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Foreword

This Economic Survey was prepared by Jan Stráský, Martin Borowiecki and Federico Giovannelli with inputs from Joaquín Calvo Giménez (external consultant), Jean Chateau, Antonela Miho (external consultant) and Francesco Vanni under the supervision of Mame Fatou Diagne. Research assistance was provided by Federico Giovannelli and editorial support by Robin Houng Lee.

The Survey was discussed at a meeting of the Economic and Development Review Committee on 20 June 2023 with participation of representatives of the European Commission and the European Central Bank and of Canada and Norway as lead speakers. The previous Survey of the European Union was issued in September 2021 and the previous Survey of the euro area in September 2021.

The Survey is published under the responsibility of the Secretary-General of the OECD. Information about the latest as well as previous Surveys and more information about how Surveys are prepared is available at http://www.oecd.org/eco/surveys.

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Glossary of acronyms

ACER	Agency for the co-operation of energy regulators
AML	Anti-money laundering
AML/CFT	Anti-money laundering and combating the financing of terrorism
AMLA	Anti-money laundering authority
AMLD	Anti-money laundering directive
AMLR	Anti-money laundering regulation
APFTE	Association for the promotion of touristic and economic flows
BECCS	Bioenergy with carbon capture and storage
CAP	Common agricultural policy
CBAM	Carbon border adjustment mechanism
CDR	Carbon dioxide removal
CfD	Contracts-for-differences
CFSP	Common foreign and security policy
CFT	Combating the financing of terrorism
CGE	Computable general equilibrium
CSPS	Common agricultural policy strategic plans
CSR	Country-specific recommendations
CSRD	Corporate sustainability reporting directive
DAC	Direct air capture
DMA	Digital markets act
DSA	Debt sustainability analysis
DSTRI	OECD Digital services trade restrictiveness index
ECB	European Central Bank
ECR	Effective carbon rate
EDES	Early detection and exclusion system
EDP	Excessive deficit procedure
EEA	European Economic Area
EMU	Economic and monetary union
ENTSO	European network of transmission system operators for electricity
EPPO	European public prosecutor's office
ESF	European social fund
ESR	Effort sharing regulation
ESRB	European systemic risk board
ETS	Emission trading system
EU	European Union
FATF	Financial action task force
FIUs	Financial intelligence units
GAECs	Good agricultural and environmental conditions
GBER	General block exemption regulation
GBRF	Green budgeting reference framework
GHG	Greenhouse gas
IFIs	Independent fiscal institutions
IPCEI	Important projects of common European interest
IRA	Inflation reduction act
JTF	Just transition fund
JTM	Just transition mechanism
LCRs	Local content requirements
LNG	Liquefied natural gas

LULUCF	Land use, land-use change and forestry
MFF	Multiannual financial framework
MTO	Medium-term objective
NGEU	Next generation EU
NGOs	Non-governmental organisations
NRRP	National recovery and resilience plans
OLAF	European anti-fraud office
PMR	Product market regulation
PPA	Commercial power purchase agreement
R&D	Research and development
RRF	Recovery and resilience facility
SGP	Stability and growth pact
SMEs	Small and medium-sized enterprises
STRI	OECD Services trade restrictiveness index
TLTRO	Targeted longer-term refinancing operations
TSO	Transmission system operator
TTF	Title transfer facility
TYNDP	Ten-year network development plan
UAFP	Union anti-fraud programme
UNCAC	UN convention against corruption

BASIC STATISTICS OF THE EUROPEAN UNION, 2022

(Numbers in parentheses refer to the OECD average)

LAND, PEOPLE AND ELECTORAL CYCLE					
Population (million, 2021)	447.2		Population density per km² (2021)	111.8	(38.7)
Under 15 (%, 2021)	15.0	(17.4)	Life expectancy at birth (years, 2021)	80.4	(78.7)
Over 65 (%, 2021)	21.0	(17.7)	Men (2021)	77.7	(75.9)
International migrant stock (% of pop., 2019)	12.5	(13.2)	Women (2021)	83.3	(81.7)
Latest 5-year average growth (%)	0.1	(0.5)			
ECONOMY					
Gross domestic product (GDP)			Value added shares (%, 2021)		
In current prices (billion USD)	16 668.7		Agriculture, forestry and fishing	2.4	(2.6)
In current prices (billion EUR)	15 821.3		Industry including construction	25.1	(26.6)
Latest 5-year average real growth (%)	1.3	(1.6)	Services	72.5	(70.8)
Per capita (thousand USD PPP, 2021)	49.1	(51.0)			
GENERAL GOVERNMENT					
Expenditure (% of GDP, 2021)	49.8	(46.3)	Gross financial debt (% of GDP, 2021)	106.9	(107.4)
Revenue (% of GDP, 2021)	46.4	(38.7)	Net financial debt (% of GDP, 2021)	60.6	(68.7)
EXTERNAL ACCOUNTS					
Exchange rate (EUR per USD)	0.95		Main exports (% of total merchandise exports, 2021)		
PPP exchange rate (USA = 1)	0.65		Machinery and transport equipment	31.8	
In per cent of GDP			Chemicals and related products, n.e.s.	16.5	
Exports of goods and services	56.1	(33.4)	Manufactured goods	15.5	
Imports of goods and services	54.5	(34.9)	Main imports (% of total merchandise imports, 2021)		
Current account balance	-0.1	(-1.1)	Machinery and transport equipment	32.2	
			Manufactured goods	15.5	
			Chemicals and related products, n.e.s.	14.1	
LABOUR MARKET, SKILLS AND INNOVATION					
Employment rate (aged 15 and over, %)	54.1	(57.5)	Unemployment rate, LFS (aged 15 and over, %)	6.1	(5.0)
Men	60.0	(65.4)	Youth (aged 15-24, %)	14.5	(10.9)
Women	48.5	(50.1)	Long-term unemployed (1 year & over, %)	2.4	(1.2)
Participation rate (aged 15 and over, %)	58.1	(60.9)	Tertiary educational attainment (aged 25-64, %, 2021)	38.1	(39.9)
Average hours worked per year	1,571	(1,752)	Gross domestic expenditure on R&D (% of GDP, 2020)	2.3	(3.0)
ENVIRONMENT					
Total primary energy supply per capita (toe, 2021)	2.9	(3.8)	CO_2 emissions from fuel combustion per capita (tonnes, 2021)	6.2	(7.9)
Renewables (%, 2021)	17.8	(11.6)	Municipal waste per capita (tonnes, 2021, OECD: 2020)	0.5	(0.5)
Exposure to air pollution (more than 10 µg/m³ of PM 2.5, % of population, 2019)	77.5	(61.7)			
SOCIETY					
Income inequality (Gini coefficient, latest available)	0.296	(0.315)	Education outcomes (PISA score, 2018)		
Relative poverty rate (%, 2019)	10.8	(11.4)	Reading	481	(485)
Median disposable household income (thousand USD PPP, 2019)	23.9	(26.6)	Mathematics	488	(487)
Public and private spending (% of GDP)			Science	483	(487)
Health care	9.1	(9.3)	Share of women in parliament (%)	32.6	(32.5)
Pensions (2019)	10.2	(9.5)	Net official development assistance (% of GNI, 2017)	0.3	(0.4)
Education (% of GNI, 2021)	4.6	(4.4)			

Note: The year is indicated in parenthesis if it deviates from the year in the main title of this table (2022). Where the OECD aggregate is not provided in the source database, a simple OECD average of latest available data is calculated where data exist for at least 80% of member countries.

Source: Calculations based on data extracted from databases of the following organisations: OECD, International Energy Agency, International Labour Organisation, International Monetary Fund, United Nations, World Bank.

BASIC STATISTICS OF THE EURO AREA, 2022

(Numbers in parentheses refer to the OECD average)

LAND, PEOPLE AND ELECTORAL CYCLE					
Population (million, 2021)	345.2		Population density per km² (2021)	145.0	(38.7)
Under 15 (%, 2021)	14.8	(17.4)	Life expectancy at birth (years, 2021)	79.9	(78.7)
Over 65 (%, 2021)	21.5	(17.7)	Men (2021)	77.0	(75.9)
International migrant stock (% of pop., 2019)	14.1	(13.2)	Women (2021)	82.9	(81.7)
Latest 5-year average growth (%)	0.1	(0.5)			
ECONOMY					
Gross domestic product (GDP)			Value added shares (%, 2021)		
In current prices (billion USD)	14 020.7		Agriculture, forestry and fishing	2.3	(2.6)
In current prices (billion EUR)	13 307.9		Industry including construction	25.2	(26.6)
Latest 5-year average real growth (%)	1.1	(1.6)	Services	72.5	(70.8)
Per capita (thousand USD PPP, 2021)	50.9	(51.0)			
GENERAL GOVERNMENT					
Expenditure (% of GDP, 2021)	50.7	(46.3)	Gross financial debt (% of GDP, 2021)	96.7	(107.4)
Revenue (% of GDP, 2021)	47.1	(38.7)	Net financial debt (% of GDP, 2021)	57.0	(68.7)
EXTERNAL ACCOUNTS					
Exchange rate (EUR per USD)	0.95		Main exports (% of total merchandise exports, 2021)		
PPP exchange rate (USA = 1)	0.69		Machinery and transport equipment	28.5	
In per cent of GDP			Chemicals and related products, n.e.s.	18.0	
Exports of goods and services	54.8	(33.4)	Manufactured goods	16.8	
Imports of goods and services	53.1	(34.9)	Main imports (% of total merchandise imports, 2021)		
Current account balance	1.2	(-1.1)	Machinery and transport equipment	30.2	
			Manufactured goods	16.7	
			Chemicals and related products, n.e.s.	13.8	
LABOUR MARKET, SKILLS AND INNOVATION					
Employment rate (aged 15 and over, %)	56.1	(57.5)	Unemployment rate, LFS (aged 15 and over, %)	6.4	(5.0)
Men	61.2	(65.4)	Youth (aged 15-24, %)	16.3	(10.9)
Women	51.4	(50.1)	Long-term unemployed (1 year & over, %)	2.5	(1.2)
Participation rate (aged 15 and over, %)	60.0	(60.9)	Tertiary educational attainment (aged 25-64, %, 2021)	38.9	(39.9)
Average hours worked per year	1,601	(1,752)	Gross domestic expenditure on R&D (% of GDP, 2020)	1.9	(3.0)
ENVIRONMENT					
Total primary energy supply per capita (toe, 2021)	3.4	(3.8)	CO_2 emissions from fuel combustion per capita (tonnes, 2021)	6.0	(7.9)
Renewables (%, 2021)	20.4	(11.6)	Municipal waste per capita (tonnes, 2020)	0.5	(0.5)
Exposure to air pollution (more than 10 µg/m³ of PM 2.5, % of population, 2019)	64.9	(61.7)			
SOCIETY					
Income inequality (Gini coefficient, latest available)	0.295	(0.315)	Education outcomes (PISA score, 2018)		
Relative poverty rate (%, 2020, OECD: 2019)	11.3	(11.4)	Reading	488	(485)
Median disposable household income (thousand USD PPP, 2020, OECD: 2019)	26.4	(26.6)	Mathematics	494	(487)
Public and private spending (% of GDP)			Science	490	(487)
Health care	9.3	(9.3)	Share of women in parliament (%)	33.8	(32.5)
Pensions (2019)	10.4	(9.5)	Net official development assistance (% of GNI, 2017)	0.3	(0.4)
Education (% of GNI, 2021)	4.4	(4.4)			

Note: Data refers to euro area member countries that are also members of the OECD (17 countries). The year is indicated in parenthesis if it deviates from the year in the main title of this table (2022). Where the OECD aggregate is not provided in the source database, a simple OECD average of latest available data is calculated where data exist for at least 80% of member countries.

Source: Calculations based on data extracted from databases of the following organisations: OECD, International Energy Agency, International Labour Organisation, International Monetary Fund, United Nations, World Bank.

Executive summary

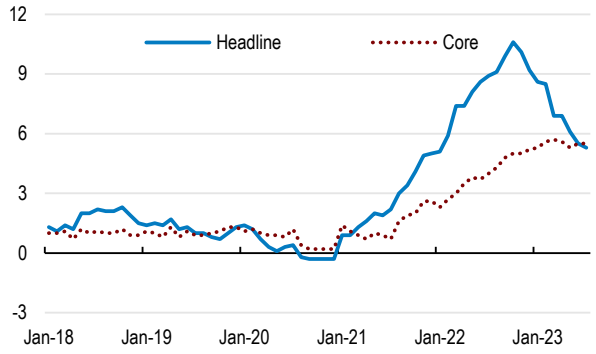
The economic recovery has been disrupted by external shocks

The European recovery has been hit hard by the energy crisis following the onset of Russia's war of aggression against Ukraine. The post-pandemic rebound in GDP has faded as the impacts of the war unfolded, driving energy prices higher and causing new supply chain disruptions. While private consumption was supported by resilient labour markets, gross fixed capital formation suffered from input shortages and elevated uncertainty.

Increases in energy and food prices have been stoking inflation (Figure 1), triggering monetary policy tightening by the ECB. Inflation has become broad-based, underlining the need for a continuation of restrictive monetary and fiscal policy.

Figure 1. Euro area inflation has surged

Harmonised index of consumer prices, 12-month % change



Note: Core inflation excludes volatile energy, food, alcohol and tobacco prices.
Source: Eurostat Harmonised index of consumer prices (HICP) database.

StatLink https://stat.link/me89vp

Resolute policy reaction by the European Commission and EU Council helped mitigate the impact of the recent negative shocks. The EU took measures to help ensure short-term energy security and alleviate the effects of high energy prices on firms and households. However, some EU policies, such as the gas price cap, were insufficiently targeted, reducing incentives to lower consumption.

Lower energy prices and recovering private consumption will gradually lift growth going forward, but elevated interest rates will continue to weigh on private investment (Table 1). Another spike in energy prices could reignite the energy crisis and restrictive monetary policy could expose financial sector vulnerabilities.

Table 1. Growth in the euro area has slowed

	2021	2022	2023	2024
Real GDP (% change)	5.5	3.5	0.9	1.5
Private consumption (% change)	3.7	4.4	0.2	1.5
Gross fixed capital formation (% change)	3.6	3.7	0.6	1.4
Harmonised index of consumer prices (% change)	2.5	8.3	5.8	3.2
Unemployment rate (%)	7.7	6.7	6.7	6.6
Fiscal balance (% of potential GDP)	-3.5	-3.0	-2.4	-2.1
Public debt (Maastricht, % of GDP)	97.3	93.2	92.3	92.0

Note: Euro area countries that are also members of the OECD (17).
Source: OECD Economic Outlook 113 database.

Monetary policy needs to reduce inflation durably

Headline inflation has moderated, but core inflation remains high and wage growth is accelerating. Monetary policy rates have been raised steadily since July 2022 to bring inflation back to the 2% target. Second-round effects, with past inflation feeding into higher prices and wage demands, must be limited to secure a decline in inflation and prevent a wage-price spiral. Monetary policy needs to remain restrictive until underlying inflationary pressures are lowered durably.

Higher interest rates are amplifying financial vulnerabilities, especially in countries with high levels of private debt and a high share of variable mortgages. Although banks remain well-capitalised and their balance sheets sound, the authorities should use macroprudential policies and other targeted instruments to address financial sector risks as needed. In the medium term, policies addressing long-standing weaknesses of the banking sector, such as overcapacity and low profitability, should continue, as well as completion of the Banking Union.

Fiscal spending must be targeted and sustainable

Fiscal policy must become sufficiently restrictive. Measures to mitigate the energy crisis

have further increased public debt and must become more targeted and eventually withdrawn even if energy prices do not decrease further. At the same time, the Next Generation EU (NGEU) programmes should be implemented efficiently to minimise inflationary pressures and help boost potential growth in the medium term.

The Commission's proposal to reform the economic governance framework is a step in the right direction. Compliance with EU fiscal rules in the pre-pandemic period had been partial, resulting in insufficiently countercyclical fiscal policy and insufficiently declining or rising public debt. Stronger emphasis on fiscal sustainability and multiannual planning could significantly improve fiscal outcomes. Better compliance could be achieved by giving a stronger role to national fiscal councils and through carefully designed and consistently applied sanctions.

Boosting inclusive growth through a stronger and deeper Single Market

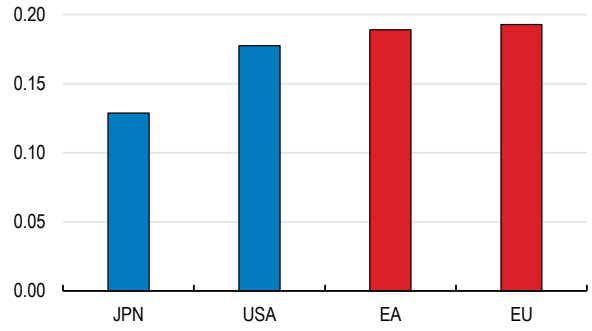
The Single Market provides a level playing field, opening opportunities for firms to grow and innovate. While state support, such as subsidies, may be warranted, it should be provided without distorting competition in favour of firms located in countries with more fiscal resources. Rather, EU policies and instruments could help set consistent framework conditions and facilitate adaptation to structural change, for example by providing an early-stage support for green R&D and innovation at the EU level.

Barriers to the Single Market, especially in the provision of services, remain high (Figure 2). Improving labour mobility, for example by further simplifying the rules for posting workers, would help for some services. However, digital services trade is held back by continuing differences in regulatory practice. Differing material efficiency standards and fragmented waste regulation hamper progress towards the circular economy and add to the shortage of critical raw materials.

Despite progress in fighting corruption, challenges remain. EU institutions should continue to coordinate national efforts to ensure the effectiveness of public spending and maintain trust. As outlined in the Commission's new proposal for a Directive, aligning minimum standards across countries and strengthening prevention measures could improve the effectiveness of the EU anti-corruption framework. Rules on transparency and lobbying for Members of the European Parliament should also be reinforced.

Figure 2. Trade in services remains restricted

Average Services Trade Restrictiveness Index, 2022



Note: The Services Trade Restrictiveness Index (STRI) takes values between zero and one, one being the most restrictive. The index is based on laws and regulations in force on 31 October 2022.
Source: OECD Services Trade Restrictiveness Index (STRI) database.

StatLink https://stat.link/80syu6

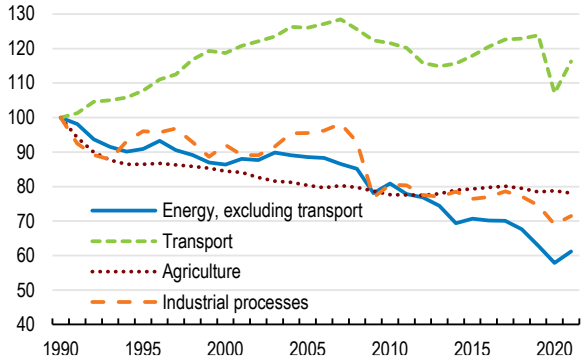
Accelerating the green transition

Greenhouse gas (GHG) emissions have been reduced by a fifth over the past decade. Emission reductions happened mostly in sectors covered by the Emission Trading System (ETS), including energy and energy-intensive industry, while sectors not covered by the ETS (notably agriculture and transport) have contributed little (Figure 3). More action is needed across all sectors, but particularly in non-ETS sectors, to achieve the ambitious net-zero target by 2050. This entails using the entire toolbox of mitigation policies, including stronger carbon pricing, subsidies, and regulatory measures.

There is a need for greater harmonisation of carbon prices, before raising them gradually. The uneven coverage of the ETS across sectors and differences across national tax systems impose heterogeneous abatement incentives across countries and activities, leading to higher costs of achieving climate targets. Industry continues to receive most emission allowances free of charge. Reducing emissions in non-ETS sectors calls for extending carbon pricing to agriculture.

Figure 3. Agriculture and transport have contributed little to emissions reduction

GHG emissions by source sector, index 1990 = 100



Note: Excluding land-use, land-use change and forestry (LULUCF).
Source: OECD Environment Statistics database.

StatLink https://stat.link/ivb3t5

Investment in the green transition is held back by shallow capital markets. In contrast with peer economies, the involvement of venture capital and institutional investors remains limited, reflecting a high regulatory burden. Deeper capital markets could support the development and growth of new clean technologies. In addition, better disclosure of climate-related risks is needed to reduce such risks in the financial system. In this regard, the EU has already adopted climate-related disclosure requirements for financial markets and banks and is currently working on extending disclosure requirements to large firms, while the ECB will only accept collateral that meets the EU's sustainability criteria.

More integrated wholesale electricity markets are key for the energy transition and achieving energy security. However, insufficient cross-border electricity connections hamper such integration. Moreover, retail electricity markets remain fragmented along national boundaries due to price regulation. Regulated retail prices below market prices leave energy providers with little incentives to invest. Price regulation also reduces energy saving incentives and discourages consumers from reducing peak demand.

Generous government support for renewables, including feed-in-tariffs, mostly benefits cost-competitive technologies such as solar and wind. In contrast, there is room to further increase the use of competitive auctions. The recent relaxation of state-aid rules may lead to higher subsidies for solar and wind, raising concerns about the effectiveness of public support as it may lead to a subsidy race within the EU and between the EU and other countries. Moreover, EU regulations encourage the use of unsustainable woody biomass, which can be more emission-intensive than coal.

The Common Agricultural Policy has not been effective in reducing emissions in agriculture over the past decade. For instance, direct payments to farmers keep livestock numbers high and promote the agricultural use of drained peatlands, despite their negative impact on the climate. In addition, mitigation measures are voluntary and have a low potential to reduce emissions.

Emissions in road transport are on the rise, reflecting an ageing car fleet that relies heavily on fossil fuels. Emissions only fell during the pandemic. More stringent vehicle emission standards and an extension of the ETS carbon price to road transportation, as envisaged by the new EU ETS 2 from 2027, will help reduce emissions. This should be complemented with taxation of fuels based on environmental performance. However, tax exemptions and reduced tax rates for fossil fuels for aviation and shipping continue to undermine climate policy. Moreover, cross-border rail traffic remains underdeveloped, despite having on average lower emissions per passenger than other forms of transportation. This reflects high and often discriminatory locomotive lease prices, rail charges and parking fees for foreign train operators.

Limiting reallocation costs from the green transition

The green transition requires more efficient labour reallocation. Labour mobility across EU countries is relatively low. One barrier to labour mobility is an abundance of occupational entry barriers. Other barriers to cross-border mobility include limited portability of unemployment benefits and rigid housing markets.

EU funding aims to help most affected regions manage the employment effects of the green transition. However, funding for mobility and training could be better tailored to local labour market needs. As regions develop their "Just Transition Plans", greater efforts are needed to identify and address the drivers of low training and job-to-job transitions.

