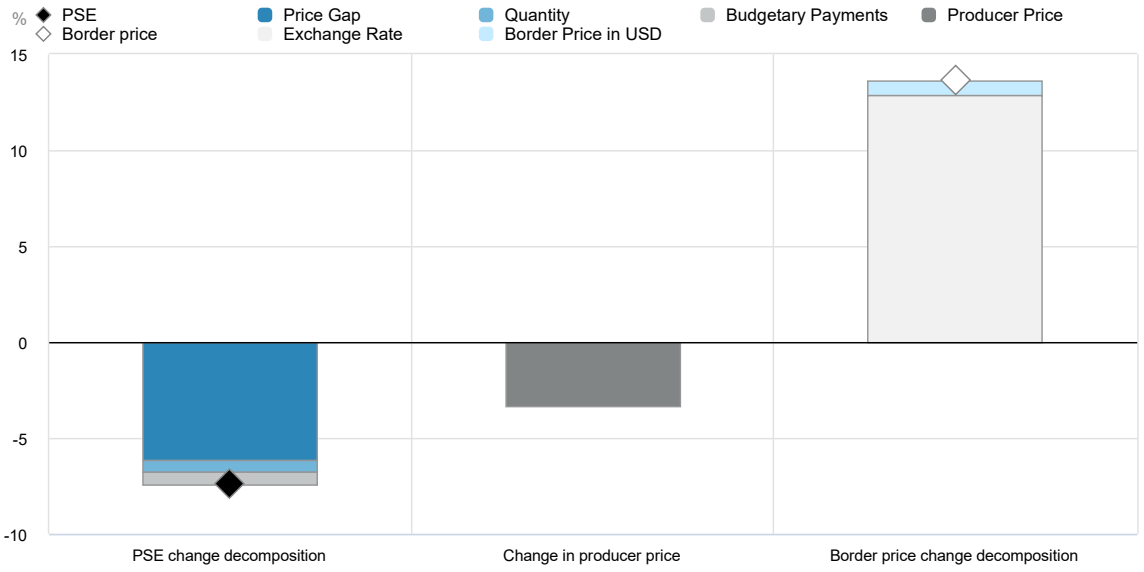
- Climate-change adaptation measures, as defined in the national adaptation plan, focus on information provision and research and development (R&D). Investment and support for strengthening the capacity of the private sector should be expanded. Further targeted efforts, such as introducing incentives for farmers to adopt more-resilient production systems, are also needed to support farmers in their climate adaptation and mitigation activities. Moreover, investments should focus on infrastructure for sustainable water use and diversification of varieties.
- Producer support in Korea is still much higher than the OECD average and MPS accounts for most producer support. The use of potentially distorting support such as MPS should be reduced through policy reforms. More targeted policies can help achieve MAFRA objectives such as stabilising farm-household income, improving productivity in the long term, and addressing ageing and decrease of the farm-household population.
- MAFRA was recently reorganised to reflect growing societal needs such as sustainable growth, carbon neutrality, improved animal welfare, and food security. An office for agriculture innovation was created to progress towards these goals. This shows the new government's shift in emphasis of agricultural policy towards innovation and sustainability. The related reallocation of budget and manpower will help MAFRA strengthen its functions to enhance agricultural sustainability, though progressing further will require targeted and tailored measures so that sustainable productivity growth remains and to reform the current system of support.
- The COVID-19 pandemic and Russia's war of aggression in Ukraine increased the need for a stable agricultural supply chain in Korea. Although Korea's Medium and Long-term Food Security Plan aims to expand the domestic base for production and consumption, and to secure a more stable overseas supply chain, this plan should be implemented in a market-oriented manner so as not to cause disruption to international agricultural markets.
- The direct payment system in Korea has been revised several times to limit market distortions. Further reforms should align with government priorities, such as strengthening food security and achieving carbon neutrality. For instance, payments could be directed towards low-emitting production methods.
- Systematic management of rural areas was institutionalised through the Act on Rural Support for Restructuring and Regeneration. Co-operation between the central and local governments is an essential element. Successful co-ordination between governments requires incentives for local governments and the private sector to align local rural area planning with the national long-term vision for rural development. This could include help for building local decision-making capacity and fund projects with national and local development benefits.

Figure 19.1. Korea: Development of support to agriculture



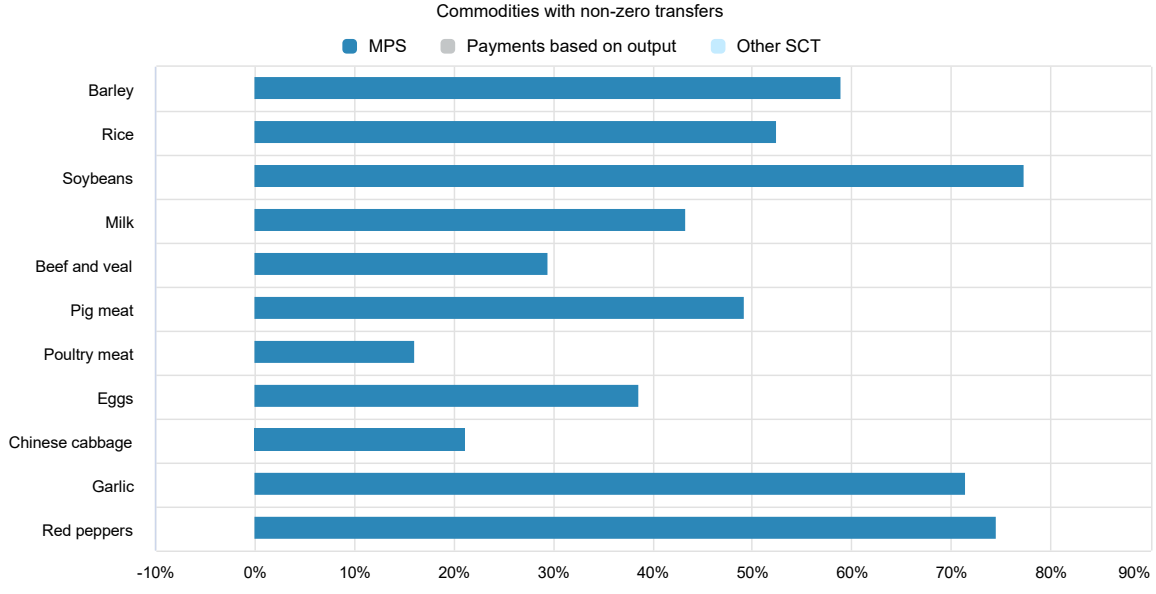
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 19.2. Korea: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 19.3. Korea: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 19.1. Korea: Estimates of support to agriculture

Million USD

	1986-88	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**16 985**	**26 360**	**47 514**	**42 515**	**51 743**	**48 284**
***of which:** share of MPS commodities (%)*	74.33	63.27	59.24	60.34	61.06	56.33
Total value of consumption (at farm gate)	**17 247**	**33 199**	**64 267**	**58 570**	**67 921**	**66 311**
Producer Support Estimate (PSE)	**10 682**	**14 466**	**23 498**	**21 865**	**26 710**	**21 920**
Support based on commodity output	10 562	13 505	20 427	18 732	23 401	19 148
Market Price Support[1]	10 562	13 505	20 427	18 732	23 401	19 148
Positive Market Price Support	10 562	13 505	20 427	18 732	23 401	19 148
Negative Market Price Support	0	0	0	0	0	0
Payments based on output	0	0	0	0	0	0
Payments based on input use	90	470	599	652	651	493
Based on variable input use	29	207	257	301	312	159
with input constraints	4	34	46	49	45	44
Based on fixed capital formation	57	246	148	144	149	150
with input constraints	0	18	40	41	44	34
Based on on-farm services	4	17	194	207	191	184
with input constraints	0	0	0	0	0	0
Payments based on current A/An/R/I, production required	29	490	480	481	463	496
Based on Receipts / Income	29	292	78	78	81	74
Based on Area planted / Animal numbers	0	198	402	403	382	421
with input constraints	0	160	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	0	1 942	1 999	2 045	1 784
With variable payment rates	0	0	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
With fixed payment rates	0	0	1 942	1 999	2 045	1 784
with commodity exceptions	0	0	0	0	0	0
Payments based on non-commodity criteria	0	1	0	0	0	0
Based on long-term resource retirement	0	1	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0	0
Miscellaneous payments	0	0	50	0	150	0
Percentage PSE (%)	**62.26**	**52.66**	**46.32**	**47.90**	**48.52**	**42.93**
Producer NPC (coeff.)	**2.50**	**1.97**	**1.70**	**1.73**	**1.75**	**1.64**
Producer NAC (coeff.)	**2.65**	**2.11**	**1.86**	**1.92**	**1.94**	**1.75**
General Services Support Estimate (GSSE)	**1 066**	**2 676**	**3 392**	**3 247**	**3 555**	**3 374**
Agricultural knowledge and innovation system	67	243	876	854	903	870
Inspection and control	26	126	341	349	357	317
Development and maintenance of infrastructure	467	1 811	1 799	1 704	1 925	1 769
Marketing and promotion	0	26	38	38	42	35
Cost of public stockholding	505	471	338	302	330	383
Miscellaneous	0	0	0	0	0	0
Percentage GSSE (% of TSE)	**8.92**	**15.62**	**12.63**	**12.92**	**11.73**	**13.31**
Consumer Support Estimate (CSE)	**-10 147**	**-15 375**	**-25 781**	**-23 961**	**-28 609**	**-24 775**
Transfers to producers from consumers	-10 015	-12 814	-19 220	-17 180	-21 776	-18 704
Other transfers from consumers	-205	-2 654	-6 602	-6 811	-6 874	-6 122
Transfers to consumers from taxpayers	73	93	41	30	41	51
Excess feed cost	0	0	0	0	0	0
Percentage CSE (%)	**-58.95**	**-46.08**	**-40.03**	**-40.93**	**-42.15**	**-37.39**
Consumer NPC (coeff.)	**2.45**	**1.86**	**1.67**	**1.69**	**1.73**	**1.60**
Consumer NAC (coeff.)	**2.44**	**1.85**	**1.67**	**1.69**	**1.73**	**1.60**
Total Support Estimate (TSE)	**11 821**	**17 235**	**26 931**	**25 142**	**30 306**	**25 345**
Transfers from consumers	10 220	15 468	25 822	23 991	28 649	24 826
Transfers from taxpayers	1 805	4 421	7 711	7 962	8 530	6 640
Budget revenues	-205	-2 654	-6 602	-6 811	-6 874	-6 122
Percentage TSE (% of GDP)	**7.64**	**2.93**	**1.57**	**1.53**	**1.67**	**1.51**
Total Budgetary Support Estimate (TBSE)	**1 258**	**3 731**	**6 504**	**6 410**	**6 905**	**6 197**
Percentage TBSE (% of GDP)	**0.81**	**0.64**	**0.38**	**0.39**	**0.38**	**0.37**
GDP deflator (1986-88=100)	**100**	**209**	**303**	**296**	**304**	**310**
Exchange rate (national currency per USD)	**812.03**	**1 224.03**	**1 205.33**	**1 180.13**	**1 144.46**	**1 291.41**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Korea are: barley, garlic, red pepper, Chinese cabbage, rice, soybean, milk, beef and veal, pig meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en.

Description of policy developments

Overview of policy trends

Korea's agricultural sector has undergone rapid structural change, following the country's rapid industrialisation and economic growth. After the Korean war, it was vital for Korean agriculture to be able to feed the population. From the 1950s to the 1970s, the focus was on increasing crop productivity and achieving self-sufficiency in staple crops, particularly rice. During the process of industrialisation, the agricultural sector also provided cheap and high-quality labour to the manufacturing sector and laid a foundation for stable economic growth.

Throughout the late 1980s and 1990s, the main policy objectives shifted to restructuring the agricultural sector and improving its competitiveness. The government adopted more market-oriented policy frameworks, and this period was marked by the progressive liberalisation of agriculture and food markets via free trade agreements. In the late 1990s, policy objectives further diversified into areas such as enhancing productivity, improving long-term agricultural sustainability and increasing provision of public goods.

During the late 1990s and 2000s, non-tariff measures on agricultural products were gradually converted into tariffs and tariff rate quotas (TRQs), with the exception of rice as agreed in the Uruguay Round Agreement on Agriculture. In January 2015, the non-tariff measure on rice was also replaced by a TRQ.

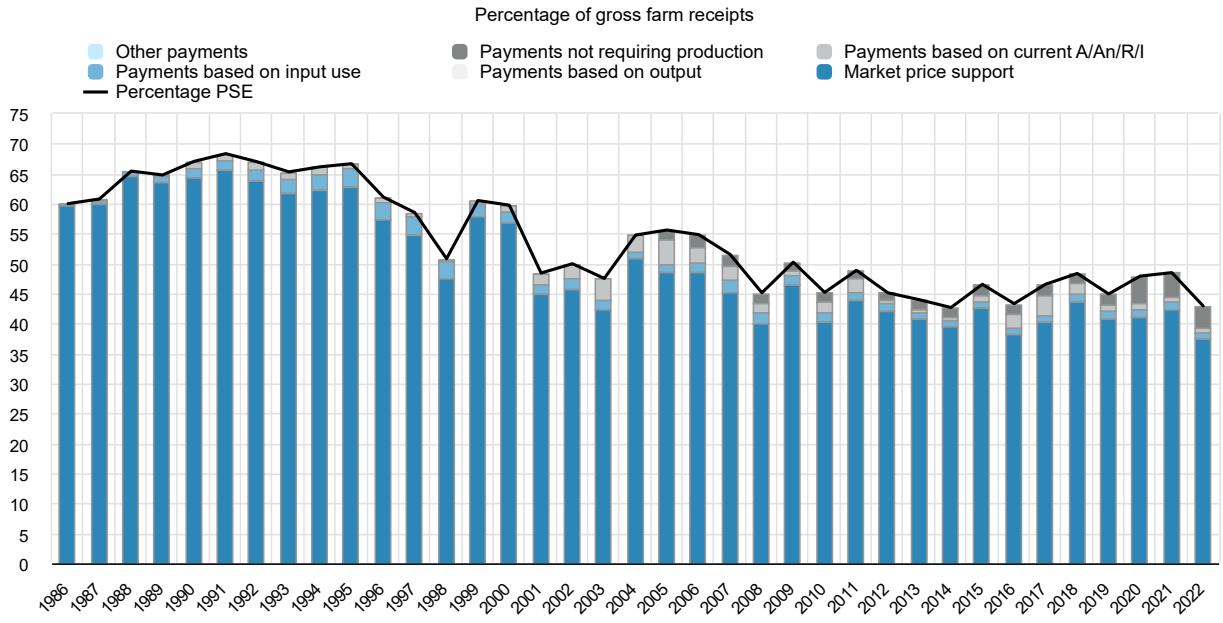
Slowed economic growth and demographic changes moved objectives in the 2000s further from growth to broader public policy goals. These goals included revitalising the rural economy, expanding export markets, improving the environmental performance of agriculture and promoting the food industry. A holistic food policy began to take shape that took into account production, consumption, safety, nutrition, welfare and the environment, as well as food availability for low-income groups. This entailed a shift from central government leadership to horizontal governance for participation and collaboration with a larger role for local governments and the public.

Table 19.2. Korea: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to 1970s	Relatively closed economy Policy focus on productivity and self-sufficiency	Price support and government procurement programmes for crops Subsidies for inputs (including fertilisers and seeds) Land reclamation, land consolidation and water system projects to rearrange the production base R&D and extension projects to enhance productivity (the Rural Development Administration established in 1962) Development of new rice varieties such as Tongil
1980-1990	Exposure of domestic producers to open market Structural adjustment programmes	Non-tariff measures replaced by tariffs and tariff rate quotas (except for rice) Rural restructuring plan (announced in 1991) Government procurement programme for crops Direct payment programmes (early retirement payments from 1997) Agricultural insurance scheme (from 1997) Investment in the renovation of the production base and modernization of distribution facilities
2000-present	Responding to changing market demands Diversified policy objectives	Tariffs and tariff rate quotas Tariff concession through Free Trade Agreements Public stockholding scheme for major staple crops Direct payment programme for rice (2005-2019) Direct payment scheme reformed (from 2020) Environment-friendly agricultural programmes

Overall support to farmers as a share of gross farm receipts considerably declined in the 1990s and early 2000s but has been relatively stable for the last ten years, fluctuating around 45%. Korea's PSE still remains much higher than the OECD average. Market price support is a dominant component of total support to agriculture. The share of the MPS in total support showed only a moderate decrease during the last three decades (Figure 19.4).

Figure 19.4. Korea: Level and PSE composition by support categories, 1986 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

The Framework Act on Agriculture, Rural Community and Food Industry, enacted in 2007, establishes Korea's agricultural policy framework. It requires the government to establish a national policy plan every five years with the purpose of providing direction for national policies to pursue the sustainable development of agriculture and rural communities, to ensure the stable supply of safe agricultural products and quality food, and to enhance the level of income and quality of life of farmers. The 3rd National Plan to Develop Agriculture, Rural Communities and the Food Industry (2023-27) was established in 2023, reflecting the national policy agenda and the agricultural policy goals of the government newly formed in 2022. This recent plan includes five policy objectives: 1) securing food sovereignty; 2) fostering the agro-food industry as a new growth engine; 3) strengthening the safety net for farm households; 4) enhancing food safety in the supply chain; and 5) creating a comfortable and attractive rural space.

The public stockholding scheme for rice, known as the Public Storage System for Emergencies, was established in 2005. One of its objectives is to guarantee food security in times of natural disaster or temporary shortage driven by the mismatch between supply and demand. Under the scheme, the government purchases rice from farmers at market price during the harvest season and releases the

stockpiled rice at market price when necessary. The government has a similar purchasing programme for soybeans.

The new Direct Payment System, in force since May 2020, combines and replaces the previous agricultural direct payments for landscape conservation, environment-friendly agriculture, livestock products, paddy field farming (in the form of selective direct payments), and the income compensation scheme for rice. The system aims to stabilise the incomes of small to medium-sized farms and to improve farm compliance with regulatory obligations in order to promote public good in the agriculture and rural communities. In total, farmers must comply with 17 regulatory obligations covering environmental protection, food safety, and farm management standards such as standards for pesticide application. There is also a direct payment for the transfer of the farm management rights to enable retired farmers to sell or lease their farmlands while maintaining their incomes, and to create more opportunities for young farmers.

The Korean Government announced the Enhanced Update of its First Nationally Determined Contribution for achieving the Net-zero across all the sectors in November 2021. This requires GHG emissions in agriculture and fisheries to decline 27.1% relative to 2018 levels by 2030 and 37.7% by 2050. Accordingly, the 2050 Agri-Food Carbon Neutrality Strategy was revealed in December 2021. This sectoral strategy contained a detailed implementation plan for carbon neutrality including GHG emission reduction for food production, distribution, consumption and energy conversion. Moreover, as a member of the Global Methane Pledge, Korea makes efforts to reduce methane emissions in the agricultural sector by 20.6%.

Agricultural disaster insurance, revenue insurance and work safety insurance are provided by private companies with government subsidies covering 50% of the insurance premiums. The agricultural disaster insurance scheme, which covers 67 crops and 16 livestock products, protects farmers against losses in crop yield and livestock. Agricultural revenue insurance covers seven crops: grapes (coverage began in 2015), onions (2015), soybeans (2015), garlic (2016), potatoes (2017) sweet potatoes (2017), and cabbage (2018). Work safety insurance covers injuries, illnesses and accidents, or deaths of farm workers that occur during on-farm work and contributes to stabilising farm income.

Rapid economic growth has led to several challenges in rural areas. It has exacerbated the urban-rural gap in terms of living conditions and community services, resulting in rural out-migration. The Spatial Plan for Rural Communities aims to address this gap via improved land use systems, restructured rural areas, and revitalisation of the function of rural villages. MAFRA also has a role to play to help improve rural residential areas, relocate locally unwanted facilities and provide necessary social services. The Act on Support for Rural Restructuring and Regeneration was passed by the National Assembly in February 2023 and laid the legal foundation for the systematic management of rural spaces (see below for more details).

Tariffs and tariff-rate quotas (TRQs) continue to be the main agriculture trade policy measures. Trade restrictions on all agricultural products were converted to tariffs and TRQs, with non-tariff measures on rice, which had been an exception in the Uruguay Round, being replaced by a tariff scheme since 1 January 2015. A total of 63 agricultural products are subject to TRQs, including rice, corn and soybeans. In-quota tariff rates range from 0% to 50% with out-of-quota rates between 9% and 887%. Since the tariffication of rice trade, a TRQ volume of rice (408 700 tonnes, about 10.7% of annual rice consumption) has been maintained at a 5% tariff rate (the out-of-quota tariff is 513%).

Korea is engaged in 22 bilateral and regional free trade agreements (FTAs). Some of these agreements include significant tariff reductions for livestock and fruit products, but rice is excluded from tariff concessions. Import tariffs on beef from the United States, Australia and Canada are being progressively phased out over a 15-year period from the entry into force of the respective agreements (March 2012 for the United States, December 2014 for Australia, and January 2015 for Canada). Tariffs on pork from the European Union, the United States and Chile are being phased out over 10 years, and on pig meat from Canada over 13 years. Tariffs on chicken meat from the United States and the European Union are being abolished in phases over a period of 10 years to 13 years after the respective FTAs came into effect (2012 for the United States and 2011 for the European Union).

Climate change adaptation policies in agriculture

In accordance with the Framework Act on Low Carbon and Green Growth enacted in 2010, the Korean central and local governments establish the National Climate Change Adaptation Plan every five years to adapt to climate change and cope with its public-health problems and natural disasters.

The Plan includes: (1) improving the capability to observe, forecast, and provide information on climate change including weather disasters; (2) assessing the impact and vulnerability of climate change by sector and region; (3) implementing measures for adaptation by sector and region; and (4) preventing disasters for vulnerable people and regions influenced by climate change. In addition, the framework act mandates a detailed plan for practical implementation of the National Climate Change Adaptation Plan by relevant ministries.

The 3rd National Climate Change Adaptation Plan was established in December 2020, covering 2021-25. This plan was formulated with the participation of the government, experts, and representatives from the regions, industry and civil society. A list of 84 national climate-change risks in six major areas, including the agricultural sector, was compiled using scientific evidence, and customised implementation tasks for each risk were laid out. It also included inspection and evaluation systems by the public evaluation group (Korean Government, 2020[1]).

MAFRA carries out several tasks to help the sector adapt to climate change and maintain a sustainable agricultural environment and stable food production. These include:

- **Providing information to improve climate resilience**. The government and its research institutes develop technologies for sectoral productivity evaluation and prediction, and improve the early-warning system of agrometeorological disasters. They also strengthen forecast and evaluation technologies to improve agricultural productivity, such as projecting changes in the area suitable for the cultivation of major crops.
- **Strengthening the production base in the face of climate change**. Government institutes develop and distribute production facilities and technologies, such as improved energy efficiency. They also develop damage-reduction technologies and climate-adaptive crop varieties in response to extreme weather, and strengthen disaster management of agricultural facilities and infrastructure by developing and distributing standards for disaster-resistant facility structures.
- **Preserving a safe agricultural environment**. The government is strengthening pest management, including the control of invasive species, and improving agricultural environment management by assessing impacts and vulnerabilities, including soil erosion and quality of agricultural water.

Within the framework of national climate-change adaptation measures, relevant ministries and local governments established detailed implementation plans in 2021 and selected performance indicators for each task to secure implementation. MAFRA conducts an annual survey and research to assess the impacts of and vulnerability to climate change in agriculture and rural areas. The results are evaluated and disclosed every five years.

Domestic policy developments in 2022-23

Reorganisation of the Ministry of Agriculture, Food and Rural Affairs (MAFRA)

MAFRA reorganised itself in December 2022 to prepare for future demands in the agricultural sector. This responds to the objectives declared by the new government: promoting sustainable growth in agriculture, strengthening food security and building a safety net for farms, improving rural spaces, achieving carbon neutrality and enhancing animal welfare.

Within MAFRA, the Agricultural Innovation Policy Office was established and charged with promoting new industries and innovations related to food, such as expanding smart farming, stabilising farm household

income, enhancing the provision of public goods, fostering generational renewal and developing new technologies such as alternative meat. The Food Policy Office handles the overall production and distribution of agricultural products and is responsible for ensuring a stable food supply. To actively respond to changes in the policy environment such as increased public interest in animal welfare and the growth of companion animal industry, a new Animal Welfare and Environment Policy Directorate was set up. It is in charge of animal welfare and health such as enforcing the Animal Protection Act and fostering related industries including veterinary service and pet food. The temporary task force team in charge of climate change was converted into a formal organisation, the Rural Carbon Neutrality Policy Division, to promote carbon neutrality in agriculture and rural areas and respond to climate change.

Improving and supplementing the direct payment system

In line with the goals of the direct payment system to stabilise farm household income and promote the public values of agriculture, MAFRA has operated a public service direct payment system since 2020 and revamped the system to strengthen its function.

In October 2022, the laws and regulations relevant for the direct payment system were amended. In particular, conditions related to the requirement of farming have been relaxed, thereby expanding the targeted beneficiary group such that farm households that have engaged in farming but not received direct payments can now receive public service direct payments. In 2023, an additional plan was announced to gradually expand the direct payment system to strengthen food security and realise carbon neutrality in the agricultural sector. This plan includes expanding the production of strategic crops to improve self-sufficiency and facilitating activities to cut carbon emissions in response to climate change. Accordingly, a direct payment system for strategic crops has been introduced to increase the production of major grain crops with low self-sufficiency rates and support the diversification of the rice-centred production structure. The operation management system will be continuously improved to prevent illegal receipt of payment by strengthening on-site inspections and supplementing institutional loopholes.

Medium and Long-term Food Security Plan

In December 2022, MAFRA announced the Medium and Long-term Food Security Plan to prepare for food security-related risks, such as extreme weather events and international market shocks. It endeavours to stabilise the supply and demand of major crops in the event of such shocks. The main goal of this plan is to expand the domestic production and consumption base and secure a stable overseas supply chain of major import commodities such as wheat, soybean and corn, including in times of crisis.

In addition to using the direct payment system to encourage production of strategic crops, the Plan aims to expand integrated production areas for specific products, and systematically manage farmlands necessary for improving food self-sufficiency. It aims to strengthen a domestic consumption base in co-operation with food companies and support them in securing overseas grain distribution channels. In order to expand overseas grain distribution facilities owned by domestic companies, the government plans to promote a low-interest loan support project worth KRW 50 billion (USD 38.7 million) on an annual basis (Korean Government, 2022[2]).

Generational renewal, attracting young farmers and activating smart farming

The Agricultural Innovation and Management Stabilisation Measures were announced in October 2022 and are designed to achieve the goal of 30 000 young farmers by 2027. The measures include strengthened financial support for start-ups beginning from their earliest stages and significantly expand leasing of farmlands to young farmers. A new start-up complex for young farmers is created to facilitate the growth of agricultural start-ups. Gimje and Sangju were recently selected as candidates for the start-up complex. Loans are provided to alleviate the financial burden of young farmers, and housing support is expanded to help young farmers settle in rural communities. The government aims to convert 30% of

horticultural facilities and livestock barns into smart facilities, create large-scale smart farm complexes using reclaimed and idle land, and strengthen private-sector-led governance. It supports the distribution of environmental control and data management equipment centred on strawberry, melon and flower greenhouses, and prepares guidelines for each item for smart greenhouse design. It facilitates the development of self-driving agricultural machines and agricultural drones and robots.

The Act on Support for Rural Restructuring and Regeneration

Rural area planning has been institutionalised via the "Act on Support for Rural Restructuring and Regeneration", enacted in March 2023. The act introduces the concept of rural specialised districts that facilitate systematic and efficient use of rural spaces and enable the zoning of rural areas. Seven types of rural specialised districts can be designated according to need, such as for rural industry, livestock, rural convergence industry, renewable energy, agricultural landscape, agricultural heritage or rural village protection. The central government provides direction for rural spatial planning but local governments take the lead in a bottom-up approach that takes into account regional characteristics and conditions. The central government must set out a long-term vision for the development of rural spaces every ten years and review it every five years. Based on this, local governments formulate their basic plans and comprehensive implementation plans suitable for regional characteristics. A supporting system helps with rural spatial planning through multi-level government policy councils that deliberate on rural space policies and designate organisations to support them.

Measures for advancing the distribution structure of agricultural products

In January 2023, MAFRA announced measures for improving the distribution of agricultural products that transform production areas into hubs for distribution. These measures further expand the scale of distribution, facilitate the digitalisation of trade in agricultural products and create a competitive distribution system.

Under these measures, the government aims to establish 100 smart Agricultural product Processing Centres (APCs) in the major production areas by 2027 and foster integrated production and distribution organisations for the dedicated operation of these centres. These APCs help ensure the production area provides a stable supply of the products that consumers want. A related electronic trading system is under development so that an online wholesale market for agricultural products can be launched by the end of 2023. Starting with vegetables and fruits, this system is gradually expanded to include other products, allowing wholesalers to trade agricultural commodities nationwide. The government supports the digitisation of wholesale market transactions which had previously been operated manually and improves related logistics systems. It also supports the training of experts such as online marketers specialising in agricultural products and establishes an online direct transaction support centre for activating direct transactions between producers and consumers.

Domestic policy responses to Russia's war of aggression in Ukraine

Financial and tax support was expanded to help with the increased cost of raw materials for industries and farmers. In March 2022, the interest rate on the policy fund for feed and food companies to finance their purchase of raw materials was lowered by 0.5%. In addition, through revised supplementary budgets in May 2022, the government provided special feed purchase funds of about KRW 10.9 billion (USD 8.4 million) for livestock farmers for a limited period and offered KRW 124 billion (USD 96.0 million) to cover part of the increase in fertiliser prices to ease the burden on farms. In addition, the budget to support the purchase of processed raw materials by food companies was increased by about KRW 37 billion (USD 28.7 million), and interest rates on that policy fund were lowered further.

Trade policy developments in 2022-23

A number of free trade agreements (FTAs) have recently entered into force, including the Regional Comprehensive Economic Partnership (February 2022) and FTAs with Israel (December 2022), Cambodia (December 2022) and Indonesia (January 2023). The Korea-Philippines FTA was concluded in October 2021 and domestic ratification procedures are underway. In total, Korea currently has 22 FTAs with 59 countries, and is also negotiating FTAs with Ecuador and with the Gulf Co-operation Council as of March 2023. Korea has dealt with the existing FTAs and the ongoing FTA negotiations in the direction of protecting sensitive agricultural products including rice, guaranteeing sanitation and quarantine rights for public safety and expanding exports of its agricultural products.

Trade policy responses to Russia's war of aggression in Ukraine

In order to stabilise markets for agricultural products and raw materials, tariff quotas for unhulled barley, wheat hull and root vegetables for feed, which can replace wheat and corn for feed, were expanded. To alleviate upward pressure on prices, an in-quota tariff of 0% was applied to wheat and flour by the end of 2022, and edible oil (soybean oil, sunflower seed oil) and raw materials for inorganic fertiliser (urea, diammonium phosphate) by the end of 2023.

Contextual information

Korea's economy has been growing dramatically and GDP per capita has more than doubled over the last two decades. Korea is a high-income country with per-capita incomes at twice the average of the countries covered by this report. At 35% of the GDP (2021), trade is an important driver of the economy. In contrast, the share of agriculture's contribution to GDP fell from 4.3% to 2.0%, and its share of national employment declined from 10.6% to 5.3% during the period of 2000-2021. Although the proportion of agricultural commodities in total exports slightly increased, Korea still remains a large importer of agricultural products (Table 19.3).

Crop production accounted for 58% of the total value of agricultural production in 2021 down from 75% in 2000, due to dietary changes and the diversification of production towards livestock and high-value products (Table 19.3).

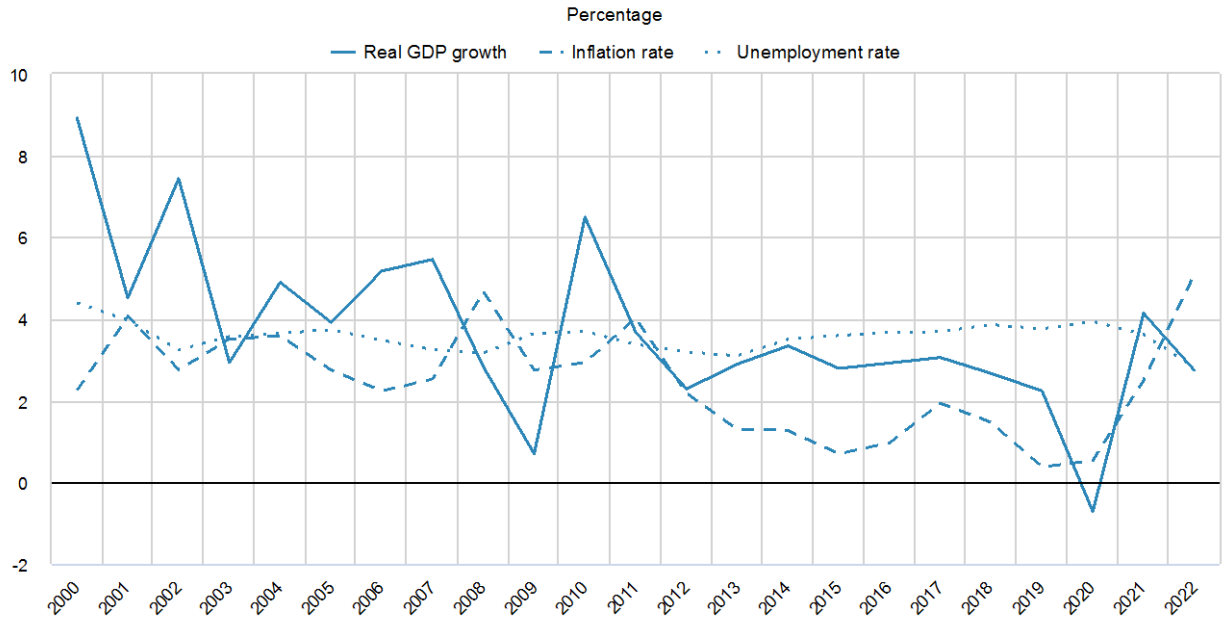
Table 19.3. Korea: Contextual indicators

	Korea		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	871	2 426	2.2%	2.0%
Population (million)	47	52	1.1%	1.0%
Land area (thousand km^2)	96	98	0.1%	0.1%
Agricultural area (AA) (thousand ha)	1 973	1 621	0.1%	0.1%
			All countries[1]	
Population density (inhabitants/km^2)	473	521	52	64
GDP per capita (USD in PPPs)	18 539	46 889	9 350	23 401
Trade as % of GDP	28.9	34.8	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	4.3	2.0	2.9	3.9
Agriculture share in employment (%)	10.6	5.3	-	-
Agro-food exports (% of total exports)	0.9	1.3	6.2	7.9
Agro-food imports (% of total imports)	5.2	5.7	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	75	58	-	-
Livestock in total agricultural production (%)	25	42	-	-
Share of arable land in AA (%)	87	83	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

After the economic downturn caused by the COVID-19 pandemic, Korea's economy recovered in 2021, but growth slightly slowed to 2.6% in 2022. The unemployment rate fell from 3.7% to 2.9%, but the inflation rate rose significantly from 2.5% to 5.1% (Figure 19.5). Sound health management and supportive policies helped Korea emerge swiftly from the pandemic. Even prior to the war in Ukraine, inflation had risen mainly because of soaring energy prices and pandemic-induced supply bottlenecks. The war in Ukraine pushed up inflation further (OECD, 2022[3]).

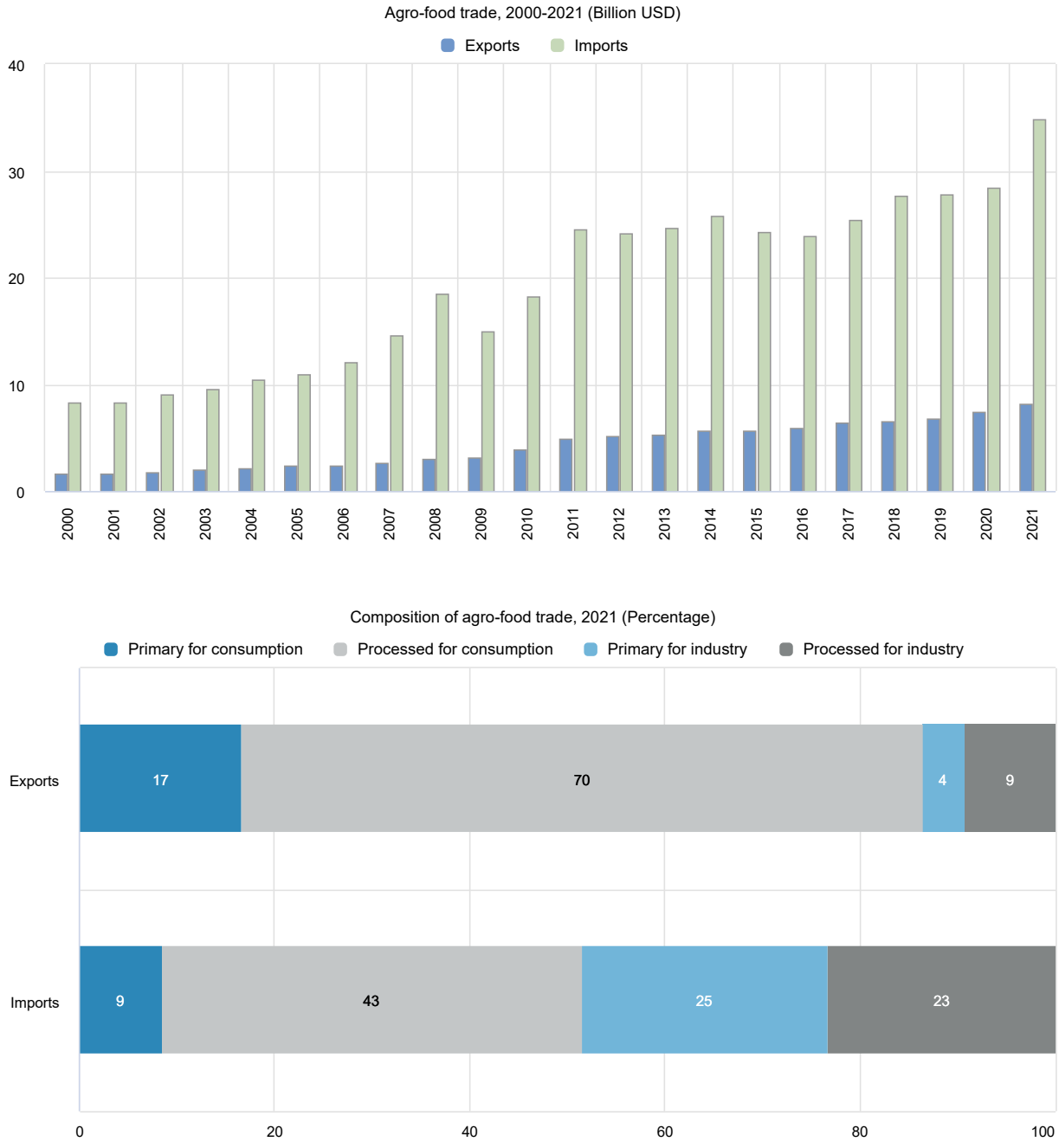
Figure 19.5. Korea: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Over the past 20 years, both agro-food imports and exports in Korea have shown a steady increase. However, the agro-food import value is more than three times bigger than the agro-food export value. In 2021, agro-food imports exceeded USD 30 billion for the first time. While over 87% of agro-food exports are products for final consumption, about 50% of agro-food imports are used for final consumption. Key imported agricultural commodities include maize, soybeans and wheat for animal feed (Figure 19.6).

Figure 19.6. Korea: Agro-food trade



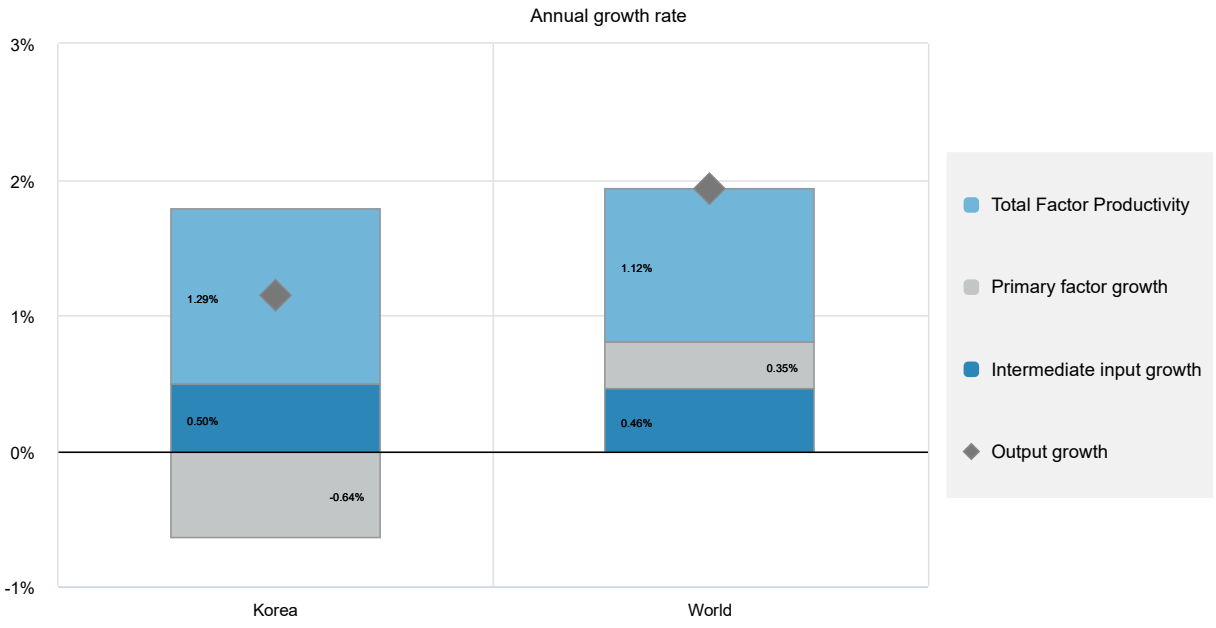
Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

At 1.3% per year, total factor productivity (TFP) growth in Korea was slightly higher than the global average over the period of 2011-20. As the declining use of primary factors was only partly offset by higher use of intermediary inputs, agricultural output grew more slowly over the last decade (Figure 19.7).

The average nitrogen and phosphorus surpluses remain well above OECD averages and have not changed significantly over the last two decades. The share of agriculture in water abstractions also remains

high compared to the OECD average, due to the high proportion of rice paddy fields in agricultural land areas, and water stress has been increasing and remains very high compared to other OECD countries. The annual GHG emissions from the agricultural sector accounted for 3% of total emissions, well below the OECD average of 10.5% (Table 19.4).

Figure 19.7. Korea: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 19.4. Korea: Productivity and environmental indicators

	Korea		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	3.4%	1.3%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	230.6	229.9	32.2	30.4
Phosphorus balance, kg/ha	45.4	45.9	3.3	3.0
Agriculture share of total energy use (%)	2.9	1.0	1.7	2.0
Agriculture share of GHG emissions (%)	4.3	3.0	8.6	10.5
Share of irrigated land in AA (%)	41.0	41.3	-	-
Share of agriculture in water abstractions (%)	53.4	53.0	46.6	49.7
Water stress indicator	27.1	31.4	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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20 Mexico

Support to agriculture

Mexico's Producer Support Estimate (PSE) for 2020-22 was equal to 11.3% of gross farm receipts, about a third of that in 1991-93 (31%) and lower than the OECD average. Although the PSE is relatively low, it mainly comprises potentially most-distorting forms of support. Market Price Support (MPS) and payments based on output and input subsidies decreased over the past 20 years from 77.9% in 2000-02 to 68.9% in 2020-22. While trade liberalisation and domestic policy reforms in the 1990s reduced these forms of support, MPS increased again after 2016. The ratio of producer to border prices (National Protection Coefficient, NPC) is 1.07, suggesting that domestic prices are an average 7% higher than those in international markets. Single Commodity Transfers (SCT) are highest for sugar, milk, poultry, and rice.

Budgetary transfers allocated to producers in 2020-22 were mainly for payments based on input use, particularly for electricity (pump groundwater for irrigation) and the fertiliser programme. Direct payments based on land are another important form of support used in two major policy instruments, the production for well-being programme (direct payments based on land); and the sowing life programme (direct payments based on area for afforestation and agroforestry). Payments based on input use and land represent 80% of total budgetary transfers to producers.

General services expenditures (General Service Support Estimate, GSSE) in 2020-22 equalled around 1% of agriculture's value of production, and 8% of the Total Support Estimate (TSE), lower than the OECD average on both counts. Most of those expenditures are directed at agricultural innovation, extension, and training (55%, predominantly technical institutes and vocational schools), and development and maintenance of infrastructure, particularly on large hydrological works (37%). Total support to agriculture in Mexico was 0.6% of Gross Domestic Product (GDP) in 2020-22, well below the 1.3% observed in 1991-93.

Recent policy changes

Agricultural policies in 2022-23 focused on consolidating the implementation and reach of the main agricultural support programmes – part of a multi-year process. The emphasis is on supporting small-scale producers of basic grains such as maize, beans, wheat, milk, and rice, and supporting rural women, indigenous populations and vulnerable groups.

The most significant change occurred in the geographic coverage of the fertiliser programme, which had been implemented in only the five poorest states of the country. Implementation was expanded nationally as of 2023 while continuing to target the poorest communities of each state. The budget allocated to this programme increased from MXN 1.9 billion (USD 88.4 million) in 2020 to MXN 16.7 billion (USD 938.2 million) in 2023. Around 55% of beneficiaries of the programme are in communities with indigenous populations and 41% are women.

The guaranteed minimum price programme run by SEGALMEX was updated to support more than 117 000 small and medium-scale farmers. It purchased 9 million tonnes of maize and wheat, and 618 million litres of milk in 2022. Additionally, the maximum amount eligible to receive the guaranteed price increased from 20 tonnes to 35 tonnes of maize per farmer, while for milk it went from 25 litres to 30 litres per cow. The maximum amount for rice was reduced from 120 tonnes to 80 tonnes per farmer. For medium-sized farms whose production is not purchased by SEGALMEX, a price-hedging mechanism was introduced in 2021-22, where the difference between the guaranteed price and a reference price is covered by insurance, for which the government pays part of the premium. Lastly, the National Financing Agency for Agricultural, Rural, Forestry and Fisheries Development (FND) is under a dismantling process, which meant a suspension of credit granting in 2023.

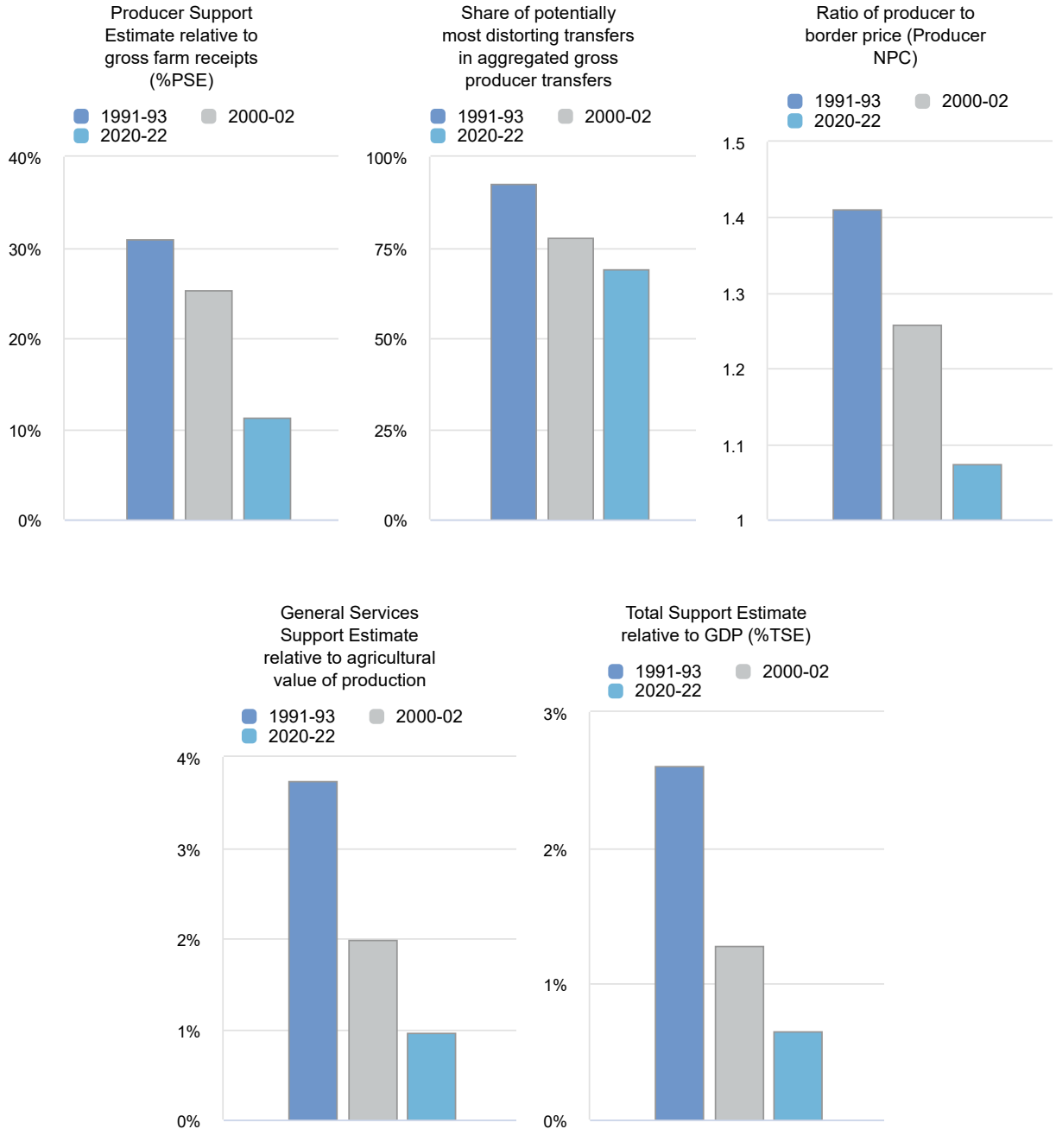
Assessment and recommendations

- The 2022 national adaptation guidelines for agriculture set out measures largely in alignment with good adaptation practices. However, more detailed and concrete actions embedded in the country's agricultural policy instruments can be developed to strengthen the resilience of the sector and its adaptation to climate change. Moreover, more and better climate-change adaptation information, such as adaptation actions, and the use of agri-environmental indicators are key to assessing policy impact. Lastly, Mexico should consider reforming its electricity subsidies, which continue to encourage water overuse, and more broadly improve water management as this will be key for the future of agriculture under a changing climate.
- Within its economy-wide targets to reduce greenhouse-gas (GHG) emissions by 22% and black-carbon emissions by 51% relative to business-as-usual (BAU) by 2030, a specific target for agriculture calls for an 8% reduction relative to BAU. Additional actions are needed to achieve this, as support and financing to increase the use of bio-digesters in livestock farms and conserve and restore grasslands are insufficient to deliver the needed results.
- Mexico should enhance activities in training, technology transfer and adoption, and capacity building related to sustainable agriculture, and promote related techniques. This is even more important given that Mexico's significant agrobiodiversity resources need better protection. More needs to be done to encourage sustainable production. Climate-smart practices, zero till, crop diversification, soil recovery, and others are relevant in this context. Traditional knowledge should be acknowledged as a valuable resource. Moreover, transitioning to schemes that promote agrobiodiversity using local plant genetic resources (a main ecosystem service that small-scale farmers in poor areas provide) could be more cost-effective in helping poor farmers and increase the resilience of agricultural systems and the genetic diversity of plants.
- Mexico's efforts to reorient its payment schemes to focus on vulnerable populations is a remarkable development – particularly the tailored and targeted nature of new and old policy instruments – and follows previous OECD recommendations. This includes area-based Production for Wellbeing payments that target small and medium-size producers and those in marginalised, indigenous communities in the poorest states; the expanded and more-targeted Fertiliser Programme; and the Sowing Life programme supporting small farmers' agroforestry projects in poor municipalities.
- Despite these efforts to reorient payments, improvements are needed to ensure that programmes deliver on their sustainability objectives. The Fertiliser Programme should only tackle market imperfections that limit poor farmers' access to fertiliser, inputs, or credit and could be accompanied by training in good agricultural practices. To improve implementation, the fertiliser programme should systematically consider soil characteristics and nutrient needs when distributing fertilisers. The Sowing Life programme needs to ensure that it does not incentivise farmers to deforest their parcels to become beneficiaries. One way is to offer complementary payments for environmental services that work as incentives to preserve existing forests. In addition, the efficiency of these

programmes would be improved by parallel development of a zoning system that identifies land use based on agri-climates and soil fertility. Moreover, conditioning payments on the implementation of sustainable farming practices could reduce the sector's environmental impact. Support to producer organisations (e.g. co-operatives), and output and input market access for small-scale and poor farmers could also help overcome barriers related to scale.

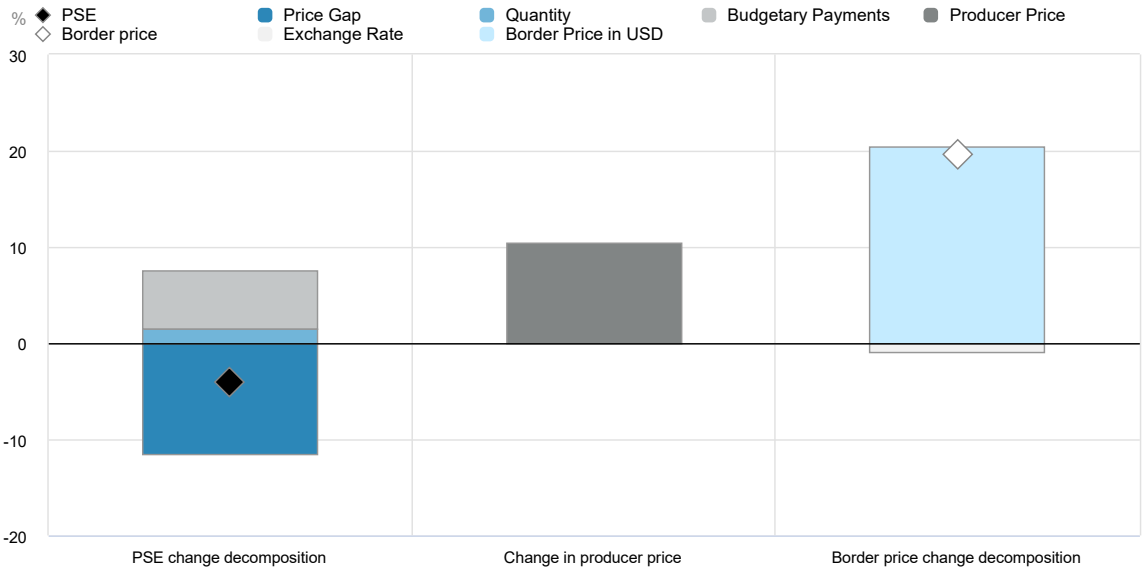
- Mexico's support to agriculture is relatively low, yet most of it is potentially most-distorting, such as MPS for products like sugar, milk, and poultry. MPS has been increasing since 2016, after some decrease due to reforms in the 1990s and 2000s. Given the transition to targeted policies already mentioned, the objectives of remaining MPS policies can be re-evaluated. Mexico should consider gradually phasing out price regulations for sugarcane and continue efforts to re-orient payments towards schemes targeting poor smallholders and environmentally sustainable practices.
- Public allocations to general services and public goods are limited even though these can improve the sector's performance and create an enabling environment. In particular, the sector would benefit from greater investments in extension and technical assistance services, price and weather information systems, better agricultural knowledge, innovation systems, and agricultural research and development.

Figure 20.1. Mexico: Development of support to agriculture



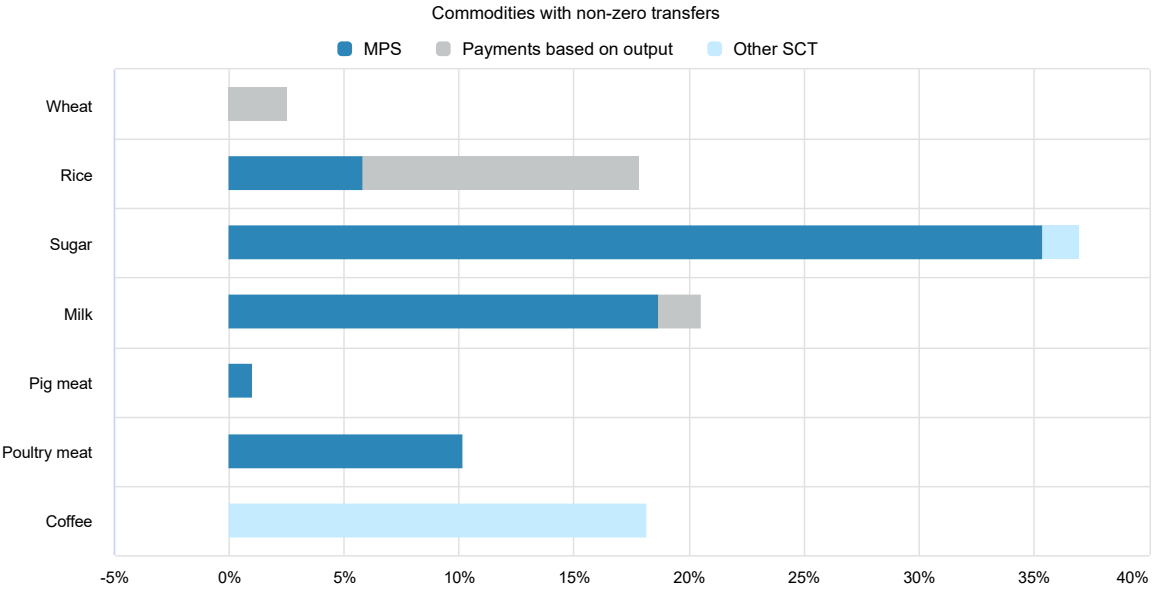
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 20.2. Mexico: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 20.3. Mexico: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Table 20.1. Mexico: Estimates of support to agriculture

Million USD

	1991-93	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**28 112**	**31 345**	**63 200**	**55 967**	**63 731**	**69 902**
***of which:** share of MPS commodities (%)*	68.31	66.28	63.04	62.39	64.01	62.71
Total value of consumption (at farm gate)	**28 196**	**34 362**	**65 654**	**69 657**	**53 538**	**73 766**
Producer Support Estimate (PSE)	**9 144**	**8 539**	**7 456**	**7 862**	**7 374**	**7 132**
Support based on commodity output	7 698	6 282	4 613	5 265	4 572	4 003
Market Price Support[1]	7 646	5 967	4 478	5 137	4 507	3 790
Positive Market Price Support	7 693	5 999	4 478	5 137	4 507	3 790
Negative Market Price Support	-47	-32	0	0	0	0
Payments based on output	52	315	136	129	65	213
Payments based on input use	1 443	953	859	766	807	1 004
Based on variable input use	746	349	519	413	494	650
with input constraints	0	0	0	0	0	0
Based on fixed capital formation	545	362	196	213	173	202
with input constraints	0	4	29	23	28	38
Based on on-farm services	152	241	144	139	140	151
with input constraints	0	0	0	0	0	0
Payments based on current A/An/R/I, production required	3	137	0	0	0	0
Based on Receipts / Income	0	59	0	0	0	0
Based on Area planted / Animal numbers	3	78	0	0	0	0
with input constraints	0	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	574	499	564	658
Payments based on non-current A/An/R/I, production not required	0	1 167	0	0	0	0
With variable payment rates	0	0	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
With fixed payment rates	0	1 167	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
Payments based on non-commodity criteria	0	0	1 410	1 332	1 431	1 468
Based on long-term resource retirement	0	0	1 410	1 332	1 431	1 468
Based on a specific non-commodity output	0	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0	0
Percentage PSE (%)	**30.91**	**25.22**	**11.31**	**13.40**	**11.07**	**9.74**
Producer NPC (coeff.)	**1.41**	**1.26**	**1.07**	**1.10**	**1.06**	**1.06**
Producer NAC (coeff.)	**1.45**	**1.34**	**1.13**	**1.15**	**1.12**	**1.11**
General Services Support Estimate (GSSE)	**1 048**	**621**	**602**	**548**	**579**	**679**
Agricultural knowledge and innovation system	288	304	354	331	358	374
Inspection and control	0	102	54	60	50	51
Development and maintenance of infrastructure	284	112	194	157	171	254
Marketing and promotion	83	103	0	0	0	0
Cost of public stockholding	392	0	0	0	0	0
Miscellaneous	0	0	0	0	0	0
Percentage GSSE (% of TSE)	**9.49**	**6.52**	**7.28**	**6.40**	**7.13**	**8.42**
Consumer Support Estimate (CSE)	**-7 013**	**-5 520**	**-3 060**	**-3 956**	**-2 377**	**-2 848**
Transfers to producers from consumers	-7 668	-5 893	-3 250	-4 114	-2 541	-3 094
Other transfers from consumers	-396	-124	-2	0	-4	-3
Transfers to consumers from taxpayers	852	348	192	158	168	250
Excess feed cost	199	149	0	0	0	0
Percentage CSE (%)	**-25.65**	**-16.27**	**-4.70**	**-5.69**	**-4.45**	**-3.87**
Consumer NPC (coeff.)	**1.40**	**1.21**	**1.05**	**1.06**	**1.05**	**1.04**
Consumer NAC (coeff.)	**1.35**	**1.19**	**1.05**	**1.06**	**1.05**	**1.04**
Total Support Estimate (TSE)	**11 044**	**9 508**	**8 250**	**8 569**	**8 121**	**8 061**
Transfers from consumers	8 064	6 017	3 252	4 114	2 544	3 098
Transfers from taxpayers	3 376	3 616	5 000	4 455	5 580	4 966
Budget revenues	-396	-124	-2	0	-4	-3
Percentage TSE (% of GDP)	**2.60**	**1.28**	**0.65**	**0.78**	**0.64**	**0.55**
Total Budgetary Support Estimate (TBSE)	**3 398**	**3 541**	**3 772**	**3 432**	**3 613**	**4 271**
Percentage TBSE (% of GDP)	**0.80**	**0.48**	**0.30**	**0.31**	**0.28**	**0.29**
GDP deflator (1991-93=100)	**100**	**396**	**1 073**	**996**	**1 066**	**1 159**
Exchange rate (national currency per USD)	**3.08**	**9.49**	**20.56**	**21.40**	**20.22**	**20.07**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Mexico are: wheat, maize, barley, sorghum, coffee, dried beans, tomatoes, rice, soybean, sugar, milk, beef and veal, pig meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

Starting in the 1980s, reforms to price support reduced its prominence in the policy mix. In 1988-89, guaranteed prices for wheat, sorghum, barley, rice and oilseeds were eliminated. After the enactment of the North American Free Trade Agreement (NAFTA) in 1994, guaranteed prices for maize and beans were phased out and the government withdrew from procurement and marketing except for beans and maize, for which government involvement was reduced but not eliminated.

The old system of market supports was replaced by a new one of direct income support payments (PROCAMPO) based on historic cultivated crop area, which was given to all farm sizes. During this period of trade liberalisation, subsidies for financial instruments to reduce financial risks (price hedge instruments) were also put in place. Input subsidies for seeds, fertiliser, pesticides, machinery and diesel fuel were reduced in the 1990s, but the input subsidy for electricity to pump groundwater was maintained.

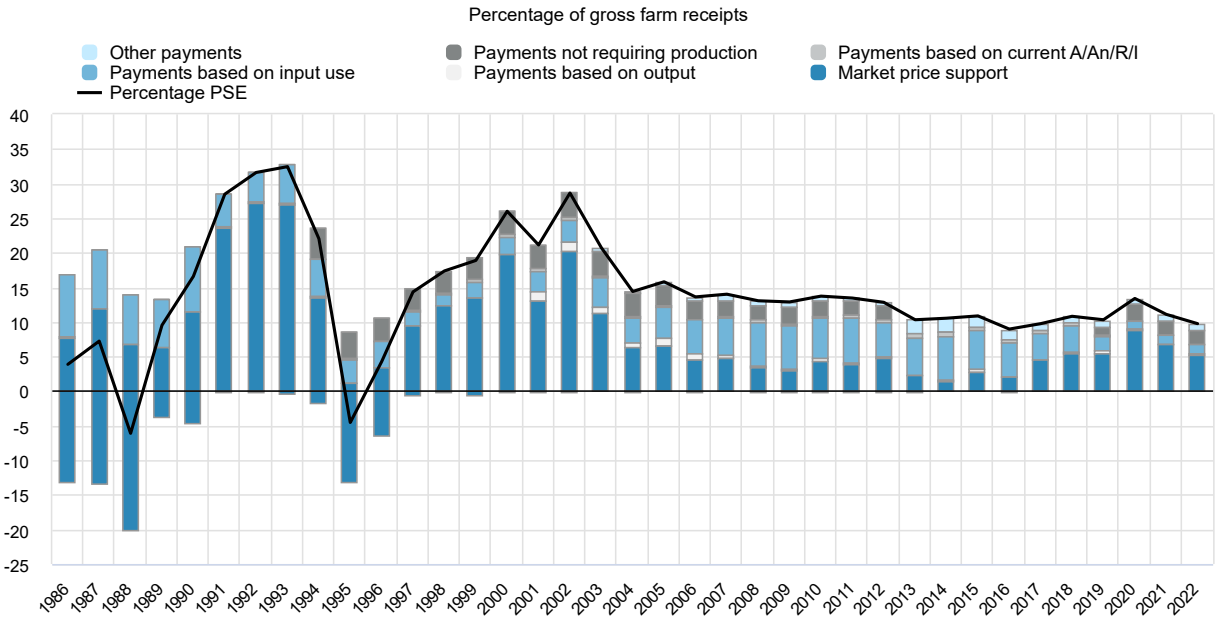
In 2018 direct payments were redirected to target small and medium-scale farmers located in poor regions of the country. Minimum guaranteed prices for staple crops were reinstated in the form of government purchases of crops from a limited number of farmers, mainly smallholders, at a minimum price. Crops purchased under this intervention were then distributed to poor households at subsidised prices in both rural and urban areas. The Procampo programme was renamed “Production for Wellbeing” and reformed to provide support only to small and medium scale farmers, with particular focus on those located in poor communities. Furthermore, subsidies for large farms and food processors to encourage price hedging were dismantled.

Table 20.2. Mexico: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to 1990s	Import substitution model	Agricultural tariffs and import quotas Minimum prices for staple food (maize, rice, beans, wheat, etc.) State food marketing enterprise (CONASUPO) Subsidies for inputs (fertilisers, seeds, electricity for water pumps) Preferential agricultural credit
1990-2018	Trade liberalisation	Dismantling of tariffs on agricultural products (except sugar) Dismantling of state marketing enterprise Elimination of input subsidies, except electricity for water pumps Elimination of minimum prices Reforms to land tenure NAFTA and other FTAs signed Preferential agricultural credit Creation of direct payment to farmers (PROCAMPO) Insurance and price hedge subsidies
2018- present	Reforms to target and tailor direct payments to smallholders	Guaranteed minimum prices on staples (maize, beans, wheat, rice and milk) are targeted to smallholders and limited to a certain amount of production volume. PROCAMPO was renamed “Production for Wellbeing” and reformed to provide payments to only small- and medium-size producers, emphasising the poorest states located in the south of the country. Preferential agricultural credit. Electricity subsidies for water pumps. Fertiliser support targeted to small and medium-scale farmers and limited to only 600kg.

Producer support, PSE was mostly comprised of market price support until end of 1990s. After this period, the share of market price support declined while that of budgetary support grew, until 2016 when market price support and input-based support again became the largest components of producer support (Figure 20.4)

Figure 20.4. Mexico: Level and PSE composition by support categories, 1986 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

Agricultural support policies in Mexico are guided by the Sectoral Programme for Agriculture and Rural Development 2019-2024. The current Sectoral Programme focuses on several objectives: improve agricultural productivity for food self-sufficiency; bring down poverty rates in rural areas; increase the income of small-scale agricultural producers; develop an inclusive, sustainable, healthy, and nutritional agri-food system; and promote a sustainable use of soil and water.

Farmers' support policies in Mexico are delivered via three main programmes: 1) guaranteed prices for small-scale farmers for staple grains; 2) payments based on area under the programme "Production for Wellbeing"; and 3) fertiliser programme. Other relevant support policies include those directed to consumers in vulnerable areas via the distribution of staple foods, and sanitary and phytosanitary measures for early detection of pests and diseases.

For the Guaranteed Minimum Prices Programme, prices are granted to small and medium-sized producers of maize, beans, wheat, milk, and rice, defined as those with up to 30 rain-fed hectares or 5 irrigated hectares. Guaranteed minimum prices are lower than market prices and try to address market failures encountered by farmers. These market failures are created by lack or limited infrastructure like rural roads, storage facilities, market information, or lack of co-operatives, this situation constrains farmers who end up selling at low prices their products to middlemen. In this sense, guaranteed prices set a minimum price that must be paid to farmers but that is still below market prices.

For small-scale farmers of wheat and rice, SEGALMEX (the agency in charge of food security in Mexico) buys directly or pays the difference between the reference and guaranteed prices. For medium-scale maize

producers (those with more than 5 hectares of rain fed), support is provided through a price hedging mechanism, where the difference between the guaranteed price and a reference price is covered by an insurance for which the SEGALMEX pays part of the premium. The reference price is calculated as the sum of the average future price of maize published in the Chicago Board of Trade, and a commercialisation fee based on transportation costs determined by SEGALMEX. In all cases, there are limits based on volume to the support a single farmer can receive. Lastly, under SEGALMEX, small-scale maize producers are eligible for a transportation subsidy.

The state enterprise DICONSA operates the Rural Supply Program (PAR), with SEGLMEX as provider of food. The PAR programme aims to facilitate physical access to product of the basic food basket to improve the food security of the population living in the rural areas in poverty conditions. DICONSA has fixed or mobile convenience stores and sells staple food to vulnerable populations at reduced prices. DICONSA distributes and sells the products purchased by SEGALMEX such as beans, rice, and maize, among other basic products at subsidised prices in its stores located in vulnerable and poor rural and urban populations. DICONSA can also purchase some of its products directly from smallholders. Another state enterprise, LICONSA, buys milk from small-scale producers, then processes and distributes it in established stores in limited quantities at subsidised prices for low-income consumers included in social programs. Both DICONSA and LICONSA support food actions for vulnerable poor populations.

In 2022, LICONSA institution that provides fortified milk to vulnerable populations, had 6.2 million beneficiaries, distributing 808 million litres of milk with an estimated average of 11 litres of milk per household per month. Around 60% of all beneficiaries were women. This programme reached around 3.5 million children between 0 and 15 years old. People with chronic diseases, with disabilities and over 60 years old are permanent beneficiaries of the programme. In 2022, DICONSA that buys from smallholders and sells the products through its convenience stores to vulnerable populations, covered 25 881 communities, of which 12 273 are in indigenous communities. It is estimated that DICONSA benefited about 23 million inhabitants throughout the country.

The Production for Wellbeing programme focuses on area-based payments that target small and medium-scale producers, including from indigenous communities. Payment rates decrease with farm size increments and differ by product. The products covered are grains (e.g. maize, rice, beans, wheat), amaranth, chia, sugarcane, coffee, cocoa, nopal-cactus, honey and milk. Furthermore, these programmes have a gender and indigenous component, as the programme stipulates that at least 28% of beneficiaries need to be women, and 45% of beneficiaries need to be in the 1 033 municipalities with indigenous populations.

Under the Wellbeing programme, small-scale farmers (those with up to 5 rain-fed hectares) receive a payment per hectare of MXN 2 000 (USD 100); medium-scale farmers (those between 5 and 20 rain-fed hectares or up to 5 irrigated hectares) receive MXN 1 200 (USD 60) per hectare, and both small and medium-scale producers of chia and amaranth receive MXN 3 000 (USD 150) also per hectare. For 2023, the Production for Wellbeing programme is expected to reach more than 2 million smallholders and medium-scale farmers; of which around 57% of beneficiaries are in municipalities with indigenous population, 34% are women, and 61% are located in the poorest regions of the country in the south.

The Fertiliser Programme provides up to 600 kg per year of nitrogenous and phosphate fertiliser to small-scale producers of maize, beans, rice, or any other crop with *cultural and economic impact at the state or regional level* holding no more than three hectares and located in highly marginalised communities of the country. The programme was launched in 2019 in the state of Guerrero and expanded in 2021 to the states of Morelos, Puebla, Tlaxcala, and Chiapas (some of the poorest states in the country). In 2023 the programme has been further expanded to the whole country (see below). In addition, a key input subsidy is provided for on-farm electricity consumption for water pumping via reduced electricity tariffs.

The Secretariat of Wellbeing (Social Development Ministry) operates the Sowing Life programme, which supports agroforestry projects implemented by small-scale farmers (having up to 2.5 hectares of available

land) located in poor municipalities. The programme provides direct payments, in-kind support (e.g. plants, seeds, sowing tools and nurseries) and technical support for afforestation and agroforestry projects.

Investments in general services or public goods are mostly allocated to agricultural knowledge and innovation systems, hydrological infrastructure and on animal and plant health inspection and control. Investments in hydrological infrastructure have been for rehabilitation and maintenance of off-farm irrigation systems. SENASICA, the agency in charge of implementing sanitary measures in the agri-food chain, implements sanitary and phytosanitary campaigns and measures for early detection of pests and diseases. This programme supports inspection and monitoring projects of sanitary risks, control and prevention of pests and diseases, inspection of goods that are transported in the country, implementation of systems for reducing contamination risks in production units and promotion of good sanitary practices.

In terms of climate change mitigation, agriculture contributes around 13% of GHG emissions in Mexico. The country's pledge to the Paris Climate Conference in December 2015 includes unconditional and conditional targets. Under the 2020 update of its NDC, Mexico committed to unconditionally lower GHG emissions by 22% and black carbon emissions by 51% relative to BAU by 2030. Agriculture GHG emissions reduction targets are -8%. Depending on international support, this could increase to 36% of total emissions and to 70% of black carbon emissions. To achieve these targets, the agricultural sector strategy promotes agricultural practices adapted to climatic and environmental conditions such as soil conservation and reduced burning of residues considering community and scientific knowledge; and adopting agroforestry, agroecology and biodigesters on livestock farms.

Lastly, Mexico continues to use its free trade agreements that involve more than 50 countries, and a large share of Mexico's agricultural trade occurs under these agreements for both agricultural products and inputs.

Climate change adaptation policies in agriculture

The Strategic Plan for Climate Change on Agriculture *Plan Estratégico de Cambio Climático del sector Agroalimentario, PLECCA*) was produced in 2022 and identify the agricultural sector as requiring particular focus for adaptation efforts. Alongside agriculture, they point out the need to strengthen the country's water and food security, and to conserve and recover natural ecosystems and the ecological functions and environmental services they provide, among others (Agricultura, 2022[1]).

Climate-change adaptation strategies include promoting sustainable production and consumption practices, incorporating climate risks into value chains, addressing sanitary and phytosanitary risks, protecting native crops, and promoting financing mechanisms targeting the negative impacts of climate change. In addition, the government aims to strengthen the adaptive agricultural capacity of at least 50% of municipalities most vulnerable to climate change, establish early-warning and risk-management systems at every level of government, and reach a 0% net deforestation rate by 2030.

Agricultural technical workshops have been created since 2019, in the states of Chiapas, Campeche, Mexico, Oaxaca, Puebla, and Yucatan. At these discussion roundtables (MTA), producers, technicians, academics, and the federal government discuss climate-change risks and their incidence on crops, and aim to define the main adaptation practices to be promoted by the government. These practices include changing planting seasons, diversifying plant varieties, promoting practices to retain soil moisture and improve its fertility, and integrating pest/disease management.

The National Soil Strategy for Sustainable Agriculture (ENASAS) was developed in 2022 to promote the sustainable management of agricultural soils. The strategy is currently informing policy instruments for the conservation and restoration of degraded agricultural soils. The strategy is promoted by the National University (UNAM) in co-ordination with the Ministry of Agriculture and the Global soil Partnership (FAO). Also in 2022, the Soil Doctors programme was implemented in Michoacán, Puebla, and Morelos to promote a self-sufficient system for training farmers in the sustainable management of agricultural soils.

The Water Footprint Working Group was set up in 2022 with the participation of several water related public institutions to explore the development and implementation of estimation and reduction systems for the water footprint of the agricultural sector. The Working Group is implementing a pilot program with different models to estimate the water footprint of agricultural crops in seven Irrigation Districts in the states of Sonora, Chihuahua, Guanajuato, Jalisco, Hidalgo, and the Lagunera Region. The water footprint in these entities will be estimated for crops such as maize, wheat, beans, barley, avocado, walnuts, alfalfa, and agave.

Domestic policy developments in 2022-23

Agricultural policies continued to focus on consolidating the implementation and reach of the main agricultural support programmes, such as the fertiliser programme and the guaranteed minimum price programme. Implementation of the Production for Wellbeing programme remained unchanged, its emphasis remained on supporting small-scale producers of basic grains such as maize, beans, wheat, and rice, as well as support for rural women, indigenous population, and vulnerable groups.

The most significant change occurred in the geographic coverage of the fertiliser programme, which used to be implemented in five of the poorest states of the country only; as of 2023 implementation began throughout all national territory, while continuing to target the poorest communities of each state. The budget allocated to this programme, which had amounted to MXN 1.9 billion (USD 88.4 million) in 2020, was increased to MXN 2.2 billion (USD 108.4 million) in 2021 and to MXN 16.7 billion (USD 938.2 million) in 2023, an almost nine-fold increase within two years in nominal terms. For 2023 the programme is expected to also increase and reach 3 million hectares, benefiting 2 million smallholders. Around 55% of beneficiaries of the programme are in communities with indigenous populations and 41% are women.

The guaranteed minimum price programme run by SEGALMEX was updated to support 117 118 small and medium-scale farmers and to acquire 9 million tonnes of maize and wheat and 618 million litres of milk in 2022. Prices for maize went from MXN 6 278 (USD 312.2) to MXN 6 805 (USD 338.4) per tonne; for beans, from MXN 16 000 (USD 795.6) to MXN 17 340 (USD 862.2) per tonne; for wheat, from MXN 6 900 (USD 343.1) to MXN 7 480 (USD 372) per tonne; for rice, from MXN 7 300 (USD 363) to MXN 7 913 (USD 393.5) per tonne; and lastly, for cow milk, from MXN 9.2 (USD 0.46) to MXN 10.6 (USD 0.53) per litre. Additionally, the maximum amount eligible to receive the guaranteed price increased from 20 tonnes to 35 tonnes for maize, while for milk it went from 25 litres to 30 litres per cow. For rice the maximum amount was reduced from 120 tonnes to 80 tonnes.

For medium-sized farms whose production is not purchased by SEGALMEX, a price hedging mechanism was introduced in 2021-22, where the difference between the guaranteed price and a reference price is covered by an insurance for which the government pays part of the premium. For wheat, the guaranteed price for these medium-scale producers (i.e. those with more than 8 hectares) increased from MXN 6 400 (USD 318.2) to MXN 6 938 (USD 345) per tonne. For maize medium-scale producers (i.e. those with more than 5 and less than 50 hectares), the incentive corresponds to the difference between the guaranteed price for small producers and the reference price (also calculated by SEGALMEX). Eligible quantities are limited to a maximum of 600 tonnes of maize and 200 tonnes of wheat.

In 2023 a decree was published that announced the dismantling of the National Financing Agency for Agricultural, Rural, Forestry and Fisheries Development (FND), which meant a suspension of credit granting in 2023 after its reduction by 35.1% in 2022 compared to 2021.

Following a December 2020 decree, through which the country started phasing out the use of glyphosate and genetically modified (GMO) maize for human consumption, another decree published in February 2023 and coming into effect on 1 January 2024 prohibits the use of GMO in white maize used for human consumption (maize dough and maize tortilla). The use of GMO in yellow maize used for the agroindustry and for animal feed remains possible. The government argues several aspects for this

measure: 1) to safeguard human health; 2) protect the environment and in particular biodiversity given the country's role as a major centre of origin for maize; and 3) ensure food security for poor rural populations as poor and indigenous farmers use traditional maize varieties for self-consumption that can be polluted.

Domestic policy responses to Russia's war of aggression in Ukraine

Following the inflationary pressures caused by the war in Ukraine, a decree with a package against inflation and shortage (APECIC) signed in May 2022 reduced to zero import tariffs for 21 basic basket products (e.g. vegetable oils, rice, tuna, pork, poultry, beef, some horticultural products, dry beans, milk, lemon, sardines, grains, among others) and 5 strategic agricultural inputs (maize and wheat flour, sorghum, wheat and maize). Moreover, administrative procedures were relaxed to facilitate the imports of such goods; this rule change does not exempt compliance with sanitary and food safety requirements. This decree, that aims to reduce domestic inflation, was extended twice in October 2022 and in January 2023, and expanded to incorporate more food products, personal hygiene products, animal feed and agricultural inputs (e.g. such as live bovine animals, beef, swine and poultry meats, tuna, sardines, milk, eggs, potatoes, tomatoes, onions, carrots, dry beans, citrus, apples, wheat, maize, rice, sorghum, pasta, bread, canned vegetables, some fertilisers, toilet paper, among others).

In January 2023, a 50% export tariff was introduced by decree on white maize intended for human consumption (1005.90.04). The aim of this measure is to contain price increases of this staple grain. The decree, which is to remain in force until 31 December 2023, complements the above-mentioned tariff elimination on basic foodstuff imports.

Mexico is heavily dependent on fertiliser imports, a quarter of which used to originate from Russia. Mexico continues, in the short term, to rely on its FTA partners to procure the national demand. The country is investigating longer-term options to replace imported fertilisers, such as expanding the use of local organic and bio-fertilisers, as well as to increase national production of mineral fertilisers.

Trade policy developments in 2022-23

In May 2022, Mexico and the United Kingdom began negotiations for a free trade agreement. The countries are seeking an agreement that strengthens trade in goods and services, increases investment flows, and promotes digital and cross-border trade.

Contextual information

Mexico had a population of 128 million in 2021, ranks as the 13th largest world economy and has a per capita GDP just below the average of all countries covered in this report. Agriculture's contribution to GDP has increased slightly since 2000 from 3.3% to 3.9% in 2021. Despite the decline over the past two decades, however, agriculture's share of total employment remains comparatively high at more than 12.2% in 2021. Trade is an important driver of Mexico's economy; in 2021 it represented 39.2% of GDP and has grown 14.8 percentage points since 2000. Agro-food trade is an important fraction of total trade, both in terms of exports and imports, representing 7.4% and 5.1% of each, respectively.

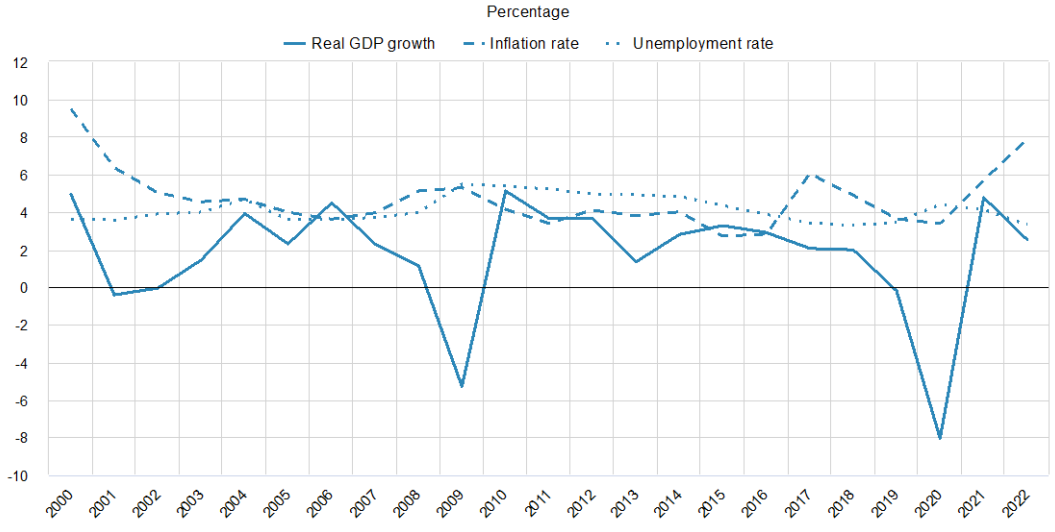
Table 20.3. Mexico: Contextual indicators

	Mexico		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	1 097	2 481	2.7%	2.0%
Population (million)	101	128	2.4%	2.4%
Land area (thousand km^2)	1 944	1 944	2.4%	2.4%
Agricultural area (AA) (thousand ha)	106 330	97 138	3.5%	3.3%
			All countries[1]	
Population density (inhabitants/km^2)	52	65	52	64
GDP per capita (USD in PPPs)	10 870	19 445	9 350	23 401
Trade as % of GDP	24.4	39.2	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	3.3	3.9	2.9	3.9
Agriculture share in employment (%)	17.3	12.2	-	-
Agro-food exports (% of total exports)	4.6	7.4	6.2	7.9
Agro-food imports (% of total imports)	5.5	5.1	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	57	59	-	-
Livestock in total agricultural production (%)	43	41	-	-
Share of arable land in AA (%)	22	21	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

Economic growth has been slowing since 2010 and stalled in 2019. As a result of the COVID-19 pandemic and related restrictions, economic output fell by 8.1% in 2020. After rebounding growth in 2021, economic growth in 2022 declined to 2.5%, resulting in economic output remaining below the pre-pandemic level. Inflation registered a high level of 7.9% in 2022, while the unemployment rate fell to 3.3%.

Figure 20.5. Mexico: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Since 2015, Mexico has registered a positive and growing net agro-food balance reaching USD 10.8 billion surplus in 2021. Whereas most agro-food exports are primary and processed for final consumption, more than half of agro-food imports are intermediate products for further processing.

Figure 20.6. Mexico: Agro-food trade

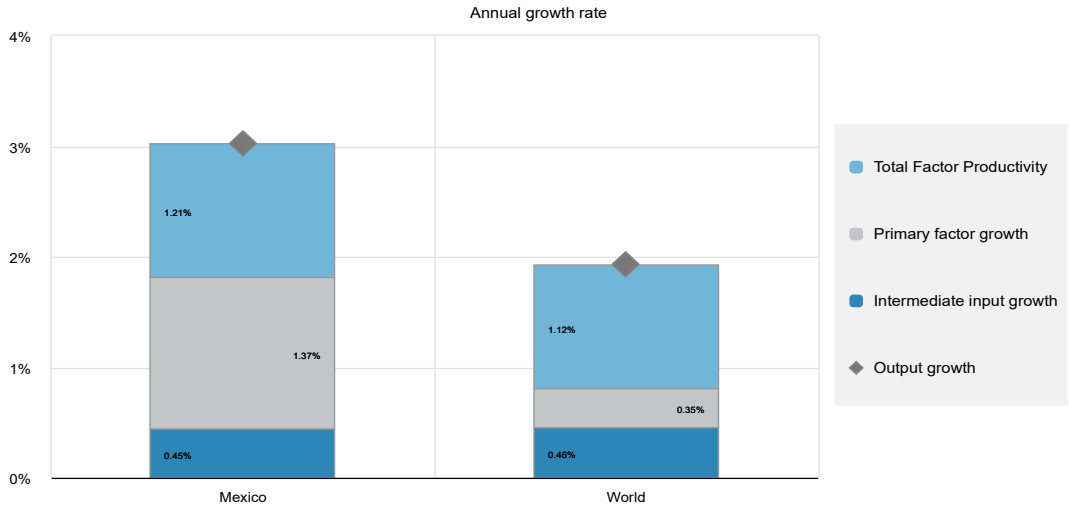


Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Mexico's significant agricultural output growth, around 3%, over the past decade was due predominantly to the increased use of primary factors, notably capital and land. In addition, total factor productivity (TFP) grew by 1.2% per year between 2011 and 2020, slightly faster than the world average. Increased use of intermediate inputs, notably fertilisers and feed, contributed less to the output growth.

In contrast to the average trend observed in the OECD area, nutrient balances in Mexico have increased in the last decade and reached nearly 35 kg/ha for nitrogen and 4 kg/ha of phosphorus in 2021. Agricultural GHG emissions represent 19% of the country's total, which is higher than the OECD average and is also above its relative contribution to the country's economy. Water stress is well above the OECD average, and agriculture is partly responsible for this pressure due to its high share of total water abstractions.