Main findings	Key recommendations
Reduce inflation durably and protect financial stability	
Inflation has become more broadly based and more dispersed across euro area countries.	Maintain a restrictive monetary policy stance, as needed and depending on data, to ensure inflation expectations remain firmly anchored and inflation decreases durably toward its medium-term target.
Increasing interest rates raise risks to financial stability. Risks are on the rise in the commercial and residential housing sectors degrading asset quality of banks and the non-bank financial sector.	Continue to use macroprudential policy, including countercyclical capital buffers, to bolster the resilience of the banking sector.
The European banking system is not well integrated. Fragmentation in supervision and oversight as well as inconsistencies in national insolvency frameworks are obstacles to further financial integration.	Complete the Banking Union by addressing all outstanding issues in a holistic manner.
Enhance fiscal sustainability	
A broadly neutral fiscal stance and backloading of the fiscal effort to 2024 weakens the effect of the ongoing monetary policy tightening.	Implement prudent fiscal policy, consistent with the return of inflation to target, while ensuring that income support for high energy prices is temporary and targeted and preserves energy saving incentives.
The Stability and Growth Pact has not delivered countercyclical fiscal policy or ensured a downward path to more prudent debt levels.	Refocus fiscal rules on debt sustainability and multiannual expenditure plans.
Protect the Single Market while strengthening resilience and autonomy	
Most state support lies outside the scope of the EU state-aid rules, which have been relaxed during the pandemic.	Protect the Single Market and avoid relaxing the state-aid rules further.
European support for renewables production is considerable. Effective use of existing EU resources could help meet investment needs.	Re-direct existing EU budgetary resources towards support for green R&D, innovation and early-stage support coordinated at the EU level.
Digital and green transitions are hampered by continuing fragmentation of regulations and standards across the EU.	Coordinate harmonization of national regulations and their alignment with EU rules for digital services provision, the circular economy and building codes.
Strengthen the anti-corruption framework	
Corruption reduces economic efficiency, leads to waste of public resources and undermines citizens' trust in public institutions.	Continue to co-ordinate national efforts to fight corruption and fraud. Align minimum standards across countries and strengthen prevention measures.
Accelerate the green transition	
The uneven coverage of the EU Emission Trading System (ETS) across sectors and differences across national tax systems impose heterogeneous abatement incentives across countries and sectors. Energy taxation maintains inequalities in tax treatment across sectors and different uses of energy. Reduced rates and tax exemptions for environmentally harmful fossil fuels, including heating gas, aviation, and maritime fuels, continue to undermine decarbonisation efforts.	Continue expanding the coverage of ETS, for instance in agriculture, by establishing emission monitoring and reporting systems (e.g., for emissions from livestock and fertiliser use) and including emissions of large emitters. Bring forward the phase out of free emission allowances. Revise the Energy Taxation Directive to introduce minimum tax rates for fossil fuels based on energy content and environmental performance, and broaden the tax base by phasing-out exemptions and reduced rates for fossil fuels. Announce clear time paths for the evolution of minimum tax rates for fossil fuels.
There is a lack of risk capital for financing new sustainable technologies.	Promote the Capital Markets Union by reviewing the regulatory burden on institutional investors.
Government support for renewables remains high and mostly benefits cost-competitive solar and wind. There is room to further increase the use of competitive auctions.	Ensure that the EU state-aid framework allows government subsidies only for renewable technologies that are not yet competitive.
EU regulations encourage the use of emission-intensive biomass for energy.	Ensure that EU countries do not support the use of unsustainable biomass by revising the Renewable Energy Directive and excluding unsustainable biomass from the taxonomy of sustainable activities.
Retail electricity markets are fragmented along national boundaries, reflecting price regulation. Insufficient investment in cross-border grid connections slows down the integration of wholesale electricity markets.	Ensure that EU countries phase out regulated retail electricity prices by fully implementing the EU Directive on Common Rules for the Internal Market for Electricity. Increase investment in cross-border grid connections by diverting EU funds to the Connecting Europe Facility.
Direct payments continue to promote the environmentally harmful use of drained peatlands. Direct payments to agricultural producers based on livestock numbers have increased.	Remove support for the agricultural use of drained peatlands. Gradually withdraw direct payments for high livestock numbers.
International rail traffic remains underdeveloped.	Ensure non-discrimination in locomotive lease prices and rail track charges for domestic and foreign trains.
Limit the reallocation costs from the green transition	
Occupational entry barriers reduce labour mobility.	Continue efforts to reduce occupational entry barriers.
Spending efficiency is a concern for the inflow of EU funds under the Just Transition Fund.	Concentrate future funding for alleviating the socio-economic impacts of the green transition on mobility support and training, and make it conditional on labour market outcomes.

1 Key Policy Insights

The recovery in the European Union and euro area has been disrupted by the energy price shock and the cost-of-living crisis that followed Russia's war of aggression against Ukraine. EU policies helped avoid a severe downturn, but the near-term outlook is clouded by uncertainty and downside risks. Monetary and fiscal policy need to remain restrictive to lower underlying inflationary pressures. Fiscal sustainability should be grounded in efficient public spending and improved economic governance. To facilitate structural change, barriers in the Single Market need to be reduced further and complemented by an efficient early-stage support for green innovation.

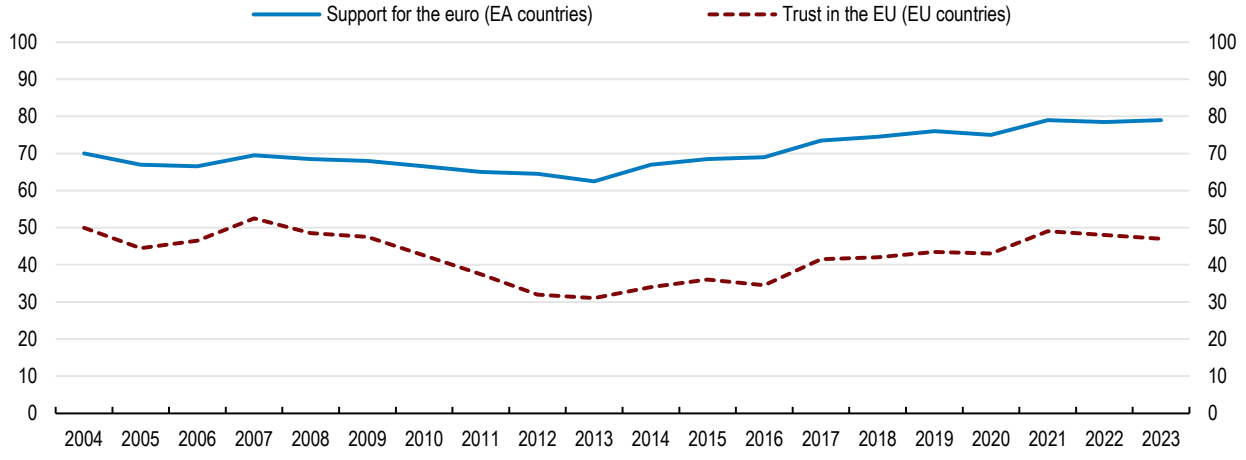
The European Union is tackling critical challenges

The COVID-19 pandemic has brought multiple challenges and uncovered existing weaknesses, which elicited new policy responses at the EU level. Recovery from the pandemic has been cut short by ongoing global supply chain disruptions, increasing energy and commodity market pressures and high uncertainty following Russia's unprovoked war of aggression against Ukraine. These mostly external shocks have turned 2022 into a particularly difficult year for Europe. War is taking place on European soil creating a humanitarian crisis and significant disruptions to economic activity. Inflation in the euro area and the EU has reached levels not seen in advanced economies in decades, and growing trade tensions coupled with increasingly protectionist industrial policies are endangering the rules-based international economic order. In the presence of these immediate challenges, more long-term tasks such as climate-change mitigation and the digital transition are in the danger of fading into the background.

The policy response of the European institutions, both at the EU and euro area level, has been robust and creative. The EU continues to provide substantial humanitarian, military and financial support to Ukraine, so far amounting to EUR 55 billion. The EU also succeeded in coordinating an effective and timely reaction to the energy crisis, strengthening energy security. The ECB has tightened monetary policy, albeit belatedly, to tame inflation. The European Commission has followed with reform proposals aimed at improvements in economic governance important for the functioning of the Economic and Monetary Union (EMU). This work has paid off: unlike in the aftermath of the global financial crisis, trust in the EU has been preserved and even strengthened, while support for the common currency, which welcomed Croatia as a new member at the start of this year, is at a historical high (Figure 1.1). The EU and the euro area are acknowledged by their citizens as effective protection mechanisms, useful for addressing both immediate risks and long-term challenges.

Figure 1.1. Trust in the EU has been preserved and support for the euro is unprecedented

Share of survey respondents, per cent



Note: Surveyed respondents were asked the following questions: (1) "Are you for or against a European economic and monetary union with one single currency, the euro?", and (2) "Do you tend to trust the European Union institutions?". The series "In favour of European economic and monetary integration" (blue line) refers to respondents in the euro area countries, while the series "Trusting the EU institutions" (dotted brown line) refers to respondents in the European Union countries.
Source: Standard Eurobarometer 98 - Winter 2022-2023, https://europa.eu/eurobarometer/surveys/detail/2872

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However, the challenges that lie ahead may be as large as those recently confronted. Over the past decade, greenhouse gas emission reductions happened mostly in sectors covered by the Emission Trading System (ETS). In contrast, sectors not covered by the ETS have contributed little to emission reduction. Aggregate labour productivity has been trending downwards for decades, as in other major

economies. In the EU, labour productivity growth that soared in 2021, in the aftermath of the pandemic, has dropped to 0.7% in 2022.

Monetary policy must continue its restrictive stance to durably reduce inflation, while taking financial stability into account. Fiscal policy needs to support monetary policy, ensuring that the macroeconomic policy mix for the euro area is sufficiently restrictive to bring down inflation. That means better targeting of the fiscal support and implementing the Next Generation EU and the National Recovery and Resilience Plans efficiently to ensure that the fiscal stimulus from additional public investment does not push up inflation in the medium term. The EMU institutional architecture has to be renovated and the complex set of EU fiscal rules replaced by a system of economic governance that will improve both compliance with and national ownership of the rules.

Macroeconomic stabilisation can be helped by further developing the Single Market, which would alleviate cost and price pressures by expanding long-term productive capacity of EU countries. The Next Generation EU programme will provide some of the considerable investment needed to make the Single Market work for the green and digital transitions. But public investment will have to be accompanied by more private capital, and alleviating financing constraints, particularly for small and medium-sized firms, is key for meeting the environmental challenges. More also needs to be done in removing the persistent barriers in services trade and augmenting labour mobility. In addition, the harmonisation of national regulations with EU rules in the area of circular economy and construction can directly help fulfil the ambitious emission reduction targets.

Apart from ensuring a level-playing field, growing the Single Market entails an appropriately calibrated industrial policy enhancing resilience and supporting productive capabilities. Further relaxation of the state-aid rules risks creating uneven conditions across countries, reflecting the amount of fiscal space in the various countries rather than opportunity costs and synergies. Instead of harmful subsidisation races, the EU could focus on international co-operation to avoid new dependencies and join the efforts of governments and businesses to improve risk preparedness.

Looking ahead, a key challenge is to accelerate decarbonisation efforts in Europe. This requires that all sectors contribute to emission reductions and calls for an extension of emission trading to agriculture and transportation. Such efforts should be complemented by measures to shift to cleaner energy and improve energy efficiency.

Against this background, the Survey has three main messages:

- Monetary and fiscal policies must provide sufficiently restrictive macroeconomic conditions to bring down inflation and ensure that inflation expectations remain firmly anchored at the 2% target. The economic governance reform, which could help improve fiscal outcomes, is an integral part of this effort.
- The Single Market is an essential driver of long-term growth with considerable potential for further deepening. Beyond providing a level playing field, the Single Market could be leveraged to enhance resilience. Further reducing existing barriers to services trade and labour mobility, while protecting workers' rights, will also facilitate the digital and green transitions. Continuing to fight corruption and fraud is necessary to strengthen trust in public institutions.
- The green transition requires further efforts to reduce emissions by using the entire toolbox of mitigation policies, including carbon pricing and regulatory measures. This entails greater harmonisation of carbon prices across countries and sectors, before raising them gradually. Also, more integrated electricity markets will be key for the energy transition and achieving energy security.

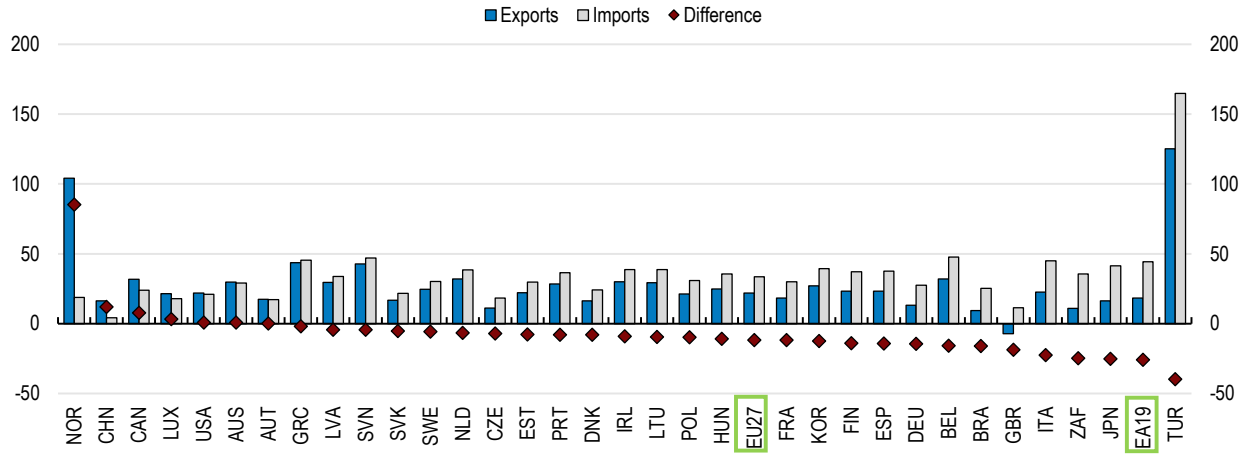
Economic recovery has been slow and uneven

The recovery has been hampered by the energy crisis and high inflation

Europe has been hit hard by Russia's unprovoked war of aggression against Ukraine and the energy crisis that followed. In the wake of the pandemic, growth rebounded in 2022, reflecting government support of about 1.2% of EU GDP to households and firms, as well as improvements in global supply chains and stronger demand from global reopening. Even so, the large negative terms-of-trade shock that sharply increased prices of imports, such as energy, relative to export prices, has been persistent and heterogenous across European countries, reflecting varying energy needs and supply chains. It amounted to a considerable transfer of wealth away from Europe (Figure 1.2), which continued, despite lower imports of energy and gradually decreasing energy prices, to contribute negatively to economic growth until the third quarter.

Figure 1.2. Europe has been hit strongly by the energy crisis

Per cent changes in trade in goods values



Note: March-July 2022 compared with the same months of 2021.
Source: OECD International Trade Statistics database.

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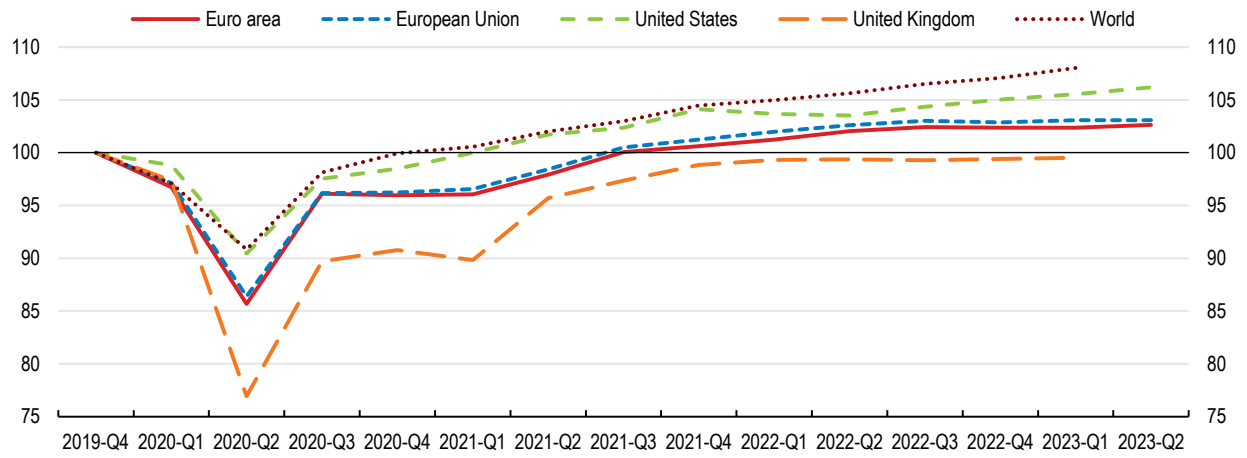
The EU economy has contained the adverse impact of the war in Ukraine and the surge in energy prices thanks to coordinated and timely policy action. The measures resulted in rapid diversification of supply and a sizeable fall in gas consumption. The sharp deterioration of the terms of trade in 2021 and 2022 was greater in the EU than in many advanced economies. Policy actions at the EU and national levels helped enhance resilience and mitigate the negative effects on household income and productive capacity. Gradually declining energy prices have recently helped reverse the negative terms-of-trade shock and reduced production cost pressures.

The recovery of European economies has been lagging other regions (Figure 1.3). GDP growth slowed to 3.5% in 2022 in both the EU and the euro area, following a rebound from the pandemic that resulted in growth above 5% in 2021. Private consumption remained resilient, supported by continuing employment gains, a further decrease in the savings rate and fiscal support mitigating the energy crisis. Consumer spending on services continued to increase and durable goods consumption grew markedly in the second half of 2022, reflecting reduced supply chain disruptions. Increasing interest rates and elevated uncertainty have had limited effects on gross fixed capital formation so far. The contribution of gross fixed capital formation to GDP growth has been complemented by an improved trade balance driven by the recent decline in energy prices.

Figure 1.3. The rebound in GDP growth has been relatively weak

Real GDP, index 2019-Q4 = 100



Note: Data refers to the euro area including 19 countries.
Source: OECD Economic Outlook: Statistics and Projections database; and Eurostat National Accounts database.

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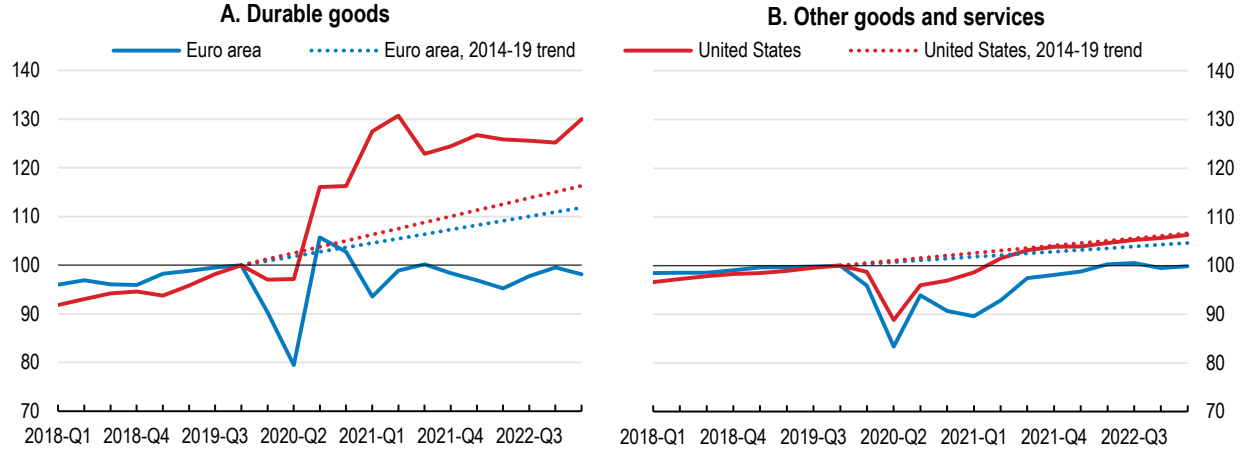
The relatively slow recovery reflects the negative terms-of-trade shock from the war in Ukraine as well as sluggish private consumption during most of the pandemic period and weak investment, both of which pre-date the war. As discussed in the 2021 *OECD Economic Survey of the European Union* (OECD, 2021[1]), the resurgence of the pandemic in the autumn of 2020 and a new wave of infections in the first months of 2021 forced EU countries to impose additional containment measures, which further delayed the recovery (Figure 1.4). Similarly, the weak level of euro area investment can be linked to a sharp contraction during the first wave of the COVID-19 pandemic followed by a slow rebound, although these dynamics are driven to large extent by the investment data for Ireland (Figure 1.5).

Figure 1.4. The rebound in consumption has been limited

Real personal consumption expenditures, index 2019-Q4 = 100



Note: Other goods consist of semi-durable and non-durable goods. Only euro area member countries that are also members of the OECD (17 countries) are considered.
Source: OECD National Accounts database; and OECD calculations.

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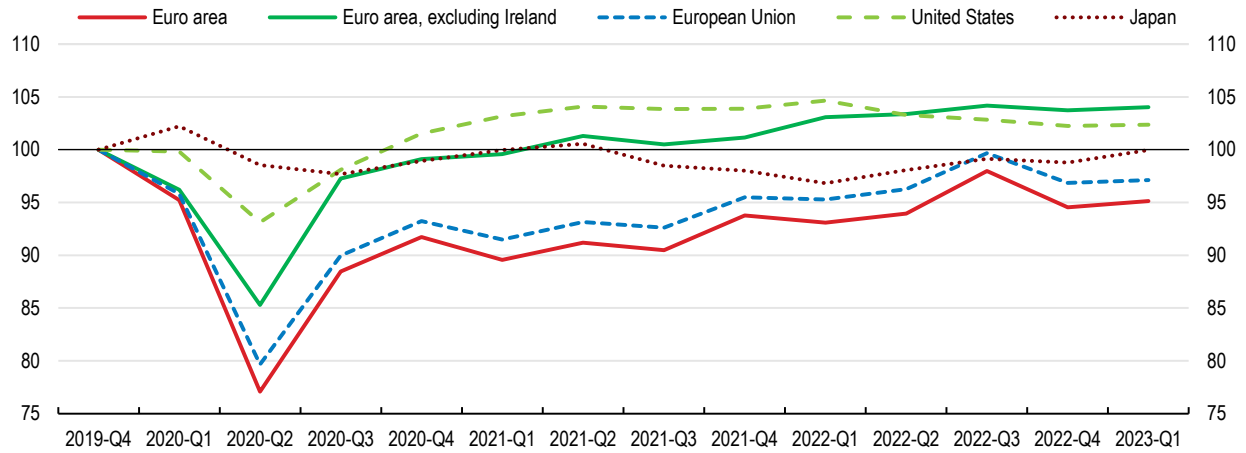
Figure 1.5. Investment in the euro area continued to recover in 2022

Real gross fixed capital formation, index 2019-Q4 = 100



Note: Data refers to euro area member countries that are also members of the OECD (17 countries) and to the 27 EU Member countries.
Source: OECD Economic Outlook: Statistics and Projections database.

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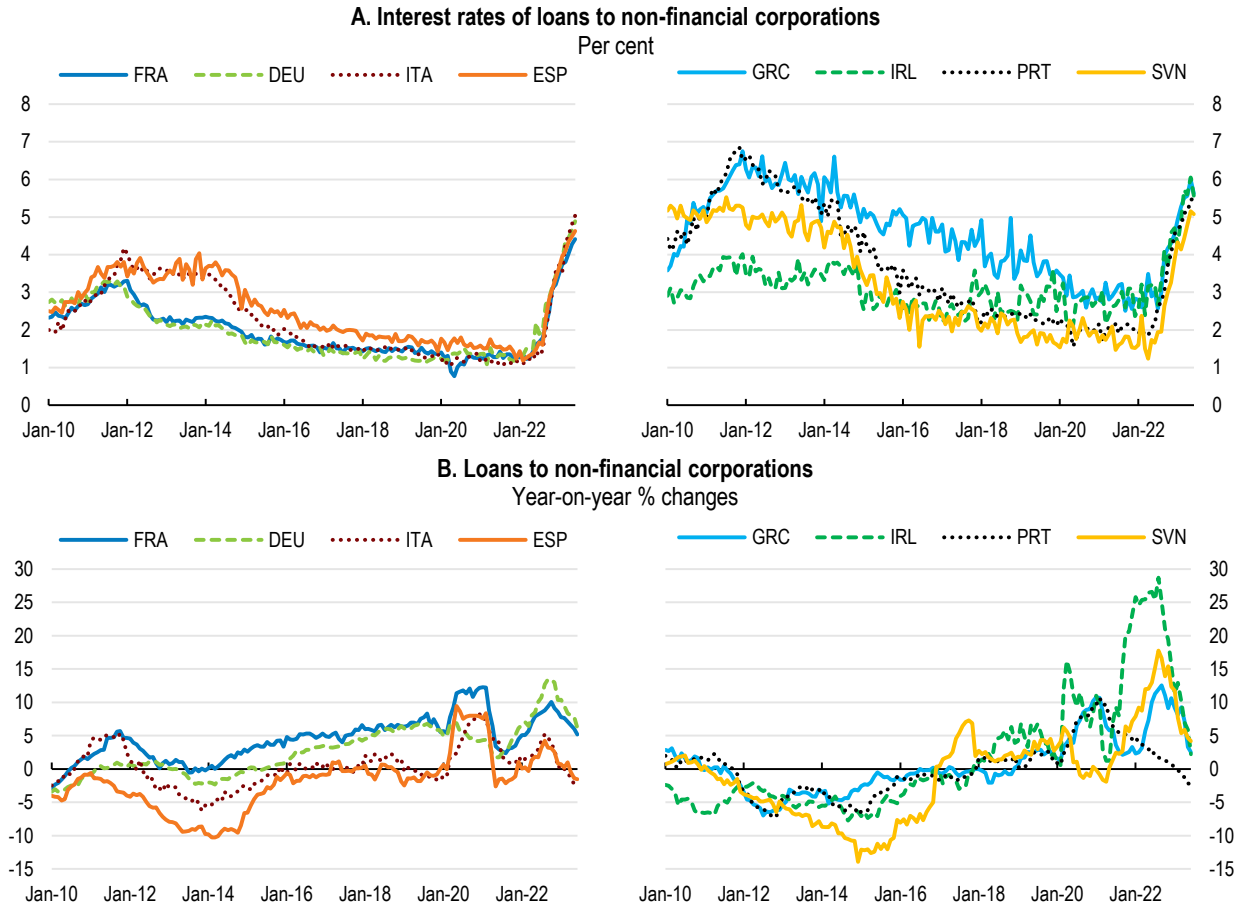
Increases in the prices of energy and food have been fuelling inflation. The negative terms-of-trade shock has exacerbated price pressures associated with post-pandemic fragmentation of global supply chains. To deliver on its mandate of price stability and to prevent inflation expectations from de-anchoring, the ECB has accelerated tightening monetary policy in July 2022, having put in place the Transmission Protection Instrument, raising policy interest rates by 400 basis points in less than eleven months. Nevertheless, the start of the tightening may have been too late (Darvas and Martins, 2022[2]). The corresponding increase in lending interest rates and tighter credit standards triggered a slowdown in credit provision to both firms and households, further weighing on the recovery and aggravating existing financial vulnerabilities (Figure 1.6).

The labour market recovery continued in 2022 with employment exceeding the pre-pandemic level, but with considerable heterogeneity across sectors. Labour market slack decreased markedly in the information and communication technology sector and construction, while employment in manufacturing and some service sectors was still lower than before the pandemic. Labour market tightness is reflected in the unemployment rate, which is at historically low levels in both the EU and the euro area, while job vacancy rates are unprecedently high (Figure 1.7). Wage growth indicators picked up in the third and fourth quarter of 2022, recording the strongest increase, at an annual rate of 3.9%, in services. Labour market tightness is projected to continue, reflecting continuing labour shortages in many countries. Nominal wage growth is projected to accelerate as increased efforts to obtain compensation for recent inflation could lead to upward pressures in wage negotiations. Although wage shares and profit margins currently appear close to their historical averages, GDP deflator decomposition suggests increasing unit profits at the aggregate level (Figure 1.8). While a full recovery of the lost purchasing power could trigger de-anchoring of inflation expectations, increasing unit profits point to some room for non-inflationary wage increases.

Figure 1.6. Higher borrowing costs have reduced credit growth



Note: New business loans with an initial rate fixation period of less than one year. Loans other than revolving loans and overdrafts, convenience and extended credit card debt. In Panel A, loans of up to 1 year for Greece. In Panel B, loans adjusted for credit and securitisation.
Source: ECB MFI Interest Rate Statistics database.

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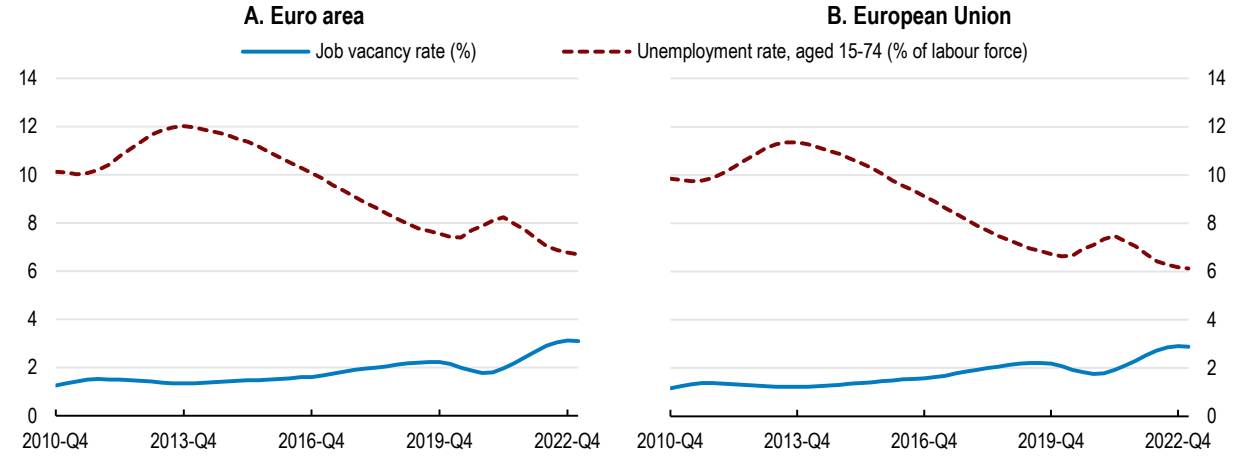
Figure 1.7. The unemployment rate is historically low and job vacancies have increased



Note: Four quarter moving average rates. Data refers to the euro area including 20 countries and to the 27 EU Member countries.
Source: Eurostat Job Vacancy Statistics database; Eurostat Labour Market Statistics database; and OECD calculations.

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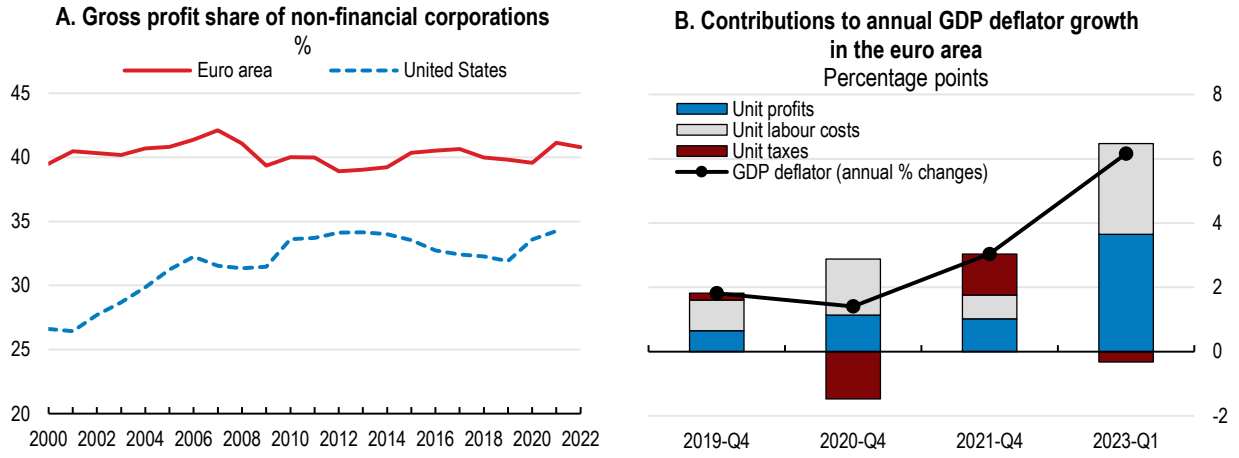
Figure 1.8. Profit share remains close to the historical average, but unit profits are increasing



Note: In Panel A, the indicator is calculated as gross operating surplus and mixed income over gross value added for the non-financial corporate sector (S11). In both Panel A and Panel B, data refers to the euro area including 19 countries.
Source: Eurostat Non-financial Transactions database; Eurostat Labour Cost Index database; OECD Annual Sectoral Accounts database; Eurostat National Accounts database; OECD calculations.

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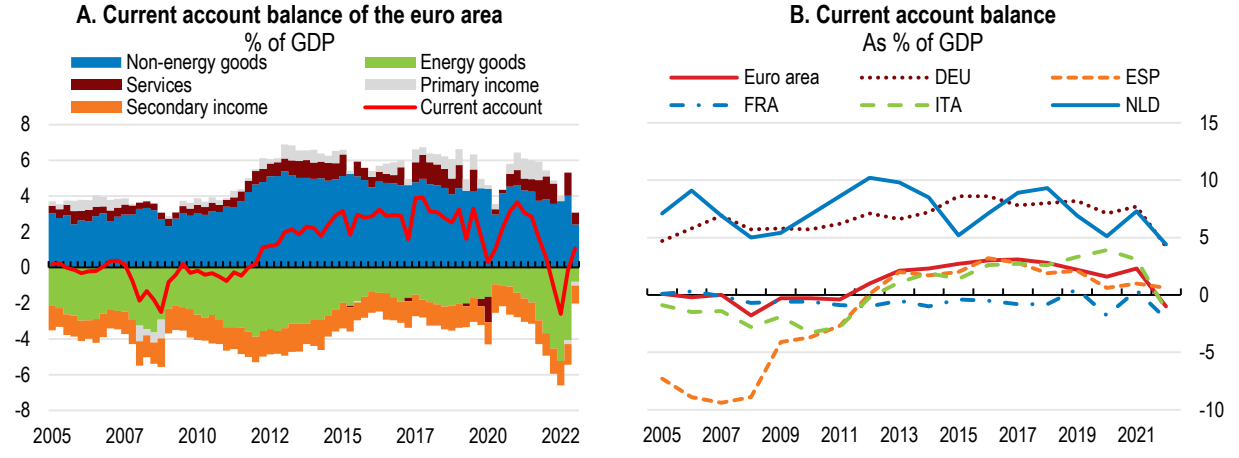
After a prolonged period of current account surpluses, the euro area's current account balance has deteriorated sharply, mainly driven by expensive energy imports (Figure 1.9). At the same time, the strong variation in energy dependency together with varying energy needs led to discrepancies in current account dynamics, increasing risks of external imbalances in some countries (European Commission, 2022[3]).

Figure 1.9. The current account balance reflects expensive energy imports



Note: Data refers to the euro area including 20 countries as of 2013 and 19 countries from 2005 to 2012.
Source: Eurostat Balance of Payments database; Eurostat International Trade by SITC database; Eurostat National Accounts database; and OECD calculations.

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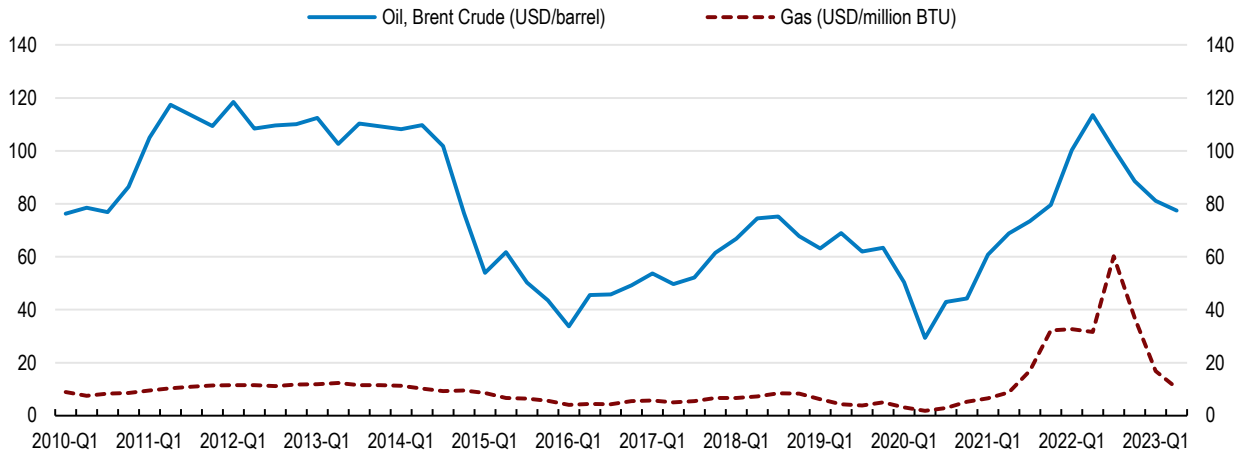
A forceful policy response helped to reduce the fallout from the energy crisis

The energy crisis has abated in 2023 reflecting both stronger supply and lower-than-expected demand. European firms have been resilient during the energy price crisis. Many firms managed to reduce gas consumption significantly when elevated energy prices continued to incentivise fuel-switching and energy efficiency measures, while maintaining high levels of production. For example, in Germany where about 60% of industrial companies use natural gas, 75% of gas-dependent firms were able to reduce gas consumption without cutting production, while some 40% reported further room for consumption reduction

(Pittel and Schultz, 2022[4]). Mild weather conditions also lowered heating requirements, ensuring inventory levels 20% above their long-term average at end-2022. As a result of these favourable developments, gas and oil prices have declined significantly (Figure 1.10). A continuing exclusion of gas imports from Russia also appears manageable, as the integration of European countries into the global liquified natural gas (LNG) market progresses (Albrizio et al., 2022[5]). Even in the absence of Russian gas, adherence to the voluntary 15% gas demand reduction plan would help fill up the storage capacities next winter.

Figure 1.10. Energy prices have been volatile

Energy prices in U.S. dollars



Source: Refinitiv; and Oxford Economics

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The adjustment during the energy crisis has been helped by tailored policy responses at EU level, including both measures to strengthen supply and reduce demand. In addition to the short-term measures focused on alleviating tensions in natural gas markets (Box 1.1), the Commission proposed measures concerning other sources of energy. These include the cap on extraordinary market revenues from electric power generation, a mandatory reduction target for peak hours demand and a one-off solidarity contribution from fossil fuel companies (European Commission, 2022[3]). As discussed in detail in Chapter 2, some of these measures cannot be sufficiently targeted or reduce incentives for energy savings and should not be introduced, at least not in their current proposed form.

The EU should refrain from overly generous price-capping mechanisms, which in any case should be carefully designed to minimise negative effects on energy savings. As discussed in Chapter 2, measures to mitigate the impact of high energy prices included a cap on wholesale gas prices at EU level. However, this mechanism suffers from several problems. It may imperil the functioning of the Internal Energy market and reduce gas imports into the EU. A price cap also contradicts the Emission Trading System, which aims at raising energy costs to incentivise investment in renewables. Importantly, price regulation cannot really be targeted and thus it risks reducing energy saving incentives, contradicting EU-wide efforts to improve energy efficiency.

Joint gas purchasing was proposed as a tool to leverage the EU's purchasing power as a major gas importer and prevent companies and countries outbidding each other and thereby driving up gas prices. However, the proposed mechanism seems impractical and in need of improvement (Barnes, 2022[6]). Since the demand aggregation mechanism is mandatory up to the 15% of the gas storage facilities (see above), while participation in joint purchasing remains voluntary, it is not clear how much gas will be bought through the scheme. It is possible that it will not have much impact. The Commission estimates the maximum amount prescribed by demand aggregation at about 13.5 bcm (European Commission, 2022[7]), less than 4% of total EU annual gas consumption of more than 400 bcm. Moreover, the Title Transfer Facility (TTF) is a functioning wholesale market that already effectively represents the purchasing power of the EU. On

the contrary, the Joint Purchasing IT Tool agreed in December 2022 seems to be duplicating the role of current LNG aggregators such as trading houses, oil and gas companies, as well as European utility companies that have signed long term LNG purchase contracts with producers. In addition, smaller buyers who are sometimes seen as beneficiaries of joint purchasing, can already access smaller-size contracts at the TTF and current market pricing with reference to TTF traded prices effectively provides demand aggregation. The new demand aggregation tool, however, requires a cumbersome assessment of potential negative effects of purchasing consortia on competition and places broad notification obligations on the gas sector, which may be unattractive for large companies (Hancher and Levitt, 2023[8]).

Box 1.1. EU measures to ease strains on natural gas markets

Alongside the longer-term structural measures in the Fit for 55 package and the REPowerEU plan (Chapter 2), additional short-term measures were introduced to make European gas markets more resilient:

Minimum gas storage obligations: Requirement to fill gas storage to 80% of capacity by November 2022 and to 90% ahead of all following winters. Several EU Member States adopted more stringent regulations, aiming for higher filling targets.

A regulation on coordinated demand reduction measures for gas: A voluntary reduction by 15% in gas demand between August 2022 and March 2024, compared to the average over the five previous years. The reduction target could become mandatory in case the EU initiates a crisis-level alert.

Energy diplomacy: the EU intensified its international outreach to strengthen energy partnerships with key natural gas and LNG suppliers, including Algeria, Azerbaijan, Norway and the United States.

Joint Gas Purchasing Mechanism: adopted in December 2022, it will facilitate the coordination of gas purchases at the EU level using a two-step process (Regulation 2022/2576). The first step requires demand aggregation with volumes equivalent to 15% of the gas needed to fill a country's storage facilities to 90% of capacity and the second involves voluntary participation in joint purchasing.

Enhanced solidarity: in December 2022 the EU Council adopted new rules for sharing natural gas amongst EU countries in case of an emergency. These rules will be triggered only if member states have not concluded bilateral agreements setting the modalities of solidarity.

New floating storage regasification units and the expansion of existing regasification terminals will provide the EU with 25% more regasification capacity in 2023 compared to 2021. This represents an increase of around 40 bcm annually.

Market correction mechanism (a wholesale gas price cap): EU energy Ministers reached a political agreement on the rules for a temporary one-year mechanism starting on 15 February 2023. The instrument imposes a safety price ceiling on the month-ahead Title Transfer Facility (TTF) derivatives and will be automatically activated if the month-ahead TTF price exceeds €180/MWh for three working days or if the TTF price is €35 higher than a reference price for LNG and non-LNG contracts on global markets for the same three working days. The Agency for Cooperation of Energy Regulators (ACER) was entrusted with monitoring and publishing these market corrections.

Source: International Energy Agency (2023[9]).

Growth will slow down in 2023, gradually picking up in 2024

Growth in the euro area is projected to slow to 0.9% in 2023, despite the support that robust labour markets and declining headline inflation will provide to real incomes and private consumption, before gradually strengthening in 2024. The benefits of lower energy prices and declining inflation are projected to help the growth momentum to gradually pick up, bringing average annual growth in 2024 to 1.5% (Table 1.1).

Growth in the European Union will follow a similar profile and rebound in 2024 to 1.5% year-on-year on the back of stronger private consumption (Table 1.2).

Headline consumer price inflation is projected to moderate, while core inflation will remain sticky. With the sharp rises of energy prices in 2022 still working their way through the economy and with monetary policy tightening having begun later than in the United States, both headline and core inflation are projected to remain above target in the euro area for longer. Annual headline inflation in the euro area is projected to come down from 8.3% in 2022 to 5.8% in 2023 and remain above 3% in 2024. Core inflation in the euro area, which kept increasing throughout 2022, is projected to decrease to 5.4% in 2023, before easing further to 3.6% in 2024.

Table 1.1. Macroeconomic indicators and projections for the euro area

	2019	2020	2021	2022	2023[1]	2024[1]
	Current prices (EUR Billions)	Annual percentage change, volume (2015 prices)				
Gross domestic product (GDP)	11956.4	-6.2	5.5	3.5	0.9	1.5
Private consumption	6363.3	-7.8	3.7	4.4	0.2	1.5
Government consumption	2450.2	0.9	4.4	1.3	-0.2	0.9
Gross fixed capital formation	2653.4	-6.2	3.6	3.7	0.6	1.4
Housing	631.3	-3.3	7.8	1.4	. .	. .
Final domestic demand	11466.9	-5.6	3.8	3.5	0.2	1.4
Stockbuilding[2]	. .	-0.3	0.3	0.3	-0.1	0.0
Total domestic demand	11551.1	-5.8	4.1	3.8	0.0	1.4
Exports of goods and services	5738.4	-9.4	11.1	7.3	2.1	2.9
Imports of goods and services	5333.0	-8.8	8.8	8.3	0.8	2.7
Net exports[2]	405.4	-0.6	1.4	-0.2	0.7	0.2
Memorandum items						
Potential GDP		1.6	1.6	1.4	1.2	1.1
Output gap (% of potential GDP)		-6.4	-3.0	-1.0	-1.3	-1.0
Employment		-1.5	1.5	2.8	1.1	0.5
Unemployment rate (% of labour force)		7.9	7.7	6.7	6.7	6.6
GDP deflator		1.9	2.1	4.6	5.7	3.0
Harmonised index of consumer prices		0.3	2.5	8.3	5.8	3.2
Harmonised index of core inflation[3]		0.7	1.5	4.0	5.4	3.6
Household saving ratio, net (% of household disposable income)		13.6	11.5	7.7[1]	7.4	6.7
Current account balance (% of GDP)		2.6	4.2	1.2	2.4	2.6
General government fiscal balance (% of GDP)		-7.1	-5.3	-3.7	-2.9	-2.2
Underlying general government fiscal balance (% of potential GDP)		-2.9	-3.5	-3.0	-2.4	-2.1
Underlying government primary fiscal balance (% of potential GDP)		-1.7	-2.3	-1.5	-1.0	-0.5
General government debt, Maastricht definition (% of GDP)		99.3	97.3	93.2	92.3	92.0
General government net debt (% of GDP)		75.9	70.8	57.0	56.4	56.2
Three-month money market rate, average		-0.4	-0.5	0.3	3.2	3.4
Ten-year government bond yield, average		0.0	0.0	1.8	3.3	3.7

Note: Data refers to euro area member countries that are also members of the OECD (17 countries).
1. OECD estimates.
2. Contribution to changes in real GDP.
3. Index of consumer prices excluding food, energy, alcohol and tobacco.
Source: OECD Economic Outlook 113 database.

Risks to projections are tilted to the downside (Table 1.3). The disruption from the Russian invasion of Ukraine is likely to continue to weigh on global output through the impact on uncertainty, continuing risks to food and energy security, and the ongoing adjustments in commodity markets as price caps and embargos on Russian energy take full effect. The risk of critical energy shortages in the 2023-24 winter

has diminished but not disappeared. Supply from Russia in 2023 is likely to be minimal, in contrast to the early months of 2022, and the likely rebound in demand in China will increase competition for tight global LNG supply. This could push energy prices up again, resulting in another spike in consumer prices and further economic dislocation. Risks of higher prices also remain in oil markets, given recent production cuts by oil exporters and considerable uncertainty as to how Western sanctions on oil and oil products from Russia will affect global supply.