Figure 20.7. Mexico: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 20.4. Mexico: Productivity and environmental indicators

	Mexico		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	5.1%	1.2%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	26.5	34.8	32.2	30.4
Phosphorus balance, kg/ha	1.8	4.0	3.3	3.0
Agriculture share of total energy use (%)	3.0	3.0	1.7	2.0
Agriculture share of GHG emissions (%)	19.1	19.1	8.6	10.5
Share of irrigated land in AA (%)	4.5	6.2	-	-
Share of agriculture in water abstractions (%)	82.0	75.7	46.6	49.7
Water stress indicator	15.6	19.8	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data

Reference

Agricultura (2022), *Plan Estratégico de Cambio Climático del Sector Agropecuario (PLECCA)*. [1]

21 New Zealand

Support to agriculture

Support to agricultural producers in New Zealand consistently ranks among the lowest in the OECD. During 2020-22, the Producer Support Estimate (PSE) averaged 0.7% of gross farm receipts, slightly higher than the 0.5% reported for 2000-02 but far below the OECD average. Almost all prices align with world market prices. Exceptions are fresh poultry and table eggs, and some bee products, which cannot be imported into New Zealand due to the absence of Import Health Standards (IHS) for these products – the standards that imports considered a biosecurity risk must meet. These restrictions result in some market price support (the only form of support to individual commodities in New Zealand), amounting to 12% of gross commodity receipts for poultry meat and 33% for eggs in 2020-22. Additional minor producer support is provided through on-farm services, mainly related to animal health and disaster relief.

Agricultural policies in New Zealand focus on animal disease control, relief payments in response to natural disasters, and investments in the agricultural knowledge and information system. The government also provides support to community-scale off-farm investments in irrigation systems. Over the past decades, the share of agricultural land under irrigation expanded significantly.

Thanks to structurally low producer support, more than 70% of all support to the sector was for general services for most of the past two decades. Still, such support for general services (General Service Support Estimate, GSSE) is estimated at just under 2% of the value of agricultural production during 2020-22, well below the OECD average. On average, total support to the sector represented just over 0.2% of Gross Domestic Product (GDP) during 2020-22, less than half the average share across the OECD.

Recent policy changes

The New Zealand Government provided funding to support recovery after a record number of adverse weather-related events, including flooding, drought, and cyclone damage. By April 2023, the government had paid out NZD 37 million (USD 23 million) to aid rural communities and the agricultural sector with cyclone recovery and clean up, about half of what had been allocated by then. The Ministry for Primary Industries and the National Institute of Water and Atmospheric Research also developed a new drought-forecasting tool, with a first version available for testing since early 2023.

Important reforms related to animal welfare were conducted in 2022. A ban on battery cages for housing layer-hens came into effect on 1 January 2023 after a long phase-in period that started in 2012. In September 2022, new legislation was passed to end the export of livestock by sea, effective from April 2023. The ban follows a transition period to allow impacted businesses to adjust.

Several new land regulations were passed. These include an amendment to the Overseas Investment Act 2005, now requiring certain overseas investors to demonstrate the benefits of their investments to New Zealand; the National Policy Statement for Highly Productive Land, requiring identification and protection of the most productive land; and an update of the Intensive Winter Grazing regulations, with an updated farm-planning module released for the 2023 winter grazing period.

In May 2022, New Zealand published its first Emissions Reduction Plan. Its key actions include the introduction of an agricultural-emissions pricing mechanism by 2025 and the establishment of a Centre for Climate Action on Agricultural Emissions, to accelerate the development and uptake of mitigation technologies, among others. Options for such a pricing mechanism have been proposed by the *He Waka Eke Noa* Partnership and the Climate Change Commission.

The Organic Products and Production Act in force since April 2023 helps develop standards for organic products and set requirements for businesses in the organic sector, from production through sale.

The New Zealand-United Kingdom Free Trade Agreement (FTA) was signed in February 2022 and negotiations on a New Zealand-European Union FTA were concluded in June 2022. When implemented, both will expand export opportunities for New Zealand's agricultural and food products.

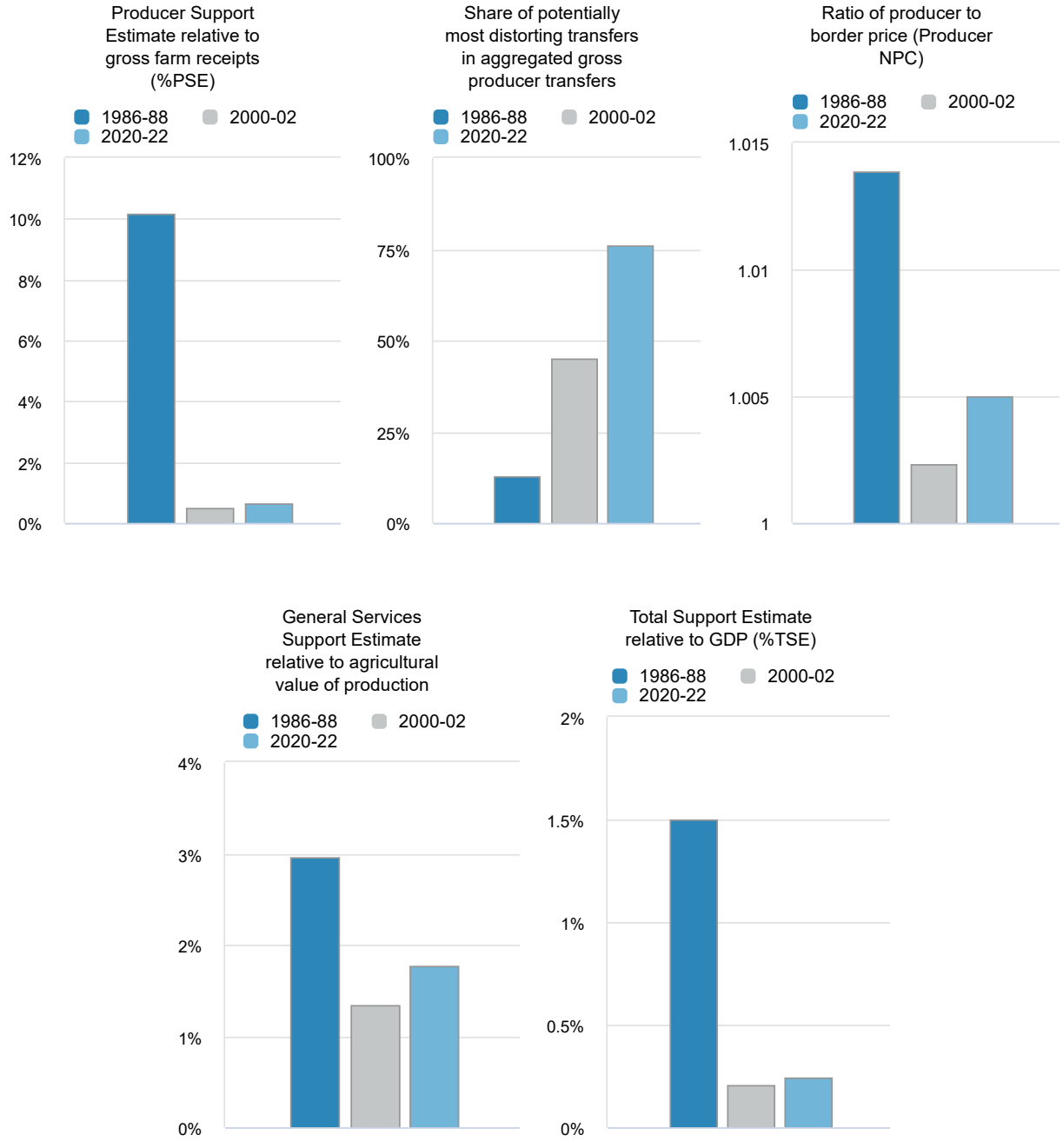
Assessment and recommendations

- New Zealand's move towards pricing agricultural emissions is remarkable on the international stage as a first-of-its-kind trying to reduce the climate footprint of the agricultural sector. While of significant economic importance, the sector also represents a large share of New Zealand's total emissions due largely to ruminant livestock production. Parallel investments in climate-related research at national and international levels rightly focus on the mitigation of methane emissions. Strengthening research and development (R&D) efforts in collaboration with other countries will also help limit potential competitiveness losses and carbon leakages.
- At the same time, New Zealand's farmers must adapt to a changing climate and growing frequency and intensity of weather-related adverse events. In addition to the government's engagement in climate-change-related research and adaptation planning, New Zealand could consider enhancing measurement of adaptation outcomes, possibly complemented by resilience-oriented measures. Short-term responses to adverse weather-related events should be complemented by longer-term measures to help the sector transition to more climate-resilient production structures and methods. For example, given expected increases in drought frequencies, climate-change-related challenges need to be fully reflected in New Zealand's water-management policies.
- New Zealand's agricultural sector focuses on foreign markets and trade. Its export-orientation (underlined by the country's low level of producer support and laudable absence of formal trade barriers) is buoyed by New Zealand's engagement in many FTAs, which cover two-thirds of its agricultural exports. The recently signed FTA with the United Kingdom and the one concluded with the European Union are important additions to this set of trade agreements.
- New Zealand's IHS are key to the country's biosecurity vis-à-vis imported products. However, some livestock products (including eggs, fresh chicken meat, and honey) cannot be imported because they do not have IHS. While representing a small share of New Zealand's agricultural output and consumption, the development of relevant IHS would provide consumers lower prices and larger choice (not least in times of short domestic supply) without compromising biosecurity.
- Kiwifruit exports to markets other than Australia by entities besides Zespri (the main company) continue to be subject to regulatory authorisation by Kiwifruit New Zealand. New Zealand should aim to ease these restrictions, as they burden participation in kiwifruit exports by other firms wishing to do so, reducing competition and efficiency in the kiwifruit trade.
- New Zealand's policy mix rightly focusses on key general services. In addition to pest- and disease-control, significant investments target the agricultural knowledge and innovation system. In the long term, this should improve agricultural productivity growth, which has been low in recent years. Mandatory funding by private investors often complements public expenditures for general services. This can help ensure that investments are allocated efficiently and that the beneficiaries of these services contribute to their funding. However, public investments in general services

relative to the sector's size remain below the OECD average, suggesting that additional funding could be considered, notably towards sustainable productivity growth. New Zealand's engagement in international co-operation is key for accelerating progress in this area.

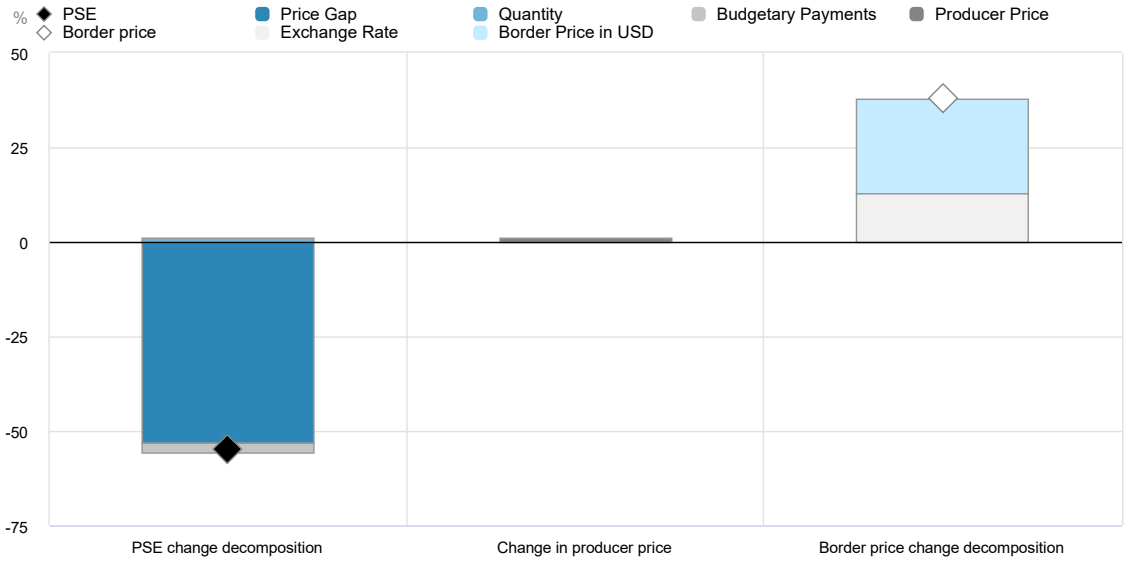
- Data suggests that New Zealand's agricultural sector continues to face large (and increasing in the case of nitrogen) nutrient surpluses due to its large livestock sector and fertiliser use. This puts soil, water, and air quality at risk. The 2020 Resource Management Regulations limiting chemical nitrogen fertiliser application on pastureland should help limit agricultural pollution of freshwater ecosystems and reduce such pressures. The extent to which additional efforts could be required should be carefully monitored. Such efforts might include revisiting the production mix or changes in production practices – even though this transition could be supported by the planned pricing of agricultural emissions.

Figure 21.1. New Zealand: Development of support to agriculture



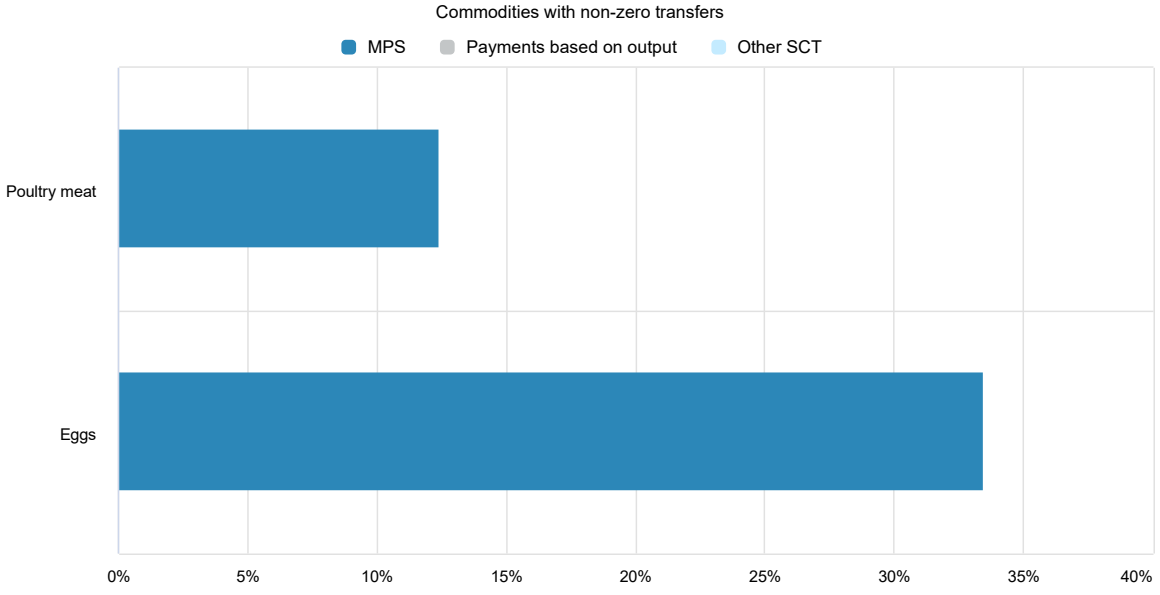
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 21.2. New Zealand: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Figure 21.3. New Zealand: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en

Table 21.1. New Zealand: Estimates of support to agriculture

Million USD

	1986-88	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**4 067**	**6 371**	**22 222**	**20 139**	**24 587**	**21 940**
***of which:** share of MPS commodities (%)*	72.09	73.07	76.28	74.78	77.79	76.27
Total value of consumption (at farm gate)	**1 624**	**2 649**	**9 564**	**9 302**	**10 147**	**9 242**
Producer Support Estimate (PSE)	**424**	**33**	**147**	**199**	**172**	**70**
Support based on commodity output	54	15	112	168	131	37
Market Price Support[1]	53	15	112	168	131	37
Positive Market Price Support	53	15	112	168	131	37
Negative Market Price Support	0	0	0	0	0	0
Payments based on output	1	0	0	0	0	0
Payments based on input use	179	17	32	29	39	29
Based on variable input use	2	0	0	0	0	0
with input constraints	0	0	0	0	0	0
Based on fixed capital formation	154	0	0	0	0	0
with input constraints	0	0	0	0	0	0
Based on on-farm services	23	17	32	29	39	29
with input constraints	0	0	0	0	0	0
Payments based on current A/An/R/I, production required	26	1	3	1	3	4
Based on Receipts / Income	26	1	3	1	3	4
Based on Area planted / Animal numbers	0	0	0	0	0	0
with input constraints	0	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	165	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	0	0	0	0	0
With variable payment rates	0	0	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
With fixed payment rates	0	0	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0	0
Percentage PSE (%)	**10.16**	**0.52**	**0.66**	**0.98**	**0.70**	**0.32**
Producer NPC (coeff.)	**1.01**	**1.00**	**1.01**	**1.01**	**1.01**	**1.00**
Producer NAC (coeff.)	**1.11**	**1.01**	**1.01**	**1.01**	**1.01**	**1.00**
General Services Support Estimate (GSSE)	**119**	**85**	**393**	**407**	**412**	**360**
Agricultural knowledge and innovation system	60	46	176	195	186	147
Inspection and control	31	28	192	187	201	189
Development and maintenance of infrastructure	27	11	25	24	25	24
Marketing and promotion	0	0	0	0	0	0
Cost of public stockholding	0	0	0	0	0	0
Miscellaneous	0	0	0	0	0	0
Percentage GSSE (% of TSE)	**20.97**	**71.98**	**70.33**	**65.10**	**67.87**	**80.44**
Consumer Support Estimate (CSE)	**-53**	**-13**	**-86**	**-142**	**-102**	**-14**
Transfers to producers from consumers	-51	-13	-106	-161	-125	-32
Other transfers from consumers	-2	0	0	0	0	0
Transfers to consumers from taxpayers	0	0	20	19	23	18
Excess feed cost	0	0	0	0	0	0
Percentage CSE (%)	**-3.36**	**-0.51**	**-0.89**	**-1.53**	**-1.01**	**-0.15**
Consumer NPC (coeff.)	**1.03**	**1.01**	**1.01**	**1.02**	**1.01**	**1.00**
Consumer NAC (coeff.)	**1.03**	**1.01**	**1.01**	**1.02**	**1.01**	**1.00**
Total Support Estimate (TSE)	**542**	**118**	**559**	**625**	**606**	**447**
Transfers from consumers	53	13	106	161	125	32
Transfers from taxpayers	491	105	453	463	481	415
Budget revenues	-2	0	0	0	0	0
Percentage TSE (% of GDP)	**1.50**	**0.21**	**0.24**	**0.30**	**0.25**	**0.19**
Total Budgetary Support Estimate (TBSE)	**489**	**103**	**448**	**456**	**476**	**410**
Percentage TBSE (% of GDP)	**1.36**	**0.18**	**0.19**	**0.22**	**0.19**	**0.17**
GDP deflator (1986-88=100)	**100**	**137**	**218**	**210**	**216**	**228**
Exchange rate (national currency per USD)	**1.71**	**2.25**	**1.51**	**1.54**	**1.41**	**1.58**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for New Zealand are: wheat, maize, oats, barley, milk, beef and veal, sheep meat, wool, pig meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

Prior to the 1970s, New Zealand exported more than half its agricultural production to the United Kingdom and support for agricultural producers was largely non-existent except for some import-competing sectors such as eggs and poultry. At the same time, New Zealand's Statutory Marketing Boards, operating since the end of World War I, enjoyed significant rights to regulate supply and trade of several key export products. Overall, relative to the more protected manufacturing sectors, agriculture was implicitly taxed (Anderson et al., 2008[1]).

The accession of the United Kingdom to the European Economic Community in 1973 weakened New Zealand's access to its most important market, and the oil shock of the mid-1970s generated significant foreign exchange shortfalls given the country's dependence on oil imports. In response, the government introduced policy measures to support agricultural production (MPI, 2017[2]). These included input subsidies, minimum prices supported by import barriers and export incentives, tax concessions, low-interest loans and development grants (MPI, 2017[2]; Harris and Rae, 2004[3]).

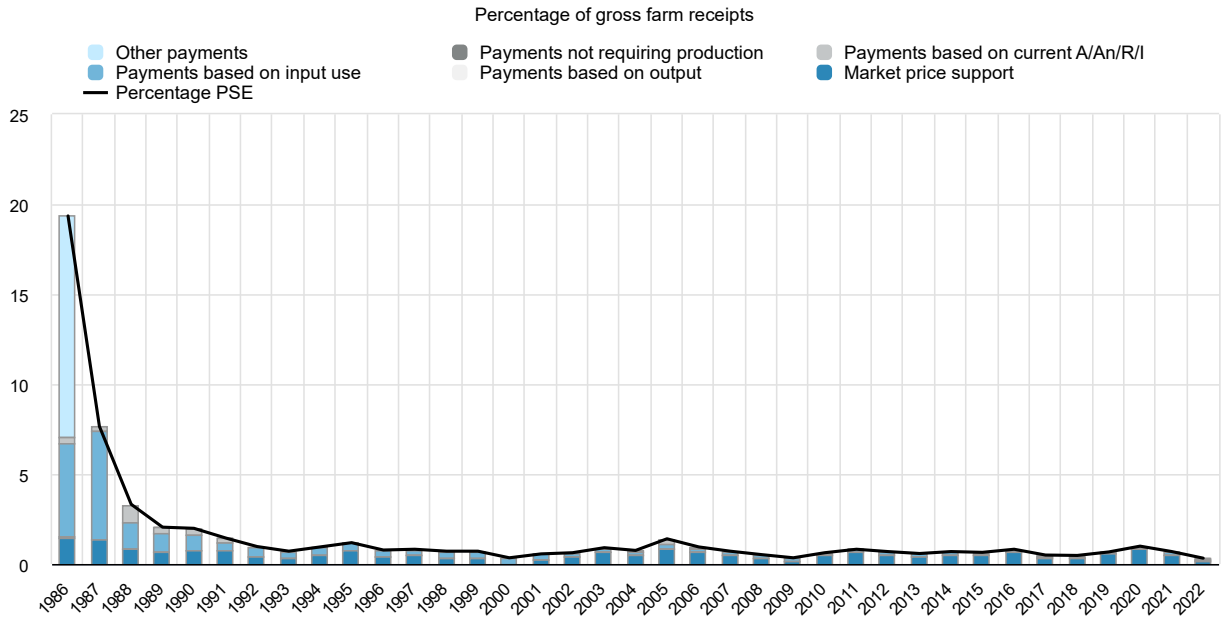
In response to macroeconomic problems, including the substantial fiscal burden of these support measures, a new government implemented significant economic reforms during the second half of the 1980s. By the end of that decade, production and trade distorting policies supporting the farm sector practically disappeared (Table 21.2). In the context of these reforms, New Zealand's Statutory Marketing Boards lost most of their authority or were dissolved (Nayga and Rae, 1993[4]).

Table 21.2. New Zealand: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to 1975	Export-oriented agriculture with little policy intervention. Implicit taxation notably of exporting agriculture relative to the manufacturing sector	Statutory Marketing Boards with significant authority to regulate production and trade of key export products Agricultural and manufacturing import tariffs Limited farm support, including some input subsidies
1975-1984	Incentivising agricultural production	Introduction of significant farm support measures: price support, input subsidies, tax concessions, low-interest loans, development grants
Late 1980s	Reforms to market and trade liberalisation	Dismantling of price support and most other forms of direct farm support, along with economy-wide reforms liberalising the manufacturing industry as well Restricted function or dismantling of the Statutory Marketing Boards. Exit packages and debt restructuring programmes for farmers who had to stop operating
1990-present	Continuing trade liberalisation	Focus on general services and disaster aid

Since the policy reforms in the late 1980s, New Zealand's level of support to agricultural producers has been the lowest among OECD countries (Figure 21.4). Consequently, for the last three decades, total support to the sector was driven mainly by policies related to general services to agriculture, such as agricultural research and biosecurity controls for pests and diseases. For the last almost 20 years, PSE has been consistently below 1% of gross farm receipts, and while this low support has been dominated by SPS-related market price support, most of the budgetary producer support has consistently been provided for livestock disease control. Most of the support for the sector, however, has consistently been in the form of provision of general services to the sector, notably through the agricultural knowledge and information system and related to the country's pest and disease control.

Figure 21.4. New Zealand: Level and PSE composition by support categories, 1986 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

Agricultural support in New Zealand is limited largely to expenditures on general services, primarily agricultural research and biosecurity controls for pests and diseases. A significant share of the costs of regulatory and operational functions, including for border control, is charged to beneficiaries (e.g. farmers) or those who create risks (e.g. importers).

Market and trade regulations

Practically all of New Zealand's agricultural production and trade is free from economic regulation. Since the phasing out by the end of 2010 of restrictions on dairy exports directed to specific markets protected by TRQs, export rights have been allocated to dairy companies based on the proportion of milk-solids collected. Export regulations continue to exist for kiwifruit: the New Zealand company Zespri has the default right, although not an exclusive right, to export kiwifruit to all markets other than Australia. Other traders can export kiwifruit to non-Australian markets in collaboration with Zespri, subject to approval by the relevant regulatory body, Kiwifruit New Zealand. Kiwifruit exporters to Australia are required to hold an export licence under the *New Zealand Horticulture Export Authority Act 1987***,** which provides for multiple exporters to that market.

As a trade-dependent economy geographically distant from export markets, New Zealand currently has ten Free Trade Agreements (FTAs) in force, which cover approximately two-thirds both of the value of New Zealand's total exports and of its agro-food exports. Four additional agreements are concluded but not yet in force: the New Zealand-European Union FTA; the New Zealand-United Kingdom FTA (see section on trade policy developments on these two agreements); the Regional Comprehensive Economic Partnership

(RCEP);[1] and the Anti-Counterfeiting Trade Agreement (ACTA).[2] Negotiations are ongoing between New Zealand and the countries of the Pacific Alliance.[3]

Biosecurity and food safety

Import Health Standards (IHS) issued under the *Biosecurity Act 1993* state the requirements for importing risk goods[4] into New Zealand. Risk goods can be imported only with an IHS in place for the product, and with the product meeting all relevant IHS measures. For some products (table eggs, uncooked chicken meat, honey), no IHS is in place. These products therefore cannot be imported, leading to some market price support as their domestic prices are above the world market level.

The New Zealand Government engages with industry and stakeholders to build biosecurity readiness and response capability. The *Government Industry Agreement for Biosecurity Readiness and Response* (GIA) established an integrated approach to preparing for and responding to biosecurity risks through voluntary partnerships between the government and primary industry sector groups. Signatories share decision-making, costs and responsibility in preparing for and responding to biosecurity incursions. In total, the number of industry groups having joined with the Ministry for Primary Industries under GIA now stands at 22.[5]

The *Food Act 2014* came into force on 1 March 2016. Since March 2019, all agro-food business operates under this new law. The Food Act 2014 applies a risk-based approach focused on safe and suitable food, rather than using prescriptive regulation. It aligns the domestic food system with the risk-based approach of other New Zealand food statutes that have more of an export focus and with international trends in food regulation.

Farm assistance services

Under the *Commodity Levies Act 1990,* "Industry good" activities (such as research and development, forming and developing marketing strategies, and providing technical advice) previously undertaken by statutory marketing boards are now managed through industry organisations funded by producer levies.[6] Under this legislation, levies can only be imposed when approved by producers, and producers themselves decide how to spend the levies. With a limited number of exceptions, levy funds may not be spent on commercial or trading activities. To provide accountability to levy payers, the Act requires that levying organisations seek a new mandate to collect levies every six years through a referendum of levy payers held prior to the expiry of their levy orders.

Sustainable Food and Fibre Futures (SFF Futures) is a public co-investment programme that finances projects that create value and improve sustainability in the food and fibre industries. SFF Futures has a budget of NZD 40 million (USD 25 million) per year and provides a single gateway for farmers, growers, harvesters, and industry to apply for investment in a range of projects that deliver economic, environmental and social benefits. Projects range from small, one-off initiatives to long-running multi-million dollar partnerships. Community projects require co-investment from the partner organisation of at least 20% of costs. Commercially-driven projects require a co-investment of at least 60% of costs. SFF Futures supports projects that contribute to:

- improved environmental performance for the benefit of current and future generations
- economically prosperous food and fibre industries
- thriving and sustainable rural families and communities
- New Zealand's innovative, world-leading, and future-ready food and fibre sector.

Sustainability and sustainable productivity growth

The Ministry for Primary Industries' *Productive and Sustainable Land Use* package promotes farmland use practices aimed to improve value creation and environmental outcomes. One part of the programme, *Extension Services*, supports and enables producers to improve environmental, social and wellbeing outcomes in their communities by helping them design their own solutions. Extension Services emphasises partnering with farmers through catchment groups, regional stakeholders and agricultural professionals to ensure services are relevant to the needs and priorities of local communities. The programme's NZD 35 million (USD 22 million) budget over four years from July 2019 supports up to 2 200 producers across targeted catchments and regions.

The *Māori Agribusiness: Pathway to Increased Productivity* (MAPIP) framework supports Māori primary sector asset owners who seek to sustainably increase the productivity of their primary sector assets, including land, agriculture, horticulture, forestry, and seafood. Introduced in 2015, the MAPIP programme offers a one-on-one approach to achieving primary sector aspirations. The *Māori Agribusiness Extension Programme* (MABx) additionally enables the Government to partner with Māori (in a one-to-many approach) to achieve economic, environmental, social and cultural aspirations through sustainable development of primary sector assets. The government committed NZD 12 million (USD 7.6 million) to facilitate MAPIP and MABx projects. Such projects may also be eligible for funding under the SFF futures fund and the Maori Agribusiness workforce skills and training programme (see above).

The *Essential Freshwater package*, introduced in 2020, contains national policies and regulations to stop further degradation of New Zealand's freshwater resources, improve water quality within five years, and restore freshwater ecosystems to a healthy state within a generation. The *Resource Management (National Environmental Standards for Freshwater) Regulations 2020* implement part of the package and set requirements for activities posing risks to freshwater and freshwater ecosystems. The standards set minimum requirements for feedlots and other stockholding areas; define requirements for managing intensive winter grazing of forage crops; restrict further agricultural intensification until the end of 2024; and set a cap on the application of synthetic nitrogen fertiliser for pastoral farming at 190 kilogrammes per hectare per year.

As part of the Essential Freshwater package, the Government introduced *The National Policy Statement for Freshwater Management 2020* (Freshwater NPS), which requires regional councils to work collaboratively with Māori and the community to develop a plan for maintaining or improving the state of freshwater in the region, in line with national freshwater health indicators. Other Freshwater NPS requirements include avoiding further loss or degradation of wetlands and rivers, and protecting the habitats of indigenous freshwater species.

The *Sustainable Land Management Hill Country Erosion Programme* (HCEP) aims to protect New Zealand's estimated 1.4 million hectares of pastoral hill country classified as erosion prone. It funds councils to develop four-year erosion control projects. The government approved a total of NZD 35.3 million (USD 22.4 million) for the period 2019-23. Selected projects include: the development of whole-farm plans to manage erosion on farms with highly erodible land; the development of agroforestry plans; wide-spaced planting of poplars and willows; land retirement from production to revert to native vegetation; and soil conservation and sustainable land management programmes. Although the main purpose of the HCEP is to reduce erosion, it also aims to reduce sediment loss to waterways, increase on-farm biodiversity, and contribute to the sequestration of carbon in small-scale forests and through planting of poplars and willows.

Climate change mitigation

Primary agriculture is responsible for about half of New Zealand's gross GHG emissions. This share is large relative to other OECD countries, due to the prevalence of livestock-based agriculture and the large

share of renewable sources in the electricity mix. Most agricultural emissions are methane emissions from dairy, sheep, and beef cattle.

In its 2021 Nationally Determined Contribution (NDC) to the Paris Agreement, New Zealand committed to reducing national net GHG emissions by 50% below gross 2005 levels by 2030, an economy-wide target covering, among others, agriculture and other land use sectors. This corresponds to a 41% reduction on a multi-year emissions budget for the 2021-30 period.

The Zero Carbon Amendment Act 2019 (Zero Carbon Act) sets separate long-term emission reduction targets for long-lived and short-lived GHG emissions, including a target for biogenic methane. In particular, the emissions reduction targets set out in the Zero Carbon Act aim to reduce all GHG emissions, except biogenic methane, to net zero by 2050; and reduce gross biogenic methane emissions to 10% below 2017 levels by 2030 and 24-47% by 2050.

An independent Climate Change Commission advises on setting carbon budgets and policies to meet them. On 31 May 2021, the Climate Change Commission provided the government with its final advice on the first three emissions budgets (2022-2025, 2026-2030, 2031-2035) and on the proposed policy direction for New Zealand's first Emissions Reduction Plan (ERP) which was published in May 2022. Key actions include introducing an agricultural emissions pricing mechanism by 2025, establishing a new Centre for Climate Action on Agricultural Emissions to drive a step change in mitigation technology innovation and uptake on farms, and supporting producers to make changes through programmes to support needs and aspirations of Māori and climate-focused extension and advisory services.

The *New Zealand Emissions Trading Scheme* (NZ ETS) is the main policy tool to reduce GHG emissions. It requires companies in the agricultural supply chain (e.g. meat processors, dairy processors, nitrogen fertiliser manufacturers and importers) to report their agricultural emissions. However, these companies are not required to pay for their emissions. The NZ ETS also imposes a cost on emissions from transport fuels, electricity production, synthetic GHGs, waste and industrial processes, including in primary sectors.

One of New Zealand's major projects tackling climate change is *He Waka Eke Noa - the* Primary Sector Climate Action Partnership. This brings together resources, expertise and knowledge from industry, Māori and the government. The partnership aims to implement a framework by 2025 to reduce agricultural greenhouse gas emissions specifically and build the sector's resilience to climate change. This is to be achieved through: 1) measuring, managing and reducing on-farm emissions; 2) recognising, maintaining or increasing integrated carbon sequestration on farms; and 3) adapting to a changing climate. The framework will include incentivising farmers and growers to take action through an appropriate pricing mechanism by 2025, in line with legislation.

In mid-2022, the *He Waka Eke Noa Partnership* provided the government with its recommendations for a farm-level emissions pricing system. In this system a levy is raised from the sector, with discounts given for on-farm sequestration and the uptake of mitigation technologies. The Climate Change Commission contributed its own advice on agricultural emissions. Officials across government departments worked with *He Waka Eke Noa* partners to develop advice for ministers on the pricing mechanism for greenhouse gas emissions from agriculture. The government intends to introduce legislation in 2024. If an alternative pricing system is not implemented by 1 January 2025, the Climate Change Response Act 2002 states that agricultural emissions will be priced under the NZ ETS.

Recognising the need to drive increased afforestation, the government introduced a package of changes to the NZ ETS in 2020, designed to stimulate afforestation and ease forestry owners' compliance burden. In 2023 these changes came into force, including a shift in forestry accounting to a simpler averaging system, and also a category for permanent forestry.

The *One Billion Trees programme* aims to double the previous planting rate (including re-planting following harvest and new planting) to plant one billion trees over the decade from 2018-28. The programme is supported both by direct government investment (such as the One Billion Trees Fund and joint ventures

between Crown Forestry and private landowners), and adjustments to regulatory settings (such as the Emissions Trading Scheme) to encourage and support tree planting.

The *One Billion Trees Fund* was launched in November 2018 as part of the One Billion Trees programme. The fund has provided NZD 77.8 million (USD 49 million) for tree planting grants to landowners including farmers, in order to generate environmental, landscape and productivity benefits. It has also provided NZD 98.8 million (USD 63 million) for partnership initiatives to help in overcoming the barriers to tree planting. The fund closed to new applications in June 2021 but the programme is continuing until 2028 for grants that have already been approved.

Within the SFF Futures programme, a total of 40 projects were completed between July 2022 and April 2023. The Ministry for Primary Industries has committed up to NZD 258 million (USD 164 million) since the inception of the SFF Futures Fund in 2018. The total ministry and industry investment in SFF Futures programmes as of 30 April 2023 was approximately NZD 555 million (USD 352 million).

The New Zealand Government researches and develops mitigation technologies to reduce agricultural GHG emissions. It does so primarily through the *Centre for Climate Action on Agricultural Emissions* (CCAAE), comprised of the *New Zealand Agricultural Greenhouse Gas Research Centre* (NZAGRC), and a joint venture between government and industry leaders, as well as in co-ordination with the member countries of the *Global Research Alliance on Agricultural Greenhouse Gases* (GRA).

As part of the Climate Emergency Response Fund, New Zealand has allocated nearly NZD 339 million (USD 215 million) to accelerate the development of high-impact technologies and practices to reduce agricultural greenhouse gas emissions. To achieve these objectives, the new *Centre for Climate Action on Agricultural Emissions* has been established. The centre has two key components – a new public–private joint venture with some of New Zealand's top companies and an enhanced NZAGRC. These play complementary roles in driving research and development for reducing biological emissions. The new centre will compliment work done by *He Waka Eke Noa*, and will also include knowledge-based approaches to support Māori land owners with climate change mitigation.

The NZAGRC, funded by the Ministry for Primary Industries and the Ministry of Business, Innovation and Employment, brings together nine organisations that conduct research to reduce agricultural GHG emissions. The research focuses on practical ways to reduce on-farm methane and nitrous oxide emissions while improving productivity and sequestering soil carbon, as well as Māori-focused research and future farm systems' research. Industry partners co-invest in some of the research led by NZAGRC. The Pastoral Greenhouse Gas Research Consortium (PGgRc) holds the intellectual property (IP) generated by the research and develops commercialisation pathways for greenhouse gas mitigation solutions to reach livestock farmers.

The GRA, a network of 67 member countries and 29 partner organisations, was established in 2009. New Zealand hosts the Secretariat and GRA Special Representative, and co-chairs its Livestock Research Group. The GRA facilitates collaborative and evidence-based dialogue and knowledge sharing. New Zealand collaborates with other GRA members on research, development and extension of technologies and practices to deliver more climate-resilient food systems without growing GHG emissions. New Zealand builds future capability and capacity through running training programmes and supporting GRA scholarship programmes in developing countries, including in South-East Asia and southern and eastern Africa. New Zealand funds international collaborative efforts to accelerate global research in mitigating GHG emissions from agriculture, especially for pastoral livestock farming, and co-funds and participates in several international research calls designed to decrease agricultural emissions.[7]

Land rights policies

The *Overseas Investment Act 2005* makes acquisitions of "sensitive land" involving "overseas persons", as defined under the Act, subject to consent of the Toitū te Whenua Land Information New Zealand. Most

New Zealand land is considered as “sensitive” under the Act. The criteria that apply depend on the land being acquired and the pathway under which the application is made. For applications under the benefit to New Zealand pathway, there are additional criteria that apply where the land includes farm land. The amended act also places conditions on overseas investors – they must demonstrate how their investment will benefit the country.

Climate change adaptation policies in agriculture

The New Zealand Government published its first National Climate Change Risk Assessment in 2020. It sets out the priority and significant risks New Zealand faces from the impacts of climate change. The government published its first National Adaptation Plan in August 2022, which sets out actions to address these risks. Unlike the ERP, the National Adaptation Plan does not have a chapter dedicated to either the agriculture or forestry sector. Rather, agricultural and forestry adaptation measures, policies, and strategies are subsumed within the Natural Environment and the Economy domains of the Plan. Agricultural actions in the Plan include: strengthening border and on-farm biosecurity, water availability and security, plant health and capability, animal health, research, indigenous landowners, and the aquaculture industry; and reducing hill country erosion.

In addition, the government provides funding to Rural Trust Funds (RSTs) after climatic and other adverse events to help affected primary producers, and their families and employees. Rural Assistance Payments can be provided to cover essential living costs for farmers in hardship.

Domestic policy developments in 2022-23

Responses to biosecurity threats and adverse events

New Zealand is currently five years into a 10-year programme to eradicate *Mycoplasma bovis,* a bacterial disease that affects cattle and can generate significant animal welfare issues, resulting in production losses for farmers. Farmers impacted by the eradication programme are eligible for compensation, and in the fiscal year ending June 2022, the government paid out NZD 14.3 million (USD 9.1 million). The current phase of the *M. bovis* response aims to control the last known pockets of the disease.

New Zealand endured a record six climatic events between mid-2021 and early 2023 that required a response under the Primary Sector Recovery Policy. Government funding allocated by the Ministry for Primary Industries enabled rural support trusts (RSTs) to increase psychosocial support, run information sessions and coordinate local recovery efforts. In total, in the fiscal year ending June 2022, the government provided the RSTs with NZD 1.5 million (USD 0.95 million) in funding. Some of the most significant adverse events were floods followed by droughts which affected the South Island.

In July 2021, flooding was experienced across the West Coast and the top of the South Island. The Ministry for Primary Industries supported the work of two local RSTs, provided animal welfare services and worked with local civil defence and industry partners to assess property damage and wellbeing needs.

In early 2022, drought conditions were affecting Southland, Clutha and the Queenstown Lakes districts. The Ministry for Primary Industries worked with all 14 RSTs, industry groups and the Caring for Communities network to provide a range of recovery activities. This included arranging social events, motivational speakers and access to technical advice.

In early 2023, New Zealand was once again hit by three adverse weather events, first by a cyclone in the upper and east coast of the North Island, then by widespread flooding in Northland, Auckland, Waikato and Bay of Plenty, followed by a cyclone only a few weeks later resulting in further significant flooding and storm damage in these areas. Some areas recorded record rainfall which flooded farmland, damaged infrastructure, and washed away crops. Funding of about NZD 1.2 billion (USD 770 000) was allocated to RSTs to implement support following these events. The government then approved funds to aid rural

communities and the agricultural sector with cyclone recovery and clean up. By April 2023, the total funding allocation reached NZD 78 million (USD 49 million), of which NZD 37 million (USD 23 million) had been paid out.

In response to these kinds of adverse weather events, in October 2021 the Ministry for Primary Industries and the National Institute of Water and Atmospheric Research began developing a new drought-forecasting tool that uses climate modelling to provide 35-day soil moisture forecasts. Soil moisture observations can warn of drought or flood conditions before other, more traditional weather indicators are triggered. Testing of the first version of the tool by user groups began in late 2022.

In April 2022, New Zealand reactivated the national *Feed Coordination Service*, initially established to help farmers find grazing and connect with surplus feed following nationwide shortages due to the COVID-19 pandemic and earlier droughts. A monthly survey on regional feed supply, to support feed budgeting and planning, was also reinstated in February 2023.

Farm services and workforce initiatives

The Ministry for Primary Industries is establishing an on-farm support service to deliver assistance to farmers and growers. The service aims at connecting farmers and growers to resources, advice, funding opportunities and extension services. These are provided by the public sector, organisations. As of March 2023, the Ministry had 41 staff in the regions and expects this to grow to 90 across all regions over time. The service has been allocated NZD 55 million (USD 35 million) over four years.

The *Opportunity Grows Here* workforce attraction campaign launched in June 2020 as part of a wider programme to get more New Zealanders employed in the primary sector workforce and to address longer term workforce issues. This programme was launched to employ 10 000 more New Zealanders in the food and fibre sector over four years. As of February 2023, the Ministry for Primary Industries and its sector partners have helped over 14 000 people to enter the food and fibre sector through the programme.

Animal welfare

On 7 December 2012, the Minister for Primary Industries issued an amended code of welfare for layer hens that created a phased transition away from housing layer hens in battery cages by 1 January 2023. The *Animal Welfare (Care and Procedure) Regulations 2018* outlined the transition deadlines in regulation, making them directly enforceable. The phase-out was to ensure that industry had sufficient time to adjust and to lessen a short-term increase in the price of eggs. However, in December 2022, 10% of the industry was still using battery cages for layer hens. This contributed to a temporary shortage of eggs, as well as an increase in wholesale egg prices, once the ban came into effect. This was compounded by a recent decision by two major supermarkets to also phase out the sale of colony cage eggs by 2025 and 2027.[8] This was further impacted by ongoing impacts of COVID-19, and a global rise in the cost of grains.

A review of the livestock export trade was undertaken in 2019 in response to concerns that the welfare of livestock during long-distance sea transport could be a risk to New Zealand's reputation, and was an opportunity to examine the welfare of livestock being exported. New Zealand's remoteness means animals are at sea for extended periods of time, posing a risk to their welfare. New legislation ending the export of livestock by sea was passed in September 2022 and came into effect in April 2023. The ban follows a transition period which has allowed impacted businesses, including in importing countries, to adjust. The impact on New Zealand's total primary sector exports is low, as livestock exports by sea represent 0.6% of total primary sector exports.

Natural resource policies and organic farming

In the fiscal year ending June 2022, more than NZD 1.3 million (USD 0.82 million) was committed through the *Sustainable Land Management and Climate Change Freshwater Mitigation* fund (SLMACC FM) to a

four-year project aimed at quantifying the effectiveness of mixed species and soil cover-based management approaches that avoid or reduce the transfer of contaminants from soil to water. In partnership with industry, over NZD 600 000 (USD 380 000) has also been committed to a *Sustainable Food and Fibre Futures* project (SFF Futures) to quantify nutrient, sediment and faecal losses from sheep winter crop grazing.

New Zealand has benefited from overseas investment in developing the forestry sector and in bringing to it new skills and thinking. The August 2022 amendment to the *Overseas Investment Act 2005* was introduced to ensure that new investments involving conversion of farm land into production forestry benefit New Zealand – including by bringing tangible community, economic and environmental benefits. Prior to the amendment, overseas investors wishing to convert land, such as farmland, into production forestry (i.e. for the intention of harvesting, replanting and long-term management) could apply under a streamlined "Special Forestry Test" which was designed to encourage investment in production forestry. With the passage of the *Overseas Investment (Forestry) Amendment Act 2022*, new proposals by overseas investors to convert land into production forestry will need to clearly explain how the proposed investment will contribute to New Zealand, as assessed against factors set out in the "benefit to New Zealand test".[9] The new rules give decision makers additional discretion to determine the appropriateness of investment in a forestry conversion and whether it benefits New Zealand, as well as discretion to impose consent conditions to ensure delivery of benefits. The law change applies only to land conversions and does not affect overseas investments in existing forestry land, which will continue to be assessed under the Special Forestry Test.

In October 2022, New Zealand launched the *National Policy Statement for Highly Productive Land*. About 15% of New Zealand (3 830 000 hectares) is estimated to be highly productive. In the last 20 years, over 35 000 hectares of highly productive land has been lost to urban or rural residential development while lifestyle blocks[10] under 8 hectares occupy more than 170 000 hectares of highly productive land. This National Policy Statement requires the country's most productive land to be identified and managed to prevent inappropriate subdivision, use and development.

The *Intensive Winter Grazing* (IWG) regulations were updated in November 2022. To help farmers manage their winter grazing, a farm planning module, co-developed by government and industry stakeholders, has been updated and released for the 2023 winter grazing period. The Freshwater Farm Plan system, to be introduced in mid-2023, will provide a risk-based, tailored approach to managing fresh water, including intensive winter grazing. The low-slope map used in the stock exclusion regulations has been updated to improve its accuracy.

In April 2023, the Organic Products and Production Act became law. This Act aims to help with developing new standards for organic products, and to set requirements for businesses in the organic sector from production through to sale.

Dairy Industry Restructuring (Fonterra Capital Restructuring) Amendment Act

In November 2022, New Zealand passed the Dairy Industry Restructuring (Fonterra Capital Restructuring) Amendment Bill to support Fonterra's move to a new capital structure. The act also included measures to:

- Increase the number of ministerial nominees to Fonterra's Milk Price Panel from one to two to improve the transparency and robustness of Fonterra's base milk price-setting arrangements.
- Clarify the requirement that the Chair of Fonterra's Milk Price Panel be fully independent of Fonterra.
- Require that Fonterra only appoint a Chair of the Milk Price Panel who has been approved by the minister.
- Give the Commerce Commission the power to issue binding directions to Fonterra on matters arising from its reviews of Fonterra's Milk Price Manual and base milk price calculation.

- Support liquidity and transparency in the trade of Fonterra shares in its restricted farmer-only market by, for example, requiring Fonterra to engage one or several designated market makers and to make independent financial markets analysis of its performance accessible to farmers and unit holders.
- Require Fonterra to maintain and publish a dividend and retentions policy, to support Fonterra's ability to access internal capital for investment in innovation.

Domestic policy responses to Russia's war of aggression in Ukraine

Throughout 2021 and 2022, the government communicated with industry leaders through the Supply Chain Forum. The forum had representation from across the food and fibre sector and met fortnightly. By of the end of June 2022, the forum had provided up-to-date information to the food and fibre sector and enabled a range of experts to discuss the implications of world events. It helped ensure communication channels worked effectively and intervened successfully to resolve logistical challenges. It also ensured the sector was well represented at cross-governmental workshops that led to the development of the New Zealand Freight and Supply Chain Strategy.

New Zealand's distance from Russia and Ukraine combined with limited bilateral trading relationships has helped insulate New Zealand from the direct economic effects of the invasion. The most significant impacts on New Zealand have been through higher fuel and commodity prices, financial market volatility, and the drag on global economic activity. Exports historically going to Russia were able to be largely diverted to other markets.

Domestic policy responses to the COVID-19 pandemic

New Zealand lifted the annual cap on Recognised Seasonal Employee Scheme (RSE) workers by 3 000 places to allow access to 19 000 workers. This is in response to ongoing sector growth and subsequent increased demand for seasonal workers with a corresponding regional supply shortage, reduced working holiday makers in New Zealand as a result of COVID-19 and global workforce shortages.[11] Employers, unions, and the government were all involved in the decision for the new cap, with Pacific representatives brought in as the work developed.

Trade policy developments in 2022-23

The New Zealand-United Kingdom Free Trade Agreement was signed on 28 February 2022. In 2022, food trade between the two countries represented 2.4% of New Zealand's total food exports, and 2% of its food imports. The new free trade agreement, once in force, will remove customs duties for a range of food products, such as wine, honey, onions, kiwifruit, and a range of dairy products. Dairy and horticultural products will be 100% tariff free within 7 years of the agreement's entry into force. Trade in beef and sheep meat will be liberalised over a longer time frame of 10 years and 15 years, respectively.

Negotiations on a New Zealand-European Union Free Trade Agreement were concluded on 30 June 2022. In 2022, New Zealand's food trade with the European Union represented 4.5% of New Zealand's total food exports, and 19.1% of its food imports. The new free trade agreement, once in force, will reduce tariffs on a number of agro-food products. For horticultural products, 99.9% of New Zealand's current trade with the European Union will enter tariff free at entry into force. Dairy and meat will see a reduction in tariffs, as well as new FTA quota access, some of which will be duty free. Other agricultural products, such as wine, honey, and seeds, will see 97% of tariff lines eliminated as of the FTA's entry into force, rising to 99.5% on full implementation.

New Zealand has reopened negotiations with the Gulf Co-operation Council on a Free Trade Agreement (involving Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates).

Contextual information

New Zealand is a relatively small and sparsely populated country with a per capita GDP that is slightly above the OECD average, but well above the average of all countries covered by the report. It has a high degree of market openness that is related to its high dependency on international trade. Agriculture has a comparatively high, albeit slowly shrinking, importance to the economy, accounting for around 6% of both GDP and employment. Moreover, agro-food products account for more than two-thirds of New Zealand's total exports.

With little arable land, grass-fed livestock products represent the backbone of the agricultural sector, and livestock products account for 80% of its total production value. New Zealand is the world's largest exporter of sheep meat, and among the largest exporters of dairy products. Beef, fruit and horticultural products also contribute significantly to the country's agro-food exports.

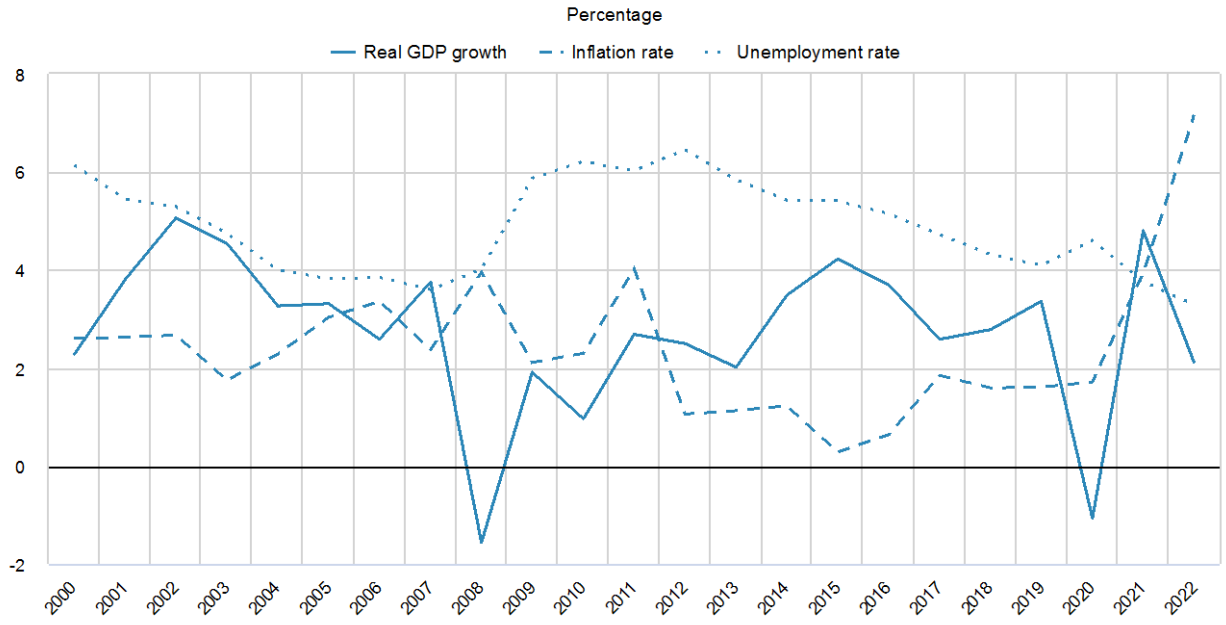
Table 21.3. New Zealand: Contextual indicators

	New Zealand		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	83	241	0.2%	0.2%
Population (million)	4	5	0.1%	0.1%
Land area (thousand km^2)	263	263	0.3%	0.3%
Agricultural area (AA) (thousand ha)	15 413	10 154	0.5%	0.3%
			All countries[1]	
Population density (inhabitants/km^2)	15	19	52	64
GDP per capita (USD in PPPs)	21 458	47 045	9 350	23 401
Trade as % of GDP	24.5	24.4	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	8.3	6.2	2.9	3.9
Agriculture share in employment (%)	8.5	6.1	-	-
Agro-food exports (% of total exports)	50.7	68.3	6.2	7.9
Agro-food imports (% of total imports)	7.9	11.5	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	18	20	-	-
Livestock in total agricultural production (%)	82	80	-	-
Share of arable land in AA (%)	10	5	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

New Zealand has a stable economy having featured robust growth and a relatively low inflation rate for most of the past decade. However, after rebounding from the COVID-19 related recession to a growth rate close to 5% in 2021, the globally difficult economic situation due to Russia's war of aggression in Ukraine reduced GDP growth in 2022 to just over 2%, while inflation rose to 7.3%, the highest level in more than three decades.

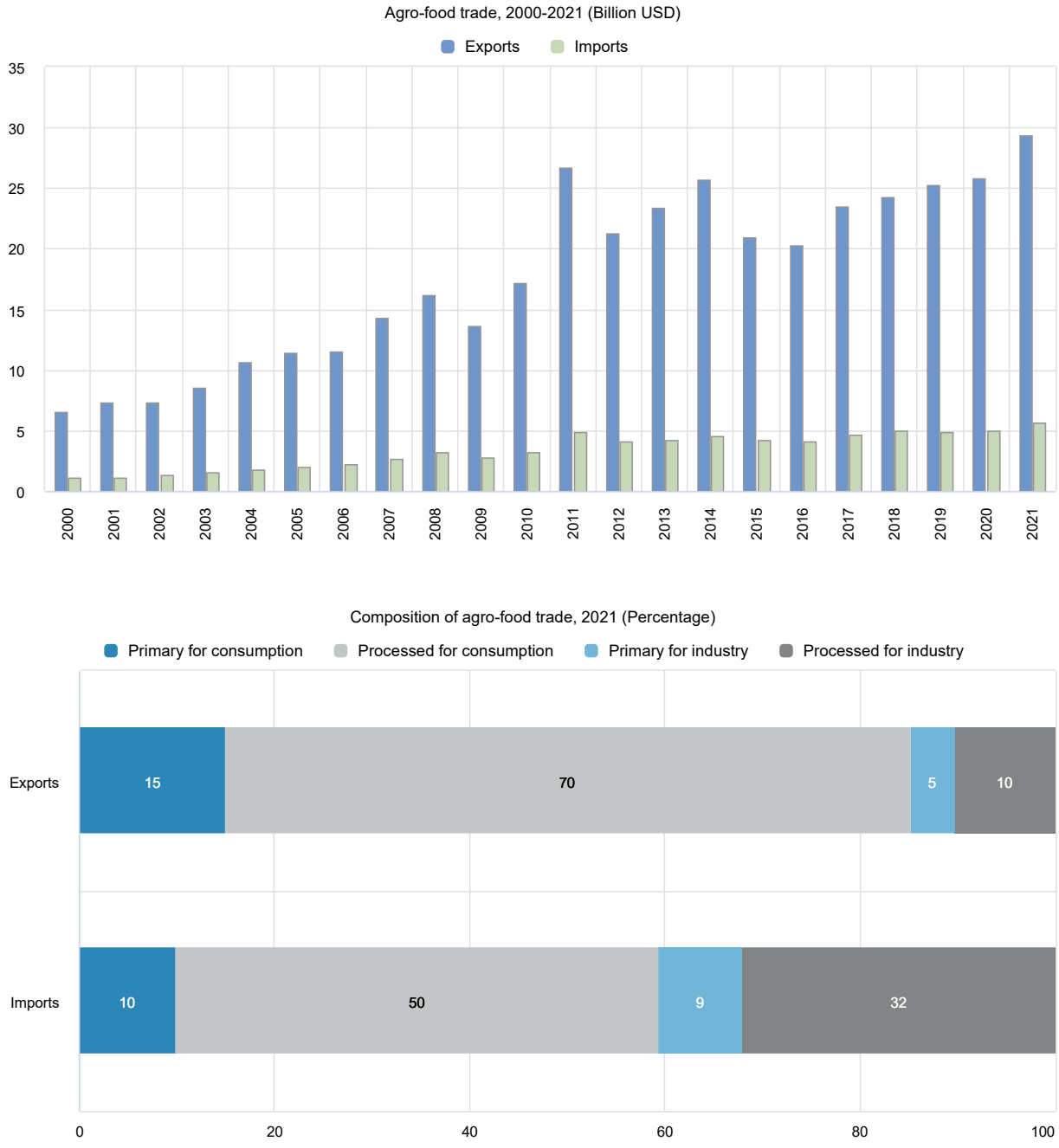
Figure 21.5. New Zealand: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

New Zealand is a consistent and growing net exporter of agro-food products, which after some drops in 2015 and 2016 due to, among others, lower dairy prices, have picked up again since 2017 and reached record levels in 2021. Most of New Zealand's agro-food trade, particularly its exports, is processed food for final consumption. On the import side, however, intermediary products represent two-fifths of the trade basket.

Figure 21.6. New Zealand: Agro-food trade

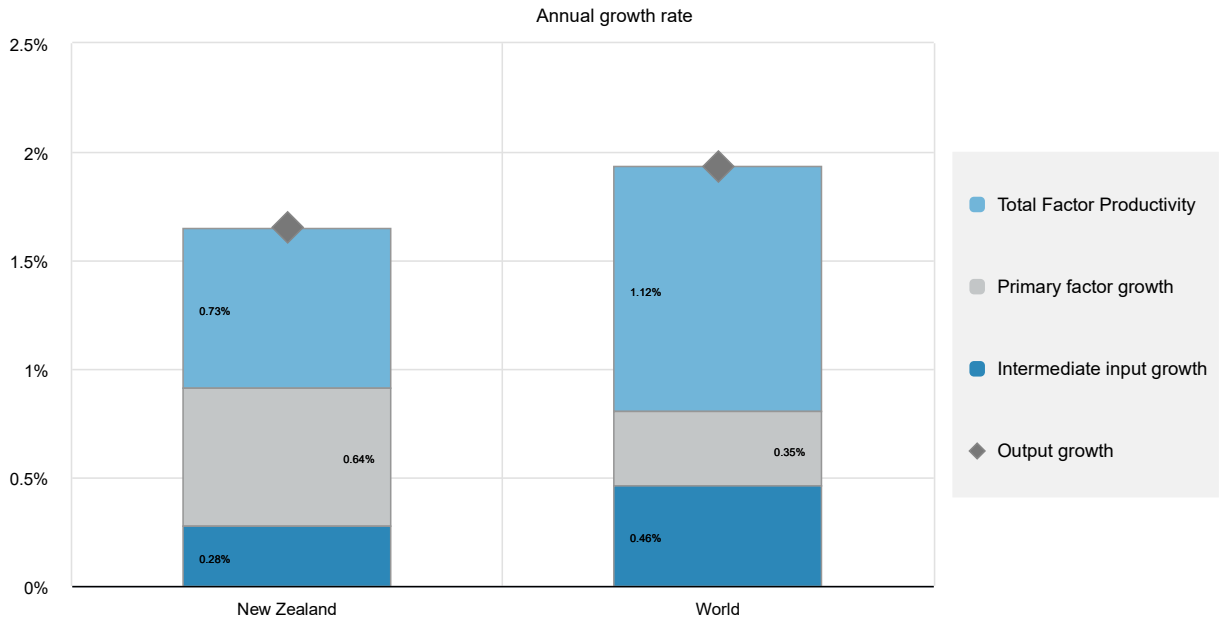


Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

New Zealand's growth in agricultural output over the 2011-20 decade has been below the global average, driven by relatively low productivity growth: at 0.7%, the estimated average growth in total factor productivity (TFP) is well below the global average. It is also well below the TFP growth measured for the 1990s.

Due among others to the large share of renewables in electricity generation and the dominant role of dairy and ruminant meat, agriculture is responsible for half of New Zealand's GHG emissions. Almost three-quarters of agricultural emissions are in the form of enteric methane from ruminant livestock. Nutrient surpluses are also well above the respective OECD averages, although those of phosphorous have declined somewhat from their levels in the 1990s. The sector is also the country's prime consumer of freshwater as irrigated land has expanded, partly in response to climate related uncertainties. Nonetheless, its overall level of water stress, while higher than in the 1990s, is relatively low.

Figure 21.7. New Zealand: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 21.4. New Zealand: Productivity and environmental indicators

	New Zealand		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	3.3%	0.7%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	36.7	63.3	32.2	30.4
Phosphorus balance, kg/ha	13.2	8.3	3.3	3.0
Agriculture share of total energy use (%)	3.6	5.4	1.7	2.0
Agriculture share of GHG emissions (%)	49.8	50.0	8.6	10.5
Share of irrigated land in AA (%)[1]	3.7	7.3	-	-
Share of agriculture in water abstractions (%)	..	61.7	46.6	49.7
Water stress indicator	0.7	2.2	8.3	7.4

Notes: * or closest available year.
1. Data are not comparable between time periods due to change in methodology.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Notes

[1] RCEP comprises the ten countries that make up the Association of South East Asian Nations (ASEAN), Australia, the People's Republic of China (hereafter "China"), India, Japan, Korea and New Zealand.

[2] Other ACTA signatories include Australia, Canada, the European Union and 22 of its Member States, Korea, Japan, Mexico, Morocco, Singapore, and the United States.

[3] Pacific Alliance countries are Chile, Colombia, Mexico, and Peru.

[4] Risk goods are any items that may constitute, harbour, or contain an organism that may cause unwanted harm to natural or physical resources, or to human health in New Zealand (https://www.mpi.govt.nz/import/importing-into-nz-how-it-works/import-health-standards).

[5] Three more industry groups, which have not signed the deed, are represented by other signatories.

[6] Activities "beneficial to the industry, but whose benefits cannot be captured by those who fund or provide the activity", or "long-term investments in the industry made with the expectation of accelerating delivery of better technology and products for the industry" (NZIER, 2007[5]).

[7] Other funders of the GRA include the Climate Change, Agriculture and Food Security programme of the Consultative Group on International Agricultural Research (CGIAR-CCAFS) and the government of the Netherlands.

[8] A colony cage is an inside enclosure that can house up to 60 hens.

[9] The benefit test is considered to be met where a) the overseas investment will, or is likely to, benefit New Zealand (this benefit being assessed against 7 broad factors outlined in Section 17 of the Overseas Investment Act 2005, including economic benefits, benefits to the rural environment, and others; and b) if the relevant land is, or includes, residential land, the relevant Ministers are satisfied that the conditions imposed on the consent are likely to be, met (https://www.linz.govt.nz/guidance/overseas-investment/overseas-investment-tests/benefit-new-zealand-test).

[10] Rural land which has been turned into residential housing.

[11] Working holiday schemes allow young adults from other countries that participate in the programme to work and make holidays in New Zealand for up to 6, 12 or 23 months depending on the nationality.

22 Norway

Support to agriculture

Norway provides the highest relative levels of support to agriculture among the 54 countries covered in this report. Total support in 2020-22 equalled 83% of the value of production at farmgate prices. While this is down significantly from the 125% average in 2000-02, it remains much higher than the OECD average of 25%. Transfers to producers made up 51% of gross farm receipts in 2020-22, also the highest in the OECD. The value of support received by farmers was slightly higher than the value of farm production when valued at world market prices.

Much of Norway's support is in forms considered most market distorting, accounting for just over half of all support to producers. This is slowly changing as the share of potentially most-distorting transfers has declined since the mid-1980s, from 78% in 1986-88, to 61% in 2000-02, to 52% in 2020-22. Domestic market prices are supported through border protection and market regulations. This Market Price Support (MPS) remains the largest component of support to producers (37% in 2020-22) and affects most major commodities except sheep meat and wool. Payments based on current production factors such as area and animal numbers also account for a large share of support to producers (33%).

Support for general services (General Service Support Estimate, GSSE) accounts for a relatively small share of overall support. In 2020-22, GSSE accounted for 4.9% of total support to the sector, equivalent to 4% of the value of agriculture production. Almost two-thirds of this is for agricultural education services through the Norwegian University of Life Sciences, with most of the remainder for agricultural product-safety and inspection services through the Norwegian Food Safety Authority.

Recent policy changes

The annual agricultural agreement between the government and the two farmers' organisations included significant increases in support to producers. These large increases were partly an effort to compensate for rising input costs stemming from the war in Ukraine. The agreement included an increase in target prices, additional budgetary support, an increase in agricultural tax deductions, and increased funding for regional environmental programmes.

A temporary electricity subsidy was introduced in response to rising power prices in late 2021 and was continued following the outbreak of the war in Ukraine. Agricultural enterprises were given special treatment in the form of higher consumption limits than households and other businesses, and no consumption limits on greenhouse and irrigation operations. The scheme compensates a given percentage of electricity consumption above NOK 0.7/kWh (USD 0.07/kWh) – currently 100% for greenhouses and 80% for all other agricultural enterprises.

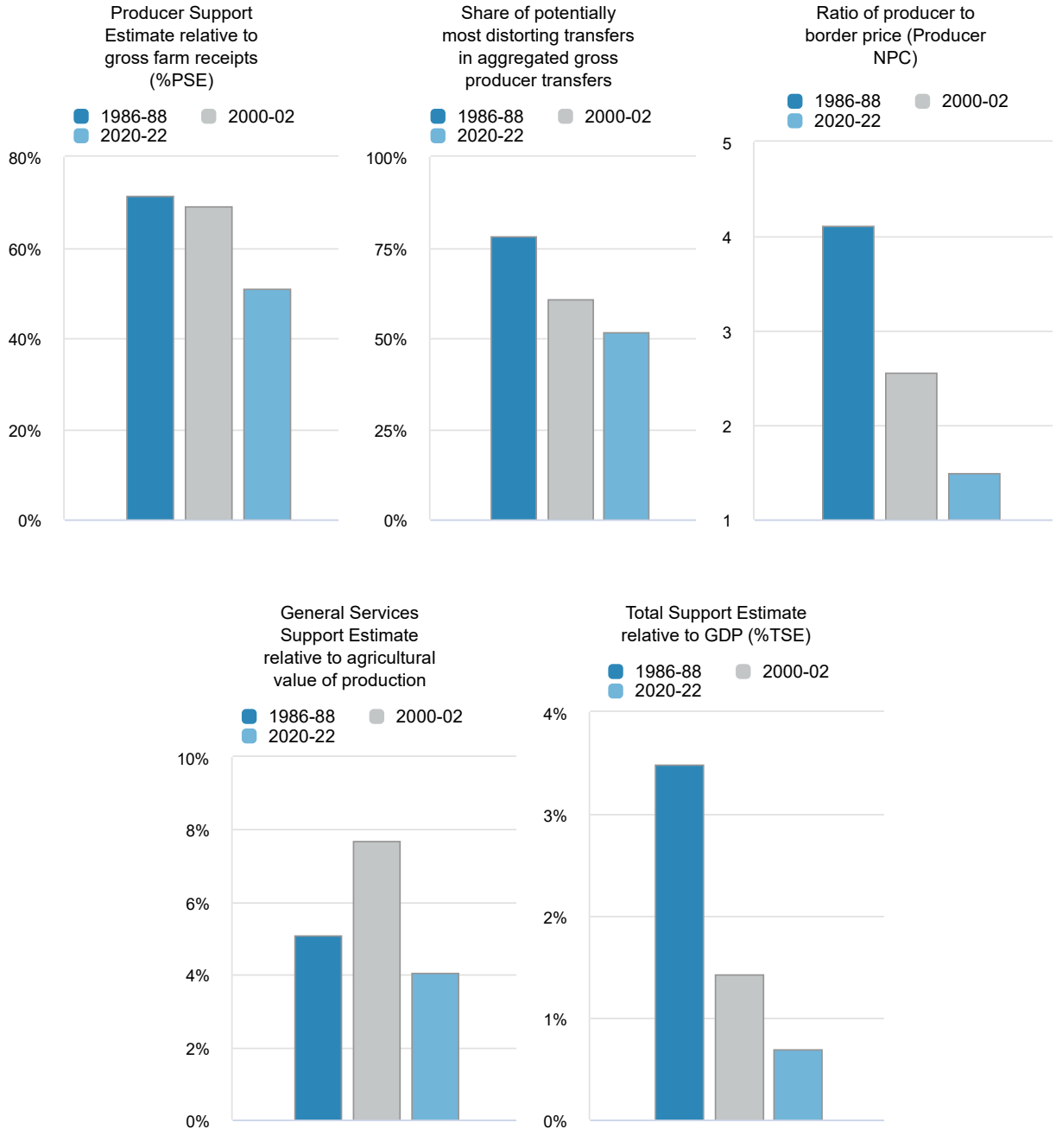
Changes to the milk quota system took effect in 2022. Farmers wishing to sell their milk quotas must now sell a minimum of 40% of the quota to the government at a fixed price of NOK 4 per litre (USD 0.4 per litre). This is an increase from the 20% minimum which existed since 2017. There are no price controls on

the sale of the remaining 60% of the quota, which can be sold privately to other producers within the seller's production region.

Assessment and recommendations

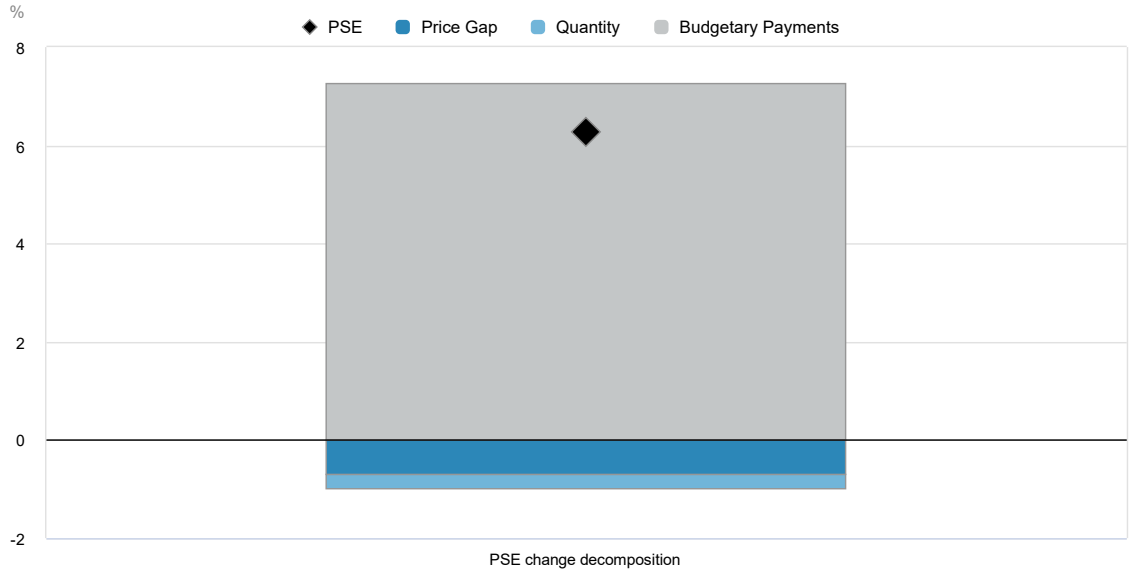
- Norway has taken some positive steps to adapt and prepare for a changing climate, including investments in flood preparedness, research and innovation into climate-adapted production processes and genetics, soil management, and contingency storage. These could be complemented with activities that boost forecasting and recovery. Early-warning systems for extreme events such as droughts, floods or pest incursions could help affected communities prepare for and minimise these risks as much as possible. Consideration could also be given to enhancing farmers' role in managing their business risk from changing climate. This could be achieved by introducing voluntary risk-management programmes such as mutual funds, or tax-beneficial contingency savings accounts that allow farmers to smooth out income in the face of rising business risks, as such measures have proven effective in other countries.
- Norway's producer support structure runs the risk of leading to climate maladaptation in the medium-to-long term. Production subsidies and market price supports insulate producers from external signals and lock them into production patterns that might become less tenable as climate patterns shift. Agricultural policy should help producers prepare for change, guiding them towards more sustainable and competitive production. Norway could consider reducing border protection and commodity-specific support in a gradual and predictable way to let markets play their role in allocating production resources. This would help producers respond more efficiently to climate pressures.
- The climate-mitigation strategy for the agricultural sector as laid out in Norway's Climate Action Plan for 2021-2030 largely relies on changing consumer dietary preferences away from high-emitting commodities. Reducing the share of ruminant meat and dairy products in consumers' diets can reduce greenhouse-gas (GHG) emissions related to food. However, relatively high payments coupled to the production of high-emitting commodities such as beef and other livestock means focus will likely remain on producing these outputs and might not respond to changing consumer preferences. Making support less commodity-specific can allow more flexibility in production planning and provide income support to farmers without compromising the government's goal of land retention in the agricultural sector.
- Re-orienting support towards general services – especially for the agricultural knowledge and innovation system – could increase productivity growth while maintaining environmental protection and sustainable natural-resource management. Much of Norway's productivity growth in recent years came from labour-saving initiatives, but did little to reduce environmental pressures. Research and outreach programmes should target sustainable agricultural practices to reduce the use of harmful inputs and emissions. Support for pest and disease control will also increase in importance as climate change could drive new incursions into Norway.
- The framework of negotiations between farmers' associations and the government provides stability and a platform for regular evaluation and gradual adjustment. Recent inclusions of agri-environmental programmes are welcome. However, the agreements focus overwhelmingly on annual farm incomes, and the gradual nature of the negotiations makes it difficult to make more transformational change. This can be a barrier to needed reforms, such as responsiveness to markets and concerns around climate, agri-environmental outcomes, and the provision of ecosystem services. Norway could consider limiting the scope of negotiations, such as by exempting programmes that provide public goods.

Figure 22.1. Norway: Development of support to agriculture



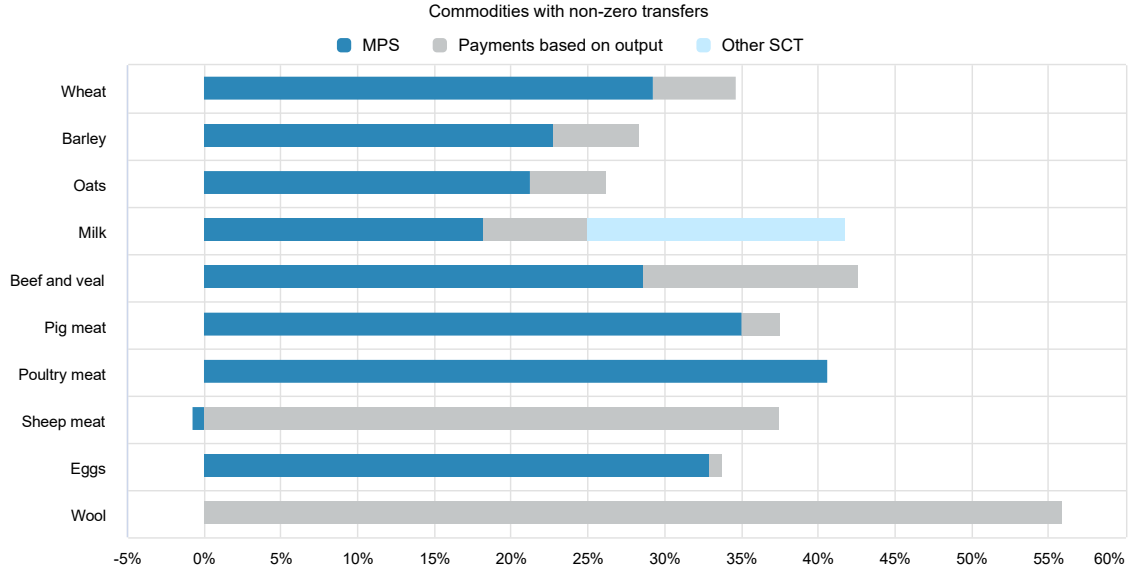
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 22.2. Norway: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency. The producer price change and the border price change are not calculated when both negative and positive market price support (MPS) occur at the commodity level for the previous year. Note that negative MPS estimates for livestock products may arise in cases of aligned product prices if there is positive MPS for feed commodities.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 22.3. Norway: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 22.1. Norway: Estimates of support to agriculture

Million USD

	1986-88	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**2 533**	**2 052**	**3 859**	**3 490**	**4 140**	**3 947**
***of which:** share of MPS commodities (%)*	73.28	80.83	73.29	75.39	71.64	72.84
Total value of consumption (at farm gate)	**2 687**	**2 085**	**4 076**	**3 653**	**4 457**	**4 118**
Producer Support Estimate (PSE)	**2 844**	**2 339**	**2 896**	**2 808**	**3 016**	**2 865**
Support based on commodity output	2 070	1 348	1 384	1 398	1 465	1 287
Market Price Support[1]	1 397	1 011	1 080	1 103	1 142	994
Positive Market Price Support	1 397	1 011	1 082	1 110	1 143	994
Negative Market Price Support	0	0	-3	-7	-1	0
Payments based on output	673	337	304	295	323	293
Payments based on input use	250	117	199	184	179	232
Based on variable input use	149	71	107	85	88	147
with input constraints	0	0	0	0	0	0
Based on fixed capital formation	91	38	82	90	80	76
with input constraints	0	0	0	0	0	0
Based on on-farm services	11	8	10	10	11	10
with input constraints	0	0	0	0	0	0
Payments based on current A/An/R/I, production required	524	871	962	890	1 008	988
Based on Receipts / Income	0	49	77	72	80	80
Based on Area planted / Animal numbers	524	822	885	818	928	908
with input constraints	371	644	728	666	761	757
Payments based on non-current A/An/R/I, production required	0	0	346	330	357	351
Payments based on non-current A/An/R/I, production not required	0	0	0	0	0	0
With variable payment rates	0	0	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
With fixed payment rates	0	0	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
Payments based on non-commodity criteria	0	3	6	5	7	6
Based on long-term resource retirement	0	0	0	0	0	0
Based on a specific non-commodity output	0	3	6	5	7	6
Based on other non-commodity criteria	0	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0	0
Percentage PSE (%)	**71.44**	**69.03**	**51.04**	**54.05**	**50.15**	**49.24**
Producer NPC (coeff.)	**4.11**	**2.56**	**1.49**	**1.64**	**1.48**	**1.39**
Producer NAC (coeff.)	**3.50**	**3.23**	**2.04**	**2.18**	**2.01**	**1.97**
General Services Support Estimate (GSSE)	**129**	**158**	**156**	**151**	**168**	**150**
Agricultural knowledge and innovation system	74	62	100	99	107	95
Inspection and control	5	25	33	29	37	33
Development and maintenance of infrastructure	29	54	14	15	15	13
Marketing and promotion	21	15	9	9	10	9
Cost of public stockholding	0	2	0	0	0	0
Miscellaneous	0	0	0	0	0	0
Percentage GSSE (% of TSE)	**4.04**	**6.16**	**4.87**	**4.88**	**5.00**	**4.73**
Consumer Support Estimate (CSE)	**-1 388**	**-1 036**	**-1 050**	**-1 144**	**-1 130**	**-876**
Transfers to producers from consumers	-1 675	-1 101	-1 076	-1 200	-1 150	-877
Other transfers from consumers	-178	-75	-95	-103	-122	-59
Transfers to consumers from taxpayers	220	71	152	133	172	150
Excess feed cost	244	70	-31	26	-30	-89
Percentage CSE (%)	**-56.34**	**-51.15**	**-26.73**	**-32.49**	**-26.38**	**-22.06**
Consumer NPC (coeff.)	**3.23**	**2.28**	**1.40**	**1.55**	**1.40**	**1.29**
Consumer NAC (coeff.)	**2.29**	**2.05**	**1.36**	**1.48**	**1.36**	**1.28**
Total Support Estimate (TSE)	**3 193**	**2 568**	**3 204**	**3 092**	**3 356**	**3 164**
Transfers from consumers	1 853	1 176	1 171	1 303	1 272	937
Transfers from taxpayers	1 518	1 467	2 128	1 892	2 206	2 286
Budget revenues	-178	-75	-95	-103	-122	-59
Percentage TSE (% of GDP)	**3.49**	**1.42**	**0.70**	**0.85**	**0.70**	**0.59**
Total Budgetary Support Estimate (TBSE)	**1 796**	**1 557**	**2 124**	**1 989**	**2 214**	**2 170**
Percentage TBSE (% of GDP)	**1.96**	**0.86**	**0.46**	**0.55**	**0.46**	**0.41**
GDP deflator (1986-88=100)	**100**	**163**	**328**	**275**	**322**	**388**
Exchange rate (national currency per USD)	**6.88**	**8.59**	**9.21**	**9.41**	**8.59**	**9.61**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Norway are: wheat, barley, oats, milk, beef and veal, sheep meat, wool, pig meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en.

Description of policy developments

Overview of policy trends

Historically, Norway's agricultural policies relate to food security and ensuring farm incomes, employment opportunities and regional distribution of production. Today, these objectives are complemented by consumer and societal concerns such as sustainability and environmental issues, climate, food safety and animal welfare, cultural landscape, innovation, agri-tourism, and the small-scale food industry. Norway adopts a four-pillar approach to implement these objectives: i) border protection; ii) legal frameworks to secure family-owned farms; iii) annual negotiations between the state and farmers' organisations to determine producer prices, budget transfers and allocation of funds; and iv) domestic regulations to balance the market through producer co-operatives.

Since the mid-1980s there has been modest policy reform towards market orientation, and modest reductions in the level of support. Farmers in Norway remain heavily supported through border measures, domestic market regulations, budgetary payments and tax breaks.

Environmental cross-compliance was introduced in 1991 with the *Acreage and Cultural Landscape Programme* which grants payments on the condition that farmers meet cultural landscape requirements. Norwegian agri-environmental policies are underpinned by the premise that certain environmental public goods are most cost-effectively provided through positive externalities of agricultural commodity production.

Prompted by the WTO Uruguay Agreement on Agriculture, in force since 1995, a number of changes were introduced to agricultural policies, to improve cost efficiency and market orientation, including increased flexibility in milk quotas, removal of administered prices for eggs, poultry, pork, beef and sheep, and phasing out of export subsidies. But high levels of protection remain against imports of the most important and sensitive agricultural products, such as meat, dairy, eggs and grains. Moreover, the primary agricultural sector is exempt from standard competition law.

Most of Norway's tariff rate quotas (TRQs) were eliminated in 2000 when the WTO bound tariff rates became equal to the in-tariff quota rates. Tariffs for some products, particularly livestock products are set between 100% and 400%. However, there is a system of "open periods" allowing imports at reduced tariff rates in the event that domestic prices rise above threshold levels due to a deficit in domestic production. Since 1 January 2015, Norway unilaterally eliminated import duties on 114 agricultural tariff lines. While these duties were low (and not important for protecting Norwegian agricultural production), their elimination resulted in reduced customs procedures and administrative costs. Export subsidies were abolished at the end of 2020.

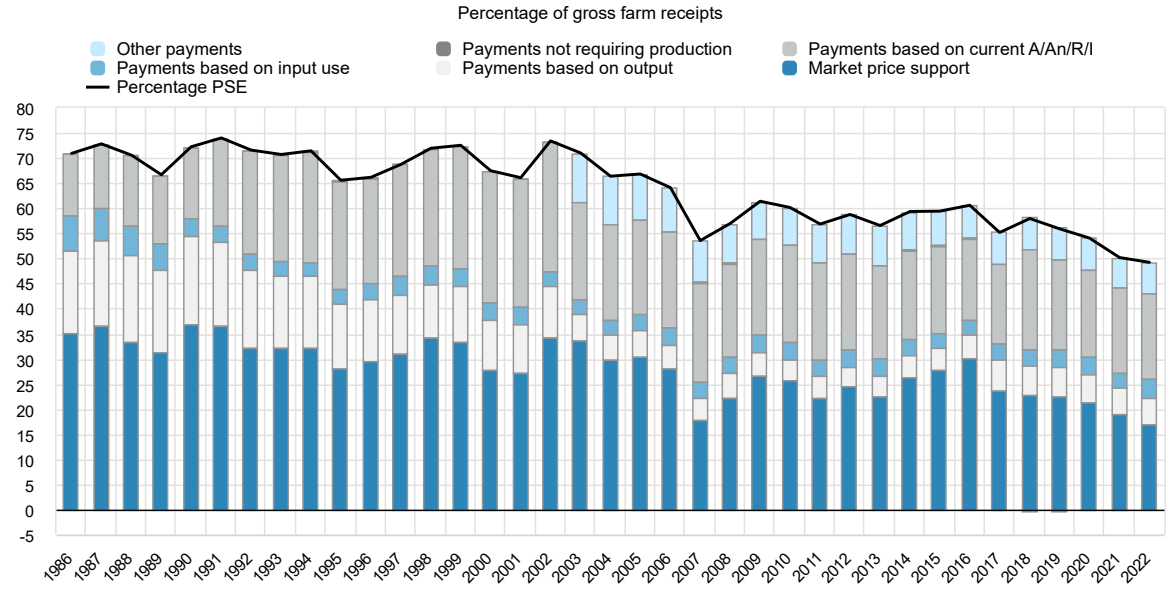
Table 22.2. Norway: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to 1985	Closed economy	High agricultural import tariffs and non-tariff measures Administered prices of agricultural products Production quotas of certain products
1985-1994	Modest domestic reforms	Modest reduction in agricultural import tariffs Removal of several administered prices Increased flexibility in the milk quota system
1995-2000	Implementation of the WTO Uruguay Agreement on Agriculture; more emphasis on environmental sustainability issues	Modest import tariff reduction; tariffication of non-tariff measures Introduction of environmental cross-compliance
2000-present	Continuation of trade reforms	Lower border protection Abolition of export subsidies Removal of several administered prices Introduction of environmental programmes

Source: (OECD, 2021[1]).

Today, agriculture in Norway remains among the most highly protected in the OECD. Market price support is provided through border protection and domestic market regulation and forms the main component of support to producers (Figure 22.4). The share of MPS in the PSE has been slowly declining over time, but still represents about 34.8% of support. Payments based on output are now around one-third of 1986-88 levels largely as a result of declines in deficiency payments to milk producers throughout the 1990s. Payments based on current production factors have increased with the introduction of new environmental programmes in the 2000s and rising subsidies for livestock and grazing animals (represented in the series payments based on current A/An/R/I in Figure 22.4).

Figure 22.4. Norway: Level and PSE composition by support categories, 1986 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

The strategic objectives of Norway's agricultural and food policies are set out in the 2016 White Paper "Change and development – A future oriented agricultural production". They include: food security, agriculture throughout the country, increasing value creation; and sustainable agriculture with lower greenhouse gas emissions.

The principal policy instruments supporting agriculture include border measures, budgetary payments differentiated by commodity and region, and domestic market regulation based on the Marketing Act. The Marketing Act covers certain types of meat (beef, mutton, pork and poultry); milk, butter and cheese; eggs; cereals and oilseeds; potatoes, vegetables, fruit and berries; and fur skins.

Target prices are provided for milk, grains and some fruits and vegetables. The government and farmers' organisations annually negotiate target prices and the budgetary framework for payments to farmers. Marketing fees are collected from producers and used to finance marketing activities dealing with surpluses.

Dairy production is controlled by a milk quota system. Milk quotas are farm-specific and tradeable only within the same regional area. Quotas were introduced in 1983, with trading of quotas being introduced in 1997 and leasing of quotas allowed since 2009. Each year the quotas are multiplied by a set factor to fix the amount of milk each producer can deliver to a dairy processor and control the overall supply of milk. New entrants to the dairy industry must procure quotas either through leasing or purchasing existing quotas from farms or the Norwegian Agricultural Agency. Currently a minimum of 40% of all quotas sold must be to the government at NOK 4 per litre (USD 0.42 per litre).

Various direct payments are provided to farmers, including acreage and headage payments, as well as payments based on product quantities for meat. Many of these are differentiated by region and farm size in order to equalise incomes across all types of farms and regions. This is designed to maintain the geographic distribution of farms and production in the country.