Table 1.2. Macroeconomic indicators and projections for the European Union

	2019	2020	2021	2022	2023[1]	2024[1]
	Current prices (EUR billions)	Annual percentage change, volume (2015 prices)				
Gross domestic product (GDP)	17856.4	-5.9	5.6	3.6	0.9	1.5
Private consumption	9501.4	-7.2	4.1	4.1	-0.1	1.6
Government consumption	3645.8	1.0	4.2	1.0	-0.2	1.1
Gross fixed capital formation	3944.3	-5.5	3.9	3.9	0.6	1.4
Final domestic demand	17090.1	-5.1	4.1	3.3	0.1	1.4
Stockbuilding[2]	. .	-0.4	0.7	0.5	. .	. .
Total domestic demand	17225.7	-5.4	4.8	3.8	-0.1	1.4
Exports of goods and services	8872.3	-8.8	11.0	7.5	2.4	3.0
Imports of goods and services	8243.5	-8.2	9.9	8.2	0.9	2.7
Net exports[2]	. .	-0.6	0.9	0.0	. .	. .
Memorandum items						
Potential GDP		1.7	1.7	1.6	1.4	1.3
Output gap (% of potential GDP)		-6.0	-2.6	-0.6	-1.2	-0.9
Employment		-1.3	1.5	2.4	0.8	0.4
Unemployment rate (% of labour force)		7.3	7.1	6.2	6.3	6.2
GDP deflator		2.2	2.5	5.4	6.2	3.2
Harmonised index of consumer prices		0.6	2.8	9.1	6.7	3.4
Harmonised index of core inflation[3]		1.0	1.7	4.7	6.0	3.7
Household saving ratio, net (% of household disposable income)		13.0	10.6	7.1[1]	6.9	6.3
Current account balance (% of GDP)		2.8	4.0	1.2	2.4	2.6
General government fiscal balance (% of GDP)		-6.9	-4.9	-3.5	-2.9	-2.3
Underlying general government fiscal balance (% of potential GDP)		-2.9	-3.3	-3.1	-2.6	-2.2
Underlying government primary fiscal balance (% of potential GDP)		-1.7	-2.1	-1.6	-1.1	-0.6
General government debt, Maastricht definition (% of GDP)		93.5	91.3	87.4	86.9	86.7
General government net debt (% of GDP)		69.5	64.3	52.0	51.8	51.7
Three-month money market rate, average		-0.3	-0.4	1.0	3.8	3.9

Note: Data refers to European Union member countries that are also members of the OECD (22 countries).
1. OECD estimates.
2. Contribution to changes in real GDP.
3. Index of consumer prices excluding food, energy, alcohol and tobacco.
Source: OECD Economic Outlook 113 database.

Trade-related tensions remain a concern. The standoff between the United States and China goes on and the cumulative coverage of goods-related import restrictions imposed by G20 countries has increased, including new export restrictions on food, animal feed and fertilisers. Medium-term risks to growth and inflation related to the ongoing fragmentation of global value chains are also rising.

The scale and duration of the monetary tightening required to durably lower inflation is uncertain. Continued cost pressures or an upward drift in inflation expectations could require the ECB to keep policy rates higher for longer, further dampening growth and potentially exposing financial sector vulnerabilities. Potential losses at banks or non-bank financial institutions from loan defaults or residential and commercial real estate exposures could intensify the drag on economic activity. On the upside, a durable and timely

conclusion of the war in Ukraine could alleviate upward pressure on energy and food prices. A stronger recovery in China could also add to external demand.

Table 1.3. Events that could lead to a major deterioration in the outlook

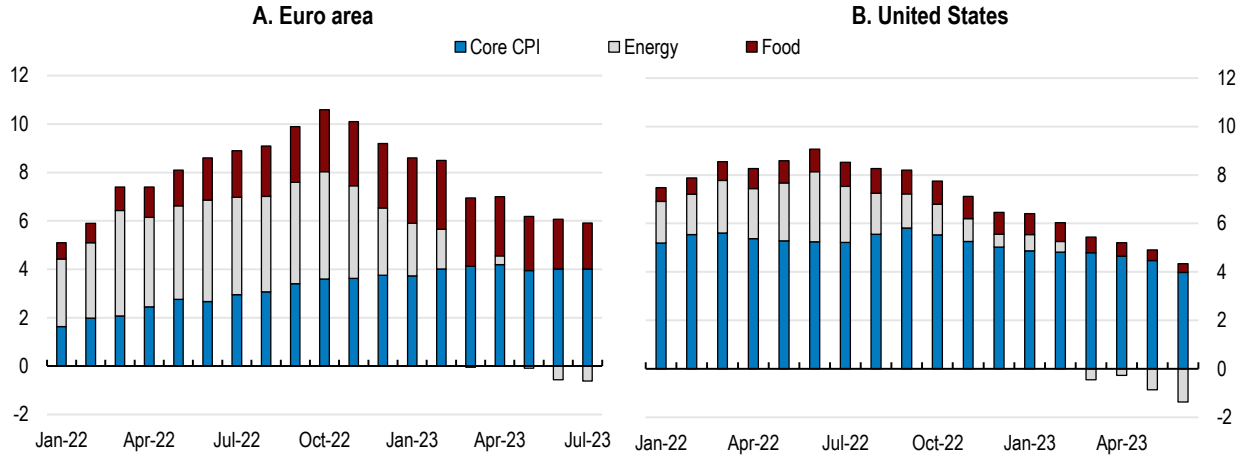
Vulnerability	Possible outcomes
The energy crisis may be rekindled by higher demand for LNG from China or unintended effects on global supply of Western sanctions on Russian oil.	A new energy price shock could lead to another spike in consumer prices, necessitating additional monetary policy tightening and dampening growth.
Trade tensions may deteriorate further, extending the scope of export restrictions.	Further fragmentation of global supply chains and barriers to trade would weigh on growth and contribute to inflationary pressures.
Interest rates may need to be higher for longer to durably reduce inflation.	Bank and non-bank losses from defaulting loans and real estate exposures could necessitate write-offs, further limiting lending, dampening growth and exposing existing financial sector vulnerabilities.

Monetary policy is broadly appropriate but financial risks are increasing

Headline inflation in the euro area remains to a large extent driven by supply-side factors (Figure 1.11). Despite lower-than-expected energy inflation at the end of 2022, food and energy prices remain the largest contributors to euro area headline inflation. At the same time, core inflation has continued to increase. The share of core items registering monthly inflation rates above their typical monthly patterns increased in December to well above 80%, the highest level in 2022 (European Commission, 2023[10]). However, interpreting the increase in inflation as demand-driven or supply-driven is not straightforward and the price changes in most cases reflect a mix of both factors, at least in OECD economies (Barnard and Koh, 2023[11]). The ECB also finds that the initial surge in core inflation in the euro area was mainly supply-driven but that supply and demand factors have played broadly similar roles in recent months (Gonçalves and Koester, 2022[12]).

Figure 1.11. Headline inflation mainly reflects a negative terms-of-trade shock from energy and food

Contributions to annual inflation growth, percentage points



Note: Food includes non-alcoholic beverages. Euro area includes 19 countries.
Source: OECD Price Statistics database; and Eurostat.

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The ECB should continue its data-dependent approach to policy

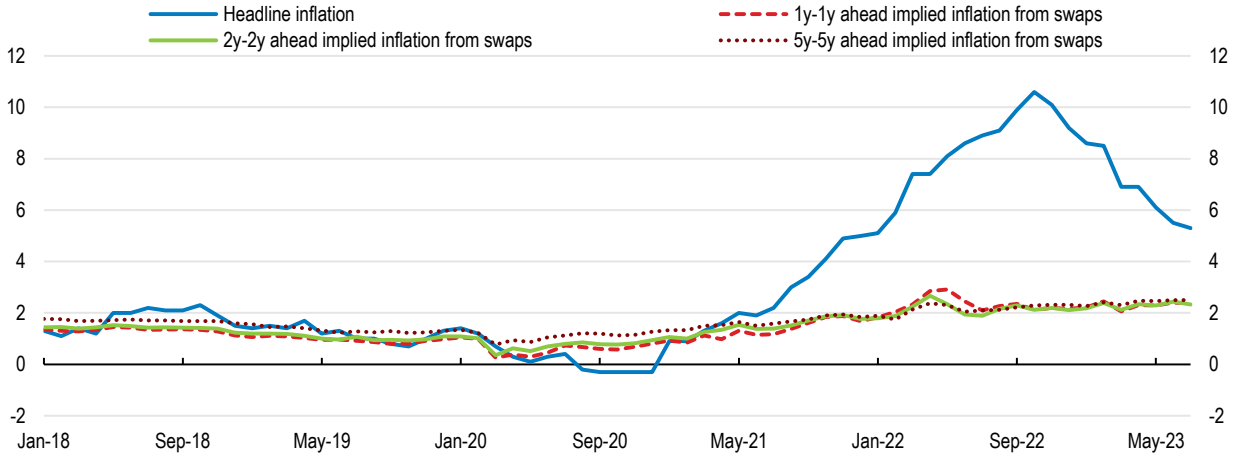
Beyond the demand-driven part of the inflation spike, the standard monetary policy prescription is to "look through" supply shocks that are not assessed to leave a lasting effect on potential output (Bodenstein,

Erceg and Guerrieri, 2008[13]). However, negative supply shocks from high energy prices and the war may turn out to be persistent or even permanent, durably reducing potential output. In such a situation, monetary policy tightening is necessary to align demand with permanently lower productive capacity. In addition, and notwithstanding the implications for potential output, monetary policy should react strongly if supply shocks risk de-anchoring inflation expectations (Brainard, 2022[14]). While simple in theory, this policy is difficult to implement, due to the challenges of assessing potential output in real time – even more so when uncertainty is high and more muted policy reaction may be warranted (Orphanides, 2003[15]).

In the current situation, the need to anchor inflation expectations may be stronger than the considerations regarding the negative effects on output. When inflation is already high, prolonging the period of high inflation increases the risk that inflation expectations adjust upward, putting medium-term price stability at risk (Schnabel, 2022[16]). Although market-based measures suggest that inflation expectations remain anchored, they appear to be pointing to a prolonged period of above-target inflation (Figure 1.12). Survey-based measures of short-term inflation expectations paint a similarly concerning picture. Inflation expectations of households in the euro area have been trending upwards for several quarters and surveys among professional forecasters remain similarly elevated (Figure 1.13).

Figure 1.12. Market-based inflation expectations appear above the 2% target

Headline inflation and inflation expectations from swaps, 12-month % change



Note: Data refer to the euro area including 19 countries.
Source: Refinitiv; and Eurostat

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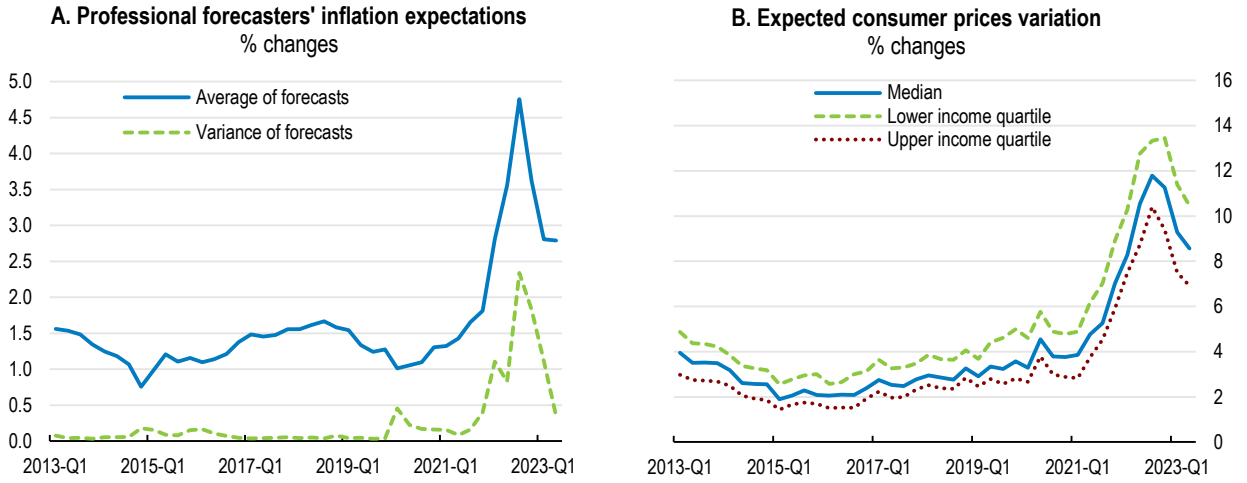
Second-round inflation effects must be minimised, as they could prolong the costly period of disinflation and potentially trigger a wage-price spiral. Judging from the past, the risks appear limited. The comparison of 22 historical episodes similar to the current situation, characterised by rising inflation, positive nominal wage growth, declining real wages, and declining unemployment, shows that wage-price spirals did not take hold on average (IMF, 2022[17]). Instead, inflation edged down and the unemployment rate stabilised following such episodes, mostly driven by monetary policy tightening, which helped to keep inflation contained. The post-COVID-19 episode also provides only limited evidence that most advanced economies may be entering a wage-price spiral, while profit margins may have increased in some sectors. The correlation between wage growth and inflation has declined over recent decades and other institutional factors, such as the high degree of firms' pricing power, declining collective bargaining power and falling trade union membership seem to be limiting the risk of a wage-price spiral developing (Boissay et al., 2022[18]).

Figure 1.13. Survey-based short-term inflation expectations have also increased



Note: Data refer to the euro area aggregate. In Panel A, data are based on the ECB Survey of Professional Forecasters (SPF) and refer to the inflation expectations for the next 12 months. In Panel B, data refer to the responses to the question "By how many per cent do you expect consumer prices to go up/down in the next 12 months?" contained in the European Commission Consumer opinion survey.

Source: ECB Survey of Professional Forecasters; European Commission, Business and consumer surveys, https://economy-finance.ec.europa.eu/economic-forecast-and-surveys/business-and-consumer-surveys_en ; and OECD calculations

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However, important caveats point to the need for continued vigilance. Data patterns from the past may not be representative of current circumstances, especially if the COVID-19 shock caused a large structural break. Differences across economies and over time in structural factors, such as union density, coverage and centralisation of wage bargaining may affect wage-setting processes. Policymakers may need to respond aggressively to supply-side shocks, especially when inflation is high and rising (IMF, 2022[17]). The risk of a wage-price spiral also depends on how firms and workers form their expectations for wages and prices. More adaptive and backward-looking expectations will require stronger monetary policy responses to reduce the risks of de-anchoring. Finally, the flat profile of nominal wages in the wake of an inflationary shock cannot be taken for granted. Wage pressures are rising in euro area more broadly, especially in countries with persistent shortages of labour (for example in Germany) or semi-automatic wage indexation (as in Belgium, Luxembourg). The impact of high inflation has been discernible in the latest wage agreements in Germany (Deutsche Bundesbank, 2023[19]) or has been projected to translate into hourly labour cost growth in the private sector of 8.5% p.a. in 2023 in Belgium (NBB, 2022[20]).

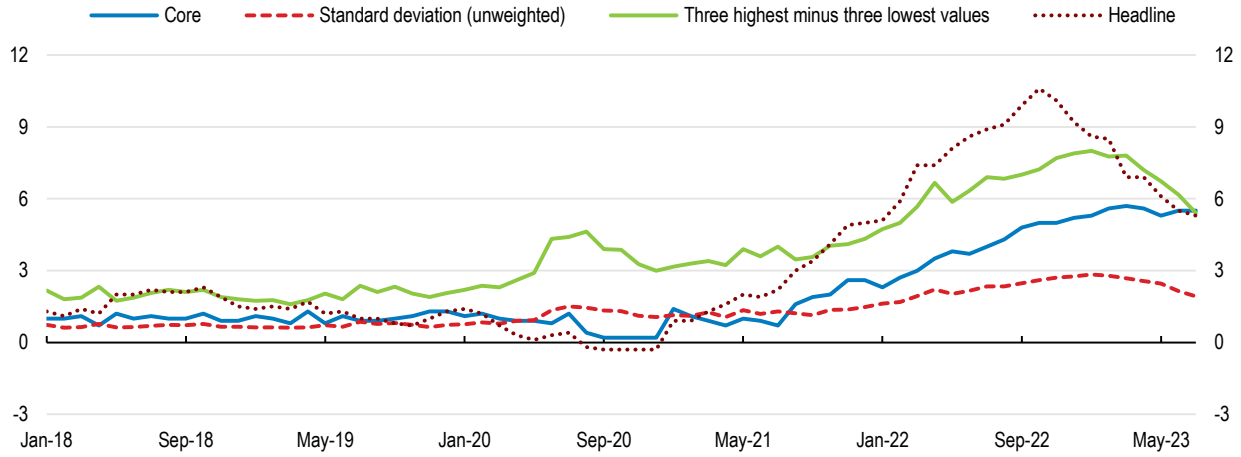
Although risks around the growth outlook have become more balanced, risks to inflation remain skewed to the upside. While headline inflation has peaked, core inflation in the euro area is still trending upward and becoming more dispersed (Figure 1.14). Core inflation appears sticky despite a swift and considerable tightening of financial conditions suggesting that changes in policy rates in the euro area are being quickly reflected in credit conditions and yields on market-based debt (Figure 1.15). The stickiness of core inflation may reflect expectations of a shallow economic slowdown partly driven by decreasing energy prices following the successful replacement of energy imports from Russia.

Moreover, bringing inflation under control may involve output losses. Looking at the historical record, there seems to be no post-1950 precedent for a sizeable disinflation induced by the central bank in the United States, Canada, Germany or the United Kingdom that does not entail substantial economic sacrifice or a recession (Cecchetti et al., 2023[21]). Analysis of the sacrifice ratios – the increases in slack associated with reductions in inflation – during large disinflationary episodes in the United States and other major economies seems to suggest that disinflation is always accompanied by a recession, although the costs of disinflation can differ markedly across episodes. Disinflation is further complicated by the strong labour market with record-low unemployment rate and historically high job vacancy rate (Figure 1.16). This

situation suggests strong aggregate activity, at least given the current state of supply-side constraints, as well as difficult labour market matching, due to both higher reallocation needs and a lower matching efficiency. Given that structural factors, such as labour reallocation and matching efficiency, cannot be influenced by monetary policy, the decrease in inflation seems unlikely without a corresponding increase in the unemployment rate in the short run (Blanchard, Domash and Summers, 2022[22]). At the same time, the Beveridge curve dynamics in the EU may be more benign, reflecting the widespread use of job-retention schemes during the pandemic (Lam and Solovyeva, 2023[23]).

Figure 1.14. Headline inflation has peaked but core inflation continues to trend upwards

Consumer price inflation, 12-month % change.



Note: Data refer to the euro area including 19 countries. Core inflation excludes volatile energy, food, alcohol and tobacco prices.
Source: Eurostat Harmonised index of consumer prices (HICP) database; and OECD calculations

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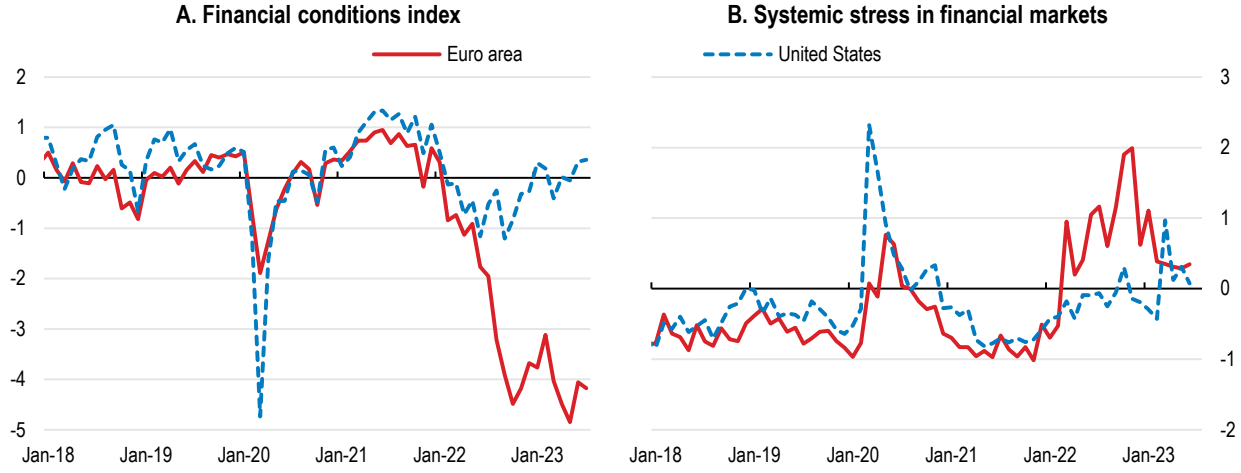
Figure 1.15. Financial conditions in the euro area have tightened considerably



Note: The Bloomberg Financial Conditions Index (FCI) is an equally weighted sum of sub-indexes that track financial stress in money, bond and equity markets. The index assesses both the availability of financing and its cost. The FCI is standardised to show the number of standard deviations above or below its average value from 1994 (for the US) and 1999 (for the euro area) to mid-2008 (the Z-score). Hence, a positive (negative) value indicates expansionary (restrictive) financial conditions compared to the level prior to the Global Financial Crisis. Data are shown up to July 2023.
Financial markets stress for the euro area is the ECB composite indicator of systemic stress combining 15 mainly market-based financial stress measures. For the US, it is the Kansas City Financial Stress Index based on 11 financial market variables. The indicators are standardised to show the number of standard deviations above or below their average value over the period 2007-2023. A positive (negative) value indicates high (low) systemic stress in the financial markets. Data are shown up to June 2023.
Source: Bloomberg; Refinitiv; and OECD calculations.

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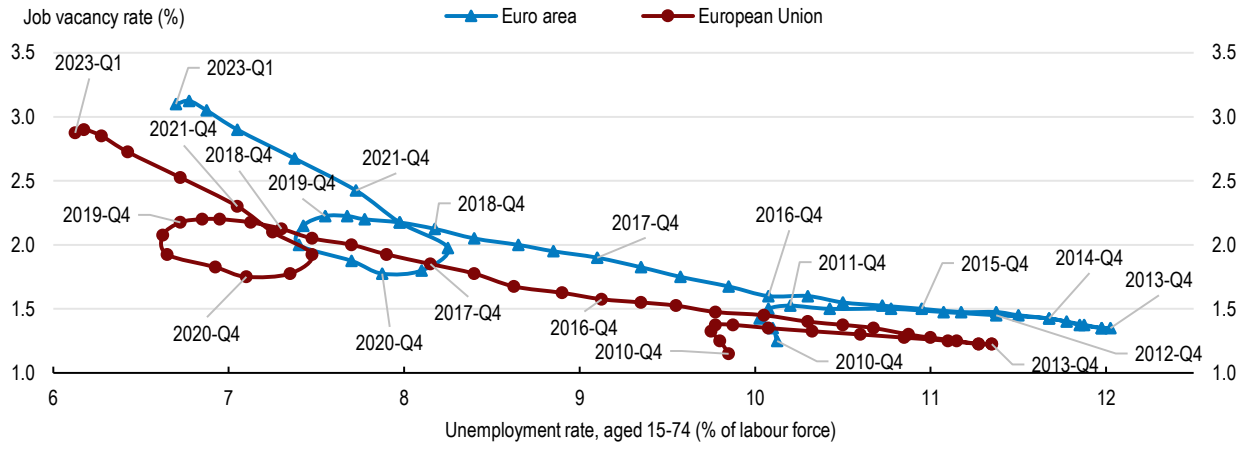
Figure 1.16. The high number of vacancies suggests costly disinflation



Note: Four quarter moving average rates. Data refers to the euro area including 20 countries and to the 27 EU Member countries.
Source: Eurostat Job Vacancy Statistics database; Eurostat Labour Market Statistics database; and OECD calculations.

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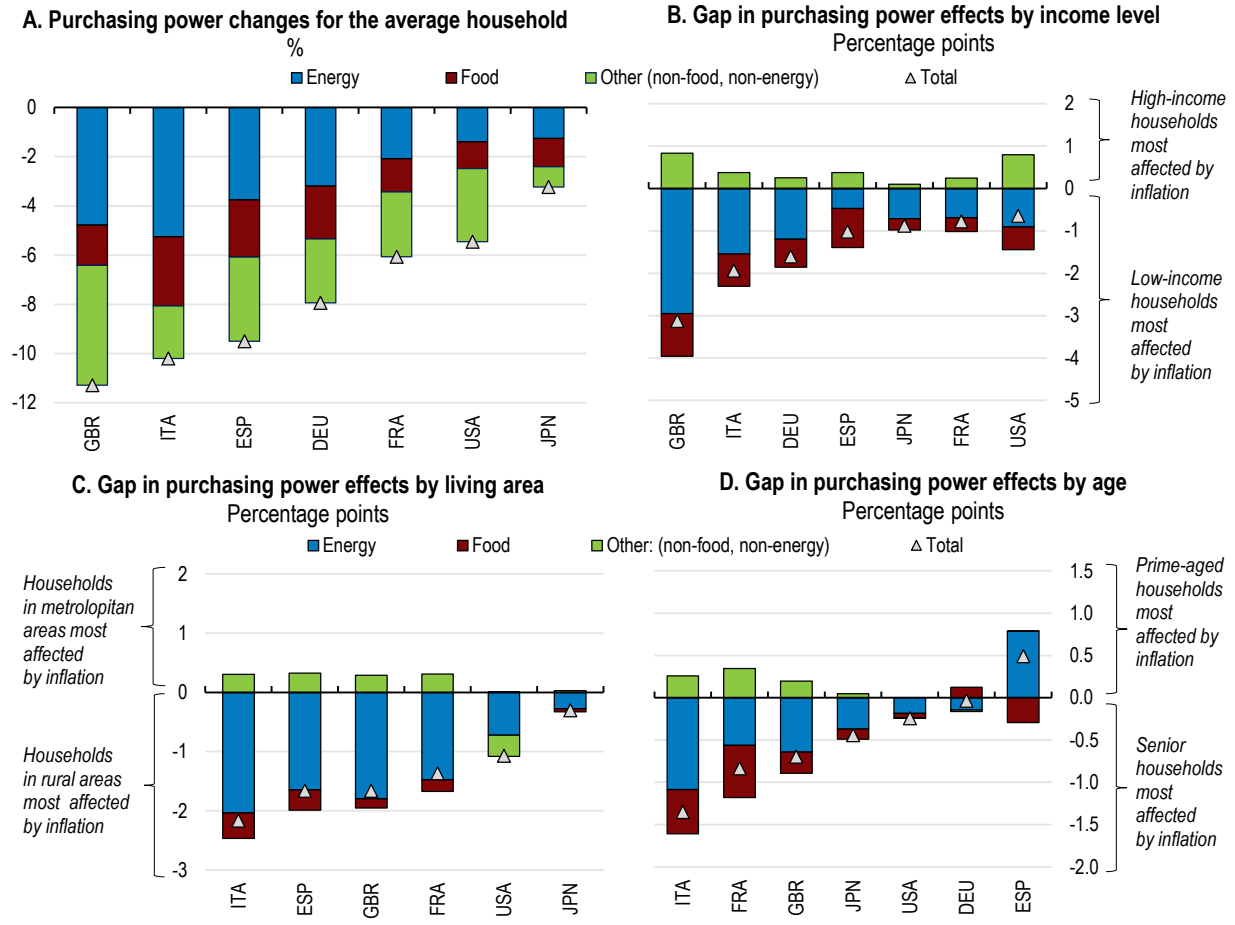
The ECB should stay determined to bring inflation back to target in a timely manner to prevent current high inflation from becoming entrenched in expectations. This requires clearly communicating the risks that inflationary pressures may be more persistent than expected and that a restrictive monetary policy stance will continue until there evidence of a sustained decline in inflation. The ECB needs to keep raising interest rates for as long as needed to put inflation back on a sustainable path towards the 2% target, which implies tightening monetary policy by more if fiscal policy stays overly accommodative. Determined policy action by the ECB has already led to a considerable tightening of the policy interest rates, which is projected to continue. The restrictive monetary policy stance is welcome. Given the high degree of uncertainty about the speed at which higher interest rates take effect and the potential spillovers from policy in other countries, a carefully calibrated approach based on incoming data is appropriate.

Inflation has distributional implications, but they are beyond the ECB's mandate

The effects of high inflation are more pronounced for low-income households. The global negative price shock following the Russian aggression against Ukraine had heterogenous inflationary effects across countries and households. The effects across countries depended on the role of Russian energy imports in overall energy needs and availability of alternative energy sources. The effects across households varied due to differences in consumption shares between low-income and high-income households, differences in the goods and services within each consumption category and differences in the ability to buffer cost-of-living increases through savings or borrowing (Causa et al., 2022[24])

The difference between the inflation rate in the lowest and highest income quintiles has been negligible between 2011 and 2021, but it increased sharply from 0.1 percentage points in September 2021 to 1.9 percentage points in September 2022 (Osbat et al., 2022[25]). The effect on the purchasing power of the average household has been mainly driven by energy and food prices (Figure 1.17, Panel A). Low-income and rural households, and the elderly were generally more exposed to the price shock than the average household, although purchasing power losses of these groups are heterogenous across countries (Figure 1.17, Panels B, C, D). Living on low income is often not the most important vulnerability compared to living in a small, isolated village and being elderly, which are both major vulnerability factors. Differences in energy spending are indeed more pronounced across place of residence than across households' incomes. At the same time, differences in energy spending do not systematically vary with age in all countries. For example, in Spain the elderly are less affected by energy prices than prime-aged persons.

Figure 1.17. Distributional effects of inflation are highest for low-income, rural, and senior households



Note: Data show the average household's decline in purchasing power following changes in consumer prices between August 2021 and August 2022. In Panels C and D, data show the gap in purchasing power (following changes in consumer prices) between two household types, namely low- relative to high-income, living in rural relative to living in metropolitan areas, and senior relative to prime-aged, respectively.
Source: (Causa et al., 2022[24])

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Since only governments have the mandate and tools to address distributional issues (Schnabel, 2022[16]), central bank policy cannot substitute for effective social security and other fiscal assistance. Including inequality as a specific mandate could also threaten central bank's independence. Hence, the ECB should continue focussing on its primary objective of maintaining price stability, and, without prejudice to that objective, on other objectives laid out in the Treaty on the Functioning of the EU.

One such example is the ECB's role in supporting the green transition. Climate change mitigation requires mainly policies by governments. However, as far as the primary mandate of price stability allows, the ECB is contributing to this effort by incorporating climate change considerations into its monetary policy framework (Box 1.2). This effort for incorporating climate change is an ongoing project and may require adjustments as monetary policy changes. For example, the ECB implements the changes to its corporate bond portfolio through adjustments to reinvestments of maturing securities. The ongoing reduction in reinvestments will constrain the ECB's ability to decarbonise its corporate bond portfolio and may have to be replaced by another policy, possibly based on the stock-based approach. Similarly, the measures limiting the share of marketable assets issued by entities with a high carbon footprint that can be pledged as collateral are expected to have initially only a small impact on ECB counterparties (Schnabel, 2023[26]).

Box 1.2. Greening the ECB's monetary policy operations

The measures incorporating climate change into ECB monetary policy operations follow the ECB's climate action plan and include rules for corporate bond purchases, collateral framework, disclosure requirements and risk management. Their aim is to reduce climate-related financial risks on the Eurosystem's balance sheet, encourage transparency and assist in the transition to a greener economy. They are implemented without prejudice to the ECB's primary objective of price stability. In particular, the following measures have been adopted:

- **Corporate bond holdings:** in October 2022, the ECB started gradually decarbonising its corporate bond holdings by tilting them towards issuers with lower greenhouse gas emissions, more ambitious carbon reduction targets and better climate-related disclosures. Tilting is to be implemented through the reinvestment of the sizeable redemptions expected over the coming years. At the same time, the volume of corporate bond purchases will continue to be determined solely by monetary policy considerations.
- **Collateral framework:** before the end of 2024, the ECB plans to limit the share of assets issued by issuers with a high carbon footprint that can be pledged as collateral when borrowing from the ECB. This measure, at first applying only to marketable debt instruments of non-financial corporations, will reduce climate-related risks in Eurosystem credit operations. Additionally, the ECB has started in 2022 to consider climate change risks when reviewing haircuts – reductions to the value of collateral reflecting its riskiness – applied to corporate bonds.
- **Climate-related disclosure requirements for collateral:** depending on the implementation date of the Corporate Sustainability Reporting Directive (CSRD), probably from 2026, the ECB will only accept marketable assets and credit claims from companies and debtors that meet the Corporate Sustainability Reporting Directive (CSRD). This will help improve disclosure and generate better data for financial institutions, investors and civil society. Since a significant fraction of the assets that can be pledged as collateral, such as asset-backed securities and covered bonds, do not fall under the CSRD, the ECB will continue to encourage further disclosures of climate-related data.
- **Risk assessment and risk management:** the ECB will continue to improve its risk assessment tools and capabilities related to climate-related risks. By the end of 2024, the Eurosystem will also start using common minimum standards for national central banks' assessment of climate-related risks for credit rating purposes.
- **Statistics on climate-related risks and green finance:** to improve awareness regarding the climate-related risks in the financial sector and better monitor developments in green finance, the ECB in January 2023 published a first set of climate-related statistical indicators, covering indicators on sustainable finance, carbon emissions and physical risks.

The effect of these policy announcements and actions can already be seen in the bond markets. For example, following the announcement of the ECB's climate action plan at the end of the 2021 Monetary Policy Strategy Review, yields-to-maturity of green bonds eligible for ECB operations decreased compared to equivalent conventional bonds. Furthermore, green bond issuance by firms incorporated in the euro area increased.

Source: ECB (2022[27]); Eliet-Doilet and Maino (2022[28]).

Unconventional policies should be gradually withdrawn

Following the increases in policy interest rate, which remains the key instrument for setting the monetary policy stance, the ECB has also started a gradual and predictable reduction of its monetary policy bond portfolio. The pace of reduction amounts to EUR 15 billion per month on average from March to June 2023,

followed by discontinuation of reinvestments under the ECB's Asset Purchase Programme from July 2023. At the same time, the ECB's flexibility built into the Pandemic Emergency Purchase Programme, the Transmission Protection Instrument and the Outright Monetary Transactions, allow swift responses to potential fragmentation in financial markets that would hamper monetary policy transmission.

However, the withdrawal of the monetary stimulus provided by the ECB's large-scale asset purchases may entail some risks. Looking at the experience with the Fed's reversal of asset purchases since 2017, there seems to be no matching decrease in the balance sheet of commercial banks, including reductions in bank deposits and outstanding credit lines to corporations. This could make the financial sector more sensitive to potential liquidity shocks and necessitate further liquidity provision by the central bank, as happened in the United States during the repo spike episode in September 2019 and the dash for cash in March 2020 (Acharya et al., 2022[29]).

Banks' asymmetric responses to the provision and withdrawal of monetary stimulus need to be closely monitored and managed. There are different reasons why banks may react differently to quantitative easing, which seems to expand claims on liquidity, and quantitative tightening, which does not appear to reduce these claims. One possibility is that quantitative easing, unlike quantitative tightening, had both market liquidity effects and additional effects from signalling the easier monetary policy stance when rates were at the effective lower bound. Another is moral hazard, as banks rely on the central bank to repeat its past interventions when market liquidity seizes up, or an unintended effect of regulation, where new rules could have succeeded in making banks hold reserves but made it cheaper to finance reserves with new claims on liquidity, such as credit lines (Acharya et al., 2022[29]). The discrepancy between aggregate claims on liquidity and aggregate reserves needs to be monitored and, if excessive, its levels should be managed counter-cyclically.

The appropriate speed of the ECB's quantitative tightening and the modalities, under which the unconventional measures are withdrawn, remains uncertain. It is possible that quantitative tightening is progressing too slowly. Relying on short-term rate increases without quickly reducing central bank balance sheets is likely to increase the interest rate exposure of the central bank, leading to losses on existing positions. Without the demand-reducing effects of balance sheet reduction, it is also possible that short-term interest rates will have to rise higher than would otherwise be needed (Turner, 2022[30]). To reduce uncertainty and limit interest rate increases, the ECB could provide a quantified medium-term strategy of asset sales together with a contingency plan for responding to large or disruptive movements in market rates. The existing instruments, such as the Transmission Protection Instrument, which aims at preventing unwarranted financial market dynamics threatening monetary policy transmission, could be complemented by contingency plans for dealing with other possible shocks.

Higher interest rates are beginning to weigh on the economy

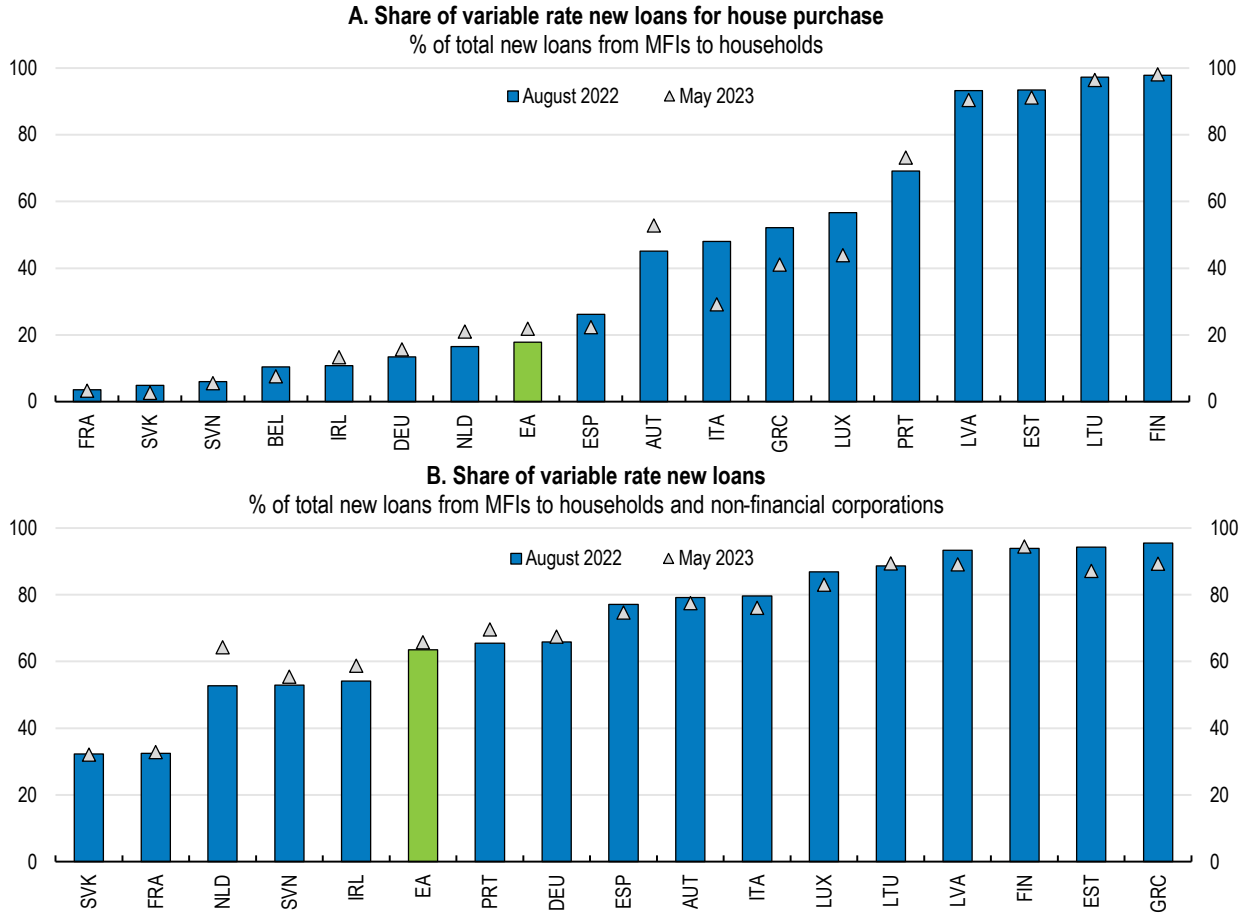
Higher policy interest rates have triggered repricing across asset classes and generated sizeable unrealised losses on the bond portfolios held by financial institutions. Although banks tend to benefit from higher interest rates on aggregate, as profitability increases, this may not be the case for all banks. Strains from tighter monetary policy have appeared in parts of the banking sector and could intensify as monetary policy continues to tighten, especially among nonbank financial intermediaries, such as pension funds and insurers (Garcia Pascual, Natalucci and Piontek, 2023[31]). Bank lending has moderated across euro area countries, reflecting decreases in both supply and demand. On the supply side, euro area banks made sizeable voluntary repayments of loans from Targeted Longer-Term Refinancing Operations (TLTRO) between November 2022 and February 2023. In addition, tighter credit standards reflect higher risk perception and declining risk tolerance of banks. Loan demand by firms has decreased due to weakening fixed investment, while falling strongly for households across euro area countries. Weak loan demand of households reflects higher lending rates as well as lower consumer confidence and deteriorating prospects in the housing market (ECB, 2023[32]).

Rising interest rates on mortgages amplify the financial vulnerability of households, especially in countries with a high level of private debt and high shares of variable rate mortgages. Bank lending rates for household mortgages similarly continued to rise, reaching more than 3% per annum in January 2023, up from 1.33% the year before, while consumers expect them to increase further over the next 12 months. Higher rates on new mortgages and declining real incomes have led to a sharp fall in the demand for mortgages. The impact of higher interest rates on the housing sector is still building up and will continue to weigh on growth. The drag on growth will come through negative effects on residential investment, especially in countries with a high share of variable rate loans, and on consumption, by reducing disposable income and housing wealth. These developments in the residential housing sector pose financial stability risks, too. While the share of homeowners with a mortgage is relatively low in large euro area countries, the share of variable rate mortgages has recently increased (Figure 1.18, panel A). The increased share of variable rate mortgages points to growing exposure of euro area households to rising interest rates (Figure 1.18, panel B).

House prices in the EU have been resilient in the first half of 2022 but started to decline in most EU countries in the last quarter of 2022. Since the trough in 2013, house prices have been increasing steadily and the COVID-19 pandemic further accelerated this trend (Figure 1.19, panel A). In many countries, house prices decoupled strongly from rental prices (Figure 1.19, panel B). The Commission's methodology indicates that house prices are now overvalued in more than a half of the euro area countries (Frayne et al., 2022[33]) and more substantial correction cannot be ruled out, despite favourable labour market conditions and the borrower-based macroprudential measures introduced recently in many countries (ECB, 2022[34]). While higher interest rates may impair households' ability to repay their variable rate mortgages, a housing market correction would lower the value of collateral and require banks to provision against potential losses. Hence, the residential real estate risks need to be carefully monitored. If needed, these risks should be addressed by further macroprudential tools, such as increasing capital buffers and additional tightening of borrower-based measures (Valderrama, 2023[35]), while avoiding procyclical effects.

In some countries, both households and firms are highly indebted and thus vulnerable to increases in financing costs. High levels of non-financial corporations' debt threaten a wave of bankruptcies. The number of bankruptcies among EU firms increased steadily in the fourth quarter of 2022. This was partly driven by a restart of courts' activity after the pandemic and the withdrawal or phase-out of fiscal support (Figure 1.20). The situation varied across countries, but the largest increase in bankruptcies was in services sectors, such as accommodation and transportation, partly reflecting withdrawal of the pandemic support. In addition, cyclical risks related to heightened inflation and tighter financing conditions in the commercial real estate sector have increased, with potential systemic impact on the financial system and the real economy (ESRB, 2023[36]). The cyclical factors are exacerbated by a shift towards e-commerce, increased demand for flexibility in leasable office space related to a rise in mobile and hybrid working models as well as climate-related policies, such as stricter building standards.

Figure 1.18. Variable rate mortgages and loans are common in many countries



Note: Euro area includes 19 countries. Variable rate loans include loans with floating rate or initial rate fixed for a period of up to 1 year. In Panel A, November 2021 for Greece instead of August 2022. In Panel B, July 2022 for Finland and Luxembourg, and June 2022 for Greece instead of August 2022.
Source: ECB; Eurostat; and OECD calculations.

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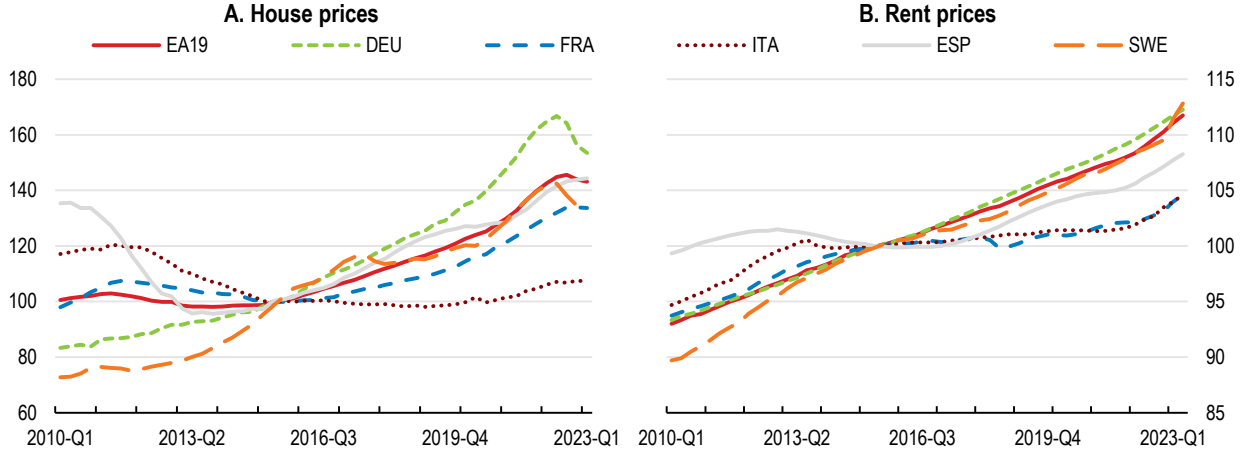
Figure 1.19. House prices have deviated strongly from rent prices in most countries

Index 2015=100, seasonally adjusted



Note: In panel A, the latest observation is 2023Q1. In panel B the latest observation is 2023Q2.
Source: OECD Price Statistics database; and OECD calculations.

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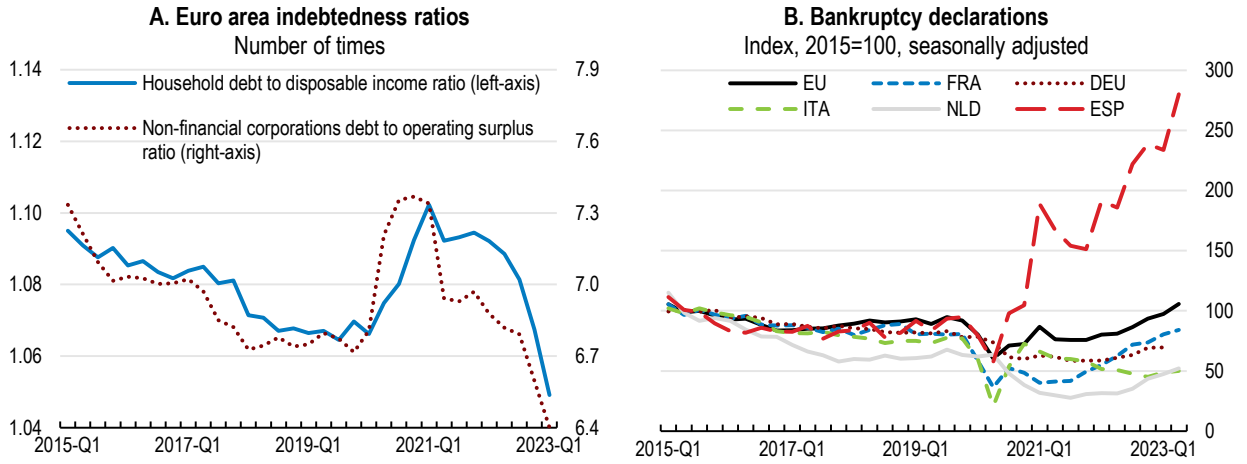
Figure 1.20. Households and firms remain highly indebted, and bankruptcies are increasing



Note: In Panel A, data refer to the euro area including 19 member countries. Debt is computed as the sum of the following liability categories in the financial balance sheet of the institutional sector: currency and deposits (AF2), debt securities (AF3), loans (AF4), insurance, pension, and standardised guarantees (AF6), and other accounts payable (AF8).