Since 2004, agri-environmental measures have been implemented as part of the National Environmental Programme (*Nasjonalt miljøprogram)*, which aims to contribute to sustainable agriculture production with reduced greenhouse gas (GHG) emissions, as well as to fulfilling Norway's international commitments on environment and climate in the agricultural sector.

The most important agri-environmental measures are the *Acreage and Cultural Landscape Support* (*Areal- og kulturlandskapstilskudd*), which provides payments to farmers as an incentive for land to remain in production and prohibits major changes to the natural landscape, such as levelling agricultural land, spraying edge vegetation or channelling rivers or streams. There are requirements and support for livestock on pasture, with extra payments for grazing on unimproved land. Other measures include those for organic agriculture, payments for regional environmental programmes for specific agri-environmental measures, Special Environmental Measures in Agriculture (*Spesielle Miljøtiltak I jordbruket*) and organised grazing measures (*Tiltak I beiteområder*). Environmental levies are applied on agricultural pesticides

The *Selected cultural landscapes in agriculture* (*Utvalgte kulturlandskap I jordbruket, UKL*) initiative supports farmers who want to make an extra effort to care for the environmental values of cultural landscapes in 51 selected areas deemed important or exceptional. The investment is based on voluntary agreements between the state and landowners. Co-ordination of these cultural landscapes nationally is the responsibility of the Norwegian Directorate of Agriculture, in collaboration with the Norwegian Environment Agency and the National Heritage Board. Each of the selected areas is co-managed by the municipality, landowners and agricultural enterprises, in collaboration with regional agricultural, natural and cultural heritage management.

The Regional Environmental Programme includes payments to reduce water pollution from agricultural fields, environmentally-friendly spreading of manure, management of fields deemed of high natural value or with special biodiversity, maintenance around heritage sites in the agricultural landscape, etc.

Article 19 of the European Economic Area (EEA) Agreement concerning trade in basic agricultural products is reviewed periodically. The last round of these reviews was finalised in April 2017 and changes agreed entered into force in October 2018. Under the EEA, tariff rate quotas (TRQs) expanded on several products, including meat, cheese, vegetables and certain products used in the food industry for making processed agricultural goods. Through the European Free Trade Association (EFTA), Norway has negotiated 30 free trade agreements (FTAs) with 41 partner countries. All agreements include agricultural products, although average tariffs remain above those outside the agricultural sector. For agricultural products, simple average MFN applied tariffs were 37.1% and bound tariffs were 143.1% in 2017.

In 2017 the government introduced the Climate Change Act as part of its goal to transition to a low-emission society by 2050. The Act prescribed into law the country's targets for emissions reductions by 2030 and 2050 which are to be reviewed every five years. In 2021, these economy-wide targets were officially set at a reduction in emissions of at least 50-55% by 2030 and 90-95% by 2050 relative to 1990 levels (an increase in ambition from the reduction targets of 40% and 80-95% prescribed in the initial 2017 iteration of the Act). The government has since announced its intention to increase its 2030 target to a minimum reduction of 55% based on 1990 levels, however this had not been enshrined into law as of March 2023. The agricultural sector in Norway also has a sectoral target to reduce net CO_2 equivalent emissions by 5 million tonnes (or around 70% of agricultural emissions including land use and land use change) in the 10-year period 2021-30. This target was formed as part of the 2019 annual agreement with the farmers' organisations and was included in the government's climate action plan in 2021. Most of this reduction is anticipated to come from government efforts to change consumption patterns and various climate measures in the agricultural value chain (Norwegian Ministry of Climate and Environment, 2021[2]).

Policies, strategies and measures in agriculture are under continuous development to contribute to the fulfilment of international agreements and commitments, typically for the protection of the environment. Fossil fuel emissions from the agriculture sector are subject to the nation's carbon tax. A combination of economic and regulatory instruments exists to reduce run-off and comply with commitments of the EEA agreement for water protection. For instance, autumn tillage is restricted in areas surrounding the vulnerable Oslofjord estuary to reduce run-off.

Regarding measures related to animal welfare, there is a ban on routine prophylactic use of antibiotics and the use of antibiotics as growth promoters in animal feed. Veterinary services are provided in the whole country to ensure all animals have access to treatment. Investments to promote animal welfare are given priority in the ordinary investment programme for agriculture. A new white paper on animal welfare is due to be presented to the parliament in 2024.

Climate change adaptation policies in agriculture

Norway's northern position, landscape and production systems provide unique challenges for agriculture under a changing climate. Adverse weather events, such as the 2018 summer drought and regular "iced-in" winter pastures, can affect critical stages of production. A warming climate has the potential to provide the benefits of longer growing seasons, higher yields, and expanded production areas for various crops at Norway's northern latitude. However, it also carries additional risks of extreme weather events and new pests and diseases. Norway is expected to receive increased rainfall in the future due to climate change, which brings higher risk of landslides and floods (Norwegian Ministry of Climate and Environment, 2013[3]). Migration of some animal species driven further north by climate change might also be a challenge for farmers – the most recent example being wild boars. Similarly, incursions of new diseases such as bluetongue, tick-borne diseases, West Nile fever, Leishmaniasis, and African horse sickness also pose a threat to Norwegian agriculture (OECD, 2021[1]).

Norway published the white papers “Climate challenges – agriculture part of the solution” in 2009 and “Climate change adaptation in Norway” in 2013. These discuss adaptation actions the government will take, such as monitoring and reporting, plant-breeding provision, contingency storage of seed, disease preparedness and legislation, pest research, and sustainable landscape management.

Sustaining agricultural activity throughout the country has been a policy objective since the 1950s to provide economic opportunities in rural and remote areas where there are few alternatives and to promote self-sufficiency. More recently, the government also views this objective as a means to safeguard food supply against extreme weather events, pests, and diseases by spreading production geographically. Agricultural land in Norway is scarce, so the government aims to limit land conversion away from agriculture to a target maximum of 300 ha per year, corresponding to 0.03% of total agricultural land. In 2022, additional support was provided for agriculture in marginal regions and to promote the use of pastures that might otherwise be abandoned.

The political platform of the current government emphasises adaptation solutions that bind soils, store carbon, and guard against damaging erosion, floods and water out of place. Several adaptation policies that support this platform were adopted in 2022 as part of the annual negotiations with farmers’ organisations. These include support for investments in drainage systems to handle excessive water and for cropping practices that abate erosion and run-off. Support was also provided for contingency storage of seed and grain. Norway takes part in missions under Horizon Europe, which has a focus on soil management and adaptation in agriculture.

Research on climate-adapted production, improving agronomic practices, and technology development is a priority for the government. Increased funding was provided this year for research and promotion of climate-adapted varieties of grass, legumes, crops, and vegetables. Funding is also provided for research, extension services, veterinary services, and plant breeding suitable for the unique geographic challenges of Norway’s northern position.

Norway invests in conservation and management of genetic resources for food and agriculture. The Svalbard Seed Vault and the national strategy and action plan for management of genetic resources aim for the survival and further development of genetic material as a resource for plant breeding and food production under a changing climate.

The government and farmers’ organisations negotiated a climate agreement for agriculture in June 2019 with a target to reduce emissions and enhance carbon sinks by 5 $MtCO_2eq$. This equals around 70% of the 7.1 million tonnes emitted in 2019 (including emissions from land use and land-use change, transport, and heating) (Norwegian Ministry of Climate and Environment, 2021[2]). The farmers’ organisations presented a plan to fulfil the target through eight areas:[1]

- deployment of a climate calculator and increased investment-in-climate advice to all farms by 2030
- targeted efforts to improve roughage quality and use of feed additives, livestock breeding in cattle, sheep and pigs, and improved animal health
- adoption of machinery that runs on electricity, biofuels, biogas or hydrogen
- adoption of fossil-free heating sources
- better use of fertilisers through more environmentally-friendly spreading methods, better storage capacity, and timing.
- increased use of livestock manure for biogas production to reduce GHG emission in agriculture and other sectors
- use of cover crops, biocarbon and grazing to remove carbon from the atmosphere and store it in plant biomass and soil
- Development and application of new technologies that reduce GHG emissions and increase carbon storage

In 2022, the government announced the establishment of Bionova, which began operating in January 2023 as a financing mechanism for initiatives addressing the impact of climate change on agriculture and increasing value creation in the circular bioeconomy. It will serve as an important tool to reach the climate objective of the agreement between the government and farmers' associations.

Domestic policy developments in 2022-23

Main policies in agriculture are subject to annual negotiations with farmers' organisations leading to an annual agricultural agreement. In May 2022, the Norwegian Government agreed to a significant expansion of support for 2022-23 during these annual negotiations, in part to compensate for the recent significant increases in input costs stemming from the war in Ukraine. Projected budget outlays of the agricultural agreement are projected to grow by approximately 9% higher in 2022 and 31% in 2023. This is in line with an objective of the government's platform on agriculture – to address what it considers insufficient income of farmers and low self-sufficiency of Norwegian agriculture. The main elements of the agreement were:

- An increase in target prices with an effect on revenue of about NOK 1.5 billion (USD 156 million) from 1 July 2022. Target prices for grains were increased by NOK 1.00 (USD 0.1) per kg for food grains and NOK 0.93 (USD 0.9) per kg for feed grains, on average. The food grade wheat target price was increased by 26% to NOK 4.80 (USD 0.50) per kg and the feed barley target price was increased by 28% to NOK 4.06 (USD 0.42) per kg. This was done to encourage increased production of grains in response to increasing costs of key inputs.
- An extraordinary payment of NOK 2 billion (USD 208 million) in autumn 2022.
- Increased tax deductions for agriculture by NOK 367 million (USD 38 million) from 2022 to 2023.
- The marketing arrangements for cereals were temporarily changed to prevent animal feed prices from changing as a result of fluctuations in global prices for cereals.
- A 30% increase in funds for Regional Agri-Environmental Programmes. These were mostly dedicated to measures to abate run-off in the vulnerable Oslofjord estuary. This continues a trend in recent years towards a more climate and environmentally friendly direction.
- Increased direct and investment subsidies for small and medium-sized farms. The direct subsidies are prioritised for producers of sheep and cattle.

From 2022, at least 40% of milk quotas sold must be to the government at a fixed price of NOK 4 per litre (USD 0.42 per litre). There are no price controls on the remaining 60% that is allowed to be sold privately to other producers within the seller's production region. By restricting quota sales between the 14 production regions for cow milk, the government seeks to maintain geographical distribution, cost-effective food production and equal economic opportunities for producers in all regions.

Each year, milk supply is controlled by milk quotas and a set quota ratio is determined by the government which dictates the maximum amount of milk that can be produced per quota allotment. For the 2023 quota year (1 January 2023 to 31 December 2023), the cow milk quota ratio was set at 0.95, meaning that farms can deliver a maximum of 95% of their allotted milk quota. This is a four-percentage point drop from the 0.99 ratio in the 2022 quota year. The goat milk quota ratio in 2023 remained unchanged at 0.99 of quota levels.

Domestic policy responses to Russia's war of aggression in Ukraine

The government held extraordinary negotiations in autumn 2021 to compensate for rising building material and fertiliser costs already being experienced before the war. These negotiations yielded an extraordinary payment of approximately NOK 750 million (USD 78 million) to the agricultural sector. Following the outbreak of war, the 2022 annual agreement (as discussed in the section above) included several measures specifically designed to compensate for rising input costs. These include an additional

extraordinary payment totalling NOK 2 billion (USD 208 million), investment grants totalling NOK 200 million (USD 21 million) and an extension of the tax deduction for agriculture.

To compensate for rising energy costs, a general electricity support scheme was introduced. The scheme provided relief to both households and businesses but provided special treatment to agricultural operations. Agricultural holdings were provided with higher consumption limits than households and other businesses, including unlimited consumption limits on greenhouse and irrigation operations. The electricity support compensates a given percentage of electricity prices above NOK 0.70 per kWh (USD 0.07). Initially this percentage was set at 55% for all entities but was later increased to 80% for agricultural holdings, compared to 90% for households. For greenhouse farming, 100% of costs over NOK 0.70 per kWh (USD 0.07) are covered. This scheme will be continued until 31 December 2024.

The marketing arrangement for cereals was also temporarily changed through the agricultural agreement in 2022. Deficiency payments were introduced in July 2022 for imported carbohydrate raw materials used for animal feed. Separate subsidy rates were calculated on various crops such as wheat, barley, corn and peas. This was done to ensure that costs of carbohydrate raw materials for animal feed did not change as a result of volatile world cereal prices caused, or exacerbated, by Russia's illegal invasion of Ukraine.

Trade policy developments in 2022-23

Norway is party to the European Free Trade Association (EFTA) through which it is currently negotiating several free trade agreements. In June 2022, the EFTA officially launched free trade negotiations with Kosovo. Negotiations remain ongoing for free trade agreements with India, Thailand, Malaysia, Viet Nam and Moldova. Negotiations with Mercosur (Argentina, Brazil, Paraguay and Uruguay) concluded in substance in August 2019, however had not yet entered into force as of May 2023.

Contextual information

Norway's agricultural production is dominated by livestock, accounting for around 70% of the value of agricultural production. This largely reflects Norway's geographic endowments, with a shortage of land suitable to crops, but an abundance of grassland and pastures. The most favourable land is dedicated to arable crops as a matter of policy design, while ruminant livestock is allocated to regions with less favourable conditions. As a result, crop production mainly takes place in central parts of Norway, and production of cow and goat milk, and bovine and sheep meat takes place in rural areas.

Due to climatic conditions that are generally unfavourable to broadacre agriculture, the agricultural sector produces a rather narrow range of commodities. The primary activities have traditionally been sheep farming, cattle (both for milk and meat) and cereals (mainly used as animal feed). The farm structure is dominated by relatively small family farms, many of which are in remote locations.

Table 22.3. Norway: Contextual indicators

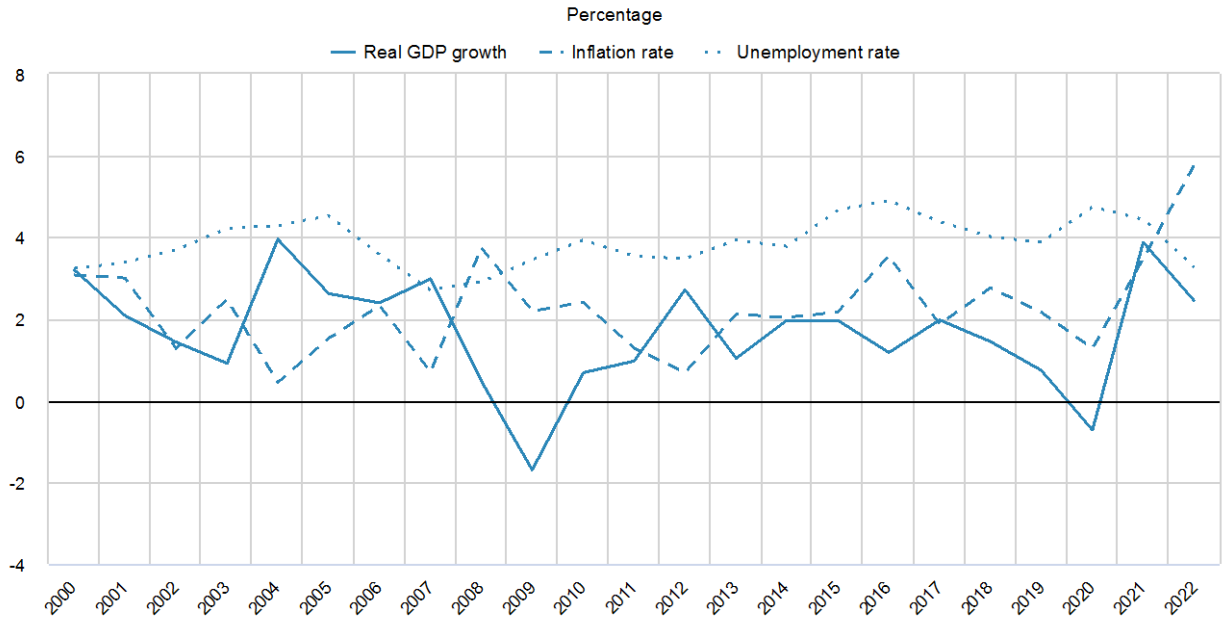
	Norway		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	166	435	0.4%	0.4%
Population (million)	4	5	0.1%	0.1%
Land area (thousand km^2)	365	364	0.4%	0.4%
Agricultural area (AA) (thousand ha)	1 042	986	0.03%	0.03%
			All countries[1]	
Population density (inhabitants/km^2)	12	15	52	64
GDP per capita (USD in PPPs)	36 941	80 496	9 350	23 401
Trade as % of GDP	27.5	27.1	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	2.1	1.8	2.9	3.9
Agriculture share in employment (%)	4.1	2.3	-	-
Agro-food exports (% of total exports)	0.8	0.9	6.2	7.9
Agro-food imports (% of total imports)	5.6	10.1	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	29	30	-	-
Livestock in total agricultural production (%)	71	70	-	-
Share of arable land in AA (%)	84	82	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

Norway's GDP grew by 2.5% in 2022, slightly slower than the OECD average of 2.8%. Norway's GDP per capita is among the highest in the world, helped by a substantial petroleum sector and a regulative framework conducive to business development. The country is broadly successful in its prioritisation of low inequality and the universal provision of core public services, including health and education. The gap between the highest and lowest incomes is among the smallest in the OECD area and rates of poverty are low (OECD, 2022[4])

Strong headline consumer price inflation in 2022 has been driven by large electricity price increases. Global supply bottlenecks in computer chips, lumber and shipping were also strong contributors to inflation (Figure 22.5). Housing in Norwegian cities has become still more expensive with a new surge in prices during the pandemic (OECD, 2022[4]).

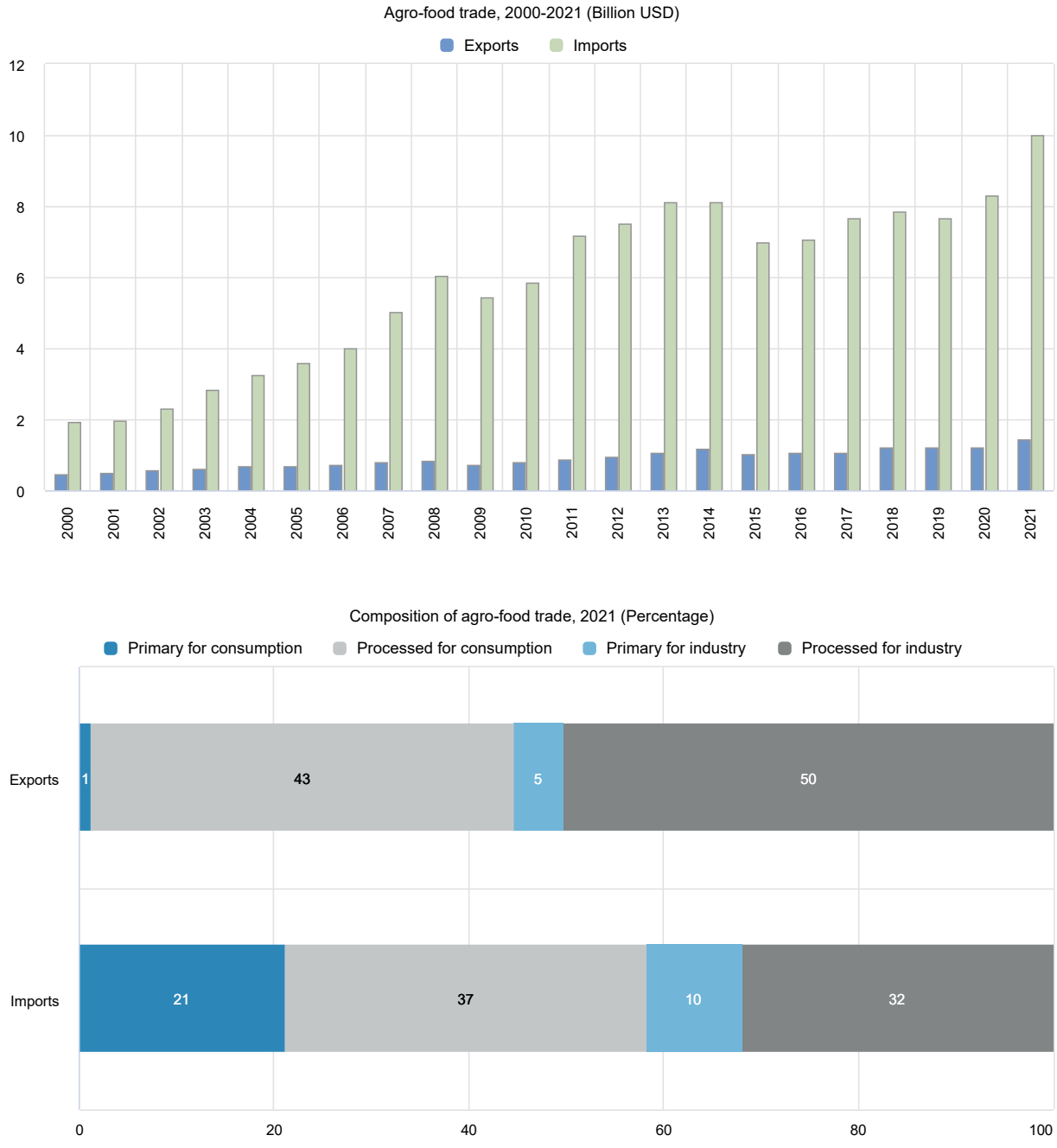
Figure 22.5. Norway: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Norway is a net importer of agricultural products (excluding fish). Agro-food products represent around 10.1% of total imports, compared to only 0.9% of total exports. The European Union is Norway's main trading partner, accounting for about two-thirds of both imports and exports. Within the European Union, Sweden and Denmark together account for one-third of Norwegian agro-food exports, whereas imports are more broadly sourced. Outside the European Union, the United States and Japan are important export destinations. Most agro-food exports are in products for final consumption, while a small majority of imports are for further processing.

Figure 22.6. Norway: Agro-food trade

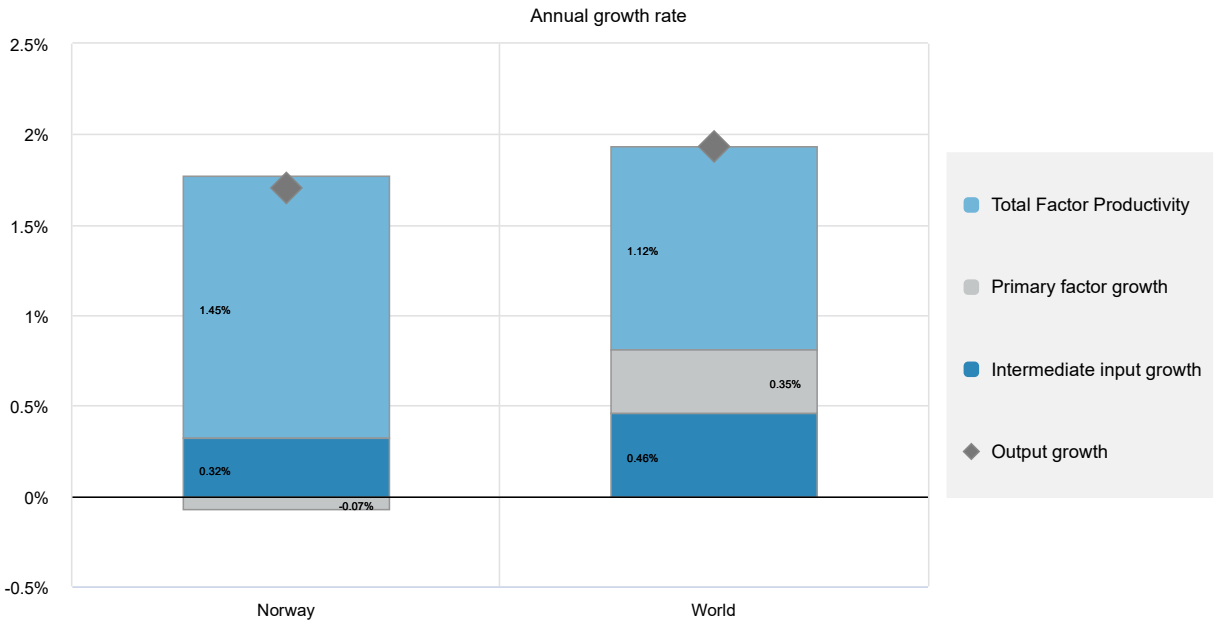


Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Agricultural output in Norway grew at an average rate of 1.7% between 2011 and 2020, only slightly lower than the global average growth rate of 1.9% (Figure 22.7). Norwegian growth has been driven primarily by advances in productivity, as captured by the total factor productivity (TFP) indicator, and to a lesser degree by the intensification of intermediate input use such as nitrogen fertilisers. This has more than offset declining use of primary inputs, such as labour and machinery. Despite having relatively high TFP growth

since 2000 compared to the OECD average, the rising use of nitrogen fertilisers alongside declining total agricultural land and stable livestock numbers has resulted in little improvement in environmental outcomes. Norway's current levels of nitrogen and phosphorus surpluses, which place pressure on soil, water, and air quality, are amongst the highest in the OECD (OECD, 2021[1]).

Figure 22.7. Norway: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 22.4. Norway: Productivity and environmental indicators

	Norway		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	5.7%	1.4%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	85.3	94.5	32.2	30.4
Phosphorus balance, kg/ha	12.0	11.0	3.3	3.0
Agriculture share of total energy use (%)	1.6	1.5	1.7	2.0
Agriculture share of GHG emissions (%)	8.4	9.2	8.6	10.5
Share of irrigated land in AA (%)	4.2	3.3	-	-
Share of agriculture in water abstractions (%)	..	..	46.6	49.7
Water stress indicator	..	..	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

References

Norwegian Ministry of Climate and Environment (2021), *Norway's Climate Action Plan for 2021-2030*, http://www.government.no/. [2]

Norwegian Ministry of Climate and Environment (2013), *Climate change adaptation in Norway. White paper*, http://www.government.no. [3]

OECD (2022), *OECD Economic Surveys: Norway 2022*, OECD Publishing, Paris, https://doi.org/10.1787/df7b87ab-en. [4]

OECD (2021), *Policies for the Future of Farming and Food in Norway*, OECD Agriculture and Food Policy Reviews, OECD Publishing, Paris, https://doi.org/10.1787/20b14991-en. [1]

Note

[1] See http://www.bondelaget.no/tema/landbruketsklimaplan/landbrukets-klimaplan.

23 Philippines

Support to agriculture

Support to agricultural producers (Producer Support Estimate, PSE) in the Philippines averaged 22% of gross farm receipts in 2020-22, like 20 years earlier but below a peak of 28% in 2014. The current support level is the highest among the emerging economies covered in this report.

Although budgetary support gained in prominence over the last three years, support to farmers continues to be dominated by Market Price Support (MPS), mainly provided by transfers from consumers. Rice producers are the main beneficiaries of MPS, which is primarily provided through import tariffs. Sugarcane and animal products also receive substantial MPS. As a result, domestic producer prices were 29% higher than world market prices on average in 2020-22. Payments to farmers support variable inputs and investment in agricultural equipment and facilities. MPS and payments for inputs (which, together with payment based on output volumes, represent the most production- and trade-distorting measures) account for 96% of support to farmers.

The General Services Support Estimate (GSSE) in 2020-22 equalled close to 5% of the sector's value of production, almost double the value observed 20 years earlier. It is dominated by investments in infrastructure (notably in irrigation systems and farm-to-market roads) and in the agricultural knowledge and innovation system (in particular for extension programmes). Overall, total support to the agricultural sector accounted for 2.3% of GDP in 2020-22, down from 2.9% in 2000-02 but still the highest among countries reviewed in this report.

Recent policy changes

The President-elect took over the responsibilities for the Department of Agriculture (DA) in 2022 and became Secretary of Agriculture. This is the first time a president has also held this role. The budget allocated to agriculture increased 40%, from PHP 117.29 billion (USD 2.2 billion) in 2022 to PHP 163.5 billion (USD 3 billion) in 2023.

The government introduced several measures to mitigate the impacts of Russia's war of aggression against Ukraine. These include programmes to reduce the cost of fertilisers and fuel, and tariff reductions to facilitate access to imports. In addition, the government continues to impose Suggested Retail Prices (SRP) for specific food items.

During the 2022-23 school year, the Milk Feeding Programme, which provides milk and milk products to often underfed and nutrient-deficient students in public day care, kindergartens, and elementary schools, received 80% of its needed milk volumes from local dairy farmers and co-operatives. This follows direct distributions of food and milk packs to homes or through a pick-up system during school closures that started during the COVID-19 pandemic. PHP 3.7 billion (USD 68 million) was earmarked for this programme.

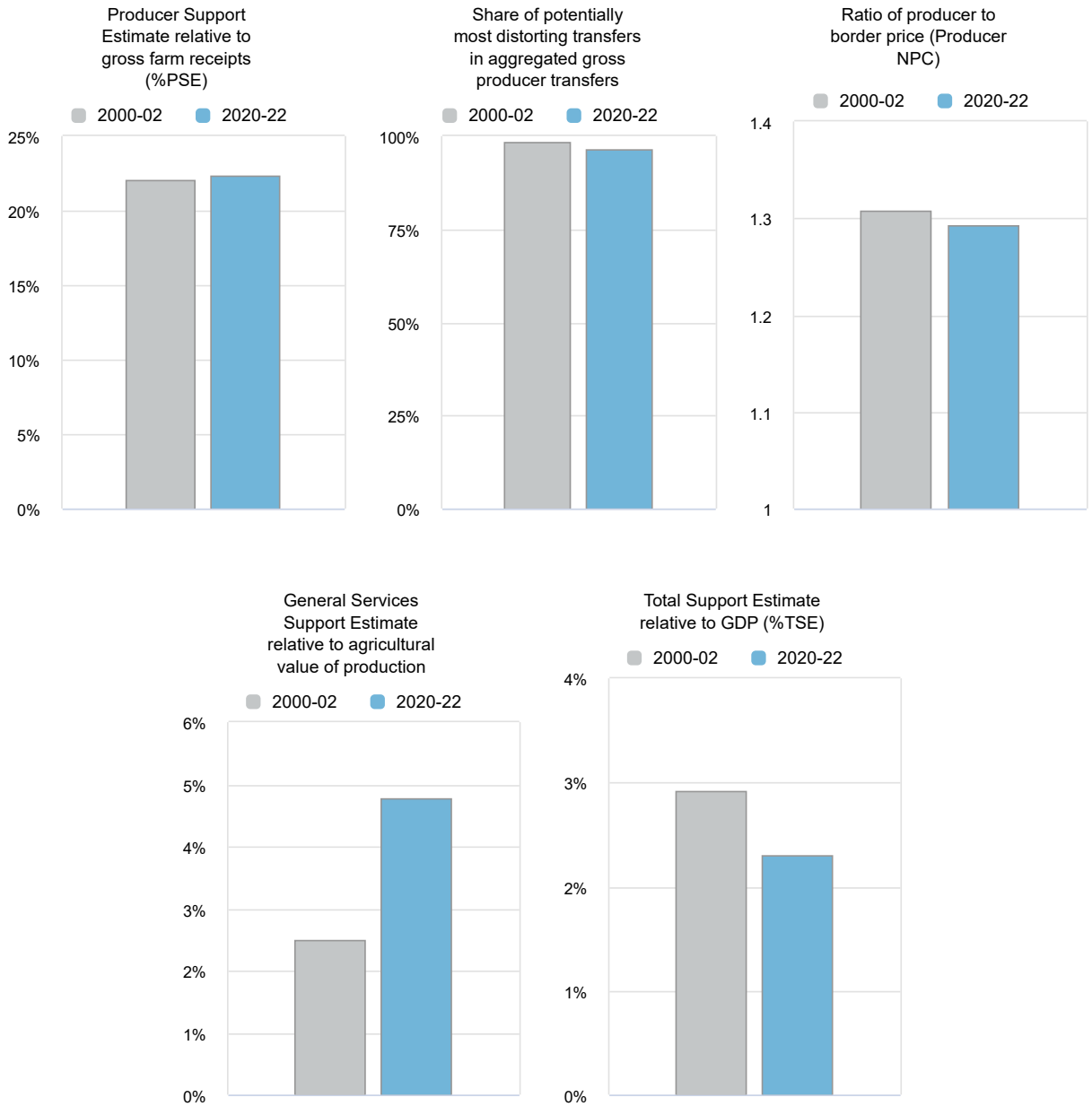
The Agriculture, Fisheries and Rural Development Financing Enhancement Act of 2022 replaced the Agri-Agra Law in July. While government and private financial institutions used to be required to allocate at least 15% of their lending portfolios to the agricultural sector and 10% to agrarian reform, the new law offers these institutions greater flexibility in allocating the minimum total 25% of their loanable funds between the agricultural sector or agrarian reform. The Act also expands agricultural credit to include agriculture and fisheries-related activities such as agricultural mechanisation and modernisation, agri-tourism, public rural infrastructure, marketing and processing, and digitalisation of agriculture.

The Coconut Farmer and Industry Development Plan was approved in June 2022. The 2021 Coconut Farmers and Industry Trust Fund Act makes PHP 75 billion (USD 1.4 billion) available for five years to modernise the coconut industry and increase the income and competitiveness of coconut farmers.

Assessment and recommendations

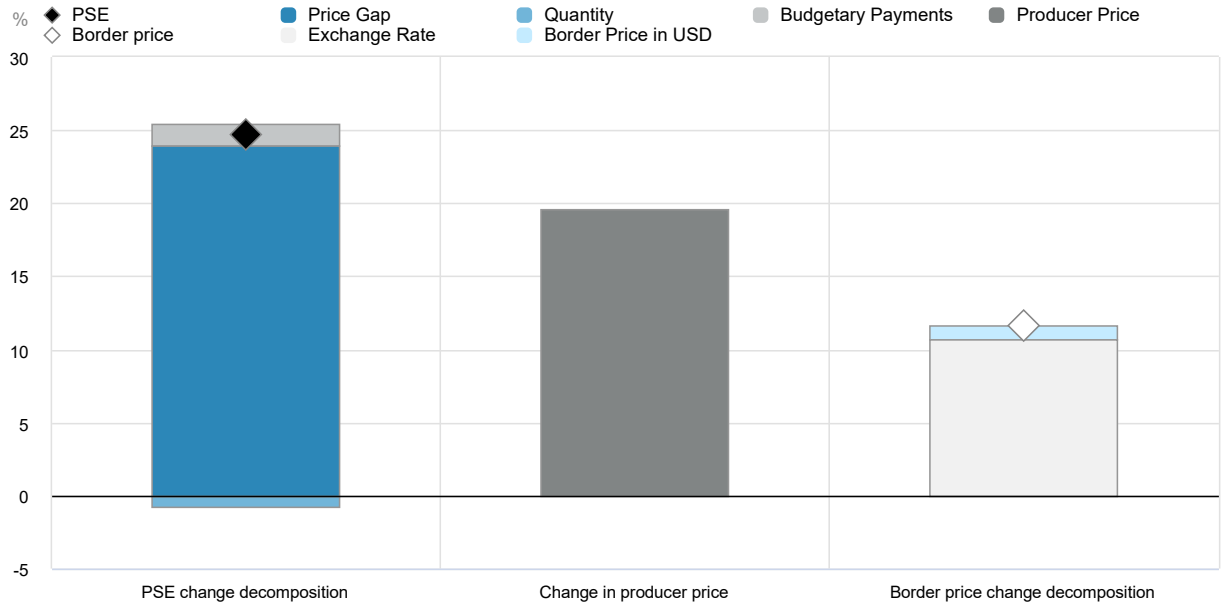
- Since the late 2000s, the DA has prioritised climate-change adaptation in the national policy framework and taken important steps to mainstream resilient building and disaster reduction in its programmes and operations. However, adaptation policies should have defined and measurable outcomes, and efforts should be undertaken to monitor their impacts. While funding for adaptation measures is increasing, their implementation should be carefully monitored, and public funding should encourage private investment to address the sector's needs. The effectiveness of current risk-management tools should be assessed – particularly the extent to which insurance and cash-transfer schemes encourage risk-reducing decision making on farms. Moreover, the current system of strong support for specific commodities (notably sugar and rice) creates a barrier to adjusting production structures to a changing climate. The prevailing price support should be reformed to incentivise needed transformation of the sector.
- The Philippines must accelerate development and implementation of climate-change mitigation policies for agriculture to meet commitments to reduce emissions by 75% of projected business-as-usual emissions between 2020 and 2030 (subject to the provision of climate finance and help with implementation), as outlined in its 2021 Nationally Determined Contribution. Targeted actions should focus on the most important emission sources and economically viable solutions, such as by changing rice-production methods and encouraging rice farmers to diversify their production.
- The Philippines' agricultural policy focuses on food security and poverty alleviation through a guaranteed supply of staple food (rice) at affordable prices, backed by policies supporting rice producers that make rice one of the most heavily supported agricultural commodities. Reducing tariff rates for rice, pig meat, and poultry on a temporary basis since 2021 to ensure food security has marked a significant policy shift. Further reductions in tariff rates should be pursued in the future. Removing commodity-specific support can enable diversification of farm income sources and spread farmers' risk, reducing vulnerability to climate shocks.
- GSSE increased since 2000-02 but plateaued in the last ten years. Boosting long-term investment in infrastructure and R&D should lift productivity in the agricultural sector, which is growing slower than the global average and than most countries in the region.

Figure 23.1. Philippines: Development of support to agriculture



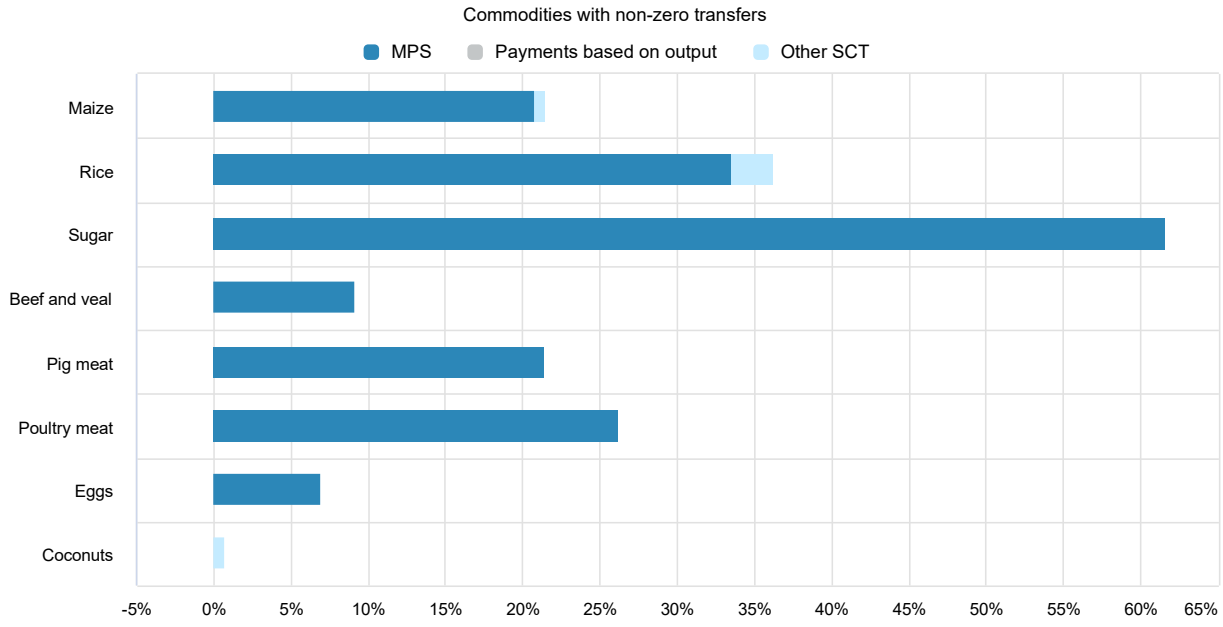
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 23.2. Philippines: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 23.3. Philippines: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 23.1. Philippines: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**9 727**	**32 307**	**30 722**	**32 791**	**33 409**
***of which:** share of MPS commodities (%)*	89.19	93.51	93.12	93.41	93.99
Total value of consumption (at farm gate)	**9 950**	**37 139**	**34 021**	**38 762**	**38 634**
Producer Support Estimate (PSE)	**2 167**	**7 328**	**6 535**	**7 261**	**8 187**
Support based on commodity output	2 094	6 784	6 134	6 666	7 552
Market Price Support[1]	2 094	6 784	6 134	6 666	7 552
Positive Market Price Support	2 134	6 784	6 134	6 666	7 552
Negative Market Price Support	-40	0	0	0	0
Payments based on output	0	0	0	0	0
Payments based on input use	69	526	385	579	615
Based on variable input use	36	274	158	339	325
with input constraints	0	0	0	0	0
Based on fixed capital formation	32	252	227	240	290
with input constraints	0	0	0	0	0
Based on on-farm services	0	0	0	0	0
with input constraints	0	0	0	0	0
Payments based on current A/An/R/I, production required	0	0	0	0	0
Based on Receipts / Income	0	0	0	0	0
Based on Area planted / Animal numbers	0	0	0	0	0
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	0	0	0	0
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	5	17	17	15	20
Percentage PSE (%)	**22.03**	**22.36**	**21.00**	**21.75**	**24.05**
Producer NPC (coeff.)	**1.31**	**1.29**	**1.29**	**1.29**	**1.30**
Producer NAC (coeff.)	**1.28**	**1.29**	**1.27**	**1.28**	**1.32**
General Services Support Estimate (GSSE)	**244**	**1 555**	**1 723**	**1 595**	**1 347**
Agricultural knowledge and innovation system	56	370	417	395	298
Inspection and control	14	77	98	67	66
Development and maintenance of infrastructure	155	896	991	913	784
Marketing and promotion	6	50	49	52	50
Cost of public stockholding	12	137	141	142	128
Miscellaneous	1	24	27	26	21
Percentage GSSE (% of TSE)	**10.11**	**17.39**	**20.87**	**18.01**	**14.13**
Consumer Support Estimate (CSE)	**-2 250**	**-8 016**	**-7 058**	**-8 258**	**-8 731**
Transfers to producers from consumers	-2 299	-7 122	-6 714	-7 135	-7 517
Other transfers from consumers	-152	-1 365	-962	-1 688	-1 445
Transfers to consumers from taxpayers	0	0	0	0	0
Excess feed cost	201	471	617	564	231
Percentage CSE (%)	**-22.53**	**-21.62**	**-20.75**	**-21.30**	**-22.60**
Consumer NPC (coeff.)	**1.32**	**1.30**	**1.29**	**1.29**	**1.30**
Consumer NAC (coeff.)	**1.29**	**1.28**	**1.26**	**1.27**	**1.29**
Total Support Estimate (TSE)	**2 411**	**8 883**	**8 259**	**8 856**	**9 533**
Transfers from consumers	2 451	8 487	7 676	8 822	8 963
Transfers from taxpayers	112	1 761	1 545	1 721	2 016
Budget revenues	-152	-1 365	-962	-1 688	-1 445
Percentage TSE (% of GDP)	**2.91**	**2.30**	**2.28**	**2.25**	**2.36**
Total Budgetary Support Estimate (TBSE)	**318**	**2 099**	**2 125**	**2 190**	**1 981**
Percentage TBSE (% of GDP)	**0.38**	**0.54**	**0.59**	**0.56**	**0.49**
GDP deflator (2000-02=100)	**100**	**186**	**184**	**188**	**..**
Exchange rate (national currency per USD)	**48.96**	**51.12**	**49.62**	**49.26**	**54.48**

.. Not available

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.

1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Philippines are: maize, rice, sugar, beef and veal, pig meat, poultry, eggs, bananas, coconut, mango and pineapple.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en.

Description of policy developments

Overview of policy trends

Heavy government interventions in agricultural markets within a closed economy characterised the Philippines during the period from 1970 to 1986. The government had monopoly control over trade in rice, sugar and maize, operated by the National Grains Authority (NGA) established in 1972 (later renamed the National Food Authority [NFA]). Sugar trade was nationalised under the National Sugar Trading Corporation. At the same time, high-yield rice varieties were introduced and their use was encouraged with input subsidies, as was the use of fertilisers and pesticides. Public spending in the sector increased (particularly on irrigation), financed by a mix of taxes on major agricultural exports and foreign loans. Access to credit was facilitated by legally obliging financial institutions to provide 25% of their loans to the agricultural sector. Budgetary expenditures financed extension services to the farming sector (OECD, 2017[1]).

Partial liberalisation of the sector was implemented gradually from 1986 to 2000. Reforms undertaken in the 1990s aimed to improve services provided to agriculture, particularly extension services, and infrastructure. Market interventions were gradually reduced, as were tariffs and non-tariff measures on agro-food imports. The policy of self-sufficiency in rice continued with the provision of input subsidies to farmers, mainly for fertilisers and certified seeds, but also with credit facilitation and the provision of support to public services for agriculture, such as investments in irrigation and farm-to-market roads. At the beginning of the 1990s, the Philippines negotiated a number of trade agreements (for example, it is a founding member of the ASEAN Free Trade Area). Upon joining the WTO in 1995, the country committed to removing quantitative restrictions on imports of sensitive agricultural products, with the exception of rice, and to gradual liberalisation of agro-food trade. Public expenditure on agriculture declined substantially in the late 1990s, due to tight fiscal policies adopted in the aftermath of the Asian Financial Crisis (OECD, 2017[1]).

Since 1988, the Philippines has undertaken an ambitious agrarian reform to redistribute agricultural land to landless farmers and land workers. The reform covered close to three-quarters of the country's agricultural area. While the redistribution of land was effectively complete by the end of 2015, property rights remained unsettled and almost half of the reform beneficiaries still have collective ownership certificates instead of individual property rights.

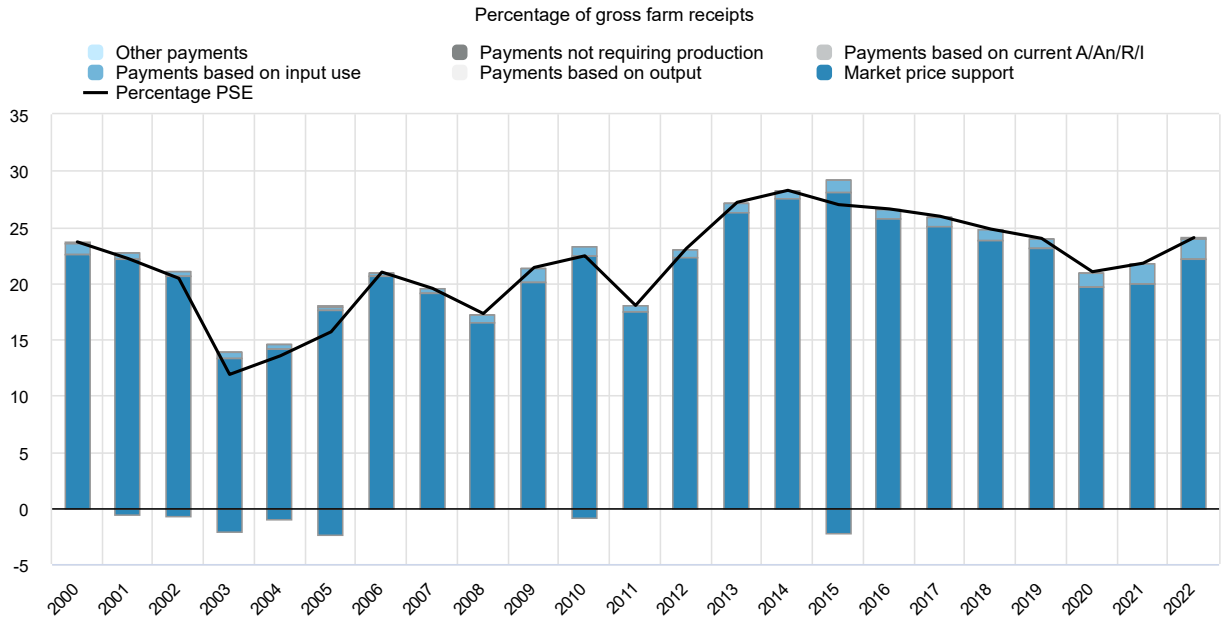
During the 2000s, the government undertook policy measures to further reduce market interventions in agriculture. Subsidised credit programmes were terminated, and private traders allowed to import rice at limited levels. However, the focus on food (rice) self-sufficiency was reinforced and after the global food price crisis in 2008 spending on irrigation and input subsidies increased substantially. The Food Staples Sufficiency Programme, launched in 2011, retained a focus on rice and other selected staples, but shifted emphasis away from input subsidies towards providing public services to agriculture, such as extension and infrastructure (OECD, 2017[1]). Following the Uruguay Round Agreement on Agriculture, the system of quantitative restrictions for rice was abolished in March 2019 and replaced by a tariff rate quota system. The government established the *Rice Competitiveness Enhancement Fund* (RCEF) in 2019 to offset the effect of the liberalisation of rice imports on producers' incomes. This fund has an annual appropriation of PHP 10 billion (USD 203 million) for six years (until 2025).

Table 23.2. Philippines: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to 1986	Closed economy with heavy state interventions in agricultural markets and trade	Agricultural import tariffs; Export taxes on agricultural products State monopoly control over rice and maize trade (NGA, now NFA) Food self-sufficiency (rice and other staples); Increasing support to those commodities Nationalisation of sugar production; Creation of the National Sugar Trading Corporation
1986-2000s	Gradual reforms towards trade liberalization	Continued policy of food self-sufficiency (rice) Land reform started in 1988 (redistribution of land) National Sugar Trading Corporation reduced its functions and changed to the Sugar Regulatory Administration Investments in general services (irrigation, roads) Input subsidies declined due to the Asian financial crisis Removal of quantitative restrictions of all agricultural products except rice FTAs and WTO accession
2000-present	Minor policy change, some forms of state intervention in markets and trade maintained	Food self-sufficiency (rice) continues to be the main objective Quantitative quotas for rice imports High tariffs of some agricultural products, particularly rice and maize Subsidised credit was dismantled Input subsidies for rice Import quantitative restrictions for rice abolished and replaced by import tariffs (2019) Increased budgetary support to rice producers

Support to farmers as a share of gross farm receipts (percentage PSE) gradually increased until 2014 where it reached its maximum level of 28% before declining to 21% in 2020. Support has then been growing over the last two years, stabilising to 24% in 2022. This is the highest among the emerging economies included in this report. MPS for imported commodities (i.e. rice, maize, beef, poultry, pig meat and eggs) constitutes almost all of the support to farms and largely reflects existing trade barriers mainly in the form of tariffs and tariff rate quotas (Figure 23.4). Rice is the most important commodity in terms of value of production, so the level and fluctuation of market price support for rice largely drives the evolution of total MPS. MPS for rice is implemented through multiple policies that include support prices, release prices, government procurement and import restrictions. Most of the exported commodities covered (coconut, bananas, mangoes and pineapple) are not subject to trade or domestic policies and hence do not receive any MPS. Sugar receives price support through sugar production quotas, regulation of foreign trade and protection with high tariffs. Budgetary support to producers is low, and exclusively made up of payments based on input use. Most of these payments are based on production support services (such as the distribution of seeds or fertilisers) and provision of agricultural machinery, equipment and facilities linked to commodity specific programmes.

Figure 23.4. Philippines: Level and PSE composition by support categories, 2000 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

Price support policies are an important part of the policy mix. These mainly focus on rice and sugar and take the form of trade barriers (tariffs and TRQs) and domestic market regulations for rice. The National Food Authority (NFA) implements rice price support by buying buffer stocks at administered prices from domestic producers and selling these stocks at subsidised prices to consumers. For sugar, production quotas and trade barriers (tariffs and TRQs) provide producer price support and market regulation.

Tariff protection is the Philippines' main trade policy tool. Trade liberalisation primarily occurs within regional trade agreements, particularly the ASEAN Free Trade Area. The simple average applied Most Favoured Nation (MFN) tariff on agricultural products was 9.8% in 2020. Tariff lines applied are ad valorem and range from 0% to 66.9% (USTA, 2022[2]).

Tariff rate quotas are applied to 14 agricultural products, with in-quota tariffs ranging from 30% to 50% and out-of-quota from 35% to 65%. Products covered include live swine, goats and poultry and poultry meat, potatoes, coffee, maize, rice and sugar. Import licensing is required for all regulated products (including those under TRQs), and is intended to safeguard public health, national security and welfare.

Quantitative restrictions on rice imports were replaced with an **import tariff system** in March 2019, under the Rice Tariffication and Liberalisation Law (RA 1120) implemented to comply with the Philippines' WTO obligations. In place of a quota on imports from ASEAN countries, a single tariff of 35% for rice applies. For rice imports from non-ASEAN countries, a TRQ applies. Applied MFN in-quota and out-of-quota tariffs for rice are set at 40% and 50% respectively. Additionally, grains, grain products and sugar require export

permits. To offset the effects of rice liberalisation and to encourage self-sufficiency, the Philippines Department of Agriculture (DA) has implemented several support programmes for rice producers.

Budgetary support to agricultural producers, both through payments provided to farmers individually and to the agricultural sector as a whole (general services), is small compared to the level of price support. Budgetary support to producers focuses on subsidising the use of variable inputs, including seeds and fertilisers. General service payments are mainly for infrastructure and agricultural research and development.

In April 2021, the Philippines submitted its Nationally Determined Contribution which committed to reduce GHG emissions by 75% relative to projected business-as-usual cumulative emissions between 2020 and 2030, of which 2.7% is unconditional and 72.3% is conditional (UNFCCC, 2021[3]).[1] For 2021-30, the conditional target GHG emission reduction for agriculture is 29.4% below the business-as-usual scenario of 539.09 $MtCO_2eq$ cumulative emissions (Department of Agriculture (DA), 2022[4]). In 2022, the agricultural sector accounted for around a quarter of national emissions and was the second-highest emitter of GHGs in the Philippines, after the energy sector. The Philippine's ambition is to focus mitigation efforts on the major sources of agricultural GFG emissions (paddy rice cultivation, livestock enteric fermentation, soil cultivation, and livestock manure management) by adopting nature-based solutions (e.g. microbial inoculants or diet modification to reduce emission from livestock), crop management techniques (such as supplements like biochar and organic fertiliser to increase soil friability) or renewable energy for water management,

Climate change adaptation policies in agriculture

Located along the Pacific "Ring of Fire", the Philippines frequently experience earthquakes and volcanic eruptions. The archipelago of 7 109 islands is also at the centre of a typhoon belt and typically experiences 20 typhoons every year, in addition to risks of flooding, drought, and rising sea levels.

In 2022, the Philippines had the highest disaster risk according to the World Risk Index, which measures both the exposure and vulnerability of a country's population to potential impact from natural hazards (IFHV, 2022[5]). Due to climate change, the Philippines face an increased frequency of extreme weather events, the consequences of rising sea levels, temperature increases, and changes in rainfall patterns. Natural disasters aggravated by climate change cause considerable damage to the agricultural sector and pose major risks to agricultural output and productivity growth. From 2010 to 2019, damage to agriculture amounted to around USD 5.7 billion or 63% of total estimated damage from extreme natural events and disasters (The World Bank Group, 2022[6]; OECD, 2017[1]).

As the impact of climate change became increasingly visible, the Climate Change Act was enacted by the government in 2009 and established the Climate Change Commission (CCC) as the policy-making body to co-ordinate, monitor, and evaluate national climate-change programmes and action plans. The CCC's advisory board comprises government agencies (e.g. DA, Department of Environment and Natural Resources, Local Government Units) and representatives from academia, the business sector, and non-governmental organisations. The CCC also supports efforts to reduce GHG emissions and promotes activities to increase resilience to natural disasters (e.g. using early-warning systems) with the National Disaster Risk Reduction and Management Council (NDRRMC). Through the CCC, the Philippines submitted its Nationally Determined Contribution, which identified both mitigation and adaptation measures (Department of Agriculture, 2022[7]).

Strategic climate-change adaptation priorities are integrated in the Philippines' policy framework through the 2010-22 National Framework Strategy on Climate Change (NFSCC) and the 2011-28 National Climate Change Action Plan (NCCAP). The NFSCC seeks to build the adaptive capacity of communities, increase the resilience of natural ecosystems to climate change and optimise mitigation opportunities towards sustainable development (Climate Change Commission (CCC), 2010[8]). The NCCAP determines climate-

related objectives and provides priorities for action in seven thematic areas, including food security, water sufficiency, and ecosystem and environmental stability, among others.

The DA launched the Climate Change Systems-Wide Programme in 2013, which cuts across policy instruments and agencies of the Department and allows it to address climate-change vulnerabilities and risks in designing and implementing its programmes. Within the DA, the Climate Resilient Agriculture Office (CRAO) oversees programmes focused on climate-change adaptation and mitigation in agriculture. The CRAO and DA Regional Field Offices (RFOs) partner to provide farming communities assistance, and prepare and disseminate farm and fishery advisories based on weather outlooks.

The flagship programme of the DA's climate agriculture policy is the national and system-wide Adaptation and Mitigation Initiative in Agriculture (AMIA), which enhances climate-resilient agriculture technologies and practices in local communities, helping farmers and fishers build sustainable living conditions and enterprises. The programme aims to increase the capacity of individual farmers and fishers to use and apply climate information and support services that: (1) improve their food, nutrition, and livelihood security; (2) promote climate-resilient and sustainable production and management practices and technologies; (3) develop and adopt risk-transfer mechanisms to protect their income and livelihoods from sudden and slow-onset climate-related stress and shocks; and (4) support the development of climate-resilient agricultural and fisheries infrastructure (Department of Agriculture, 2022[7]).

AMIA is implemented by the DA in partnership with the RFOs, universities, international organisations, financial institutions, and non-government organisations. As of December 2022, there were 163 climate-resilient "AMIA villages" in different stages of implementation, located in 55 provinces, and 213 additional climate-resilient pilot sites under development. Through the AMIA village approach, productivity-enhancing technologies and integrated support services tailored to the needs of the community are continuously being delivered to farmer-beneficiaries, such as the provision of drought-tolerant varieties, drip irrigation and water harvesting, and the use of coconut husks as mulch in the upland agro-ecological zone (Department of Agriculture (DA), 2022[4]).

In 2022, the DA launched training modules for local government units (LGUs) on evidence-informed planning, and provided on-line presentations on climate information services and workshops for farmers. These additional training and extension services aim to disseminate adaptative tools, technologies and practices.

The CRAO also provides climate and weather-informed services; and helps complete climate-risk and vulnerability assessments, and disaster-risk reduction financing and risk transfer. The CRAO partners with national and local government units to expand regional coverage of climate-risk and vulnerability assessments, and develop an understanding of the current and future climate risks facing the region. As of December 2022, 58 provincial Climate-Risk Vulnerability Assessment (CRVA) maps were completed to focus the investment projects of DA Banner Programs. CRVA maps are among the decision-support tools developed under the AMIA programme, designed to ensure that climate-resilient technologies are applied. RFOs provided regular farm and fishery advice based on the climate outlook in 2022. Three types of information have been generated: (1) the 10-day Farm Weather Outlook and Advisory (FWOA) provides a weather forecast and farm actions to avoid losses or ensure effective farm-management practices; (2) the Seasonal Climate Outlook and Advisory provides information on expected extreme events during the upcoming six months, such as typhoons, drought, and dry spells; and (3) the special FWOA tracks incoming typhoons and provides advice on climate-resilient agriculture practices to prevent or limit damage before, during, and after a typhoon (Department of Agriculture (DA), 2022[4]).

The Survival and Recovery Loan Assistance Programme is the DA Agricultural Credit Policy Council's (ACPC) umbrella loan programme for post-disaster recovery. It supports small farmers and fishers through loan and grant assistance in areas affected by calamities. Borrowers can receive interest-free financial assistance up to PHP 25 000 (USD 459) to contribute to finance the rehabilitation of farming, fishing, and livelihood activities. ACPC's partners (co-operatives, NGOs, associations, and rural or co-operative banks)

granted a total of PHP 418 million (USD 7.7 million) in loans to small farmers and fishers from 2019 to 2022.

The government's lead agricultural insurer, the Philippines Crop Insurance Corporation (PCIC) provides farmers and fishers with insurance against losses of crops and non-crop agricultural assets due to natural calamities, pests and diseases, and other risk factors. The PCIC provided almost 3.2 million farmers and fishers with insurance coverage amounting to PHP 103.47 billion (USD 1.9 billion) in 2021. Insured crop area accounted for 18% of total crop land, with two third of the insured coverage devoted to rice, maize, and high-value crops. Farmers can choose between natural-disaster coverage (including typhoon, flood, drought, earthquake, volcanic eruption, and tornado) or multi-risk coverage (including crop losses caused by natural disasters, plant diseases, or pest infestation). With an additional premium, livestock (cattle, swine, poultry) are eligible for natural-disaster coverage (typhoon and flood). The budgetary expenditures allocated by the government to the PCIC to provide subsidised agricultural insurance amounted PHP 4.5 billion (USD 83 million) in 2022.

In 2022, the DA attributed PHP 24 billion (USD 480 million) to its programmes and activities devoted to climate-change adaptation, a 23% increase over 2021.

Domestic policy developments in 2022-23

After the May 2022 election, the new president took over as Secretary of Agriculture, a first in the Philippines. The new administration set itself a key objective to ensure a sufficient and affordable food supply in the face of numerous challenges and disruptions, including those caused by Russia's war of aggression against Ukraine, the COVID-19 pandemic, and natural disasters.

In 2022, the DA published the National Agriculture and Fisheries Modernization Plan (NAFMIP) 2021-30 that serves as a directional plan for the agricultural sector for the next decade. The plan sets out strategies to encourage investments and ensure sustained growth in the agricultural and fishery sector, as well as to achieve a resilient food production and distribution system. It focuses on spatial planning and a balanced portfolio of investments in agriculture infrastructure development (e.g. the construction of production and post-harvest infrastructure facilities), the provision of machinery and equipment, and the intensification of research and extension services.

The budget of the DA and its attached agencies increased from PHP 117.29 billion (USD 2.2 billion) in 2022 to PHP 163.5 billion (USD 3 billion) in 2023. The 40% increase is intended to support the transformation of the sector towards a more competitive, sustainable and resilient agriculture while helping the country to overcome the rising cost of inputs and to reduce inflation in food prices.

In April 2022, the National Irrigation Administration (NIA) was relocated from the Office of the President (OP) to the DA as an attached agency. The NIA ensures the development and maintenance of irrigation systems to support agricultural productivity and farmers' income in line with water management principles. The 2022 return of the NIA to the DA, after a series of transfers between the OP and other departments, seeks to further integrate the agency in the agricultural sector, to strengthen agencies' mandates in a complementary way and to synchronise both agency's strategies.

The Senate and House of Representatives of the Philippines enacted the Agriculture, Fisheries and Rural Development Financing Enhancement Act of 2022 which replaced the Republic Act No. 1000, known more commonly as the Agri-Agra Law. The Agri-Agra Law required all financial institutions, whether government or private, to allocate at least 15% of their lending portfolio to the agricultural sector and 10% to agrarian reform. The new act still requires these institutions to allocate a minimum of 25% of their total loanable fund but with greater flexibility between the agricultural sector and the agrarian reform. It also expands agriculture credit to include different agriculture and fishery-related activities, such as agricultural mechanisation and modernisation, agri-tourism, public rural infrastructure, marketing and processing and digitalisation of agriculture. The new law's objectives are to enhance the productivity, competitivity and

sustainability of the agriculture and fisheries sectors and to promote the livelihoods of rural community beneficiaries.

The Coconut Farmer and Industry Development Plan (CFIDP), which aims to modernise the coconut industry and increase income and competitiveness of coconut farmers, was approved in June 2022. The CFIDP was developed and funded through the creation of the Coconut Farmers and Industry Trust Fund Act in February 2021, allowing PHP 75 billion (USD 1.4 billion) to be used over the next five years for the benefit of the country's coconut industry and its farmers. The Philippines Coconut Authority started to implement the programme in partnership with other government agencies under several priority areas: provision of social protection, strengthening of coconut farmers' organisations, programmes of research and development, intercropping/livestock integration systems, development of the coconut value chain and provision of support services. As of mid-October, the PCA identified 2.9 million out of the 3.1 million coconut farmers listed in the National Coconut Farmers Registry System as potential beneficiaries of the CFIDP programmes. Eligible beneficiaries include farm owners or coconut growers who own at least 0.5 hectares of land with a minimum of 20 coconut trees; tenants or tenant-workers; and farm workers.

In 2022, the National Food Authority (NFA) intervened in the domestic market by buying rice for buffer stocks at a price set at PHP 19 (USD 0.38) per kg of rice, and by selling domestic rice from its stocks at administratively fixed prices comprised between PHP 23 (USD 0.42) and PHP 27 (USD 0.50) per kg according to the variety of rice and the type of buyers (authorised retail outlets, government agencies or private institutions). Buffer stocks of rice are maintained by the government for the stated purposes of ensuring food security (especially for emergency situations) and stabilising prices. In effect, these stocks are used to support domestic producers with price floors while at the same time protecting consumers with price ceilings. As of 31 December 2022, NFA maintained the equivalent of three and a half days of the average national consumption of rice, with the objective to increase the buffer stock to the equivalent of 9 days of average consumption. In 2022, the Department of Budget and Management in the Philippines raised the allocated funding for the NFA's buffer stock programme from PHP 7 billion (USD 128 million) in 2022 to PHP 12 billion (USD 220 million) in 2023 to ensure sufficient supply of rice in times of global food crisis.

As defined under the Rice Competitiveness Enhancement Fund (RCEF), support to rice farmers accounted for a total of PHP 10 billion (USD 203 million) in 2022 and was allocated across four components: 50% to rice farm machinery and equipment, 30% for rice seed development, propagation and promotion, 10% for the provision of credit to farmers, and 10% for extension services This fund was initiated in 2019 to offset the effect of the replacement of quantitative restrictions on rice imports with tariffs. It is available for six years (2019-24) and has an annual budget of PHP 10 billion (USD 203 million) financed with the receipts from rice import tariffs. Since its implementation, the programme reduced retail prices of regular milled rice from PHP 45 (USD 0.80) per kg in 2018 to PHP 37 (USD 0.70) per kg in 2021, and provided wider varieties of rice choice to consumers.

The excess rice tariff collection from financial year 2021, above the PHP 10 billion (USD 183 million) mandated under the RCEF, was allocated to the Rice Farmers Financial Assistance programme (RFFA). In the third and fourth quarters of 2022, almost 1.6 million eligible small rice farmers (with 2 hectares or less planted to rice) registered in the government's Registry System for Basic Agriculture, benefitting from a cash transfer of PHP 5 000 (USD 92) per farm. Funding for this cash assistance amounted to PHP 8 billion (USD 147 million). Under the programme of Cash and Food Subsidy for Marginal Farmers and Fishers, small producers of maize, coconut and sugar cane received similar support in the form of cash and food assistance amounting to PHP 3 000 (USD 55) in cash and PHP 2 000 (USD 37) equivalent in food per farm.

In 2022, an African Swine Fever (ASF) outbreak continued to spread in the Mindanao region and in December 2021 the Rai typhoon damaged pork facilities in Central and Western Visayas, offsetting the herd rebuilding effort happening in the Luzon region. As a result, there was zero growth in pig meat

production relative to the 2021 level. Since 2019, when the Philippines reported its first outbreak of African Swine Fever, the country has been struggling to contain the virus, which has resulted in a loss of over 3 million pigs. National zoning measures are in place and the DA is providing financial and technical support to ASF-affected producers under the public and private programme *Bantay ASF sa Barangay* (BaBay ASF), launched in February 2021. This initiative, still in place, targets improvements in biosecurity and disease control measures through co-operation between local authorities, specialist biosecurity officers and farmers. It also provides insurance to hog farmers. Coupled with the BaBay ASF, the DA implemented the Integrated National Swine Production Initiatives for Recovery and Expansion (INSPIRE), a rebuilding programme focusing on restoring breeders' pig numbers and enhancing biosecurity. This programme, which covers the 2021-23 period, has an initial budget of PHP 400 million directed at ASF-affected hog producers, farmer's co-operatives and associations, semi-commercial farms, local government units, and state colleges and universities. To accelerate the rebuilding programme, the DA has also encouraged partnerships between private groups and the Land Bank of the Philippines, which provided credit assistance for building swine biosecurity facilities.

Domestic policy responses to Russia's war of aggression in Ukraine

In March 2022, the government launched the "Plant, Plant, Plant Program Part 2" to mitigate the effects of high input prices, high logistics costs, decreased agri-food exports and increased food inflation, while boosting local food production. Most (PHP 20 billion, USD 367 million) of the total funding of PHP 24 billion (USD 441 million) was allocated to finance a balanced fertilisation strategy and the fertiliser subsidy, with the remainder equally shared between urban and peri-urban agriculture; local feed production; strengthening of aquaculture and mariculture fisheries; and the mobilisation of food.

After the average retail price of urea more than doubled between May 2021 and May 2022. the government began in March 2022 to provide fertiliser discount vouchers valued at PHP 1 131 (USD 21) per hectare for inbred rice, PHP 2 262 (USD 41) per hectare for hybrid rice, and PHP 2 000 (USD 37) for maize and cassava. These vouchers covered the 2022 wet season and the 2022 and 2023 dry seasons. In February 2022, the DA distributed for free 33 500 tonnes of fertiliser in different regions of the country. To reduce the Philippines' dependence on imported fertiliser, the Department of Agriculture's Fertilizer and Pesticide Authority developed the *Balanced Fertilization Strategy* to promote the use of combined organic and non-organic fertiliser to help maintain soil fertility while minimising the use of chemical fertilisers.

To protect consumers from rising commodity prices, the government imposed suggested retail prices (SRPs) on several food items, including processed milk, beef and poultry meat, pork, canned fish and sugar, soy sauce, bread and noodles. A purchase limit of 1 kg of white or washed sugar per consumer per day was implemented temporarily. SRPs had previously been implemented during the COVID-19 pandemic in 2020-21 to avoid a sharp rise in the prices of basic food items.

Another response to high food prices was promoting urban gardening. The DA signed a Memorandum of Agreement with local government units, non-government organisations, private companies and universities to intensify the National Urban and Peri-urban Agriculture Programme. The programme provided starter kits including seeds and fertiliser, technical assistance and agricultural training to 4 580 households and communities (DA, 2021[9]).

In March 2022, the DA launched the Fuel Discount for Farmers and Fisherfolk, created through the General Appropriations Act of 2022 with a budget of PHP 500 million (USD 9 million), to mitigate the impacts of the rising price of fuel. This measure provided fuel discount vouchers of PHP 3 000 (USD 55) to eligible farmers and fisherfolk for the purchase of gasoline or diesel from a Department of Energy designated fuel station.

In 2022, while pandemic restrictions were eased, the DA continued to intervene to ensure adequate, accessible, and affordable food to Filipino households, particularly in Metro Manila and other major centres. In addition to the network of government stores (*KADIWA ni Ani at Kita*) which sells basic food items supplied by small producers to Metro Manila residents at regulated prices, the DA Agribusiness and Marketing also launched eKadiwa, an ecommerce website linking producers to consumers across the Metro Manila area. In 2022, new direct marketing platforms were established, including physical food terminals (Kadiwa Retail Selling), mobile markets (Kadiwa on-wheels) and transportation and distribution networks (Kadiwa express), and the eKadiwa online marketing platform was further developed.

In 2021-22, to help children and students during the pandemic, the government earmarked PHP 3.7 billion (USD 68 million) for its national feeding programmes. These include the School-based Feeding Programme (implemented by the Department of Education), the Supplemental Feeding Programme for children in day care (Department of Social Welfare and Development in co-ordination with local government units) and the Milk Feeding Programme (DA in co-ordination with the National Dairy Authority and the Philippine Carabao Center). In total, these programmes benefitted more than 3.1 million students. National feeding programmes seek to address under-nutrition and nutrient-deficiency among children in public day care, kindergarten, and elementary schools. During school closures until August 2022, nutritious food and milk packs were distributed directly at homes or scheduled via a pick-up system. Local dairy farmers and co-operatives supplied 80% of the target milk volume required by the Milk Feeding Programme for 2022. Around 60% of the domestic fresh milk production goes to this programme, which remains a growth driver for the Philippines' dairy production (USDA, 2022[10]).

Trade policy developments in 2022-23

In 2022, the DA issued several temporary import bans on the importation of domestic and wild birds and their products, including poultry meat and eggs. The bans were imposed for veterinary and phytosanitary reasons, mostly in response to outbreaks of highly pathogenic avian influenza (HPAI). Thus, imports of live birds, poultry and eggs were prohibited for several months from Croatia, Spain, Burkina Faso, Moldova, Canada (Nova Scotia), and from the United States (Missouri, South Dakota, North Dakota, Minnesota, and Iowa). Imports of live birds, poultry and eggs have been allowed back into the Philippines starting in June from Belgium, the Czech Republic, and Denmark, in August from Japan, and in September from Hungary. The Philippines lifted the restriction on the importation of live cattle, meat and meat products from Canada and Germany in January and from the United Kingdom in March. A ban on the importation of domestic and wild pigs and their products originating from Italy and Thailand was put in place in January 2022.

The Regional Comprehensive Economic Partnership (RCEP) was ratified by the Senate in February 2023, Once the RCEP enters into force, 75% of the country's 1 718 agricultural tariffs will be set to zero and a further 15% of agricultural tariffs will be reduced. Some agricultural products including rice, sugar, swine and poultry meat will remain excluded from tariff reductions.

The Philippines, which has benefited for a long time from the United States' tariff rate quotas system for its sugar exports, has not been able to export sugar to the United States since the previous crop year 2021-22. The Sugar Regulatory Administration (SRA), which oversees Philippine sugar policy, trade, and domestic prices, allocates the sugar output before each crop year depending on its destined market: sugar allocation classification A for the US market, B for the domestic market, D for the world market and C as a reserve that could be classified later on according to the needs of the country. These allocations are updated as the season progresses. The SRA recommended that all raw sugar be allocated to the domestic market in the current crop year 2022-23 as the country experimented a sugar shortage partly due to the impacts of typhoons in production areas and the high cost of fertilisers. To address the supply gap, in September 2022 the president in his role as Secretary of Agriculture and the SRA authorised the import of

150 000 metric tonnes of refined sugar. Half of the sugar imported will be for industrial use and half will be for domestic consumption.

Trade policy responses to Russia's war of aggression in Ukraine

Lower MFN tariff rate for rice (Executive Order 171, series of 2022) to 35 % were extended until the end of 2022, the same level as rice from ASEAN member countries. The usual in-quota tariff rate is 40% and the out-of-quota rate is 50%. The temporary liberalisation of the rice market was originally taken to boost supply and the diversity of rice suppliers during the pandemic and to reduce the impact of climate change on food security. The extension is intended to mitigate the impact of Russia's war of aggression against Ukraine on the rising domestic price of rice and on supply shortages. (USDA, 2022[11]).

The temporary tariff rate on imported pig meat (15% in-quota; 25% out-of-quota) that were reduced to address rising pork prices due to African Swine Fever, were also extended until the end of 2022 to cushion the impact of supply constraints caused by Russia's invasion of Ukraine. The Minimum Access Volume (the TRQ) that was temporarily increased in 2021 to 254 000 metric tonnes is now back at its normal level of 54 000 metric tonnes (February 2022 to January 2023) (USDA, 2022[12]). To facilitate the import of maize, an important feed component for poultry and pigs, the government lowered in-quota tariffs on maize imports to 5% (from 35%) and out-of-quota imports to 15% (from 50%) until the end of 2022. Reduced tariff rates for mechanically deboned or mechanically separated poultry (from 40% to 5%) and frozen whole turkey (from 40% to 20%) implemented in June 2019, remained in place until 31 December 2022.

Contextual information

The Philippines is a mid-size country in terms of land area, but its population of 114 million makes it the world's 12th most populous country. Just under half, 48%, of Filipinos live in urban areas. With a median age of 24 years, the Philippines has a comparatively young population. At USD 8 893 in purchasing power parity (PPP), GDP per capita accounts for less than 40% of the average GDP per capita of all countries analysed in this report (Table 23.3). Overall, the Philippines' economy is well integrated into international markets as measured by a ratio of trade to GDP of 25% in 2021.

Agriculture remains an important sector for the Philippines, but the sector's 24% share in total employment compared to its 10% contribution to GDP highlights a significant gap in labour productivity. Farms tend to be small in size, with an average landholding of just 1.3 hectares.

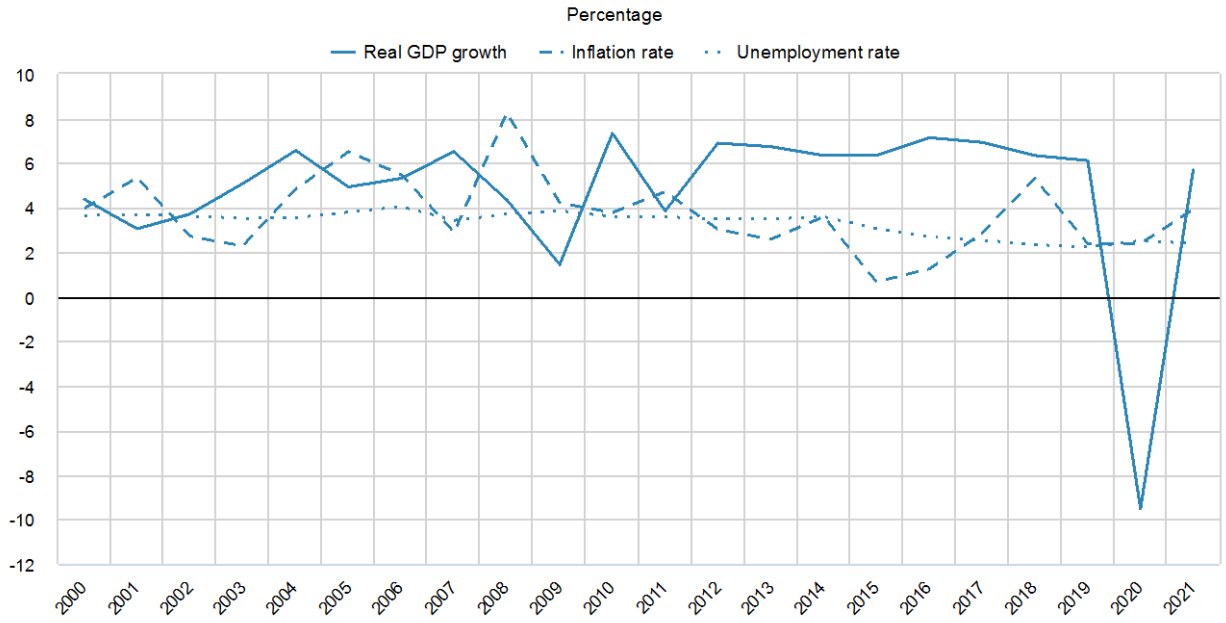
Table 23.3. Philippines: Contextual indicators

	Philippines		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	268	1 013	0.7%	0.8%
Population (million)	78	114	1.8%	2.2%
Land area (thousand km^2)	298	298	0.4%	0.4%
Agricultural area (AA) (thousand ha)	11 234	12 675	0.4%	0.4%
			All countries[1]	
Population density (inhabitants/km^2)	260	380	52	64
GDP per capita (USD in PPPs)	3 437	8 893	9 350	23 401
Trade as % of GDP	44.9	25.3	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	13.9	10.1	2.9	3.9
Agriculture share in employment (%)	37.1	24.3	-	-
Agro-food exports (% of total exports)	4.0	8.1	6.2	7.9
Agro-food imports (% of total imports)	7.3	13.3	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	63	58	-	-
Livestock in total agricultural production (%)	37	42	-	-
Share of arable land in AA (%)	45	44	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

Since 2012, the Philippines has achieved a relatively stable GDP growth of around 6% annually and enjoys comparatively low levels of unemployment that had been falling since 2015 to approach 2% in 2019 (Figure 23.5). However, due to the COVID-19 pandemic, the economy contracted by around 10% in 2020 and unemployment levels increased. In 2021, the Philippines' GDP growth rate rebounded to 5.7 %, close to pre-pandemic levels. Inflation has been fluctuating, after lower rates in 2019 and 2020 inflation rose to 4% in 2021.

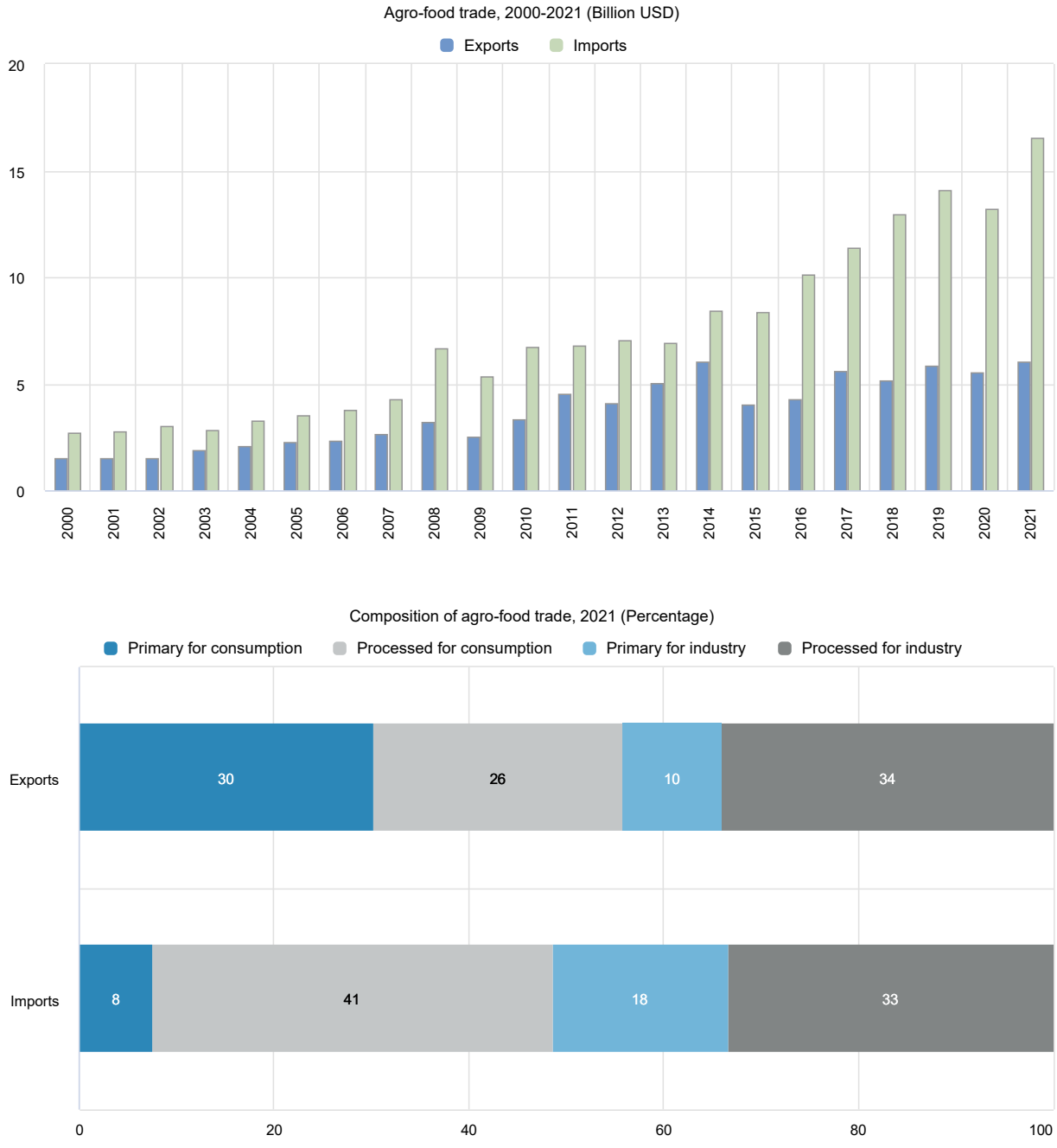
Figure 23.5. Philippines: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

The Philippines has been a consistent and increasing net agro-food importer since 2000 but agro-food exports have been growing over the last two decades (Figure 23.6). While agro-food exports plateaued since 2017, agro-food imports have continued to increase at a higher rate during this period. The significant increase in agro-food imports since 2020 has been driven notably by stronger imports of grains (wheat and rice), oilcake, meat and palm oil. Processed products for final consumption dominate the Philippines' agro-food imports representing 41% of the total in 2021. In turn, processed products for the industry (mainly crude coconut oil) is an important export category, accounting for 34% of agro-food export, followed by primary products for final consumption (mainly fruit such as bananas or pineapple).

Figure 23.6. Philippines: Agro-food trade

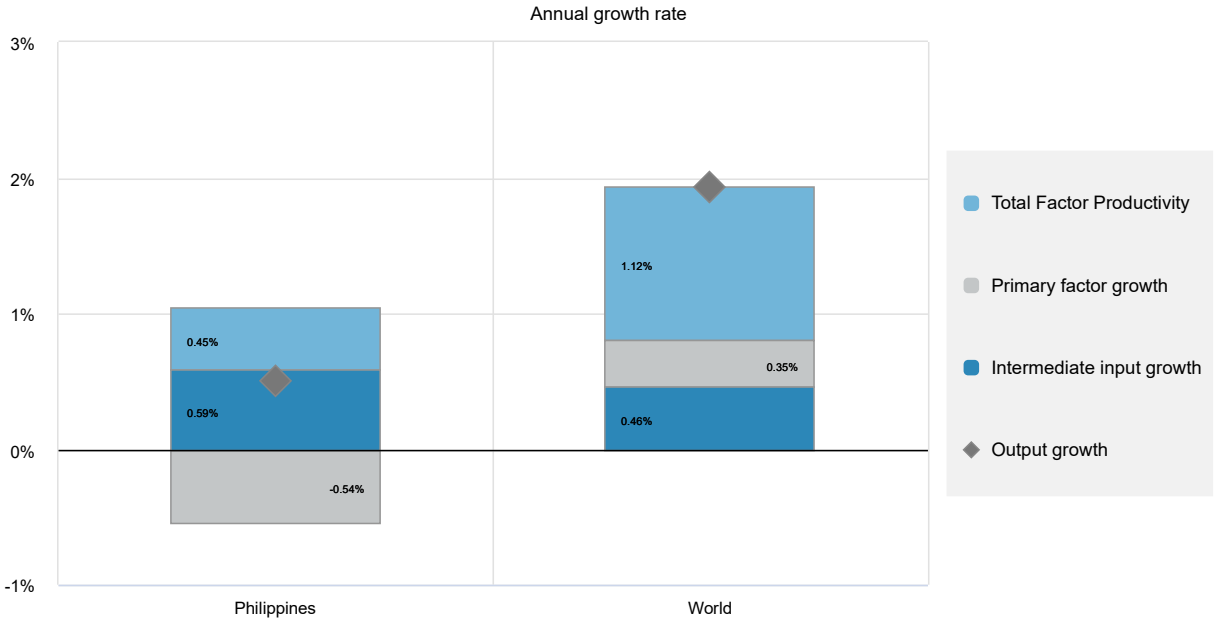


Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Agricultural production increased in the Philippines by only 0.5% per year on average from 2011-20, well below the world average (Figure 23.7). This was due to declining primary factor use (-0.5% per year) and a low total factor productivity growth (+0.4% per year). The contribution of intermediate input growth (0.6%) to agricultural output growth is above the world average.

Agriculture remains the most important user of water, accounting for 79% of total water consumption in 2021. However the sector's share in total energy abstractions remains low (0.8%). The country's nitrogen and phosphorous balances have increased and are comparatively high.

Figure 23.7. Philippines: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 23.4. Philippines: Productivity and environmental indicators

	Philippines		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	0.3%	0.5%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	50.8	59.8	32.2	30.4
Phosphorus balance, kg/ha	7.7	9.3	3.3	3.0
Agriculture share of total energy use (%)	0.4	0.8	1.7	2.0
Agriculture share of GHG emissions (%)	29.2	..	8.6	10.5
Share of irrigated land in AA (%)	15.3	14.9	-	-
Share of agriculture in water abstractions (%)	82.4	79.0	46.6	49.7
Water stress indicator	..	..	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Note

[1] Unconditional refers to policies and measures which can be undertaken using nationally mobilised resources. Conditional refers to policies and measures which require support or the means of implementation under the Paris Agreement.

24 South Africa

Support to agriculture

Support to producers in South Africa amounted to 4.5% of gross farm receipts in 2020-22, up slightly from 3.9% in 2000-02. The share of potentially most-distorting gross producer transfers – mostly composed of Market Price Support (MPS) and support for variable input use without constraints – fell marginally from an average of 97% in 2000-02 to 95% in 2020-22. However, domestic prices for most commodities align with world prices. Sugar is an exception, mainly due to import tariffs, leading to single-commodity support worth 35% of gross receipts. Most direct payments are provided as input subsidies (fuel tax refund) or as investment subsidies directed towards small-scale farming.