Source: Eurostat Financial Balance Sheets database; Eurostat Non-financial Transactions database; Eurostat Business Registration and Bankruptcy Index database; and OECD calculations.

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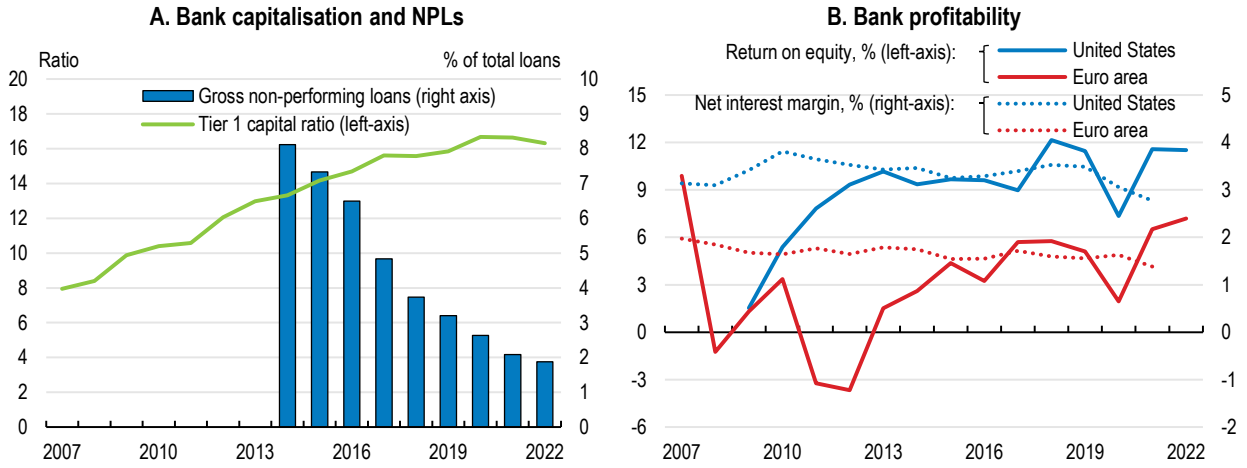
Macroprudential tools can help increase resilience to financial sector risks from private debt exposures. Preserving and building up macroprudential buffers could support the resilience of banks and other credit institutions by strengthening their ability to absorb losses. Macroprudential buffers should be used in conjunction with other tools, such as prudent risk management practices, and set according to country-specific macro-financial outlooks and banking sector conditions to limit procyclicality (ESRB, 2022[37]). Even at the current late stage of the financial cycle, countries with macro-financial imbalances may increase macroprudential buffers, taking into account the existing levels of capital and the ability of banks to generate profits (ECB, 2022[34]). For example, further build-up of releasable buffers, such as the countercyclical capital buffer, may be desirable when conditions allow. These buffers can be released immediately when adverse developments materialise, improving the capacity of authorities to provide relief to the banking sector.

Financial sector integration needs to be stepped up

Overall, European banks hold good quality assets, although the recent market tensions led to a large fall in bank equity prices, increasing the cost of new capital. In addition, the recent deterioration in loan portfolios of banks suggest an increase in credit risk. Until recently, rising interest rates have mainly bolstered short-term profitability, reflecting wider profit margins and still limited loan loss provisions. However, bank profitability may worsen if market turmoil intensifies and threats to asset quality result in higher provisioning needs and increasing stocks of non-performing loans (Figure 1.21). Since Russia's invasion of Ukraine, loans to energy-intensive firms have seen higher probabilities of default than loans to other firms. With higher interest rates, banks will also face higher credit risks from exposures to residential real estate markets, as erosion of real disposable income and savings through inflation further weakens the debt servicing capacity of households (ECB, 2022[34]).

Figure 1.21. European banks are well capitalised, but profitability is relatively low



Note: In Panel A, Tier 1 capital ratio refers to regulatory Tier 1 capital to risk-weighted assets. In Panel B, net interest margin corresponds to the accounting value of bank's net interest revenue as a share of its average interest-bearing (total earning) assets.
Source: ECB; IMF Financial Soundness Indicators database; and World Bank Global Financial Development database.

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Banking sector policies must address long-standing issues as well as new challenges, such as digitalisation and the green transition. Structural weaknesses include low cost-efficiency, limited revenue diversification and overcapacity in parts of the banking sector. Accelerated digitalisation could help remedy some of these issues, albeit at a cost of greater cyber risks (ECB, 2022[34]). The banking sector seems to have too many institutions that are less profitable than competitors. For example, in 2019 the market share of the top five US banks was 43% of consolidated domestic assets, as against 23% in the euro area (Gabrieli, Marionnet and Sammeth, 2021[38]). Consolidation of the banking sector through cross-border mergers could help improve profitability and reduce overbanking. Compared to domestic consolidation, cross-border mergers could enhance the effects of geographic diversification and encourage the emergence of larger European banks better equipped to compete with their international counterparts. In addition, a consolidated, more profitable banking sector would be in a stronger position to finance the transition to a greener economy and deal with its climate-related exposures.

The EU financial system remains highly bank-dominated and fragmented along national lines, which is unlikely to change in the short or medium term. While two pillars of the banking union, the Single Supervisory Mechanism and the Single Resolution Mechanism, are in place, the third pillar – a common deposit protection scheme – has not yet been achieved. Immediate further steps towards the completion of the banking union involve the review of the Crisis Management and Deposit Insurance (CMDI) framework (Eurogroup, 2022[39]). Hence, the recent Commission's proposal to reform the CMDI framework (European Commission, 2023[40]) is a step in the right direction. In addition, the banking union could be deepened by ending the reliance on legislative constraints that ring-fence capital and liquidity of cross-border groups along national lines (Enria, 2022[41]). Progress with the banking union will also help advance the capital markets union (Véron, 2014[42]).

Progress on the banking and capital market union has recently been limited. Some headway has been achieved on bank crisis management, including the proposal for harmonized handling of small and mid-sized failing banks and a parallel evaluation of State aid rules for banks in line with the reformed crisis management framework. Since the June 2022 Eurogroup meeting, no progress has been made on the other streams of work. As for the capital markets union, recent significant developments include steps towards a European Single Access Point for corporate disclosures and a post-trade consolidated tape, as well as a single dataset of prices and volumes for securities traded in the EU, proposed in November 2021. In December 2022, the Commission followed up with proposals regarding EU clearing services,

harmonisation of certain corporate insolvency rules and simplifying the administrative burden associated with listing on stock exchanges. These steps are welcome, but they need to be followed by further bold steps to defragment European capital markets, as discussed in the 2021 *OECD Economic Survey of the euro area* (OECD, 2021[43]). Given the multiple trade-offs involved and political sensitivity, the completion of the banking union and capital markets union should be high on the list of priorities for the next Commission after the 2024 European Parliament elections (Table 1.4).

Table 1.4. Monetary and macroprudential policy measures taken since the last Survey

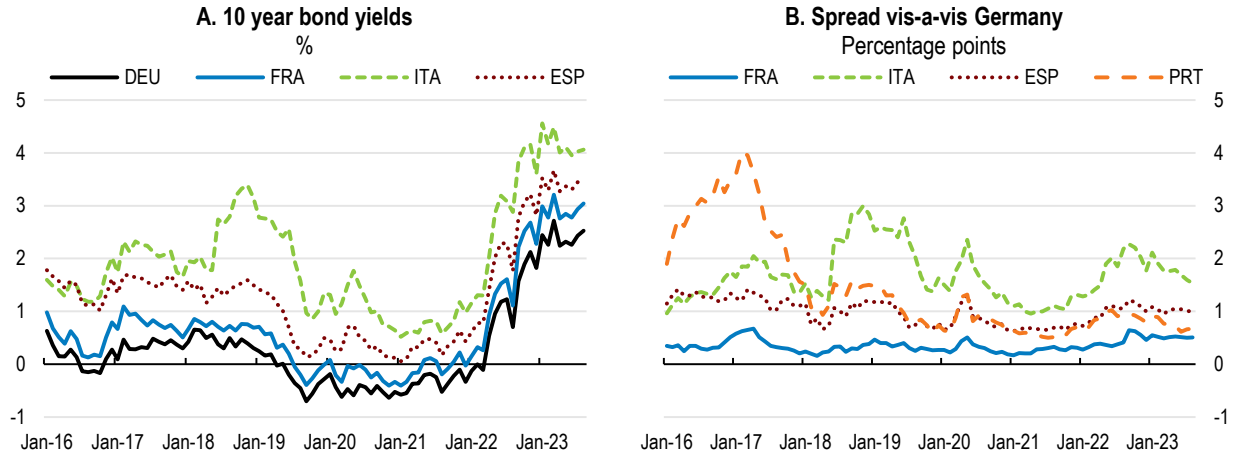
Main recommendations of the 2021 Survey	Action taken since 2021
Keeping monetary policy accommodative	
Continue monetary policy accommodation until inflation robustly converges toward the ECB objective.	In response to the surge in inflation since 2021, the ECB initiated monetary policy normalisation in December 2021 to ensure that inflation returns to the 2% medium-term target. Measures taken include the end of net asset purchases, a cumulative increase in ECB policy rates by 375 basis points, changes to the longer-term refinancing operations, and a gradual reduction of the APP portfolio.
In its next strategic review, the ECB could consider moving towards average inflation targeting in case the inflation objective is not met.	The next strategy review is planned for 2025.
Exit from pandemic-related financial measures should be gradual. Capital and equity buffers should be rebuilt gradually.	Vulnerabilities posing medium-term risks accumulated throughout the pandemic period and relate to residential real estate as well as to strong credit growth and increasing indebtedness in the non-financial private sector. To address them, by end-2022 a significant number of countries participating in European banking supervision decided to gradually rebuild or maintain macroprudential capital buffers (countercyclical capital buffer and a sectoral systemic risk buffer).
Take stock of the effectiveness of recently adopted new tools and the suspension of self-imposed limits to the asset purchase programme, prolonging them if needed.	The ECB evaluates the effectiveness of non-standard monetary policy measures on an ongoing basis. Net asset purchases have stopped in the first half of 2022, a gradual reduction in the APP securities portfolio is taking place since March 2023, while reinvestments are to end in July 2023.
Enhance the economic resilience of the euro area by completing the Banking and the Capital Markets Unions.	As of April 2023, the Commission has completed 14 of the 16 actions to which it committed in the 2020 Capital Markets Union action plan. On the Banking Union, the Commission in April 2023 proposed reviews of crisis management and deposit insurance framework (CMDI), the Single Resolution Mechanism Regulation (SRMR) and the Deposit Guarantee Schemes Directive (DGSD). The CMDI review aims at better applying the framework, in particular to small and medium-sized banks, and enhancing the use of industry-funded safety nets.

Fiscal policy needs to become sufficiently restrictive

The challenging economic environment underlines the importance of the appropriate policy mix in the euro area. While the ECB has been tightening monetary policy to keep historically high and persistent inflation under control, fiscal support is being provided to help cushion the impact of high energy costs on households and companies. Short-term fiscal actions to cushion living standards need to avoid a further persistent stimulus to demand at a time of high inflation while maintaining energy saving incentives, thereby ensuring consistency with monetary policy and avoiding adverse effects on fiscal sustainability (OECD, 2022[44]).

Monetary policy tightening has led to higher costs of borrowing for firms and households and also pushed up interest rates on sovereign borrowing. While refinancing costs for governments increased, sovereign bond spreads have remained stable for most countries and even declined for Italy, Greece and the non-euro area EU countries (Figure 1.22). However, the risk remains that, to the extent that governments continue to issue new bonds beyond simply rolling over maturing debt, the excess supply under tightening financial conditions will lead to greater competition for investors' demand, pushing sovereign yields further up (Schroeder and Bouvet, 2023[45]).

Figure 1.22. Sovereign borrowing costs increased while the spreads moderated



Source: Refinitiv; and OECD calculations.

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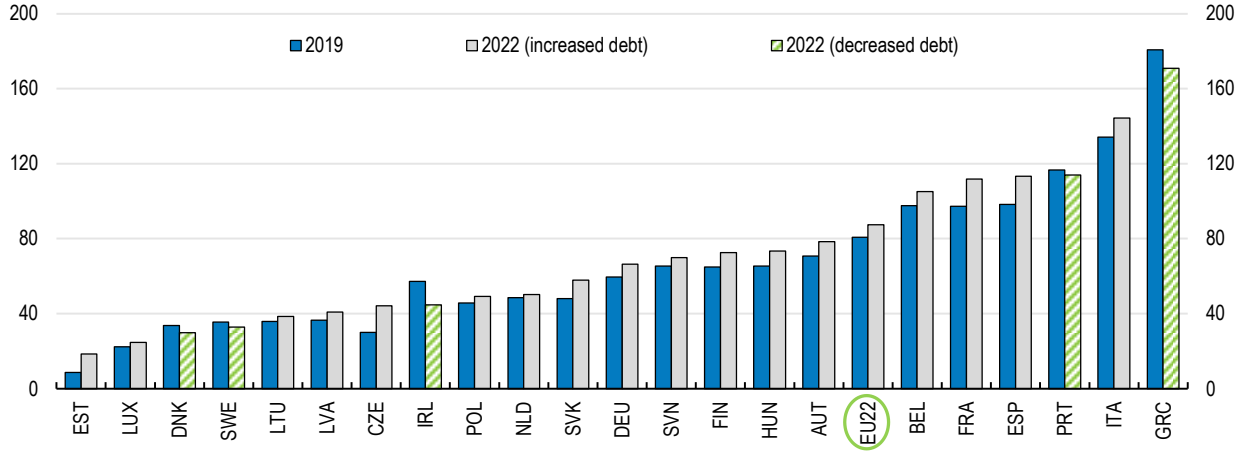
Public debt ratios in the European Union have increased following the disbursement of the unprecedented pandemic and energy crisis support (Figure 1.23). Initially, higher inflation triggered by supply chain disruptions and higher energy and food prices lowered debt-to-GDP ratios, due to a temporary boost in nominal GDP. However, the ensuing decline in real growth, higher interest payments and deteriorating primary deficits eventually pushed up public debt ratios above the pre-pandemic levels.

Figure 1.23. Public debt increased from pre-pandemic levels in most countries

General government debt, Maastricht definition, as a percentage of GDP



Note: Data refers to the European Union member countries that are also members of the OECD (22 countries).
Source: OECD Economic Outlook: Statistics and Projections database

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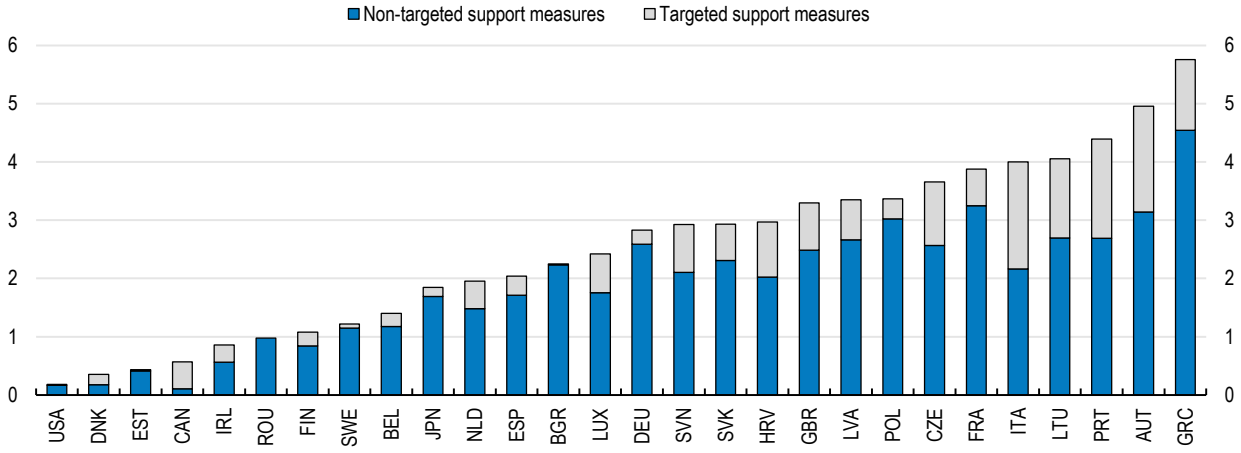
Fiscal support to cushion the impact of high energy costs has been high and mostly untargeted (Figure 1.24). Support to energy consumers amounted to more than 2% of GDP in some EU countries, well above the 0.7% of GDP in the median OECD economy. Price support, such as reduced taxes and reduced or regulated prices, has dominated income support and was largely untargeted. Income support, including transfers and tax credits to consumers, was better targeted to vulnerable households. However, non-targeted income support measures, such as private transportation subsidies for employees driving to work, are not infrequent. Price support measures are relatively simple to introduce and communicate, but they weaken incentives to reduce energy use, provide disproportionate support to better-off households and risk further stoking energy and consumer price inflation as well as its distributional implications. There

is a strong case for gradually withdrawing broad fiscal support. Targeted support for vulnerable households inadequately covered by the general social protection system may still be needed, especially since vulnerability to high energy prices also depends on other factors than income, such as the inability to renovate energy-inefficient dwellings and high energy needs due to age or geographical factors (Pisu et al., 2023[46]).

Figure 1.24. Fiscal support during the energy crisis was mostly untargeted

Announced spending on energy support measures, % of GDP, 2022-23



Note: Support measures are taken in gross terms, i.e., not accounting for the effect of possible accompanying energy-related revenue-increasing measures, such as windfall profit taxes on energy companies. Where government plans have been announced but not legislated, they are incorporated if it is deemed clear that they will be implemented in a shape close to that announced. Gross fiscal costs reflect a combination of official estimates and assumptions on how energy prices and energy consumption may evolve when the support measures are in place. Costs are estimates for announced spending over 2022 and 2023, naturally subject to greater uncertainty in the current year. Measures corresponding to categories "Credit and equity support" and "Other" have been excluded. When a given measure spans more than one year, its total fiscal costs are assumed to be uniformly spread across months. For measures with no officially announced end-date, an expiry date is assumed and the fraction of the gross fiscal costs that pertains to 2022-23 has been retained. The current vintage of the database has a cut-off date of 20 April 2023.
Source: OECD Energy Support Measures Tracker

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Ensuring effective targeting going forward may require improvements to existing administrative data along with development of targeted measures that go beyond standard welfare benefits. The digital transformation provides an opportunity to develop agile targeting instruments based on data collection (such as smart meters) and management that leverages innovative digital tools introduced by tax administrations during the COVID-19 pandemic (Causa et al., 2022[24]). However, income support policies based on energy consumption reduce the incentives to save. Over time, priority should be given to investing in capacities for vulnerable consumers to shift their energy consumption to alternative fuels. In addition to targeted support, measures need to shift energy consumption toward clean energy sources consistent with net-zero emission targets. Financial support for energy efficient improvements in housing and use of electric light-duty vehicles are two relevant areas of policy intervention. To promote the use of environmentally friendly vehicles, measures to expand the deployment of charging capacity are needed.

Planned public investment may be delayed

The Next Generation EU (NGEU) programme offers a historic opportunity to foster potential growth and transform the economy, but its implementation may fuel inflationary pressures. The main instrument of the NGEU programme agreed in reaction to the COVID-19 pandemic is the Recovery and Resilience Facility (RRF) financed by joint borrowing at EU level. Governments are correctly addressing the energy crisis through public investment and decisive structural reforms that may boost potential growth and help deliver the green and digital transitions. However, the disbursements under the NGEU and RRF are expected to

stay high until the end of the programme in 2026 and elevate public investment. An efficient implementation of the investment projects and reforms envisaged in the National Recovery and Resilience Plans (NRRP) may help reduce the inflationary pressure but will not avoid it completely. Moreover, several euro area countries have postponed their disbursement requests and some structural reforms required as preconditions for paying out the funds needed to be clarified to avoid ambiguities. In other cases, procurement contracts needed to be revised due to high inflation or raw material and labour shortages. The various delays led to an underspending of funds in 2021 and 2022 compared to the initial NRRPs, which may be difficult to correct and could severely test the absorption capacity of the recipient countries.

Experience with the absorption of EU funds from the Multiannual Financial Framework (MFF) suggests caution. By the end of 2020, only 60% of EU funds under the 2014-20 MFF had been absorbed in the four biggest euro area countries. In the previous budget period 2007-13, an additional period of three years was needed to get the absorption rates close to 100%. Given that the NGEU funds, comprising the RRF, other NGEU components and the REPowerEU funds available to euro area countries, amount to almost four times the funding available under the regular 2021-27 MFF (Dorrucci and Freier, 2023[47]), it is possible that the six-year horizon of the RRF will not be sufficient. Moreover, the definition of milestones and targets in the RRF Regulation focuses on inputs and outputs, such as specific reforms and investment plans, rather than on result indicators (Darvas and Welslau, 2023[48]). For example, the positive impact of the RRF on the green transition may not be adequately assured through existing milestones and targets (Hindriks et al., 2022[49]).

Disbursement of the NGEU funds must minimise the risk of overstimulating the economy. The short-term effect of additional public expenditure will add to inflation, which will only be contained in the medium-term, as inflationary pressures associated with the NGEU are offset by the disinflationary effect of greater productive capacity (Bankowski et al., 2022[50]). Moreover, inflationary effects in some countries may be more noticeable. To avoid short-term inflationary effects and support monetary policy tightening, the fiscal policy stance should remain sufficiently restrictive. In this respect, following the activation of the general escape clause under the SGP during 2020-2023, delays in clarifying the EU fiscal framework risk contributing to higher inflation and weakening perceptions regarding the necessary fiscal stabilisation.

The EU budget (multiannual financial framework) is relatively small, just about 1% of EU GDP in annual terms, which is not commensurate with the pursuit of macroeconomic stabilisation objectives. About two thirds of the revenue to the EU budget comes from national budgets. The rest comes from other sources, such as customs duties paid on goods imported from outside the EU and a small percentage of the value added tax collected by each EU country. In principle, the EU budget financed within the multiannual financial framework must be balanced. However, some activities, such as the 807 billion euro for the NGEU and the 99 billion euro for the temporary Support to mitigate Unemployment Risks in an Emergency (SURE) programmes are financed by issuing EU bonds. The EU budget is a key policy tool to support regional growth and convergence. Its largest spending items - cohesion policy and the Common Agricultural Policy (CAP), complemented in the current budgetary period by one-off NGEU spending - share explicit concerns of balanced territorial development, as described in the 2021 *OECD Economic Survey of the European Union* (OECD, 2021[1]).

A broad reform of economic governance is needed

The European fiscal framework has shown some limitations in the past in addressing both sustainability and cyclicality issues in a rule-oriented setting, as discussed in the 2021 *OECD Economic Survey of the euro area* (OECD, 2021[43]). The Stability and Growth Pact (SGP) has gone through substantial evolutions over time to better reflect fiscal policy needs, fill surveillance gaps and improve enforcement. However, increased flexibility was provided at the cost of increasing complexity, with a proliferation of numerical targets and procedures. At the same time, the framework failed to prevent a trend increase in the debt ratio in most countries and to encourage sufficiently countercyclical national fiscal policies. Historically, in the pre-pandemic period, countries with fiscal space tended to have positive output gaps, reducing the need

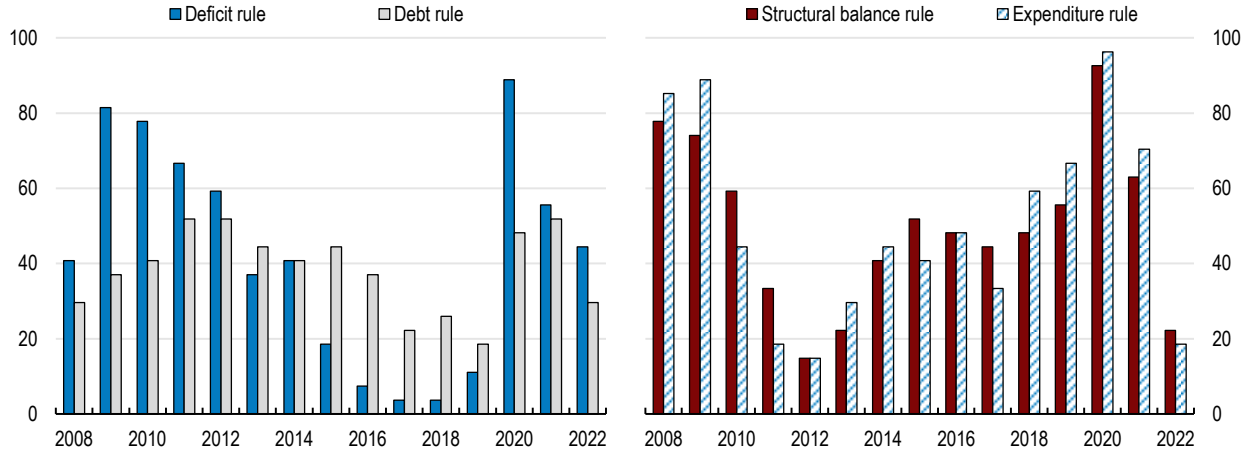
for fiscal stimulus. Conversely, fiscal consolidation in the past was often associated with low public investment as countries prioritised current spending, at the expense of meeting investment needs.