Support for general services to the sector (General Service Support Estimate, GSSE) has declined relative to the size of the sector. The GSSE averaged 1.3% of the value of agricultural production during 2020-22, below the 3.8% observed in the early 2000s, and below the average of other countries in this report. Most payments to general services go to the agricultural knowledge and innovation system, and to infrastructure (mainly related to land reforms, irrigation, and other infrastructure). Support in these categories targets an enabling environment for small-scale farming, which became a priority following land reforms. Expenditures for inspection and control are also an important and growing element of services. Total support to the sector fell in relative terms from an average 0.6% of Gross Domestic Product (GDP) in 2000-02 to 0.3% in 2020-22, with more than two-thirds of the support transferred to individual producers.

Recent policy changes

The National Assembly (NA) passed the Expropriation Bill on 28 September 2022, though it remains to be passed by the National Council of Provinces before being signed by the president. The bill is intended to provide for expropriation with zero compensation in certain circumstances, when in the public interest. These circumstances include abandoned land, state land, or land held for speculative purposes, among others.

The national budget item on Agriculture, Land Reform, and Rural Development (Vote 29) passed into law by the National Assembly in 2022 aims to provide equitable access to land, integrated rural development, sustainable agriculture, and food security for all. It provides the Department of Agriculture, Land Reform and Rural Development (DALRRD) with resources and a mandate to develop agricultural value chains, provide agricultural inputs and facilitate rural development.

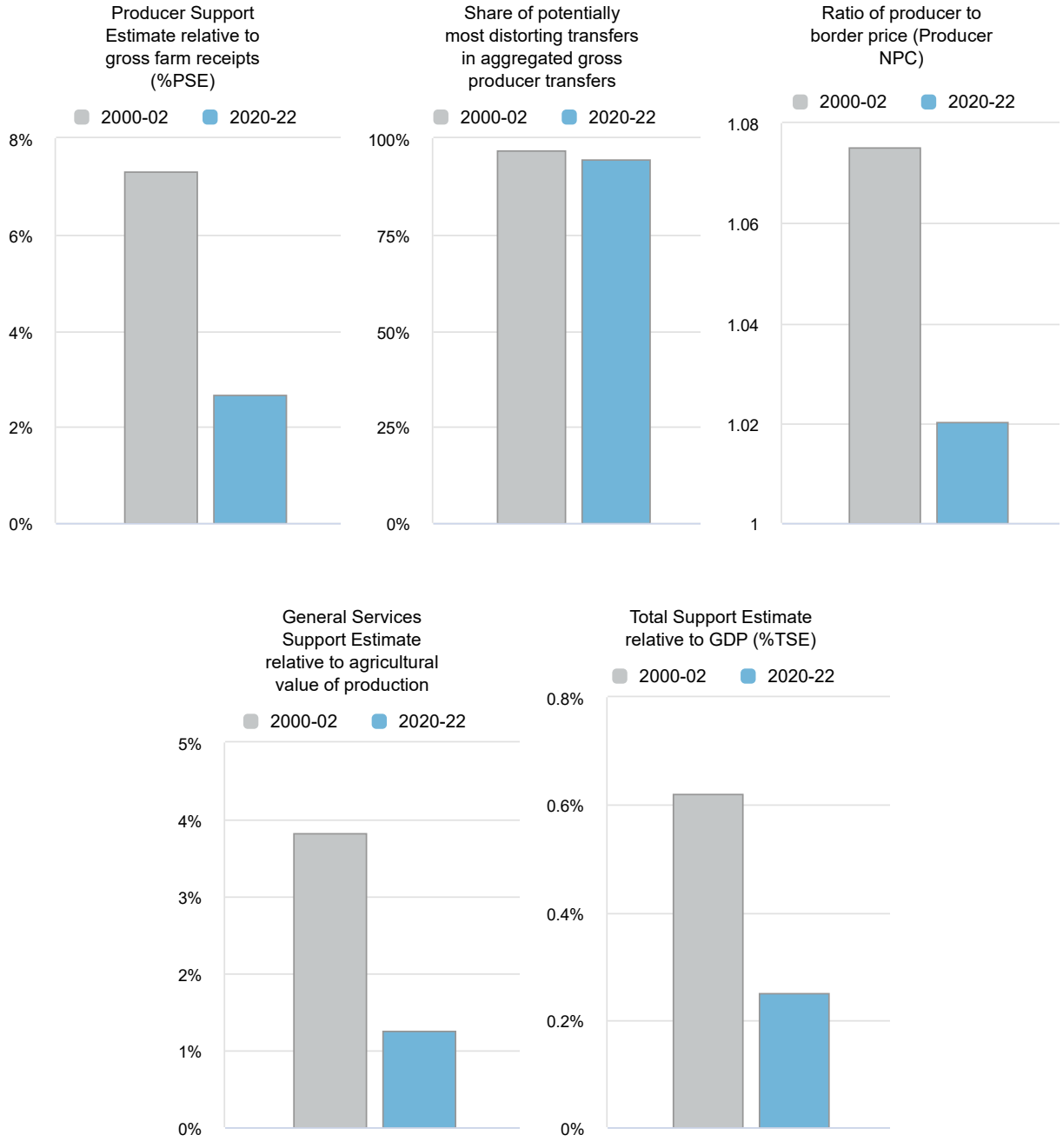
The Agriculture and Agro-processing Masterplan (AAMP) was signed by the Minister of DALRRD and sector stakeholders in May 2022. The plan aims to promote investment in infrastructure critical to industry, and to facilitate market expansion.

In October 2022, a ZAR 3.2 billion (USD 195.48 million) Blended Finance Scheme was launched by DALRRD with Lank Bank to assist farmers. The dual-funding scheme (loan and grant) is intended to assist alignment with the Agriculture and Agro-processing Master Plan (AAMP) for a ten-year period.

Assessment and recommendations

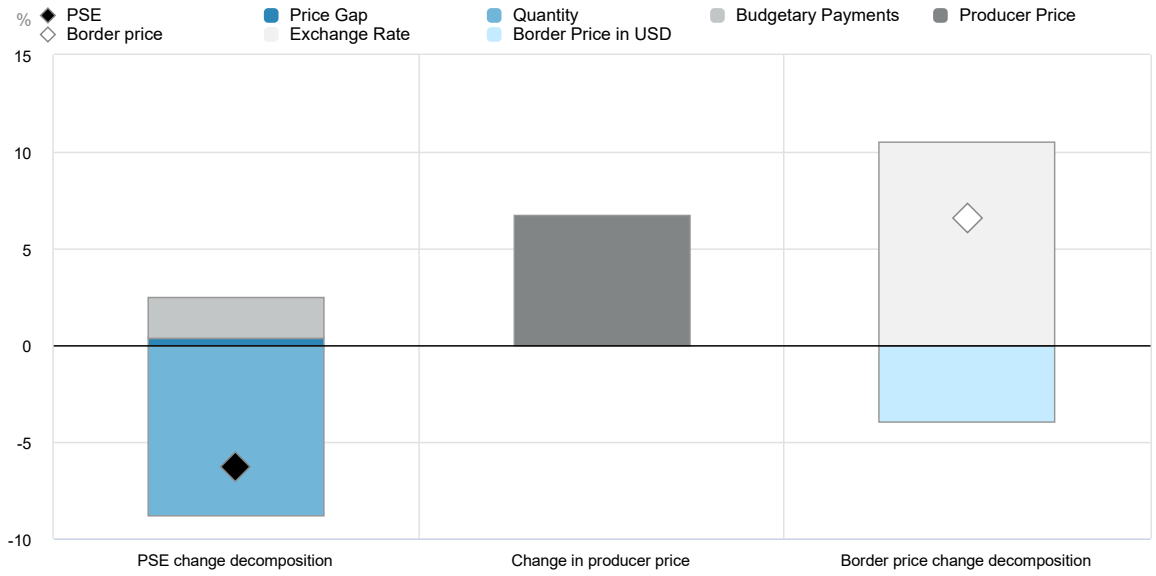
- Useful steps have been taken in preparing plans and programs to enhance the adaptation of agriculture to climate change. However, it is urgent to move from planning to the implementation of policy actions – including the planned early-warning system, especially given the vulnerability of South African agriculture to droughts, floods, storms, and other natural disasters. Adaptation measures that have co-benefits with mitigation and other food system objectives should be prioritised, given the persistent challenges of poverty and unemployment. Greater support should be provided for transformative capacity, to help farmers build long-term resilience to climate change.
- Carbon taxes in place since January 2022 under the Carbon Tax Act have not been applied to agricultural emissions. South Africa could consider extending the scope of the carbon tax to progressively include agricultural emissions, along with social safety-net policies to offset potential food-price increases and income losses for poor households and producers caused by this change. Furthermore, a sectoral emissions target for agriculture could be established under the Climate Change Bill once it becomes law, as such targets can be helpful for focusing mitigation efforts and measuring progress.
- With significant policy reforms in the mid-1990s, South Africa opened its agricultural markets by eliminating MPS for most products except sugar. Overall support is now low, but the support that remains is highly distorting and should be phased out.
- Budgetary spending continues to be oriented towards land reform and its beneficiaries (mainly smallholders and emerging commercial farmers) in the form of general services to the sector through R&D, knowledge transfer, and infrastructure. The challenge continues to be timely funding of economically viable projects, and coordination and targeting of support programmes tailored to the needs of emerging farmers.
- If support programmes are to help emerging entrepreneurs become commercial producers, they must draw upon the experiences of successful commercial farmers. Specifically, public-private partnerships and industry associations can address weaknesses in programmes and services by public authorities.
- Expropriation of property without compensation remains a concern. Despite the failed attempt to amend the constitution for this purpose, uncertainty about property rights remains, and could undermine investor confidence in the sector.
- The pace of land reform should be linked to developing an enabling environment for its beneficiaries, including education, training, infrastructure, and access to modern farming equipment, finance and markets. Particularly important is upskilling public-extension officers and providing them with resources to service rural communities and emerging commercial producers. Capacity in the private sector, and learning and training institutions can be leveraged to revitalise public-extension services quicker. Without these developments, land redistribution cannot deliver the expected outcomes, such as improving the welfare of rural black populations, increasing food security in rural areas, and developing a viable commercial sector.
- Very low nutrient balances (negative in the case of nitrogen) across South Africa raise questions about soil fertility in parts of the country. The government should focus on improving soil fertility though conservation practices and improving market access to fertilisers where appropriate.

Figure 24.1. South Africa: Development of support to agriculture



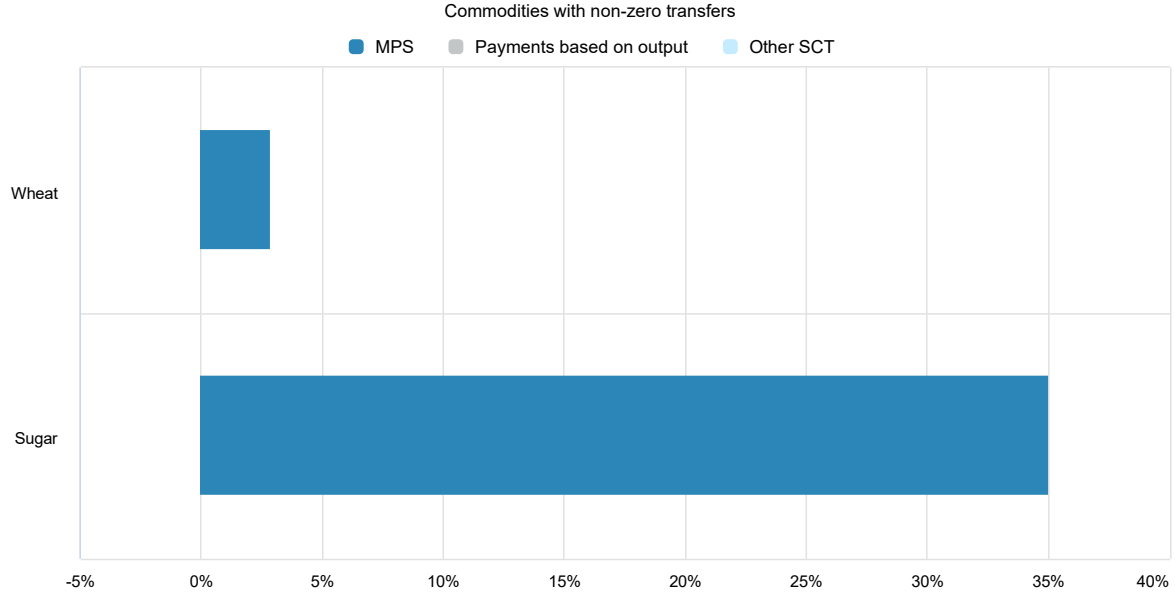
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 24.2. South Africa: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 24.3. South Africa: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 24.1. South Africa: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**6 824**	**23 691**	**20 491**	**25 214**	**25 366**
***of which:** share of MPS commodities (%)*	74.75	77.39	75.72	77.25	79.20
Total value of consumption (at farm gate)	**6 000**	**19 224**	**17 013**	**20 262**	**20 397**
Producer Support Estimate (PSE)	**477**	**636**	**736**	**635**	**537**
Support based on commodity output	438	468	582	458	365
Market Price Support[1]	438	468	582	458	365
Positive Market Price Support	451	468	582	458	365
Negative Market Price Support	-13	0	0	0	0
Payments based on output	0	0	0	0	0
Payments based on input use	36	168	154	177	172
Based on variable input use	25	132	121	139	138
with input constraints	0	0	0	0	0
Based on fixed capital formation	11	34	32	38	34
with input constraints	0	0	0	0	0
Based on on-farm services	1	1	1	1	1
with input constraints	0	0	0	0	0
Payments based on current A/An/R/I, production required	3	0	0	0	0
Based on Receipts / Income	3	0	0	0	0
Based on Area planted / Animal numbers	0	0	0	0	0
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	0	0	0	0
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0
Percentage PSE (%)	**7.32**	**2.67**	**3.57**	**2.50**	**2.10**
Producer NPC (coeff.)	**1.08**	**1.02**	**1.03**	**1.02**	**1.01**
Producer NAC (coeff.)	**1.08**	**1.03**	**1.04**	**1.03**	**1.02**
General Services Support Estimate (GSSE)	**264**	**298**	**301**	**323**	**271**
Agricultural knowledge and innovation system	146	121	124	129	110
Inspection and control	39	65	68	70	58
Development and maintenance of infrastructure	78	92	89	103	85
Marketing and promotion	0	20	20	21	18
Cost of public stockholding	0	0	0	0	0
Miscellaneous	0	0	0	0	0
Percentage GSSE (% of TSE)	**34.18**	**31.84**	**29.00**	**33.70**	**33.52**
Consumer Support Estimate (CSE)	**-350**	**-357**	**-426**	**-357**	**-288**
Transfers to producers from consumers	-347	-332	-366	-342	-288
Other transfers from consumers	-17	-25	-59	-16	0
Transfers to consumers from taxpayers	0	0	0	0	0
Excess feed cost	14	0	0	0	0
Percentage CSE (%)	**-6.03**	**-1.86**	**-2.50**	**-1.76**	**-1.41**
Consumer NPC (coeff.)	**1.07**	**1.02**	**1.03**	**1.02**	**1.01**
Consumer NAC (coeff.)	**1.06**	**1.02**	**1.03**	**1.02**	**1.01**
Total Support Estimate (TSE)	**741**	**934**	**1 037**	**957**	**808**
Transfers from consumers	364	357	426	357	288
Transfers from taxpayers	394	602	670	616	520
Budget revenues	-17	-25	-59	-16	0
Percentage TSE (% of GDP)	**0.62**	**0.25**	**0.34**	**0.23**	**0.20**
Total Budgetary Support Estimate (TBSE)	**304**	**466**	**454**	**500**	**443**
Percentage TBSE (% of GDP)	**0.25**	**0.12**	**0.15**	**0.12**	**0.11**
GDP deflator (2000-02=100)	**100**	**335**	**317**	**336**	**352**
Exchange rate (national currency per USD)	**8.69**	**15.87**	**16.46**	**14.78**	**16.37**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for South Africa are: wheat, maize, sunflower, sugar, milk, beef and veal, pig meat, sheep meat, poultry, eggs, groundnuts, grapes, oranges and apples.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

Widespread support, regulation, and price and production control within a closed economy characterised agricultural policy in South Africa under the apartheid regime between 1955 and 1990.

Post-apartheid, quick and substantial reforms in the mid-1990s reduced state intervention in agricultural markets and led to more market-oriented commercial farming. Domestic marketing of agricultural products was deregulated, and barriers to agricultural trade were reduced by replacing direct import controls with tariffs, removing state controls over exports, and eliminating export subsidies. These reforms reduced market price support and budgetary support to commercial farming.

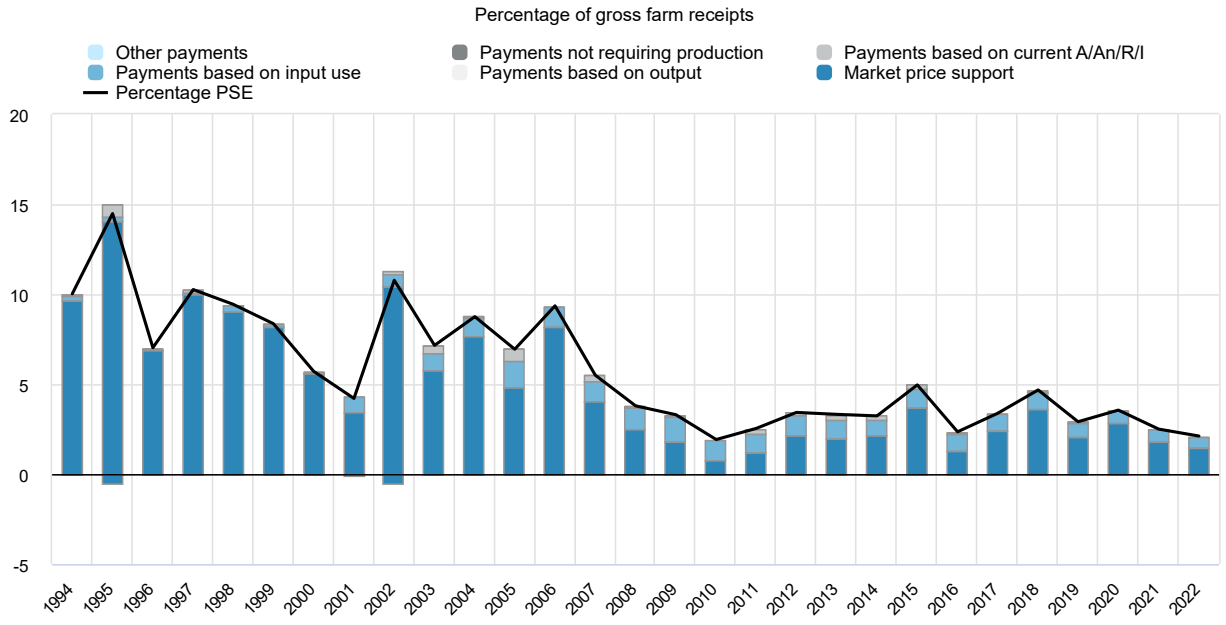
As stated in the White Paper on Land Policy of 1997, land reform aimed to redress past injustices, foster reconciliation and stability, support economic growth, improve household welfare, and alleviate poverty. Key elements of the land reform included land restitution, land redistribution and land-tenure reform. The land reform process is on-going and further legislative regulations have been submitted to facilitate the acceleration of the land reform process: 13.22 million hectares (or 17% of land used for agriculture) has been transferred away from white landowners (this includes restitution, redistribution, private transactions, and State procurement) by 2020 (Sihlobo and Kirsten, 2021[1]). Of this, 3.08 million hectares have been transferred to the state and 10.14 million hectares have been transferred to black owners. In several instances, communities elected to receive financial compensation where land was successfully identified for restitution (2.34 million hectares in addition to the transferred land). Since it started, the land reform has been accompanied by agriculture support exclusively targeting black smallholders and emerging producers (mainly provided within the Comprehensive Agricultural Support Programme, CASP). These include subsidies for variable and fixed input credit and financial support, extension, marketing, and training services (Table 24.2).

Table 24.2. South Africa: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to mid-1990s	Closed economy under the apartheid regime	Large subsidies for commercial agricultural producers Import controls; export subsidies for agricultural products Price and production controls under the Agricultural Marketing Act of 1937
Mid-1990s-present	Post-apartheid period; democratic government; market deregulation and trade liberalisation Land redistribution; emphasis on black small-scale producers' development	Marketing of Agricultural Products Act (1996) brings market deregulation and trade liberalisation WTO accession Agricultural tariffs replace import controls Import tariffs applied to sugar and livestock products (except eggs), with tariff-free imports of maize (since 2007) and wheat (since 2021) Land restitution and redistribution Land reform-related programmes supporting black smallholder farmers: - Increased spending to finance the land reform process - Direct support targeting black smallholders

Support to farmers has been decreasing as a share of gross farm receipts (with some year-to-year variation) during 1995–2007 because of policy reforms and deregulation of the market. Since then, support has tended to stabilise at a relatively low level, around 4% of gross farm receipts. Market price support is the main component of support, provided mainly to sugar (Figure 24.4). Budgetary support to producers, mostly input subsidies, is targeted to black smallholders. Budgetary expenditures on general services to the sector are increasing and spent mainly on knowledge transfer and infrastructure.

Figure 24.4. South Africa: Level and PSE composition by support categories, 1994 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

The current system has no domestic market support interventions or export subsidies. Border measures, applied on Southern African Customs Union (SACU[1]) common borders, are the only price support policy for all commodities except sugar (see Sugar Agreement below).

Import protection for agricultural and food products is based on specific and ad valorem tariffs applied at the SACU level. The average applied Most Favoured Nation (MFN) tariff for agricultural products is 8.8%, well below the average bound tariff on agricultural products of 39% (WTO, 2022[2]). Tariff rate quotas (TRQs) exist for a range of agricultural products under the WTO minimum market access commitments.[2] The zero import-tariff for maize applies since 2007. No tariffs have been levied on wheat imports since July 2021.

The Department of Agriculture, Land Reform and Rural Development (DALRRD) has an ongoing commitment to build sustainable rural livelihoods. As part of this commitment the Agricultural Land Holding Account (ALHA) was established in terms of the Provision of Land and Assistance Act, 1993 (Act No. 126 of 1993). Through the ALHA the state can proactively and legally target and acquire land using funds appropriated by parliament and use this to meet the demand or need for land. Over the medium term, the entity aims to acquire 110 850 hectares of strategically located land, of which 50% is set to be allocated to women, 40% to young people, and 10% to people with disabilities.

The Comprehensive Agricultural Support Programme (CASP) was set up to assist new beneficiaries of Land reform to access credit and means of support from commercial banks and the government-owned Land and Development Bank. The CASP focuses on providing on- and off-farm infrastructure and

production inputs; capacity building; marketing and business development support; advisory services; regulatory services; and financial services.

The Micro Agricultural Financial Institutions of South Africa (MAFISA) provides financial services to smallholders in the agriculture, forestry and fisheries sector. The objective of the scheme is to address the financial services needs of smallholders. Services provided through the scheme include production loans, the facilitation of savings by MAFISA clients, and capacity building for member-owned financial institutions (intermediaries).

South Africa is a founding member of the SACU, a full customs union with a common external tariff. In 1994, South Africa became a member of the Southern African Development Community (SADC[3]). From 2012, the SADC free trade agreement (FTA) was fully implemented. Trade between South Africa and the European Union takes place under the SADC-EU Economic Partnership Agreement (EPA) regime. This is a free trade agreement between the SADC EPA States (comprised of all SACU Member States plus Mozambique) and the European Union. The most important benefit for South Africa is the enhanced market access for agricultural products such as sugar, wine, some dairy products, flowers, fruits and nuts as well as their preparations. The Agreement has contributed to an increase in South Africa's exports of agricultural products to the European Union in recent years.

Other free trade agreements relevant to agriculture include the SACU-EFTA FTA, a free trade agreement between members of the European Free Trade Association (EFTA) and the SACU which came into force in 2008, and the SACU and Mercosur Preferential Trade Agreement (PTA) which came into force in 2016. Trade between South Africa and the UK is currently taking place under the SACUM-UK EPA following the departure of the UK from the EU. The UK is a significant trading partner for SA in terms of agriculture. The SACUM-UK EPA is a replicate of the SADC-EU EPA in terms of market access commitments except for few provisions that were modified during negotiations. Some important benefits for South Africa include enhanced market access for wines and sugar into the UK.

South Africa is also a beneficiary of the US African Growth and Opportunity Act (AGOA), a non-reciprocal trade preference programme that grants eligible Sub-Saharan African countries duty-free, quota-free (DFQF) access to the United States for selected export products. AGOA was enacted in 2000 for eight years. The Act has been extended twice and is now in place until 2025. AGOA affects in particular exports of wine, macadamia nuts and oranges.

South Africa committed to restricting its economy-wide greenhouse gas (GHG) emissions to 350-420 $MtCO_2eq$ in in its Nationally Determined Contribution (NDC), updated in September 2021. This represents a 12-32% reduction in its GHG emission targets for 2030 contained in its first NDC submitted in 2015. Total GHG emissions in South Africa amounted to 447 $MtCO_2eq$ in 2020 (including FOLU), and agriculture contributed 9.0% of these between 2000 and 2020 (Department of Forestry, Fisheries & the Environment, 2022[3]).

Neither the original or updated NDC sets sector-specific targets, nor do they commit to a carbon neutrality goal.

The Carbon Tax Act is an integral part of government policy on climate change and will be implemented in three phases. The carbon tax rate since January 2022 was ZAR 144 (USD 8.80) per tonne carbon dioxide equivalent (tCO_2eq) and is set to increase to reach USD 30/tCO_2eq by 2030. Carbon Taxes do not currently apply to agricultural emissions.

If it is passed into law, the Climate Change Bill that was introduced to Parliament in February 2022, and is currently with the Portfolio Committee on Forestry, Fisheries and the Environment, will serve as the legal framework for action on climate change to move to a net-zero emissions economy by 2050. It will establish sectoral emission targets, including for agriculture.

Climate change adaptation policies in agriculture

Agriculture in South Africa is particularly vulnerable to drought, and all municipalities experienced droughts in the past 30 years (Meza et al., 2021[4]), which are anticipated to worsen along with other natural disasters such as floods and storms due to climate change (World Bank, 2023[5]). In 2018, DALRRD approved the Climate Smart Agriculture Strategic Framework (2018). The framework outlines Climate Smart Agriculture (CSA) measures to combat problems that relate to climate change facing South Africa's agricultural sector. Sector responses developed by DALRRD include climate-change adaptation and mitigation programmes focusing on enhancing the resilience of farmers, food and agricultural production systems, and reducing agricultural GHG emissions while ensuring national food security.

The process includes: (1) guidelines developed for the implementation of agricultural policies, plans and strategies by provinces to address climate change; and (2) climate-change adaptation and mitigation programmes developed to implement sector policies, plans, and strategies. Relevant programmes for adaptation include the promotion of food gardens outside of land classified as agricultural land or farmland, promotion of urban agriculture, and provincial committees to assist in the implementation of an early-warning system.

Domestic policy developments in 2022-23

The National Assembly (NA) passed the Expropriation Bill in September 2022 to repeal the existing Expropriation Act of 1975 and to provide a framework that is aligned with the Constitution. It is intended to guide the processes and procedures for the expropriation of property by organs of state. Furthermore, it is intended to provide for expropriation with nil compensation in certain circumstances, which may be appropriate in the public interest. Special circumstances include, amongst others, abandoned land, state land, or land held for speculative purposes. The bill is pending passaged by the National Council of Provinces (NCOP). If it is passed by the NCOP, the bill will be signed into law by the president.

The Expropriation Bill is separate from the attempt to amend the South African Constitution to allow for the expropriation of land without compensation for the purposes of land reform. The key difference is that the Expropriation Bill is not aimed exclusively at expropriating property or land for land reform, but its objectives are for the expropriation broadly of property including land for a public purpose or in the interest of the public, such as for building infrastructure, industrial development, etc.

The national budget item on Agriculture, Land Reform and Rural Development (Vote 29), passed into law by the National Assembly in 2022, provides DALRRD with resources and a mandate to develop agricultural value chains, provide agricultural inputs, increase equitable access to land, and facilitate rural development. The 2022-23 financial year Medium Term Expenditure Framework (MTEF) budget allocation is ZAR 17.287 billion (USD 1.056 billion) and is expected to increase to ZAR 18.168 billion (USD 1.11 billion) by 2024-25. Noteworthy developments include:

- DALRRD's plans to employ 10 000 extension officers aimed to a five-fold improvement in the ratio of extension officers to farmers at an expected cost of ZAR 936 million (USD 57.18 million) through the comprehensive agricultural support programme grant.
- Upgrading of the 21 municipal fresh produce markets across the country and revitalise 5 irrigation schemes at a cost of ZAR 2.1 billion (USD 128.28 million) through the Rural Infrastructure Development subprogramme in the Rural Development programme.
- Acquiring 130 687 hectares of productive land at an estimated cost of ZAR 3 billion (USD 183.26 million) as part of its Food Security, Land Reform and Restitution programme (Treasury, 2022[6]).

In May 2022 the Agriculture and Agro-processing Masterplan (AAMP) was signed by the Minister of DALRRD and sector stakeholders. The plan has the following intervention pillars:

- resolving policy ambiguities and creating an investment friendly environment
- investing in and maintaining an enabling infrastructure critical to industry
- providing comprehensive farmer support
- improving food security
- facilitating market expansion and promoting trade
- Increasing local production and reducing reliance on imports.

On 24 October 2022, a ZAR 3.2 billion (USD 195.48 million) Blended Finance Scheme was launched by DALRRD with Lank Bank to assist farmers. The dual-funding scheme (loan and grant) is intended to assist for a ten-year period in alignment with the Agriculture and Agro-processing Master Plan (AAMP). It is envisaged that DALRRD and Land Bank each invest ZAR 325 million (USD 19.46 million) per annum over the next three years to grow the fund to ZAR 1.95 billion (USD 119.12 million). The objective of the fund is to support the land and agrarian reform initiatives by assisting qualifying black producers to acquire and develop land and expand production. The value chains that will be targeted include fruits, nuts, vegetables, grains, sugarcane, poultry and red meat (South African Government, 2022[7]).

The Department of Science and Innovation (DSI) and DALRRD launched the National Biosecurity Hub in October 2022. The National Biosecurity Hub forms part of the DSI's Agricultural Bioeconomy Innovation Partnership Programme. The programme seeks to enable collaboration towards the system of innovation to support the prevention, reduction and management of crop and animal diseases. DALRRDs MTEF allocation, as part of its Agricultural Production, Biosecurity and Resources Management programme, is ZAR 1.3 billion (USD 79.41 million) to strengthen biosecurity, sanitary and phytosanitary standards for agricultural products.

Trade policy developments in 2022-23

The customs duty on sugar was adjusted two times during 2022, first from 414.85c/kg (USD 25.34) to 299.46c/kg (around USD 18.29) in June 2022, and again to 195.28c/kg (USD 11.93) in August 2022. Safeguard duties, which have been applied to all EU countries since 2018, expired entirely in March 2022. Anti-dumping duties on bone-in poultry meat from Brazil, Denmark, Ireland, Poland, and Spain, were suspended by the Minister of Trade, Industry and Competition in August 2022 for twelve months.

A tariff rebate is in place, rebating the full anti-dumping duties on the importation of frozen bone-in cuts of chicken meat, imported from or originating in the United States. In 2023 an import tariff rate quota (TRQ) of 71 290 tonnes was set, which is free of the anti-dumping duty of ZAR 9.40/kg (USD 0.57/kg).

South Africa ratified the African Continental Free Trade Agreement (AfCFTA). The African Union (AU) Heads of State and Government decided that preferential trade should start on 1 January 2021. Practical trade was planned to take place during 2022 once outstanding issues mainly on finalising the Rules of Origin, were concluded. On 25 February 2023 SACU finalised its outstanding tariff offer to the AfCFTA. Negotiations to finalise remaining work continued as part of the Built-in Agenda. South Africa has already published new tariff rates through the South African Customs and Excise that applies under this agreement.

Contextual information

South Africa has the most industrialised and diversified economy in Africa, and the second largest economy (after Nigeria) on the African continent. With the largest GDP per capita of the continent, it ranks as an upper middle-income country. However, income inequality is high and widespread poverty persists.

The importance of agriculture in the economy is relatively low, contributing 3% of GDP, although it makes a more important contribution to employment (Table 24.3). South Africa has abundant agricultural land,

but only 12% of it is arable, while the remaining agricultural area is mostly semi-arid pastures with extensive livestock production. The farm structure is highly dualistic, with a well-developed and market-oriented sector of large-scale commercial farms and a large number of smallholder farms.

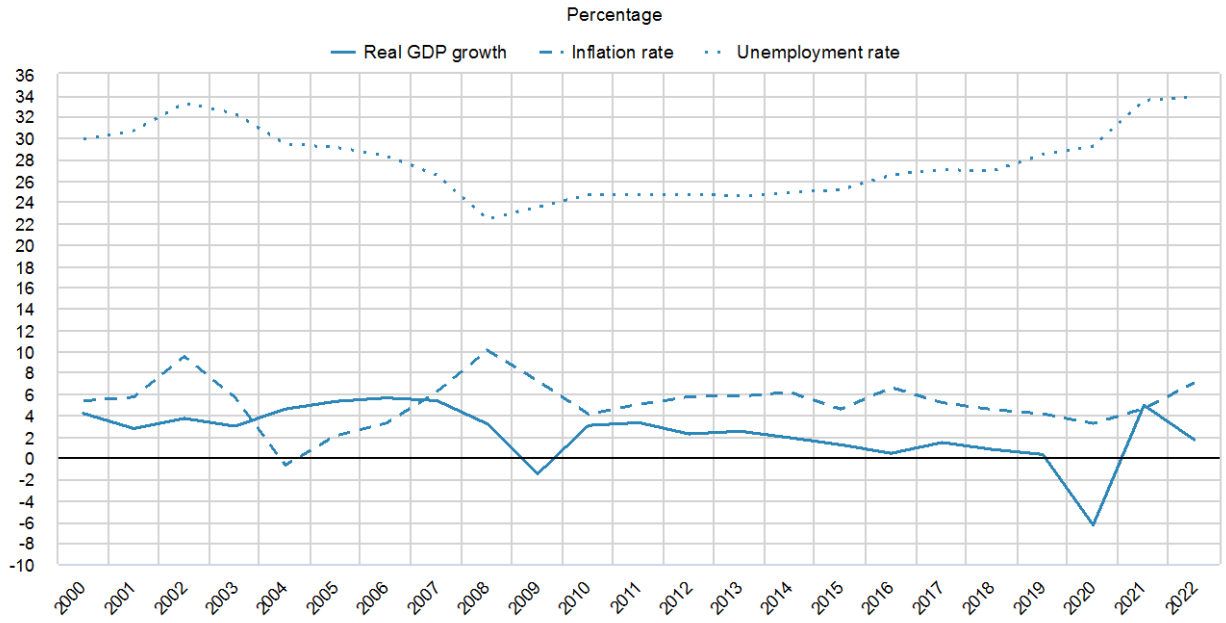
Table 24.3. South Africa: Contextual indicators

	South Africa		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	382	869	1.0%	0.7%
Population (million)	44	59	1.0%	1.1%
Land area (thousand km^2)	1 213	1 213	1.5%	1.5%
Agricultural area (AA) (thousand ha)	98 125	96 341	3.3%	3.3%
			All countries[1]	
Population density (inhabitants/km^2)	38	49	52	64
GDP per capita (USD in PPPs)	8 154	14 624	9 350	23 401
Trade as % of GDP	19.4	25.5	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	3.3	2.5	2.9	3.9
Agriculture share in employment (%)[2]	20.5	21.3	-	-
Agro-food exports (% of total exports)	8.5	9.9	6.2	7.9
Agro-food imports (% of total imports)	5.2	7.4	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	56	53	-	-
Livestock in total agricultural production (%)	44	47	-	-
Share of arable land in AA (%)	14	12	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
2. These figures are based on ILO modelled estimates and have a high degree of uncertainty.
Sources: OECD statistical databases; UN Comtrade; ILO and national data.

South Africa has experienced a relatively moderate inflation – below 5% in most recent years, but climbed to 7% in 2022. However, a persistently high and increasing rate of unemployment remains an obstacle for alleviating poverty. Real GDP growth has been declining since 2011 and dropped below to -6% in 2020, in response to COVID-19 restrictions and impacts, before rebounding strongly in 2021 to 5% and then slowing to just 1.7% in 2022 (Figure 24.5).

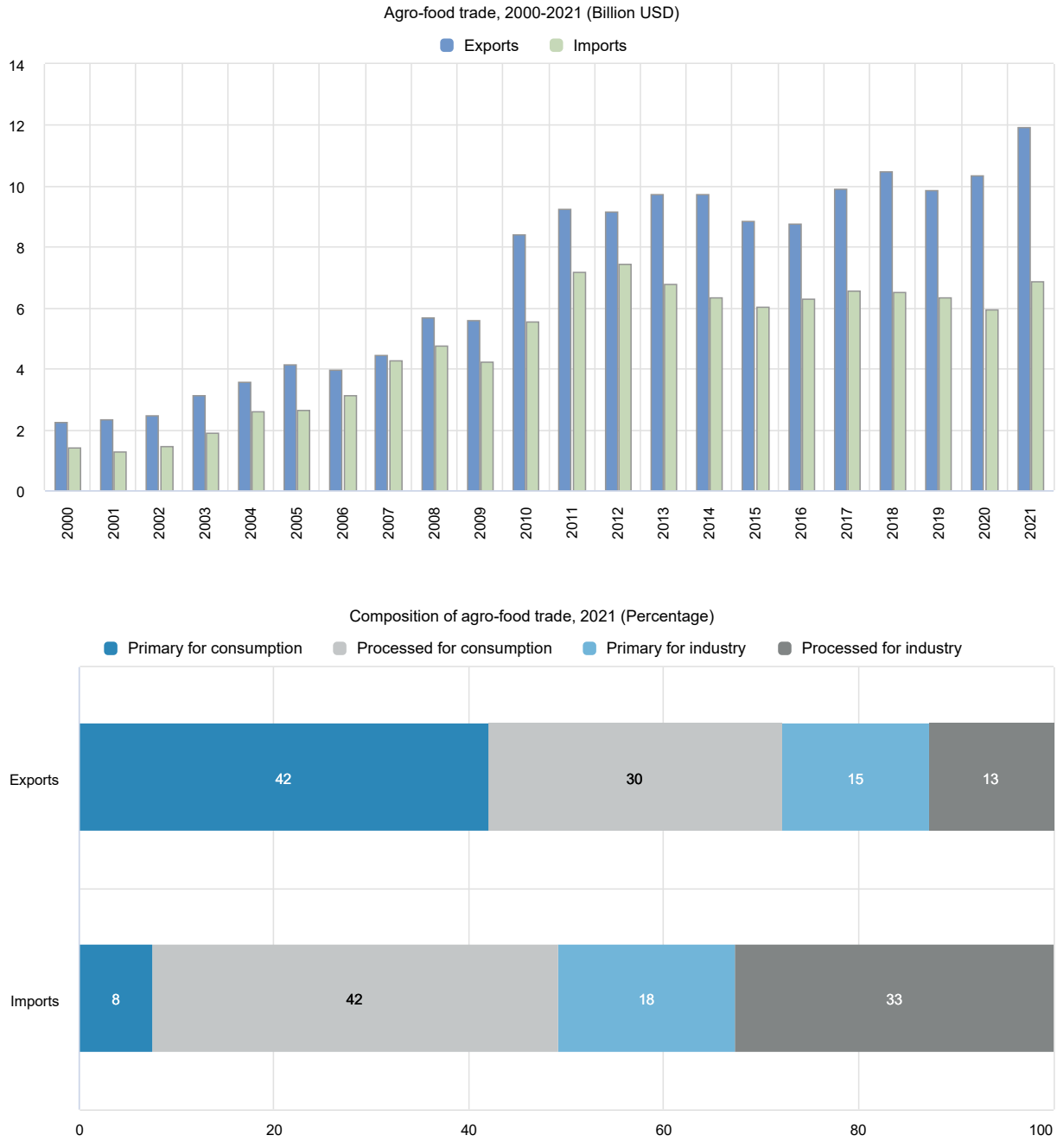
Figure 24.5. South Africa: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

South Africa is consistently a net exporter of agro-food products (Figure 24.6). In 2021, the share of agro-food exports in total exports was around 10%, while the share of agro-food imports was around 7% in 2021 (Table 24.3). The majority (57%) of agro-food exports are primary agricultural products, whereas around three-quarters of agro-food imports are processed products (Figure 24.6).

Figure 24.6. South Africa: Agro-food trade

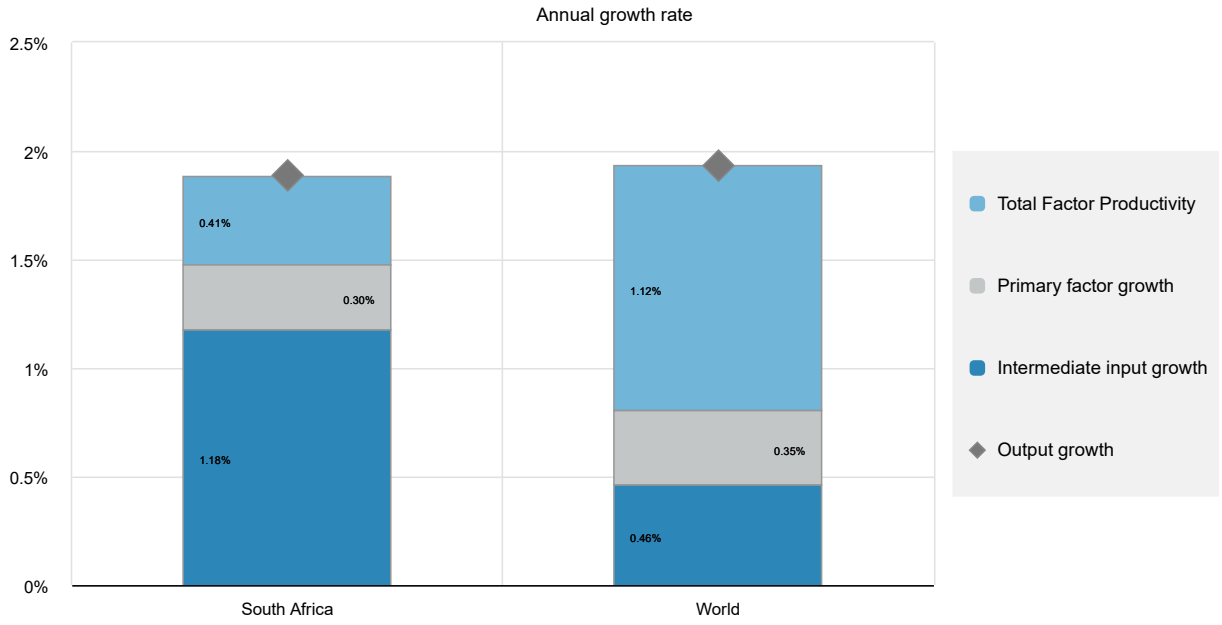


Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Agricultural output growth has been similar to the global average over the 2011-20 period, but driven predominantly by increased use of intermediate inputs (Figure 24.7). This was not the case in the 1990s, where annual TFP growth averaged 1.6%, however TFP growth has slowed significantly since then, growing by only 0.4% per year during 2011-20, well below the world average (Table 24.4).

Phosphorus and nitrogen balances are very low and negative, respectively, and well below the OECD average. Although agriculture uses most (58%) of abstracted water, only a few regions have irrigated land, and water resources are scarce in most of the agricultural areas (Table 24.4). The livestock sector is another important user of water in agriculture. Agriculture's share in energy use has increased and remains above the OECD average.

Figure 24.7. South Africa: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 24.4. South Africa: Productivity and environmental indicators

	South Africa		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	1.6%	0.4%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	-6.3	-6.0	32.2	30.4
Phosphorus balance, kg/ha	0.2	0.0	3.3	3.0
Agriculture share of total energy use (%)	2.6	2.9	1.7	2.0
Agriculture share of GHG emissions (%)	..	..	8.6	10.5
Share of irrigated land in AA (%)	1.5	1.7	-	-
Share of agriculture in water abstractions (%)	61.5	57.9	46.6	49.7
Water stress indicator	41.7	..	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Notes

[1] The SACU members are: Botswana, Lesotho, Namibia, Eswatini (former Swaziland) and South Africa.

[2] TRQ's are allocated based on historical trade as specified under each TRQ. If the TRQ's are unused by 1 September each year, then unused TRQ's are available to other member states. The establishment of a permanent TRQ Management System at the SACU level is still in progress.

[3] The SADC member countries are: Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Eswatini, Tanzania, Zambia and Zimbabwe.

25 Switzerland

Support to agriculture

Since the 1980s, Switzerland has undertaken gradual reforms to liberalise agricultural trade, resulting in moderate reductions in support to agriculture, which then plateaued in the early 2010s. Support to producers as a share of gross farm receipts remains high at 49% on average in 2020-22, more than three times the OECD average. However, changes in the structure of support have been pronounced, as direct payments replaced a substantial share of market price support (MPS).

MPS remains the main component of support, arising mostly from tariff rate quotas (TRQs) with high out-of-quota tariffs. MPS represented 86% of total producer support in 1986-88, but decreased since to about 40%. Domestic prices were 46% above world prices on average in 2020-22. Large price gaps lead to substantial shares of Single Commodity Transfers (SCT) in commodity gross farm receipts for many products – notably poultry, eggs, and pig meat – while sugar benefits from direct budgetary support.

Switzerland provides significant direct payments to farms, almost all of which are subject to environmental cross-compliance. Total payments to farmers have been relatively stable over the past 20 years at 28% of gross farm receipts. The share of these payments in total support increased from 14% in 1986-88 to 60% in recent years, following the phase down of MPS. Direct support was reformed in 2014 towards more decoupling and mostly consists of area payments to agricultural land not tied to a specific commodity, payments to maintain farming in less-favoured conditions, and payments to farmers who apply stronger environmental or animal-welfare-related practices.

Switzerland's expenditures for general services (General Services Support Estimate, GSSE) are high. GSSE relative to agricultural production value rose from below 6% in 2000-02 to nearly 9% in 2020-22, among the highest of countries covered in this report. Almost half of GSSE expenditure goes to the agricultural knowledge and innovation system. Total support to agriculture (Total Support Estimate, TSE) fell as a share of Gross Domestic Product (GDP) from 2% in 2000-02 to less than 1% in 2020-22.

Recent policy changes

The Federal Council published its report on the future orientation of agricultural policy in June 2022. It responded to Parliament's request to further analyse the food security and sustainability implications of policy reform options, after the 2021 suspension of a first reform proposal (AP22+). The report proposes a long-term strategy for Swiss agriculture and food systems to 2050, structured around food-supply resilience, climate, environment- and animal-friendly food production, value-added creation, and healthy and sustainable consumption.

To start implementing this plan, new water-quality measures approved by the Federal Council in April 2022 came into force on 1 January 2023. These include a ban on high-risk pesticides, more-restrictive spraying rules, and adjustments in direct payments to disincentivise pesticide use, supporting the goal to reduce the risks associated to the use of pesticides by 50% by 2027. Additional measures were approved, tightening fertiliser application rules and allocating 3.5% of cropland area to the promotion of biodiversity.

Entry into force of these latter measures was postponed to 2024 due to the Russian war of aggression against Ukraine.

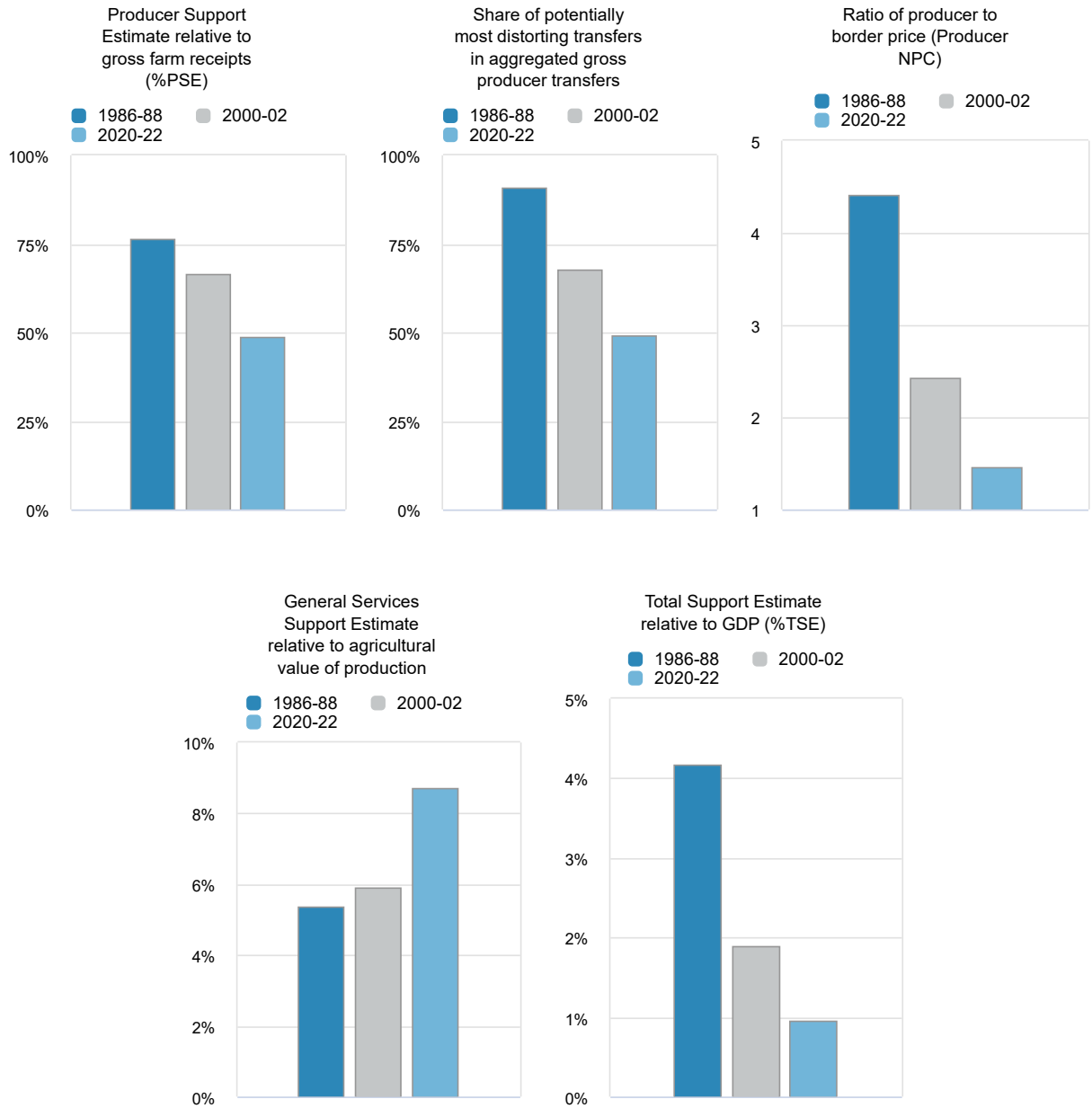
Switzerland implemented measures to ensure its supply of nitrogen fertilisers, in response to various crises, among which the COVID-19 pandemic, the high energy prices, and later the war in Ukraine. As of December 2021, the Confederation had released 20% of its strategic reserve of nitrogen fertilisers in response to early supply difficulties in international markets, which corresponds to 8% of annual national need. Tariffs on feedstuff were also lowered in reaction to high grain prices, whereas sanctions similar to those of the European Union targeted fertiliser imports from Russia, without substantial impact on Swiss production.

In winter 2022 and spring 2023, Switzerland's Parliament approved new socioeconomic measures initially part of the AP22+ package, including federal support to crop-insurance schemes. This evolution is in line with the Adaptation Action Plan for 2020-25, which defines a series of measures for agriculture.

Assessment and recommendations

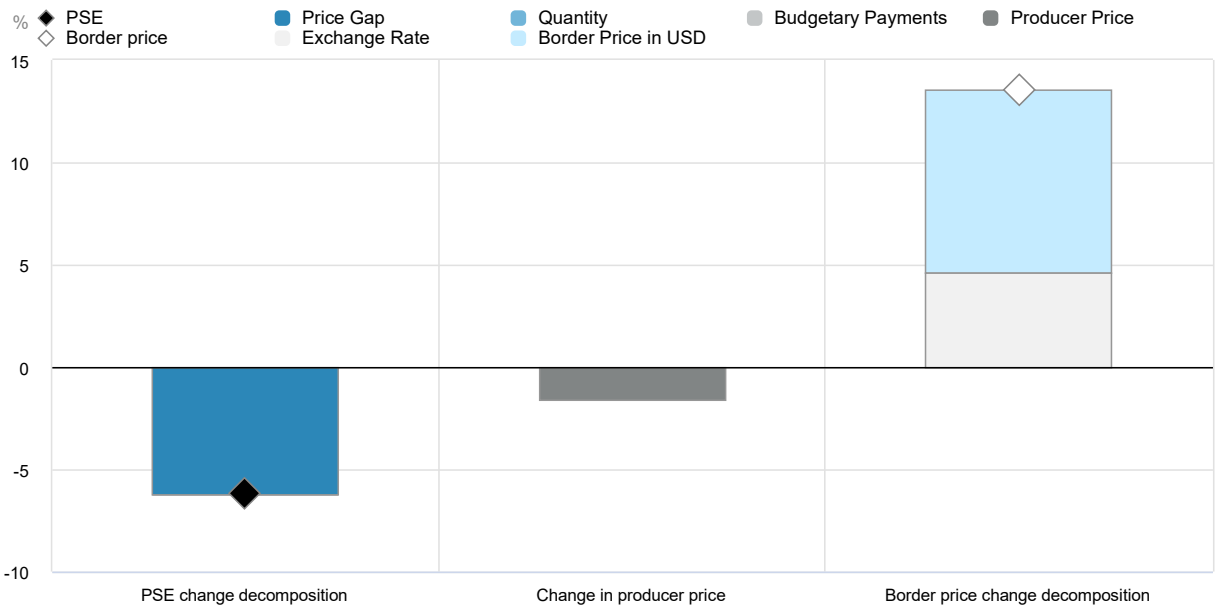
- Switzerland is now implementing its second climate-change adaptation plan, including detailed measures on agriculture, which illustrates the commitment for climate action in that area. Large investments in research and innovation – including adapting breeds and practices, and better monitoring climate and natural resources – provide a strong basis for adapting to future climate changes and reinforce the sector's resilience.
- At the same time, successive political reversals in past years – notably rejection of the revised CO_2 Act by referendum and postponement of agricultural reform AP22+ in 2021 – have delayed concrete climate action and the necessary transformations to food and agriculture. New legislative proposals will have to demonstrate the capacity of the country to align the sector with long-term objectives in a timely manner.
- While Switzerland reduced its share of most-distorting producer support over the past decades, border measures and output-based payments remain among the highest in the OECD. Continuing efforts to decouple income support from farm output would decrease pressure on food prices and the environment, and facilitate adaptation in the sector consistent with its food-system objectives.
- High level of support to the agricultural knowledge and innovation system has not translated into increased total factor productivity. Further investments in improving the resource-efficiency of production would support environmental and climate goals.
- Large payments allocated to environmental preservation have helped reduce environmental pressures, but the nitrogen surplus is still twice the OECD average. The new clean-water programme should support further reduction in fertiliser application, but stronger regulatory efforts may be needed to address this structural issue in the long run.
- The sector must reconsider its production mix to achieve its food security and sustainability objectives, within a broader food systems perspective also encompassing consumers. Announced climate targets for 2050 and the goals of the Global Methane Pledge will be difficult to meet without reducing the ruminant herd. High levels of livestock production also increase the country's reliance on crop imports and are a major driver of observed nitrogen and phosphorus cycle imbalances.

Figure 25.1. Switzerland: Development of support to agriculture



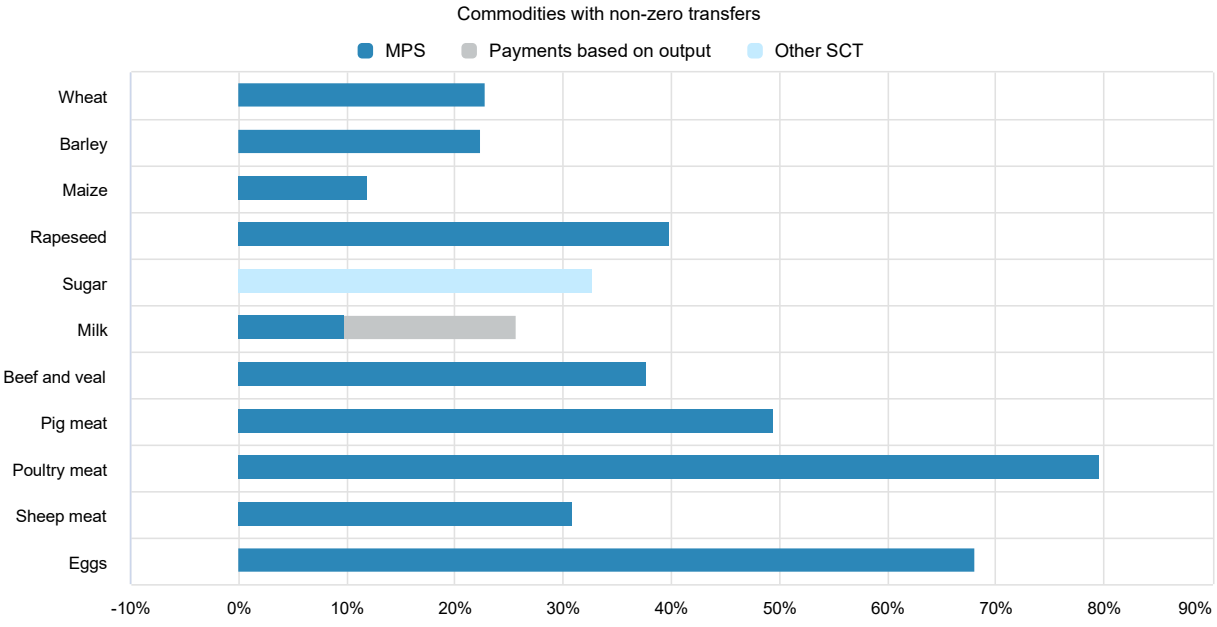
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 25.2. Switzerland: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 25.3. Switzerland: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 25.1. Switzerland: Estimates of support to agriculture

Million USD

	1986-88	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**8 025**	**5 695**	**9 727**	**9 741**	**9 695**	**9 745**
***of which:** share of MPS commodities (%)*	62.80	57.98	62.10	60.49	63.79	62.02
Total value of consumption (at farm gate)	**12 693**	**8 853**	**15 632**	**14 240**	**15 931**	**16 726**
Producer Support Estimate (PSE)	**6 871**	**5 057**	**6 599**	**7 081**	**6 700**	**6 018**
Support based on commodity output	5 966	3 363	3 176	3 670	3 192	2 666
Market Price Support[1]	5 939	3 145	2 770	3 274	2 775	2 261
Positive Market Price Support	5 939	3 145	2 770	3 274	2 775	2 261
Negative Market Price Support	0	0	0	0	0	0
Payments based on output	27	218	406	396	418	406
Payments based on input use	358	126	150	150	158	141
Based on variable input use	289	67	71	71	73	70
with input constraints	0	14	0	0	0	0
Based on fixed capital formation	46	53	79	79	86	71
with input constraints	0	0	41	42	47	34
Based on on-farm services	23	6	0	0	0	0
with input constraints	0	0	0	0	0	0
Payments based on current A/An/R/I, production required	392	564	1 069	1 060	1 094	1 053
Based on Receipts / Income	10	0	0	0	0	0
Based on Area planted / Animal numbers	382	564	1 069	1 060	1 094	1 053
with input constraints	217	540	1 020	1 008	1 044	1 007
Payments based on non-current A/An/R/I, production required	18	51	1 114	1 111	1 142	1 089
Payments based on non-current A/An/R/I, production not required	0	774	69	85	68	56
With variable payment rates	0	0	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
With fixed payment rates	0	774	69	85	68	56
with commodity exceptions	0	0	0	0	0	0
Payments based on non-commodity criteria	0	58	771	759	790	764
Based on long-term resource retirement	0	0	0	0	0	0
Based on a specific non-commodity output	0	58	771	759	790	764
Based on other non-commodity criteria	0	0	0	0	0	0
Miscellaneous payments	137	120	250	245	255	248
Percentage PSE (%)	**76.60**	**66.44**	**48.65**	**52.27**	**49.19**	**44.57**
Producer NPC (coeff.)	**4.41**	**2.44**	**1.46**	**1.58**	**1.47**	**1.36**
Producer NAC (coeff.)	**4.27**	**2.98**	**1.95**	**2.10**	**1.97**	**1.80**
General Services Support Estimate (GSSE)	**431**	**337**	**849**	**836**	**870**	**840**
Agricultural knowledge and innovation system	110	70	409	404	421	401
Inspection and control	9	24	11	11	12	11
Development and maintenance of infrastructure	80	54	90	86	92	91
Marketing and promotion	29	37	67	66	69	66
Cost of public stockholding	66	32	51	49	50	54
Miscellaneous	137	120	221	220	226	217
Percentage GSSE (% of TSE)	**5.41**	**6.09**	**11.39**	**10.54**	**11.49**	**12.24**
Consumer Support Estimate (CSE)	**-9 012**	**-5 034**	**-4 551**	**-4 967**	**-4 596**	**-4 088**
Transfers to producers from consumers	-6 065	-3 245	-2 789	-3 312	-2 786	-2 269
Other transfers from consumers	-3 788	-1 986	-1 782	-1 703	-1 821	-1 823
Transfers to consumers from taxpayers	700	147	9	19	5	4
Excess feed cost	141	50	12	29	6	0
Percentage CSE (%)	**-75.00**	**-57.83**	**-29.10**	**-34.93**	**-28.86**	**-24.45**
Consumer NPC (coeff.)	**4.44**	**2.44**	**1.41**	**1.54**	**1.41**	**1.32**
Consumer NAC (coeff.)	**4.00**	**2.37**	**1.41**	**1.54**	**1.41**	**1.32**
Total Support Estimate (TSE)	**8 002**	**5 541**	**7 458**	**7 936**	**7 575**	**6 862**
Transfers from consumers	9 853	5 231	4 572	5 015	4 607	4 092
Transfers from taxpayers	1 937	2 296	4 668	4 623	4 789	4 593
Budget revenues	-3 788	-1 986	-1 782	-1 703	-1 821	-1 823
Percentage TSE (% of GDP)	**4.18**	**1.90**	**0.95**	**1.07**	**0.95**	**0.85**
Total Budgetary Support Estimate (TBSE)	**2 063**	**2 396**	**4 688**	**4 662**	**4 800**	**4 601**
Percentage TBSE (% of GDP)	**1.08**	**0.82**	**0.60**	**0.63**	**0.60**	**0.57**
GDP deflator (1986-88=100)	**100**	**127**	**137**	**135**	**136**	**140**
Exchange rate (national currency per USD)	**1.58**	**1.64**	**0.94**	**0.94**	**0.91**	**0.95**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Switzerland are: wheat, maize, barley, rapeseed, sugar, milk, beef and veal, sheep meat, pig meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

Until the early 1990s, Swiss agriculture was largely isolated from world markets, due to high trade barriers and strong domestic market regulations. Substantial reforms of agricultural policy were implemented in the mid-1990s and early 2000s. These were prompted by commitments made under the GATT and later the WTO. There have been no systematic policy reforms since 2013, and current schemes are expected to extend until at least 2025.

The reforms implemented between 1993 and 2003 had three main elements:

1. Reduced barriers to imports and greater transparency in border measures, gradual removal of price guarantees and other market regulations, maintenance of production quotas for milk, and introduction (in 1998) of new market regulations for sugar.
2. New direct payments less coupled to production, and voluntary ecological direct payments linked to ecological services (1993-1998).
3. Cross-compliance requirements connecting almost all direct payments to proof of ecological performance as of 1999.

Between 2004 and 2013, policy reforms were comparatively modest and focussed on deregulation of agricultural markets. Export subsidies were phased out, and milk quotas were abandoned in 2009 even though the market remained strongly regulated.

In 2013, a new Agricultural Policy framework for 2014-17 (AP 2014-17) reformed the system of payments (OECD, 2015[1]). This framework was extended since then and is still in place today. The direct payment scheme was modified under this reform to improve its efficiency and effectiveness and create links to specific agricultural practices (OECD, 2017[2]).

Environmental modalities (regulations on pesticide and nutrient surpluses, cross-compliance requirements and budgetary support to sustainable practices) have been tightened in the context of a new Agricultural Policy framework (AP22+) preparation. Although the reform process was temporarily suspended, the future orientation of the agricultural policy, published by the government in 2022, sets new milestones for the reform in the coming decade, and some first environmental measures started to be implemented.

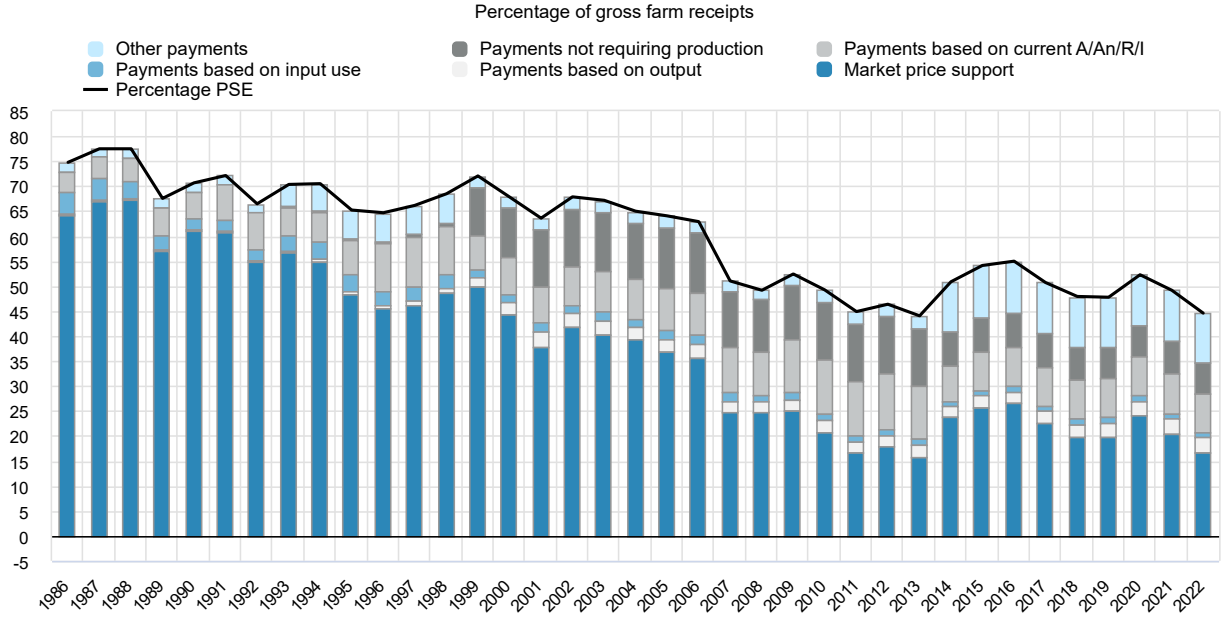
Table 25.2. Switzerland: Agricultural policy trends

Period	Framework	Changes in agricultural policies
Prior to 1993	Closed market	High border protection; regulated prices and interventions in domestic agricultural markets Payments based on output and input use; commodity-specific area and headage payments
1993-1998	Reforms to open up markets New system of direct payments	Reduced import barriers; enhanced transparency Reduction of export subsidies for some agricultural and processed products Reduction of domestic market regulations except for milk (production quotas); introduction of sugar production quotas and guaranteed prices Creation of General Direct Payments, including: - Complementary Direct Payments based on area (arable and grassland) and other supplementary payments - Payments for integrated production - Payments for farming in difficult conditions Introduction of Ecological Direct Payments as voluntary schemes based on environmental services provided by farmers (biodiversity, landscape, animal welfare, etc.), and incentives for more sustainable use of resources and pollution reduction
1999-2004	Continuation of reforms to open up markets Changes in the system of	Further gradual reduction of import barriers Reform of the General Direct Payments; Complementary Direct Payments replaced by a general Area Payment not requiring production of particular crops; introduction of a general

Period	Framework	Changes in agricultural policies
	direct payments	payment for ruminants Abolition of payments for integrated production Introduction of environmental cross-compliance; all direct payments conditional to a proof of ecological requirements
2005-2013	Abolition of export subsidies Removal of production quotas (dairy, sugar)	Further gradual reduction of import barriers Abolition of export subsidies for primary agricultural products (2010) Abolition of dairy quotas and related guarantee prices for milk (2009) Abolition of sugar market regulations and introduction of area payments for sugar-beet to compensate for related price reductions (2009)
2014-present	Reform of the general direct payments	Reform of the system of General Direct Payments (2014) Abolition of general area payments Reallocation of payments related to specific agricultural practices Introduction of transition payments to make the reform socially acceptable Replacement of general headage payments to ruminants with area payments to pastures with a minimum stocking density Continuation of environmental cross-compliance conditions within the new system of payments Abolition of remaining export subsidies for some processed products (1 January 2019) New payments to producers of commercial milk and grains to compensate for price reductions due to the abolition of export subsidies for processed products (2019)

Support to farmers declined from close to 80% of gross farm receipts in the late 1980s but remained high at 45% in 2022. Potentially most production- and trade-distorting support (mainly market price support) also declined from around 80% to less than 40% of producer support between 1986 and 2022, while other payments grew.

Figure 25.4. Switzerland: Level and PSE composition by support categories, 1986 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

Policy objectives

Swiss agricultural policy falls under the framework of the Agriculture Act (AgricA) from 1998, which establishes the principles and instruments for the regulation of the sector. The AgricA aims to ensure that agriculture is sustainable and innovative. It focuses on: 1) food security for the population; 2) conservation of natural resources; 3) preserving cultivated landscape; 4) decentralised occupation of the territory; and 5) improving animal welfare.

The key elements of the AgricA have been enshrined in the Swiss Federal Constitution (Art. 104). In 2017 a referendum led to the adoption of a new article on food security (Art. 104a), emphasising the need to guarantee the supply of food to the population through:

- safeguarding the basis of agricultural production, especially land
- adapting food production to local conditions and using natural resources efficiently
- ensuring that the agriculture and food sector meet the market needs
- building trade relationships that contribute to the sustainable development of the agriculture and food sector
- using food in a way that conserves natural resources.

The Constitution and the AgricA require securing sufficient long-term food supplies for the population, based on both domestic production and imports and considering the entire value chain. This is achieved through specific measures developed within four-year budget and programme cycles.

Budgetary support

The current support programmes are defined by the new agricultural budget for the period 2022-25 (AP 2022-25), which follows on the AP 2018-21 that covered the past four years. These plans are an extension of the policy framework first established in 2014. The budget allocation for AP 2018-21 was 1.7% lower in nominal terms than for AP 2014-17, whereas the new 2022-25 budget is 0.6% higher, compared to AP 2018-21.

Budgetary support to agriculture consists of three main elements, including direct payments, production and marketing expenditures, and support to improve the production base.

Direct payments to farmers target food security and environmental services (landscape, biodiversity, sustainable use of resources) and animal welfare. These payments are subject to environmental cross-compliance, with specific “ecological services requirements”.

Production and marketing expenditures mainly support dairy producers via three types of payments: (1) for milk processing into cheese; (2) for milk production without silage feed; and (3) for milk and dairy product sales from the farm (introduced in 2019). In addition, area payments apply to oilseeds, protein crops, cereals (introduced in 2019) and sugar beet. Some expenditures under this heading are for general services to the sector, including marketing and product promotion.

Policies to improve the production base include direct support to on-farm investments as well as general support for infrastructure improvement, social aid to farmers, and advisory services. These payments were first initiated as part of the AP 2014-17 policy framework.

Following the abolition of milk quotas in 2009, the inter-branch organisation for milk, *l’Interprofession du Lait* (IP Lait), implemented standard milk delivery contracts for its members. These set different prices and volumes for milk delivery (contingents A, B and C). These contracts became compulsory for all milk producers in 2013, including those outside IP Lait. In effect, this replaced the previous production quota

system with another production control mechanism implemented on a private basis. This scheme was extended in 2021 by the Federal Council (Switzerland's federal government).

Trade policy instruments

Agro-food imports to Switzerland are largely regulated by tariff rate quotas (TRQs) with relatively low in-quota tariffs and high out-of-quota tariffs. TRQs cover meat, milk products, potatoes, fruits, vegetables, bread cereals and wine. Since 1999, an auction system allocates some of the TRQs to traders. A notable exception to the quota system is feed grains, which are subject to single tariffs. These are regularly adjusted depending on market conditions to stabilise feed prices for the livestock sector.

Preferential tariff rates apply unilaterally to imports from developing countries under the general system of preferences. The Swiss Government grants zero tariffs to all products from Least Developed Countries (LDCs), so agricultural imports from LDCs (according to the official UN definition) are duty- and quota-free since September 2009.

Export subsidies for primary agricultural products were eliminated by 1 January 2010. The remaining export subsidies for some processed products were abolished as of 1 January 2019, following the Nairobi agreement in 2015. To compensate the impacts of that reform, additional payments to producers for commercial milk (Agriculture Act Art. 40) and grain (Agriculture Act Art. 55) were introduced.

Switzerland's network of trade agreements consists of the European Free Trade Association (EFTA) Convention, the Free Trade Agreement with the European Union and some 33 agreements concluded with 43 countries. All were signed within EFTA, with the exception of agreements with the People's Republic of China, Japan, the United Kingdom and the Faroe Islands.

Climate change mitigation in agriculture

Switzerland set the goal in 2019 to reach climate neutrality by 2050 and defined specific commitments for emissions reductions in the agricultural sector. Though not legally binding, the Long-Term Strategy (LTS) from 2021 targets 40% emission reduction for agriculture compared to 1990 by 2050.

The Climate Strategy for Agriculture of 2011 sets out action areas where specific mitigation objectives could be set. These are in the livestock sector (breed, herd management, animal feed, animal building), the crop sector (crop and variety type, management practices), fertiliser management (application rate, storage and spreading), and energy consumption (building, machinery and renewable energy). AP22+ was expected to develop actions in these areas but was suspended in 2021 following concerns by parliament (details below).

The Climate Strategy for Agriculture has set an overall emissions reduction target by 2050 of two-thirds for the food system as a whole, compared to 1990 levels. As part of the 2030 Sustainable Development Strategy, a separate target defined in 2021 called for reducing the GHG emissions footprint of each food consumer (including imported food) by 25% by 2030, based on 2020 levels.

Several measures support climate mitigation in agriculture:

- A carbon tax on fossil fuels used to heat greenhouses and barns for livestock, as set out by the 2011 version of the CO_2 Act. Following a public consultation in 2021, the level of this tax was stabilised at CHF 120 (USD 126) per tonne CO_2 as from 2022. Transportation fuels are not subject to the carbon tax. Producers can opt out from the tax payment by submitting a long-term decarbonisation plan for their installations.
- A requirement for fossil fuel producers and importers to offset part of transport-related CO_2 emissions through national emissions reductions projects. Domestic agricultural projects can contribute to these with investments in anaerobic digesters or fertilisation improvements.

- New measures were also adopted in 2022-23, such as the new water quality plan setting a fertiliser reduction target of 20% by 2030 and strengthened contributions to sustainable production systems through soil fertility improvement measures, higher use of organic fertilisers and longer productive lifetime for cows to reduce emissions per unit of output (see further below).

Initiatives are also in place to foster R&D, knowledge dissemination and innovation. These fund information platforms, association initiatives for climate protection in agriculture, or development of sustainability schemes.

Sustainable Development Goals

The Federal Council adopted in 2021 a 2030 Sustainable Development Strategy (SDS) and a related action plan containing, among others, a revision of the Climate Strategy for Agriculture. The SDS identifies three priority themes with specific objectives for 2030: Sustainable consumption and production; Climate, energy and biodiversity; and Social equity. For the transformation towards sustainable food systems, four targets were defined as part of the SDS Sustainable Consumption and Production theme:

- A reduction of one-quarter in food GHG emissions footprint for Swiss consumer by 2030 compared to 2020 (described earlier).
- A share of one-third of total population with healthy and sustainable dietary patterns by 2030, in line with the food pyramid (national dietary recommendations).[1]
- A reduction of 50% in food waste per capita by 2030 compared to 2017, and a substantial reduction in food losses along the supply chain.
- An increase by one-third by 2030 in the share of farms exceeding the ecological services requirements in a verifiable manner, compared to 2020.

In the context of the UN Food Systems Summit activities in 2021, Switzerland also set up a National Pathway for Food Systems Transformation. This was done in co-ordination with stakeholders and is closely integrated with the SDS. The Food Systems Summit Dialogues helped identify themes such as the development of a coherent cross-sectoral food systems strategy; the promotion of food systems transformation through awareness-raising and education; the reflection of the true cost of food in prices and fairer distribution of added value along the chain of actors; and the promotion of research, innovation, digitalisation and new technologies. These extra elements are to be addressed in a future revision of the SDS action plan or other relevant policy instruments.

Climate change adaptation policies in agriculture

Switzerland defined its climate-change adaptation strategy in March 2012, in a framework document from the Federal Council that describes approaches to be adopted by each sector of the economy. A first set of areas for action in agriculture had been identified in the 2011 Climate Strategy for Agriculture, and a revised strategy is expected to be published in the course of 2023 to strengthen these elements and link them to climate mitigation efforts.

Two successive action plans set out specific adaptation measures for each sector. The first of these covered 2014-19 and had 63 sectoral and cross-sectoral measures. The second, released in 2020 for 2020-25, has 75 measures, including 46 from the previous plan.[2] These documents clarify what actions to undertake at federal, cantonal and communal levels, and lay out international collaboration channels to support climate adaptation. Some measures target agriculture specifically, while others have indirect implications in related domains (water management, biodiversity, human health, animal welfare).

Adaptation measures for agriculture, as defined in the successive adaptation plans, are organised around the following axes: (1) adapting products, production systems, and production practices; (2) improving

knowledge of adaptation possibilities; and (3) mitigating weather-related risks for production and prices. Work started with the following action tracks:

- optimised use of plants and suitable animal breeds, including pest management
- enhanced use of land and water resources
- data development for operations adapted to production sites
- extension of monitoring and early-warning systems
- analysis of opportunities to support private risk-management

Complementary actions with respect to water, soil, biodiversity, and human health can help agricultural adaptation. Examples in the domain of water management are determining water needs better, reviewing water-protection plans and management-planning tools, and developing improved drought-prediction systems. The current action plan includes soil-protection measures that link to carbon-sequestration objectives through a mapping of the state of Switzerland's soils. Some measures related to biodiversity protection include the restoration of peatlands and creating areas with shade (including on agricultural land). Measures related to human health include protecting workers from high exposure to extreme heat, ultraviolet radiation, and other extreme events. For animal health, measures are planned to monitor and mitigate heat stress, as well as research on the emergence of new pests and diseases.

The Pilot Programme for Adaptation to Climate Change is an illustration of current federal efforts to support the uptake of these measures by funding specific projects that test adaptation actions. The first phase of the programme in 2013-17 funded 31 projects across Switzerland in the domains of water management, prevention of natural disasters, ecosystems and land-use management, urban development, and research. The second phase in 2018-20 funded 50 projects to analyse dairy-herd stress, ground-water management and reservoirs for irrigation, and agricultural development planning.

Other federal programmes also indirectly support adaptation efforts in agriculture. The Agri-food Quality and Sustainability Programme aims to increase the value-added and environmental and socioeconomic sustainability of agricultural production. The programme funds up to half the costs related to a selected innovative project. Similarly, the Sustainable Resource Management Programme (provision of Art. 77a under AgricA) covers up to 80% of the cost of investments in optimising the use of resources such as water, fertilisers, phytosanitary products, animal feed and drugs, and energy.

Adaptation strategies are also supported through public research activities. Agroscope's 2022-25 research programme conducts several activities to develop new plant production and animal husbandry systems, and and animal varieties better adapted to the changing climate. This includes research on resource-efficient and site-adapted cultivation methods and production systems for field crops and special crops; new crop-breeding research based on genomic and phenotypic methods; and research on management and production practices. The climate adaptation plans also include knowledge-development activities that focus on regional climate-change scenarios for Switzerland, new hydrological data and scenarios for water policy, research on hail forecasting, and broader risk assessment at national and regional levels.

Domestic policy developments in 2022-23

On 22 June 2022, the Federal Council published its report on the future orientation of the agricultural policy. This report was published in response to requests from the two parliament chambers to examine in more detail long term food security and sustainability challenges in advance of the AP22+ reform. Taking a broad perspective encompassing production and consumption, the report proposes a long-term strategy for Swiss agriculture and food systems around four axes: 1) ensuring food supply resilience; 2) encouraging climate, environment and animal-friendly food production; 3) strengthening value-added creation; and 4) supporting a healthy and sustainable consumption. The report also provides a foresight for the Swiss

agriculture and food systems by 2050, aiming at identifying the potential synergies and trade-offs between the different objectives and targets, notably:

- Supplying half of national food needs from diverse local production.
- Increasing labour productivity by 50% relative to 2020.
- Reducing GHG emissions from the agricultural sector by 40%, compared to 1990, and from food consumption per capita by two-thirds compared to 2020.
- Improving nutrients cycling to respect sustainability thresholds in water and the atmosphere.
- Reducing food waste by 75% relative to 2020.
- Ensuring a healthy and sustainable diet for all the population.
- Championing innovation and adoption of environmentally friendly technologies.

To reach these objectives in Switzerland, the agricultural policy orientation report considers several lines of action: i) stronger innovation capacity and know-how; ii) more efficient use of natural resources and adaptation to local conditions; iii) more transparency and true cost accounting; iv) simplified policy instruments.

The implementation of that strategy is planned in three steps. First, new water quality measures approved in April 2022 by the Federal Council have come into force on 1 January 2023 and target the adverse environmental impacts of fertilisers and pesticides. These measures include:

- Pesticides with high potential risk have been banned, except when no better alternative exists. Pesticide applications also must be more distant from rainwater collection spots. Direct payments schemes were adjusted to support reduction in pesticide use. These steps aim to reduce the risks associated to the use of pesticides by 50% by 2027, compared to the average level in 2012-15, to better protect water and ecosystems,
- The tolerance margin of 10% for measurement of manure application will no longer apply from 2024, meaning fertiliser inputs should remain below 100% of the land nutrient needs to respect environmental cross-compliance for direct payments. In addition, farmers will have to dedicate 3.5% of their cropland area to the promotion of biodiversity. These new measures, initially aiming to reduce nitrogen and phosphorus fertiliser losses by 20% by 2030, compared to the average 2014-16 level, and expected to enter into force in January 2023, were postponed to 2024 due to the Russian aggression against Ukraine.
- Producers will have the obligation as from 2024 to spread liquid farmyard manure using low-emission methods. The regulation of storage and spreading of farmyard manure will be added to the cross-compliance requirements.
- In addition to new regulatory measures, sectors are also invited to take additional voluntary measures to reduce fertiliser losses, in co-ordination with the Confederation. Mandatory reporting on use of fertiliser, animal feed and phytosanitary products was introduced to increase transparency on current practices and their impact on the environment and incentivize changes in practices.

Second, the parliament adopted in winter 2022 and spring 2023 some direct payments adjustments focused on socioeconomic provisions. The new measures include:

- an improved social security cover for spouses and partners working on the farm
- new contributions to reduce crop insurance premiums
- the merging of the networking and landscape quality programmes
- a restructuring of payments for the diversification of agricultural activities, as well as those limiting the negative environmental impacts of agricultural production via new buildings, installations, machinery and technological applications

- support to regulatory control of plant protection products via laboratory analyses.

Third, a new draft legislation of agricultural policy orientation was requested from the Federal Council by 2027 to embrace a food systems approach and include additional elements of agricultural policy reform.

Beside elements of reform driven by the agricultural policy orientation process, other policy adjustments were undertaken to address more immediate needs. In February 2022, the parliament extended until 2026 temporary protections of the sugar sector and sugar beet production, through a modification to the AgricA. Thus, the sector continues to benefit from a tariff protection of CHF 70 (USD 73) per tonne of sugar and a support of CHF 2 100 (USD 2 200) per hectare of sugar beet, with an extra CHF 200 (USD 209) in the case of organic farming or integrated production practices.

In May 2022, the Federal Council changed the legislation on “Swissness” labelling (food items entitled to display the Swiss cross), which also defines the conditions under which exceptions were allowed. The list of such products will no longer be maintained by the Confederation. As from 1 January 2023, the sector itself determines and communicates what amount of primary ingredient should be sourced from Switzerland to earn such labelling.

In November 2022, the amendment of 19 agricultural ordinances was adopted by the Federal Council, most entering into force in 2023, among which:

- New support for protein crops intended for human consumption, such as chickpeas and lentils, to take account of the increased demand for plant-based food proteins and encourage the production in Switzerland of such alternative food products.
- New aid for the planting of robust varieties of grapes, stone fruits and pome fruits.
- Modification of provisions related to summer pastures, with retroactive effect from 1 January 2022, to secure the long-term exploitation of the mountain pastures. Farmers can now receive full payments for summer pastures even if the increased presence of wolves forces them to remove their herds prematurely from mountain pastures.
- Softening of some provisions planned on water quality due to the international market situation. The per area payments for security of food supply were reduced less than expected in 2023 and set at CHF 700 (USD 733) per hectare. Furthermore, the four-year commitment period (2023-26) for the two direct payment programmes for improving soil fertility was abolished and the requirement to register for such programmes postponed by one year.
- New premia to preserve Swiss breeds with “critical” or “threatened” status. This scheme replaces the separate support for the Franches-Montagnes horse breed, while covering other Swiss breeds as well.

Domestic policy responses to Russia’s war of aggression in Ukraine

The Swiss Federation adopted on 4 March 2022 a first set of sanctions against Russia and started to take domestic measures to adapt its agriculture and food system to the new international market situation.

The Confederation took measures to ensure supply of main inputs to agriculture, by releasing some of its strategic reserves of fertiliser and fuel. In December 2021, prior to the war, the Federal Department of Economic Affairs, Education and Research (EAER) had already decided to release 20% of its strategic reserve of nitrogen fertilisers through 2022, in response to the supply difficulties in fertiliser markets triggered by high energy prices. This corresponds to about 8% of the annual national needs. This measure remained in force for all of 2022 to mitigate the adverse market effects of the war and ensure availability of nitrogen fertiliser for crop production needs.

In response to concerns over food security, the 3.5% set-aside of cropland for promotion of biodiversity, initially planned to enter into force in 2023, was postponed to 2024. A response plan was initiated for preparedness of Swiss emergency food stocks (these stocks are usually directed to international

assistance through the World Food Program). An energy saving information campaign was put in place and preparatory work was done on a response plan to a potential nuclear accident in Ukraine, including for its consequences on Swiss agriculture.

In June 2022, labelling rules for sunflower oil and sunflower lecithin were temporarily relaxed due to the difficulties in these markets triggered by the war. These relaxed rules do not apply to other sunflower ingredients or substitutes containing or sourced from genetically modified organisms.

Trade policy developments in 2022-23

In November 2022, the Joint Committee on Agriculture related to the Agreement between the European Union and the Swiss Confederation on trade in agricultural products mutually recognised some new products' designations of origin and geographical indications. This applied to specific charcuterie and baked products from Switzerland and to 60 products from the European Union.

In February 2023, the Federal Council approved the negotiation mandate for the opening of discussion to further develop the 2019 trade agreement between the Swiss Federation and the United Kingdom. Negotiations are expected to start in 2023, conditional to the mandate approval by the relevant parliament committees and the Conference of cantonal governments. The United Kingdom is among the ten most important trade partners for the Swiss Federation.

Low milk production in 2022 created significant tensions in the domestic butter market. In response, the tariff rate quota was expanded by 6 100 tonnes in 2022, through five successive decisions, to match the 40 000 tonnes domestic demand. For 2023, the TRQ was expanded by 3 000 tonnes.

Similarly, following the 25% decrease in the domestic production of bread cereals to 304 000 tonnes, the TRQ for these bread cereals was expanded from 40 000 tonnes to 110 000 tonnes in May 2022, and finally set at 130 000 tonnes one month later.

Trade policy responses to Russia's war of aggression in Ukraine

On 8 March 2022, following the aggression of Russia on Ukraine and in response to its consequences on agricultural commodity prices, the Swiss Confederation decided to reduce border protection measures for animal feed imports. The decrease in tariff, which entered into force on 15 March 2022, was CHF 3 (USD 3.14) per 100 kg for wheat, barley, rye, triticale, maize grain and kibbled maize. For oats, the tariff decrease was CHF 1 (USD 1.05) per 100 kg, which set it to zero. For oilseed meals and vegetable oils, no tariffs were in place recently, as international prices are already higher than domestic ones. These tariffs were gradually brought back to higher levels after May 2022 as world prices weakened.

On 27 April 2022, the Federal Council adopted sanctions similar to those of the European Union on imports from Russia, targeting products of economic importance. In that context, import quotas were set on fertiliser imports (1 710 tonnes for potash and 1 636 tonnes for other synthetic fertilisers compounds). Thanks to the use of the fertiliser strategic reserves, these restrictions did not have any significant impacts on Swiss crop production.

Contextual information

Switzerland is a small economy with high GDP per capita, that had experienced low and periodically negative inflation until the 2022 global inflation surge with unemployment rates below 5% over the past two decades. GDP growth has been stable at around 2% prior to the COVID-19 pandemic, and it returned to pre-crisis levels in 2022, after a recovery period in 2021.

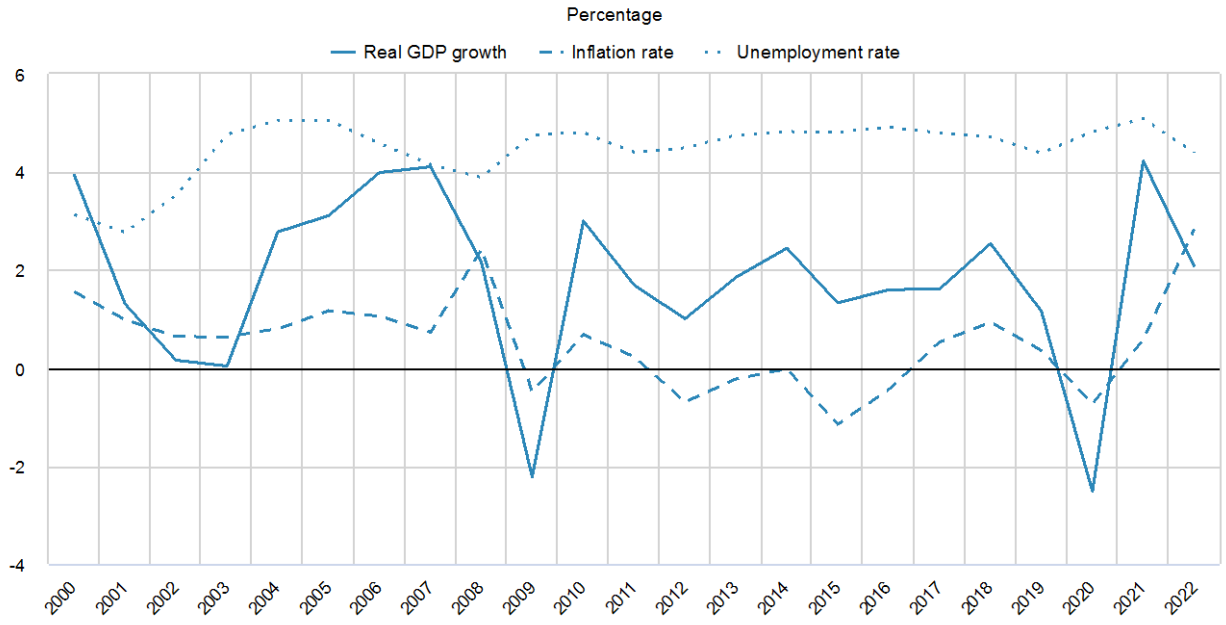
The relative importance of agriculture in the Swiss economy is low, accounting for just 0.6% of GDP and around 2% of employment. The farm structure is dominated by relatively small family farms. Hills and mountain farming areas (including alpine summer pastures) are used for extensive milk and meat production, while more concentrated pork and poultry production is located in valleys. Agricultural land covers 36% of the country area and is composed mostly of grassland, with arable land representing only 10% of total area. Crop production has shifted away from traditional arable crops (grains, oilseeds) towards an increasing production of fruits and vegetables over time.

Table 25.3. Switzerland: Contextual indicators

	Switzerland		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	264	661	0.7%	0.5%
Population (million)	7	9	0.2%	0.2%
Land area (thousand km^2)	40	40	0.05%	0.05%
Agricultural area (AA) (thousand ha)	1 566	1 504	0.05%	0.05%
			All countries[1]	
Population density (inhabitants/km^2)	180	218	52	64
GDP per capita (USD in PPPs)	36 350	75 951	9 350	23 401
Trade as % of GDP	29.2	43.2	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	1.1	0.6	2.9	3.9
Agriculture share in employment (%)	4.8	2.2	-	-
Agro-food exports (% of total exports)	2.7	2.9	6.2	7.9
Agro-food imports (% of total imports)	5.9	4.8	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	50	41	-	-
Livestock in total agricultural production (%)	50	59	-	-
Share of arable land in AA (%)	26	27	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

Figure 25.5. Switzerland: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Switzerland has consistently been a net agro-food importer, with 4.8% of its total imports in 2021 being agro-food products, compared to 2.9% of its exports.[3] Swiss agro-food exports consist mostly of processed products for final consumption (86% of total agro-food exports). This category also represents half of the agro-food imports (Figure 25.6).

Figure 25.6. Switzerland: Agro-food trade



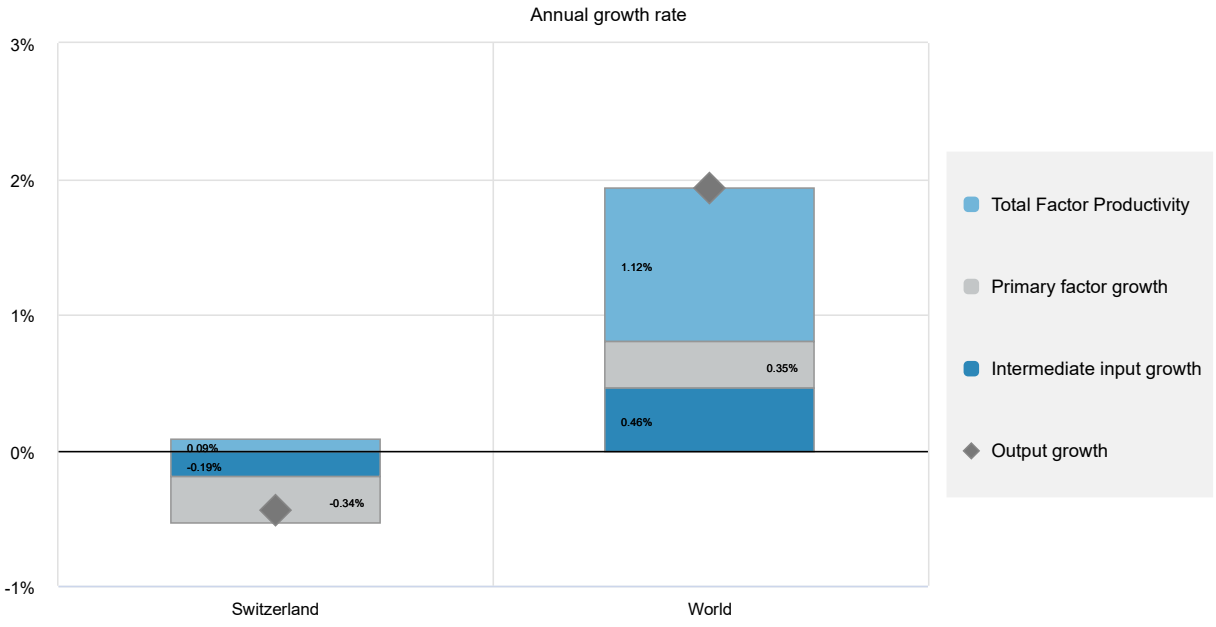
Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Total factor productivity (TFP) growth in agriculture has slowed significantly to close to zero between 2011 and 2020. However, both the use of intermediary inputs (-0.19%) and primary factor (-0.34%) decreased. As a result, overall output has declined over that period.

Swiss agriculture is largely rain-fed. Swiss farmers irrigate only 3.3% of their agricultural land and the share of agriculture in the country's water abstraction (8%) is less than one-sixth of the OECD average. In

addition, the water stress indicator is well below the OECD average. Agriculture's share of energy use went down as well and is less than one-third of the OECD average. On the other hand, while nutrient surpluses have declined moderately, the surplus of nitrogen (59 kg/ha for N) is still twice the OECD average, which negatively impacts water quality and GHG emissions. Swiss agriculture emissions amounted to 5.8 $MtCO_2eq$ in 2019 (13.3% of national emissions), not counting emissions from energy consumption in agriculture, forestry and fisheries (0.6 $MtCO_2$, i.e. 1.4%). This places the country above the OECD average. While the LULUCF sector in Switzerland is a net sink, thanks to forest management (-2.3 $MtCO_2$ per year since 1990), cropland and grassland also emit together an average 0.7 $MtCO_2$ (1.5% of the national emissions) due to changes in soil carbon.

Figure 25.7. Switzerland: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 25.4. Switzerland: Productivity and environmental indicators

	Switzerland		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	0.9%	0.1%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	63.0	59.4	32.2	30.4
Phosphorus balance, kg/ha	2.8	3.5	3.3	3.0
Agriculture share of total energy use (%)	0.6	0.6	1.7	2.0
Agriculture share of GHG emissions (%)	11.3	13.3	8.6	10.5
Share of irrigated land in AA (%)	2.8	3.3	-	-
Share of agriculture in water abstractions (%)	..	8.0	46.6	49.7
Water stress indicator	4.9	3.8	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Notes

[1] This target is an intermediate milestone for a long-term ambition of the whole population adopting a healthy and sustainable diet by 2050.

[2] In 2020, the Swiss Government found that 14 of the 63 measures in the first adaptation plan were fully completed, 28 were in advanced implementation, 19 were in the initial phase of implementation, and 2 were on hold.

[3] Total imports and exports include here gold bars and other precious metals, coin, precious stones and gems as well as works of art and antiques.

26 Türkiye

Support to agriculture

Türkiye's transfers to agricultural producers are near the OECD average at about 16% of gross farm receipts in 2020-22, a decline from 25% in 2000-02. About 57% of support is market price support (MPS) generated by tariffs, combined with reductions of exporters' debts and equity injections to state enterprises. While this is above the OECD average, the role of MPS has declined since 2000-02. Producer prices were about 11% above border prices in 2020-22, primarily because of support for beef, poultry, eggs, and sunflowers. Prices of other commodities are more aligned with border prices. Premium payments to producers of specific commodities are also provided, and these combine with MPS to cause the share of support considered most-distorting to be 86% in 2020-22, close to double the OECD average of 44%. Other forms of support are area-based payments provided as crop insurance, and support to defray the cost of diesel and fertiliser.

General support to the sector (General Service Support Estimate, GSSE) was 4.3% of the value of agricultural production in 2020-22, above the OECD average but down from 15.4% in 2000-02. However, 2000-02 had unusually high duty-loss payments due to a surge in inflation, and the current level more closely reflects historical averages. The largest components of the GSSE are for development and maintenance of infrastructure (mainly irrigation), and marketing and promotion (duty-loss payments and equity injections). Total support to the sector (Total Support Estimate, TSE) was 1.6% of GDP in 2020-22. This is less than the 3.9% in 2000-02 – reflecting a faster pace of overall economic growth compared to the sector – but remains well above the OECD average.

Recent policy changes

State-supported agricultural insurance expanded in 2022 with the introduction of revenue-protection. Producers affected by natural disasters are eligible for additional support and grants. Revenue-protection insurance covers 70% of insured farm revenue against yield losses and price variations.

The Department of Security of Supply was established in 2022 to follow national and international production trends, and develop measures to secure supply of strategic agricultural products. The Supply Security Monitoring System will be improved to support supply security in agricultural products.

As of 2022, diesel and fertiliser supports are delivered via a card issued by the Ziraat bank, which may only be used for the purchase of diesel and fertiliser. This replaces a cash-based system for this per-hectare payment. Interest-reduced agricultural credits through Ziraat Bank and the Agricultural Credit Cooperative were also modified. Farmers can get zero-interest credit from Ziraat Bank for traditional (widespread) crop production up to TRY 200 000 (USD 12 077), but they must use any borrowing above TRY 100 000 (USD 6 038) only to purchase diesel or fertiliser.

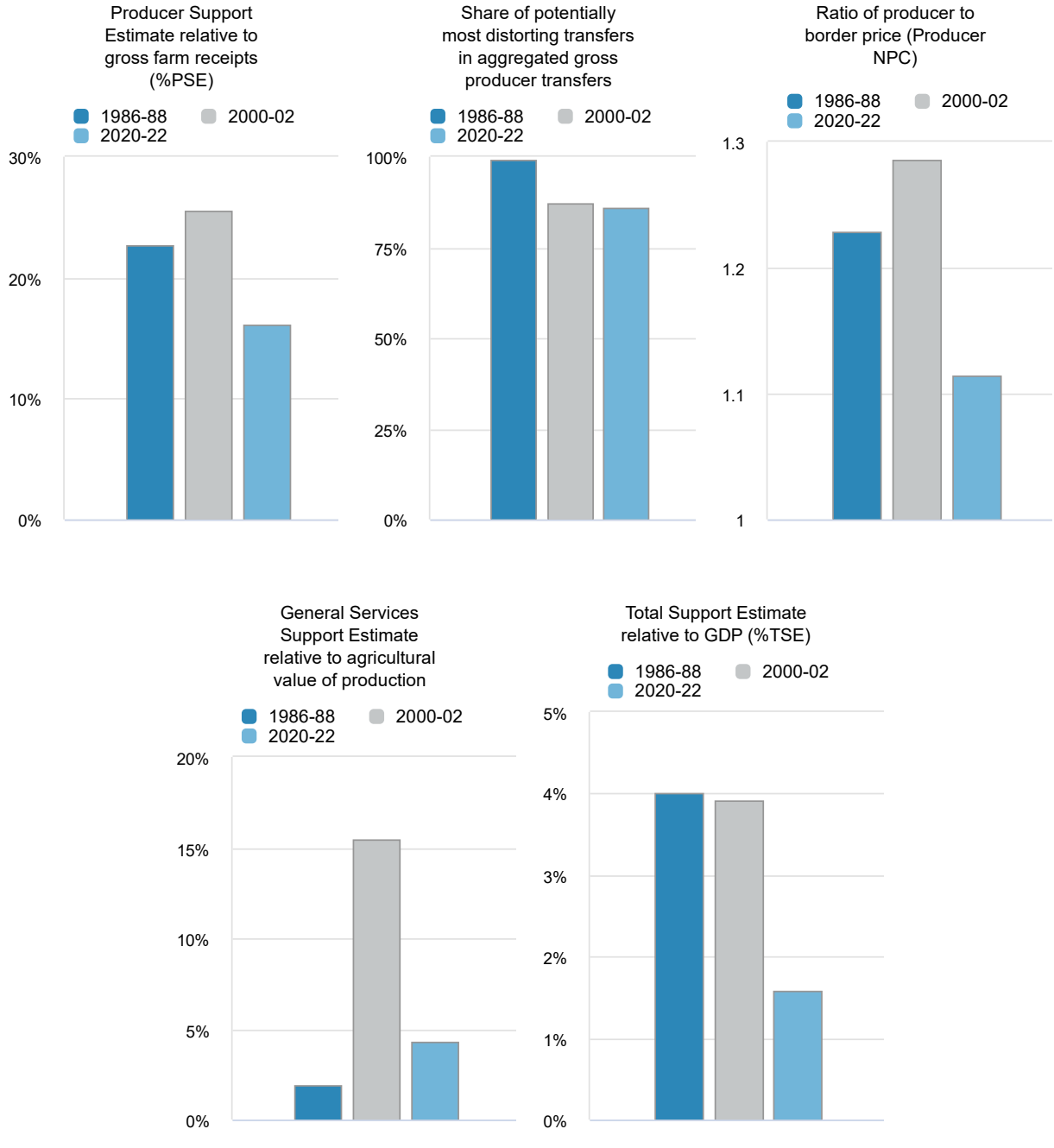
Türkiye eliminated the export subsidy entitlements for agriculture products or groups of products as of the end of 2022 in accordance with the Nairobi Ministerial Decision on Export Competition.

Support levels in most budgetary programmes increased by varying degrees, in the context of rising consumer price inflation.

Assessment and recommendations

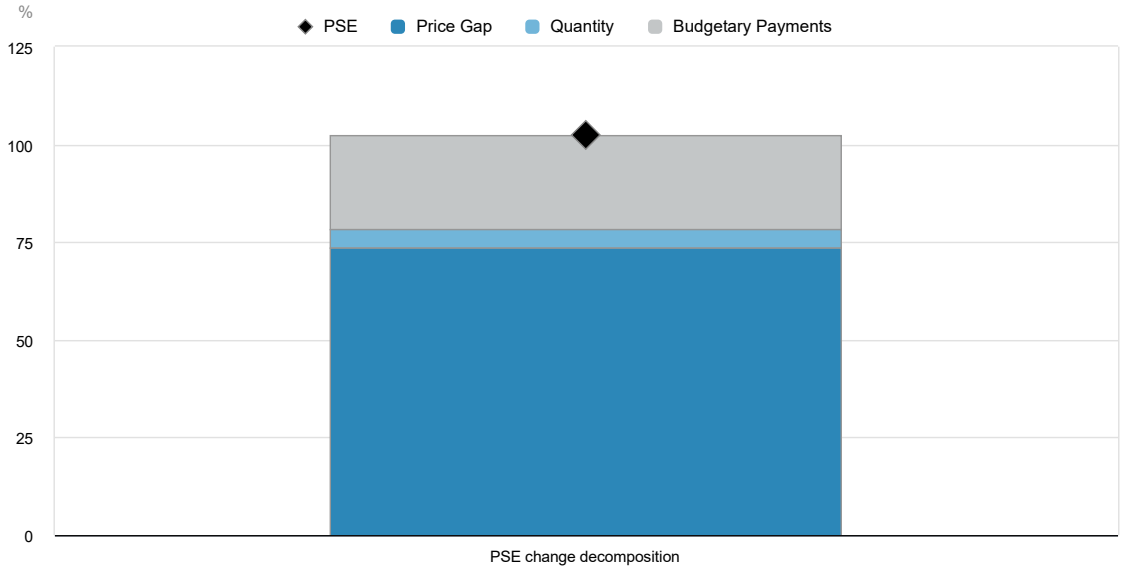
- Agriculture in Türkiye is affected by climate change, with the sector expected to face increasing aridity and frequency of droughts. Efforts to implement water pricing for users are helping increase water-use efficiency, but on-farm awareness, preparedness, and adaptation to drought risks are key to reduce farming communities' vulnerability and build agricultural resilience. Targeted training programmes and extension services can inform farmers about the use of efficient irrigation techniques and drought-adapted farming practices.
- Current policies aim to reduce the farm sector's vulnerability to drought while encouraging the production of water-intensive crops, which sends contradictory signals to farmers. Moving from production-linked support for certain commodities to providing sector-wide services that enhance the sector's capacity to prepare, prevent, absorb, and reconstruct can help sustainable productivity growth. This could include more support for research and development (R&D) of drought-resistant varieties, encouraging the adoption of water-saving crop varieties, and providing education and training to build on-farm capacities to adopt and implement drought-resilient management.
- Agricultural policies (including MPS) strongly influence farmers' production decisions, and state enterprises are important in the product marketing system for certain commodities. Commodity-specific support, self-sufficiency targets, and planned agricultural production should be replaced by policies to improve the competitiveness, efficiency, and sustainability of production as part of a holistic policy for the food supply-chain. Such reform would be of particular benefit to consumers, who faced rapidly-increasing food prices in 2022.

Figure 26.1. Türkiye: Development of support to agriculture



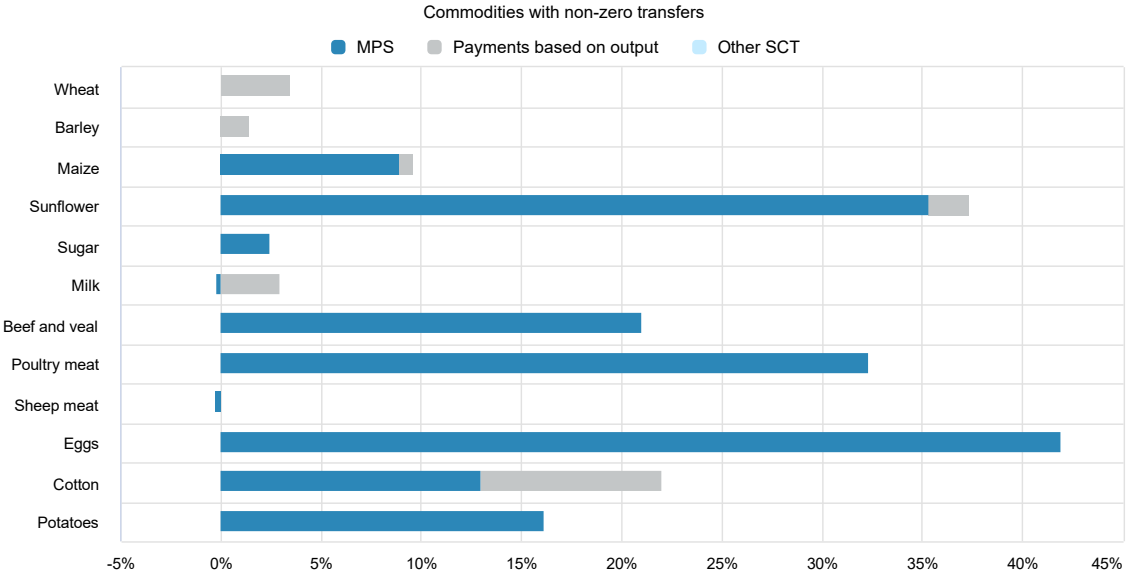
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 26.2. Türkiye: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency. The producer price change and the border price change are not calculated when both negative and positive market price support (MPS) occur at the commodity level for the previous year. Note that negative MPS estimates for livestock products may arise in cases of aligned product prices if there is positive MPS for feed commodities.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 26.3. Türkiye: Commodity-specific transfers as a percentage of commodity gross receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 26.1. Türkiye: Estimates of support to agriculture

Million USD

	1986-88	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**18 343**	**22 169**	**58 050**	**52 251**	**53 410**	**68 491**
***of which:** share of MPS commodities (%)*	55.00	71.38	84.52	79.81	87.87	85.89
Total value of consumption (at farm gate)	**15 837**	**22 577**	**64 562**	**56 854**	**62 502**	**74 329**
Producer Support Estimate (PSE)	**4 304**	**6 045**	**10 884**	**13 995**	**8 957**	**9 699**
Support based on commodity output	3 419	5 158	7 159	6 501	7 086	7 891
Market Price Support[1]	3 408	4 836	6 270	5 588	6 165	7 056
Positive Market Price Support	3 412	4 853	6 300	5 624	6 220	7 056
Negative Market Price Support	-3	-16	-30	-36	-55	0
Payments based on output	11	321	890	913	922	835
Payments based on input use	885	426	2 658	6 422	748	803
Based on variable input use	850	302	2 097	5 102	546	642
with input constraints	0	0	0	0	0	0
Based on fixed capital formation	19	116	513	1 273	131	136
with input constraints	0	0	0	0	0	0
Based on on-farm services	16	8	48	47	71	26
with input constraints	0	0	0	0	0	0
Payments based on current A/An/R/I, production required	0	25	1 067	1 072	1 123	1 005
Based on Receipts / Income	0	0	203	210	176	224
Based on Area planted / Animal numbers	0	25	863	862	948	780
with input constraints	0	0	49	54	48	44
Payments based on non-current A/An/R/I, production required	0	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	436	0	0	0	0
With variable payment rates	0	0	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
With fixed payment rates	0	436	0	0	0	0
with commodity exceptions	0	0	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0	0
Percentage PSE (%)	**22.73**	**25.54**	**16.09**	**23.07**	**15.94**	**13.63**
Producer NPC (coeff.)	**1.23**	**1.29**	**1.11**	**1.12**	**1.14**	**1.10**
Producer NAC (coeff.)	**1.29**	**1.34**	**1.19**	**1.30**	**1.19**	**1.16**
General Services Support Estimate (GSSE)	**333**	**3 507**	**2 226**	**1 076**	**1 952**	**3 650**
Agricultural knowledge and innovation system	67	29	48	64	47	34
Inspection and control	51	67	12	13	11	14
Development and maintenance of infrastructure	22	513	1 369	807	1 408	1 892
Marketing and promotion	95	2 888	796	192	486	1 710
Cost of public stockholding	0	0	0	0	0	0
Miscellaneous	99	11	0	0	0	0
Percentage GSSE (% of TSE)	**7.39**	**36.34**	**20.14**	**7.14**	**17.89**	**27.34**
Consumer Support Estimate (CSE)	**-3 032**	**-4 861**	**-5 071**	**-4 441**	**-6 068**	**-4 705**
Transfers to producers from consumers	-3 027	-4 553	-4 594	-4 054	-5 033	-4 694
Other transfers from consumers	-49	-340	-738	-709	-1 494	-11
Transfers to consumers from taxpayers	0	0	0	0	0	0
Excess feed cost	43	33	260	322	459	0
Percentage CSE (%)	**-19.70**	**-21.12**	**-7.46**	**-7.81**	**-9.71**	**-6.33**
Consumer NPC (coeff.)	**1.25**	**1.27**	**1.08**	**1.09**	**1.12**	**1.07**
Consumer NAC (coeff.)	**1.25**	**1.27**	**1.08**	**1.08**	**1.11**	**1.07**
Total Support Estimate (TSE)	**4 637**	**9 552**	**13 110**	**15 071**	**10 909**	**13 349**
Transfers from consumers	3 075	4 893	5 332	4 763	6 527	4 705
Transfers from taxpayers	1 611	4 999	8 516	11 017	5 876	8 655
Budget revenues	-49	-340	-738	-709	-1 494	-11
Percentage TSE (% of GDP)	**4.00**	**3.91**	**1.57**	**2.09**	**1.33**	**1.51**
Total Budgetary Support Estimate (TBSE)	**1 229**	**4 716**	**6 840**	**9 483**	**4 745**	**6 293**
Percentage TBSE (% of GDP)	**1.07**	**1.96**	**0.79**	**1.32**	**0.58**	**0.71**
GDP deflator (1986-88=100)	**100**	**139 552**	**1 719 647**	**1 083 416**	**1 397 071**	**2 678 455**
Exchange rate (national currency per USD)	**0.00**	**1.12**	**10.81**	**7.02**	**8.86**	**16.56**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Türkiye are: wheat, maize, barley, sunflower, sugar, potatoes, tomatoes, grapes, apples, cotton, tobacco, milk, beef and veal, sheep meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en.

Description of policy developments

Overview of policy trends

Before 1980, an import substitution policy was in place in Türkiye and agriculture was tightly controlled to meet policy objectives, which included maintaining stable grain prices, increasing yields and production and developing exports. Some agricultural products were taxed while others received subsidies, but the sector was a net payer to the government budget overall.

From the 1980s until 2000, the sector was a net beneficiary of support, directed towards import-competing farm products. The main agricultural policy instruments were price support for crop products and input subsidies. Programmes provided low-cost credit, agricultural chemicals, seeds, irrigation, and fertiliser. Livestock production was supported mainly through border measures.

State enterprises managed intervention buying, in the form of State Economic Enterprises (SEEs) as exclusive purchasers of grains, pulses, sugar, tobacco and tea; and Agricultural Sales Cooperative Unions (ASCUs) responsible for horticultural crops, cotton, oilseeds, nuts, and olive oil. Support prices were announced after planting, and farmers received payment a year or more after harvest and delivery. These bodies also maintained stocks, executed exports, issued export licenses and distributed input subsidies.

After 2000, the country embarked on a process of structural reform as a condition for receiving macro-economic stabilisation assistance from the IMF and World Bank. These reforms were carried out between 2001 and 2008 through the Agricultural Reform Implementation Project (ARIP). ARIP was intended to improve efficiency in the agri-food sector by removing market distortions, and to contribute to fiscal consolidation. Under ARIP, Turkish agricultural policy was oriented towards closer alignment with the European Union's Common Agricultural Policy.

Reforms after 2001 reduced the State's role in setting prices, marketing, and trade of agri-food products. SEEs and producer co-operatives were made independent to varying degrees and at different speeds, and became more exposed to market conditions. Structural adjustment in agriculture was promoted through aid to convert land to alternative production, or land consolidation, and with transition support and aid for rural development. This period also saw a shift away from output and input subsidies towards direct income support payments, although high border protection for agri-food products remained in place.

The first national Rural Development Strategy for 2007-2013 was adopted in 2006 as the basis of the EU Instrument for Pre-Accession Assistance Rural Development (IPARD-I). Within the framework of IPARD-I EUR 1.045 billion (USD 1.28 billion) was paid to the beneficiaries. The IPARD-I was implemented in 42 provinces and resulted in approximately EUR 2.3 billion (USD 2.81 billion) investment in 10 653 projects. The National Rural Development Strategy for 2014-2020 covering the IPARD-II period was adopted in 2014. Türkiye launched the implementation of IPARD-II (2014-2020) with a budget of EUR 1.04 billion (USD 1.27 billion).

Since 2010, production-linked payments were re-established for many products. Current agricultural policies also include import tariffs, fixed purchasing prices, deficiency payments (income support payments), insurance support, area-based payments and interest concessions. In addition, there is an emphasis on infrastructure, particularly for irrigation, also connected to rural development objectives.

In accordance with the Nairobi Ministerial Decision on Export Competition, Türkiye eliminated the export subsidy entitlements for agriculture products or groups of products as of the end of 2022.

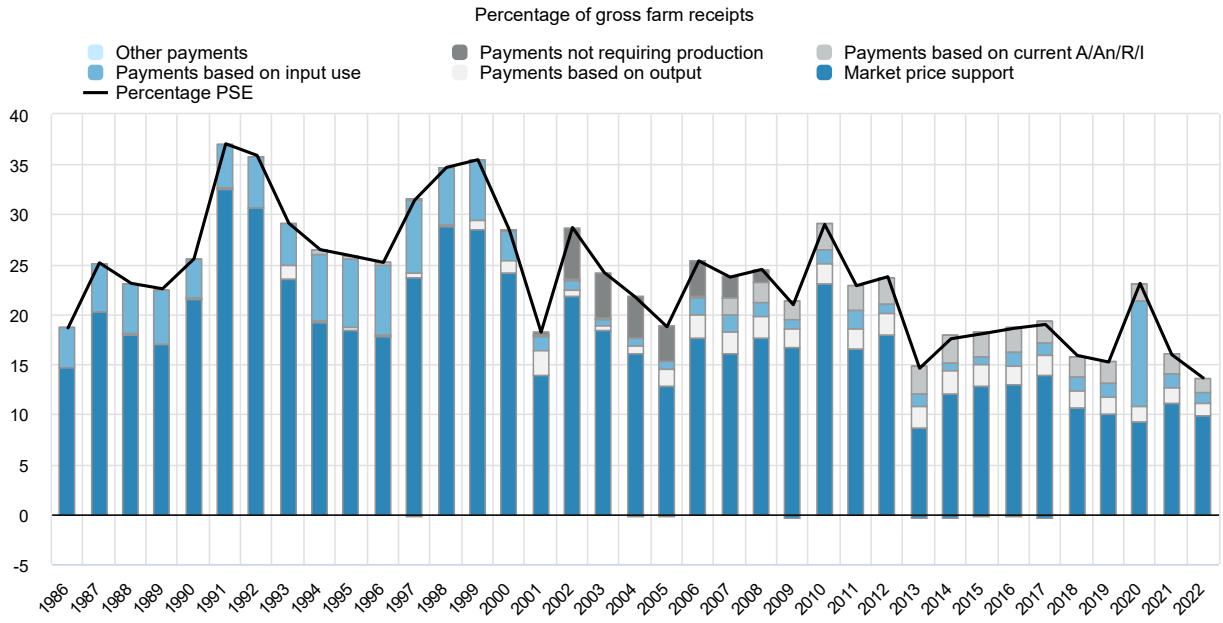
Table 26.2. Türkiye: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to 1980s	Closed economy (import substitution regime)	High tariffs for border protection Agricultural price controls Input subsidies Import controls by the State Economic Enterprises (SEE) which controlled agricultural marketing and production Agricultural Sales Co-operatives Unions (ASCU) and agricultural member cooperatives (ASC) Agricultural Credit Cooperatives State-owned Agricultural Bank
1980-2010	Gradual reform to liberalise trade but with agricultural protection	Agricultural Reform Implementation Project (ARIP) as a precondition of the World Bank and IMF programmes Privatisation of some SEEs and restructuring of ASCUs Price-fixing by government discontinued for some products but remains for others Gradual reduction of tariffs for some agricultural inputs and outputs Progressively reduced role for ASCUs and ASC Price controls continued Product and input subsidies phased out Introduction of Direct Income Support Compensatory payments to cover the cost of switching from crops in excess supply (e.g. hazelnuts and tobacco) to alternative activities (net imported products) Introduction of agri-environmental policies and cadastral works FTAs signed
2010-present	Open market economy but with some agricultural protection	Agricultural tariffs continue to be used Export subsidies (up to the end of 2022) Deficiency payments differentiated according to 945 agricultural basins throughout the country Infrastructure investments increased

The PSE has been declining steadily as a percentage of gross farm receipts since the late 1990s, and now is at historic lows. Exchange rate movements and domestic inflation have affected nominal rates of support, but the policy situation is stable when expressed as a share of gross farm receipts (Figure 26.4).

Budgetary payments have grown in importance, starting with the move towards decoupled payments in the early 2000s, and remained significant through successive reforms that changed their basis. Budgetary support jumped in 2020 due to exceptional spending related to COVID-19, mainly for concessional loans and interest concessions, but levels have since returned to the historical trend.

Figure 26.4. Türkiye: Level and PSE composition by support categories, 1986 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

The majority of support comes through market price support, consisting mainly of tariffs on imported products, though depreciation of the Turkish Lira related to domestic inflation has reduced the prominence of this form of support. Budgetary support comes through price-stabilising (deficiency) payments and area-based payments linked to production characteristics. Purchases of inputs and marketing of major commodities is handled through the state enterprises and collective marketing boards (SEEs and ACSUs), which have price-setting power. Due to market conditions, there have been no purchases of inputs by SEEs in 2022. Irrigation infrastructure is the main target of general support to the sector.

Until the end of 2022, export subsidies applied to 14 commodity groups, out of the 19 groups eligible under Türkiye's WTO commitments. These included processed fruit and vegetables, poultry meat and eggs. Export subsidies were granted in the form of reductions of the exporters' debts to public corporations (for example, for taxes, and telecommunications or energy costs). Under the Nairobi agreement, these export subsidies were phased out at the end of 2022. Production quotas apply at the farm level for sugar beet.

The Basin-Based Support Model (*Havza Bazlı Destekleme Modeli*) targets self-sufficiency in strategic agricultural products and planned agricultural production. Agricultural areas are divided into 945 basins, each identified with a set of strategic products that receives support in that basin. Deficiency payments are set to raise the price of specific commodities to encourage a certain pattern of production according to the government's evaluation of environmental sustainability and economic suitability. R&D is targeted to increase the yield and quality of local varieties. Basin- and product-based fertilisation and chemical pesticide guides and plant-based water consumption guides are in place.

Some area-based payments directly come in support of specific commodities, as it is the case for instance of hazelnut plantations. Some other payments are more oriented towards farming practices such as using certified seeds or cultivating fodder crops. Farmers can also receive area payments for using certified saplings, organic farming, using good agricultural practices and for the rehabilitation of olive groves.

State-supported agricultural insurance (TARSİM) comes through a public-private partnership where private insurance companies deliver uniform policies to farmers. The state pays between 50% and 67% of the total insurance premium on behalf of farmers.

Water management and irrigation

In the context of water management policy, Türkiye applies the EU Water Framework Directive, which calls for River Basin Management Plans (RBMPs). These have been implemented for the 25 basins in Türkiye by Basin Management Committees with the support of Water Management Coordination Committee and Basin Management Central Committee working at national level. Water Management Coordination Boards, Basin Committees (operating at basin level) and Provincial Water Management Coordination Boards (operating at local level) develop strategies and plans to ensure inter-sectoral co-ordination and co-operation, to adopt an Integrated Water Resources Management (IWRM) approach, to achieve national targets and to fulfil international commitments.

To take a more participatory and holistic approach to managing water resources, a basin-based management target has been adopted. This reflects a “planning-implementation-monitoring-supervision” system. Several regulations have been issued to support this reform, and the legislative infrastructure continues to be established. In this vein, “River Basin Protection Plans” for 25 river basins have been completed. Out of 25 river basins, the River Basin Management Plan in 11 basins and the Sectoral Water Allocation Plan in 7 basins have been completed. All River Basin Management and Sectoral Water Allocation Plans are expected to be completed by 2028. Studies to determine the effects of climate change on water resources and the effects of climate change on snowmelt and currents have been completed, and the preparation process of flood and drought management plans is being carried out.

Sectoral Water Allocation Plans (SWAPs) are being prepared to manage water resources on a basin and sub-basin basis. These will be followed up annually. These plans are designed to preserve water resources, to ensure fair and balanced water distribution among the water user sectors, and to maximise the benefit to be obtained from water use.

Infrastructure investments in irrigation continue to be a major policy focus. Investments support adoption of advanced technology and modern irrigation systems. This includes pressurised piped irrigation systems where transmission losses may be reduced by up to 35% for sprinkler irrigation and 65% in drip irrigation compared to the open flow canal irrigation systems.

Within the framework of the “Rural Development Investments Support Program”, up to 50% grant support is available for the installation of irrigation systems (drip or sprinkler). Approximately 330 000 producers were supported by such grants and credit support, and pressurised irrigation systems were installed on a total area of 1.12 million hectares by the end of 2021. Since 2003, the use of closed system irrigation projects has been accelerated to reduce loss and leakage. By 2022, 32% of irrigated area used piped irrigation networks, compared to 6% in 2003.

The “Regulation on Controlling Water Use in Irrigation Systems and Reducing Water Losses”, in place since 2017, calls for measures be taken to increase irrigation efficiency to 55% by 2024. This regulation sets out the procedures and principles regarding efficient use of irrigation water in irrigation systems, saving water, reducing losses and preventing unauthorised use, and reducing irrigation water supply, distribution and usage costs.

Climate change mitigation

In the food and agriculture sector, the Strategic Plan of the Ministry of Agriculture and Forestry (2019-2023), the National Climate Change Action Plan (2012-2023) and the Research Master Plan (2021-2025) of the General Directorate of Agricultural Research and Policies (GDARP) specifically support research and innovation for net-zero carbon ambitions. Within the scope of the National Climate Change Action Plan and in accordance with the targets in the title of Agriculture and Food Supply, research is being undertaken to provide data for the greenhouse gas inventory of Türkiye and to measure and monitor the greenhouse gases released into the atmosphere by agricultural activities.

Research on greenhouse gas emissions from animal production and fertiliser management is also undertaken as part of GDARP to determine the greenhouse gas emissions from enteric and fertiliser-based animal production systems. Studies are continuing for cattle, sheep, goat and chicken production in order to determine the T-2 model of emission factors (EF) recommended by the IPCC (2019) that reflect national conditions. Additionally, to provide information and data for Land Use, Land Use Change and Forestry Sector (LULUCF), a pilot research study in 2022 focussed on determining and modelling soil organic carbon under different land use categories.

Climate change adaptation policies in agriculture

Türkiye adopted the Green Deal Action Plan in 2021 with targets and actions to increase the sustainability of agriculture. The Action Plan's "Sustainable Agriculture" and "Tackling Climate Change" headings include actions such as reductions in the use of pesticides, anti-microbials, and chemical fertilisers; developing organic production; increasing renewable energy use in agriculture; reducing food loss; and sustainable water use and reuse of wastewater. Developments for the year 2022 are reflected in the Yearly Report on the Green Deal Action Plan.[1]

Presidential Circular No. 2022/8 on the Ecosystem-Based Adaptation Strategy to Climate Change for Anatolian Steppe Ecosystems was published on 7 July 2022. Implementation of the strategy brings an integrated approach to climate change in the management of agricultural, pasture, wetland, and forest areas in agricultural production. The strategy will help the government improve understanding of this approach in the Anatolian Steppes. Its objectives include:

- creating resilience in the ecosystems affected and to-be-affected by climate change
- making the agricultural economy and rural population resilient to climate change
- integrating ecosystem-based adaptation studies with policy, planning, and decision mechanisms to support climate-change adaptation strategies
- developing a governance model in partnership with stakeholders

The 2023-27 Strategy and Action Plan for Combating Agricultural Drought (*Türkiye tarimsal kuraklikla mücadele stratejisi ve eylem plani*) was announced in 2022. The action plan is designed to minimise the effects of drought by increasing public awareness, involving all stakeholders in the process, planning sustainable agricultural water use, taking necessary measures during periods when drought does not occur, and implementing an effective combat programme during crisis periods. Priority will go to drought-combatting activities that complement those to combat other disasters affecting the agricultural sector. The issue will be handled with a holistic approach in economic, social, and environmental terms.

Actions taken under the plan are carried out based on drought severity according to defined thresholds. These are: (1) pre-drought processes; (2) risk-assessment and management; and (3) crisis-assessment and management. Provincial Drought Action Plans will be prepared based on these threshold levels. The main activities foreseen are:

- drought risk-prediction and crisis-management

- ensuring sustainable water supply
  - increasing storage capacity
  - improving infrastructure
  - collecting and reusing wastewater
  - managing groundwater
  - water-conserving land-use techniques
  - integrated water management
- managing water demand
  - improved transmission systems for irrigation
  - using groundwater effectively
  - incentive programmes
  - accounting for drought in crop and livestock production policies
  - expanding greenhouse production
- accelerating R&D and increasing extension and training
- improving institutional capacity

The General Directorate of Agricultural Research and Policies co-ordinates research on climate-friendly agriculture and the economical and sustainable use of soil and water resources. To set priorities for adaptation work, a research project is looking at farmers' and producers' awareness of changing climatic conditions and their resilience to climate change. This was initially in the Thrace and Aegean Regions where agriculture is intense, but has expanded to all regions and continues as a national programme. A guide using the results of this research will be published to assist farmers in adapting to changing climate conditions.

Domestic policy developments in 2022-23

Production planning, insurance and assistance

Production planning is increasingly seen by the government of Türkiye as a tool to address issues such as climate change, the pandemic process and the increase in food demand. Main priorities are to use natural resources in an effective, efficient and sustainable manner, to increase production, quality and trade, to ensure security of supply, to stabilise the income of producers, to protect public health and consumer interests, to increase the competitiveness of the agriculture, food and forestry sector, and to take necessary measures against climate change and its impacts.

For this purpose, the Department of Security of Supply was established in 2022 to follow national and international developments, analyse the adequacy process of production and develop measures for security of supply in strategic agricultural products. With the Supply Security Monitoring System to be established within this scope, data collection, analysis, monitoring and decision support services in digital environment will be improved to support efforts to ensure supply security in agricultural products.

Additional efforts were made in 2022 by the Ministry to advance the digital transformation of programme delivery. The "Tarim Cebimde" mobile application was deployed, and producers have been provided with access to the Farmer Registration System (ÇKS) applications and product notifications via the e-government gate as of October 2022.

The scope of agricultural insurance was expanded in 2022 with the introduction of revenue protection insurance. Producers affected by natural disasters are eligible for additional support and grants. Revenue Protection Insurance covers 70% of insured farmer revenue against yield losses and price variations. In

2022, 3 million insurance policies were issued and TRY 4.8 billion (USD 289 million) of state insurance premium support was provided.[2] Revenue protection insurance was first piloted in the three districts of Konya in 2021-22. As of October 2022 it is available in all districts of Konya. It will be available to all producers across Türkiye as of October 2023.

The national action plan on Prevention, Reduction and Monitoring of Food Loss and Waste, established in 2020, continues to advance in its implementation, with 70% of planned actions completed and 881 000 pledges made by consumers to reduce food waste. Five guidelines were published on logistics, food service sector, food retail sector, composting and consumers. As raising awareness activities are still ongoing, focus on children is continuing with the help of FAO's "Do Good Save Food" educational materials translated to Turkish.

Domestic consumer price inflation in Türkiye reached 80% in 2022, and agricultural policies have adjusted in some ways for this. For example, announced purchase prices for sugar beet, considered a strategic commodity, were increased by 245% to TRY 1 450 (USD 88) per tonne.

The amount of support to be paid to farmers registered in the Farmer Registration System (ÇKS) and located in areas where planting is prohibited due to "potato wart" disease has been increased to TRY 1 250 (USD 75) per ha from TRY 1 100 (USD 124 at 2021 exchange rates) previously. Farmers are eligible for the payment if they grow alternative crops or leave fields fallow in areas where the disease is present.

Delivery of diesel and fertiliser supports as of 2022 are now delivered via a card issued by the Ziraat bank that may only be used for the purchase of diesel and fertiliser. This replaces the previous cash-based system for this per-hectare payment. Interest-reduced agricultural credits through Ziraat Bank and Agricultural Credit Cooperative have also been modified. Farmers can get zero-interest credit loans from the Ziraat Bank for traditional (widespread) crop production up to TRY 200 000 (USD 12 077), but if a farmer borrows more than TRY 100 000 (USD 6 038) they must use the additional amount only for the purchase of diesel or fertiliser.

Water management and irrigation

A pilot project was established for the use of solar power for irrigation in the Samsat district of the Adiyaman province. A solar power plant was constructed to power the pumped irrigation infrastructure in that district. This is in accordance with Türkiye's strategy of "Reducing Foreign Dependence on Energy and Increasing the Ratio of Renewable Energy Sources in Energy Distribution". Also, irrigation unions and agricultural producers have been given the opportunity to use loans with an upper limit of TRY 7.5 million (USD 453 000) for solar energy investments with an interest rate discount of up to 100%.

Investigating the Use of Marginal Water in Agricultural Irrigation and Determining its Contribution to the Circular Economy (MARSUDE) was launched in five different provinces in 2022. This programme has the aim of contributing to the use of low-quality water in irrigation by investigating the possibilities and conditions of using reclaimed water in agriculture.

Rural development

Externally funded rural development projects in rural disadvantaged areas were accelerated and support to small family enterprises and income generating activities was increased. Grants and support were provided through the Programme for Supporting Rural Development Investments (KKYDP), the European Union Rural Development Programme (IPARD), the Project for Support and On-Site Development of Forest Villages (ORKÖY), and Expert Hands in Rural Development Projects.

Support for economic investments targeting agriculture within the scope of rural development support and rural economic infrastructure investments was increased in 2022. For support for "Economic Investments in Agriculture", the upper limits of the eligible project were increased from TRY 5 million (USD 564 000 at

2021 exchange rate) to TRY 7 million (USD 423 000) for new applications. The amounts have been increased from TRY 3.5 million (USD 395 000 at 2021 exchange rate) to TRY 5 million (USD 302 000) for applications that complete existing projects and from TRY 3 million (USD 338 000 at 2021 exchange rate) to TRY 4 million (USD 241 000) for applications related to capacity, technology renewal or modernisation. The upper limit of support for rural economic infrastructure investments has been increased from TRY 300 000 (USD 34 000 at 2021 exchange rates) to TRY 500 000 (USD 30 193), excluding VAT, for applications for machinery and equipment purchases.

In addition, the "Implementation Principles of the Rural Development Investment Support Program for the 2022-2023 Application Period" were amended to include small family businesses engaged in animal production. Enterprises with 5 to 50 cattle or 50 to 300 sheep or goats will be eligible for 50% grant support for the purchase of feed preparation machines, manure scrapers, milking machines, milk cooling tanks, animal scratch brushes, drinkers, air conditioning and ventilation systems, and electricity generation systems up to 5 kW for transhumance and nomads.

The Financial Framework Partnership Agreement with the European Union, which constitutes the legal infrastructure of support within the scope of the third period of the instrument for pre-accession assistance covering the years 2021-27 (IPA III), entered into force on 14 December 2022. Part of this is the instrument for pre-accession assistance for rural development (IPARD). The implementation of the IPARD III period began in 2023. The EU IPARD funds allocated to develop the capacity for compliance and implementation of the EU acquis in Türkiye and create the capacities for economic and social cohesion cover five components: transition period support and institutional structuring, cross-border co-operation, regional development, human resources development and rural development.

Trade policy developments in 2022-23

In accordance with the Nairobi Ministerial Decision on Export Competition, Türkiye eliminated the export subsidy entitlements for agriculture products or groups of products as of the end of 2022.

The average rate of customs duties applied in 2022 for basic agricultural products outside the Customs Union Common External Tariff was 58%.[3]

In 2022, a revised free trade agreement (FTA) with Montenegro and amendment of the FTA with Morocco came into force. The ratification processes of the FTA with Ukraine, and the United Arab Emirates; and revised FTAs with Georgia and Malaysia are continuing. The Preferential Trade Agreement (PTA) with Pakistan has entered into force on 1 May 2023 and the PTA with Uzbekistan (signed in 2022) on 1 July 2023. An Additional Protocol to extend the scope of the current concessions under the PTA with Azerbaijan was signed on 14 April 2023. FTA negotiations are actively ongoing with three countries: Japan, Thailand, and Indonesia.

Trade policy responses to Russia's war of aggression in Ukraine

In July 2022, Türkiye, the UN, Russia, and Ukraine signed an agreement in Istanbul to resume grain exports from three Ukrainian Black Sea ports, which were paused after the Russian invasion of Ukraine in February 2022. A Joint Coordination Center with officials from the three countries and the UN was set up in Istanbul to oversee the shipments.

The Decision on the "Principles to be Applied in the Import of Agricultural Products from Ukraine" (Decision Number 5251) was published on 3 March 2022. This introduces exceptions to official controls in the import or transit of agricultural products in order to ensure food supply security and to avoid problems in accessing food products. The regulations introduced by the decision are as follows:

- Official certificates and documents, which are required to be submitted to the Ministry of Agriculture and Forestry within the scope of the Law No. 5996 on Veterinary Services, Plant Health, Food and

Feed, in the import or transit trade of agricultural products loaded from Ukraine, will not be required under certain circumstances.

- The frequency of official controls by the Ministry will be determined based on risk analysis.
- The Ministry's General Directorate of Food and Control is authorised to make decisions in terms of special situations that may arise.

The export of some agricultural and food products was temporarily banned or limited in certain cases due to the war to ensure domestic supplies. Since February 2022, Türkiye has applied an export ban to more than a dozen agricultural products, including vegetable oils, meat, pulses, and some dairy products. On 26 June 2022, the ban on butter exports was replaced with a monthly quota, and on 7 July the ban on olive oil exports was removed. Export controls of most vegetable oils were lifted in August 2022.

Duty rate adjustments first put in place in response to the COVID-19 pandemic have been continued to ensure food supply security and prevent price fluctuations. Pursuant to the decision published in the Official Gazette on 31 December 2022, duty rates of 0% apply until 30 April 2023 for wheat, barley, oat, rye, sorghum and corn and until 30 June 2023 for chickpeas, lentils and dry beans. These duty rates had been 45% for wheat, 35% for barley, 25% for maize, 130% for oats, rye and sorghum and 19.3% for chickpeas, lentil and dry beans. As of 1 May 2023, customs duties for wheat, corn, barley, rye, sorghum and oats were increased to 130%. Until 31 May 2023, the duty rate was reduced from 10% to 0% in the import of crude sunflower seed oil and from 5% to 0% in the import of sunflower seeds. As of 1 June 2023 customs duties for these products were increased to 36% and 27% respectively.

Contextual information

Türkiye has the 11th largest economy in the world as measured by GDP in PPP. Per capita GDP has tripled since 2000 and is above average for the countries included in this report. Türkiye has a large agriculture sector that employed 17% of the country's working population and accounted for 5.5% of GDP in 2021. Türkiye is a net exporter of agro-food products, which accounted for 10.8% of all exports (Table 26.3).

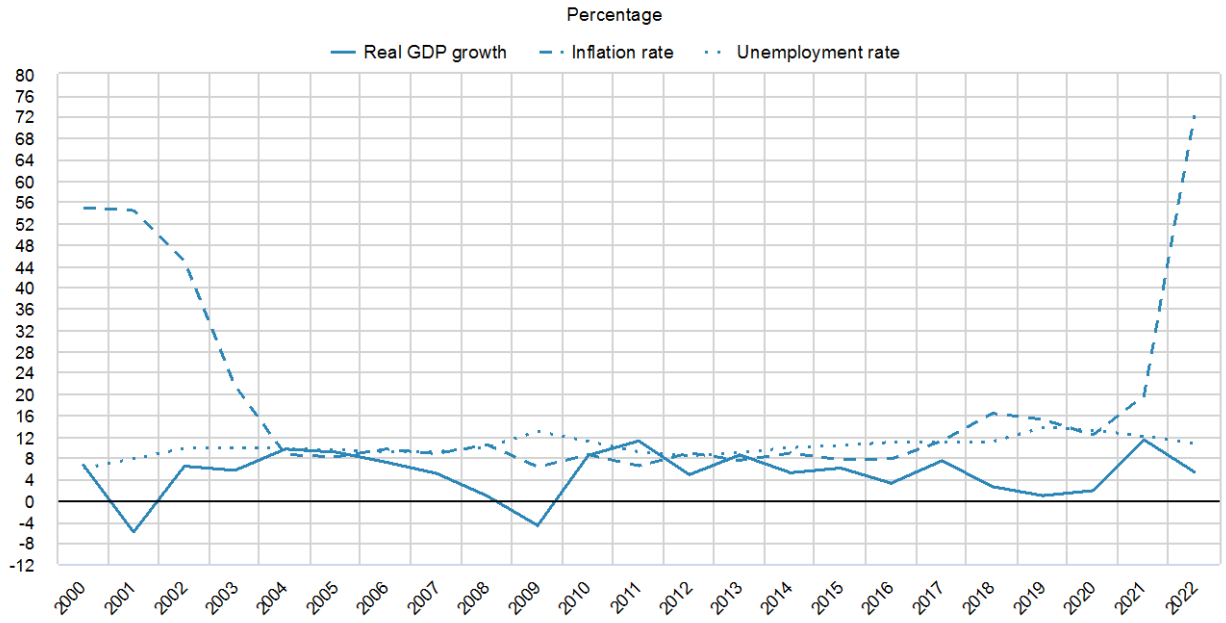
Table 26.3. Türkiye: Contextual indicators

	Türkiye		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	609	2 581	1.5%	2.1%
Population (million)	64	84	1.5%	1.6%
Land area (thousand km^2)	770	770	0.9%	0.9%
Agricultural area (AA) (thousand ha)	40 479	37 762	1.3%	1.3%
			All countries[1]	
Population density (inhabitants/km^2)	83	110	52	64
GDP per capita (USD in PPPs)	9 476	30 672	9 350	23 401
Trade as % of GDP	14.9	30.4	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	10.0	5.5	2.9	3.9
Agriculture share in employment (%)	36.0	17.2	-	-
Agro-food exports (% of total exports)	13.3	10.8	6.2	7.9
Agro-food imports (% of total imports)	5.9	7.5	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	57	58	-	-
Livestock in total agricultural production (%)	43	42	-	-
Share of arable land in AA (%)	59	52	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

The economy has recovered fast from the COVID-19 pandemic. However, macroeconomic policies and high commodity prices have contributed to a surge in inflation, which is now above 70% (and higher for many agricultural commodities) (Figure 26.5). Rising food prices triggered by the pandemic and subsequently Russia's war against Ukraine contributed significantly to overall inflation. The labour market is performing well and GDP growth was strong at around 6% in 2022.

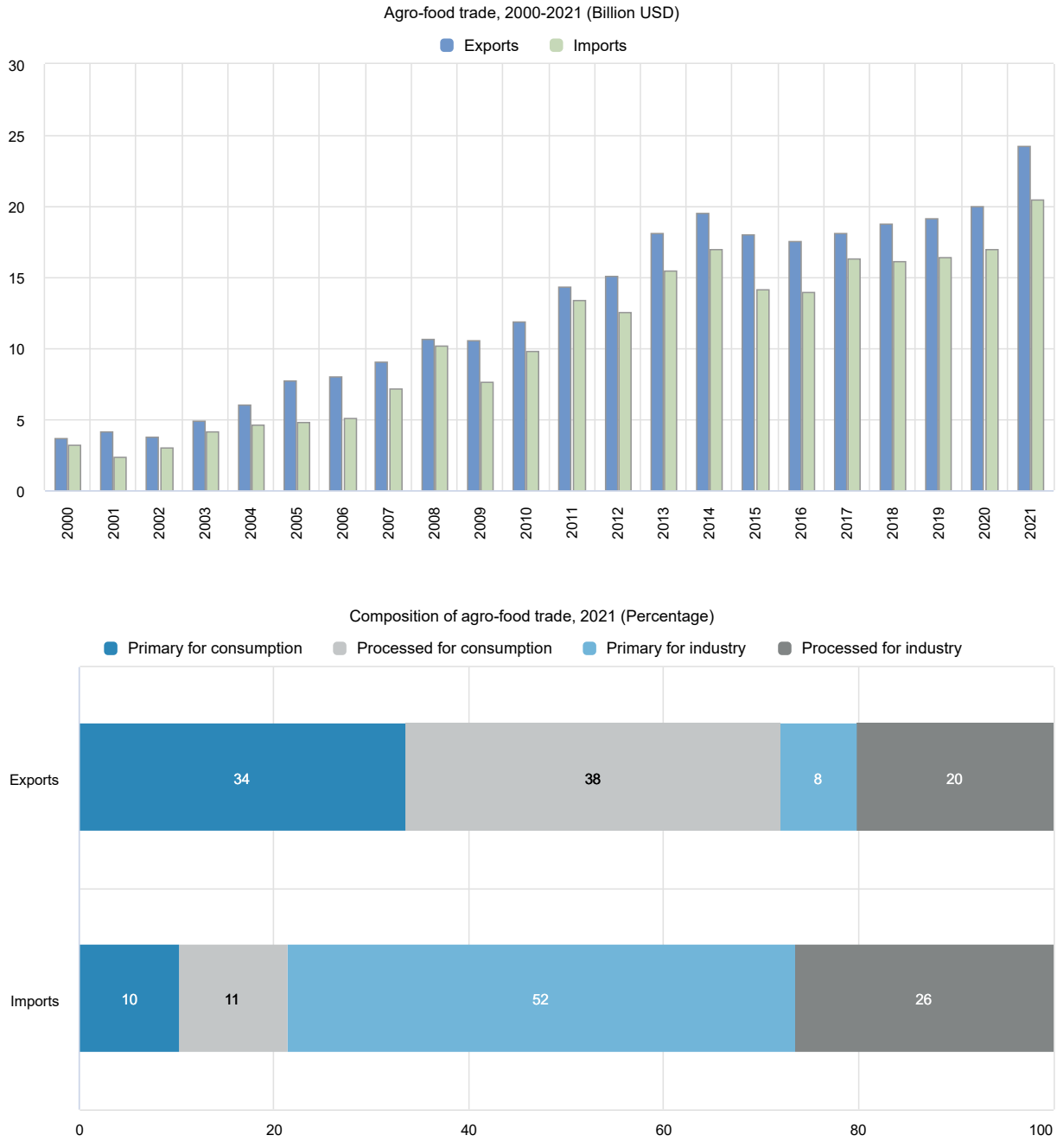
Figure 26.5. Türkiye: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Türkiye is a significant agricultural exporter of nuts, dried fruits, and some fresh vegetables; main export destinations include the European Union, Iraq, the Russian Federation and the United States. Türkiye is a major producer of wheat, sugar beets, milk, poultry, cotton, tomatoes and other fruits and vegetables, and is the top producer in the world for apricots and hazelnuts as well as the largest global exporter of quinces and raisins. Agricultural trade has been steadily increasing and Türkiye is a net exporter. Most imports are products destined for further processing, while most exports are products for consumption (Figure 26.6).

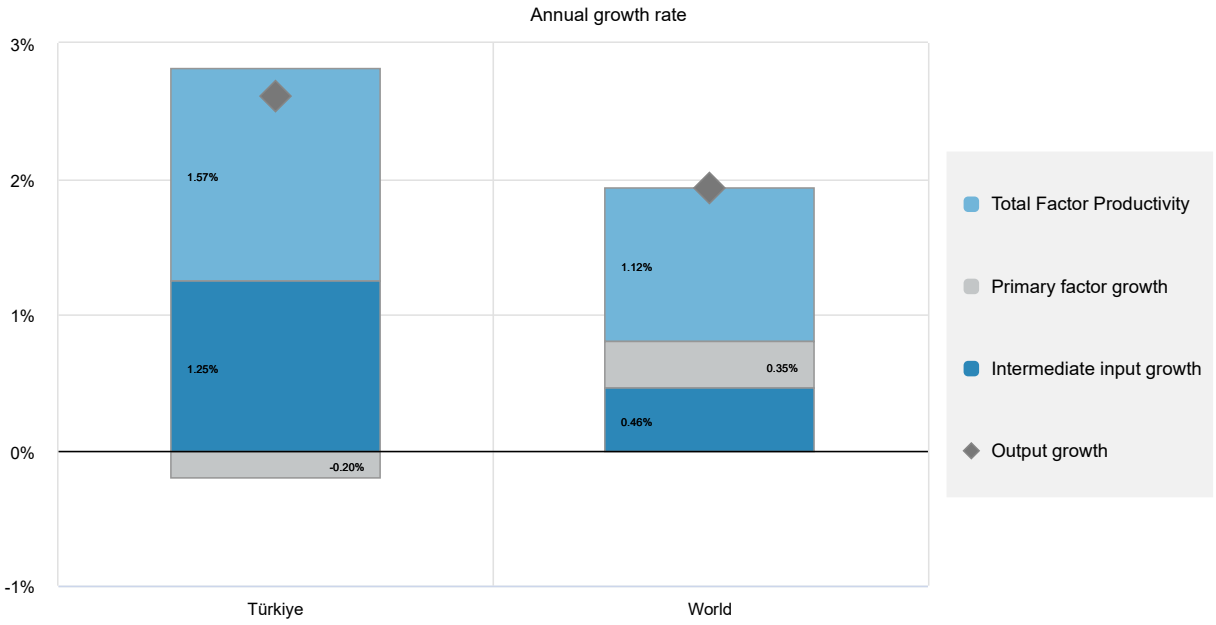
Figure 26.6. Türkiye: Agro-food trade



Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Agricultural growth has been predominantly based on total factor productivity (TFP) growth and increased use of inputs (Figure 26.7). Improved productivity may be connected to increased irrigated area, opening more land to intensive production.

Figure 26.7. Türkiye: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Agriculture uses about 85% of the freshwater abstracted by all sectors. Water stress is increasing and above the OECD average (Table 26.4). Average precipitation is expected to decline because of climate change, increasing stress on the hydrological system. Nitrogen and phosphorus balances have also been increasing, and phosphorus balance is well above the OECD average due to intensive livestock production. Agriculture represents 4.5% of energy use, below its share of GDP (5.5%), but it accounts for a relatively high share of national GHG emissions (14%).

Table 26.4. Türkiye: Productivity and environmental indicators

	Türkiye		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	0.9%	1.6%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	27.8	37.9	32.2	30.4
Phosphorus balance, kg/ha	8.0	9.2	3.3	3.0
Agriculture share of total energy use (%)	5.0	4.5	1.7	2.0
Agriculture share of GHG emissions (%)	14.2	14.0	8.6	10.5
Share of irrigated land in AA (%)	8.0	11.7	-	-
Share of agriculture in water abstractions (%)	75.4	84.7	46.6	49.7
Water stress indicator	18.6	26.1	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

Notes

[1] https://ticaret.gov.tr/data/643ffd6a13b8767b208ca8e4/YMEP%202022%20Faaliyet%20Raporu.pdf.

[2] 2022 TRY/USD exchange rate was 16.56, up from 8.86 in 2021. This should be borne in mind when looking at year-on-year changes.

[3] The Customs Union with Türkiye has been in force since 1995 and is based on the 1963 Ankara Agreement and its Additional Protocol (1970) https://trade.ec.europa.eu/access-to-markets/en/content/eu-turkiye-customs-union.

27 Ukraine

Support to agriculture

Support to agricultural producers changed drastically in 2022 due to the large-scale military aggression of Russia against Ukraine. Ukraine entered a period of martial law on 24 February 2022, under which much state support for agriculture was diverted to security and defence. As a result, nearly all traditional support programmes were suspended in 2022, although some measures were introduced to sustain agricultural production during warfare. New measures included tax breaks, simplified regulatory procedures, and temporary financial support in the form of subsidies.

Support to agricultural producers since 2011, measured by the Producer Support Estimate (PSE), had hovered close to zero, with an average value of -0.4% of gross farm receipts during 2020-22. PSE is mostly driven by Market Price Support (MPS), which was negative for much of the past two decades with average producer prices below international reference levels. Due to tariff protection, domestic prices for sugar and meat products are above international reference levels, while oats, sunflower, and milk are implicitly taxed. Budgetary support to producers, mainly in the form of tax benefits and input support for short-term loans and fixed-capital formation, represents less than 1% of gross farm receipts. MPS and payments for the unconstrained use of variable inputs, which are Ukraine's most production- and trade-distorting measures, account for 85.2% of producer transfers.

Support for general services (General Service Support Estimate, GSSE) averaged 0.6% of the value of agricultural production in 2020-22, which is low compared to other countries covered in this report and down from a 1.3% average in 2000-02. Most of this goes to inspection and control services, and agricultural schools. Total support to the sector as a percentage of Gross Domestic Product (GDP) fell from 0.4% in 2000-02 to 0.1% in 2020-22.

Recent policy changes

In accordance with the Presidential Decree in February 2022, Ukraine is under martial law due to the large-scale military aggression of Russia. Martial law has affected all aspects of life, including the functioning of the agricultural sector. The Cabinet of Ministers of Ukraine (CMU) approved measures to ensure the country's food security by monitoring the state of food safety, ensuring uninterrupted production of agricultural and food products, providing food products for long-term storage to the population of territorial communities in active combat regions, forming a strategic storage network of raw materials and food resources, creating opportunities for food self-sufficiency, meeting needs for imported components, ensuring the fulfilment of domestic and export demand, and imposing export restrictions.

At the same time, CMU diverted UAH 4.4 billion (USD 136 million) of the state budget for 2022 from agricultural support to security and defence whilst introducing some temporary tax breaks for enterprises in the combat zone or in temporarily occupied territory that were exempted from paying environmental and land taxes. In addition, the value-added tax (VAT) for fuel was reduced from 20% to 7% for all uses; and

agricultural producers were exempted from paying VAT on goods destroyed in the war and those used for the country's defence.

Simplified regulatory requirements for producers and exporters were introduced to reduce the bureaucratic burden on business and state authorities, and support the uninterrupted production of agricultural products. Phytosanitary requirements for export and the state registration process for pesticides and agrochemicals were eased and the list of agrochemicals that can be imported, produced, traded, and used without registration was expanded.

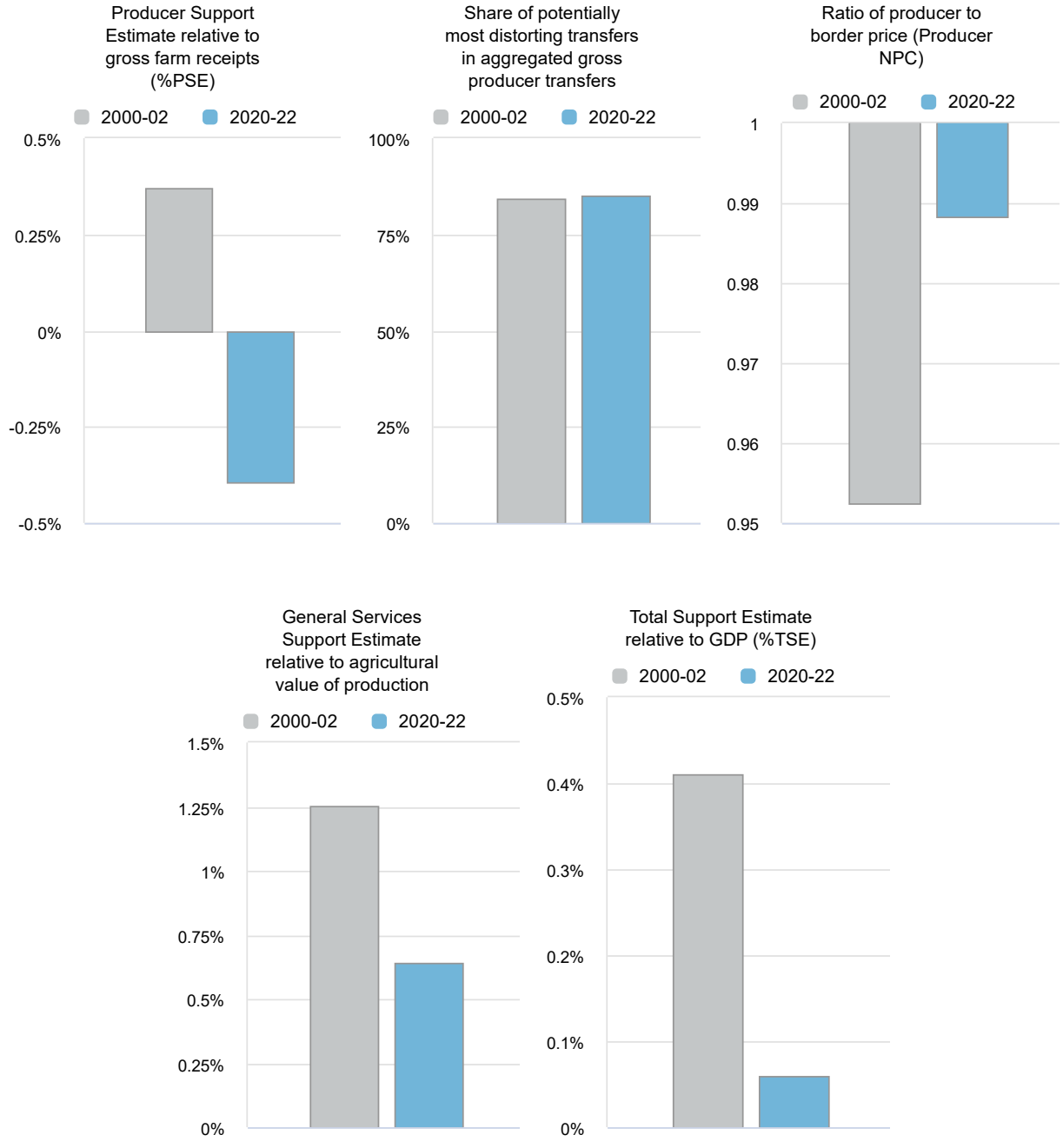
The Ministry of Agrarian Policy and Food (MAPF) began exercising functions and powers for forming and implementing state policy for organic production, distribution, and labelling of organic products; safety and individual quality indicators of food products; quarantine and plant protection; and veterinary medicine. Under martial law, Ukrainian producers of organic products are permitted to switch from EU standards to Ukrainian production standards without an additional transition period.

Assessment and recommendations

- As one of the world's leading producers and exporters of agricultural commodities, sustaining and rebuilding Ukraine's agricultural sector is essential for supporting the country's economic recovery. The sector faces challenges on multiple fronts, including:
  - economic stressors as costs of production have risen and traditional support programmes have been suspended
  - disruptions in production and value chains due to temporary occupation of agricultural land, mining and contamination of land by explosives, and a decrease in farm labour
  - disturbances in trade from the closure of ports and the destruction of critical infrastructure

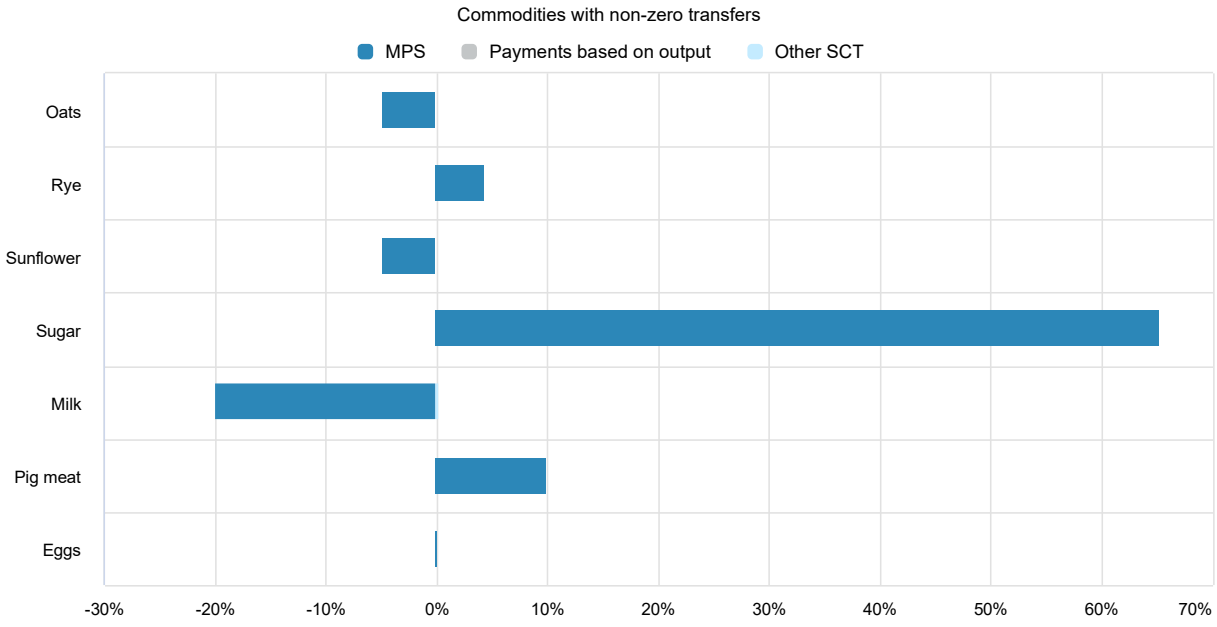
  Temporary support measures and longer-term efforts toward recovery should address each of these to restore the sector and build the foundations for future growth.
- Aid from international organisations, partner-country governments and the private sector has largely focused on direct damage to Ukraine's agricultural sector and land resources, estimated at more than USD 8.7 billion as of April 2023, by demining farmlands, providing seeds, and investing in the construction and repair of production facilities. However, the indirect toll of the war on Ukrainian agriculture is estimated at nearly four times the direct costs, at USD 34.2 billion. Aid to offset both direct and indirect costs could ensure the continuity of production and position the sector for more-rapid recovery.
- The suspension of nearly all producer-support programmes is likely to generate immediate and long-term consequences for the structure and sustainability of the sector. As funding to restore producer support becomes available, an opportunity exists to reform policy instruments for a more sustainable agricultural sector that is resilient and adaptable in the face of shocks, including those due to climate change.
- There is evidence that efforts to protect international trade, such as the Black Sea Grain Initiative and the suspension of trade barriers by key trading partners, have been effective, though the volume of exports from Ukraine continues to fall. Effort should continue to reduce physical and institutional barriers to trade, not only as a temporary measure but also to ensure recovery over the medium to long term.

Figure 27.1. Ukraine: Development of support to agriculture



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 27.2. Ukraine: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 27.1. Ukraine: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**9 619**	**39 530**	**34 579**	**50 143**	**33 867**
***of which:** share of MPS commodities (%)*	86.77	82.62	84.74	85.70	77.42
Total value of consumption (at farm gate)	**8 841**	**25 734**	**24 112**	**30 786**	**22 304**
Producer Support Estimate (PSE)	**36**	**-109**	**490**	**57**	**-875**
Support based on commodity output	-432	-418	184	-271	-1 168
Market Price Support[1]	-548	-418	184	-271	-1 168
Positive Market Price Support	389	425	359	500	416
Negative Market Price Support	-937	-843	-175	-771	-1 584
Payments based on output	116	0	0	0	0
Payments based on input use	203	132	135	150	110
Based on variable input use	169	65	39	48	109
with input constraints	0	0	0	0	0
Based on fixed capital formation	31	66	95	102	2
with input constraints	0	0	0	0	0
Based on on-farm services	2	0	0	1	0
with input constraints	0	0	0	0	0
Payments based on current A/An/R/I, production required	265	177	172	178	183
Based on Receipts / Income	265	150	160	158	133
Based on Area planted / Animal numbers	0	27	12	20	50
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	0	0	0	0
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	0	0	0	0	0
Based on long-term resource retirement	0	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0
Percentage PSE (%)	**0.37**	**-0.40**	**1.41**	**0.11**	**-2.56**
Producer NPC (coeff.)	**0.95**	**0.99**	**1.01**	**0.99**	**0.97**
Producer NAC (coeff.)	**1.00**	**1.00**	**1.01**	**1.00**	**0.98**
General Services Support Estimate (GSSE)	**121**	**251**	**224**	**268**	**262**
Agricultural knowledge and innovation system	51	78	71	75	88
Inspection and control	26	159	141	177	160
Development and maintenance of infrastructure	36	3	2	5	2
Marketing and promotion	1	0	0	0	0
Cost of public stockholding	1	1	3	0	0
Miscellaneous	7	9	7	10	12
Percentage GSSE (% of TSE)	**76.19**	**..**	**31.32**	**82.40**	**..**
Consumer Support Estimate (CSE)	**397**	**397**	**-192**	**279**	**1 105**
Transfers to producers from consumers	490	411	-174	291	1 116
Other transfers from consumers	-38	-13	-17	-8	-13
Transfers to consumers from taxpayers	0	0	0	0	0
Excess feed cost	-55	-1	-1	-4	1
Percentage CSE (%)	**4.47**	**1.73**	**-0.80**	**0.91**	**4.95**
Consumer NPC (coeff.)	**0.95**	**0.98**	**1.01**	**0.99**	**0.95**
Consumer NAC (coeff.)	**0.96**	**0.98**	**1.01**	**0.99**	**0.95**
Total Support Estimate (TSE)	**157**	**142**	**714**	**325**	**-613**
Transfers from consumers	-452	-398	191	-283	-1 103
Transfers from taxpayers	647	553	540	616	502
Budget revenues	-38	-13	-17	-8	-13
Percentage TSE (% of GDP)	**0.41**	**0.06**	**0.46**	**0.16**	**-0.48**
Total Budgetary Support Estimate (TBSE)	**705**	**560**	**530**	**596**	**554**
Percentage TBSE (% of GDP)	**1.83**	**0.35**	**0.34**	**0.30**	**0.44**
GDP deflator (2000-02=100)	**100**	**1 766**	**1 569**	**1 962**	**..**
Exchange rate (national currency per USD)	**5.38**	**28.86**	**26.96**	**27.29**	**32.34**

.. Not available

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.

1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Ukraine are: wheat, maize, rye, barley, oats, sunflower, sugar, potatoes, milk, beef and veal, pig meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en.

Description of policy developments

Overview of policy trends

Prior to the 1990s, central planning regulated all sectors of Ukraine's economy, including agriculture, as part of the Soviet Union. The state administered prices and state enterprises controlled the production and marketing of agricultural inputs and outputs as well as the processing and distribution of food. The first reforms initiating a transition towards a market-based economy began at the end of the 1980s. A limited right to private production was established for land leased from collective farms or individuals, enabling the establishment of private family farms (von Cramon-Taubadel et al., 2008[1]).

An economic crisis in the early 1990s triggered a significant economic contraction and inflation that impacted the agricultural sector and resulted in substantial reductions in agricultural output and productivity. Consequently, several trade and price liberalisation policy reforms were reversed in the mid-1990s. Renewed reforms in agribusiness privatisation and collective farm restructuring intensified only after macroeconomic stabilisation in the 2000s (OECD/The World Bank, 2004[2]). While prior to the 1990s, the state owned all land,[1] today about three-quarters of agricultural land is private property (StateGeoCadastre, 2017[3]).[2]

In 2005, the State Agrarian Fund was established as a state-owned public joint stock company (reorganised in 2013). Its initial mandate was to regulate grain prices through intervention purchases, to store grain in state-owned silos and sell it to bakeries to guarantee bread prices, and to provide loans to grain producers. The fund progressively became involved in other activities, such as state purchases and sales of a broad range of agricultural and food products; forward contracts; flour processing and wholesaling; and sales of fuel and mineral fertilisers to producers (OECD, 2015[4]). In 2020, a new law "On State Support of Agriculture of Ukraine", did not mention the activities of the Agrarian Fund, implying that the Agrarian Fund may be liquidated in the future. The government budget has not allocated funds to the State Agrarian Fund since 2016, resulting in fewer state interventions in agricultural markets.

Two key events helped shape agricultural policies in Ukraine leading up to 2022. First, in 2008, Ukraine became a member of the WTO, setting its agricultural bound tariffs at an average of 10.8%, expanding its export opportunities, and contributing to changes in the system of state support for agriculture. Second, in 2014, the European Union and Ukraine signed the Deep and Comprehensive Free Trade Area (DCFTA) as part of their Association Agreement. The DCFTA entered into force in September 2017 and involves tariff reductions and duty-free import quotas to facilitate trade between Ukraine and the European Union, including in agricultural and food products.

From 1999 to 2016, the state provided significant support through VAT accumulation, based on an agriculture-specific VAT regime (AgVAT). Under this regime, farmers were able to retain the VAT received on their sales of primary and processed products, and to use those funds to cover the VAT on purchased inputs and for other production purposes, at their discretion. From 2014 to 2016, this mechanism provided 90% of total state support. In 2017, a development subsidy partially replaced this source of support, before the support was phased out altogether in 2018. Other notable domestic policy measures included input subsidies, tax concessions, price controls, import tariffs, non-tariff trade regulation, minimum purchase prices, direct state purchases, and preferential loans.

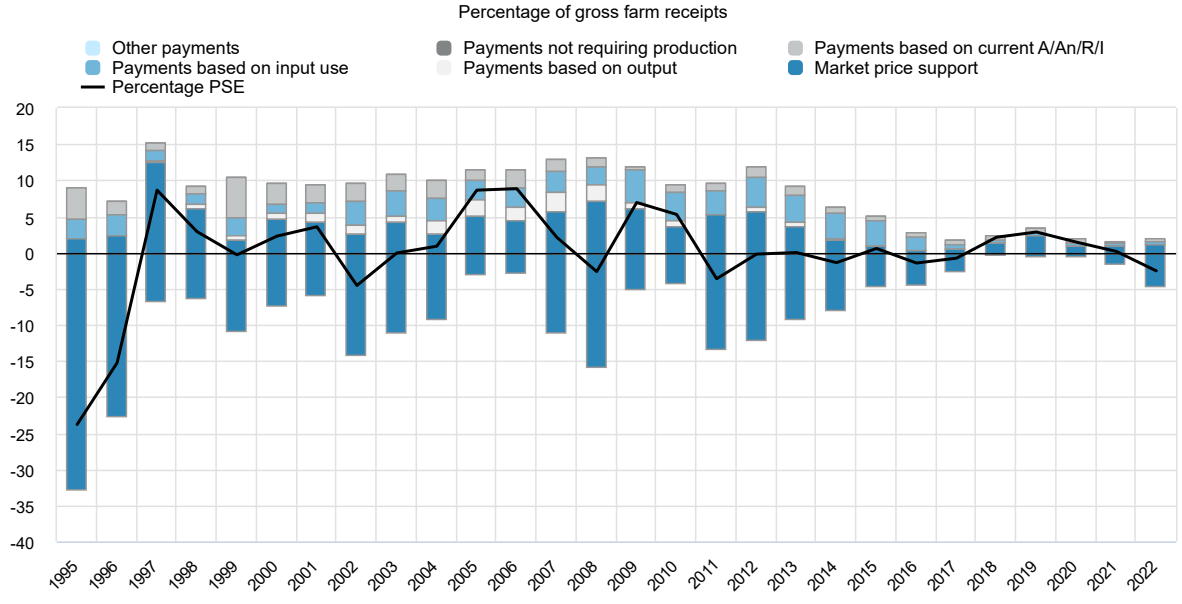
A moratorium banning the sale of agricultural land was put in place in 2002, although leasing for cultivation was permitted. The moratorium was extended annually through 2019 but was not formally extended into 2020. From July 2021, a new law came into force that lifts the ban on the sale of agricultural land and grants individual citizens the right to purchase up to 100 hectares of privately owned land, although a ban continues on the sale of state-owned land.[3] From January 2024, larger purchases of up to 10 000 hectares will be permitted for Ukrainian citizens and Ukrainian legal entities.

Table 27.2. Ukraine: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
Prior to 1990s	Planned economy	Planned agricultural production, state administered prices State controlled value chain and agricultural trade, including marketing of agricultural inputs and outputs
1990-2000	Transition economy: gradual reforms towards market economy Interrupted by deep economic crisis in the early 1990s	Increased import tariffs for agricultural and processed food products Land reform to allow private ownership Gradual dismantling of centralised marketing schemes Reversal of reforms during economic crisis
2000-2022	Renewed reforms towards an open economy	Reduction of agricultural tariffs following WTO accession Export taxes and quotas for main exported products, successively eliminated or replaced by MoUs State Agrarian Fund (price controls, production controls, marketing, loans, etc.) with market interventions through minimum reference prices and state food purchases successively reduced Sugar production quotas until 2018 Various subsidies for inputs, interest support and tax concessions
2022-present	Entered period of martial law due to large-scale military aggression of the Russian Federation	Reallocation of agricultural support funds to security and defense Suspension of traditional support programs Introduction of temporary measures applicable during period of martial law, including tax breaks, food security measures, and simplified regulatory requirements

Due to the negative MPS only partly offset by transfers to producers through tax concessions and other measures, support to agricultural producers was negative for most of the 1990s. The level fluctuated over the last decade but has generally been closer to zero (Figure 27.4). With little budgetary support to general services or consumers, total support to the sector remained small for most of the past 25 years.

Figure 27.3. Ukraine: Level and PSE composition by support categories, 1995 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

The Ministry of Agrarian Policy and Food (MAPF) is the main executive body in Ukraine in charge of the development of agriculture. Between September 2019 and January 2021, MAPF was integrated into the Ministry of Economic Development, Trade and Agriculture (MEDTA). At the beginning of 2021, MAPF was restored. A resolution adopted by the Cabinet of Ministers of Ukraine (CMU) in February 2021 defines the functions of MAPF, including the formation and implementation of state policy in a range of areas, including agriculture, fisheries, food security, rural development, and land management.

The law, "On State Support of Agriculture in Ukraine", adopted in 2004, defines key policy priorities and formulated agricultural support measures. This is complemented by the annual law, "On the State Budget of Ukraine", which sets the budget for agricultural subsidies.

The law, "On Agricultural Cooperation", entered into force in November 2020, regulating issues related to the creation, management, and dissolution of agricultural co-operatives. It eliminates a distinction between production and service co-operatives and defines co-operative education as a priority task of agricultural co-operatives.[4]

In 2020, the ratification of the law, "On Amendments to Certain Legislative Acts of Ukraine Concerning the Conditions of Turnover of Agricultural Lands", created the legislative framework for the introduction of market turnover of agricultural land. The law:

- Lifts a ban on the sale of agricultural land for private ownership.
- Grants the right to purchase of land exclusively to Ukrainian citizens in the amount of no more than 100 hectares per person from 1 July 2021 to 1 January 2024.
- Permits legal entities whose founders or final beneficiaries are Ukrainians to acquire the right of ownership, such entities cannot have businesses registered abroad or in offshore companies.
- Bans the sale of land to foreigners, who can obtain the right to purchase land only after a national referendum.
- Prohibits the sale of agricultural land of state and communal ownership.

Agricultural producers are eligible for a Single Tax[5] set as a percentage of normative agricultural land values, which was established on 1 July 1995 and adjusted since then in line with the general consumer price index.[6] The Single Tax originally replaced 12 taxes for which agricultural enterprises were liable as business entities. The scope of this tax has narrowed and at present the Single Tax replaces three taxes – the profit tax, the land tax for land used in agricultural production and a special water use fee. Agricultural producers are now liable for the other nine taxes that were previously included in the Single Tax. The Single Tax regime provides tax savings to agricultural producers of around UAH 4.3 billion (USD 133 million) annually.

In addition to the Single Tax regime, the general budget programme, "On Financial Support of Agricultural Producers", provides measures targeted to specific activities, including partial compensation for the costs of agricultural machinery and equipment and interest rate subsidies on bank loans. For livestock producers, these also include interest rate support for loans funding livestock husbandry and breeding; partial reimbursement of costs related to the construction and reconstruction of animal farms and buildings; per-head payments for cows to agricultural enterprises and for young cattle to rural households; and partial compensation to agricultural producers purchasing breeding animals, semen and embryos. In turn, on the crop side, support is provided in the form of reimbursements for different types of on-farm investments and debt repayments.

Ukraine has been a member of the WTO since May 2008. The country charges import tariffs on most agricultural products, with applied most-favoured-nation (MFN) tariffs for agricultural products averaging 9.1%, well above the average for non-agricultural products of 3.7% (WTO, 2022[5]). While most imports face *ad valorem* tariffs, Ukraine maintains a global tariff-rate quota for raw cane sugar. This quota was only

used in 2011 and 2021, as there was an excess sugar supply on the Ukrainian market in other years. Export duties are applied to some oilseeds, live animals, and raw hides, but have gradually decreased following Ukraine's accession to the WTO.

The Association Agreement with the European Union, ratified by Ukraine in 2014, increasingly influences the country's policies. On 27 June 2014, the European Union and Ukraine signed the Deep and Comprehensive Free Trade Area (DCFTA), which applied provisionally from 1 January 2016 and entered into force on 1 September 2017. Under the agreement, trade liberalisation between the European Union and Ukraine is to be implemented over a transition period of seven to ten years. The European Union agreed to open tariff rate quotas (TRQs) for duty-free imports for Ukraine's principal agro-food products, such as grain, meat and milk products, and sugar, and to grant free access for others. Ukraine, in turn, committed to reduce import duties for a number of goods from the European Union. About 40% of agriculture-related import duties were reduced to zero immediately after the agreement entered into force. During an ensuing transition period, the share of exports liberalised is schedule to increase to 96%. For some remaining agri-food tariff lines – covering selected products in product categories such as dairy and eggs, sugar, miscellaneous edible products, animal oils and fats, and feeding stuff for animals – Ukraine maintains TRQs with zero in-quota tariffs. Since 1 January 2016, Ukraine applies three TRQs with zero in-quota tariffs for imports from the European Union of pig meat, poultry meat and poultry meat preparations, and sugar. Both the European Union and Ukraine committed to eliminate export subsidies for mutually traded agricultural goods.