The European fiscal framework interacts with and may be reinforced by market discipline, including through the credit risk premium. It has been argued that in practice market discipline may be too weak, allowing borrowers to run up debts that become increasingly difficult to service. Recent research using data for 71 countries for the period 1981-2015 concludes that, in general, market signals matter more for fiscal discipline than fiscal rules. In addition, in the EU and OECD countries, unlike in emerging economies, market signals tend to reinforce the discipline implied by fiscal rules (Agnello, Castro and Sousa, 2023[51]).

Crucially, compliance with the rules has been partial (Figure 1.25): average compliance with the rules across EU countries between 1998 and 2019, before the activation of the general escape clause, amounted to 64% for the deficit rule and 71% for the debt rule. Compliance was unsurprisingly lower for countries with high debt levels (Larch et al., 2022[52]). Lower compliance rates also tended to go along with a larger country size and a weaker tradition of national independent fiscal institutions (Larch, Malzubris and Santacroce, 2023[53]).

Figure 1.25. Compliance with fiscal rules has been partial

Share of European Union countries non-compliant with EU fiscal rules, per cent



Note: Data refer to the 27 EU Member countries. Compliance rules are the following: (i) deficit rule, a country is considered compliant if the budget balance of the general government is equal or larger than -3% of GDP or, in case the -3% of GDP threshold is breached, the deviation remains small (max. 0.5% of GDP) and limited to one year; (ii) debt rule, a country is considered compliant if the debt-to-GDP ratio is below 60% of GDP or if the excess above 60% of GDP has been declining by 1/20 on average over the past three years; (iii) structural balance rule, a country is considered compliant if the structural budget balance of the general government is at or above the medium-term objective (MTO) or, in case the MTO has not been reached yet, the annual improvement of the structural budget balance is equal or higher than 0.5% of GDP, or by the remaining distance to the MTO if smaller than 0.5% ; (iv) expenditure rule, a country is considered complaint if the annual rate of growth of primary government expenditure, net of discretionary revenue measures and one-offs, is at or below the ten-year average of the nominal rate of potential output growth minus the convergence margin necessary to ensure an adjustment of the structural budget deficit in line with the structural balance rule.

Source: EFB Secretariat Compliance Tracker, https://commission.europa.eu/business-economy-euro/economic-and-fiscal-policy-coordination/european-fiscal-board-efb/compliance-tracker_en; and OECD calculations.

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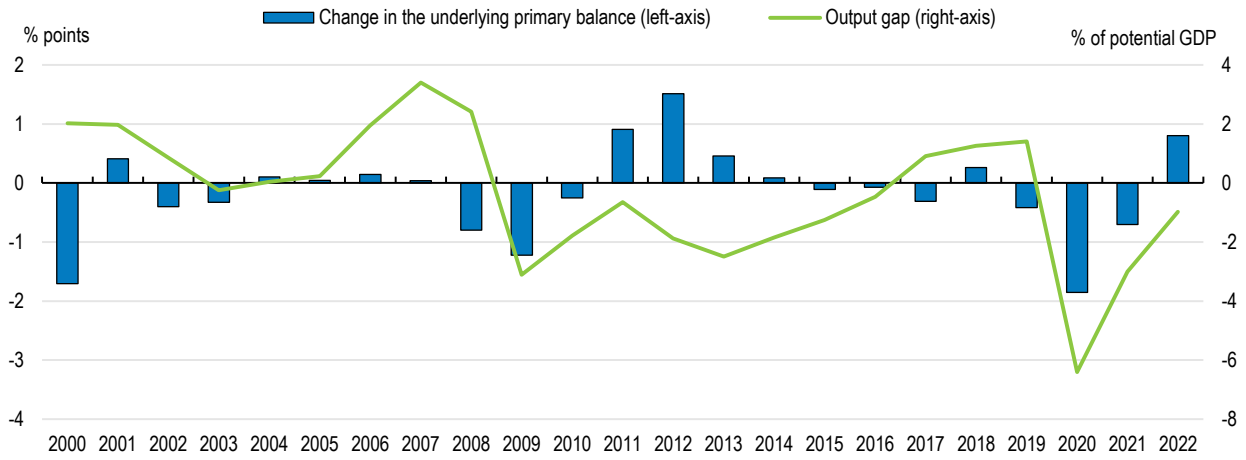
Countercyclical fiscal policy should provide aggregate demand support in downturns, consistent with long-term fiscal sustainability. In practice however, fiscal policies have often been procyclical, resulting in insufficient buildup of fiscal buffers during economic good times and fiscal tightening in bad times. While the 2008-09 Global Financial Crisis and the start of the COVID-19 pandemic in 2020 were two periods of sizeable counter-cyclical expansion, the euro area has not yet experienced an episode of sizable counter-cyclical fiscal tightening nor a significant strengthening of fiscal buffers in good times. The pro-cyclical consolidation in 2012-13 took place during the sovereign debt crisis, leading to weak growth, heightened market pressures and concerns about debt sustainability in some countries (Figure 1.26). Pro-cyclicality

has reflected government policy choices, market access and weak compliance with the Medium-Term Objective set in structural terms and the Expenditure Benchmark rules. The resolve for countercyclical fiscal policy seems to be lacking from the start: looking at fiscal policies ex ante, using the information available at the time of budget planning, they appear to be neither pro-cyclical nor counter-cyclical (Larch, Orseau and van der Wielen, 2021[54]; Gootjes and de Haan, 2022[55]). However, one source of the pro-cyclicality is a persistent optimism regarding expected economic growth rates on which fiscal spending plans are based (Beetsma et al., 2022[56]). The Commission's Commonly Agreed Methodology (CAM) for assessing potential output has also led to large revisions to the structural balance and, even with averaging over ten years, to potential growth (Barnes and Casey, 2019[57]).

Figure 1.26. Fiscal policy was often procyclical



Note: Data refers to euro area member countries that are also members of the OECD (17 countries).
Source: OECD Economic Outlook: Statistics and Projections database

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To improve economic governance, the Commission has proposed revisions to the fiscal framework, to be put in place as soon as possible after the general escape clause triggered by the pandemic expires at the end of 2023 (Box 1.3). This proposal is a step forward from the current framework, for at least two reasons. First, it bases the medium-term fiscal adjustment on a comprehensive assessment of debt sustainability risks, which considers country-specific circumstances, including projected borrowing costs, ageing costs and the overall impact of fiscal consolidation and structural reforms on growth rather than simple numerical metrics (Blanchard, Sapir and Zettelmeyer, 2022[58]). It also relies less on unobserved variables like the structural balance, making more use of medium-term projections. Second, annual net expenditure ceilings set in terms of spending levels are a simpler and more stable operational target than the cyclically adjusted fiscal balance currently used by the SGP.

The EU fiscal framework is in transition. While the general escape clause of the SGP will be deactivated at the end of 2023, the new legal framework, which depends on the outcome of the ongoing review, is not yet in place. To allow for an effective bridge to the future set of fiscal rules, which will depend on negotiations among EU countries (ECOFIN, 2023[59]), some elements of the Commission's reform proposal will be incorporated to the fiscal surveillance cycle that starts in spring 2023 with the issuance of fiscal country-specific recommendations (European Commission, 2023[60]). The draft budgetary plans for 2024 will be assessed by the Commission in autumn 2023 based on the spring 2023 amended fiscal country-specific recommendations (CSR). The Commission has invited member countries to submit Stability and Convergence Programmes including their medium-term fiscal and structural plans. In turn, the Commission will include in its fiscal CSRs for 2024 both quantitative requirements and qualitative guidance on planned investment and energy measures. The fiscal CSRs will also be quantified in terms of net primary expenditure, as outlined in the reform proposal, and differentiated depending on national public debt challenges.

Box 1.3. The Commission's Economic Governance Reform Proposal

In addition to the reference values of 3% and 60% of GDP for deficit and debt, the EU fiscal governance framework notably involves the following numerical thresholds and rules:

- **The one twentieth debt rule**: when debt is above 60% of GDP, the annual debt reduction over three years should be at last one twentieth of the debt in excess of the 60% threshold.
- **The country-specific medium-term budgetary objective (MTO)**: between -1% of GDP and balance or surplus, corrected for cyclical effects and one-off temporary measures. The objective is revised every three years, or when major structural reforms are implemented.
- **The expenditure benchmark**: the net growth rate of government spending below or equal to a medium-term potential economic growth rate, depending on compliance with the MTO.

The Commission's proposal aims to increase the medium-term orientation of the rules, simplify the framework and increase national ownership. It centres on replacing the preventive arm of the Stability and Growth Pact with a national medium-term adjustment plan anchored in debt sustainability analysis. The reference values of 3% and 60% of GDP for deficit and debt, respectively, are to be maintained and integrated in the new framework. However, the one-twentieth debt rule, which has proven difficult to apply, and the Medium-Term Objective (MTO) for the structural balance and the Expenditure Benchmark based on potential growth would no longer be used.

The Commission would propose a multiannual adjustment path (the so-called *technical trajectory*) in terms of the level of net primary expenditure (defined as expenditure net of discretionary revenue and excluding interest expenditure as well as cyclical unemployment expenditure to allow the full working of automatic stabilisers) for countries with a debt-to-GDP ratio above 60% or a deficit above 3% of GDP, ranging from four to seven years and using an existing debt sustainability analysis (DSA) methodology agreed with member states. These countries will have to put debt on a plausibly downward path by the end of the four-year adjustment period at the latest, based on the assumption of unchanged policy settings. The reference path would also be set to ensure that the deficit remains below 3% of GDP over the medium term defined as the 10 years after the adjustment period. For countries with a deficit below 3% of GDP and a debt-to-GDP ratio below 60%, the Commission will, instead of a technical trajectory, calculate the structural primary balance needed to keep the deficit below 3%.

After a discussion with the Commission, countries would then submit a "medium-term fiscal structural plan" outlining their fiscal adjustment and structural reform commitments. To prevent backloading of fiscal consolidation, the average annual adjustment foreseen in the national plan should not be lower than the average over the entire adjustment period. Moreover, the debt-to-GDP ratio at the end of the "planning horizon" must be smaller than the initial value. Additional flexibility, in terms of a more gradual adjustment path than the standard four-year horizon, could be envisaged in the presence of priority reforms and investment commitments. To ensure equal treatment, the Commission would assess the trade-off between reforms and the speed of adjustment based on a common EU framework. The final step would be the adoption or rejection of the plan by the Council of the EU. If a country and the Commission cannot agree, the reference adjustment path originally prepared by the Commission would be used for fiscal surveillance and enforcement. The national fiscal structural plans will also cover policies needed to address macroeconomic imbalances. In case of insufficient progress, an excessive imbalances procedure would be opened and the country would be asked to submit a revised fiscal structural plan to the Council.

Enforcement will continue to follow the excessive deficit procedure (EDP). For countries with a deficit above 3% of GDP, the minimum annual improvement of 0.5% of GDP is proposed. For countries with public debt above 60% of GDP, the debt-based EDP would be triggered by failure to comply with the endorsed expenditure path. Failure to comply with the agreed path, or in case of negative circumstances, with the amended path, would lead to sanctions, including possible suspension of EU financing, fines, and other reputational sanctions. While some new enforcement measures are envisaged, the overall aim is to strengthen national ownership, as countries sign up to the plan. No changes were proposed to the legal framework of the Macroeconomic Imbalances Procedure.

Source: European Commission (2022[61]), European Commission (2023[62]), European Commission (2023[63]), Darvas (2023[64]) and Blanchard, Sapir and Zettelmeyer (2022[58]).

Importantly, in the transition period, countries will set fiscal targets in their medium-term fiscal plans, which will form the base for their own fiscal CSRs. The Commission stands ready to propose fiscal CSRs in line with national targets, provided they are consistent with the criteria set out in the reform orientations, notably that they keep public debt on a downward path (or at a prudent level for low-debt countries) and the budget deficit below 3% over the medium term (European Commission, 2023[60]). Given the risk that the new fiscal framework may not be finalised in this legislative period, this approach allows a gradual evolution of fiscal surveillance. The new framework emphasises a multiannual medium-term perspective, while introducing common safeguards to ensure debt sustainability, which both aim to ensure that the fiscal effort is not postponed in good times. This may help reduce the procyclicality of fiscal policy observed in the past, depending on the choices made in finalising the proposal.

Stronger fiscal councils could help improve compliance more than reliance on sanctions

Important elements of the revised fiscal framework and its enforcement remain to be decided. For example, the requirements imposed on the reference path and the national medium-term fiscal plans may be too vague and may not be sufficient to ensure debt sustainability. Fiscal adjustment is meant to ensure both a fiscal deficit of less than 3% of GDP and a “plausibly declining” debt path after four to seven years, which may not be sufficiently ambitious for a high-debt-risk country (Blanchard, Sapir and Zettelmeyer, 2022[58]). Debt sustainability analysis, despite recent analytical refinements, remains very sensitive to modest changes in assumptions (European Fiscal Board, 2022[65]). One of the objectives of the reform is to increase national ownership to improve compliance and budgetary outcomes. Greater adherence by national politicians, parliaments and citizens could help to ensure better outcomes, as is already the case in many countries with low debt. While national authorities may play a more active role in agreeing their adjustment paths, the proposal details the Commission’s role, while being less specific on upgrading the role of national independent fiscal institutions (IFIs). This entails a risk that the national policy discussions will not engage sufficiently with the new framework, which would be inconsistent with the stated aim of strengthening national ownership and the role of IFIs.

Empowering national fiscal councils and providing them with sufficient resources is key to improve national ownership (Wyplosz, 2022[66]). Independent fiscal institutions, such as fiscal councils, are essential in building credibility of fiscal policy at the national level by enhancing transparency and accountability. They can help to enrich the political debate about public finances and increase the medium-term focus. Effective fiscal councils have a measurable impact on the design and implementation of fiscal policy. In addition, more media visibility of the IFIs makes fiscal rules more effective as measured by higher rule compliance (Mohl et al., 2021[67]).

Fiscal surveillance could be partially delegated from the European to the national level, provided that an adequate fiscal framework is in place and budgetary outcomes remain satisfactory (Thygesen et al., 2022[68]). Assessments of IFIs should contribute to the analysis behind the initial medium-term adjustment path for the Council of the EU (ECOFIN), including oversight or preparation of the assumptions underlying

the macroeconomic projections and debt sustainability analysis. Most national IFIs already produce debt sustainability assessments and this role can be developed further (The Network of EU Independent Fiscal Institutions, 2021[69]). Under the new framework, the IFIs could also be responsible for the assessment of discretionary revenue measures. At the start of the excessive deficit or debt procedure, the IFIs could be tasked with assessing the relevant country-specific factors. For the IFIs to become effective watchdogs of national macro-fiscal management, minimum standards for mandates, resources, expertise, and access to information should be established in EU legislation (Arnold et al., 2022[70]) and gradually implemented, reflecting the experience of the IFIs and existing best practice (OECD, 2014[71]). Making the European Fiscal Board institutionally independent and endowing it with sufficient resources would also help to strengthen discussion of fiscal issues at the European level.

The Commission's proposal maintains the reliance on sanctions, which has a poor record and needs to be improved. It is sometimes argued that the enforcement of fiscal rules could be strengthened through other EU policy instruments, such as the EU cohesion policy (Larch et al., 2022[52]). EU law allows the Commission to suspend European Structural and Investment Funds (ESIF) in case of insufficient action under the EDP. Given that cohesion funds represent a large part of the EU budget, this could serve as a credible incentive. However, in practice this provision has never led to any actual loss of funds. Similarly, the introduction of reverse qualified majority voting (RQMV) in 2011 did not result in imposing more granular SGP sanctions. This meant a more decisive role for the Commission in a situation of a split vote in the Council because a qualified majority of voting countries would be needed to overturn a Commission recommendation. Although this innovation was expected to result in a quasi-automatic implementation of the stricter SGP rules, this did not happen (European Fiscal Board, 2019[72]). Instead, the Commission in 2016 decided to de facto relinquish SGP sanctions for non-compliance against Spain and Portugal by setting their level to zero (Larch et al., 2022[52]). This episode has been linked to a generalized lack of SGP ownership, both by the countries and the Commission, or to the perception that sanctions, even when ineffectual, are limiting national sovereignty (Mangov et al., 2019[73]).

Table 1.5. Improving the European fiscal arrangement

Main recommendations of the 2021 Survey	Action taken since 2021
Evaluate the fiscal framework with the aim to better ensure sustainable government finances, sufficient counter-cyclicality and greater ownership.	In November 2022, Commission's orientations for the economic governance reform reviewed the key concerns, including complexity, pace of debt reduction, incentives for reforms and investment, national ownership and enforcement.
Improve fiscal policy making by strengthening the involvement of independent fiscal institutions, enhancing medium-term budgetary frameworks, and by considering positive incentives.	The April 2023 legislative proposals outlined a reformed fiscal framework relying on medium-term orientation and national ownership. The framework aims at credible reduction of high debt levels and promotion of sustainable and inclusive growth, while also envisaging a stronger role for national IFIs.
Swiftly implement national recovery and resilience plans to deliver structural reforms and investments based on sound cost-benefit analysis.	The progress on RRP implementation is continuously monitored, also in the context of the European Semester. The implementation of the RRF is ongoing. A total of EUR 153 billion have been disbursed as of May 2023.
Rigorously assess the economic impact of SURE and Next Generation EU as they could provide a valuable input to the debate on the completion of the EMU architecture.	The Commission has assessed the economic impact of SURE in its bi-annual reports and plans to evaluate SURE by 2024Q3, as recommended by the ECA.
Among other options, consider adopting an expenditure rule anchored to a debt ratio target.	The April 2023 legislative proposals emphasize expenditure developments (net of revenue-increasing or decreasing fiscal policy measures), which will serve as a basis for setting countries' fiscal adjustment paths and carrying out annual fiscal surveillance.

The Single Market must be protected and deepened

The Single Market has contributed considerably to economic growth in the European Union. Recent estimates put the real GDP level impact of the Single Market since its inception between 9% and 12% (in

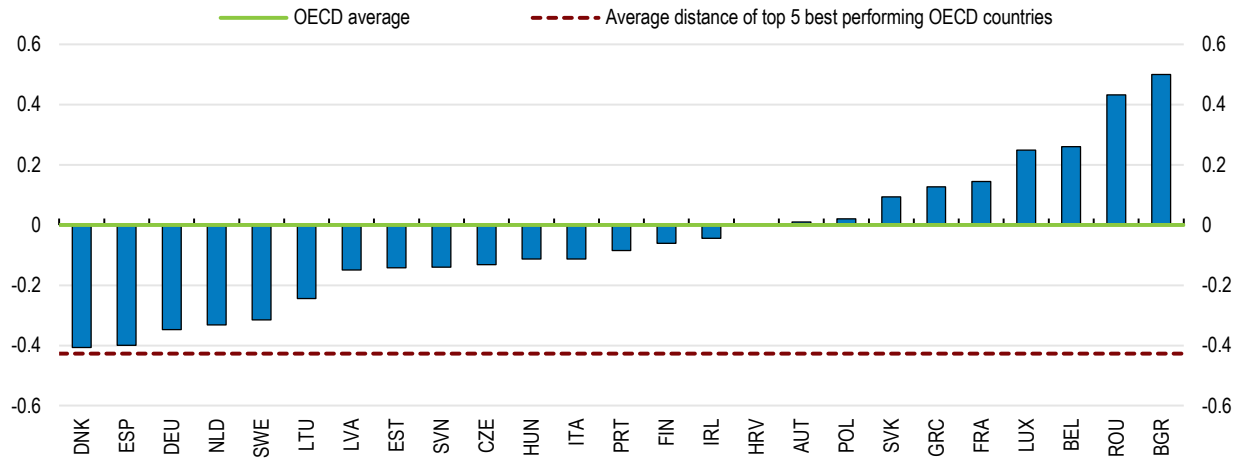
't Veld, 2019[74]) (Lehtimäki and Sondermann, 2020[75]). Effective implementation and enforcement of Single Market rules is also crucial to preserve EU resilience to economic shocks. However, continued efforts to address persistent barriers, including the promotion of cross-border provision of services, are needed (European Commission, 2023[76]). The digital, telecommunications and financial services markets remain particularly fragmented (OECD, 2023[77]).

Improving product market regulations further would deepen the Single Market

The OECD product market regulation (PMR) indicators show that existing barriers to competition in the best performing EU countries are about as low as in the strongest OECD performers. Most EU countries perform well in this respect. Yet, in some member countries regulatory barriers to competition remain high despite decades of EU membership (Figure 1.27).

Figure 1.27. Most EU countries perform well in PMR, but some barriers remain

Distance between PMR indicator scores for EU countries and the OECD



Note: The Product Market Regulation (PMR) indicator is a composite index that encompasses a set of indicators that measure the degree to which policies promote or inhibit competition in areas of the product market where competition is viable. Scores range from 0 to 6 and increase with restrictiveness (data refer to 2018).
Source: OECD Product Market Regulation database.

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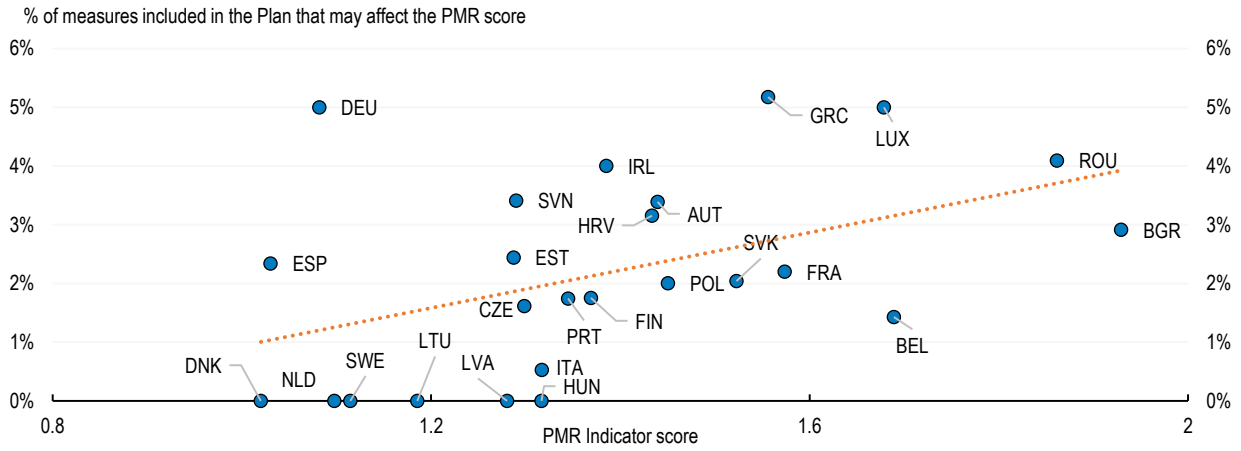
Current reform programmes, if fully implemented, are likely to strengthen the Single Market, particularly in countries with more restrictive PMRs. To benefit from the Recovery and Resilience facility, EU countries submitted national Recovery and Resilience Plans to the Commission, outlining investment plans and regulatory reforms addressing country-specific recommendations from the European Semester. Some reforms relate directly to PMR, while many investments aim to improve the infrastructure in network sectors, the regulatory set-up of which is assessed in the PMR indicators (Vitale and Terrero, 2022[78]). If fully implemented, the national Recovery and Resilience Plans will bring clear benefits for countries most in need of improving their PMR (Figure 1.28).