The DCFTA incorporates fundamental WTO rules on non-tariff barriers, such as prohibition of import and export restrictions, and disciplines on state trading. However, Ukraine's difficulty complying with EU food safety, veterinary and phytosanitary requirements has created a barrier for trade integration. The DCFTA contains provisions for technical regulations, standards and conformity assessments to harmonise with those of the European Union, as well as for technical co-operation in the field of regulations, standards and related issues between Ukraine and the European Union. In line with these provisions, the "Comprehensive Strategy of Implementing Legislation on Sanitary and Phytosanitary Measures" was approved in 2016 and provides a process for harmonisation of Ukraine's SPS legislation with EU requirements. As of 2021, 64% of Ukraine's obligations under the Sanitary and Phytosanitary Measures section of the agreement have been fulfilled.[7]

Other free trade agreements (FTAs) in which Ukraine is engaged include the FTA with the European Free Trade Association (EFTA), in force since June 2012; the multilateral FTA with the Commonwealth of Independent States (CIS), in force since August 2012; bilateral agreements with all CIS members; and the Canada-Ukraine FTA, in force since August 2017.[8] FTAs with Israel and the United Kingdom entered into force in January 2021. In February 2022, Ukraine and Türkiye signed a new FTA (see below).

In July 2019, the CMU approved the "Strategy for the Development of Exports of Agricultural and Food Products for the period up to 2026." It focuses on product competitiveness, an expanded range of export products, Ukrainian food brands, and supporting information and analysis on agro-food exports.

Climate change adaptation policies in agriculture

Despite the challenges associated with operating under martial law, Ukraine enacted several measures in 2022 to support agricultural climate-change adaptation. A resolution to improve state support for agricultural water users directed funds to support a subsidy up to 25% of the cost of irrigation systems put into operation. The measure aims to enhance efficiency, increase the area of reclaimed land, and contribute to increased food security.

The Land Protection Programme was adopted in January 2022 to ensure the sustainability of land use and contribute to the creation of ecologically safe living conditions. In place through 2032, the programme seeks to optimise the structure of the agricultural landscape, reduce ploughed land area, increase the

productivity of agricultural land, reduce the threat to land resources from degradation processes, and preserve natural wetlands.

Several adaptation actions were incorporated into Ukraine's second Nationally Determined Contribution (NDC) submitted under the Paris Agreement. These include:

- introduction of minimised tillage techniques and a ban on stubble burning in fields
- support for land-protection activities and the restoration of windbreaks
- harmonisation with EU legislation of domestic regulations on the distribution and use of pesticides and agrochemicals
- introduction of best agricultural practices for zones vulnerable to nitrate pollution
- support for returning and restoring degraded land, with purchase by the state or payments for decommissioning
- support for the use of manure at all stages, including production, processing, storage, transportation, and application, and its utilisation in biogas production
- support for the development of organic agriculture and the observance of crop rotations

An agreement on the participation of Ukraine in the EU LIFE environmental and climate action programme was ratified in September 2022, ensuring Ukraine's participation as an associate member and its contribution to the implementation of joint projects.

Domestic policy developments in 2022-23

The year 2022 marked a significant departure from standard agricultural policies and support mechanisms due to the Russian war of aggression. Virtually all traditional support programmes were suspended, while new temporary measures were introduced during the period of martial law.

Changes in Agricultural Support Measures

The majority of subsidy and grant programmes that operated in 2021 were suspended starting in 2022. Among the suspended programmes were per-hectare payments for producers of buckwheat; per-hectare payments for crop losses due to emergencies and natural disasters; subsidies for cow herd expansion and for goats and sheep; financial support for horticulture, viticulture, and hop growing; state support for potato growers; a subsidy for beekeeping; and partial compensation for agricultural machinery and equipment.

New input subsidies were created to support small agricultural producers in wartime conditions, including a subsidy per unit of arable land for producers with up to 120 hectares in cultivation and a subsidy for keeping cows for producers with 3 to 100 animals. Grant programmes were introduced for the construction of greenhouses and horticultural gardens, both of which tie the receipt of aid to the creation of jobs. Although the MAPF approved grant spending of UAH 383 million (USD 11.8 million) in 2022, only UAH 54 million (USD 1.7 million) was transferred to recipients. The remainder of the promised funds will be transferred to recipients from the general fund of the state budget for 2023.

Some measures were introduced to allow farmers to carry out consistent field operations during wartime. Critical workers identified by agricultural and food enterprises as necessary to carry out spring and summer field work were granted a deferment of up to six months from being enlisted for military service; operating agricultural machinery without registration was allowed while under martial law; and the validity of permits to work with pesticides and agrochemicals was extended. Ukrainian farmers were not obligated to repay loans received under state support for livestock breeding or elevator construction if the assets were destroyed as a result of military aggression.

Several forms of financial support were developed or expanded in 2022. A fund to support the partial guarantee of loans was created to provide guarantees for credit obligations of farmers for up to 10 years

covering 50% of the outstanding amount of their principal debt to the financial institutions with which the fund entered into a co-operative agreement. Another resolution established the provision of state support for agricultural products insurance covering up to 60% of the payments made for insurance of agricultural products. To support agricultural commodity producers during the sowing period, the existing programme "Affordable Loans 5-7-9%" was expanded to include medium and large-sized enterprises, the maximum loan amount was increased, and a 0% annual interest rate was established.

Changes to the legal framework

Several temporary changes in land markets under martial law were introduced, including a law simplifying the procedure to acquire rights to use agricultural land during wartime, a resolution on maintaining the State Land Cadastre, changes in tenant rights on leased land, and special rules for use and disposal of land plots of entities that are of importance to the national economy. A law was also introduced to restore the registration system of agricultural land plot lease rights that existed before the introduction of martial law.

Additional laws were adopted that influence land reform. These include a new law stipulating that land auctions be conducted in a state-owned electronic trading system, a resolution approving the procedure for notarisation of data on buyers of land, and a law strengthening the protection of property and corporate rights with anti-raiding measures to prevent illegal seizure.

In terms of agri-environmental measures, the new law, "On Organizations of Water Users and Stimulation of Hydrotechnical Land Reclamation" creates a legal basis for the formation and operation of water-user organisations, transfers to them infrastructure management functions, and establishes a legal mechanism for making investments in reclamation infrastructure.[9] A resolution defines rules governing the development of land management projects, including the removal and transfer of fertile soils and the improvement of agricultural lands.

New laws were also introduced to simplify agricultural machinery registration; change the certification process for seeds, particularly those that are exported; and to improve phytosanitary measures.

The Ministry of Economy of Ukraine, along with MAPF, continues to translate European Union directives into national legislation as part of the implementation of the Association Agreement. This resulted in a number of changes in domestic agricultural policy, including legislation governing the production and sale of baby food; protection of the geographical indications for agricultural products; simplification of the procedure for registering plant varieties and for certifying seeds and planting materials; and state registration of livestock facilities according to European Union standards.

Consumer support measures

Under martial law, the CMU obligated state bodies to ensure price controls for a basket of goods including wheat flour, pasta, bread, buckwheat groats, pork, beef, poultry, milk, chicken eggs, sunflower oil, granulated sugar, white cabbage, onion, beetroot, carrot, and potatoes. From January 2022 to April 2022, state regulation established a maximum trade markup of 10%. This was a temporary measure that was partially lifted via a subsequent resolution, "Weakening of State Regulation of Product Prices", which abolished state regulation of prices for some goods (namely buckwheat, granulated sugar, domestically produced pasta, and butter), although a requirement for sellers to declare any price increase exceeding 5% remained in place. The cost of natural gas was also limited for producers of flour and bread, milk, chicken, and sunflower oil through April 2022. The government set the maximum level of surcharge on the price of Ukrainian-produced natural gas (excluding rent payments) at no more than 24% for food producers.

The resolution of March 2022, "Some Issues of Providing the Citizens with Long-Term Food Products and Sanitary and Hygienic Products under Martial Law", provided products to residents in regions with active hostilities free of charge. Products covered include flour; cereals; pasta; sunflower oil; canned meat, fish,

and legumes; sugar; milk or its substitutes; bakery and confectionery products; tea; and coffee. The resolution established the rate of each product per person for one month.

In 2022, the government temporarily changed food labelling requirements under martial law. As a result of forced changes in recipes due to the limited availability of raw materials, a difference between the actual content of a food product and the mandatory information of the labelling of the product was allowed, with the caveat that the consumer be informed in any possible way about the presence of allergens. Imported food products and fodder could be sold with product information in a foreign language for a portion of the year, though any goods with foreign language labels that were imported from March to December 2022 may remain in circulation until the expiration date.

Domestic policy responses to the COVID-19 pandemic

Financial state support for agricultural entities is carried out via the Entrepreneurship Development Fund (EDF), a non-profit institution that directs loans to micro, small, and medium enterprises (MSMEs). In particular, state support is provided to prevent the outbreak of epidemics, including the COVID-19 pandemic, as well as to prevent and overcome their consequences. This programme features a reduction of loan interest rates for enterprises impacted by quarantine, with reduced loan interest rates of 5%, 7%, and 9% annually and partial loan guarantees for some businesses.[10] In March 2022, the programme was modified to better support agricultural commodity producers while sowing during the period of martial law by providing investment loans for the purchase of agricultural machinery, seeds, fertilisers, fuels and lubricants.

Trade policy developments in 2022-23

At the outset of the war, the National Bank of Ukraine imposed restrictions on the purchase of foreign currency and cross-border transfers for the import of goods. However, a resolution by the CMU permitted the Bank to pay for goods on a list of critical imports. The list was updated 16 times as the restrictions were gradually phased out and eventually cancelled in July 2022. Another resolution simplified the clearance of certain goods through customs, allowing for a deferment of customs payments for meat and dairy products, fish, vegetables, oil, coffee, tea, sugar, and cocoa.

The law, “On the Customs Tariff of Ukraine”, entered into force on 1 January 2023. The law allows for a re-classification of import goods according to the Harmonized Commodity Description and Coding System of 2022 and the corresponding version of the European Union’s Combined Nomenclature. This does not affect the rates of import duties applied to specific HS codes.

At present, Ukraine places a tariff and quota on only one agricultural commodity, raw cane sugar. In 2021, the quota was set at 260 000 tonnes with a 2% tariff. In 2022, the Ministry of Economy began accepting applications for raw cane sugar importers for a volume of 267 800 tonnes.[11] Export duties are applied to only a few products, including some oil seeds, live animals, and raw hides. The rates have been significantly reduced as part of the implementation of the WTO commitments framework.

On 3 February 2022, prior to the invasion by Russia, Ukraine and Türkiye signed an FTA, enabling an increase in trade with Türkiye from USD 7.5 billion to USD 10 billion in five years. Türkiye is a major trading partner with Ukraine, accounting for 4.49% of Ukraine’s total imports (7th largest partner) and 4.95% of its exports (4th largest partner) annually (World Bank, 2023[6]). The FTA specifies a tariff schedule with negotiated TRQs and duties for a number of important exports from Ukraine to Türkiye (e.g. live cattle, dried peas, soft wheat, corn, and crude sunflower oil) and imports to Ukraine from Türkiye (e.g. tomatoes, cucumbers, grapes, apricots, and other fruits and vegetables). At present, the ratification process of the FTA is continuing.

Ukraine ratified an agreement on the abolition of import duties and tariff quotas in bilateral trade with the United Kingdom, beginning 19 June 2022 and lasting for at least 12 months. The agreement is expected

to increase exports of Ukrainian agricultural products, including flour, dairy products, poultry, and tomato paste, to the United Kingdom.

The government of Canada cancelled import duties and quantitative restrictions on Ukrainian products for the year as part of the FTA between Ukraine and Canada. In April 2023, Canada and the Ukraine agreed to expand the FTA to further liberalise trade, eliminating tariffs on exports from the Ukraine to Canada, even if components are obtained from other countries (The New Voice of Ukraine, 2023[7]).

Annually since 2011, MAPF signs a Memorandum of Understanding with grain market participants to ensure food security, avoid the application of export restrictions, ensure the projected grain export regime, and stabilise the grain market in Ukraine. The document is one of the key factors in maintaining a balance between domestic grain consumption and export opportunities, as well as stability and predictability in food markets. It typically sets a maximum volume of wheat exports, which was 25.3 million tonnes in the 2021-22 marketing year. In the 2022-23 marketing year, because of Russia's war of aggression against Ukraine, the Memorandum was not signed.

The government of Ukraine prohibited the export of some goods and applied licensing to the export of others for all or part of the year. Export prohibitions applied to oats; millet; buckwheat; sugar; salt; rye; live cattle; and meat and offal from cattle, frozen in brine, dried, or smoked. Goods subject to licensing were those considered socially important, including wheat, corn, meat of domestic chickens, eggs of domestic chickens, and sunflower oil. Subsequent resolutions cancelled the ban on exports for beef, cancelled export licensing for wheat, and replaced the ban with export licensing for fertilisers, buckwheat and oats.

In 2022, the European Council adopted a regulation allowing for temporary trade liberalisation and other trade concessions with regard to certain Ukrainian products. The decision applies for a period of one year and suspends tariffs, anti-dumping duties on imports originating from Ukraine, and the application of common rules for imports originating in Ukraine. Ukrainian exporters do not use in full European Union import tariff rate quotas for animal products and for beef, pork, and lamb TRQs have never been used at all. At present, Ukraine is working to certifying domestic production capacity for exports to the European Union. As of early 2023, six poultry plants received permission from the European Union veterinary services for the trade of poultry products and 45 dairy processing enterprises were allowed to export milk products to the European Union.

A resolution introduced in 2015 to abolish zero import duty rates for imports of goods from Russia was extended through the end of 2023. A Ukrainian resolution bans completely the export of goods to Russia, until such time as the war of aggression ends.

During the period of martial law, new rules have been applied for state veterinary and sanitary control. State control over compliance with legislation on food products, feed, animal by-products, veterinary medicine, and animal welfare is carried out at all checkpoints on the state border of Ukraine and customs control zones. A comprehensive list sets out grounds for physical inspection and laboratory tests for imported goods and the procedure for import and transport of animals. Imported feed additives are permitted even if they are not registered in Ukraine if they are registered in the European Union and intended for livestock production.

Ukraine withdrew from the Agreement on the Common Agrarian Market with the Commonwealth of Independent States (CIS) effective 8 June 2022. The CIS facilitates free exchange and sharing of agricultural commodities, food processing technologies, and services for the agro-industrial sector, among a number of former members of the Soviet Union, including Russia.[12]

Contextual information

Ukraine has a large area of fertile arable land resulting in a widespread presence of agriculture in the economy and high production relative to the size of the population. Although agriculture's relative importance in the economy has declined over time, the agricultural and food industry accounted for 20% of the country's GDP, 18% of total employment, and more than 40% of the value of total exports prior to the war (Table 27.3).

The fall in Ukraine's GDP in 2022 is estimated to be more than 30% according to the Ministry of Economy, reaching its lowest level since Ukraine gained independence. The direct damage from the war as of the beginning of December 2022 is estimated to be at least USD 135.7 billion. The labour market also suffered significantly in 2022: the National Bank of Ukraine estimates the unemployment rate at 30%, while 77% of working Ukrainians state a decrease in income compared to 2021. Nearly half are uncertain about whether they will receive income in the future. According to the Pension Fund, nominal wages in Ukraine decreased by 5% during the year and real income decreased by 21%. The rate of inflation in Ukraine was 20.2% in 2022, far outpacing the OECD average of 8.2%.

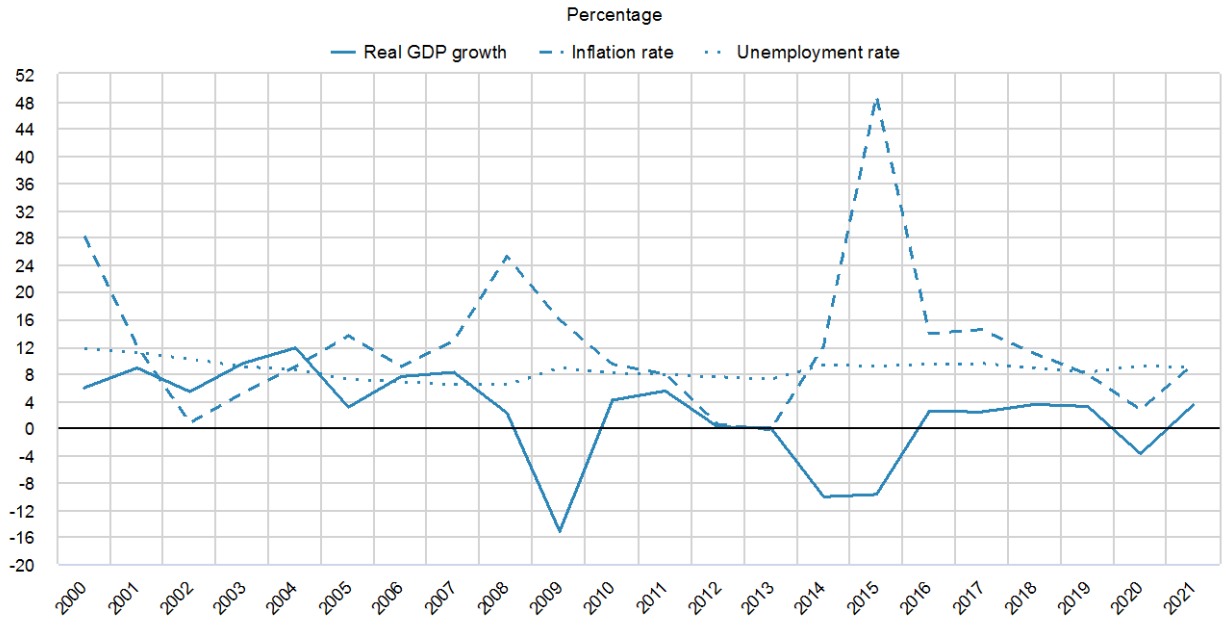
In 2022, Ukraine was able to sow and harvest only 75% of its agricultural land and total agricultural production fell by 28.3% compared to the level in 2021, with a 32.3% decrease in crop production and an 11.1% decrease in livestock production, as estimated by the State Statistics Service and the Ministry of Agrarian Policy and food of Ukraine. Production declines were particularly pronounced for wheat, maize, and sunflower seeds. Corporate agricultural enterprises suffered greater production losses than rural households. Rural households are often subsistence-oriented but accounted for 37% of Ukraine's crop production and 53% of livestock production in 2018 (Nivievskyi, Iavorskyi and Donchenko, 2021[8]).

Table 27.3. Ukraine: Contextual indicators

	Ukraine		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	210	588	0.5%	0.5%
Population (million)	49	44	1.1%	0.8%
Land area (thousand km²)	579	579	0.7%	0.7%
Agricultural area (AA) (thousand ha)	41 406	41 311	1.4%	1.4%
			All countries[1]	
Population density (inhabitants/km²)	84	75	52	64
GDP per capita (USD in PPPs)	4 260	14 220	9 350	23 401
Trade as % of GDP	44.1	33.9	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	14.0	10.6	2.9	3.9
Agriculture share in employment (%)	22.4	14.7	-	-
Agro-food exports (% of total exports)	10.1	40.6	6.2	7.9
Agro-food imports (% of total imports)	6.1	9.5	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	59	82	-	-
Livestock in total agricultural production (%)	41	18	-	-
Share of arable land in AA (%)	79	80	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

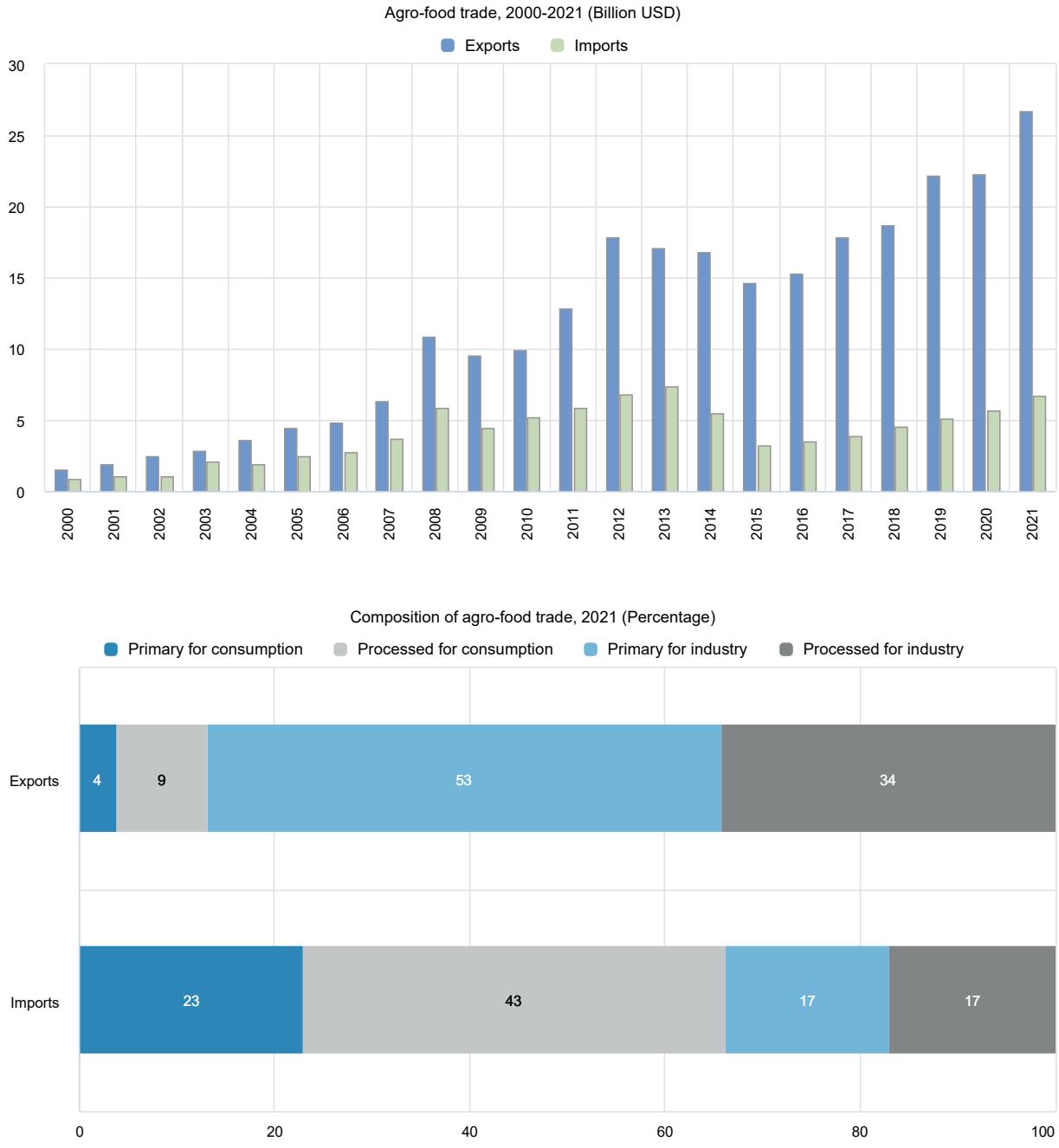
Figure 27.4. Ukraine: Main economic indicators, 2000 to 2021



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

Ukraine has been, and remains even during wartime, among the world's leading exporters of agricultural commodities, in particular grain products (wheat, barley, maize) and vegetable oils (rapeseed and sunflower oil). Exports of agro-food products have grown steadily since 2015, reaching a high of over USD 25 billion in 2021 (Figure 27.5). Most exports are primary and processed products used by industry, whereas two-thirds of imports are used for final consumption. Russia's strategy against Ukraine involves blocking ports and disrupting Ukrainian food supply chains. However, international efforts, such as the Initiative on the Safe Transportation of Grain and Foodstuffs from Ukrainian ports (also known as the Black Sea Grain Initiative), an agreement between Russia, Ukraine, Türkiye and the United Nations (UN), helped to sustain international trade. According to the State Customs Service of Ukraine, agricultural exports totalled USD 23.4 billion in 2022, which represents a 15.5% reduction relative to 2021, though this represents an increase relative to the level in 2020 and before. The volume of trade with the European Union saw a three-fold increase due to the establishment of safe export corridors.

Figure 27.5. Ukraine: Agro-food trade

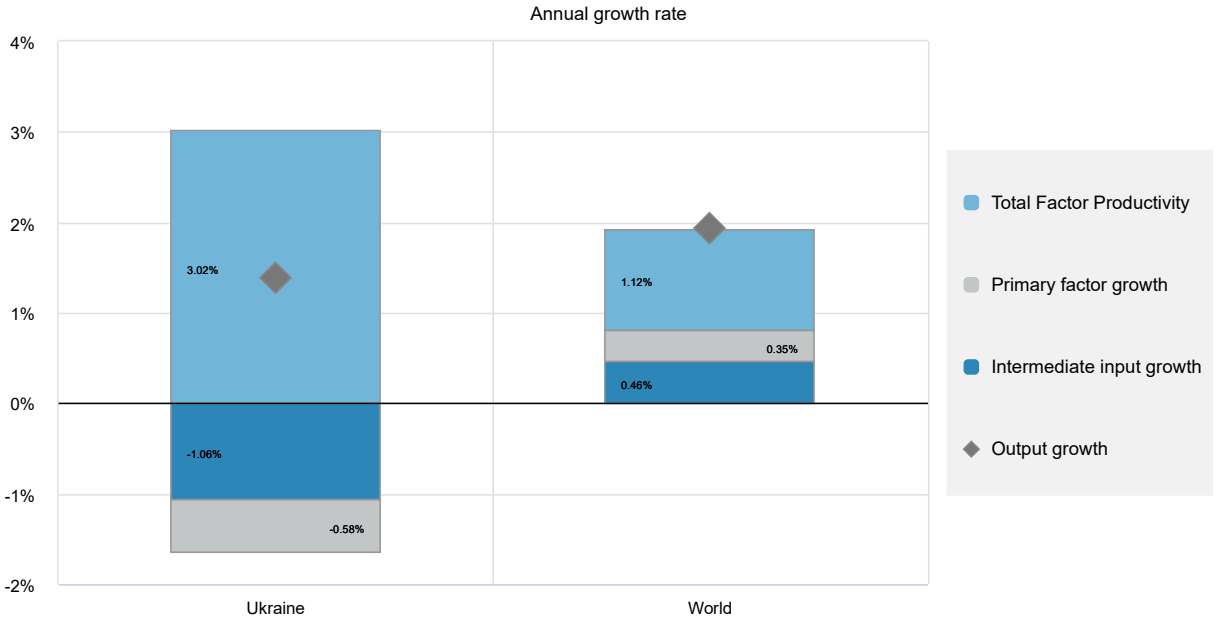


Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Growth in total factor productivity in Ukraine has increased from negative levels in the decade from 1993-2002, to a positive level that exceeded the global average for the period 2011-20, at 3% for the (Figure 27.6). Intermediate inputs and the use of primary factors shrank over the same period. Although agriculture has declined in importance for Ukraine's economy, the share of the sector in national GHG emissions has increased, from 8.7% in 1993-2002 to 13.1% in 2011-2020 (Table 27.4). The average

nitrogen balance fell over the same period and remains below the OECD-wide average. The phosphorus balance is negative, which may pose challenges in terms of sustaining soil fertility in the long run.

Figure 27.6. Ukraine: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 27.4. Ukraine: Productivity and environmental indicators

	Ukraine		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	-1.3%	3.0%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	23.9	18.8	32.2	30.4
Phosphorus balance, kg/ha	2.6	-2.5	3.3	3.0
Agriculture share of total energy use (%)	2.1	3.5	1.7	2.0
Agriculture share of GHG emissions (%)	8.7	13.1	8.6	10.5
Share of irrigated land in AA (%)	5.8	5.2	-	-
Share of agriculture in water abstractions (%)	30.0	41.3	46.6	49.7
Water stress indicator	..	..	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Notes

[1] Article 3 of the Land Code of the Ukrainian SSR, https://zakon.rada.gov.ua/laws/show/2874%D0%B0-07/ed19920101#Text.

[2] More recent estimates suggest that the share of private property in agricultural land is even higher, at 80%: Mykola Solsky (People's Deputy, Chairman of the Verkhovna Rada Committee on Agrarian and Land Policy), "It's all about the land", 2 April 2020, https://www.epravda.com/ua/columns/2020/04/2/658911/.

[3] Collective and state-owned farms were privatised starting in the late 1990s. At present, approximately 90% of land is privately owned (USAID, 2023[9]).

[4] The activities of co-operatives are defined broadly such that the legal framework does not constrain their activities, except in the case of co-operatives operating for profit, which are limited in terms of the magnitude of transactions permitted with non-members.

[5] Termed the "Fixed Agricultural Tax" before 2015.

[6] The monetary valuation of land plots can take one of two types, normative and expert, both of which are defined by the Law of Ukraine, "On Land Valuation." The normative land value is based on rent income for an area of one square meter, indexed to take into account the prior year's inflation.

[7] According to the "Report on implementation of the Association Agreement between Ukraine and the European Union 2021". In 2021 and 2022, several regulations were adopted relevant to the use of feed additives, veterinary medicine, and the transit of goods between the European Union and Ukraine.

[8] Other members and associate members of the CIS are Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, and Uzbekistan.

[9] Law No. 2079-IX of 17 February 2022.

[10] The offer of loans with interest rates of 5%, 7%, and 9% depends on the purpose of financing, annual income from business activities, and the number of jobs created. Lower rates are offered to MSMEs with annual income below UAH 50 million (USD 1.5 million) and for those that create at least two jobs during the reporting quarter.

[11] The quota increased from 260 000 tonnes in 2021.

[12] The CIS member states are Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, and Uzbekistan.

28 United Kingdom

Support to agriculture

The United Kingdom left the European Union (EU) on 31 January 2020. As a part of its transition from the EU Common Agricultural Policy (CAP), CAP-related support measures continued during 2022 while new domestic agricultural policy measures were phased in.

The Producer Support Estimate (PSE) was around 19% of gross farm receipts in 2020-22, well below the 30% measured for the European Union in 2000-02. While the largest item in the PSE is decoupled payments (46%), Market Price Support (MPS) makes up a significant share as well (35%), in particular for livestock products such as beef and poultry, which are subject to tariffs and tariff-rate quotas. Almost half of farm support comes through payments decoupled from current production, while 10% relates to payments based on input use.

Support for general services (General Services Support Estimate, GSSE) was 2.6% of the value of agricultural production in 2020-22, below the OECD average. Expenditure on agricultural knowledge and innovation systems accounts for slightly over half of GSSE and has declined in recent years. Expenditures on inspection and control services account for one-third of GSSE, while expenditures on marketing and promotion of farm products account for 10%. The Total Support Estimate (TSE) for agriculture represented 0.3% of Gross Domestic Product (GDP) on average in 2020-22, about half the OECD average.

Recent policy changes

Agricultural policy in the United Kingdom is devolved to the governments of Scotland, Wales, and Northern Ireland. The Department for Environment, Food and Rural Affairs (Defra) has responsibility for England's agricultural policy. Defra also sets some standards and regulations at national level (e.g. animal health and welfare, veterinary services, and plant health), and represents the United Kingdom in international negotiations.

England introduced several improvements to its three main environmental land management schemes, which continue to be piloted and rolled out as part of the transition out from previous schemes under the EU CAP. New standards were introduced under the Sustainable Farming Incentive scheme in 2022 to pay farmers for environmental improvements in arable and horticultural soils, grassland soils, and moorlands. Improvements were introduced to the way the Countryside Stewardship scheme operates, including simplified processes and fairer and more proportionate inspections. Twenty-two projects covering over 40 000 hectares were awarded funding under the Landscape Recovery scheme, aiming to restore nearly 700 km of rivers and to protect and provide habitat for at least 263 species.

Several new grants were made available under the Farming Investment Fund, including small grants for equipment to improve farm productivity, slurry management and animal welfare and large grants to improve water management and enhance farm productivity and added value. Slurry Infrastructure Grants were established to help livestock farmers upgrade or expand slurry storage capacity for better water quality and reduced ammonia emissions. Pilots were launched to test different approaches to support new

entrants to farming to provide more opportunities for new entrants to access land and finance, and establish successful and innovative businesses.

The CAP schemes continued in Scotland in 2022. The Scottish government published its Vision for Scottish Agriculture in March 2022 and held public consultations on the powers to be included in a proposed new Agriculture Bill to replace the CAP. In November 2022, the Scottish Government outlined their pathway and timeline for the future agricultural support framework to be phased in from 2025.

The Welsh government continued direct payments to farmers over the last three years at the same levels received under the Basic Payment Scheme (BPS). The Agriculture (Wales) Bill was introduced to the Welsh Parliament in 2022 and sets Sustainable Land Management as the overarching framework for future support to agriculture. The Sustainable Farming Scheme will be the main delivery mechanism for farm support as of 2025. The Farming Connect programme, launched in April 2023, will support knowledge transfer and encourage improved environmental performance until March 2025, when farmers transition away from BPS support.

CAP payments have also continued in Northern Ireland during the transition period. Northern Ireland's Department of Agriculture, Environment and Rural Affairs (DAERA) published the Future Agricultural Policy Decisions for Northern Ireland in March 2022, including 54 decisions on future agricultural support. Some of the key decisions include continued provision of income support through a Farm Sustainability Payment, a Beef Sustainability Package, a Farming with Nature Package providing payments for habitat creation and biodiversity restoration, and Farming for Carbon measures to encourage low-emission practices. The Climate Change Act (Northern Ireland) 2022 sets a target of net-zero GHG emissions by 2050 for Northern Ireland, and interim targets including a 48% reduction in net GHG emissions by 2030, but no specific target for agricultural emissions.

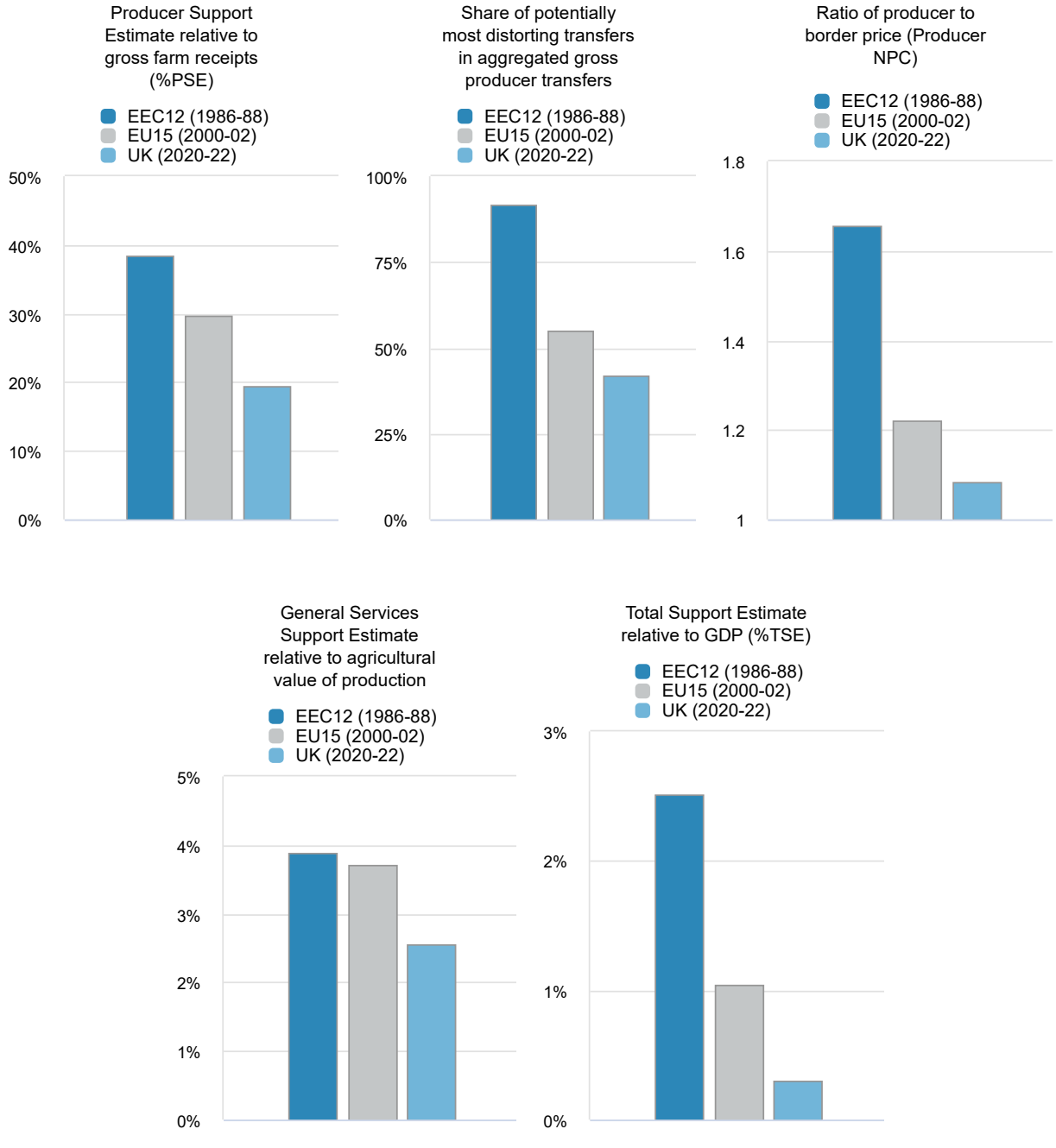
The United Kingdom concluded several Free Trade Agreements (FTAs) in 2022-23, providing enhanced market access for a range of agricultural and food products. In addition to new FTAs with Australia and New Zealand, the United Kingdom concluded negotiations to join the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), providing tariff-free access or preferential tariffs for agricultural and food exports across the 11 countries in the trade bloc.

Assessment and recommendations

- The United Kingdom and its devolved governments' strategies and planning documents provide a basis for supporting climate change adaptation. Moving beyond planning to policy implementation will be essential to strengthen adaptation and resilience in the agricultural sector. New programmes, including England's Environmental Land Management schemes; Scotland's Farming for a Better Climate programme, Farm Advisory Service and Agri-Environment Climate Scheme; and various grant schemes to encourage sustainable farming practices in Wales and Northern Ireland could contribute to progress towards enhanced climate adaptation. These initiatives will need to be carefully monitored to ensure the additionality and permanence of environmental improvements over the long run.
- Investments in R&D and innovation are essential for building farmers' capacities to adapt to climate change and reduce GHG emissions. The Farming Innovation Programme supports the development of new technologies and collaborative research projects to increase productivity and sustainability. Research efforts should also be directed at facilitating long-term transformative change and the emergence of new and diverse income sources as complements to revenue from traditional farming systems. Examples include renewable energy generation and the development of market-based mechanisms to encourage emissions reductions, carbon sequestration, and biodiversity conservation.

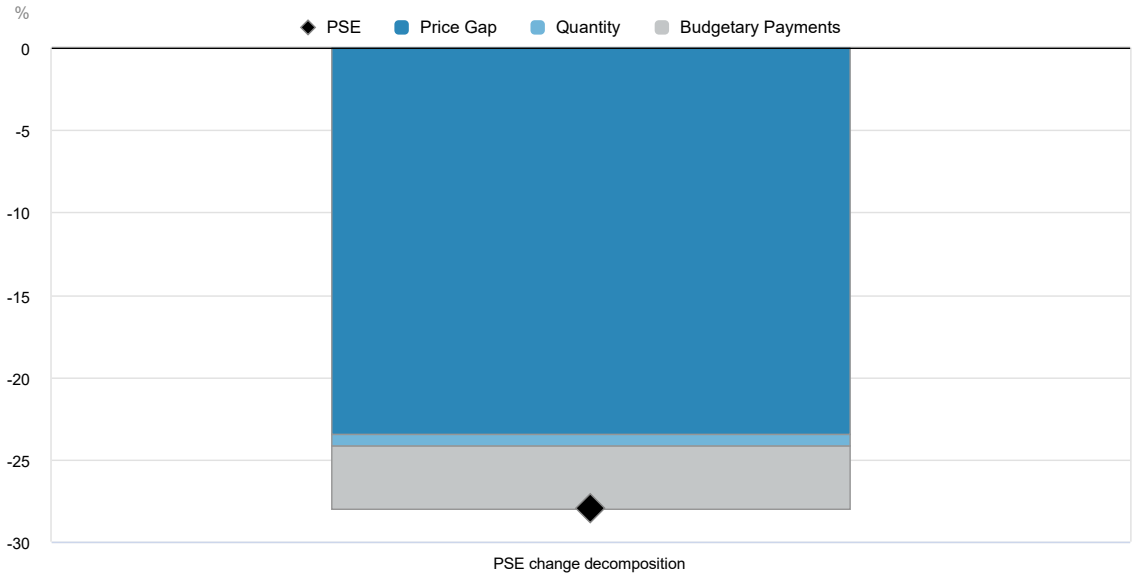
- MPS remains high for some commodities, in particular beef, poultry, and sugar. These policies can contribute to higher food prices and discourage farmers from changing production in response to climate and environmental concerns. Phasing out these price distortions would advance progress on several policy objectives, including improving soil health and water quality, and supporting climate change adaptation.
- Agricultural policies continue to evolve at varying paces across the governments of England, Scotland, Wales, and Northern Ireland. However, the transition from CAP measures to new domestic schemes is creating short-term complexity for the sector. As CAP payments are phased out, new domestic policy measures have undergone pilot testing and fine-tuning prior to a larger-scale rollout. Much of the short-term policy challenge revolves around scaling up these schemes and ensuring sufficient incentives for farmers to adopt sustainable production practices at scale, while maintaining flexibility and predictability for farmers over the long-term. Some transitional assistance or extended social safety nets might be required to facilitate the process of structural adjustment.
- Agriculture needs to achieve ambitious emissions reductions to contribute meaningfully to the United Kingdom's target of reaching net-zero emissions by 2050. A stronger policy response will be needed to tackle agricultural GHG emissions, particularly methane emissions from livestock, which represent 61% of the United Kingdom's agricultural GHG emissions. Expanding the United Kingdom's Emissions Trading Scheme to include agriculture could encourage deeper cuts in emissions while opening opportunities for farmers to earn additional revenues from afforestation and soil carbon sequestration. Technologies such as remote sensing and earth observation could strengthen monitoring, reporting and verification of land-use changes such as afforestation and peatland restoration. Ultimately, a combination of policy instruments including abatement subsidies, emissions pricing, standards, regulations, and demand-side measures may be required to create sufficient incentives for the adoption of sustainable farming practices and changes in land use.

Figure 28.1. United Kingdom: Development of support to agriculture



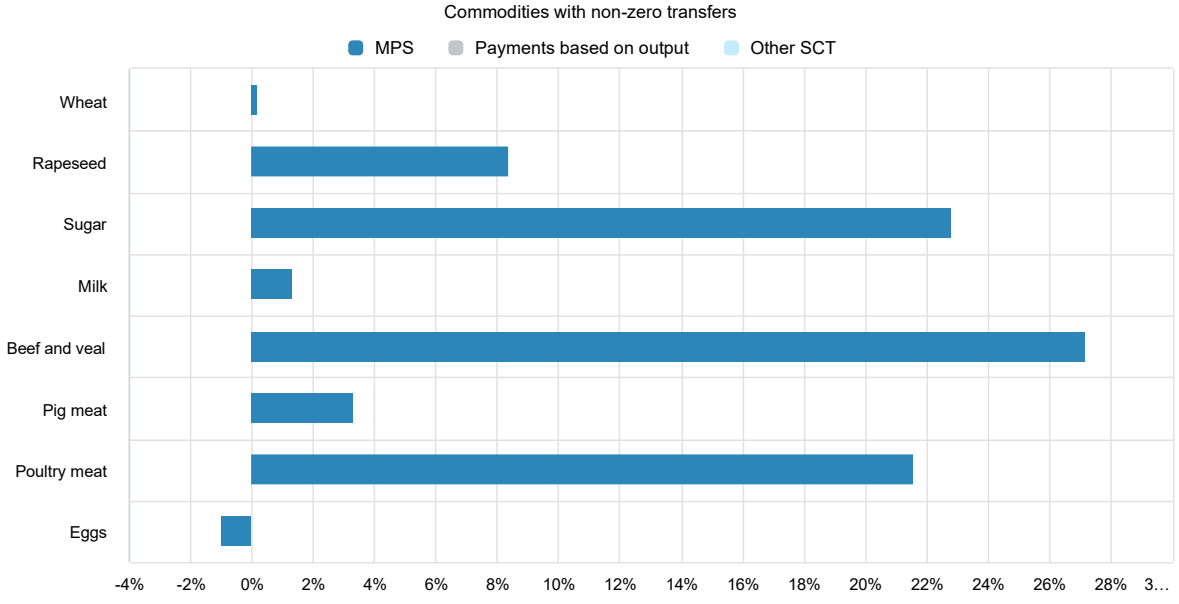
Note: Data for the UK not available individually for 1986-88 and 2000-02, when the UK was part of the European Economic Community (EEC12) and the European Union (EU15), respectively.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 28.2. United Kingdom: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency. The producer price change and the border price change are not calculated when both negative and positive market price support (MPS) occur at the commodity level for the previous year. Note that negative MPS estimates for livestock products may arise in cases of aligned product prices if there is positive MPS for feed commodities.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 28.3. United Kingdom: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 28.1. United Kingdom: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	..	**35 916**	**30 883**	**37 485**	**39 379**
***of which:** share of MPS commodities (%)*	..	73.51	71.17	72.81	76.54
Total value of consumption (at farm gate)	..	**39 473**	**34 996**	**41 672**	**41 751**
Producer Support Estimate (PSE)	..	**8 028**	**6 789**	**10 511**	**6 784**
Support based on commodity output	..	2 787	1 517	4 809	2 037
Market Price Support[1]	..	2 787	1 517	4 809	2 037
Positive Market Price Support	..	2 802	1 517	4 830	2 059
Negative Market Price Support	..	-14	0	-21	-23
Payments based on output	..	0	0	0	0
Payments based on input use	..	785	771	844	741
Based on variable input use	..	602	612	641	554
with input constraints	..	0	0	0	0
Based on fixed capital formation	..	172	153	187	175
with input constraints	..	0	0	0	0
Based on on-farm services	..	11	6	16	12
with input constraints	..	0	0	0	0
Payments based on current A/An/R/I, production required	..	714	646	662	835
Based on Receipts / Income	..	0	0	0	0
Based on Area planted / Animal numbers	..	714	646	662	835
with input constraints	..	499	594	552	350
Payments based on non-current A/An/R/I, production required	..	7	0	17	4
Payments based on non-current A/An/R/I, production not required	..	3 532	3 602	3 947	3 047
With variable payment rates	..	0	0	0	0
with commodity exceptions	..	0	0	0	0
With fixed payment rates	..	3 532	3 602	3 947	3 047
with commodity exceptions	..	0	0	0	0
Payments based on non-commodity criteria	..	175	180	225	121
Based on long-term resource retirement	..	99	68	162	67
Based on a specific non-commodity output	..	74	112	63	47
Based on other non-commodity criteria	..	2	0	0	7
Miscellaneous payments	..	27	72	9	0
Percentage PSE (%)	..	**19.33**	**18.78**	**24.34**	**15.37**
Producer NPC (coeff.)	..	**1.08**	**1.05**	**1.15**	**1.06**
Producer NAC (coeff.)	..	**1.24**	**1.23**	**1.32**	**1.18**
General Services Support Estimate (GSSE)	..	**920**	**984**	**878**	**900**
Agricultural knowledge and innovation system	..	471	559	459	395
Inspection and control	..	312	274	282	380
Development and maintenance of infrastructure	..	45	43	43	48
Marketing and promotion	..	93	108	94	76
Cost of public stockholding	..	0	0	0	0
Miscellaneous	..	0	0	0	0
Percentage GSSE (% of TSE)	..	**10.37**	**12.62**	**7.71**	**11.70**
Consumer Support Estimate (CSE)	..	**-3 391**	**-1 578**	**-5 820**	**-2 777**
Transfers to producers from consumers	..	-2 844	-1 506	-4 938	-2 089
Other transfers from consumers	..	-616	-95	-1 008	-743
Transfers to consumers from taxpayers	..	10	24	2	3
Excess feed cost	..	59	0	124	52
Percentage CSE (%)	..	**-8.44**	**-4.51**	**-13.97**	**-6.65**
Consumer NPC (coeff.)	..	**1.09**	**1.05**	**1.17**	**1.07**
Consumer NAC (coeff.)	..	**1.09**	**1.05**	**1.16**	**1.07**
Total Support Estimate (TSE)	..	**8 958**	**7 796**	**11 391**	**7 687**
Transfers from consumers	..	3 460	1 601	5 946	2 832
Transfers from taxpayers	..	6 114	6 290	6 454	5 598
Budget revenues	..	-616	-95	-1 008	-743
Percentage TSE (% of GDP)	..	**0.30**	**0.29**	**0.36**	**0.25**
Total Budgetary Support Estimate (TBSE)	..	**6 171**	**6 280**	**6 582**	**5 651**
Percentage TBSE (% of GDP)	..	**0.21**	**0.23**	**0.21**	**0.18**
GDP deflator (1986-88=100)	..	**261**	**256**	**257**	**269**
Exchange rate (national currency per USD)	..	**0.77**	**0.78**	**0.73**	**0.81**

.. Not available

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. Market Price Support (MPS) is net of producer levies and excess feed cost.
MPS commodities for the United Kingdom are: wheat, barley, oats, rapeseed, sugar, milk, beef and veal, sheep meat, pig meat, poultry and eggs.
The method for estimating MPS changes between 2020 and 2021. Market Price Differentials (MPD) for the United Kingdom are assumed equal to those of the European Union for the years until 2020, while they are calculated from UK domestic and reference prices from 2021.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en.

Description of policy developments

Overview of policy trends

The United Kingdom joined the European Economic Community in 1973, and for several decades its agricultural policies were shaped by reforms to the European Union's Common Agricultural Policy (CAP). The 2009 CAP Health Check allowed Member States to adopt a selection of measures under their Pillar 2 funding. Subsequently, elective measures were also allowed under Pillar 1 of the CAP 2014-20. The United Kingdom nations' choices of elective measures were broadly aligned in this context, while specific payments were sometimes chosen, such as the redistributive payment in Wales and voluntary coupled support in Scotland. The United Kingdom opted to transfer 10.8% of its broad-based direct payments envelope to targeted longer-term expenditure under Pillar 2.

On 31 January 2020, the United Kingdom left the European Union. The CAP defined support to agriculture in the United Kingdom until the transition out of the European Union in 2020. In 2020 there were extensive negotiations with the European Union over future trade and co-operation relations, the preparation and adoption of laws to govern agriculture in the United Kingdom after the withdrawal from the European Union, and bilateral trade liberalisation negotiations with third countries.

In 2021 new agricultural support systems were introduced in England and the devolved governments of Scotland, Wales, and Northern Ireland. While the overall policy framework over the transition period is similar across the four countries, their proposed timing and approaches to implementing the new policies vary substantially.

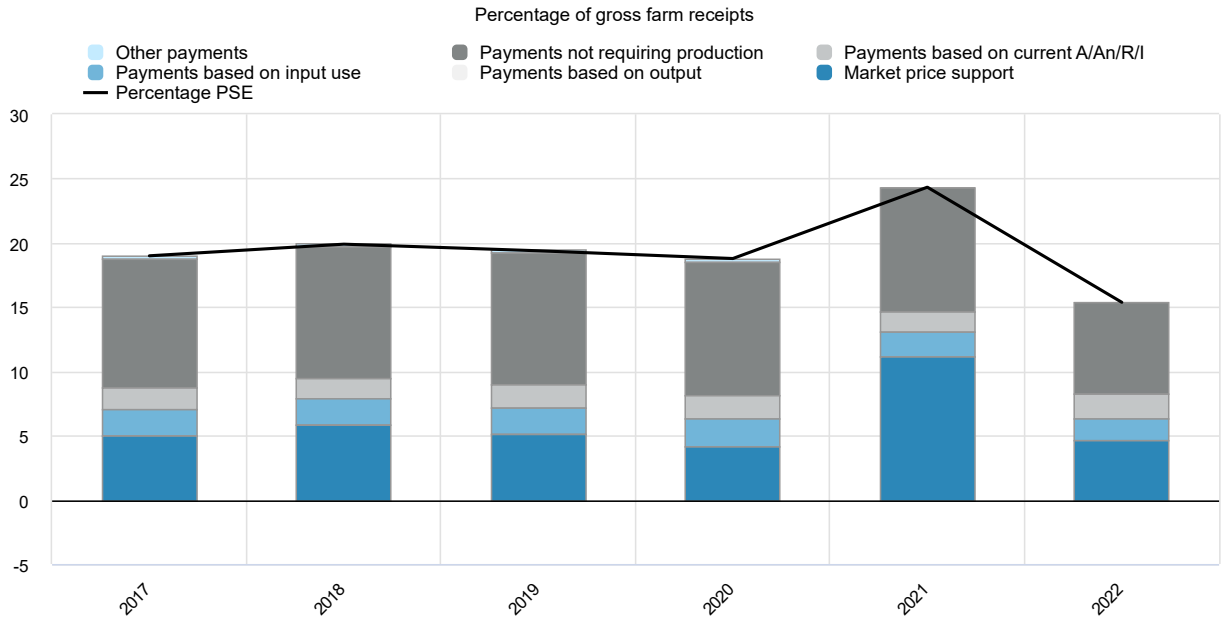
The three devolved governments and England are at various stages of development and implementation of their agricultural transition plans. Alongside the phasing out of the CAP measures, the devolved governments are taking a co-development approach with the sector and stakeholders to design and deliver their new domestic policy instruments.

Table 28.2. United Kingdom: Agricultural policy trends

Period	Broader framework	Changes in agricultural policies
1973-2020	European Union's Common Agricultural Policy (CAP)	Coupled support phase (pre-1992) MacSharry Reform (1992-1999) Agenda 2000 CAP Reform (2000-2002) Fischler Reform (2003-2008) Health Check (2009-2013) 2013 reform (2013-2020)
Since 2020	Transition to new agricultural support system	Phasing out of CAP-style direct payments: • Agriculture Act 2020 (England) • Agriculture (Retained EU Law and Data) (Scotland) Act 2020 • Agriculture (Wales) Bill 2022 • 54 policy decisions on Future Agricultural Policy for Northern Ireland New payments for farmers to provide environmental public goods

The PSE remained stable at around 19% from 2017 to 2020 before increasing sharply to 24% in 2021 and then contracting to 15% in 2022 (Figure 28.4). These fluctuations were mainly driven by changes in market price support (MPS) for livestock products, in particular beef and poultry which are subject to tariffs and tariff-rate quotas.

Figure 28.4. United Kingdom: Level and PSE composition by support categories, 2017 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

Agriculture is a devolved policy area under the Devolution Settlements for England, Scotland, Wales, and Northern Ireland. Following the United Kingdom's departure from the European Union, Ministers of the UK Government, Scottish Government, Welsh Government and the Department of Agriculture, Environment and Rural Affairs in Northern Ireland agreed to develop a non-legislative framework for UK collaboration and co-operation on agricultural support. This builds upon commitments already developed between the parties to work together at a UK level. However, since agricultural policy is devolved, each nation retains the powers to create and implement specific countrywide legislation in relation to agriculture.

In 2019, the United Kingdom became the first major economy to legislate a binding target to reach net-zero emissions by 2050. Since then, it has progressively increased the ambition of its Nationally Determined Contribution (NDC), aiming to reduce GHG emissions to 68% below 1990 levels by 2030. In 2021, the *Net Zero Strategy: Build Back Greener* set out a pathway to reach the net-zero target, including sector-by-sector goals (GOV.UK, 2021[1]). Within this, emissions in the agriculture, forestry, and other land use (AFOLU) sector may need to fall by 17-30% by 2030 and 24-40% by 2035. The Sixth Carbon Budget (2033-37) models a balanced net zero pathway for agricultural emissions to fall from 54.6 $MtCO_2eq$ in 2018 to 39 $MtCO_2eq$ by 2035 and 35 $MtCO_2eq$ by 2050 (Climate Change Committee, 2020[2]). Across the United Kingdom, responsibility to reduce GHG emissions in agriculture is devolved, with each country free to develop its own strategy to reach the target. Scotland and Wales both released separate Net Zero Strategies that detail how they will contribute to the UK's Net Zero target.

England

Three environmental land management (ELM) schemes target improved outcomes relating to biodiversity, water quality, climate change adaptation and mitigation, air quality, natural flood management, coastal erosion risk mitigation, animal health and welfare, as well as access and heritage. ELM schemes are co-designed and developed with farmers, land managers and other key stakeholders through tests and trials.

- The *Countryside Stewardship scheme* is currently Defra's primary agri-environment scheme, with over 30 000 participating farmers and land managers. Countryside Stewardship is made up of eight grants to achieve specific environmental benefits such as increasing biodiversity, improving habitat, expanding woodland areas, improving water quality, air quality and natural flood management. These include: Capital Grants; Higher Tier Capital Grants; Protection and Infrastructure grants; Woodland Management Plan grants; Woodland Tree Health grants; Implementation Plan and Feasibility Study grants; Higher Tier grants; Mid Tier and Wildlife Offers; and the Facilitation Fund. There are plans for expanding and refining the scope of the scheme, so that it pays for a wider range of targeted, specific actions at the right level of ambition to contribute to the environment and climate goals.
- The *Sustainable Farming Incentive pilot* was launched in 2021. Participants in the pilot can select Sustainable Farming Incentive standards to apply to eligible land and are paid according to the level of ambition chosen for each standard. The standards are a set of land management actions that help farmers to create greener landscapes and improve biodiversity, promote cleaner air and water, and guard against environmental risks such as climate change and flooding. More than 800 farmers are implementing the pilot scheme, providing feedback and insights that have helped to influence the scheme's design and implementation. This includes feedback on the application system, simplifying guidance, making standards less prescriptive, communicating all mandatory requirements for land management actions, developing a template soil management plan, and providing payments on a more regular (quarterly) basis.
- The *Landscape Recovery scheme* provides funding for long-term, large-scale projects that help farmers and land managers to produce environmental and climate goods on their land. Defra awards agreements through competitive application rounds focused on the delivery of specific environmental outcomes. A first competitive round was held from February to May 2022, and further rounds are planned in 2023 and 2024.

Support for R&D is a key focus of the new domestic agricultural policy. The Farming Innovation Programme has a budget of GBP 270 million (USD 333 million) and provides farmers in England with funding to develop new, innovative methods and technologies. Since October 2021, Defra has committed over GBP 100 million (USD 123 million) to a series of competitive grants to fund collaborative research projects, stimulate agricultural and horticultural R&D, and develop transformative solutions. The Future Farming Resilience Fund, launched in 2021, helps farmers to navigate changes during the agricultural transition period. The Farming Investment Fund was launched in November 2021 and provides support for farmers to improve productivity and enhance the environment, via two key strands:

- The *Farming Equipment and Technology Fund*, which provides grants of up to GBP 25 000 (USD 31 000) for the adoption of sustainable technologies and practices, such as equipment to reduce soil compaction, minimum tillage, fostering regenerative farming, supporting animal health and welfare, and improved slurry application.
- The *Farming Transformation Fund* provides grants of up to GBP 500 000 (USD 616 000) based on a set of themes including Water Management, Improving Farm Productivity, Adding Value, slurry storage and improving calf housing. These grants are targeted at more complex higher-value investments with the potential to bring transformational improvements to business performance and the environment.

Scotland

The Agriculture (Retained EU Law and data) (Scotland) Act 2020 enables the continuation of CAP schemes beyond 2021, and allows Scotland to maintain policy stability until 2025. However, the powers of the 2020 Act only enable limited simplifications and improvements to the operation of CAP legislation and preclude substantive changes until a new Scottish Agriculture Bill is passed. A new Scottish Agriculture Bill is expected to be introduced in 2023 to replace the CAP with a legal framework to support the future Scottish vision for agriculture.

The Scottish Government continues to deliver on the Update to the Climate Change Plan 2018-2032, published in 2020, which sets out a series of policies and proposals for agriculture to contribute to reaching net-zero emissions by 2045. It commits to a co-development approach, working with stakeholders and farmer-led groups to secure increased uptake of low emission farming measures through new schemes and approaches, the development of environmental conditionality and enhanced advisory support. A key underlying principle is that farmers should continue to receive regular and reliable income support, conditional on the delivery of emissions reductions and biodiversity improvements. The plan sets out a broad range of policies and actions for reducing agricultural emissions, including: the development of new agricultural support measures; providing advice and guidance for farmers who wish to retire; developing peer to peer knowledge transfer initiatives; supporting the dissemination of information and advice on climate change mitigation measures; strengthening policies on nitrogen use; reviewing the storage and application of silage, slurry and liquid digestate; exploring feed additive methane inhibitors and other methods for livestock GHG emissions reduction; exploring options for land use change to multi-faceted land use including forestry, peatland restoration and management and biomass production; supporting the integration of small woodlands; and increasing peatland restoration and management.

Wales

The Basic Payment Scheme (BPS) has continued in Wales and will remain in place until at least the end of 2023, providing stability and certainty to farmers following the United Kingdom's transition out of the European Union. Following a series of consultations on the future of agricultural support in Wales among farmers, rural communities and environmental groups, the Welsh Government proposed the development of a new Sustainable Farming Scheme in 2025 to provide income support to farmers in return for delivering sustainable land management outcomes, such as water quality, biodiversity, and animal health.

The Agriculture (Wales) Bill was introduced to the Welsh Parliament (the *Senedd*) in 2022 and sets out the most important policy changes the agricultural sector has seen in decades, with the main goal of reducing greenhouse gas (GHG) emissions from the food system. The bill sets Sustainable Land Management (SLM) as the overarching framework for future support to agriculture and provides the basis for future support schemes. The four SLM objectives included in the draft bill are:

- To produce food and other goods in a sustainable manner.
- To mitigate and adapt to climate change.
- To maintain and enhance the resilience of ecosystems and the benefits they provide.
- To conserve and enhance the countryside and cultural resources and promote public access to and engagement with them, and to sustain the Welsh language and promote and facilitate its use.

The Welsh Government's Environment (Wales) Act 2016 was updated in March 2021 setting a target of net zero emissions by 2050. The Act requires a system of 5-year carbon budgets and interim targets, which help to provide long-term predictability and ensure that regular progress is made towards the net zero target. Under Section 39 of the Act, Welsh Ministers must prepare and publish a report setting out their proposals for each budgetary period. The Net Zero Wales Carbon Budget 2 (2021-25) sets out an ambitious vision for mitigation action through a series of practices to reduce emissions from soils (e.g. leys and cover crops), livestock (e.g. diets, health, and breeding), and waste and manure management. In

addition, measures have been introduced to release about 10% of agricultural land by 2050 to support tree planting across Wales. The farming sector is a major driving force to achieve these goals with the National Farmers' Union of Wales (NFU Cymru) pledging to reach net zero emissions by 2040.

Northern Ireland

Pillar 1 of the EU CAP provided approximately EUR 327 million (USD 344 million) per annum of direct support to Northern Ireland farmers, all of which was paid out as decoupled support on a per hectare basis. Further measures were delivered under Pillar 2 of the CAP for the Northern Ireland Rural Development Programme. CAP payments have continued during the transition period following the United Kingdom's exit from the European Union, through a series of measures including the Basic Payment Scheme, Greening Payment, Young Farmers' Payment, and Regional Reserve. The budget for CAP Pillar 1 direct payments to farmers in Northern Ireland has been set at GBP 293.3 million (USD 362 million) per annum.

The Department of Agriculture, Environment and Rural Affairs (DAERA) launched the Future Agricultural Policy Framework Portfolio for Northern Ireland on 24 August 2021. The framework sets out the direction of future agricultural policy through four key targets: increased productivity, environmental sustainability, improved resilience, and supply chain functionality. DAERA launched the Consultation on Future Agricultural Policy Proposals for Northern Ireland on 21 December 2021. Based on these consultations the Minister has announced 54 decisions that will contribute to the design of new domestic agricultural policies, as well as targeted support measures.

The Climate Change Act (Northern Ireland) 2022 sets a target of net zero GHG emissions by 2050 for Northern Ireland, along with interim targets including a 48% reduction in net emissions by 2030. Section 23 of the Act requires DAERA to make regulations that set carbon budgets, with the first three carbon budgets for Northern Ireland (2023-2027, 2028-2032 and 2033-2037) due by December 2023. DAERA is required to produce 5-year climate action plans to set out the policies that Northern Ireland will implement to meet the corresponding carbon budget, as well as how the emissions reduction targets will be achieved.

Climate change adaptation policies in agriculture

England

The third Climate Change Risk Assessment, published in 2022, identified 61 risks and opportunities from climate change to the United Kingdom, including "risks and opportunities to agricultural productivity from extreme events and changing climatic conditions". The government is developing its response to all 61 risks and opportunities for the third National Adaptation Plan (NAP3), to be published in 2023 and implemented over the next five years.

Defra has developed a range of measures to improve resilience and adaptation to climate change across the agricultural sector. The three environmental land management schemes provide support for land management practices such as actions to improve soil health and water resources, increase tree planting on farms, and restore coastal habitats to support flood and coastal erosion risk management. Defra also provides support for agricultural innovation through the Farming Innovation Programme, and Defra and Natural England have expanded the Catchment Sensitive Farming Initiative to support farmers in strengthening flood risk management and resilience.

The Farming and Countryside Programme (FCP) has set a target to increase the amount of water stored by the agriculture and horticulture sectors by 66% by 2050 to support food production and protect the environment. The programme offers grants to support on-farm reservoirs and investments in precise irrigation application equipment. It intends to support climate change adaptation by reducing peak flow demand and pressure on local water supplies during summer drought periods, and contributes to statutory Environment Act targets to reduce per capita use of public water supply in England by 20% by 2037-38.

Scotland

Scotland published an update to its 2018-32 Climate Change Plan in December 2020, setting out six outcomes and a series of proposals for agriculture to help reach net-zero emissions by 2045. Some of the outcomes in the Climate Change Plan also contribute to climate change adaptation, such as the development of more productive and sustainable farming practices; information dissemination and knowledge transfer initiatives; support for precision farming and nitrogen-efficient crop varieties and fertiliser practices; measures to improve emissions intensities in livestock production; measures to reduce emissions from the use and storage of manure and slurry; and promoting carbon sequestration through increased planting of trees and hedgerows, and peatland restoration.

The Climate Ready Scotland: Second Scottish Climate Change Adaptation Programme 2019-2024 sets out policies and proposals for climate change adaptation in agriculture. Several programmes and initiatives help Scottish farmers adapt to a changing climate:

- The Farming for a Better Climate provides practical advice and support to help farmers move towards a sustainable, profitable, low-carbon future, adapting to a changing climate and securing farm viability for future generations.
- The Farm Advisory Service provides a one-stop-shop for farmers and land managers to obtain high-quality advice and information on climate change adaptation and mitigation. The service offers practical guides on farm practices that can help adapt to a changing climate, such as identifying and relieving soil compaction, using cover crops to prevent soil loss, water management and nutrient planning and use.
- The Agri-Environment Climate Scheme and the National Test Programme provide payments for land management and sustainable production practices that contribute to climate change adaptation and mitigation.

Various research programmes have been implemented to support climate change adaptation in Scotland's agricultural sector. This includes the development of a free desktop app that provides climate change risk assessments for crop pests and diseases, field trials and modelling of indigenous crop pathogens to inform integrated pest management, spring barley yield maps to assess the potential for new areas to be exploited under climate change, and soil risk maps to identify areas vulnerable to erosion, compaction, leaching, and runoff.

Wales

The report "Prosperity for All: A Climate Conscious Wales" sets out the Welsh government's national plan for climate change adaptation. Actions being taken include tackling land management practices that increase flood risk, promoting good soils and active nutrient management to increase the resilience of soils and water, engaging in research on the risks to ecosystems and agriculture businesses from climate change, and assessing future crop viabilities.

The Welsh Government also provides a range of programmes and support measures to encourage climate change adaptation in the agricultural sector:

- Grant schemes for the horticulture sector contribute towards new equipment that can improve productivity and encourage the adoption of viable alternative species and varieties of plants and trees in the face of climate change.
- A new Organic Conversion Scheme supports farmers as they transition their land away from the use of synthetic fertilisers and pesticides.
- The Growing for the Environment grant scheme encourages the cultivation of crops and pastures that provide an environmental benefit, such as mixed leys, cover crops, and protein crops.

- The Control of Agricultural Pollution Regulations aim to reduce the impacts of pesticides, fertilisers, and manure on water quality, ecosystems, and soils.
- The Red Meat Development Programme and the Dairy Improvement Programme support sustainable practices to improve livestock health and productivity.
- The Capability, Suitability and Climate Programme assessed a range of climate scenarios and the potential for a range of cropping options and undertook research to assess how grass growth might respond under future climate scenarios.

The Welsh government introduced the Agriculture Bill in the *Senedd* in September 2022, establishing Sustainable Land Management as the framework for all future agricultural support. A package of support worth over GBP 227 million (USD 280 million) will support farmers, foresters, land managers and food businesses during the transitional period to the introduction of the Sustainable Farming Scheme. This transitional support will encourage the adoption of low-carbon farming measures, land use change for wider environmental goals, and sustainable food and farming supply chains. Investments in infrastructure to enhance on-farm nutrient management will continue to be a priority, as will supporting small capital works providing environmental improvements, such as new or restored hedgerows. From 2025 onwards, the Sustainable Farming Scheme will support climate change resilience through measures such as agroforestry, the creation and management of woodland, an enhanced biosecurity and animal disease surveillance system, and the development of an Animal Health Improvement Cycle.

Northern Ireland

The Climate Change Act (Northern Ireland) 2022 received royal assent in June 2022 and commits Northern Ireland to net-zero GHG emissions by 2050 while requiring Climate Action Plans to be developed and published every five years by DAERA. A first Climate Action Plan for 2023-27 is currently being developed.

In March 2022, the DAERA Minister announced 54 policy decisions in relation to future agricultural policy in Northern Ireland. The Farming for Carbon measure includes several programmes to encourage climate change adaptation and mitigation, including low carbon emission farming practices, improvements in land use policy, and encouraging carbon farming. For example, the Beef Sustainability Package encourages farmers to improve productivity while reducing emissions, and a Ruminant Genetics Programme encourages the breeding of more environmentally efficient cattle. Applied research and knowledge transfer initiatives will promote the use of urease-inhibitor fertilisers and the optimal timing of fertiliser and slurry applications. Peatland rewetting is being progressed through the Northern Ireland Peatland Strategy, and the Northern Ireland Green Growth Strategy is helping to develop biomethane and hydrogen production from agricultural waste. The launch of a national Soil Nutrient Health Scheme will support large-scale soil sampling across approximately 700 000 fields during 2023-26, providing farmers with information to optimise the application of crop nutrients to their soils and increase soil carbon sequestration.

Domestic policy developments in 2022-23

England

Under the Sustainable Farming Incentive scheme, England launched several new standards in 2022 to pay farmers for environmental improvements relating to arable and horticultural soils, improved grassland soils, and the moorlands. In addition, six new sustainable farming standards will be introduced in 2023 including: the hedgerow standard, the integrated pest management standard, the nutrient management standard, the arable and horticultural land standard, the improved grassland standard and the low input grassland standard.

Improvements have been introduced to the way the Countryside Stewardship scheme operates, including simplifying processes and making inspections fairer and more proportionate. Currently efforts are focused

on streamlining the application process, allowing farmers to manage their agreements more flexibly, improving access to high quality advice, and allowing for more frequent quarterly payments. The scheme will continue the offer currently available through the England Woodland Creation Offer once that scheme has closed. Tenants will benefit from improved access to the scheme and expanded access to higher tier options and agreements. Countryside Stewardship Plus will also be introduced, providing an extra incentive for land managers to collaborate across local areas to deliver bigger and better results. Furthermore, the Environmental Stewardship and Countryside Stewardship agreement holders will be extended up to five years beyond their current end date, providing greater flexibility for agreement holders to leave an existing agreement early if they are offered a place on another environmental scheme and to help ensure a smooth transition to new schemes.

Under the Landscape Recovery scheme, 22 projects were awarded development funding covering over 40 000 hectares. These projects aim to restore nearly 700 km of rivers and to protect and provide habitat for at least 263 species including water vole, otter, pine marten, lapwing, great crested newt, European eel and marsh fritillary. The Landscape Recovery scheme will be opened for further applications in 2023 and 2024, primarily focused on projects of at least 500 hectares targeting net zero, protected sites and habitat creation. This includes landscape-scale projects for creating and enhancing woodland, peatland, nature reserves and protected sites such as ancient woodlands, wetlands, and salt marshes.

Several new grants are now available under the Farming Transformation Fund (a strand of the Farming Investment Fund):

- Water Management grants are offered towards the costs of construction of on-farm water storage reservoirs filled by either peak flow surface water abstraction, borehole or rainwater harvested from buildings, and other on-farm water infrastructure (e.g. irrigation pumps, water metering equipment, software and sensors).
- Improving Farm Productivity grants were launched in January 2022 and encourage the use and adoption of innovative technologies such as robotic and automation equipment, on-farm renewable energy production, LED wavelength-controlled lighting, and the more efficient use of livestock slurries and digestate through acidification.
- Adding Value grants were launched in June 2022 and are designed to support farmers to process and add value to primary agricultural products. Support is provided for the purchase of equipment and machinery, constructing or improving buildings, and innovative technologies for adding value and processing.

The Slurry Infrastructure Grants were launched in December 2022 and help pig, beef and dairy farmers improve or expand slurry storage capacity to six months. The grant aims to help farmers improve the use of organic nutrients, leading to better water quality and reduced air pollution and GHG emissions.

In November 2022 Defra launched pilots to test different approaches to support new entrants to farming to provide more opportunities for new entrants to access land and finance, and establish successful and innovative businesses. These pilots have now finished and are being evaluated to inform next steps on a new entrant support scheme to be announced in the autumn of 2023.

Animal health and welfare is an increasingly important priority. The Animals (Penalty Notices) Act 2022 gives ministers powers to introduce penalty notices for a wide range of animal health and welfare offences in England, and more limited offences in Wales. In addition, Defra launched the Animal Health and Welfare Pathway in partnership with the livestock sector, academics, charities, and experts. Financial assistance to deliver improvements to animal health and welfare was expanded in 2023 with the launch of capital grants ranging between GBP 1 000–GBP 25 000 (USD 1 200–USD 31 000) to co-finance equipment and infrastructure to improve animal health and welfare in the pig, cattle, sheep, and poultry sectors. Funding is also provided for a vet-led team to carry out a yearly on-farm review of animal health and welfare, carry out diagnostic testing, review biosecurity and the use of medicines, and provide advisory services.

Scotland

The CAP schemes continued in Scotland in 2022, facilitated by the Agriculture (Retained EU Law and Data) (Scotland) Act 2020 which enables the continuation of CAP schemes until 2025. The Scottish Government published its Vision for Scottish Agriculture on 2 March 2022. From August to December 2022, a public consultation was held on the powers to be included in a proposed new Scottish Agriculture Bill to replace the CAP.

In November 2022, the Scottish Government outlined their pathway and timeline for the future of agricultural support in Scotland. According to this pathway, a new Scottish Agriculture Bill with a legal framework to replace the rolled over CAP, and the modernisation of agricultural tenancies, will be introduced in the autumn of 2023. The Future Support Framework is to be phased in from 2025 and will enable conditional payments under four tiers:

- Tier 1: a Base Level Direct Payment to provide income support to farmers, which could be made conditional on meeting climate, biodiversity, and business efficiency outcomes.
- Tier 2: an Enhanced Level Direct Payment, which offers additional measures to deliver outcomes relating to efficiencies, reducing GHG emissions and nature restoration.
- Tier 3: an Elective Payment, focused on targeted measures including nature restoration, support for species or habitats, support for organic production, and innovation and supply chain support.
- Tier 4: Complementary Support, to enable the delivery of continuous professional development, advisory services, support for tree planting, woodland management, supply chain support, peatland restoration and management, the agricultural transformation fund, support for areas of natural constraint, and voluntary coupled support for the beef and sheep sectors.

The landscape policies and practices are expected to further evolve in response to climate change with increasing support to woodlands, the restoration of peatlands, and land for growing biomass.

Wales

In July 2022, the Welsh Government published proposals for the Sustainable Farming Scheme (SFS), the main delivery mechanism for future farm support to be introduced in 2025. The proposals include actions to target reduced fertiliser and input use, benchmarking to improve business performance, and other measures to strengthen farmers' resilience. The Sustainable Land Management Framework was set out in September 2022 as the overarching framework for future support for agriculture. Consultations and engagement with stakeholders have taken place regarding the new schemes, and the second phase of co-design is currently being analysed.

Ahead of the introduction of the SFS in 2025, the Welsh Government is continuing direct payments to farmers at the same level as received over the last three years, confirming a budget of GBP 238 million (USD 293 million) for the Basic Payment Scheme (BPS) in 2023 and an indicative budget of GBP 238 million (USD 293 million) for BPS 2024. From January 2022, two-year extensions (to December 2023) have been offered to Glastir Advanced, Commons and Organic contracts, representing a budget commitment of GBP 66.8 million (USD 82.3 million) over two years. The Welsh Government has developed proposals to deliver support during the period up to the introduction of the SFS, with funding delivered to farmers, land managers and associated rural sectors across the following themes:

- Farm scale land management: providing support for on-farm sustainable land management actions.
- On-farm environmental improvements: includes nutrient management, enhancing fuel and feed efficiency, embedding circular economy approaches and encouraging the use of renewable energy.

- On-farm efficiency and diversification: including supporting investments in new technology and equipment and enabling opportunities for agricultural diversification.
- Landscape-scale land management: delivering nature-based solutions at a landscape scale, through a multi-sectoral collaborative approach.
- Woodland and forestry: supporting 43 000 hectares of woodland creation by 2030 and supporting the creation of a timber-based industrial strategy.
- Food and farming supply chains: strengthening the Welsh food and drink industry and improving its reputation for environmentally and socially responsible supply chains.

The next Farming Connect programme began on 1 April 2023 and will continue through to March 2025. The programme helps to disseminate knowledge transfer activities and events to encourage improved environmental performance and the transition of farming businesses away from BPS support.

Northern Ireland

Following the launch of the Future Agricultural Policy Framework Portfolio for Northern Ireland in August 2021, a Consultation on Future Agricultural Policy Proposals for Northern Ireland ran from 21 December 2021 to 15 February 2022. DAERA published the Future Agricultural Policy Decisions for Northern Ireland in March 2022, and the Minister announced 54 policy decisions on future agricultural support. Decisions that are central to this future policy include:

- A Farm Sustainability Payment, which provides income support through area-based payments for plots larger than 5 hectares, with progressive capping of payments above GBP 60 000 (USD 74 000) per farm business.
- A Beef Sustainability Package with two parts: a suckler cow measure and a beef carbon reduction measure. Both measures provide headage payments and are aimed at increasing productivity, improving the efficiency of resource use, and driving down GHG emissions.
- A Farming with Nature Package, providing payments for habitat creation and restoration and biodiversity improvements to land managers with 3 hectares or more of eligible agricultural land (including land under conacre agreements and common land).
- Farming for Carbon measures which encourage low emission farming practices, such as: a Ruminant Genetics Programme to encourage more efficient cattle breeds, the use of urease inhibitor fertilisers, the optimal timing of fertiliser and slurry applications and the establishment of grassland swards with legumes and herbs to reduce fertiliser nitrogen use, peatland rewetting and sustainable management under the Northern Ireland Peatland strategy, and biomethane and hydrogen production from agricultural waste developed through the Green Growth Strategy.
- Investments in agricultural knowledge and innovation systems, and the development of supply chains. A Generational Renewal programme will encourage longer term planning for farm businesses, and DAERA will invest in the initiation of an industry-led Ruminant Genetics Programme.

Implementation of the Soil Nutrient Health Scheme continued with the opening of the application period for the second of four zones. The publication of soil nutrient results and training on their interpretation and use for Zone 1 applicants commenced in February 2023.

Domestic policy responses to Russia's war of aggression in Ukraine

In response to the rising cost of fertilisers, the government is monitoring the security and stability of fertiliser and other supply chains and collaborating closely across government and devolved administrations as well as with industry. In May 2022 Defra hosted Fertiliser Industry Taskforce meetings with key industry figures including the National Farmers Union (NFU), the Agriculture and Horticulture Development Board (AHDB)

and the Agricultural Industries Confederation (AIC), and devolved administrations, and continues to collaborate with industry on fertiliser price transparency.

In 2022 the Basic Payment Scheme payments were made in two instalments to support farmers by giving them greater liquidity. Other actions taken include changes to guidance on farmers using manures, increased grants for farmers and growers, and boosting R&D expenditure. AHDB published guidance, advice, and webinar recordings to help farmers cope with high fertiliser prices. AHDB also published reports commissioned by Defra, modelling the potential impact on arable and grassland yields of fertiliser price rises. Additionally, Defra is working with food retailers and producers to tackle high food price inflation (e.g. by maintaining "value range" food items, price matching and price freezing measures). Furthermore, the government is providing GBP 26 billion (USD 32 billion) in cost of living support payments to over 8 million households across the United Kingdom for 2023-24.

The Energy Bills Discount Scheme runs from 1 April 2023 to 31 March 2024, replacing the Energy Bill Relief Scheme which expired at the end of March 2023. This has three parts: a baseline discount for eligible business customers in Great Britain and Northern Ireland; a higher level of support for Energy and Trade Intensive Industries – including some food production and manufacturing businesses; and a Heat Network discount for heat networks with domestic end customers.

In March 2022, the Scottish Government established a Short Life Food Security and Supply Taskforce bringing together government and industry. The purpose of the Taskforce was to monitor and respond to any potential disruption to food security and supply resulting from the impact of the ongoing conflict in Ukraine. The Taskforce reported in June 2022 and delivered a series of recommendations to strengthen overall food security in Scotland. The recommendations covered business and supply chain support, future national food security structures, and reserved issues to be raised with the UK Government. All of the recommendations have since been delivered including the establishment of the new Food Security Unit within the Scottish Government. The Food Security Unit is currently focused on developing an evidence-based system to monitor risks or threats to the supply chain to help mitigate future shocks and impacts on food security.

Wales launched the Small Grants – Efficiency scheme in May 2022, providing grants of between GBP 1 000–GBP 12 000 (USD 1 200–USD 14 800) to support capital investments in new equipment and technology to increase technical performance, on-farm production efficiencies and resource efficiencies. Officials have engaged closely with the UK Agriculture Market Monitoring Group (UKAMMG) to monitor farm input costs, co-operating through the mechanism of the Provisional Common Framework for Agricultural Support. The Welsh Government has also provided advice to farmers using an online resource hub on the best application of fertiliser and fuel efficiency.

In Northern Ireland, a scheme worth up to GBP 1.6 million (USD 2 million) has been put in place to support pig producers who have been financially impacted by rising input costs. To assist farmers with cash flow, DAERA accelerated the issuance of direct payments worth GBP 293 million (USD 361 million), providing them starting 1 September 2022, six weeks earlier than previous years. In addition, the Rising Costs Industry Taskforce was established in April 2022. Led by the College of Agriculture, Food and Rural Enterprises with cross-industry representation, the taskforce provides advice and practical support to farmers on ways to manage rising costs, such as using fertilisers effectively.

Furthermore, the priority rating of 43 items eligible for grant aid through DAERA's Farm Business Improvement Scheme (Capital) – Tier 1, Tranche 4 was increased to reflect their potential to assist in addressing the issues of higher feed, fuel and fertiliser costs as a result of the war in Ukraine. The items fall under several categories including precision farming, grassland management, energy efficiency, silage quality, feed efficiency, sward renovation or reseeding, and reduced feed costs.

Trade policy developments in 2022-23

The Australia-United Kingdom Free Trade Agreement was signed on 17 December 2021. Following ratification by the UK Parliament and Royal assent on 23 March 2023, the agreement entered into force on 31 May 2023. The agreement provides enhanced market access for UK agricultural and food exports. It will also ease the movement of skilled workers between Australia and the United Kingdom, and establishes enhanced technical collaboration on biosecurity, animal welfare and antimicrobial resistance.

The New Zealand-United Kingdom Free Trade Agreement was signed on 28 February 2022 and entered into force on 31 May 2023. The agreement removes customs duties for a range of food products, such as wine, honey, onions, kiwifruit, and a range of dairy products. Dairy and horticultural products will be 100% tariff free within seven years of the agreement's entry into force. Trade in other products, such as beef and sheep meat, will be liberalised over a longer time frame of 10 years and 15 years respectively.

On 31 March 2023, the United Kingdom concluded negotiations to join the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), a free trade agreement (FTA) including 11 members: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Viet Nam. CPTPP membership will improve trade opportunities with all countries in the bloc, including those with whom the United Kingdom has an existing bilateral trade deal. The negotiation outcome will be set out in a Protocol of Accession that is now undergoing legal review. This document and the market access schedules will be published at signature. The agreement provides the United Kingdom with tariff-free access for goods exports (including agricultural and food products) in several markets, as well as access to preferential tariffs for several protected products in certain CPTPP members. This includes increased cheese quotas in Canada, staged tariff liberalisation on dairy exports to Chile, access to tariff preferences for dairy and cereals exports to Japan, reduced tariffs for chocolate, sugar confectionery and whisky exports to Malaysia, access to preferential tariffs for dairy, chocolate and sugar confectionery, beef, pork and poultry in Mexico, staged tariff liberalisation on beef and poultry exports to Peru, and the elimination of tariffs on chocolate and pork exports to Viet Nam.

Under the Australia and New Zealand FTAs and the CPTPP tariff liberalisation for sensitive goods will be phased in over time. The United Kingdom's most sensitive products such as beef and sheep meat will be subject to measures including tariff rate quotas (TRQs) and product specific safeguards. These measures will limit the volume of duty-free imports permitted and in the case of beef and sheep meat will be in place for 15 years. An additional general bilateral safeguard mechanism will also be in place for all products, providing a temporary safety net for domestic producers if they face serious injury, or the threat of serious injury, from increased imports as a direct consequence of the FTAs. This protection will last for a product's tariff liberalisation period plus five years to allow domestic producers time for readjustment.

Trade policy responses to Russia's war of aggression in Ukraine

In May 2022, an agreement in the form of an exchange of letters was reached between the United Kingdom and Ukraine, allowing for a temporary elimination of all customs duties on goods for a period of 12 months. The agreement was expected to increase exports of Ukrainian agricultural products to the United Kingdom, including flour, dairy products, poultry, and tomato paste. It was implemented by amending the Political, Free Trade and Strategic Partnership Agreement between the United Kingdom of Great Britain and Northern Ireland and Ukraine. In March 2023, in parallel to the signature of the UK-Ukraine Digital Trade Agreement, the United Kingdom pledged to extend the removal of tariffs on all Ukrainian products until March 2024.

Contextual information

Agriculture accounts for a relatively small share of the United Kingdom's economy, representing less than 1% of GDP and total employment, which is significantly less than the OECD average. The share of livestock in total agricultural production is 60%, and the share of crop production is 40% (Table 28.3).

Table 28.3. United Kingdom: Contextual indicators

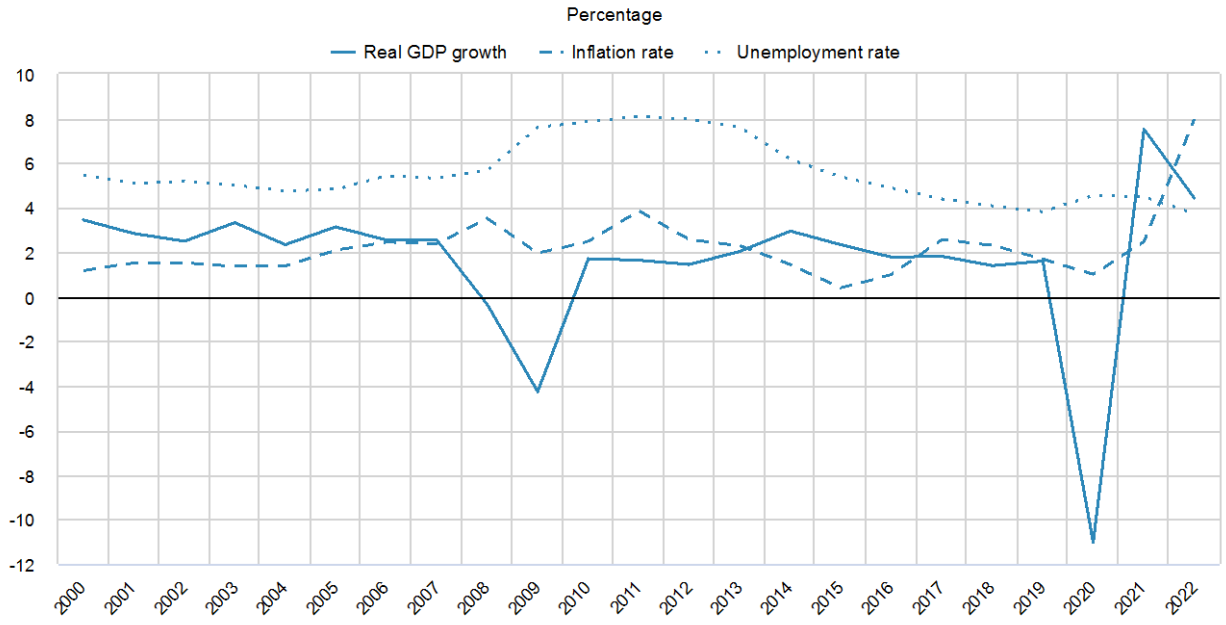
	United Kingdom		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	1 563	3 352	3.9%	2.7%
Population (million)	59	67	1.4%	1.3%
Land area (thousand km^2)	242	242	0.3%	0.3%
Agricultural area (AA) (thousand ha)	16 964	17 259	0.6%	0.6%
			All countries[1]	
Population density (inhabitants/km^2)	242	277	52	64
GDP per capita (USD in PPPs)	26 542	49 765	9 350	23 401
Trade as % of GDP	20.0	18.1	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	0.9	0.8	2.9	3.9
Agriculture share in employment (%)	1.5	0.9	-	-
Agro-food exports (% of total exports)	5.2	6.2	6.2	7.9
Agro-food imports (% of total imports)	7.8	9.4	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	41	40	-	-
Livestock in total agricultural production (%)	59	60	-	-
Share of arable land in AA (%)	35	35	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

Real GDP growth has remained steady over the past two decades, ranging between 1.4% and 3.5%, with the exception of the recession following the global financial crisis in 2008-09, and significant contraction linked to the COVID-19 pandemic which started in 2020 (Figure 28.5). The easing of health measures and high level of pent-up consumer demand resulted in a sharp rebound with real GDP growth reaching 7.5% in 2021 and remaining strong at 4.4% in 2022.

The unemployment rate was steady at around 5% in the early 2000s, and increased to more than 8% in the aftermath of the global financial crisis. Unemployment has been declining steadily since 2011 and reached a low point of 3.7% in 2022. In contrast, inflation rose to a multi-decade high of 8% in 2022, driven by rising energy and food prices, supply chain bottlenecks, and strong consumer demand.

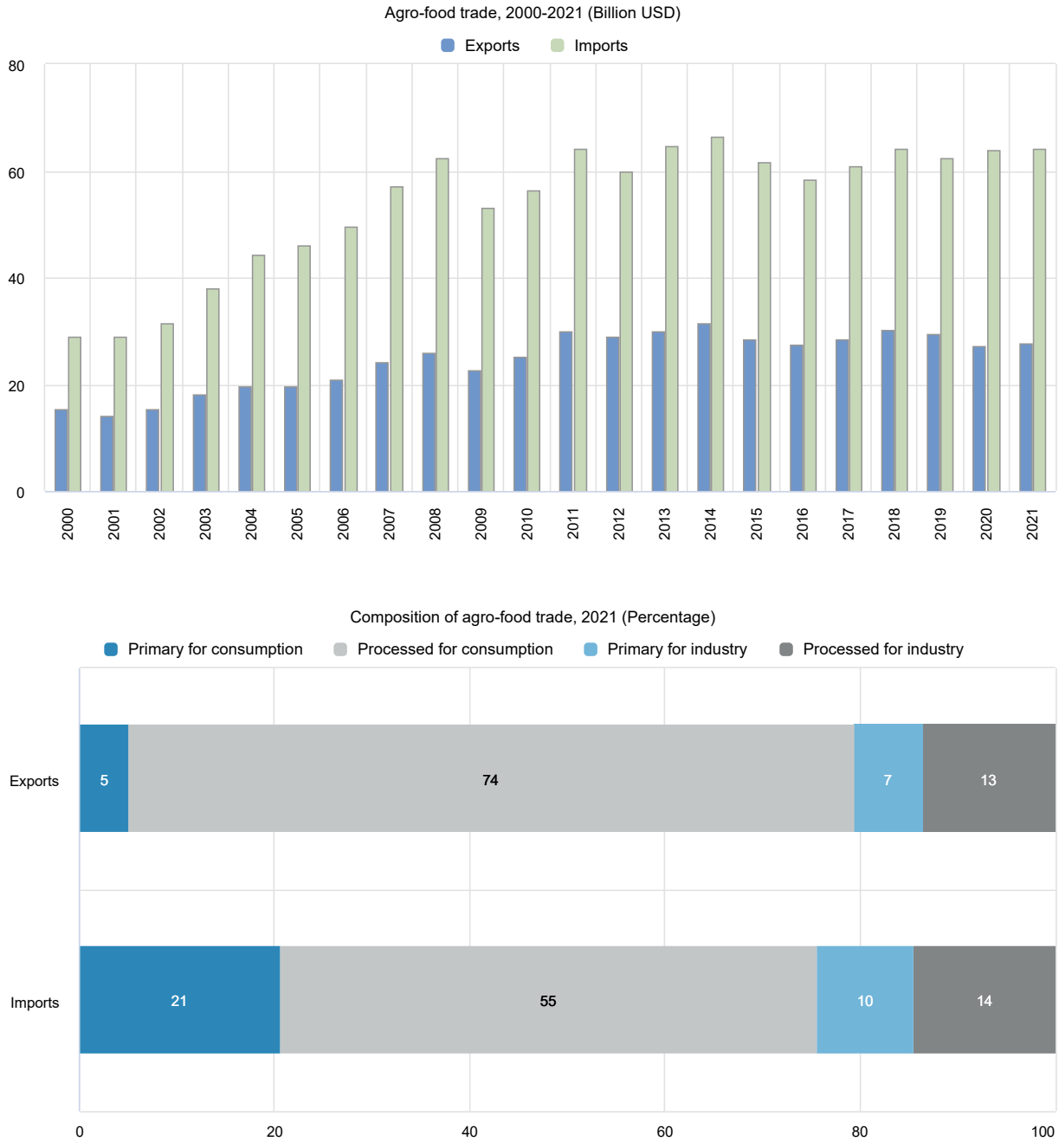
Figure 28.5. United Kingdom: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

The United Kingdom is a net importer of agricultural and food products (Figure 28.6). Over the last two decades, the share of agro-food exports in total exports has increased to 6%, while agro-food imports now account for more than 9% of total imports. The composition of agro-food trade in 2020 shows that the majority (74%) of exports are processed goods for consumption, while 14% of goods exported are processed for industry. In terms of imports, the majority (55%) are processed goods for consumption, followed by primary goods for consumption which account for 21% of imports.

Figure 28.6. United Kingdom: Agro-food trade



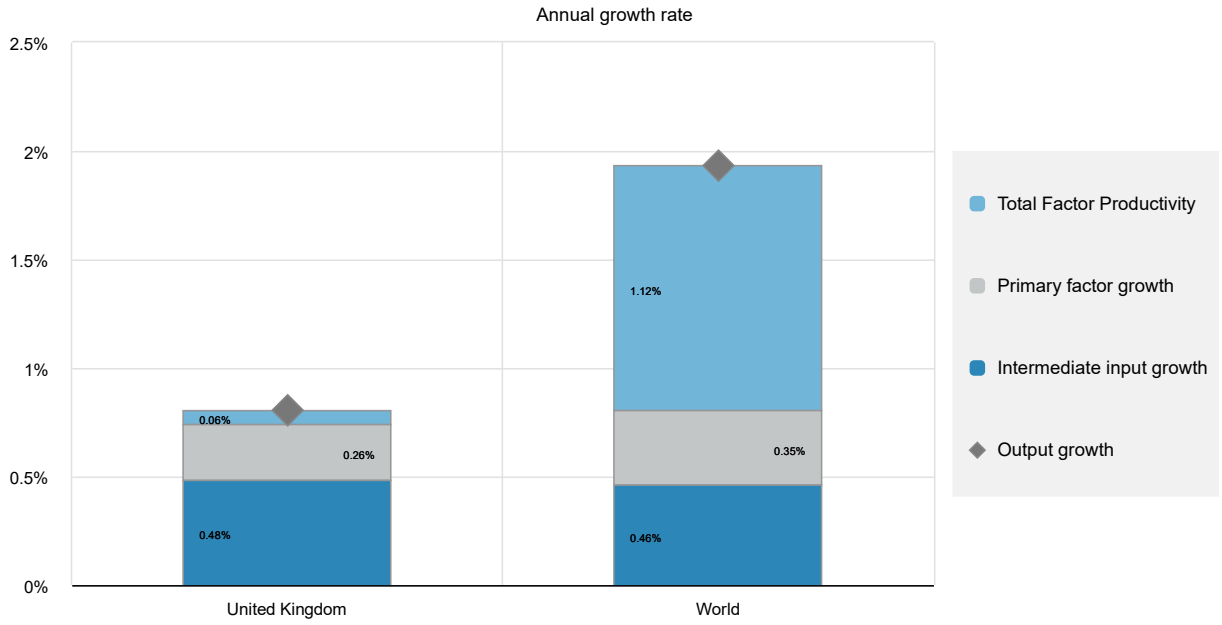
Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Agricultural output growth averaged 0.8% per year between 2011-20, less than half of the global average (Figure 28.7). Total factor productivity (TFP) growth has been close to zero over the past decade, and production growth was entirely driven by increased use of both primary factors and intermediate inputs.

Environmental indicators point to improvements over the past two decades (Table 28.4). The nitrogen balance fell by around 20%, the phosphorous balance declined by about 40%, and the share of agriculture

in water abstractions (14%) is significantly below the OECD average (50%). However, the sector's share of total energy use and of GHG emissions grew over the same period and the nitrogen balance remains more than twice the OECD average. Agricultural GHG emissions have not fallen as quickly as other sectors (in particular energy), and now equate to about 10% of total GHG emissions in the United Kingdom, slightly below the OECD average.

Figure 28.7. United Kingdom: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 28.4. United Kingdom: Productivity and environmental indicators

	United Kingdom		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	0.4%	0.1%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	107.0	86.1	32.2	30.4
Phosphorus balance, kg/ha	10.0	5.8	3.3	3.0
Agriculture share of total energy use (%)	0.8	1.1	1.7	2.0
Agriculture share of GHG emissions (%)	6.5	10.0	8.6	10.5
Share of irrigated land in AA (%)	0.8	0.4	-	-
Share of agriculture in water abstractions (%)	..	14.2	46.6	49.7
Water stress indicator	6.2	4.3	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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Climate Change Committee (2020), *The Sixth Carbon Budget: Agriculture and land use, land use change and forestry*, https://www.theccc.org.uk/wp-content/uploads/2020/12/Sector-summary-Agriculture-land-use-land-use-change-forestry.pdf. [2]

GOV.UK (2021), *Net Zero Strategy: Build Back Greener*, https://www.gov.uk/government/publications/net-zero-strategy. [1]

29 United States

Support to agriculture

Support to agricultural producers in the United States declined in 2022 as temporary payment programmes connected to the COVID-19 pandemic wound down. Support has been below the OECD average for many years, and producer support averaged 9% of gross receipts in 2020-22, well below the 20% of the mid-1980s and early 2000s. Policy reforms beginning in the 1980s progressively reduced the level of support and the prominence of price-based supports in the policy mix. The share of potentially most-distorting transfers was 15% in 2020-22, also below the OECD average and well below peak values. Prices received by farmers in 2020-22 were on average only 1% higher than in world markets, compared to 11% in 2000-02. This gap is mainly due to market price support (MPS) from border protections (including tariff rate quotas) for sugar. Producer prices of most commodities align with border prices, and the value of budgetary transfers directed at specific commodities is usually less than 10% of their gross farm receipts.

While MPS has declined, budgetary support has increased, covering mainly risk-management, crop insurance, and more recently, emergency compensation payments. The counter-cyclical nature of budgetary support links it to market price developments such that periods of high commodity prices (as in 2012-13) see lower levels of support. Domestic commodity prices have risen again in recent years, lowering overall support despite additional spending on disaster-relief programmes related to drought and other exceptional events.

US domestic food-assistance programmes that support consumers account for nearly half of total U.S. support to agriculture. Expenditures for general services (General Service Support Estimate, GSSE) equalled 2.6% of the value of production in 2020-22, below the OECD average of 3.4%, with the largest component (30%) related to institutional infrastructure for crop insurance. Agricultural knowledge transfer and marketing and promotion are the next largest components. Total support to agriculture was 0.5% of Gross Domestic Product (GDP).

Recent policy changes

Two temporary programmes were launched in 2022 to compensate for losses incurred from natural disasters in 2020 and 2021. The Emergency Livestock Relief Program (ELRP) Phase One provided additional early relief payments to ranchers because of increases in feed costs in 2021. The Emergency Relief Program (ERP) covered losses due to qualifying natural disasters in 2020 and 2021.

The Partnerships for Climate-Smart Commodities initiative launched in 2022, providing USD 3.1 billion for 141 pilot projects to help producers implement climate-smart production practices, verify greenhouse-gas (GHG) reduction benefits, and expand markets for resulting climate-smart commodities.

Various US Department of Agriculture (USDA) conservation programmes – including the Environmental Quality Incentives Program (EQIP), Regional Conservation Partnership Program (RCPP), Conservation Stewardship Program (CSP), Agricultural Conservation Easement Program (ACEP), and the Conservation Technical Assistance (CTA) Program – received substantial funding infusions with the passage of the

Inflation Reduction Act (IRA), which provided approximately USD 20 billion in new spending over ten years, designated to support adoption of specific practices with climate benefits in these programmes.

Additional measures were launched in 2022 to improve equity for underserved communities, including investments in Equity Conservation Cooperative Agreements, funding outreach and assistance programmes with money appropriated in the American Rescue Plan Act of 2021 (P.L. 117-2), and the release of the USDA Equity Action Plan.[1]

The Consolidated Appropriations Act (CAA) 2023 was signed into law in December 2022. It authorises funding for new *ad hoc* disaster-assistance and a programme to facilitate voluntary environmental markets, allowing more private funding for public-private partnerships to address specific climate or environmental priorities, and reauthorising the Pesticide Registration Improvement Act.

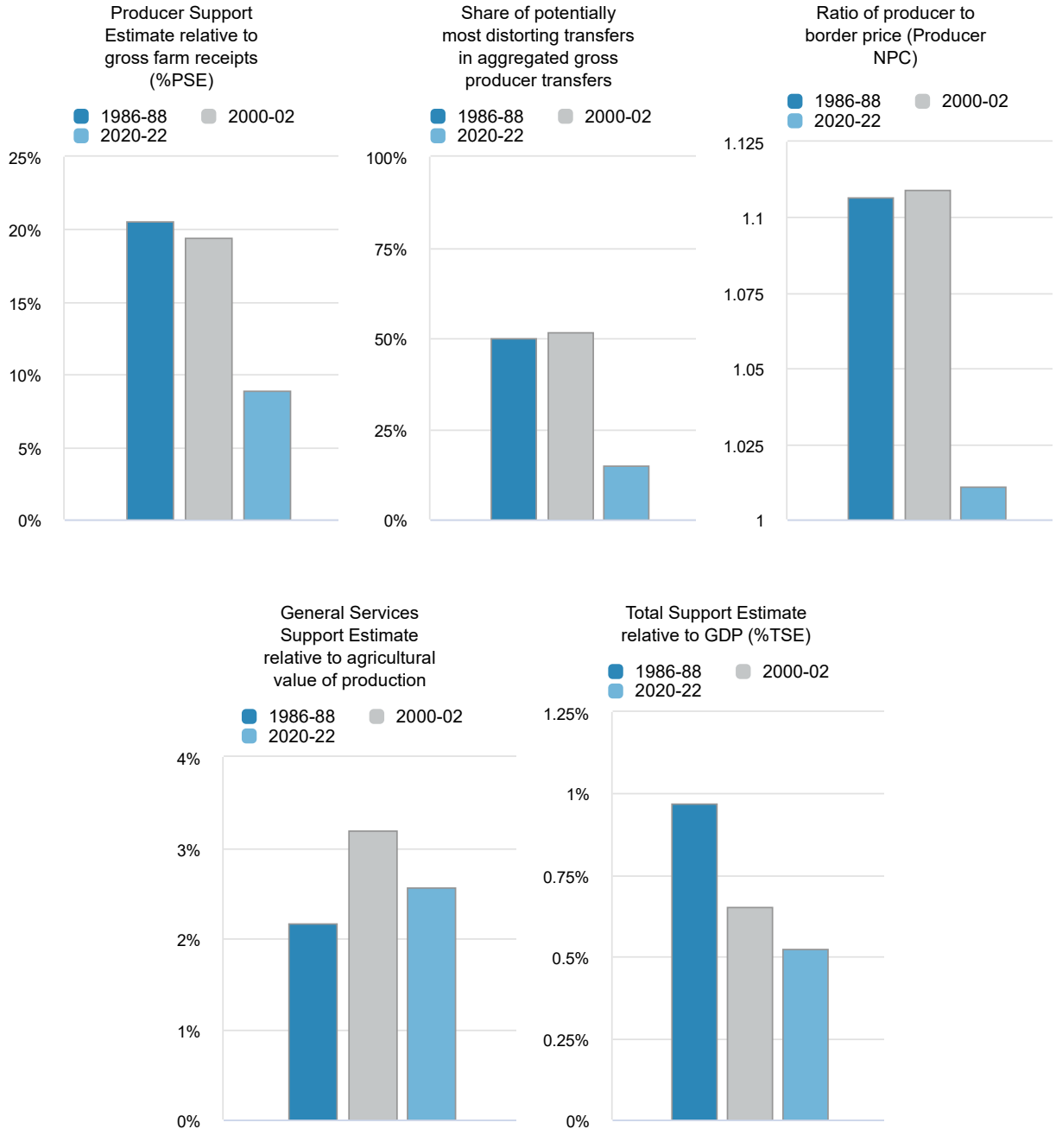
Assessment and recommendations

- Climate-change adaptation policies are well-developed and comprehensive. They cover a spectrum of activities, including forecasting, preparedness, recovery, and changes in practices. Climate change adaptation is being integrated into research and development efforts, and activities are underway to translate that information for farmers and ranchers who need to deal with weather emergencies and a changing climate. Prioritisation of climate adaptation should continue to ensure mainstreaming of climate risk and adaptation in all USDA programmes.
- USDA Climate Hubs are good examples of how decision-making and information tools can be tailored to the needs of the sector according to region and natural hazard. The hubs can integrate consideration of climate change impacts into farm programmes by raising stakeholders' awareness and providing analytical support.
- Several layers of risk-management programming are available to farmers – some general and some for specific commodities. Longstanding federal crop insurance exists alongside temporary disaster programmes that were deployed in response to the COVID-19 pandemic, value-chain disruptions, and drought. While risk-management is an important component of climate-adaptation policy and resilience, too-strong an emphasis on protecting farmers from revenue declines (the absorption capacity) can slow long-term adaptation and transformation of production practices. More attention should thus go to ensuring subsidy rates and other relevant programme parameters do not create a guaranteed return or income stream on the producer's premium, and that insurance and disaster programmes provide appropriate incentives for preparedness and long-term adaptation.
- Policies to improve services to historically underserved or vulnerable communities and improve equity in programme delivery have continued to expand since their introduction. Focussing on the needs of underserved or vulnerable communities can increase the resilience and diversity of the farming community and improve environmental justice. These efforts should be mainstreamed into agricultural policy by systematically evaluating and improving the way all agricultural programmes affect equity and diversity in the farm sector.
- Sugar is the only US commodity in the Producer Support Estimate (PSE) that receives MPS. At about 43% of revenue, the amount is significant. Current in-quota tariff allocation of raw sugar to trading partners is based on a 1975-81 reference period. This allocation should be revised and gradually increased to provide improved opportunities for countries in development to trade with the United States.
- Increased funding to conservation programmes provided under the IRA is an important step in orienting support towards environmental objectives, including for climate-change mitigation and adaptation. Given the high demand for participation in these programmes, future farm bills should maintain this funding level after the end of IRA spending. The increased funding should pay careful

attention to ensuring environmental additionality, where actions by producers are relevant to local environmental concerns and deliver verifiable improvements. Reallocating spending currently directed at commodity programmes is a budget-neutral way to do this.

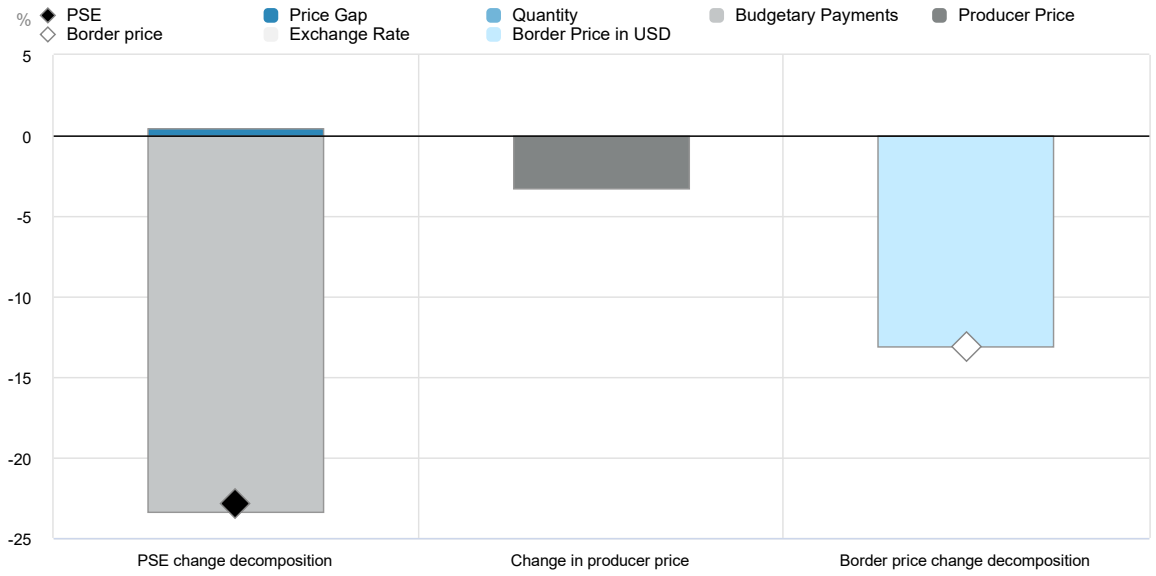
- While aggregate environmental performance (measured by nitrogen and phosphorus balances) is in line with the OECD average, local hotspots of pollution remain problematic despite federal and state programmes to encourage best management practices. Solutions will require a willingness to experiment with new options and co-ordination between regions when the sources and impacts of pollution emissions cross political boundaries.

Figure 29.1. United States: Development of support to agriculture



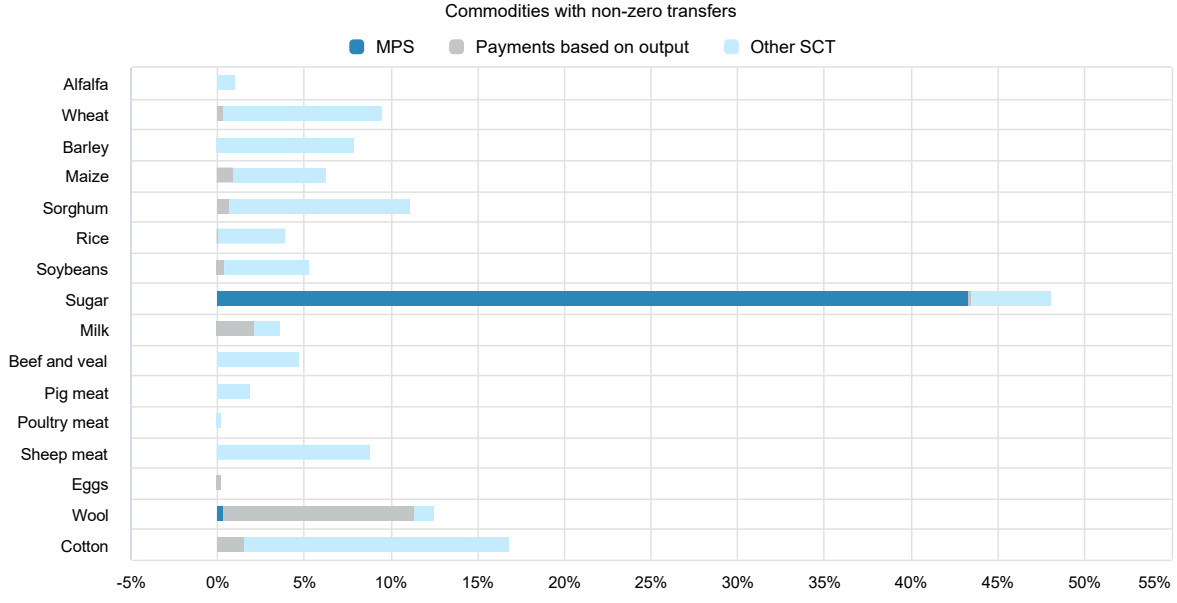
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 29.2. United States: Drivers of the change in PSE, 2021 to 2022



Note: % change of nominal Producer Support Estimate expressed in national currency.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 29.3. United States: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 29.1. United States: Estimates of support to agriculture

Million USD

	1986-88	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**143 469**	**193 454**	**455 239**	**377 555**	**459 266**	**528 897**
***of which:** share of MPS commodities (%)*	78.31	73.64	79.97	77.38	80.68	81.84
Total value of consumption (at farm gate)	**124 148**	**164 683**	**365 421**	**299 891**	**361 338**	**435 033**
Producer Support Estimate (PSE)	**34 253**	**43 724**	**44 089**	**38 369**	**53 011**	**40 887**
Support based on commodity output	14 031	19 648	4 919	8 537	3 670	2 549
Market Price Support[1]	10 922	12 467	2 207	1 947	2 214	2 462
Positive Market Price Support	11 008	12 467	2 207	1 947	2 214	2 462
Negative Market Price Support	-86	0	0	0	0	0
Payments based on output	3 108	7 181	2 712	6 591	1 457	87
Payments based on input use	7 061	7 572	10 066	9 137	9 526	11 535
Based on variable input use	3 697	3 091	2 265	1 783	1 894	3 117
with input constraints	739	168	712	643	483	1 011
Based on fixed capital formation	1 233	361	2 038	2 056	1 950	2 109
with input constraints	1 233	358	1 910	2 038	1 855	1 838
Based on on-farm services	2 131	4 120	5 763	5 299	5 683	6 309
with input constraints	349	677	1 811	1 687	1 811	1 936
Payments based on current A/An/R/I, production required	12 231	5 655	22 492	16 154	28 902	22 421
Based on Receipts / Income	912	2 055	2 729	2 327	3 087	2 773
Based on Area planted / Animal numbers	11 319	3 600	19 763	13 827	25 815	19 648
with input constraints	2 565	1 570	19 738	13 773	25 806	19 636
Payments based on non-current A/An/R/I, production required	0	0	1 010	2	2 703	324
Payments based on non-current A/An/R/I, production not required	338	8 789	3 707	2 623	6 295	2 204
With variable payment rates	0	3 969	3 707	2 623	6 295	2 204
with commodity exceptions	0	3 969	3 707	2 623	6 295	2 204
With fixed payment rates	338	4 819	0	0	0	0
with commodity exceptions	0	4 819	0	0	0	0
Payments based on non-commodity criteria	592	2 061	1 895	1 915	1 915	1 854
Based on long-term resource retirement	592	2 050	1 881	1 909	1 892	1 842
Based on a specific non-commodity output	0	0	0	0	0	0
Based on other non-commodity criteria	0	11	14	7	23	12
Miscellaneous payments	0	0	0	0	0	0
Percentage PSE (%)	**20.54**	**19.46**	**8.87**	**9.27**	**10.39**	**7.21**
Producer NPC (coeff.)	**1.11**	**1.11**	**1.01**	**1.02**	**1.01**	**1.01**
Producer NAC (coeff.)	**1.26**	**1.24**	**1.10**	**1.10**	**1.12**	**1.08**
General Services Support Estimate (GSSE)	**3 108**	**6 164**	**11 644**	**9 536**	**11 823**	**13 573**
Agricultural knowledge and innovation system	1 129	1 805	2 888	2 726	2 924	3 013
Inspection and control	372	685	1 321	1 271	1 300	1 391
Development and maintenance of infrastructure	13	461	3 587	2 296	3 463	5 002
Marketing and promotion	495	957	2 026	1 586	2 231	2 260
Cost of public stockholding	0	107	2	1	2	4
Miscellaneous	1 100	2 149	1 821	1 656	1 903	1 903
Percentage GSSE (% of TSE)	**6.55**	**8.89**	**9.56**	**9.44**	**9.07**	**10.12**
Consumer Support Estimate (CSE)	**-1 647**	**5 191**	**61 404**	**48 832**	**60 980**	**74 400**
Transfers to producers from consumers	-10 379	-12 173	-2 207	-1 946	-2 213	-2 462
Other transfers from consumers	-1 651	-2 061	-2 508	-2 328	-2 376	-2 821
Transfers to consumers from taxpayers	10 089	19 425	66 119	53 106	65 570	79 682
Excess feed cost	294	0	0	0	0	0
Percentage CSE (%)	**-1.44**	**3.57**	**20.52**	**19.79**	**20.62**	**20.94**
Consumer NPC (coeff.)	**1.11**	**1.09**	**1.01**	**1.01**	**1.01**	**1.01**
Consumer NAC (coeff.)	**1.01**	**0.97**	**0.83**	**0.83**	**0.83**	**0.83**
Total Support Estimate (TSE)	**47 450**	**69 314**	**121 852**	**101 011**	**130 404**	**134 142**
Transfers from consumers	12 030	14 234	4 715	4 274	4 589	5 282
Transfers from taxpayers	37 071	57 141	119 645	99 065	128 190	131 681
Budget revenues	-1 651	-2 061	-2 508	-2 328	-2 376	-2 821
Percentage TSE (% of GDP)	**0.97**	**0.65**	**0.52**	**0.48**	**0.56**	**0.53**
Total Budgetary Support Estimate (TBSE)	**36 528**	**56 847**	**119 645**	**99 065**	**128 190**	**131 680**
Percentage TBSE (% of GDP)	**0.75**	**0.54**	**0.51**	**0.47**	**0.55**	**0.52**
GDP deflator (1986-88=100)	**100**	**139**	**210**	**199**	**208**	**222**
Exchange rate (national currency per USD)	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.
1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for the United States are: wheat, maize, barley, sorghum, alfalfa, cotton, rice, soybean, sugar, milk, beef and veal, sheep meat, wool, pig meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

The US Congress passes legislation that sets national agriculture, nutrition, conservation, and forestry policy, commonly referred to as the "Farm Bill". The Farm Bill is an omnibus bill that is renewed on a regular basis, about every five years. Since 1933, the United States has passed 18 farm bills, the most recent being the Agricultural Improvement Act of 2018.

Historically, the commodity support component of Farm Bills focused on stabilising and boosting farm income to aid economic recovery and development during the Depression and post-war eras through price and income support for a specified set of commodities, including but not limited to corn, soybeans, wheat, cotton, rice, peanuts, dairy, and sugar (OECD, 2011[1]). Over time, Farm Bills expanded in scope: the 1973 Farm Bill first included a nutrition title while subsequent farm bills added titles on policy areas such as agricultural trade, farm credit, rural development and crop insurance. The 1985 Farm Bill added conservation provisions; the 1990 Farm Bill, organic agriculture; the 1996 Farm Bill, agricultural research; the 2002 Farm Bill, bioenergy; and the 2008 Farm Bill, horticulture and local food systems (Congressional Research Service, 2019[2]).

Agricultural policy reform in the United States has been characterised by a significant shift towards less production- and trade-distorting forms of support. Commodity programmes originally supported farm incomes through a combination of taxpayer-funded production payments and supply management in the form of acreage limits and commodity storage programmes. The Food Security Act of 1985 introduced changes that moved farmers towards more market orientation by reducing price supports in favour of direct payments, introducing greater planting flexibility and giving more attention to export opportunities for US farm products (OECD, 2011[1]).

Reforms continued with subsequent Farm Bills. The 1996 Farm Bill[2] re-designed income support programmes by replacing target prices, price-based deficiency payments and acreage controls with historically based direct payments independent of current production. A series of ad hoc emergency top-up payments supplemented the historically based payments implemented under the 1996 Farm Bill to provide additional assistance in the face of low commodity prices. These ad hoc payments were institutionalised under the 2002 Farm Bill[3] as counter-cyclical payments linked to the historically based direct payments, and continued under the 2008 Farm Bill[4] (OECD, 2011[1]). The 2014 Farm Bill ended these direct and counter-cyclical payments but continued direct income support based on historical production with programmes triggering payments based on either reference prices or revenue benchmarks. It also ended the dairy price support programme, replacing it with a premium-based milk-to-feed margin protection programme. The 2018 Farm Bill continued these programmes with only small adjustments (Table 29.2).

The largest of the farm programmes in the Farm Bill, the Federal Crop Insurance Programme (FCIP), was established in the 1930s to cover yield losses from most natural causes.[5] The programme's current form was authorised by the Federal Crop Insurance Act of 1980 and modified by subsequent Farm Bills and other legislation. The 1980 Act introduced federal premium subsidies and brought in private insurance companies (Approved Insurance Providers, or AIPs) to deliver crop insurance policies. The catastrophic (CAT) coverage level was created in 1994, under which 100% of the premium is subsidised and producers pay a fee for coverage of yield loss greater than 50% at 55% of the base commodity price.[6] The Agricultural Risk Protection Act of 2000 expanded the geographic availability of insurance, increased premium subsidy levels, and removed restrictions on livestock insurance products.

Table 29.2. United States: Agricultural policy trends

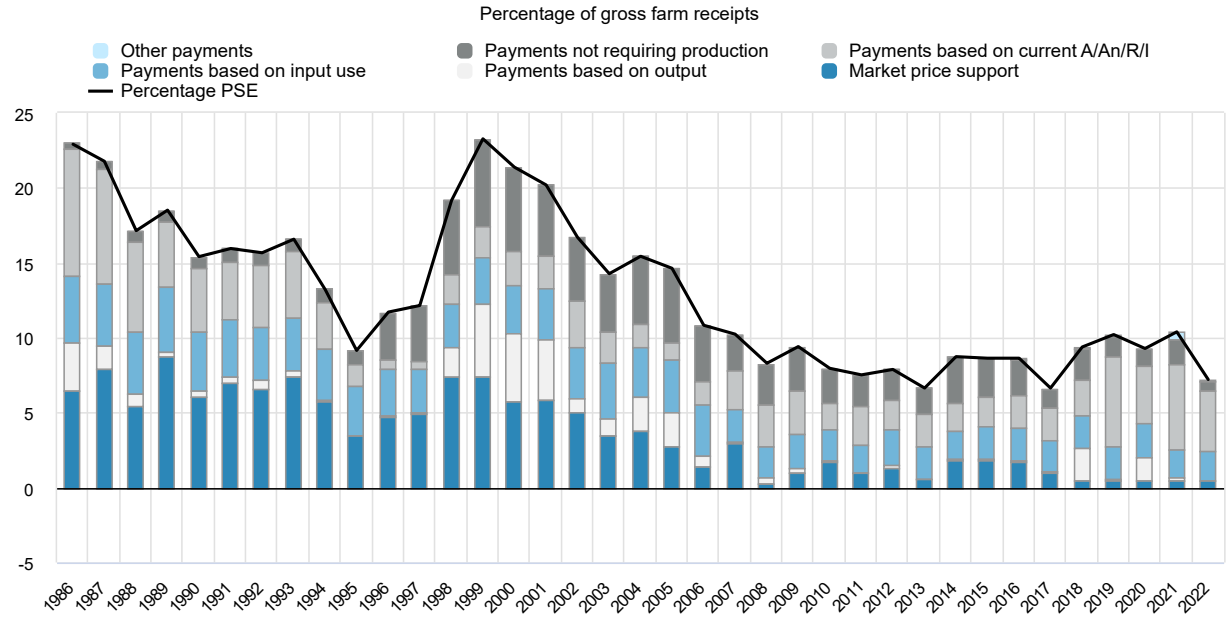
Period	Framework	Changes in agricultural policies
1980	Federal Crop Insurance Act of 1980[1]	Introduced federal premium subsidies for crop insurance (30% at the 65% coverage level) Created a public-private partnership with private insurance companies (Approved Insurance Providers), which became responsible for delivering crop insurance policies
1985	Food Security Act of 1985	Established marketing loans for cotton and rice, removing market price support element of cotton and rice commodity loans Set up the Export Enhancement Programme and the Dairy Export Incentive Programme. Established the Conservation Reserve Programme (CRP) Established conservation cross-compliance requirements (highly erodible land and wetland conservation provisions)
1990	Food, Agriculture, Conservation, and Trade Act of 1990	Introduced 15% “normal flex acres” and 10% “optional flex acres” Extended marketing loan provisions to oilseeds in 1991, and to wheat and feed grains in 1993 Allowed oilseeds and alternative crops to be planted on land in a 0/85-92 programme without loss of payments.
1994	Federal Crop Insurance Reform and Department of Agriculture Reorganization Act of 1994[1]	Catastrophic (CAT) crop insurance coverage level created Increased premium subsidies for higher coverage levels (buy-up coverage)
1996	Federal Agriculture Improvement and Reform Act of 1996	Replaced crop deficiency payments and target prices with fixed direct payments decoupled from current prices and production levels to be reduced over time Eliminated most planting restrictions Extended marketing loan provisions to most other covered crops and created alternative direct Loan Deficiency Payments (LDP) Phased-out the dairy support price (although interim legislation modified this provision) Consolidated cost share and technical assistance programmes for crop and livestock producers into the Environmental Quality Incentives Programme (EQIP) Extended CRP authorisation and capped enrolment Lifted conservation cross-compliance requirements for crop insurance participation
2000	Agricultural Risk Protection Act of 2000[1]	Expanded the geographic availability of crop insurance, increased premium subsidy levels, and removed restrictions on development of livestock insurance products
2002	Farm Security and Rural Investment Act of 2002	Annually decreasing Production Flexibility Contract payments replaced by fixed Direct Payments programme Created the Counter-Cyclical Payments programme triggering supplemental direct income support payments when prices fell below targets Added soybeans and peanuts as covered commodities under the fixed Direct Payment and Counter-Cyclical Payments programme Increased payments for environmental conservation and protection Eliminated peanut price support quota system, buying out peanut quota rights
2008	Food, Conservation, and Energy Act of 2008	Retained Direct Payment, Counter-Cyclical Payment and Marketing Assistance Loan programmes Created the Average Crop Revenue Election (ACRE) as a revenue-based alternative to the Counter-Cyclical Payment programme Changed the dairy price support programme basis from milk price to prices of dairy products Increased marketing assistance loan rates and Counter-Cyclical Payment programme target prices for a number of programme crops and sugar Introduced a permanent disaster assistance programme (Supplemental Agricultural Disaster Assistance) to end the need for ad hoc programmes Significantly increased funding for domestic food assistance programmes Ended the Export Enhancement Programme

Period	Framework	Changes in agricultural policies
2014	Agricultural Act of 2014	Repealed Direct Payment, Counter-Cyclical Payment, and ACRE programmes; created the Price Loss Coverage (PLC) and Agriculture Risk Coverage (ARC), which used the historical payment base established for the repealed programmes Added new crop insurance options: Supplemental Coverage Option (SCO), Stacked Income Protection Plan (STAX) for upland cotton; Expanded the Noninsured Crop Assistance Programme (NAP) to allow for higher premium-based coverage Re-established conservation cross-compliance requirement to receive crop insurance premium subsidies Expanded programmes for specialty crops, organic farmers, bioenergy, rural development, and beginning farmers and ranchers, continuing orientation to technical assistance, research, and development loans.
2018	Agriculture Improvement Act of 2018	Continued 2014 Farm Bill programmes with only minor changes, with some additions to programmes for specialty crops, organic farmers, local and regional markets, and beginning, military veteran and minority farmers.

1. Crop insurance legislation.
Source: Congressional Research Service (2018[3]); OECD (2011[1]; 2014[4]; 2019[5]); USDA ERS (2020[6]).

Average producer support has declined as the importance of emergency payments (related to COVID-19, drought, and supply chain issues) reduced in 2022. Support now approaches historical lows and the overall pattern and level of support is stable. In 2022, most budgetary support was based on payments that require production and were based on either area planted or animal numbers, including the Federal Crop Insurance Program and certain disaster programmes. Sugar is the only commodity with MPS (Figure 29.4).

Figure 29.4. United States: Level and PSE composition by support categories, 1986 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

The Agricultural Improvement Act of 2018 (the 2018 Farm Bill) provides the basic legislation governing farm programmes for 2019 to 2023. The twelve titles of the 2018 Farm Bill authorise policies for commodity programmes, conservation on agricultural land, agricultural trade promotion and international food aid, nutrition programmes, farm credit, rural development, agricultural research, forestry on private lands, energy, horticulture and organic agriculture, and crop insurance. Initial projections were that around 76% of budgetary spending under the 2018 Farm Bill would be for programmes in the Nutrition title – primarily the *Supplemental Nutrition Assistance Programme* (SNAP) – with farm programmes accounting for less than 25% of projected budgetary outlays. Of the farm programmes, crop insurance was projected to account for 9% of total expenditures, and Commodities and Conservation for 7% each. The remaining titles together accounted for 1% of projected spending.

The primary crop commodity programmes under the 2018 Farm Bill include programmes that make payments to producers with historical base acres[7] of programme crops (wheat, feed grains, rice, oilseeds, peanuts, pulses and seed cotton) when prices fall below minimums set out in the legislation or when crop revenue is low relative to recent levels. Producers are not required to produce the covered commodity to receive payments on their historical base. Price Loss Coverage (PLC), a counter-cyclical price programme, makes a payment when market prices for covered crops fall below effective reference prices.[8] Agriculture Risk Coverage (ARC), a revenue-based programme, makes a payment when actual revenue at the county level falls below rolling average benchmark revenues. For both programmes, payments are made on 85% of base acres. Participating producers were required to choose between the PLC and ARC programmes[9] on a commodity-by-commodity basis for 2019 and 2020, then annually for each year for 2021-23.

The crop insurance programme offers coverage options for both yield and revenue losses. Traditional crop insurance offers subsidised crop insurance to producers who purchase a policy to protect against losses in yield, crop revenue, or whole farm revenue. In addition, the Supplementary Coverage Option (SCO) and Stacked Income Protection Plan (STAX) offer area-based insurance coverage, SCO in combination with traditional crop insurance policies and STAX for upland cotton producers.

Marketing assistance loans are available for wheat, feed grains, upland cotton, rice, oilseeds, pulses, wool, mohair and honey. These loans provide cash flow at harvest when prices are typically lower, allowing farmers to delay sales until market conditions improve. These are non-recourse loans that can be repaid at market prices when those fall below the loan rate, although market prices for most commodities have been above loan rates in recent years.

For dairy producers, the Dairy Margin Coverage (DMC) programme, insures a producer-elected margin-level between a nationally defined milk price and feed costs for a premium, with payments made on enrolled historical milk production. Producers may participate in both DMC and dairy livestock insurance programmes. Under the Milk Donation Reimbursement Programme (MDP) fluid milk producers with pre-approved plans may be reimbursed for costs incurred in donating fluid beverage milk to low-income groups. Sugar is supported by a tariff rate quota (TRQ), together with provisions for non-recourse loans (which are not eligible for the repayment provisions discussed above) and marketing allotments. TRQs are in place for dairy, beef and some other products. However, US agricultural tariffs are generally low, at 4.5% on average in 2021.

Federal agri-environmental programmes focus on land retirement, easements restricting land use options and measures to encourage crop and livestock producers to adopt practices that reduce environmental pressures on working land (cropland and grazing land in production). Working land programmes include the Environmental Quality Incentives Programme (EQIP) and the Conservation Stewardship Programme (CSP). Land retirement and easement programmes include the Agricultural Conservation Easement Programme (ACEP) and the Conservation Reserve Programme (CRP). The Regional Conservation Partnership Programme offers options for regional or watershed-based conservation efforts that may

combine both land retirement, easements, and working lands programmes. Production of ethanol and other biofuels is supported mainly in the form of mandated blending for fuel use, and loan and grant programmes. Eligibility for most federal commodity programme payments, including crop insurance premium subsidies, is subject to recipients having established an individual farm-based conservation plan to protect highly erodible cropland and wetlands.

Other farm programmes include direct and guaranteed loans (including microloans) for farmland purchase and for operating credit, designed to assist producers who face difficulty obtaining credit in the private market, particularly beginning, military veteran and socially disadvantaged farmers. Farm Bill programmes also support public agricultural research and technical assistance, including programmes targeted to specialty crops; organic production; pest and disease prevention; the promotion of sustainable farming practices; and standing disaster programmes for livestock, forage, and trees, bushes and vines to help producers cope with production, financial and physical losses related to or caused by natural disasters.

Climate change adaptation policies in agriculture

The US Nationally Determined Contribution (NDC) under the Paris Agreement set an economy-wide target of reducing GHG emissions 50-52% below 2005 levels by 2030, covering all sectors (United States, 2020[7]). The NDC does not contain sector-specific targets but acknowledges that agriculture and land use will likely contribute to meeting overall GHG emissions targets. The NDC states that the United States will support scaling up climate-smart agricultural practices such as cover crops, reforestation, rotational grazing, and nutrient-management. The US is also party to the Global Methane Pledge, which commits countries to reducing methane emissions at least 30% from 2020 levels by 2030. While it focuses on fossil methane, the pledge covers all sources, including agricultural emissions.

Several programmes with broad conservation objectives offer climate-mitigation benefits, including CRP, CSP, EQIP, CTA, RCPP, and ACEP. These received substantial new funding in 2022 with the passage of the IRA.

USDA climate-adaptation efforts operate within US-government climate-change adaptation frameworks and statutory authorities. These include:

- climate-change risk-assessment undertaken through the US Global Change Research Programme's Fourth National Climate Assessment released in 2018, which includes specific attention on "Reducing Risks through Adaptation Actions"
- the US' 7th National Communication to the UNFCCC of October 2021 and the related Adaptation Communication of November 2021
- Executive Order (EO) 14008 of 27 January 2021, "Tackling the Climate Crisis at Home and Abroad"
- EO 14057 of 8 December 2021, "Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability"
- The Global Climate Change Prevention Act of 1990 (Title XXIV of the Food, Agriculture, Conservation, and Trade Act of 1990 P.L. 101–624)

In response to the EO titled "Tackling the Climate Crisis at Home and Abroad", the USDA revised its Policy Statement on Climate Adaptation in May 2021 to provide direction on the development of a USDA-wide Climate Change Adaptation Plan and development of Adaptation Plans by relevant USDA Mission Areas, agencies, and staff offices. The policy statement was followed by an Action Plan for Climate Adaptation and Resilience in October 2021. The plan highlighted climate vulnerabilities facing the sector and overarching adaptation actions to address these vulnerabilities, including:

- building resilience across landscapes with investments in soil and forest health
- increasing outreach and education to promote adoption and application of climate-smart adaptation strategies

- broadening access to and availability of climate data at regional and local scales for USDA Mission Areas, producers, land managers, and other stakeholders
- increasing support for research and development of climate-smart practices and technologies to inform the USDA and help producers and land-managers adapt to a changing climate
- leveraging USDA Climate Hubs as a framework to support USDA Mission Areas in delivering adaptation science, technology, and tools

Agency-level action plans were developed by 16 sub-entities of the USDA to identify climate-change impacts and vulnerabilities to each entity's mission, and prioritise actions to address these vulnerabilities and integrate climate-adaptation into their planning, programmes, operations, and management. Common themes in these plans are: increasing climate-literacy among employees; contingency-planning to maintain critical operations during extreme weather; addressing vulnerabilities of historically underserved farmers and ranchers; and making use of the USDA Climate Hubs.[10]

Efforts to assist farmers in buffering the impact from a shock in the short term

Weather-forecasting and increasing situational awareness are key short-term aids for farmers. Forecasting the availability of inputs such as water and forage can help farmers adapt their operations to a range of expected conditions. The US offers several platforms to provide farmers with information on weather and climate-related events:

- The USDA World Agricultural Outlook Board (WAOB) Meteorology Unit offers daily weather highlights and weekly weather and crop bulletins, supporting real-time intelligence for domestic and global crop conditions in the context of the monthly World Agricultural Supply and Demand Estimates (WASDE) report.
- The US Drought Monitor reports various indicators related to drought and provides forecasts and outlook products (for the coming month, upcoming season, and climate outlook for temperature and rainfall for the coming year). Time-series data, tables, graphs, and Geographic Information System (GIS) data are available for public download.
- Grass-Cast provides seasonal forecast maps of how much grass is projected to grow through the Spring and Summer months on rangelands throughout the western US to inform livestock-management and stocking decisions. Grass-Cast takes historical grassland production data, historical weather data, and possible scenarios for future rainfall to estimate how rangeland grass production in the current year will compare to average historical conditions.
- Natural Resources Conservation Service (NRCS) National Water and Climate Center (NWCC) produces and disseminates accurate and reliable water-supply forecasts and other climate data. NWCC supports various data-collection efforts related to snow, soil, and water conditions, including the Snow Survey and Water Supply Forecasting (SSWWF) Program, the Soil Climate Analysis Network (SCAN) Pilot Program, and the Tribal Soil Climate Analysis Network (Tribal SCAN). All data collected by NWCC are publicly available through the Water and Climate Information System (WCIS). Reports produced by the group include monthly snowpack, precipitation, reservoir, and streamflow data; hourly and daily SCAN soil condition reports for over 200 stations across the country; and water supply forecasts by river basin for 12 western states.
- The Wildfire Outlook – the National Interagency Fire Center's Predictive Services group produces a monthly National Significant Wildland Fire Potential Outlook, 7-day fire-potential outlook reports, and geographic area outlooks.
- The USDA Animal and Plant Health Inspection Service (APHIS) monitors the spread of pests, diseases, and invasive species, including by incorporating modeling to inform surveillance, developing early-warning systems, and identifying options for pest and disease control. Predictive

models to prepare for pest and disease incursions, and other changes driven by climate change are developed in collaboration with international partners.

Several policies in place help farmers prepare for extreme weather events before they occur:

- Hurricane Preparation and Recovery Commodity Guides are produced by the USDA Southeast Climate Hub in conjunction with state extension services. These provide detailed instructions on activities to undertake before and after a hurricane to minimise damage and ensure that operations resume as soon as possible in the wake of a storm. The guides also include information on relevant resources available from the USDA, including agencies offering support in the wake of disasters.
- Weather Ready Farms is a state-level agricultural education programme from the University of Nebraska Extension. Participants complete a self-assessment, attend educational programmes and events to learn how to implement new practices on the farm, undertake projects to improve their farm's resilience, have their projects verified, and receive a "Weather Ready" designation. A public online resource book, *Resilient Agriculture: Weather Ready Farms*, was produced based on this model and published in 2022.

Several programmes support recovery by providing funding in the wake of adverse events. Crop insurance is a major element, but several disaster-assistance programmes either help producers recover from damages not covered by crop insurance or help producers who might be unable to obtain crop insurance coverage. Outside of these "standing" programmes, other *ad hoc* disaster policies respond to issues as they arise:

- The Federal Crop Insurance Program (FCIP) is a longstanding programme that indemnifies producers against losses in yield, crop revenue, margin, and whole-farm revenue due to adverse events including drought, excess moisture, damaging freezes, hail, wind, disease, and price fluctuations. FCIP offers coverage for more than 100 commodities, and the government subsidises a portion of policy premium costs (the level of support varies based on the level of coverage).
- The Environmental Quality Incentives Program (EQIP) is a flagship conservation programme in place since 1996 that helps farmers, ranchers, and forest landowners integrate conservation into working lands. EQIP provides financial assistance to prevent and repair excessive soil erosion. Assistance is also available for emergency animal mortality disposal from natural disasters and other causes.
- The Livestock Forage Disaster Program (LFP) provides compensation to eligible livestock producers who suffered grazing losses due to drought or fire on land that is native or improved pastureland with permanent vegetative cover or planted specifically for grazing.
- The Livestock Indemnity Program (LIP) provides benefits to livestock producers for livestock deaths in excess of normal mortality, caused by adverse weather or by attacks by animals reintroduced into the wild by the federal government.
- Emergency Assistance for Livestock, Honeybees, and Farm-Raised Fish (ELAP) compensates eligible producers for losses due to disease, adverse weather, or conditions (such as blizzards and wildfires) not covered by LFP or LIP.
- The Emergency Loan Program provides loans to help producers recover from production and physical losses due to drought, flooding, other natural disasters, or quarantine by animal-quarantine laws or laws imposed by the Secretary under the Plant Protection Act.
- The Disaster Set-Aside Program allows producers who are unable to make scheduled payments on their direct loans from the Farm Service Agency (FSA) as a direct result of a disaster to postpone one full year's payment to the end of the loan. Assistance is available in counties or contiguous counties designated as emergencies by the President, Secretary, or FSA Administrator.

- The Emergency Conservation Program (ECP) helps farmers and ranchers repair damage to farmlands caused by natural disasters and helps put in place water-conservation methods during severe drought.
- The Emergency Forest Restoration Program (EFRP) helps owners of non-industrial private forests restore forest health damaged by natural disasters.
- The Noninsured Disaster Assistance Program (NAP) provides financial assistance to producers of non-insurable crops to protect against natural disasters that result in lower yields or crop losses, or prevent crop planting.
- The Tree Assistance Program (TAP) provides financial assistance to qualifying orchardists and nursery tree-growers to replant or rehabilitate eligible trees, bushes, and vines damaged by natural disasters.
- The Emergency Watershed Protection Program (EWP) helps communities recover from natural disasters such as floods, wildfires, earthquakes, windstorms, and other natural disasters. It funds activities that provide protection from flooding or soil erosion, reduce threats to life and property, or restore hydraulic capacity to the natural environment.

Efforts to support adaptation in the medium term

Medium-term measures include extension and outreach efforts, development of decision-support tools and information platforms, development of case studies, support for the adoption of climate-smart agricultural practices (including investments in soil health), and ensuring that programme design and delivery reflects evolving climate conditions.

Extension and outreach programmes train farmers to manage risk, adopt new technologies, and raise awareness of strategies to adapt to climate change. This is especially important for historically underserved producers:

- USDA Climate Hubs host workshops and technical demonstrations to promote the adoption and application of climate-smart strategies. “Climate Conversations” with natural-resources professionals (including NRCS and partner staff) focus on the basics of climate change and topics including drought, irrigation, and wildfire. The Climate Hubs also offer numerous communication resources, including “Translating Climate Science into Action” videos for outreach and education.
- Risk Management Education and Training programmes support historically underserved producers to understand how to manage risk in the face of volatile weather.
- The NRCS conducts conservation outreach and engagement to help farmers implement practices to adapt to a changing climate. This includes increasing technical and financial assistance for communities disproportionately vulnerable to the effects of climate change. NRCS programmes offer special provisions for historically underserved applicants, including through the Wetland Reserve Enhancement Partnership, which earmarked USD 17 million for partnerships with historically underserved communities in 2022. Additionally, the NRCS has moved to better serve limited-English-proficiency customers through activities such as translation of critical contract and other programme documents.

Decision-support tools and information platforms help farmers prepare for changing climate conditions. This includes help assessing risks and potential effects of climate change, and developing responses to them:

- The Adaptation Workbook details a structured process to consider the potential effects of climate change and design land-management and natural-resource-conservation actions that help prepare for changing conditions. The process is flexible, to accommodate a variety of geographic locations, ownership types, ecosystems and land uses, management goals, and project sizes. The Workbook contains a five-step process that asks users to define goals and objectives, assess climate impacts

and vulnerabilities, evaluate objectives considering climate impacts, identify adaptation approaches and tactics for implementation, and monitor the effectiveness of implemented actions.

- A series of ten Adaptation Case Studies was developed using the Adaptation Workbook framework and options outlined in *Adaptation Resources for Agriculture*, published by the Midwest, Northeast, and Northern Forests Climate Hubs. These case studies provide a flexible, structured, and self-guided process to identify and assess climate-change impacts, challenges, opportunities, and farm-level adaptation tactics to improve responses to extreme and uncertain conditions. Case studies cover a variety of commodity production systems across nine states and territories.
- AgroClimate is a decision-support tool that uses Applied Climate Information System (ACIS) database sub-infrastructure to help producers in the southeastern US make real-time decisions and place meteorological conditions in historical context. The tool helps producers obtain data on trends in winter chill units and bloom dates specific to their location, which can inform longer-term planning decisions, like changing varietals in replanted areas to reflect current and anticipated climate conditions.
- NRCS Information Platforms, Databases, and Decision Support Tools provide georeferenced soil, vegetation, and weather data and information needed to understand climate-change impacts and develop responses. These include the National Soils Information System (NASIS), Ecosystem Dynamics Interpretive Tool (EDIT), and Plant List of Acceptable Nomenclature, Taxonomy and Synonyms (PLANTS). NRCS also collaborates in the production of models and decision-support tools such as the Conservation Effects Assessment Program (CEAP) and the CarbOn Management Evaluation Tool (COMET). CEAP quantifies trends in conservation practices and outcomes to inform conservation programme development, while COMET assesses farm-level greenhouse-gas emissions and estimates emissions under alternative management scenarios.
- An atlas of state- and county-level Climate Quick Reference Guides was developed using 2022 National Oceanic and Atmospheric Administration (NOAA) State Summaries, RMA data analysed through the Southwest Climate Hub's AgRisk Viewer, and other published data. These guides allow producers to access hyper-local information on likely future conditions to inform their investments and business decisions.
- APHIS pest suitability maps describe changes in pest prevalence in a changing climate (with several maps completed and the remainder scheduled for completion by FY 2023). These maps will guide pest survey efforts and increase the efficient use of resources for surveys by eliminating the need to survey areas for high-risk pests if suitable environmental conditions do not exist there.

Several measures support adoption of climate-smart agricultural practices by providing technical and financial assistance, collecting data on soil health, and supporting crop diversification:

- NRCS Conservation Programmes help producers, soil- and water-conservation districts, and other partners protect and conserve natural resources on private lands. This is part of the Farm Bill, delivered through the Environmental Quality Incentives Programme (EQIP) and the Conservation Stewardship Programme (CSP), among others.
- On-Farm Conservation Innovation Trials provide incentive payments to producers to offset the risk of implementing innovative approaches, practices, and systems on working lands. The Soil Health Demonstration (SHD) component focuses conservation practices and systems that improve soil health. SHD awardees follow consistent soil health assessment protocols to evaluate the impacts of practice and system implementation. Data collected from these projects provide the initial data for a national soil health database.
- The Whole Farm Revenue Protection (WFRP) and Micro Farm policies are insurance products that support diversified farm operations to help producers adapt to a changing climate. WFRP offers revenue insurance up to USD 17 million of allowable revenue. Micro Farm is based on WFRP but

limited to producers with less than USD 350 000 in allowable revenue. The product is tailored to very small farms that are typically highly diversified.

Ensuring programme design considers the changing climate is important for maintaining intended programme benefits and informing needed reforms. Federal Crop Insurance Program (FCIP) parameters are updated so that policy design reflects climate data with respect to changes in risk, yields, practices, and other parameters. Programmes are reviewed for continued relevance under changing climate needs. Conservation practice planning and standards are reviewed and updated to use the best available science.

Efforts to support transformations that create a fundamentally new system in the long term

Activities related to long-term change in the US agricultural sector focus on interdisciplinary research to increase awareness of likely future conditions, and develop tools, technologies and management strategies to respond to them. To ensure the usefulness and accessibility of climate-smart agricultural innovation, several programmes connect with or involve producers:

- USDA Research & Development activities form the basis for validating existing climate-adaptation options and identifying and developing new ones while ensuring that actions are regionally relevant and economically viable. Research related to climate adaptation cuts across many programme areas within the USDA Agricultural Research Service (ARS). The Economic Research Service (ERS) is a federal statistical agency that provides economic information and analysis on a range of topics related to the agriculture sector, including understanding and assessing the effects of and adaptation to climate change. The National Institute of Food and Agriculture (NIFA), the USDA's primary external research, education, and extension funding agency, funds climate-change-related activities through a combination of capacity funds and competitive grants (see below). The National Agricultural Statistics Service (NASS) supports climate-change research through scientifically designed surveys that help with estimates of agricultural production, supply, price, and other variables. NASS also conducts operational remote-sensing yield estimation and disaster-monitoring of extreme weather events.
- The Agriculture and Food Research Initiative (AFRI) Program under the National Institute of Food and Agriculture (NIFA) disseminates scientific advances to producers through education and extension to facilitate adaptation to climate change. NIFA invests in sustainable agricultural research projects, including projects that support adaptation.
- USDA Climate Hubs develop and deliver science-based, region-specific information and technologies to agricultural and natural-resource managers. This enables climate-informed decision-making and assistance to implement those decisions. Working with federal, state, tribal, university, extension, and private partners, the Hubs listen and learn to identify regionally-appropriate, and climate-adapted ways to address current and future climate risks.
- The Long-Term Agroecosystem Research Network (LTAR) comprises 18 research sites dedicated to addressing national and local agricultural priorities and advancing the sustainable intensification of US agriculture. The research sites include croplands, grazing lands and integrated systems, and span a variety of geographies and climates. LTAR co-ordinates research sites, collects and manages long-term data, and develops new management techniques, technologies and agricultural-innovation partnerships.
- The NRCS multi-disciplinary climate-change technical team evaluates climate-related requirements for the agency's planning and delivery processes, to establish climate-change technical expertise and strategies to evaluate and determine requirements and guidance for conservation planning, implementation, research, demonstration, and assessment. This includes developing climate-smart research and demonstration strategies that identify knowledge gaps and on-farm research needs to guide investments, including through the RCPP and Conservation Innovation Grants (CIG) programme.

- Agriculture Innovation Mission for Climate (AIM for Climate) is a joint, five-year initiative (2021-25) by the US and United Arab Emirates (UAE) to increase and accelerate investment in and support for agriculture- and food-system innovation for climate action, including adaptation.

Domestic policy developments in 2022-23

Two temporary disaster assistance programmes funded through the Extending Government Funding and Delivering Emergency Assistance Act of 2021 were launched in 2022 to help offset the costs of natural disaster impacts incurred in 2020 and 2021.[11] The Emergency Livestock Relief Program (ELRP) Phase One provides additional early relief payments to ranchers for increases in supplemental feed costs in 2021. Ranchers who have approved applications through the 2021 Livestock Forage Disaster Program (LFP) for forage losses due to severe drought or wildfire in 2021 received an amount equal to their eligible LFP payment, multiplied by the applicable ELRP payment percentage.[12]

The second programme, the Emergency Relief Program (ERP), was launched in May 2022 and provides assistance to commodity and specialty crop producers to cover losses to crops, trees, bushes, and vines due to a qualifying natural disaster event[13] in calendar years 2020 and 2021. All crops for which crop insurance or Non-insured Crop Disaster Assistance Program (NAP) coverage is available are eligible, except for crops intended for grazing. Payments for ERP are based on a producer's individual coverage level under crop insurance or NAP. All producers who receive ERP Phase One payments are required to purchase crop insurance or NAP for the next two available crop years. A second phase of ERP was announced on 9 January 2023.

Several provisions in the Consolidated Appropriations Act, 2023 (signed into law December 2022) authorised temporary assistance for affected producers. These include:

- USD 3.74 billion in assistance to producers for losses of revenue, quality or production of crops (including milk, on-farm stored commodities, crops prevented from planting in 2022, and harvested adulterated wine grapes), trees, bushes, and vines as a consequence of droughts, wildfires, hurricanes, floods, derechos, excessive heat, tornadoes, winter storms, freeze, including a polar vortex, smoke exposure, and excessive moisture occurring in calendar year 2022. Of this amount, the Act requires that a portion of up to USD 494.5 million be designated for livestock producers.
- Up to USD 100 million for pandemic-related assistance payments to cotton merchandisers.
- Up to USD 250 million for domestic rice producers who planted a crop in 2022.
- USD 5 million for testing of soil, water, or agricultural products for per- and polyfluoroalkyl substances (PFAS), assisting producers affected by PFAS contamination with costs related to mitigate the impacts to their operations, and indemnifying producers for the value of unmarketable crops, livestock, and other agricultural products related to PFAS contamination.[14]

The existing Emergency Assistance for Livestock, Honey Bees, and Farm-raised Fish Program (ELAP) was further revised in 2022 to cover the costs of transporting livestock to feed when the livestock are intended for grazing. Producers were eligible for assistance for feed or livestock transportation costs incurred for additional mileage above normal on or after 1 January 2021. The rule also amended the definition for "eligible drought" to allow counties with lower severity to qualify.[15]

Resources and environmental measures

Climate

The Inflation Reduction Act (IRA) was signed into law in August 2022. The IRA is not agriculture-specific, but includes approximately USD 20 billion in new spending over the next ten years designated for existing USDA conservation programmes to support practices with climate benefits, including enhancements to improve soil carbon, reduce nitrogen losses, or sequester carbon dioxide, methane, or nitrous oxide. This

includes USD 8.45 billion in new funding for EQIP, USD 4.95 billion for RCPP, USD 3.25 billion for CSP, USD 1.4 billion to ACEP, and USD 1 billion for the Conservation Technical Assistance Program.[16]

A new Partnerships for Climate-Smart Commodities initiative was launched in 2022. This programme provided up to USD 3.1 billion in funding for 141 pilot projects to create or expand markets for agricultural commodities produced with climate-smart farming practices. The first pool of 70 selected projects will receive USD 2.8 billion through the Commodity Credit Corporation for pilot projects that:

- provide technical and financial assistance to producers to implement climate-smart production practices on a voluntary basis on working lands
- pilot innovative and cost-effective methods for quantification, monitoring, reporting and verification of greenhouse gas benefits
- develop markets and promote the resulting climate-smart commodities.

Approved pilot projects will last one to five years. Large-scale projects from USD 5 million to USD 100 million were targeted in a first applicant pool. This awarded funds to 71 projects, totalling USD 325 million. A second pool for smaller projects requesting from USD 250 000 to USD 4 999 999 in funding targets small or underserved producers. This pool invests in measuring, monitoring, reporting and verification activities developed at minority-serving institutions. The projects are expected to involve more than 60 000 farmers and encompass more than 25 million acres of working lands, resulting in an estimated 60 million $mtCO_2$-eq sequestered over the lives of the projects.

The Consolidated Appropriations Act (CAA) 2023 contains several provisions related to climate and agriculture. It establishes a voluntary Greenhouse Gas Technical Assistance Provider and Third-Party Verifier Program. This allows for the creation of a voluntary programme to register covered entities (e.g. technical assistance providers or third-party verifiers) if doing so will facilitate the participation of farmers, ranchers, and private forest landowners in voluntary environmental credit markets. CAA also included a provision allowing USDA to accept and use private funding for public-private partnerships for the purposes of addressing climate change, sequestering carbon, improving wildlife habitat, protecting sources of drinking water, and addressing other natural resource priorities. The provision also authorises the Department to match private donations, subject to funding availability.

Conservation and environmental programmes

In January, NRCS announced several changes to existing programmes in 2022 focused on providing new opportunities for climate smart agriculture, including:

- Expanding the five-year Conservation Incentive Contract option through the EQIP nationwide in 2022.[17]
- Investing USD 38 million in a new targeted Cover Crop initiative through EQIP in 11 states, to encourage more widespread adoption of cover crops for climate change mitigation in states with demonstrated demand for additional support for the practice.[18]
- Updating CSP rules to allow producers to re-enrol in the programme following an unfunded application to renew an existing contract.

Temporary flexibilities were introduced into certain conservation programmes. These included allowing producers in the final year of a CRP contract to voluntarily terminate their contract at the end of the primary nesting season for FY 2022 without having to repay rental payments.[19] This can allow producers to plant a crop on that land for the 2022-23 crop year, or to open it for haying or grazing. In addition, producers with cover cropping in their existing EQIP or CSP contracts are allowed to either modify their cover crop plans to shift to a conservation crop rotation or to delay their planting of the cover crop by one year without requiring that the current contract be terminated.

The Bioproduct Pilot Program (BPP) – authorised under the Infrastructure Investment and Jobs Act of 2021 – is a competitive grant programme seeking to advance the development of cost-competitive bioproducts with environmental benefits compared to incumbent products. The programme funds projects that will study the benefits of using materials derived from covered agricultural commodities for production of construction materials (such as for roads, bridges or buildings) or consumer products. The programme will fund grants of USD 2 million to USD 5 million, with USD 5 million in total funding available in FY 2022 and an additional USD 5 million available in FY 2023.

Water

The IRA includes USD 4 billion in grants for FY 2022-26 to help mitigate the impact of drought in western States. These grants are to be administered by the Department of the Interior through the US Bureau of Reclamation.

Crop insurance and risk management

In June 2022, the Federal Crop Insurance Corporation amended its regulations to enhance production reporting terminology and assist producers with production reporting requirements. The new rules provide alternative reporting options to producers who are unable to provide disinterested third-party verifiable records to support their production report. The revision is intended to make it easier for specialty crop producers and others who sell through direct marketing channels to obtain insurance. The new rules also clarify the good farming practice appeal deadline and clarify and correct portions of the policy.

In July 2022, USDA's Risk Management Agency announced that it would expand the availability of insurance for double cropping in order to reduce the economic risk of raising two crops on the same land in one year, making it easier for US farmers to help stabilise food prices and support food security. Under the initiative, RMA is making insurance coverage available for certain double-cropping rotations of soybeans or grain sorghum following another crop in more than 1 500 counties where double cropping is viable for crop year 2023.

Crop inputs

In September 2022, the new Fertilizer Production Expansion Program (FPEP) was announced to increase domestic fertiliser availability in response to rising prices. FPEP will provide grants to help eligible applicants increase or expand the manufacturing and processing of fertiliser and nutrient alternatives in the United States and its territories. The programme made available USD 500 million in funds through the CCC for 5-year grants varying from USD 1 to USD 100 million dollars. Funds can be used for, *inter alia*, expansion of manufacturing and processing of fertilisers and alternative nutrients, building new facilities, modernising existing facilities, increasing fertiliser use efficiency, purchasing new equipment, and installing climate-smart equipment to reduce GHG emissions.

In December 2022, the Pesticide Registration Improvement Act (PRIA) was reauthorised as part of the Consolidated Appropriations Act, 2023. Among other provisions, this version of PRIA requires manufacturers to include bilingual labels or a link to a translation on products within three to eight years (depending on the use classification and relative toxicity of the pesticide), increases pesticide registration and maintenance fees, and extends the deadline for the EPA to conclude its initial registration review of each covered pesticide to October 2026.

Processors and supply chains

Building on activities announced in 2021 such as the Food Supply Chain Guaranteed Loan Program (FSCGLP) and the Meat and Poultry Inspection Readiness Grants (MPIRG), several new programmes were launched in 2022 under the umbrella of the USDA Meat and Poultry Supply Chain initiative, including:

- In February, the USDA Rural Development (RD) Rural Business-Cooperative Service (RBCS) opened applications for the Meat and Poultry Processing Expansion Program (MPPEP), which will provide USD 150 million in grants of up to USD 25 million to eligible meat and poultry processors to assist them in expanding their capacity.
- In March, the USDA Agricultural Marketing Service (AMS) launched the Meat and Poultry Processing Capacity Technical Assistance Program (MPPTA), developed to support participants in the other programmes under the meat and poultry supply chain initiative by helping them to access needed technical assistance to expand and diversify processing capacity. Technical assistance offered through the initiative will focus on federal grant application management, business development and financial planning, meat and poultry processing technical and operational support, and supply chain development.
- In May, RBCS opened applications for the Meat and Poultry Intermediary Lending Program (MPILP), which will provide up to USD 125 million in grants of up to USD 15 million to qualified intermediate lenders to facilitate financing for the start-up, expansion, and operation of entities engaged in primary processing or further processing of meat and poultry.
- In May, the USDA National Institute of Food and Agriculture (NIFA) announced a USD 25 million investment in workforce training programmes, including through the new Meat and Poultry Processing - Agricultural Workforce Training grant programme.

In June 2022, the “Food Systems Transformation” framework was launched. The goals of the framework include:

- Building a more resilient food supply chain that provides more and better market options for consumers and producers while reducing carbon pollution.
- Creating a fairer food system that combats market dominance and helps producers and consumers gain more power in the marketplace by creating new, more and better local market options.
- Making nutritious food more accessible and affordable for consumers.
- Emphasising equity.

USDA has included a variety of existing and proposed programmes under this initiative, spanning all stages of the supply chain – production, processing, aggregation, distribution, and consumers. This includes supporting investments in independent meat and poultry processing projects, financial assistance for supply chain infrastructure, workforce development and funding to create regional food business centres.

The Regional Food Business Centers programme was launched in September 2022 with up to USD 400 million in funding from the Consolidated Appropriations Act of 2021. It will expand and strengthen regional food systems networks and partnerships; increase food and farm business and finance acumen as well as market awareness and access; increase the number of new food and farm businesses and viability of existing businesses; and increase the revenue of food and farm businesses served. These Regional Food Centers will be launched through co-operative agreements with partners in the region, providing co-ordination, technical assistance and capacity-building for small and mid-sized producers, processors, and distributors to create new and rejuvenate current linkages throughout the supply chain. At least six centers are anticipated (including at least one in each of three high priority areas) through grant awards ranging from USD 15 to USD 50 million.

A new rule, Requirements for Additional Traceability Records for Certain Foods went into effect in January 2023. This rule establishes additional recordkeeping requirements for certain participants in supply chains of designated foods for traceability purposes. The requirements will help to identify recipients of food to prevent or mitigate foodborne illness outbreaks and address threats of health consequences resulting from foods being adulterated or misbranded.

Finance and farm credit

In March 2022, the USDA Farm Service Agency finalised changes to its Farm Loan Programs (FLP) regulations. FLP regulations were amended to:

- allow additional flexibility for loan applicants to meet the required farming experience
- provide higher guarantee rates for lenders providing credit to beginning farmers and socially disadvantaged farmers
- provide additional programme benefits for veterans
- provide equitable relief to certain borrowers
- allow borrowers who have received debt restructuring with a write down to receive Emergency loans (EM)
- cover more issues under the agricultural Certified Mediation Program
- change conditions for loan servicing relating to accepting cash payments and establishing a fee for dishonoured checks.

The result of these changes will increase loan limits or improve the various loan programmes to relieve some restrictions to participation or otherwise encourage participation. The new rules also revised the means through which FSA will establish the maximum interest rates in response to the discontinuing publication of the London Interbank Offered Rate (LIBOR) interest rates.

In October 2022, disbursement began of USD 3.1 billion in funding to provide relief for distressed borrowers with certain Farm Service Agency (FSA) direct or guaranteed loans and to expedite assistance for those whose agricultural operations are at financial risk. As a first step toward implementing this relief, in late 2022, USDA provided nearly USD 800 million in assistance to distressed borrowers, including crediting nearly USD 600 million to the accounts of delinquent borrowers to make their loans current, and making over USD 200 million in payments to resolve the remaining debts for borrowers whose farms have already been foreclosed upon, such that they would no longer face debt collection or garnishment. Assistance for an additional set of borrowers with more complicated circumstances was made available on a case-by-case basis.

Organic agriculture

The Origin of Livestock (OOL) final rule for organic dairy animals was published in April 2022. The rule specifies that organic milk and milk products must be sourced from animals that have been under continuous organic management from the last third of gestation onward. However, transitioning herds fall under an exception to the rule. This rule also clarifies that a nonorganic dairy may transition to organic production on a one-time basis, with all animals ending their transition at the same time after a 12-month period of organic management. After the transition, the operation cannot transition additional animals or source transitioned animals. After transitioning, operations may only add animals that have been organically managed from the last third of gestation. The rule entered into effect on 6 June 2022, and all operations were required to comply with its provisions by 5 April 2023.

In August 2022, a new Organic Transition Initiative was launched. This USD 300 million multi-agency effort offers support for farmers transitioning to organic production, including increased technical assistance, market development, and financial support. Programmes were launched under the umbrella of this initiative:

- The Transition to Organic Partnership Program (TOPP), which will provide technical assistance and wrap-around support for farmers transitioning to organic. The programme will provide up to USD 100 million over five years in co-operative agreements with non-profit organisations.

- The Transitional and Organic Grower Assistance Program (TOGA), which will support the participation of transitioning and certified organic producers' participation in crop insurance by covering a portion of their insurance premium. The programme will provide up to USD 25 million through the Risk Management Agency.

Additionally, USD 75 million will be provided through NRCS to offer financial and technical assistance to producers who implement a new Organic Management conservation practice standard, and USD 100 million will be made available through an AMS initiative to improve supply chains in pinpointed organic markets. This is also part of the "Food Systems Transformation" framework.

Equity

In January 2022, USDA announced that it was investing USD 50 million in partnerships to expand conservation assistance access under its new Equity Conservation Cooperative Agreements initiative. The effort will fund two-year projects targeting expanded conservation technical assistance for beginning, socially disadvantaged, low-income, or military veteran farmers.

The American Rescue Plan Technical Assistance Investment (ARPTAI) Competitive Grant Program was launched in March 2022 to provide technical assistance and other programmes to ensure improved understanding of USDA programmes and services. Using a minimum of USD 25 million in funding authorised under Section 1006 of the American Rescue Plan Act of 2021, ARPTAI will fund co-operator organisations that collaborate with USDA on the delivery of targeted technical assistance and related activities to achieve future outcomes of improved equitable participation of farmers, ranchers and forest landowners in USDA programmes and services. Grants ranging from USD 500 000 to USD 3.5 million will be available through ARPTAI.

In April 2022, USDA released the department's Equity Action Plan, outlining actions that USDA will take to advance programme equity by improving access to programmes and services for underserved stakeholders and communities.[20] Actions outlined in the plan include:

- partner with trusted technical assistance providers
- reduce barriers to USDA programmes and improve support to underserved farmers, ranchers and landowners
- expand equitable access to USDA nutrition assistance programmes
- increase USDA infrastructure investments that benefit underserved communities
- advance equity in federal procurement
- uphold Federal Trust and Treaty Responsibilities to Indian Tribes
- maintain an unwavering commitment to civil rights.

Several USDA programmes will be included as part of the Biden Administration's Justice40 Initiative, which sets a goal to have 40% of the overall benefits of certain federal investments related to climate and the environment flow to disadvantaged, marginalised, or underserved populations.[21] This includes farm safety net programmes such as ARC, DMC, and PLC; conservation programmes such as ACEP, CREP, CRP, CSP and EQIP; research and knowledge generation programmes such as the Bioproduct Research Program and the USDA Climate Hubs; and outreach and education programmes such as conservation technical assistance, risk management education, and extension programmes benefitting underserved communities.[22] For each programme included in the initiative, agencies should establish a method to calculate benefits accruing to disadvantaged communities, develop a plan to maximise benefits to said groups, and consider programme modifications to the extent consistent with statutory and constitutional requirements to maximise benefits to disadvantaged communities.

Two new initiatives targeting underserved communities will be funded under the American Rescue Plan Act (ARPA). The first of these, "From Learning to Leading: Cultivating the Next Generation of Diverse Food

and Agriculture Professionals" programme is intended to enable minority-serving educational institutions to educate and create career development opportunities for the next generation of scholars. Up to USD 250 million will be made available through the programme in the form of grants, with awards ranging from USD 500 000 to USD 20 million. The second programme, the "Increasing Land, Capital, and Market Access Program" will help underserved producers by increasing their access to land, capital and markets. The programme will fund projects through co-operative agreements and grants that focus on strengthening land access and at least one related area of concern. Up to USD 300 million will be made available through the programme, with awards ranging from USD 250 000 to USD 40 million.

Nutrition

The first phase of the "Healthy Meals Incentives Initiative" was launched in September 2022. The initiative targets improving the nutritional quality of school meals through food systems transformation, school food authority recognition and technical assistance, the generation and sharing of innovative ideas and tested practices, and grants. The first phase of the initiative includes providing grants of up to USD 150 000 to small or rural school meal programmes to help them meet or exceed school nutrition standards, establishing an awards programme to recognise school districts that are excelling in their meal quality, and supporting schools in bringing best practices into their lunchrooms. Subsequently in November, FNS launched phase 2 of the initiative – the "School Food System Transformation Challenge", which will distribute USD 50 million in grant opportunities through up to four co-operative agreements, which will support collaboration with the food industry to develop nutritious, appetising school meals for students.

On 27 September 2022, the Biden-Harris National Strategy on Hunger, Nutrition and Health was released – in conjunction with the White House Conference on Hunger, Nutrition and Health – to achieve the Administration's goal of "ending hunger and increasing healthy eating and physical activity by 2030 so fewer Americans experience diet-related diseases, while reducing related health disparities." The strategy consists of five pillars: 1) improve food access and affordability; 2) integrate nutrition and health; 3) empower all consumers to make and have access to healthy choices; 4) support physical activity for all; and 5) enhance nutrition and food security research. In line with the strategy, a new programme providing assistance for school children during the summer months when schools are closed was authorised as part of the CAA (see next section).

In December 2022, USDA unveiled a new Agricultural Science Center of Excellence for Nutrition and Diet for Better Health (ASCEND for Better Health). This new virtual centre will bring together scientists, partner organisations, and communities to accelerate research on diet-related chronic disease, including cancer.

Domestic food assistance

Various policy measures were put in place in 2022 in response to reduced availability of infant formula resulting from recalls and the temporary closure of one of the country's largest formula manufacturing facilities. Some of these measures are described in the section "Trade policy developments" below. These measures included:

- Signing into Law the "Access to Baby Formula Act of 2022" in May, which authorises USDA to take certain actions (including allowing administrative or programme flexibilities, where applicable) to address emergencies, disasters, and supply chain disruptions affecting participants of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).
- The President's invoking of the Defense Production Act, requiring suppliers to direct needed resources to infant formula manufacturers before any other customer who may have ordered that good.
- USDA offering WIC agencies programme flexibilities by allowing them to request waivers of certain WIC regulations:

- USDA covering the additional costs of alternate formulas for state WIC agencies that contract with certain manufacturers through 28 February 2023, with the affected formula manufacturer covering the cost difference for states that contract with that manufacturer through 28 February 2023.

In February 2022, FNS finalised a rule establishing transitional standards for milk, whole grains, and sodium content in USDA school meals programmes beginning in the 2022-23 school year. Pandemic relief legislation had offered temporary flexibility from the nutritional standards established in 2012. As the pandemic flexibilities were set to expire in June 2022, the rule created a transition period which allowed some continued flexibility for schools as they recover from the pandemic. For example, the transitional rule requires that at least 80% of the weekly grains offered be whole grain-rich (i.e. contain at least 50% whole grains) rather than 100% as required by the 2012 standards. In early 2023, USDA released a proposed rule to update school meal nutrition standards that are similar to the transitional standards set forth in February 2022.

The Keep Kids Fed Act of 2022 extended flexibilities first introduced in 2020 under the Families First Coronavirus Response Act in response to disruptions caused by the pandemic. Among other provisions, the Act extended meal programme administrative and paperwork flexibilities through the 2022-23 school year, extended flexibilities for summer meals in 2022 (such as allowing meal delivery and grab-and-go options), and increased reimbursement rates for the 2022-23 school year by 15 cents per breakfast and 40 cents per lunch to help offset higher food costs and operating expenses related to the COVID-19 pandemic.

On 30 June 2022, USDA made available USD 943 million in funding from the Commodity Credit Corporation (CCC) for the purchase of domestically-grown foods for school meal programmes. The funds were distributed by state agencies to schools across the country to assist them in purchasing domestically grown-foods for school meal programmes, in response to challenges faced by child nutrition programme operators in 2022, such as elevated costs of food and supply chain disruptions.

Then in September 2022, USDA announced nearly USD 2 billion in additional funding from the CCC for both emergency food providers and school meal programmes for purchasing domestically-grown foods. Of the total announcement, USD 943 million was slated to procure USDA Foods for use by emergency food providers such as food banks (a portion of the assistance would also support incidental costs incurred by local agencies for food storage and transformation), USD 471.5 million was directed toward the Local Food Purchase Assistance Cooperative Agreement Program in November, and an investment of USD 471.5 million was made for the third round of Supply Chain Assistance funds to states to support the purchase of domestically-grown foods for school meal programmes.

Also in September, FNS published new regulations for the Summer Food Service Program (SFSP), which clarified, simplified, and streamlined programme administration. The new regulations include making permanent operational flexibilities that are demonstrated to work well in the SFSP while decreasing paperwork burdens; giving sponsors the ability to focus their programme oversight and technical assistance on sites that need it most; easing redundant requirements for high performing, experienced programme operators through a streamlined application process; providing local control of meal service times and allowing children to take one non-perishable item offsite to eat later; ending confusion around important standards and requirements by clarifying performance standards, programme definitions, and other programme requirements; and codifying FNS' statutory waiver authority for all child nutrition programmes including the National School Lunch Program, School Breakfast Program, Child and Adult Care Food Program and SFSP.

One provision of the American Rescue Plan Act of 2021 (ARPA) (P.L. 117-2) allocated USD 390 million through FY 2024 to carry out outreach, innovation and programme modernisation efforts to increase participation and redemption of benefits in WIC. Through this authorisation, USDA's Food and Nutrition Service launched three major grant programmes in 2022 to facilitate WIC modernisation, which focused

on innovation and outreach, improving the WIC experience through technology, and improving the WIC shopping experience. Through October 2022, nearly USD 53 million in grants had been awarded.

In December 2022, a permanent Summer Electronic Benefits Transfer programme was authorised as part of the Consolidated Appropriations Act, 2023 (P.L. 117-328). This programme will provide benefits of USD 40 per month per child for eligible families on an electronic benefits transfer (EBT) card, which works like a debit card, allowing families who receive school meal benefits during the schoolyear to receive assistance for retail food purchases during the summer months. The authorisation of this permanent Summer EBT programme resolves a longstanding gap in programming by ensuring that low-income children have enough to eat during the summer months when school is not in session and school meals are unavailable.

CAA also codified certain temporary pandemic-era food delivery model flexibilities for summer feeding programmes, permanently allowing summer meal providers to use alternative delivery models such as "grab-and-go" meal availability. The Act also directs USDA to work with appropriate agencies to investigate and take steps to prevent EBT fraud carried out through card skimming or cloning.

Domestic policy responses to the COVID-19 pandemic

New programmes were launched in 2022 under the umbrella of the 2021 Pandemic Assistance for Producers initiative. Programmes under this initiative were intended to help impacted producers prevent, prepare for, and respond to the COVID-19 pandemic. Among the programmes developed or launched under this initiative in 2022 were:

- **The Pandemic Cover Crop Program (PCCP)** was initially authorised in 2021 to provide crop insurance premium support to eligible producers for eligible insured acres on a spring crop insurance policy on which the producer planted a qualifying cover crop during the 2021 crop year. In February 2022, RMA announced that PCCP would be made available in 2022 as well, with coverage for the 2022 crop year extended to also cover eligible producers for eligible Whole Farm Revenue Protection (WFRP) acres.
- **The Food Safety Certification for Specialty Crops Program (FSCSC)** will provide USD 200 million to assist specialty crop operations that incurred eligible on-farm food safety programme expenses to obtain or renew a food safety certification in 2022 or 2023.
- **The Commodity Container Assistance Program (CCAP)** helps offset expenses of eligible agricultural companies and co-operatives incurred at certain ports with logistical issues caused by the COVID-19 pandemic (the Port of Oakland and the Northwest Seaport Alliance, NWSA, which is the operating partnership between the Ports of Seattle and Tacoma). CCAP helps to support improved use of empty containers and the prepositioning and temporary storage of filled containers near export terminals.

The Ocean Shipping Reform Act of 2022 was signed into law on 16 June 2022. Amongst its provisions, the act prohibits ocean carriers from unreasonably refusing cargo space when available or resorting to other unfair or unjustly discriminatory methods. The act was drafted partially in response to supply chain issues experienced during the pandemic, when ocean carriers left US products (including agricultural goods) behind at US ports and returned to Asia with empty containers, exacerbating supply issues and resulting in losses of agricultural goods that were not shipped.

Trade policy developments in 2022-23

In January 2022, the government of India agreed to allow imports of US pig meat and pig meat products into India for the first time after agreement on an export certificate to allow the importation of US pig meat and pig meat products. The agreement was reached subsequent to the November 2021 US-India Trade Policy Forum, which also saw the two partners agree on market access facilitation measures for mangoes,

pomegranates, and pomegranate arils from India, and cherries and alfalfa hay for animal feed from the United States.

In March 2022, the United States and the United Kingdom reached a new agreement to allow historically-based volumes of UK steel and aluminium to enter the US market without the application of Section 232 tariffs. As a result of the deal, the United Kingdom agreed that from 1 June 2022, the country would suspend retaliatory tariffs that had been applied to certain US exports to the United Kingdom, including on distilled spirits, various agriculture products, and consumer goods.

In December 2022, amendments were agreed for the beef safeguard trigger level under the US-Japan Trade Agreement (USJTA) detailed in the 2 June 2022 Protocol Amending the Trade Agreement between Japan and the United States of America. These amendments entered into force on 1 January 2023, replacing the existing beef safeguard trigger level with a new criteria-based mechanism.

In January 2022, a panel ruled in favour of the United States in proceedings brought against Canada under the terms of the United States–Mexico–Canada Agreement (USMCA), agreeing that Canada breached its USMCA commitments by reserving most of the in-quota quantity in its dairy tariff-rate quotas (TRQs) for the exclusive use of Canadian processors. Canada published final changes in the dairy TRQ allocation on 16 May 2022. Subsequently, the United States requested new dispute settlement consultations, most recently on 20 December 2022, regarding several additional aspects of Canada's measures, including the failure to fully allocate the annual dairy TRQ, which the United States views as inconsistent with Canada's obligations under the USMCA.

To address temporary shortages of baby formula, the "Formula Act of 2022" was signed into law in July, which provided temporary duty-free treatment for certain infant formula products imported through 31 December 2022. In parallel, "Operation Fly Formula" was a co-ordinated effort between the Department of Health and Human Services, USDA, the General Services Administration, and the Department of Defense, which contracted commercial aircraft to speed up the import of infant formulas to the United States.

Trade policy responses to Russia's war of aggression in Ukraine

Policy responses related to the Russian Federation's unprovoked and unjustified war against Ukraine were largely directed toward addressing the global food security implications of the invasion. In April 2022 USDA announced that it would draw down the full balance of the Bill Emerson Humanitarian Trust (BEHT) – roughly USD 282 million – to procure US food commodities to bolster existing emergency food operations in six countries facing severe food insecurity exacerbated by the war.[23] An additional USD 388 million in funds from the Commodity Credit Corporation (CCC) were also provided to cover freight transportation, shipping and handling, and other associated costs. The BEHT is a special authority that enables USAID's Bureau for Humanitarian Assistance (BHA) to respond to unanticipated food crises abroad when other resources are not available. BEHT provides emergency food assistance when funds available for emergency needs under title II of the Food for Peace Act for a fiscal year are insufficient to meet emergency needs during the fiscal year. This is the first time since 2014 that the US Government has used this emergency funding authority.

A bilateral initiative, the Memorandum of Understanding (MOU) between USDA and the Ukrainian Ministry of Agrarian Policy and Food, entered into force on 10 August 2022 to enhance co-ordination between the US and Ukrainian agriculture and food sectors and build a strategic partnership to address food security. The MOU will be in place for three years, and specifically seeks co-operation in the areas of productivity data and expertise, shared expertise and guidance on new technologies, and enhanced co-operation on bilateral trade and post-conflict capacity building. To date, technical assistance and other initiatives have been launched in the areas of animal health, biosecurity, sanitary and phytosanitary (SPS) capacity building, agricultural and trade policy, wildfire control, water management, and preventing illegal deforestation.

Contextual information

The United States is the world's second largest economy by GDP in PPPs and the third largest country by land area and population. US GDP per capita is among the highest in the world, more than three times the average of the countries included in this report (Table 29.3). Primary agriculture accounts for a small part of the economy – around 1% of GDP and 1.5% of employment – but agro-food accounts for almost 12% of total exports. The US agricultural sector benefits from a large domestic consumer market, as well as abundant arable and pasture land and diverse climatic conditions that support the production of a wide range of commodities. Crops represent 62% of the value of total agricultural production. Key industries include grains (maize and wheat), oilseeds (soybeans), cotton, cattle, dairy, poultry and fruits and vegetables.

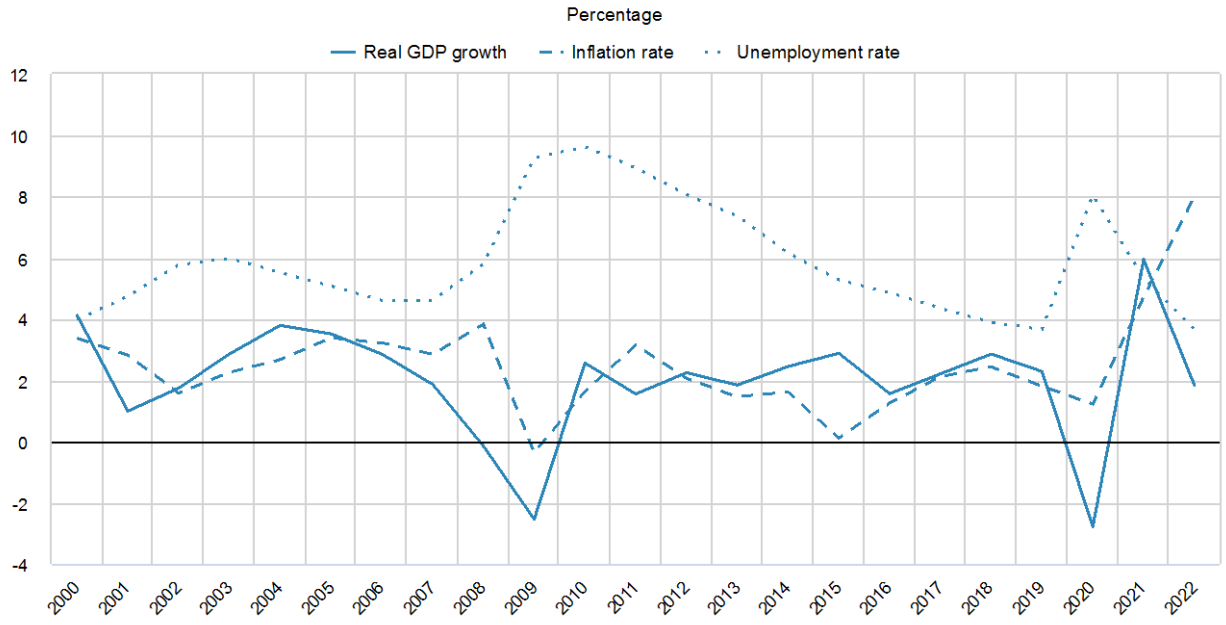
Table 29.3. United States: Contextual indicators

	United States		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	10 251	23 315	25.6%	19.0%
Population (million)	282	332	6.6%	6.3%
Land area (thousand km^2)	9 162	9 147	11.2%	11.1%
Agricultural area (AA) (thousand ha)	414 399	405 810	13.8%	13.9%
			All countries[1]	
Population density (inhabitants/km^2)	31	36	52	64
GDP per capita (USD in PPPs)	36 300	70 181	9 350	23 401
Trade as % of GDP	9.4	9.5	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	1.2	1.0	2.9	3.9
Agriculture share in employment (%)	1.8	1.5	-	-
Agro-food exports (% of total exports)	7.8	11.8	6.2	7.9
Agro-food imports (% of total imports)	3.5	6.0	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	56	62	-	-
Livestock in total agricultural production (%)	44	38	-	-
Share of arable land in AA (%)	42	39	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

Real GDP growth returned to the long-term average of around 2% in 2022 as the economy moves past the dip-and-spike effect of the COVID-19 pandemic in 2020 and 2021. However, higher food, energy and housing costs have kept inflation at record highs (Figure 29.5). The labour market has recovered nearly all the jobs lost since the onset of disruptions caused by COVID-19 pandemic, and the current unemployment rate is at historical lows.

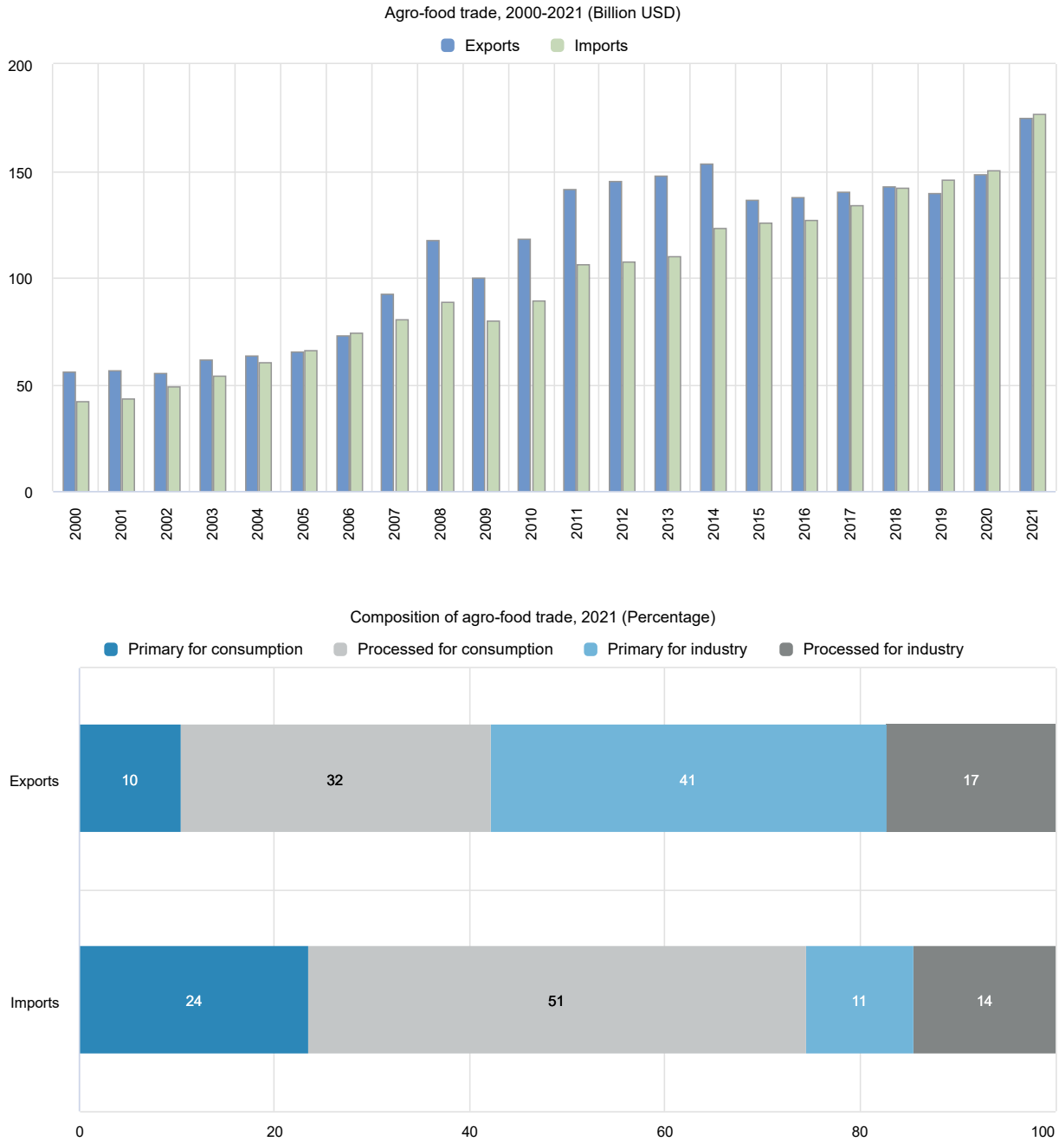
Figure 29.5. United States: Main economic indicators, 2000 to 2022



Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

The United States is the world's second largest agricultural trader, after the European Union. Both US agricultural exports and imports have been growing steadily since 2000 and net trade is nearly balanced (Figure 29.6). Exports of high-value products such as dairy products, meats, fruit, and vegetables have been growing, driven by demand in emerging markets, though the majority of exports are still destined for further processing. Import demand on the other hand is concentrated on products for final consumption.

Figure 29.6. United States: Agro-food trade

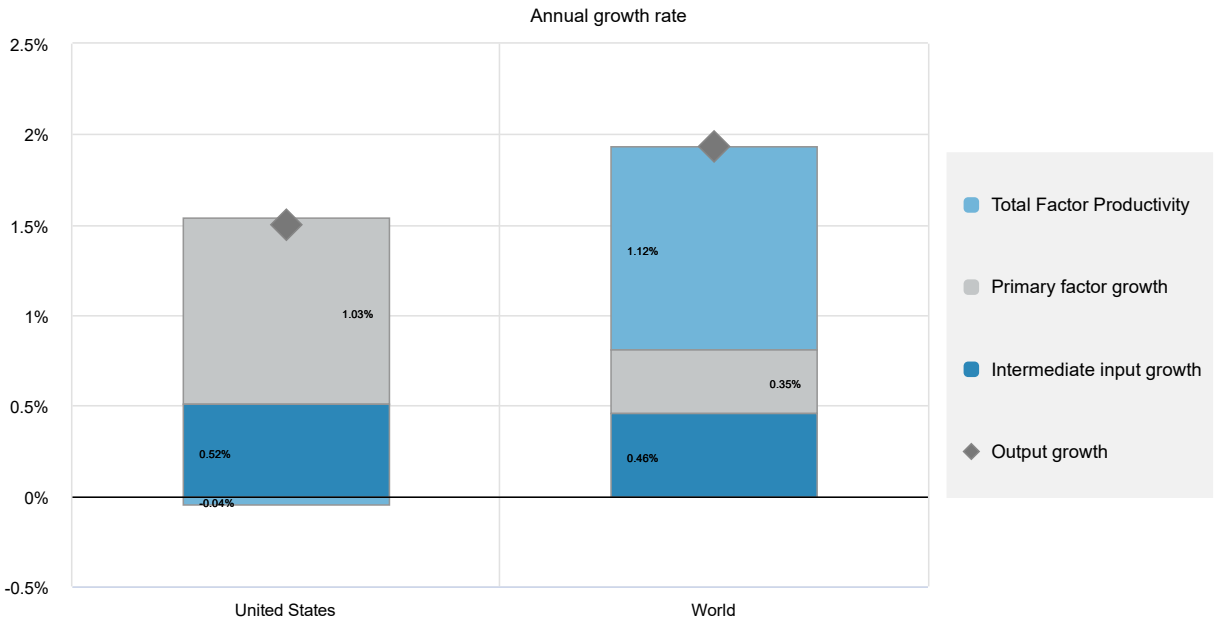


Notes: Numbers may not add up to 100 due to rounding.
Source: UN Comtrade Database.

Growth in output has been driven by increases in the use of both primary factors and inputs (Figure 29.7). Total factor productivity (TFP) growth, which averaged 1.5% between 1991 and 2000, has been close to zero over the period 2011-20. Most environmental indicators are at or slightly below OECD averages. Nitrogen balances have been gradually improving, while phosphorus balance is slightly worsening (Table 29.4). Agriculture's share in energy use and in total GHG emissions are increasing. Water stress in

the United States is above the OECD average. While the water stress indicator has declined between 2000 and 2020, there are regional hotspots of water stress. In particular, the southwest United States region is facing drier and warmer conditions, groundwater depletion, as well as competition for water demand from rapid population growth (OECD, 2017[8]).

Figure 29.7. United States: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 29.4. United States: Productivity and environmental indicators

	United States		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	1.5%	0.0%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	34.4	30.5	32.2	30.4
Phosphorus balance, kg/ha	2.8	3.5	3.3	3.0
Agriculture share of total energy use (%)	0.9	1.4	1.7	2.0
Agriculture share of GHG emissions (%)	7.6	9.9	8.6	10.5
Share of irrigated land in AA (%)	5.3	5.6	-	-
Share of agriculture in water abstractions (%)	39.7	45.6	46.6	49.7
Water stress indicator	19.5	15.6	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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USDA ERS (2020), *Farm & Commodity Policy: Overview*, https://www.ers.usda.gov/topics/farm-economy/farm-commodity-policy/. [6]

Notes

[1] The term "underserved communities" refers to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life (see note 20 for more details)

[2] Federal Agriculture Improvement and Reform Act of 1996 (P.L. 104-127).

[3] Farm Security and Rural Investment Act of 2002 (P.L. 107-171).

[4] Food, Conservation, and Energy Act of 2008 (P.L. 110-246).

[5] Agricultural Adjustment Act of 1938 (7 U.S.C. 1281).

[6] Federal Crop Insurance Reform and Department of Agriculture Reorganization Act of 1994. The Food, Conservation, and Energy Act of 2008 ("2008 Farm Bill") continued the 100% premium subsidy for CAT but increased CAT fees from USD 50 to USD 300/crop/county.

[7] Base acres are a farm's crop-specific historical acreage of wheat, feed grains, seed cotton, rice, oilseeds, pulse crops or peanuts eligible to participate in the ARC and PLC commodity programmes. Base acres are not linked to current plantings.

[8] The effective reference price is the lesser of 115% of the reference price specified in the law or an amount equal to the greater of the reference price or 85% of the average prices from the 5 preceding years, excluding the highest and lowest price. This method of calculating the payment rates allows the effective reference price to be greater than the statutory reference price if historic average prices are greater than the statutory reference price.

[9] For ARC-IC, all base acres had to be enrolled in ARC-IC.

[10] Ranching is the practice of raising herds of animals on large tracts of land. Ranchers commonly raise grazing animals such as cattle and sheep.

[11] https://www.fsa.usda.gov/programs-and-services/emergency-relief/index.

[12] Drought ratings range from D0 (moderately dry) to D4 (exceptional drought). D2 is considered a severe drought where crop or pasture losses are likely LFP covers losses due to droughts classified as D2 or D3, https://droughtmonitor.unl.edu/About/AbouttheData/DroughtClassification.aspx.

[13] Qualifying natural disaster events include wildfires, hurricanes, floods, derechos, excessive heat, winter storms, freeze (including a polar vortex), smoke exposure, excessive moisture, qualifying drought, and related conditions.

[14] PFAS are widely used, long lasting chemicals. They are commonly found in cleaning products, water-resistant fabrics, grease-resistant paper, non-stick cookware and personal care products.

[15] The new rule includes counties with drought rated as D2 intensity (see note 13) for at least eight consecutive weeks or rated as D3 or D4 – consistent with the availability of drought assistance under the Livestock Forage Program (LFP). Previously, a drought rating of at least D3 was required to qualify as "eligible drought".

[16] https://www.farmers.gov/inflation-reduction-investments.

[17] The 2021 pilot phase of this programme was available only in four states.

[18] Arkansas, California, Colorado, Georgia, Iowa, Michigan, Mississippi, Ohio, Pennsylvania, South Carolina, and South Dakota

[19] The Federal fiscal year (FY) runs from 1 October through 30 September of the following year.

[20] OMB memorandum M-21-20, Promoting Public Trust in the Federal Government through Effective Implementation of the American Rescue Plan Act and Stewardship of the Taxpayer Resources, references Executive Order 13985, "Advancing Racial Equity and Support for Underserved Communities Through the Federal Government" (20 January 2021), which includes a definition of "underserved communities" in

Section 2. The term “underserved communities” refers to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life, as exemplified by the list in the preceding definition of “equity.”

The term “equity” means the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment, such as Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of colour; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty or inequality.

[21] Justice40 is a whole-of-government initiative stemming from 2021’s Executive Order 14008 on *Tackling the Climate Crisis at Home and Abroad.* Investments covered by the initiative include investments on climate change, clean energy and energy efficiency, clean transit, affordable and sustainable housing, training and workforce development, remediation and reduction of legacy pollution, and the development of critical clean water and wastewater infrastructure. Disadvantaged populations are often disproportionately affected by these issues. For more information on Justice40, see https://www.whitehouse.gov/environmentaljustice/justice40/.

[22] For the full list, see https://www.usda.gov/sites/default/files/documents/usda-justice-40-programmes.pdf.

[23] Biden Administration Announces Hundreds of Millions of Dollars in Global Food Aid to Respond to Putin’s Unprovoked Invasion of Ukraine | USDA.

30 Viet Nam

Support to agriculture

Viet Nam's Producer Support Estimate (PSE) has been negative since 2014 and has hovered near -10% of gross farm receipts since 2018, and an average -10.5% in 2020-22. The PSE is largely driven by negative Market Price Support (MPS), which implies taxation of producers. Producers of some import-competing commodities, such as maize, sugar cane, and beef and veal, benefit from tariff protection and hence have positive MPS. However, major export commodities, such as poultry, tea, and natural rubber, are implicitly taxed. Farmgate prices were an average 10% below international reference values.

Budgetary transfers to producers are relatively small and dominated by payments based on variable input use, primarily to cover the cost of exempting farmers from paying an irrigation service fee. The government supports the production of rice by guaranteeing an average level of profit for rice growers equivalent to 30%, executed by the purchase of rice for the national strategic reserve, by prescribing price brackets, and by providing funding to maintain at least 3.5 million hectares of land in paddy. All support to farmers comes in the form of the most production- and trade-distorting measures.[1]

Support for general services for agriculture (General Service Support Estimate, GSSE) remained constant at 2.2% of the value of production, dominated by allocations to hydrological infrastructure, particularly for irrigation, and to infrastructure development in rural communes, including roads and small irrigation schemes.

Recent policy changes

The government issued several resolutions, decrees and decisions that lay out plans and targets for the next five to ten years and vision statements for the next 25 to 30 years under the umbrella of the ten-year Socio-Economic Development Strategy (SEDS) for 2021-30. These include the National Sustainable Agriculture and Rural Development Strategy for 2021-30, Vision to 2050, which sets targets for average levels of growth in agricultural value added, labour productivity, and export value. In addition, the National Green Growth Action Plan for 2021-30 delineates tasks and activities to develop a sustainable and low-emissions agricultural sector that is adaptable in the face of climate change.

Viet Nam continues to set ambitious objectives for climate-change mitigation in agriculture and has begun developing mechanisms to advance adaptation within the sector. A decree at the beginning of 2022 strengthened the country's mitigation target, aiming to reduce greenhouse-gas (GHG) emissions – including from energy use in agriculture – at least 14% (129.8 $MtCO_2eq$) compared to the business-as-usual scenario for 2030 in Viet Nam's updated Nationally Determined Contribution (NDC) submitted in 2020 under the Paris Agreement. With respect to adaptation, a national strategy was approved to transform agricultural production towards smart adaptation, and indicators were defined to monitor and evaluate progress toward climate-change adaptation objectives.

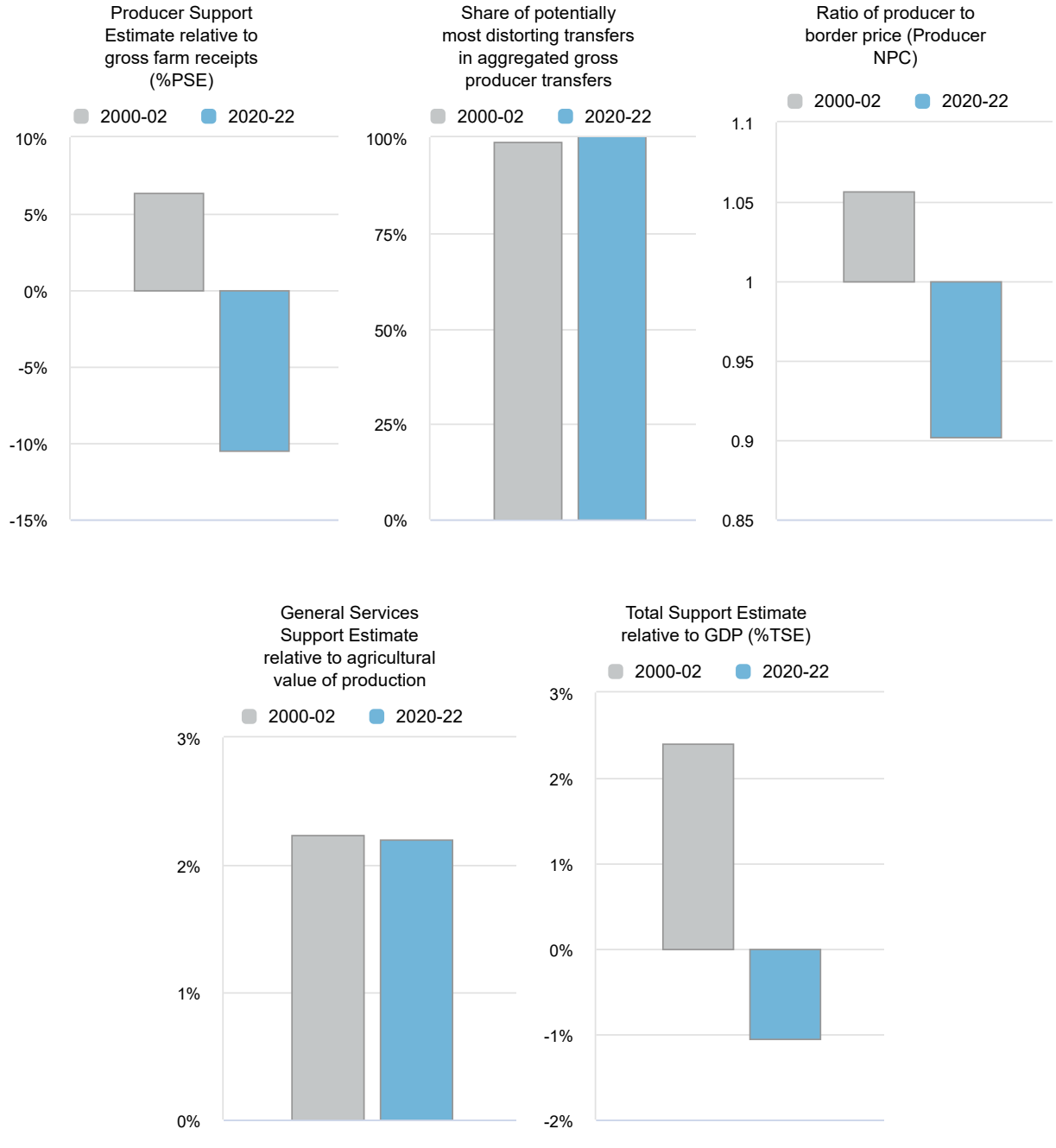
The Regional Comprehensive Economic Partnership (RCEP) of six Association of Southeast Asian Nations (ASEAN) countries – Brunei, Cambodia, Laos, Singapore, Thailand, and Viet Nam – and four

partner countries with which ASEAN has Free Trade Agreements (FTA) – the People's Republic of China (hereafter "China"), Japan, Australia, and New Zealand – came into force on 1 January 2022. Preliminary evidence suggests that the agreement has already benefitted Viet Nam: foreign trade value for Viet Nam was up about 12% on the year in the first 11 months of 2022, with China the largest importer of Vietnamese agricultural, forestry, and fishery products.[2]

Assessment and recommendations

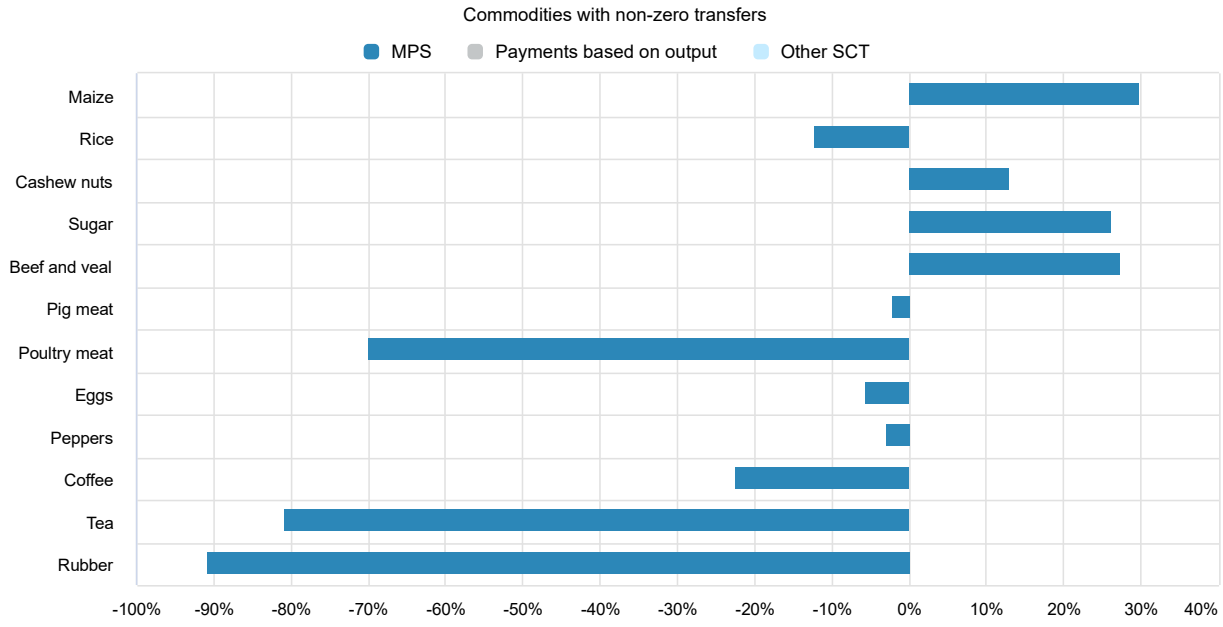
- Viet Nam has established and strengthened commitments to climate-change mitigation and adaptation as defined by national strategy and planning documents. With respect to adaptation, actions planned and undertaken span infrastructure and technological, behavioural and cultural, and social and institutional activities. These include improvements in water-resource infrastructure, breeding new varieties of rice resilient to saltwater intrusion, and developing legal and governance frameworks to support green growth. These actions build resilience in the medium to long term. The establishment of indicators to monitor and evaluate adaptation activities is a laudable and necessary step towards achieving the stated objectives. Continued efforts should document the implementation of adaptation activities and demonstrate their impact.
- Although Viet Nam seeks to advance sustainable growth in agricultural productivity, it is unclear if and by how much proposed activities will reduce the substantial environmental degradation caused by current production systems. The National Green Growth Action Plan calls to expand the irrigated land base, which will add to already significant water and energy use and could exacerbate GHG emissions, nutrient surpluses and water-quality deterioration, depending on what crops are grown. Attention should be paid to how planning and strategic visions developed at the national level help or hinder the country's ability to achieve its mitigation and adaptation targets, and the long-term sustainability of the agricultural sector.
- Although the country has made progress reforming state-owned enterprises (SOE), these continue to benefit from preferential access to credit and land, and influence the export of key commodities. Consequently, producers of these commodities are implicitly taxed, receiving commodity prices below international reference levels. Efforts should be made to phase out preferential treatment of SOEs to encourage competition and ensure equal access by private firms to productive resources.
- Viet Nam's integration into the global economy via FTAs such as the RCEP marks an important step towards expanding and diversifying export markets. Domestic producers face challenges to accessing foreign markets, for example arising from more stringent requirements for food hygiene, safety and technical standards. Though plans have been made to improve the quality and safety of agricultural products, efforts should now advance their implementation. In addition, domestic producers will face increased competition from imports. To address this, increased investments should be pursued to help domestic producers become more competitive, such as expenditures on infrastructure and training.

Figure 30.1. Viet Nam: Development of support to agriculture



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Figure 30.2. Viet Nam: Commodity-specific transfers as a percentage of commodity gross farm receipts, 2020-22



Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Table 30.1. Viet Nam: Estimates of support to agriculture

Million USD

	2000-02	2020-22	2020	2021	2022p
Total value of production (at farm gate)	**9 013**	**46 526**	**44 705**	**46 985**	**47 886**
of which: *share of MPS commodities (%)*	77.02	73.22	68.92	74.21	76.54
Total value of consumption (at farm gate)	**7 808**	**46 283**	**43 163**	**49 295**	**46 391**
Producer Support Estimate (PSE)	**591**	**-4 945**	**-4 377**	**-5 356**	**-5 102**
Support based on commodity output	470	-5 400	-4 881	-5 751	-5 569
Market Price Support[1]	470	-5 400	-4 881	-5 751	-5 569
Positive Market Price Support	959	1 289	1 707	1 456	703
Negative Market Price Support	-489	-6 689	-6 588	-7 206	-6 272
Payments based on output	0	0	0	0	0
Payments based on input use	101	453	502	393	465
Based on variable input use	101	453	502	393	465
with input constraints	0	0	0	0	0
Based on fixed capital formation	0	0	0	0	0
with input constraints	0	0	0	0	0
Based on on-farm services	0	0	0	0	0
with input constraints	0	0	0	0	0
Payments based on current A/An/R/I, production required	0	2	2	2	2
Based on Receipts / Income	0	2	2	2	2
Based on Area planted / Animal numbers	0	0	0	0	0
with input constraints	0	0	0	0	0
Payments based on non-current A/An/R/I, production required	0	0	0	0	0
Payments based on non-current A/An/R/I, production not required	0	0	0	0	0
With variable payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
With fixed payment rates	0	0	0	0	0
with commodity exceptions	0	0	0	0	0
Payments based on non-commodity criteria	21	0	0	0	0
Based on long-term resource retirement	21	0	0	0	0
Based on a specific non-commodity output	0	0	0	0	0
Based on other non-commodity criteria	0	0	0	0	0
Miscellaneous payments	0	0	0	0	0
Percentage PSE (%)	**6.35**	**-10.52**	**-9.68**	**-11.30**	**-10.55**
Producer NPC (coeff.)	**1.06**	**0.90**	**0.91**	**0.90**	**0.90**
Producer NAC (coeff.)	**1.07**	**0.90**	**0.91**	**0.90**	**0.90**
General Services Support Estimate (GSSE)	**201**	**1 023**	**1 025**	**980**	**1 065**
Agricultural knowledge and innovation system	23	138	147	133	134
Inspection and control	0	0	0	0	0
Development and maintenance of infrastructure	173	870	864	831	915
Marketing and promotion	0	0	0	0	0
Cost of public stockholding	5	15	14	16	16
Miscellaneous	0	0	0	0	0
Percentage GSSE (% of TSE)	**25.74**	**..**	**..**	**..**	**..**
Consumer Support Estimate (CSE)	**-694**	**2 570**	**1 313**	**2 632**	**3 765**
Transfers to producers from consumers	-694	3 929	3 571	4 288	3 926
Other transfers from consumers	-22	-1 626	-2 683	-2 052	-142
Transfers to consumers from taxpayers	0	0	0	0	0
Excess feed cost	22	267	425	397	-20
Percentage CSE (%)	**-8.77**	**5.56**	**3.04**	**5.34**	**8.12**
Consumer NPC (coeff.)	**1.10**	**0.95**	**0.98**	**0.96**	**0.92**
Consumer NAC (coeff.)	**1.10**	**0.95**	**0.97**	**0.95**	**0.92**
Total Support Estimate (TSE)	**793**	**-3 922**	**-3 352**	**-4 376**	**-4 037**
Transfers from consumers	716	-2 303	-888	-2 236	-3 784
Transfers from taxpayers	98	7	219	-88	-111
Budget revenues	-22	-1 626	-2 683	-2 052	-142
Percentage TSE (% of GDP)	**2.41**	**-1.05**	**-0.97**	**-1.18**	**-0.99**
Total Budgetary Support Estimate (TBSE)	**323**	**1 478**	**1 528**	**1 375**	**1 532**
Percentage TBSE (% of GDP)	**1.00**	**0.40**	**0.44**	**0.37**	**0.38**
GDP deflator (2000-02=100)	**100**	**516**	**509**	**523**	**..**
Exchange rate (national currency per USD)	**15 000.33**	**23 191.54**	**23 236.30**	**22 935.62**	**23 402.71**

.. Not available

Note: p: provisional. NPC: Nominal Protection Coefficient. NAC: Nominal Assistance Coefficient.
A/An/R/I: Area planted/Animal numbers/Receipts/Income.

1. Market Price Support (MPS) is net of producer levies and excess feed cost. MPS commodities for Viet Nam are: rice, rubber, coffee, maize, cashew nuts, sugar, pepper, tea, beef and veal, pig meat, poultry and eggs.

Source: OECD (2023), "Producer and Consumer Support Estimates", *OECD Agriculture statistics* (database). http://dx.doi.org/10.1787/agr-pcse-data-en

Description of policy developments

Overview of policy trends

Following its declaration of independence in 1945 and ensuing reunification into the Socialist Republic of Viet Nam in 1975, the Communist Party of Viet Nam initially structured the country according to the Soviet model, which was grounded in central planning and self-reliance. Within this context, agriculture's primary role was to support the development of heavy industry by providing food at low prices and achieving food self-sufficiency (OECD, 2015[1]). Production was organised around co-operatives and state farms, with SOEs providing inputs and controlling output markets. By the mid-1980s, food shortages and famine were pervasive, as was inflation.

A long series of reforms embedded within the economy-wide program known as *Doi Moi* or "Renovation" progressively liberalised Viet Nam's economy and its agricultural sector starting in 1986 (OECD, 2015[1]). The paradigm evolved toward a "law-ruled socialist market economy," in which the development of agriculture, forestry, and fisheries became a priority for stabilising the economy. The model for agricultural management shifted from co-operatives to farm households, with farmland redistributed in the form of land-use rights, and farm households given the ability to make their own production decisions provided they met certain production quotas. By 1992, prices for most goods and services were determined by markets, though regulation remained for certain commodities, such as fertiliser, sugar, and rice.

From 1993-2000, Viet Nam underwent a period of expansion, in which the country increasingly opened to trade and integrated into the global economy. Reforms introduced more market-oriented policies with the aim of expanding food production for export. A number of these reforms aimed to improve investment and technological innovation, including the 1993 Land Law, the establishment of a national extension service, and credit access for rural households. The Price Stabilisation Fund (PSF) was established to regulate the prices of certain commodities, including urea, paddy and rice, coffee, and sugarcane.

During this period, Viet Nam entered into bilateral and regional trade agreements and partnerships to expand market opportunities, including its accession to the Association of Southeast Asian Nations (ASEAN) in 1995 and its admission to the Asia Pacific Economic Community (APEC) in 1998. Most importantly, the country relaxed restrictions on the export of rice as well as internal barriers to trade between the south and the north. The country saw strong and steady growth throughout the 1990s, in terms of real GDP (7.4% per year) and agricultural output (6% per year), with the relaxation of production quotas, price controls, collectivised agriculture, restrictions on trade and investment, and bans on private enterprises (OECD, 2015[1]; World Bank, 2016[2]). The budgetary expenditure for agriculture quadrupled during this period, with several large-scale projects implemented, such as the Building Canals for All Rice Fields programme (Phan, 2014[3]; Ellis et al., 2010[4]).

From 2000-08, the policy framework aimed to stimulate agricultural and rural modernisation and industrialisation by improving yields, quality, and the value of production. Further international integration, including accession to the WTO in 2007, locked in previous reforms. The remaining few quantitative restrictions on agricultural imports and exports were progressively withdrawn but it was not until the late 2000s that private sector involvement in rice export was encouraged. Prior to this point, the right to export was limited to national and provincial SOEs.

Since 2008, two major resolutions have guided and reoriented agricultural policy development in Viet Nam. The first, the "Tam Nong Resolution", emphasises the advancement of agriculture, rural development, and farmer livelihoods based on a socialist market economy. Alongside this, a resolution to ensure national food security was issued in response to sharp increases in food prices from 2007-09. The resolution sought to ensure national food security by guaranteeing adequate food supplies, particularly for rice. It set specific targets to preserve land in the production of rice and to ensure a farm-gate price such that growers are guaranteed a certain profit margin above production costs. In March 2021, this resolution was updated

through 2030 to stabilise 3.5 million hectares of land in rice production and to ensure an average profit of 35% above production costs.

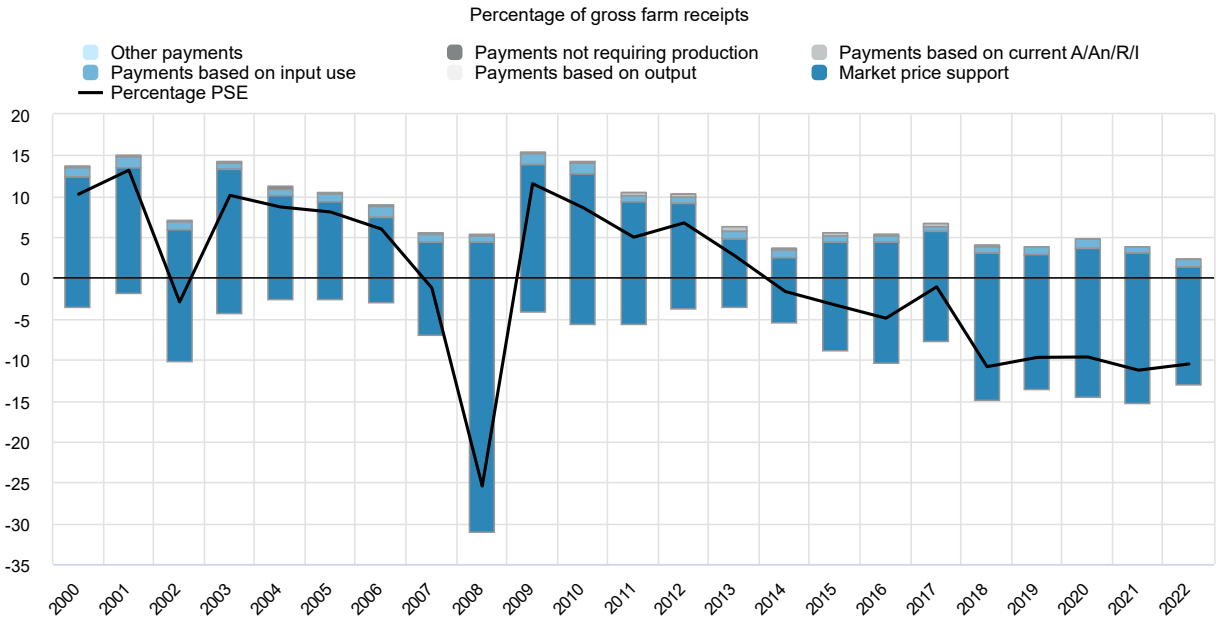
Table 30.2. Viet Nam: Agricultural policy trends

Period	Framework	Changes in agricultural policies
1976-1986	Reunification: Socialist centrally planned system	Centrally planned economy, including the agricultural sector Agricultural production organised into co-operatives that also administered land Upstream and downstream sectors reorganised as state-owned enterprises
1986-1993	Renovation (*Doi Moi*): Launch of reforms to transition Viet Nam to a socialist-oriented market economy	Farm households replace co-operatives as focus of agricultural and rural development Role of co-operatives reduced: farmers allowed to make production decisions; co-operatives limited to trading and providing services (e.g. irrigation) Economy opened to trade Reduced government control over prices, although prices regulated for some products (including fertiliser, sugar and rice)
1993-2000	Expansion: Further reforms to expand food production and exports	Land Law 1993; land use rights extended to 20 years (annual crops) and 50 years (perennial crops) Land use tax replaces production quota and agricultural output tax Rural households allowed to borrow loans from commercial institutions Price Stabilisation Fund for essential commodities Restrictions on rice exports relaxed Increased budgetary expenditure for agriculture
2000-2008	Consolidation: Policies to promote agricultural and rural modernisation and industrialisation	Policies to encourage production of primary and processed commodities, quality improvement, domestic and international trade, and increase investments from various sources in physical and social infrastructure Regional and bilateral trade agreements WTO accession
2008-present	Reorientation: Shift in emphasis from extensive development of agriculture based on quantity to one focused on quality and efficiency improvements	Agricultural policy guided by two major resolutions: - Resolution No. 26/2008/NQ-TW on agriculture, farmers and rural areas (*Tam Nong*) - Resolution No. 63/2009/NQ-CP to ensure national food security Implemented through the master plan for agricultural development (2012) and the agricultural restructuring project (2013)

Source: OECD (2015[1]).

Over the past 20 years, the overall level of support provided to Viet Nam's agricultural sector fluctuated at low or negative levels, largely driven by changes in MPS (Figure 30.3). Since 2014, PSE has remained negative, dropping to around -10% in 2018 and remaining at that level since. Total support to agriculture (TSE) has also been negative over the same period, as budgetary transfers to producers and expenditure on general services do not compensate for overall negative MPS.

Figure 30.3. Viet Nam: Level and PSE composition by support categories, 2000 to 2022



Notes: A/An/R/I:Area planted/Animal numbers/Receipts/Income.
Payments not requiring production include Payments based on non-current A/An/R/I (production not required) and Payment based on non-commodity criteria. Other payments include Payments based on non-current A/An/R/I (production required) and Miscellaneous payments.
Source: OECD (2023), "Producer and Consumer Support Estimates", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-pcse-data-en.

Main policy instruments

Two of the most important policies governing agriculture are the Master Plan for Agricultural Production Development and the Plan on Restructuring Agriculture in the 2021-2025 Period.[3] Both of these decisions contain general objectives to sustainably develop agriculture and rural areas; increase value-added, efficiency, and competitiveness; and improve the life of farmers, contribute to poverty reduction, protect the environment and ecology, and ensure national security.

Domestic price support is the main form of support for Vietnamese producers, particularly in the form of border protection for import-competing commodities such as beef, veal, and sugarcane. In recent years, tariffs for some goods have increased, although they remain within the bounds established by the WTO.

State-owned enterprises (SOEs) have declined in importance through reform and privatisation efforts, though they continue to play a role in the production, wholesale, and international trade of export commodities such as rice, rubber, coffee, and tea, for which the MPS is negative.[4] SOEs continue to be afforded privileges in terms of access to capital, natural resources, land, and human resources, which allows them to continue to exert market power, discouraging entry and suppressing farmgate prices (OECD, 2022[5]). Key SOEs that continue to operate in the agricultural sector include the Vietnam Rubber Group (VRG), the Vietnam Southern Food Corporation (Vinafood II), the Vietnam National Coffee Corporation (Vinacafe), and the Vietnam National Tea Corporation (Vinatea).[5]

There are two main policy instruments used to ensure that rice farmers earn 30% profit above production costs. First, when prices are too low, the government provides concessional loans to rice purchasing enterprises for the temporary storage of rice during harvest. Second, the government considers the profit

objective when it determines the annual volume and price of rice that it purchases each year to maintain its national reserve stockpile, managed by the General Department of State Reserves (GDRS) under the Ministry of Finance.

Payments to producers are relatively small and are mainly expenditures to offset the irrigation service fee (ISF) exemption. This exemption from paying a fee to assist with the costs of managing, maintaining, and protecting irrigation works above the “canal gate” has been in place since 2009. In June 2017, the Law on Irrigation was issued, providing for the reintroduction of an ISF for all users. In 2022, funding for the irrigation fee exemption increased by 26.5% at both the central and local government levels, relative to expenditures in 2021.[6]

Other support based on input use includes central and local government support to provide plant genetic and animal breeding material to farmers at subsidised rates to encourage diversification, improve the quality of production, and support farmers in response to natural disasters and disease outbreaks. Support for producers is also provided through the Socio-economic Development Programme for Ethnic Minorities and Mountainous Areas (known as Programme 135). The programme includes subsidies for agricultural inputs and services such as extension, which represent around 13% of total expenditures under the measure.

Funding for local rice grower support programmes is available at the provincial level to help achieve the paddy land target of 3.5 million hectares. At least 50% of this funding is to be used to support the adoption of new rice varieties, new technologies in rice production, and to promote value chain linkages for the production and sale of rice. Remaining funds are to be used for activities such as periodic soil analyses to guide restoration measures, improvements in land quality, and investments in agricultural and rural infrastructure, including irrigation systems.

Since 2003, most farming households and organisations benefit from a reduction in the land use tax or are exempt from paying it. The exemptions and reductions were initially provided for a seven-year period but have been extended twice and are currently valid until 31 December 2025.

Expenditures on irrigation systems dominate general services for the agricultural sector. In 2020, the government approved the Hydraulic Work Strategy through 2030, Vision toward 2045. The strategy establishes water supply targets for agricultural production and aquaculture and sets other objectives, such as ensuring the supply of water for double-cropping paddy rice fields and ensuring that 85% of the total area is under irrigation. Other targets in the irrigation strategy are improving drainage and environmental protection, preventing and combating natural disasters, and responding to climate change. Targets in the strategy will be achieved through a combination of investments in irrigation infrastructure, improved planning and management of irrigation laws, and technical solutions.

Expenditures on other general services include investments in infrastructure, agricultural knowledge and innovation systems, inspection and control, marketing and promotion, and public stockholding. In 2020, the government approved the Research and Development Programme for Plant and Livestock Varieties Serving Agricultural Restructuring for the Period 2021-30. The programme aims to improve research capacity and the development of agricultural plant and livestock varieties to support the modernisation of the agricultural sector, adaptation to climate change, and the restructuring of agricultural production to improve competitiveness, increase value-added, and promote sustainable development. Total investment in the programme, including private funding, is VND 103 050 billion (USD 4.4 billion) over the lifespan of the project.

Private ownership of land is not permitted in Viet Nam. Rather, all land is owned and administered by the state on behalf of the people. Law allows ownership of a Land Use Right (LUR), under which title holders may conduct real estate transactions, including buying, selling, bequeathing, and leasing land, as well as using land as collateral for mortgages with financial institutions. There are different types of LURs with differing restrictions, limiting the duration of the right,[7] the choice of crops, the process for converting paddy

land from rice to another crop, and land transfers and exchanges. Agricultural land use plans and support policies favour rice production.

The government regulates exporters of rice to promote stockholding of rice that can be supplied to the market to balance exports and domestic consumption, stabilise domestic rice prices, and fulfil international commitments in the event of natural disasters or crop failures. To obtain a certificate to export rice from Ministry of Industry and Trade (MOIT), companies must have at least one storage and one milling facility that meet national standards and regulations (either owned or leased) and maintain rice reserves equivalent to 5% of the volume shipped in the preceding six months.[8] Exporters of organic rice are exempted from the need to obtain a certificate and from the storage and milling conditions.

Following Viet Nam's accession to the WTO in 2007, the simple average most favoured nation (MFN)-applied tariff on agricultural imports decreased from around 25% in the mid-2000s to 17.1% in 2021. This is slightly lower than the simple average bound tariff on agricultural products of 18.8% (WTO, 2022[6]). Applied tariffs are much lower on imports originating from countries or regions with which Viet Nam signed free trade agreements. For example, the simple average preferential tariff on agricultural imports is just 2.3% from ASEAN members and China, and 4.5% from Australia and New Zealand.

Viet Nam implements trade liberalisation through multilateral, regional, and bilateral trade agreements. It is a member of the WTO, the Association of Southeast Asian Nations (ASEAN), and the Asia-Pacific Economic Cooperation (APEC). The country supports trade liberalisation between ASEAN members and their major trading partners in the region, including China, Japan, India, Korea, Australia, and New Zealand. Outside of ASEAN, Viet Nam has negotiated bilateral free trade agreements with Chile, Cuba, the Eurasian Economic Union, Japan, and Korea. Agreements with the European Union and the United Kingdom came into effect in 2020. Viet Nam, along with ten other countries, signed the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) on 8 March 2018. The agreement was ratified by the Vietnamese National Assembly on 12 November 2018, and entered into force on 14 January 2019. In 2022, the Regional Comprehensive Economic Partnership (RCEP) came into force for Viet Nam and 12 other countries, including ASEAN members and partner countries.[9]

Viet Nam signed and ratified the Paris Agreement on Climate Change in 2016. In its updated Nationally Determined Contribution (NDC), submitted in July 2020, the country committed to reducing 2030 business-as-usual (BAU) greenhouse gas (GHG) emissions of 927.9 MtCO2eq by 9% using domestic resources and up to 27% with international support. This goal represented a less stringent mitigation target than that set in the first NDC. However, in 2022, Viet Nam issued a decree on Mitigation of Greenhouse Gas Emissions and Protection of the Ozone Layer, under which the country strengthened its commitment to mitigation by pledging a 14% reduction from the 2030 BAU. Additionally, Viet Nam signed the Global Methane Pledge and committed to achieving net-zero carbon emissions by 2050 at the COP 26.

These national-level targets have been translated into sector-specific goals for implementation via the National Action Plan on Green Growth for 2021-30, the Action Plan to Reduce Methane Emissions by 2030, and the Scheme on Tasks and Solutions to Implement the Results of COP26. Notably, the latter sets the objective to reduce GHG emissions from agriculture, which accounts for almost one-third of the country's total emissions, by 43% relative to the 2030 BAU.

Climate change adaptation policies in agriculture

Viet Nam has invested since 2008 in building a legal and planning structure to support climate-change adaptation through the development of strategies, plans, resolutions, and laws. Benchmarks include the National Target Program on Response to Climate Change (2008), the National Strategy on Climate Change (2011), the National Environmental Protection Law (2014), the National Adaptation Plan in Agriculture (NAP-Ag, 2016), and the National Adaptation Plan (2019-2020).[10] The Ministry of Natural Resources and Environment (MONRE) oversees activities related to climate change. Within MONRE, the

Department of Meteorology, Hydrology and Climate Change (DMHCC) co-ordinates climate-change activities, responses, and strategies. Other ministries are involved in planning and implementation of climate-change initiatives, including the Ministry of Agriculture and Rural Development (MARD), which leads the development of policies specific to agriculture and development.

The 2016 NAP-Ag set out entry points to mainstream climate-change adaptation priorities for the agricultural sector. As part of these, a climate-change vulnerability assessment was carried out for crops, livestock, and aquaculture together with a stocktaking of adaptation measures and Climate-Smart Agriculture (CSA) practices in use. Several pilot projects were carried out, including a salinity monitoring and early-warning system for the Mekong River Delta, a mapping project for landslide disaster risk, rapid capacity assessments of MARD officials and stakeholders in the sector, guidelines for prioritising climate-responsive investments, and training programmes for national and provincial officials on the valuation of climate-change impacts.

Viet Nam prioritised long-term sustainable development as the focus of agriculture policy. The goals of the National Strategy on Green Growth for 2021-30, Vision to 2050 are to:

- promote economic restructuring and innovation
- achieve economic prosperity, environmental sustainability, and social justice
- move towards a green, carbon-neutral economy to contribute to global climate-change mitigation
- develop modern, clean, organic, and sustainable agriculture
- raise the quality, added value, and competitiveness of agricultural production through adjustments and shifts in the composition of livestock, crops, forestry, and aquaculture production.[11]

The National Green Growth Action Plan for 2021-30 covers 18 subjects and 134 specific tasks and activities organised into 57 groups. The plan seeks to grow agricultural value added 2.5-3% per year while promoting efficient use of natural resources. Among the specific targets for 2030 for agriculture are:[12]

- irrigate at least 30% of dry crop area using advanced water-saving irrigation methods
- convert 300 000 hectares (approximately 4%) of rice land to more environmentally friendly and profitable crops[13]
- increase organic cropland to 2% of total crop area and organic livestock products to 2-3% of total production.

The National Strategy on Climate Change to 2050 emphasises transforming the structure of crops and livestock towards smart adaptation to climate change; developing sustainable agriculture, forestry, and fishery value chains; and the complete relocation of at least 70% of households in areas at high risk of natural disasters, flash floods, and landslides.

According to the most recent national communication submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in 2019, action plans at ministerial and local levels are being developed for vulnerable sectors in parallel with national-level programmes. Within the realm of water resources, climate-change adaptation measures have been implemented via Mekong River Delta water planning and supply projects and the Red River Delta programme on water management and climate change adaptation, in addition to city scale climate change programmes for Ho Chi Minh City, Hanoi, and Can Tho.

In 2019, MARD implemented 21 of 54 tasks in the climate change action plan, with total funding of VND 47.18 billion (USD 2.0 million), compared to the VND 402 billion (USD 17.2 million) required for full implementation. The tasks focused on governance (e.g. revising and improving legal frameworks to support green agriculture), technologies (e.g. enhanced use of modern technical solutions), and planning (e.g. accounting for climate-change impacts when using land, water, and other natural resources). The

sector has also developed and adopted new rice varieties suitable for inundation conditions and that support intensified production. These include acid- and salt-tolerant varieties currently under development.

The decision, “Approval of the Set of Indicators for Climate Change Adaptation Assessment in Agriculture and Rural Development”, establishes 44 indicators and 54 sub-indicators for monitoring and evaluating climate-change adaptation activities in the sector.

Domestic policy developments in 2022-23

The government has issued numerous resolutions, decrees, and decisions establishing priorities, plans, and targets that apply to the next 5-10 years, as well as vision statements that look forward by 25-30 years. Policy developments in 2022 that carry implications for the agricultural sector include the Sustainable Agriculture and Rural Development Strategy for 2021-30, the National Target Programme for New Rural Construction, and the National Strategy for Development of the Digital Economy. These programmes specify high-level goals, such as achieving growth objectives in agricultural labour productivity, advancing the competitiveness of craft village products, and increasing the percentage of enterprises using digital platforms. Additional strategies specific to the agricultural sector include plans to reduce the use of fertilisers, increase the training of agricultural workers, and promote the sustainable development of macadamia nut production.

A May 2022 decision implements a 2018 decree that provides for agricultural insurance and agricultural insurance assistance to encourage enterprises to sell insurance and to enable producers of agricultural products to insure against production risks. The new decision expands substantially the types of producers eligible. Prior to 2022, assistance in the form of subsidies to offset agricultural insurance premiums were limited to producers of rice, buffaloes, and cows. In 2022, eligibility was expanded to include producers of rubber, pepper, cashew, coffee trees, and pigs. In addition, coverage was expanded to cover risks from a significantly larger set of disease outbreaks relevant to rice production.

MARD issued a plan to ensure food safety and the quality of agriculture, forestry and fisheries products. The plan specifies a series of indicators to achieve, including an additional 2% of production and trading establishments ranked as having a relatively low risk of contamination, a decrease in the proportion of food samples that exceed allowable levels for a suite of contaminants by 10% relative to their level in 2021, and enhanced provision of training courses for central, provincial, and sub-provincial staff. To achieve these objectives, the plan delineates a series of tasks, including the review and revision of policies, standards and technical regulations and dissemination of information on food safety.

The prime minister approved the project Promoting Application of Information Technology to Collection of Information about and Forecasting of State Agricultural Product Markets. The objective of the project is to provide timely information to support regulation and trade, and to enhance the competitiveness, value-added, and sustainable development of Vietnamese agricultural products. The project includes numerous tasks to support analysis and forecasting, including building and operating an in-depth data warehouse; developing human resources via professional training; and developing uniform regulations and guidance on procedures at different levels (central to local government).

In 2022, two measures were adopted that seek to restructure and improve the operational efficiency and competitiveness of SOEs. The decision, Restructuring State-Owned Enterprises, Focusing on State-Owned Economic Groups and Corporations in the 2021-2025 Period, sets the objective of restructuring SOEs by 2025 (VNA, 2022[7]). The Resolution, On the Continuation to Innovate, Improve Operational Efficiency and Mobilise Resources of SOEs, Focusing on Economic Groups and Corporations, recognises the relatively low efficiency of SOEs and defines targets to accelerate reforms (OECD, 2023[8]).

In early 2022, the Ministry of Natural Resources and Environment issued the Decree on Mitigation of Greenhouse Gas Emissions and Protection of the Ozone Layer, which redefines the minimum level of GHG mitigation to be achieved by 2030 as 129.8 $MtCO_2eq$ (including energy use in agriculture), which

represents a reduction of 14% from the level of emissions in the business-as-usual (BAU) scenario. A number of national strategies and action plans were issued in 2022 that target climate change mitigation and that support national goals to reduce GHG emissions from agriculture by 43% from the BAU scenario and to reduce total methane emissions by 30% in 2030 relative to 2020 levels. An updated list of GHG emission coefficients relevant to agriculture was issued in October 2022.[14]

Trade policy developments in 2022-23

After ratification by six ASEAN countries (Brunei, Cambodia, Singapore, Thailand, Laos, and Viet Nam) and four partner countries (China, Japan, Australia, and New Zealand) the Regional Comprehensive Economic Partnership (RCEP) entered into force on 1 January 2022 for these 10 countries. The RCEP entered into force with a slight delay for Korea on 1 February 2022, Malaysia on 18 March 2022, and Indonesia on 2 January 2023. RCEP is the largest free trade agreement in the world, covering around 30% of the global population and GDP. Seven of the signatories, including Viet Nam, are intersection economies also belonging to the 11-member Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).

Contextual information

Viet Nam is a mid-sized country in terms of land area, but its population of over 97 million makes it the 15th most populous country in the world (Table 30.3). Almost two-thirds of the population live in rural areas. Since the reforms of *Doi Moi* in the mid-1980s, the country has seen strong and steady growth in GDP, on the order of 5-7% annually from 2000-19 (Figure 30.4). With the impact of COVID-19, real GDP growth slowed to under 3% in 2020, marking the first time that annual growth fell below 5% in more than two decades. Real GDP growth has not recovered, remaining relatively low, at 2.6%, in 2021.

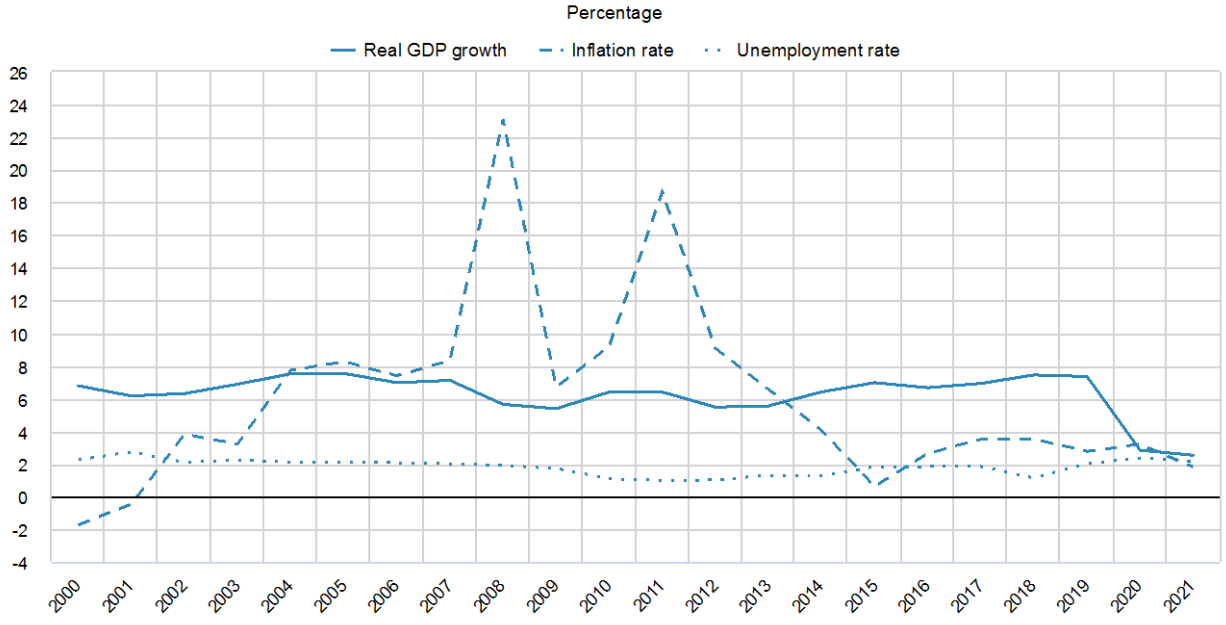
Although the relative importance of agriculture in the economy has declined over time, agriculture continues to contribute 12.6% to Viet Nam's GDP and employs 29% of the labour force. The agricultural sector in Viet Nam has undergone significant structural changes in recent decades, reflecting a shift away from staple foods to export commodities, such as rubber and cashew nuts, and to livestock production, particularly pig meat, in response to increased domestic demand. Nevertheless, crops dominate the agricultural landscape, accounting for 63% of total agricultural production in 2021 (Table 30.3). Rice alone plays a dominant role, accounting for around 26% of the value of agricultural production.

Table 30.3. Viet Nam: Contextual indicators

	Viet Nam		International comparison	
	2000*	2021*	2000*	2021*
Economic context			Share in total of all countries	
GDP (billion USD in PPPs)	202	1 138	0.5%	0.9%
Population (million)	79	97	1.8%	1.9%
Land area (thousand km^2)	310	313	0.4%	0.4%
Agricultural area (AA) (thousand ha)	8 780	12 360	0.3%	0.4%
			All countries[1]	
Population density (inhabitants/km^2)	252	311	52	64
GDP per capita (USD in PPPs)	2 553	11 676	9 350	23 401
Trade as % of GDP	49.5	90.1	12.3	15.6
Agriculture in the economy			All countries[1]	
Agriculture in GDP (%)	22.7	12.6	2.9	3.9
Agriculture share in employment (%)	65.3	29.0	-	-
Agro-food exports (% of total exports)	16.9	6.4	6.2	7.9
Agro-food imports (% of total imports)	6.1	9.6	5.5	7.2
Characteristics of the agricultural sector			All countries[1]	
Crop in total agricultural production (%)	74	63	-	-
Livestock in total agricultural production (%)	26	37	-	-
Share of arable land in AA (%)	71	55	32	34

Notes: *or closest available year.
1. Average of all countries covered in this report. Agro-food trade includes natural rubber.
Sources: OECD statistical databases; UN Comtrade; World Bank, WDI and national data.

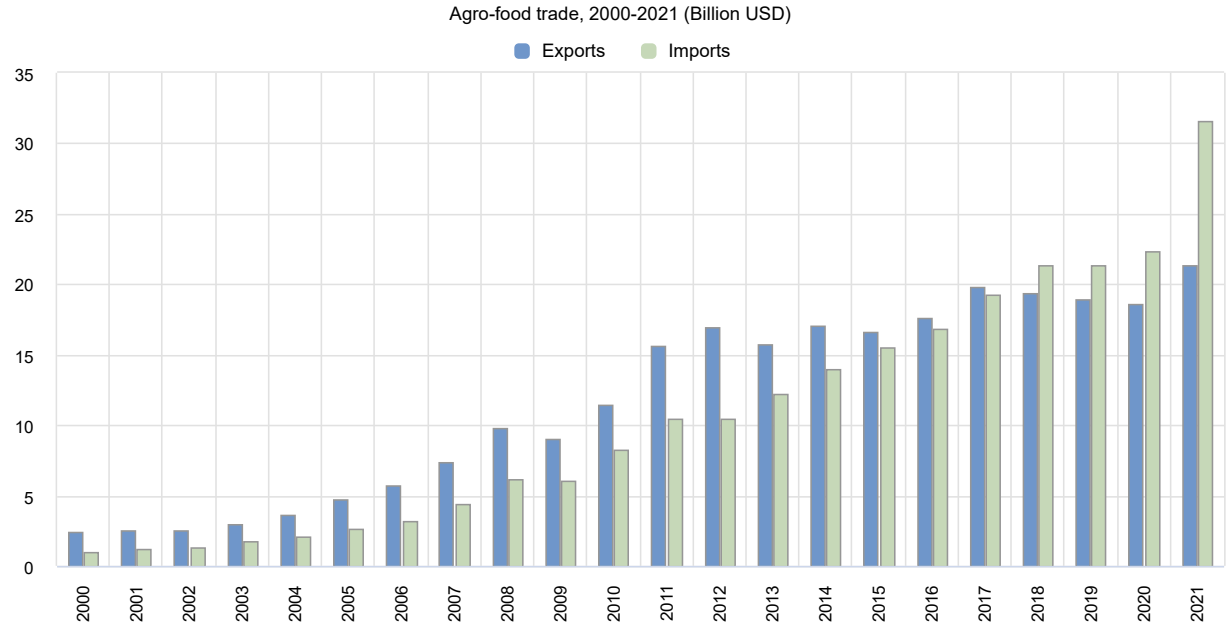
Figure 30.4. Viet Nam: Main economic indicators, 2000 to 2022

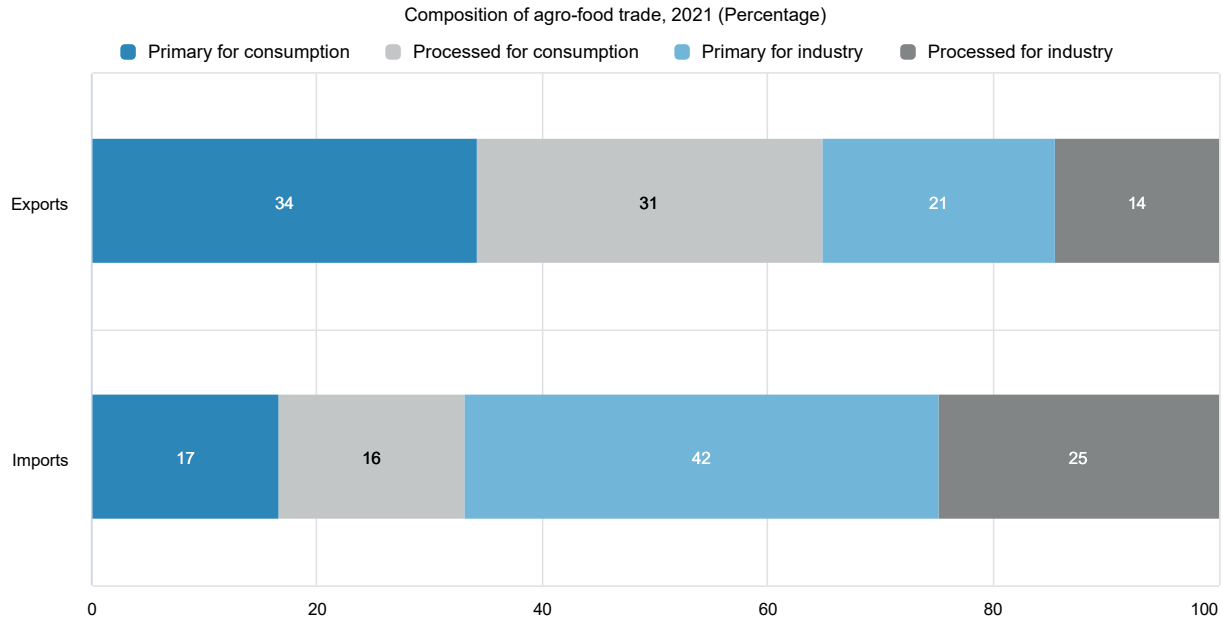


Sources: OECD statistical databases; World Bank, WDI; and ILO estimates and projections.

With the progressive liberalisation of trade, the value of imports and exports has increased by eight-fold since the early 2000s (Figure 30.5). Imports, in particular, saw a sizable jump from 2020 to 2021, from USD 22.4 billion to USD 31.6 billion. The value of exports has also steadily increased, reaching USD 21.3 billion in 2021. Viet Nam is now one of the world's largest exporters of a range of agricultural commodities, including rice, coffee, tea, cashew nuts, coffee, black pepper, natural rubber and cassava. However, exports often sell at a discount compared with the same commodities from other leading exporters due to quality differences. Nearly two-thirds of Viet Nam's agro-food exports are delivered as primary (34%) or processed (31%) goods for household consumption (Figure 30.5). Just over two-thirds of agro-food imports are used as primary (42%) or processed (25%) inputs to production, rather than for household consumption. Key imports into production include livestock feedstuffs, such as oil cake and maize, and raw commodities for further processing and export, like cotton and cashew nuts. The remaining one-third are products to meet food demand from domestic consumers, including for higher-value foods and beverages.

Figure 30.5. Viet Nam: Agro-food trade



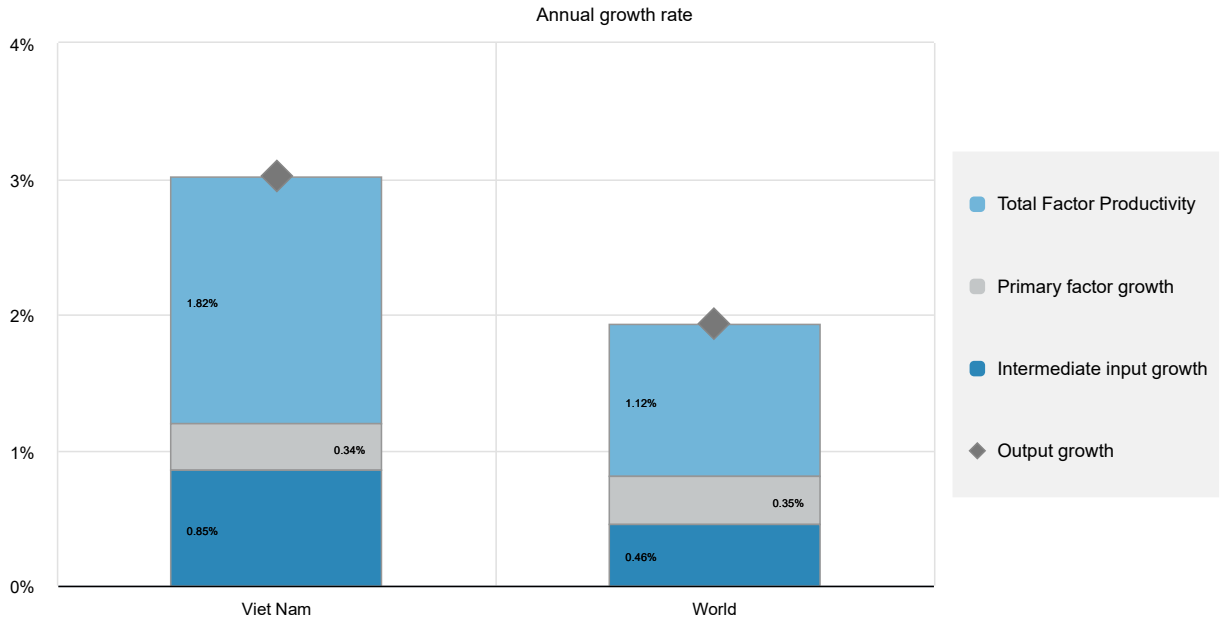


Notes: Numbers may not add up to 100 due to rounding. Agro-food trade includes natural rubber.
Source: UN Comtrade Database.

Agricultural production increased by just over 3% on average from 2011-20 (Figure 30.6). This was largely driven by growth in total factor productivity, which outpaced the world average during the same period. Greater use of primary factors and intermediate inputs likewise contributed to Viet Nam's relatively high level of growth in agricultural output.

However, agricultural production gains have been accompanied by significant pressure on natural resources. The nitrogen and phosphorous balances for Viet Nam exceed the OECD average by a factor of 3.5 and 10.9, respectively (Table 30.1). The share of agriculture in total greenhouse gas emissions is three times greater than the OECD-wide average (though agriculture accounts for a larger share in the economy), and the use of energy and water inputs is also relatively high. The resulting environmental degradation, taken together with the impact of climate change, poses a risk to agricultural production and the capacity of the sector to maintain productivity and output growth moving forward.

Figure 30.6. Viet Nam: Composition of agricultural output growth, 2011-20



Note: Primary factors comprise labour, land and capital (livestock and machinery). Intermediate input comprises materials (feed and fertiliser).
Source: USDA Economic Research Service Agricultural Productivity database.

Table 30.4. Viet Nam: Productivity and environmental indicators

	Viet Nam		International comparison	
	1993-2002	2011-2020	1993-2002	2011-2020
			World	
TFP annual growth rate (%)	2.5%	1.8%	1.7%	1.1%
			OECD average	
Environmental indicators	2000*	2021*	2000*	2021*
Nitrogen balance, kg/ha	165.6	105.6	32.2	30.4
Phosphorus balance, kg/ha	29.9	33.0	3.3	3.0
Agriculture share of total energy use (%)	1.7	4.9	1.7	2.0
Agriculture share of GHG emissions (%)	47.9	31.6	8.6	10.5
Share of irrigated land in AA (%)	..	..	-	-
Share of agriculture in water abstractions (%)	94.0	95.0	46.6	49.7
Water stress indicator	..	..	8.3	7.4

Notes: * or closest available year.
Sources: USDA Economic Research Service, Agricultural Productivity database; OECD statistical databases; FAO database and national data.

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WTO (2022), *World Tariff Profiles 2022, WTO ITC UNCTAD*, https://www.wto.org/english/res_e/publications_e/world_tariff_profiles21_e.htm (accessed on 29 March 2023). [6]

Notes

[1] The objective of ensuring an average profit of 30% is specified in Resolution No. 63/NQ-CP. Both maximum and minimum prices may be prescribed to support the objective (Hai, 2012[9]).

[2] https://www.ciie.org/zbh/en/news/exhibition/focus/20230130/36147.html.

[3] These are, respectively, Decision No. 124/QD-TTg of 2 February 2012 and Decision No. 255/QD-TTg of 25 February 2021. The latter replaced the Agricultural Restructuring Scheme towards Value-added and Sustainable Development, Decision No. 899/QD-TTg of 10 June 2013.

[4] Producers of these commodities are implicitly taxed in that they receive prices lower than world prices for their outputs. One explanation for the lower prices of these commodities is that SOEs benefit from advantages in access to capital, natural resources, land, and human resources, allowing them to exert significant market power that deters private sector entry and suppresses the farmgate prices of these exported commodities below international reference prices (OECD, 2015[1]).

[5] The VRG, one of the top ten largest listed companies across all sectors, controls 40% of the land in rubber plantations nationally and 85% of total export production (state ownership ratio 97%). Vinafood II is the country's largest exporter of rice, with the capacity to process 3 million tonnes per year, and is an exporter also of cassava, maize, beans, cashew nuts, and coffee (state ownership ratio 51%). Vinacafe accounts for 20-25% of coffee bean exports, as well as exports of peppers and cashew nuts, and imports of fertilisers for coffee production (state ownership ratio 100%). Vinatea (converted to Vietnam Tea Corporation Joint Stock Company by decision of the Prime Minister) owns 4 300 hectares of land in tea production (the largest concentrated area in the country) and produces up to 10 000 tonnes of dry tea per year, with exports to 15 countries. State ownership ratios from OECD (2022[5]).

[6] The Law on Irrigation is Law No. 08/2017/QH14. In 2022, expenditures on the ISF were VND 4.18 trillion (USD 176 million) from the central government and VND 4.72 trillion (USD 201 million) from the local government, compared with VND 3.30 million (USD 144 million) and VND 3.73 million (USD 163 million) in 2021.

[7] For example, foreigners may retain a LUR for 50 years, while locals may hold one indefinitely.

[8] Export restrictions for rice provide a policy rationale for negative MPS values until 2017. After that point, formal export restrictions no longer legally apply, but some restrictions remain in terms of maintaining rice reserves. The ongoing presence and role of SOEs in the trade of rice and other export commodities is the most likely explanation for negative MPS values since 2017.

[9] The RCEP countries are Australia, Brunei, Cambodia, China, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, New Zealand, the Philippines, Singapore, Thailand, and Viet Nam.

[10] https://reliefweb.int/report/viet-nam/viet-nam-integrating-agriculture-national-adaptation-plans-nap-ag-programme.

[11] https://en.baochinhphu.vn/national-green-growth-strategy-for-2021-2030-vision-towards-2050-11142515.htm.

[12] https://vccinews.com/news/48753/toward-green-responsible-agriculture.html.

[13] According to the Viet Nam General Statistics Office, planted area to rice in 2021 was 7 238 900 ha. The target thus represents a conversion of 4.1% of the current land in rice.

[14] Decision No. 2626/QD-BTNMT dated 10/10/2022, Announcement of List of Emission Coefficients for GHG Inventory specifies the updated emissions factors for agriculture, forestry and land in Appendix III.

Annex A. Sources and Definitions of Contextual Indicators

Table: Contextual indicators

Gross Domestic Product – GDP (USD billion in PPP): OECD National Accounts Statistics (database), Gross domestic product, USD, current prices, current PPPs. World Bank, World Development Indicators (WDI database) for Emerging Economies not available in the OECD database.

Population (million): OECD National Accounts Statistics (database), Population and employment by main activity. Calculation based on Eurostat database for the European Union. United Nations, World Population Prospects: 2022, Population, for Emerging Economies not available in the OECD database.

Land area (thousands km^2): FAOSTAT Land Use (database), Land area (1 000 ha) recalculated to thousands km^2. Land area excludes water areas.

Agricultural area (AA) (thousand ha): FAOSTAT Land Use (database), Agricultural area (1 000 ha).

Population density (inhabitants/km^2): OECD Regional and Cities (database), Regional demography, Population density and regional area. United Nations, World Population Prospects 2022, Population density, for economies not available in OECD database. Calculation based on the Eurostat population and area databases for the European Union.

GDP per capita (USD in PPP): OECD National Accounts Statistics (database), Gross domestic product (expenditure approach), per head, USD, current prices, current PPPs. World Bank, World Development Indicators (WDI database) for Emerging Economies not available in OECD database.

Trade as % of GDP: Calculation based on UN COMTRADE (database) for trade data, customs data, and GDP (local currency) indicator. Average trade calculated as (exports+imports)/2. The European Union aggregate does not account for intra-EU trade.

Agriculture share in GDP (%): OECD National Accounts Statistics (database), "National Accounts at a Glance", Gross value added, Agriculture, forestry and fishing, percentage of total activity. Eurostat database for the European Union. World Bank, World Development Indicators (WDI database) for Emerging Economies not available in OECD database.

Agriculture share in employment (%): Calculation based on OECD Labour Force Statistics (database), Employment by activities and status (ALFS), as a share of employment in agriculture, hunting, forestry and fishing in all activities (ISIC rev.3, A-B and A-X; ISIC rev.4, A and A-U). Calculation based on Eurostat, share of employed persons, aged 15 years and over, in agriculture, hunting, forestry and fishing in total NACE activities (Statistical classification of economic activities in the European Community), for the EU Member States. World Bank, World Development Indicators (WDI database), Employment in agriculture, hunting, forestry and fishing as a share of total employment; Data from the International Labour Organization, Employment in agriculture, hunting, forestry and fishing as a share of total employment (based on ILO modelled estimates) and national data for Emerging Economies not available in OECD or in other international database. The ILO modelled estimates series provides both nationally reported labour statistics observations and imputed data produced through a series of econometric models for countries

with missing data. Estimates for countries with limited labour market information have a high degree of uncertainty and are being regularly updated and revised by the ILO especially when a better source in terms of accuracy and international comparability has become available.

Agro-food exports in total exports (%): Calculation based on UN COMTRADE (database). Agro-food definition does not include fish and fish products. Agro-food codes in H0: 01, 02, 04 to 24 (excluding 1504, 1603, 1604 and 1605), 3301, 3501 to 3505, 4101 to 4103, 4301, 5001 to 5003, 5101 to 5103, 5201 to 5203, 5301, 5302, 290543/44, 380910, 382360.

Agro-food imports in total imports (%): Calculation based on UN COMTRADE (database). Agro-food definition does not include fish and fish products.

Crop in total agricultural production (%): National data, share of value of total crop production (including horticulture) in total agricultural production.

Livestock in total agricultural production (%): National data, share of value of total livestock production in total agricultural production.

Share of arable land in AA (%): Calculation based on FAOSTAT Land Use (database), arable land as a share of agricultural area.

Table: Productivity and environmental indicators

TFP annual growth (%): Agricultural Total Factor Productivity indices of the USDA Economic Research Service use primarily FAO data supplemented by national data. Agricultural TFP indices are estimates by country and for groups of countries aggregated by geographic region and income class. The presented growth rates are sensitive to the choice of the time period. Reported values have changed relative to previous releases following the International Agricultural Productivity database update that includes revisions of historical estimates to reflect newly available data and modifications to the estimation procedures. More information can be found in the section “Figure: Composition of agricultural output growth, 2011-20”.
USDA, Economic Research Service (2022), International Agricultural Productivity database, https://www.ers.usda.gov/data-products/international-agricultural-productivity/ (accessed January 2023).

Nitrogen balance (Kg/ha): Balance (surplus or deficit) expressed as kg nitrogen per hectare of total agricultural land calculated at the national level. OECD aggregate for nitrogen balance is calculated as the ratio between the total surplus and the total agricultural land area in the OECD area. European Union as a single area is calculated as the Gross Nitrogen Balance in the EU area over the utilised agricultural area of the EU.
OECD (2023), Agri-environmental indicators (database), http://www.oecd.org/tad/sustainable-agriculture/agri-environmentalindicators.htm.

Phosphorus balance (Kg/ha): Balance (surplus or deficit) expressed as kg phosphorus per hectare of total agricultural land calculated at the national level. OECD aggregate for phosphorus balance is calculated as the ratio between the total surplus and the total agricultural land area in the OECD area. European Union as a single area is calculated as the Gross Phosphorous Balance in the EU area over the utilised agricultural area of the EU.
OECD (2023), Agri-environmental indicators (database), http://www.oecd.org/tad/sustainable-agriculture/agri-environmentalindicators.htm.

Agriculture share of total energy use (%): Share of agricultural consumption in total final consumption (TFC).

International Energy Agency (2022), IEA World Energy Statistics and Balances (database), https://doi.org/10.1787/data-00512-en, and OECD Agri-environmental indicators (database), http://www.oecd.org/tad/sustainable-agriculture/agri-environmentalindicators.htm,

Agriculture share in total GHG emissions (%): Greenhouse gas emissions by source, excluding land use, land-use change and forestry (LULUCF). European Union as a single area is calculated from UNFCCC data as Agriculture greenhouse gas emissions in the EU area over the total GHG emissions in EU area.
UNFCCC Greenhouse Gas Inventory Database (2022), https://unfccc.int, and OECD Agri-environmental indicators (database), http://www.oecd.org/tad/sustainable-agriculture/agri-environmentalindicators.htm

Share of irrigated area in Agricultural Area (AA) (%): Share of irrigated area in total agricultural area.
OECD (2023), Agri-environmental indicators (database), http://www.oecd.org/tad/sustainable-agriculture/agri-environmentalindicators.htm and FAOSTAT database for Emerging Economies not available in OECD database.

Share of agriculture in water abstractions (%): Share of agriculture in total freshwater abstractions. European Union as a single area is calculated as the total abstractions for agriculture in the EU area over the total freshwater abstractions in the EU area.
OECD (2022), Agri-environmental indicators (database), http://www.oecd.org/tad/sustainable-agriculture/agri-environmentalindicators.htm.

Water stress indicator: The indicator refers to the intensity of use of fresh water resources. It is expressed as gross abstraction of freshwater as percentage of total available renewable freshwater resources. European Union is treated as a single area.
OECD (2022), "Water: Freshwater abstractions", OECD Environment Statistics (database), http://dx.doi.org/10.1787/data-00602-en.

Figure: Main macro-economic indicators, 2000 to 2022

Real GDP growth (%): OECD Country Statistical Profiles, real GDP growth. OECD Economic Outlook: Statistics and Projections (database) as a benchmark for the latest year. World Bank, World Development Indicators (WDI database) for Emerging Economies not available in OECD database. Eurostat database for the European Union for 2019, 2020 and 2021.

Inflation rate (%): OECD National Accounts Statistics (database), Prices and Purchasing Power Parities, Annual average rate of change in Harmonized Indices of Consumer Prices (HICPs). World Bank, World Development Indicators (WDI database) for Emerging Economies not available in OECD National Accounts Statistics.

Unemployment rate (%): OECD Economic Outlook: Statistics and Projections (database), Labour market statistics. Eurostat database for the European Union. International Labour Organization (ILO), Unemployment rate by sex and age (estimates and projections) for Emerging Economies not available in OECD database.

Figure: Agro-food trade

Agro-food exports (USD billion), 2000 to 2021: UN COMTRADE (database). Agro-food definition does not include fish and fish products.

Agro-food imports (USD billion), 2000 to 2021: UN COMTRADE (database). Agro-food definition does not include fish and fish products.

Composition of agro-food trade, 2021: UN COMTRADE (database). Agro-food definition in HS classification (see above) combined with the Classification by Broad Economic Categories (BEC) to generate breakdowns into type of commodities (Primary or Industrial commodities) and type of destination (Consumption or Industry).

Figure: Composition of agricultural output growth, 2011-20

TFP annual growth (%): Agricultural Total Factor Productivity indices of the USDA Economic Research Service use primarily FAO data supplemented by national data. Input growth is the weighted-average growth in quality-adjusted land, labour, capital and materials (synthetic NPK fertilisers, and animal feed), where weights are input (factor) cost shares. Special breakdown created to dissociate primary factors (land, labour and capital) from intermediate input: materials (feed and fertiliser) growth. Output growth corresponds to gross agricultural output for each country.

Agricultural TFP indices are estimates by country and for groups of countries aggregated by geographic region and income class. The European Union single area is recalculated from individual countries data and weights. The presented growth rates are sensitive to the choice of the time period.

The full documentation is available at: https://www.ers.usda.gov/data-products/international-agricultural-productivity/update-and-revision-history/.

USDA, Economic Research Service (2022), International Agricultural Productivity database, https://www.ers.usda.gov/data-products/international-agricultural-productivity/ (accessed January 2023).

Indicators used to calculate selected ratio and percentage indicators

GDP (local currency): OECD National Accounts Statistics (database), Gross domestic product, local currency, current prices. OECD Economic Outlook: Statistics and Projections (database) as a benchmark for the latest year. Calculation based on Eurostat database for the European Union. World Bank, World Development Indicators (WDI database) for Emerging Economies not available in the OECD database.

Agriculture Gross Value Added (local currency) (AgGVA): Calculation based on Agriculture share in GDP (%) and GDP (local currency) indicators.

Deflator: OECD Economic Outlook: Statistics and Projections (database), Gross domestic product, market prices, deflator. Eurostat database for the European Union. World Bank, World Development Indicators (WDI database) for Emerging Economies not available in the OECD database.

Exchange rate: OECD National Accounts Statistics (database), Prices and Purchasing Power Parities, Nominal Exchange Rate. Eurostat database for the European Union and EU Member States. World Bank, World Development Indicators (WDI database) and national data for Emerging Economies not available in the OECD database.

Agricultural Policy Monitoring and Evaluation 2023

ADAPTING AGRICULTURE TO CLIMATE CHANGE

This annual report monitors and evaluates agricultural policies in 54 countries, including the 38 OECD countries, the five non-OECD EU Member States, and 11 emerging economies. It finds that support to agriculture has reached record levels amidst subsequent crises, although the increase in support has been less than the sector's growth. After COVID-19, governments have taken significant action to limit the impacts of the war in Ukraine on the farming sector and markets.

This year's report focuses on policies for climate-change adaptation and identifies close to 600 adaptation measures adopted by governments, but notes that more action is required to advance the implementation, monitoring and assessment of adaptation measures. The report also finds that most of the support for the sector comes in forms that reduce rather than enhance the sector's capacity to adjust to future crises, including climate change. In line with the 2022 OECD Agriculture Ministerial Declaration, the report identifies key actions to focus policy efforts on improving agriculture and the food system's resilience to successive shocks while also enhancing the sector's environmental performance and productivity.

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