Potential benefits of fully implementing the national Recovery and Resilience plans suggest that regulatory fragmentation continues to hamper digital trade. The OECD Digital Services Trade Restrictiveness Index has remained stable across developed economies (Figure 1.29). Although the average level of restrictiveness in the European Union and the euro area is low compared to other world regions, Europe is not improving its position vis-à-vis economies such as the U.S., the U.K. and to lesser extent Japan. For example, EU countries maintain policies that impede trade in digitally enabled services, such as performance requirements, limitations on downloading and streaming, or restrictions on online advertising. Despite the implementation of the General Data Protection and the Free Flow of Non-Personal Data

Regulations, the lack of harmonisation of cybersecurity requirements in the EU may also impede the free flow of non-personal data.

Figure 1.28. National Plans address regulatory weaknesses identified by the PMR indicators



Note: The Product Market Regulation (PMR) indicator is a composite index that encompasses a set of indicators that measure the degree to which policies promote or inhibit competition in areas of the product market where competition is viable. Scores range from 0 to 6 and increase with restrictiveness (data refer to 2018). The horizontal axis shows the 2018 PMR indicator score for each EU country. The orange dotted line shows the correlation between PMR values and the share of measures included in the country Plan that may affect the PMR score.
Source: OECD Product Market Regulation database.

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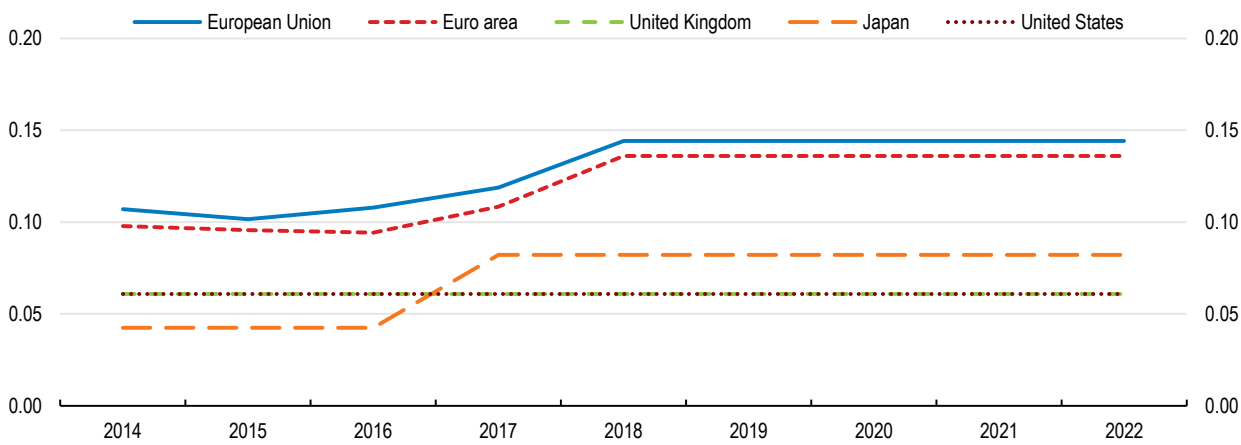
Figure 1.29. European countries maintain regulatory barriers in digital trade

Evolution of services regulatory environment for digital trade, digital STRI averages



Note: The OECD Digital STRI identifies, catalogues and quantifies barriers that affect trade in digitally enabled services. The Digital STRI indices take values between zero and one, one being the most restrictive.
Data refer to European Union and euro area member countries that are also members of the OECD (22 and 17 countries, respectively).
Source: OECD Digital Services Trade Restrictiveness Index (Digital STRI) database.

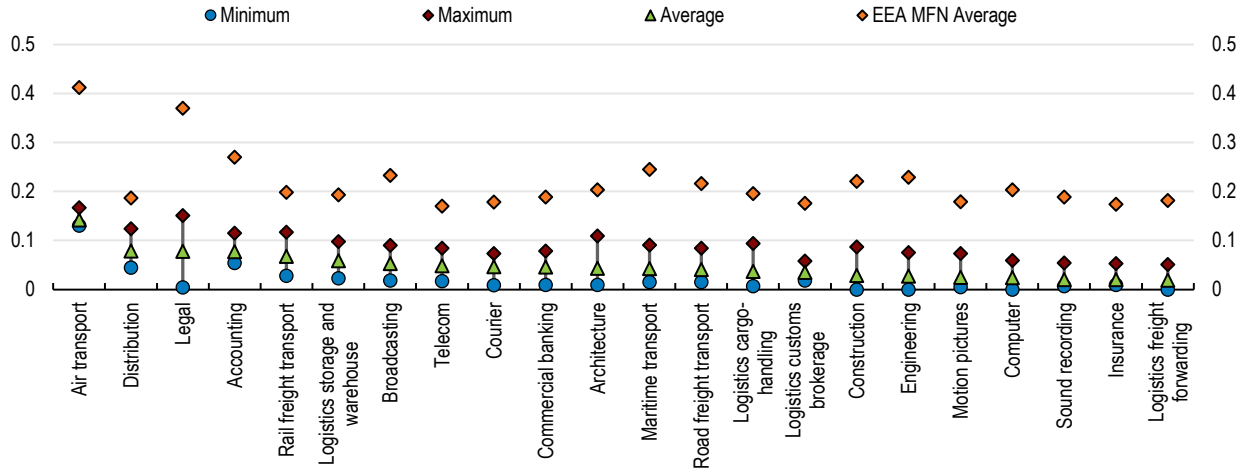
StatLink https://stat.link/z49rcd

Some restrictions remain within the Single Market, driven both by EU rules and national regulations, demonstrating the potential for further market integration in many services sectors (Figure 1.30). These include restrictions on foreign entry in air transport and distribution as well as licensing requirements for legal services. Between 2014 and 2021, the regulatory environment in the European Economic Area (EEA) became more liberal in courier and telecommunications, while progress in insurance and other financial services has been limited (Figure 1.31). In 2021-22, trade liberalisation within the EEA continued in

distribution services, commercial banking, and insurance. The most recent reforms in 2021 included financial services liberalisations in Iceland and Finland and the liberalisation in distribution services in Germany (OECD, 2022[79]).

Figure 1.30. Barriers in some services sectors within the Single Market remain high

Intra-EEA Services Trade Restrictiveness Index average, minimum and maximum scores by sector, 2022



Note: The STRI indices take values between zero and one, one being the most restrictive. The intra-EEA STRI quantifies barriers to services trade within the Single Market of the EEA. By contrast, the STRI database records measures on a Most Favoured Nations (MFN) basis, where preferential trade agreements are not taken into account. Air transport and road freight cover only commercial establishment (with accompanying movement of people). The Intra-EEA STRI regulatory database covers 24 EEA members (GBR is excluded).
Source: OECD Intra-EEA Services Trade Restrictiveness Index (STRI) database

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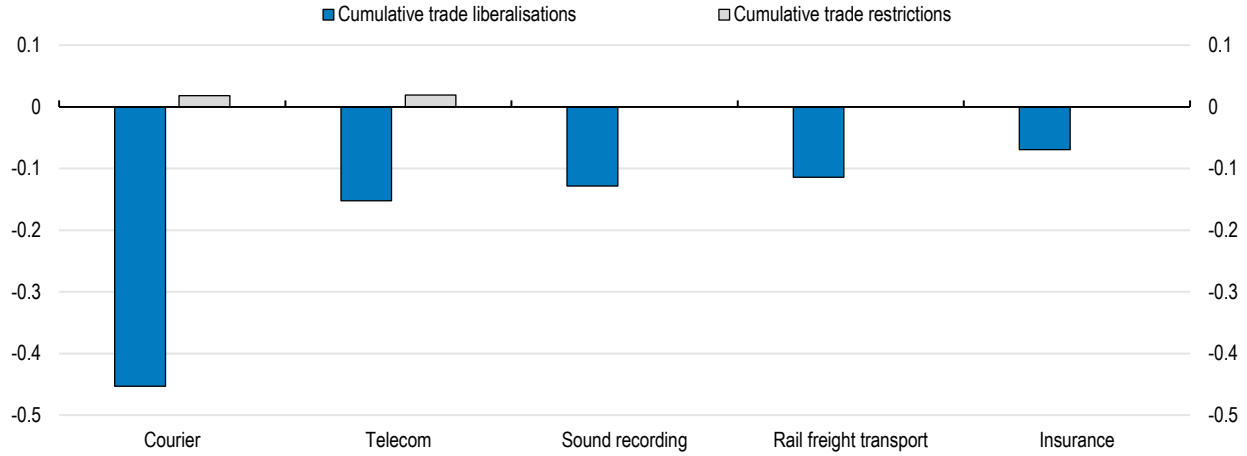
Figure 1.31. Within the Single Market, trade was liberalised in courier and telecommunication services

Intra-EEA services trade policy changes, 2014-22, percentage point



Note: The STRI indices take values between zero and one, one being the most restrictive. The intra-EEA STRI quantifies barriers to services trade within the Single Market of the EEA. The Intra-EEA STRI regulatory database covers 24 EEA members (GBR is excluded).
Source: OECD Intra-EEA Services Trade Restrictiveness Index (STRI) database

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Strong state aid framework is needed to protect the level playing field

State aid rules have been relaxed several times since the beginning of 2020, using the flexibility foreseen in the Treaty to remedy serious economic disturbances. As part of the Temporary Framework for state aid introduced in reaction to the COVID-19 pandemic, the Commission temporarily relaxed and simplified access to aid. Moreover, following Russia's unprovoked war of aggression against Ukraine, a Temporary Crisis Framework expanded support for increased energy costs as well as specific renewable energy and decarbonisation technologies (Box 1.4)

Box 1.4 The EU State aid framework has been relaxed to address serious disturbances

The EU State aid rules govern the provision of State aid to companies, including direct grants, tax advantages, repayable advantages, guarantees, loans or equity. The rules aim to protect competition and ensure a level playing field for all companies within the Single Market. To be compatible with EU rules, State aid must be necessary, proportionate, transparent, compatible with the internal market and not adversely affect competition. State aid can also contribute to economic development and job creation in underdeveloped regions (Article 107 of the Treaty of the Functioning of the European Union). If the Commission decides that State aid is incompatible with the rules, it will order a country to recover the aid from the beneficiary. For example, Ryanair was ordered in 2019 to return EUR 8.5 million of State aid received through the Association for the Promotion of Touristic and Economic Flows (APFTE) in Montpellier.

Countries are required to notify the Commission of any aid that does not fulfil the requirements of the regulations on the basis of art. 108 (4) TFEU (the so-called Block Exemptions Regulation), and the Commission approves such aid on a case-by-case basis. Under the General Block Exemption Regulation, aid to small and medium-sized enterprises (SMEs) and large companies can be exempted under specific conditions, provided it does not exceed certain notification thresholds. For example, aid for research, development and innovation, can be allowed up to certain thresholds and maximum aid intensities. Countries can provide to companies small amounts of State aid (so-called "*de minimis*" aid) without notification, up to EUR 200,000 over three years.

During the COVID-19 pandemic, the Commission adopted the State Aid Temporary Framework to use the full flexibility foreseen under State aid rules and support the economy. Under the Temporary Framework, the Commission approved nearly 950 national measures (out of more than 1300 notified) for SMEs and large businesses in many sectors, including farmers, airlines and COVID-related research, amounting to nearly EUR 3.2 trillion, an upper bound on actual spending (European Commission, 2022[80]).

The Temporary Crisis Framework was adopted in response to Russia's invasion of Ukraine, which led to another sharp increase in already elevated energy prices. The new elements of the framework aimed to (i) facilitate access to liquidity for energy companies and other affected firms, (ii) simplify requirements for support to companies affected by the high cost of energy, and (iii) extend measures to support the reduction of electricity demand.

Note: *) The eligible costs are the difference between the unit price of natural gas and electricity paid by the undertaking (as a final consumer) in each month between 1 February and 31 December, 2022, and twice the unit price paid on average during 2021.
Source: European Commission (2021[81]), European Commission (2022[80])

The current level of flexibility risks distorting the level playing field provided by the Single Market. By January 2023, some EUR 672 billion of State aid had been approved under the Temporary Crisis Framework, overwhelmingly by large EU countries, Germany, France and Italy, who notified, respectively, 53%, 24% and 7% of the total amount (Vestager, 2023[82]). However, this includes guarantees and other categories and does not mean that the nominal amounts were fully disbursed. To gauge the impact of the

Temporary Crisis Framework, one can also compare total aid notified or reported in 2020 with that notified or reported in 2019. First, there is an upward shift in aid, as all countries notified or reported more aid in 2020 than in 2019. Second, the aid distributed in 2020 tended to further increase in countries that were already subsidising a lot in 2019 (Kleinmann et al., 2023[83]). An unbalanced distribution of state aid under the Temporary Crisis and Transition Framework, would raise concerns that countries with the most fiscal space may be able to provide excessive support, at a risk for the integrity of the Single Market.

The existing EU legal framework, particularly the 2022 Guidelines on State aid for climate, environmental protection and energy, already allows for green subsidies justified by environmental externalities and climate protection (European Commission, 2022[84]). Recently, the Commission has temporarily, until end-2025, enlarged through the Temporary Crisis and Transition Framework the scope of existing simplified provisions for State aid to all renewable energy technologies, eliminated the need for open tenders for less mature technologies previously required under EU rules, and further increased the notification thresholds for State aid (Box 1.5). These measures need to be assessed in the future and adjusted, if necessary, to minimise potential harmful effects on competition. In particular, introduction of anti-relocation investment aid for green investment, could lead to harmful subsidisation races.

Box 1.5. The Green Deal Industrial Plan entails further relaxation of State aid rules

The February 2023 Communication on the Green Deal Industrial Plan for the Net-Zero Age aims at scaling up the EU's carbon neutral manufacturing capacities and supporting the use of sustainable materials in construction and other sectors. It also proposes measures to enhance the competitiveness of Europe's carbon neutral industries. The premise of the Plan is the need to massively increase the technological development as well as manufacturing of net-zero products and scale up the supply of renewable energy in the next decade. The Plan is based on four pillars: (i) a predictable and simplified regulatory environment, (ii) faster access to funding, (iii) skills and (iv) open trade for resilient supply chains. The first two pillars are most directly relevant for the Single Market.

Predictable and simplified regulatory environment

To improve the regulatory environment, the Commission presented in 2023 three key proposals:

- A Net-Zero Industry Act to support industrial manufacturing capacity and strategic multi-country projects in net-zero products. The measures will include faster permitting, streamlining the identification of common projects and developing European standards promoting the roll-out of key technologies. The support for strategic multi-country projects aims at ensuring that all countries could develop their innovative industries.
- A Critical Raw Materials Act to ensure access to materials vital for manufacturing of net-zero technologies and products by strengthening international engagement, facilitating extraction, processing and recycling, while ensuring high environmental standards.
- Electricity market reform, as part of the RePowerEU Plan.

Faster access to financing

To accelerate access to financial support, the Commission temporarily relaxed State aid rules further, using the flexibility foreseen in the Treaty to remedy serious economic disturbances, moving from the existing Temporary Crisis Framework to a modified Temporary Crisis and Transition Framework. In particular, the relaxation aims for faster approvals for certain transactions.

The new framework extends the simplified provisions for renewable aid deployment to all renewable technologies, eliminating the need for open tenders for less mature technologies and extending deadlines for completing projects that receive support. It also further relaxes rules for aid to decarbonise industrial processes by allowing linking aid to standard percentages of investment costs and adding a more flexible ceiling per beneficiary in aid schemes fulfilling specific conditions. Moreover, it provides enhanced investment support schemes for the production of strategic net-zero technologies and

additional aid for new projects in strategic net-zero value chains. Finally, the Commission amended the General Block Exemption Regulation. The amendment grants EU countries more flexibility to design and implement support measures in sectors that are key for the green transition. It also introduces more possibilities for support for IPCEI-like projects in research and development. These measures, together with the code of good practices for Important Projects of Common European Interest (IPCEI) that was prepared by the Commission, could also streamline and simplify the approval of IPCEI projects.

To avoid fragmenting the Single Market due to varying levels of national support, the Commission also proposes to increase EU-level funding through several channels:

- The InvestEU Programme, which supports EU public and private investments in net-zero technologies and industrial innovation and in collaboration with the European Investment Bank, the European Investment Fund and other participating institutions has so far provided guarantee agreements worth EUR 21 billion. The program targets high-risk SMEs and midcaps lacking sufficient collateral and prioritizes cross-border investment (European Commission, 2023[76])
- The Innovation Fund, which supports innovative technological solutions and strategies reducing carbon emissions in energy-intensive industries and energy storage. The Commission plans to launch a competitive bid in autumn 2023 for supporting the production of renewable hydrogen and expand this mechanism to other net-zero technology areas including batteries as well as electrolysers.
- In the medium term, the Commission proposes to create a European Sovereignty Fund to preserve a European technological lead in key fields related to the green and digital transitions.

The Commission acknowledges that the Green Deal Industrial Plan will require significant investment from private sources and emphasizes the role of a fully developed Capital Markets Union in improving access to finance for individuals and firms.

Source: European Commission (2023[85])

The EU can help increase resilience

Post-pandemic changes in the geopolitical environment and the green and digital transitions are leading the EU to reconsider the approach to industrial policy beyond regulating a large internal market. The Commission has proposed several policy measures aimed at strengthening market resilience, such as the Single Market Emergency Instrument providing solidarity in case of future crises. The EU also continues to alleviate its strategic dependencies through new industrial alliances and increased efforts in regulation and setting of standards (European Commission, 2021[86]). These policies are steps in the right direction and should be developed further, while carefully considering their limitations and preserving an open economy. Economic resilience requirements may justify joint procurement procedures, build-up of strategic reserves of key products as well as better identification of risks and rapid response networks facilitating public-private co-operation in responding to crises. Similarly, well-designed measures addressing market failures within the EU or beyond may be useful in situations when benefits exceed costs. However, strategic autonomy policies may lead to trade inefficiencies. Such interventions generate trade diversion – increased trade within the EU – which is insufficient to compensate for the induced loss of external trade (Bauer, 2022[87]). Hence, EU action should continue to be guided by proportionality and adherence to the principles of multilateralism and rules-based free trade.

A related concern is that a shortage of critical raw materials will undermine the EU's strategic autonomy and slow down the expansion of the green and digital transitions. The EU is highly dependent on the import of raw materials needed for batteries and wind turbines, including lithium, nickel, cobalt for batteries as well as rare earths for permanent magnets, and plans to diversify imports through new trade agreements with Australia and Chile. In addition, the supply of critical raw materials within the EU is constrained by long permitting processes (Bobba et al., 2020[88]). The European Commission proposed to designate

strategic raw material projects as of public interest and encourages EU countries to shorten lengthy approval processes to two years for extraction projects and one year for processing and recycling projects (European Commission, 2023[89]). Swift implementation of the proposal would eventually reduce EU's dependence on imports of strategic raw materials.

The aim of EU industrial policy should be to create sound framework conditions and facilitate adaptation to structural change. Public funding needs to be used proportionately to address market failures, with a view to triggering additional private investment that would not have taken place otherwise (OECD, 2020[90]). Rather than relaxing rules for state aid, multiplying potential distortions and market fragmentation, multi-country approaches could be leveraged to provide support open to all firms across the Single Market. For example, Important Projects of Common European Interest (IPCEI) support pooling of public resources across several countries in areas where markets alone cannot deliver breakthrough innovation.

IPCEIs are an expanding support tool for projects in the field of research, development and innovation that the private sector alone cannot finance. They involve state aid with specific rules and substantial amounts of financing compared to other channels of public support. For example, the three IPCEIs adopted by the end of 2021 – one project on microelectronics and two on the battery value chain – involved almost EUR 8 billion of public funding complemented by EUR 20 billion of private funds (Eisl, 2022[91]). However, the framework suffers from a lack of broad-based participation of SMEs and firms from some EU countries, which the Commission recently aimed to address by amending the GBER. Another major flaw is the lack of transparency on the decision to invest public funds and on project governance. Not enough information on existing IPCEIs is available to enable monitoring of the efficient spending of public funds or the distortive effects on competition. In cases where public interest in efficient use of public funds outweighs the interest of private companies in limited disclosure, this information should be published in an accessible and timely manner (Poitiers and Weil, 2022[92]).

The governance of IPCEIs needs to be significantly improved to achieve better coordination and harmonisation across countries and more equal access for enterprises. Despite their potential role in EU industrial policy IPCEIs are national exercises with wide variation in procedures and reporting. This creates unnecessary burdens for enterprises, which simplification and harmonisation of rules at the EU level could help reduce. This would help future IPCEI projects, supported by an exchange forum for sharing national best practices. Moreover, better support for enterprise applicants at the EU level could help alleviate the cross-country differences in technical and administrative capacities. For example, such support service could provide training on how to write IPCEI applications, collect project ideas from enterprises and advise on how to best align them with IPCEI requirements. Finally, the Commission needs to allocate sufficient resources, including administrative capacity, to ensure a comprehensive assessment as well as swift implementation of IPCEIs (Eisl, 2022[93]).

The EU could also expand subsidies for green R&D, innovation and early-stage deployment of next-generation green technologies. For such early-stage projects, EU support should rely on instruments, which are administratively simple and allow to target support also to small firms. While large firms can sometimes play an anchor role, it is important to ensure that smaller players are also supported, since disruptive new technology solutions are often developed by new young firms. To avoid harming the Single Market's level playing field, these support measures should be allocated at an EU level, consist mostly of grants and aim at high-risk early-stage technologies (Tagliapietra and Veugelers, 2021[94]).

Policy tools other than subsidies, such as streamlined regulations for permitting procedures and green public procurement can be efficient in developing green technologies. The temporary emergency regulation to fast-track permits for renewable energy infrastructure and grids (Regulation 2022/2577) agreed in December 2022 and faster permitting in legislative proposals on critical raw materials and net zero industry from March 2023 are thus a step in the right direction. Public procurement amounts to about 14% of the EU's GDP and makes up a large share of the market in areas like transport, construction and health services. In these sectors, the purchasing decisions of public authorities can encourage green

innovation by giving start-ups access to economies of scale (Mazzucato, 2013[95]). Similarly, by introducing sustainability requirements, the EU could prioritize clean technologies produced to European standards without resorting to more contentious measures, such as local content requirements (Kleinmann et al., 2023[83]).

The EU could also seek to obtain an exemption from the U.S. Inflation reduction Act (IRA) provisions on the electric vehicle tax credits and local content requirements (LCRs) for batteries components and critical minerals. Several possibilities for doing so have been suggested, including expanding the definition of a free trade agreement in the IRA legislation to include agreements under discussion or plurilateral agreements (Bouët, 2023[96]). Bilateral negotiations regarding the IRA implementation have been going on since October 2022 and have already produced results, such as the relaxation of provisions on leased cars provided by EU companies.

Avoiding market fragmentation to spur progress towards a digital and green economy

Deepening the Single Market is important for the digital and green transitions. Further harmonisation and the mutual recognition of standards allow businesses to sell their products and services across borders, with competition leading to lower prices and innovation (see above). However, important obstacles remain, including fragmented regulatory frameworks for digital markets and the circular economy.

The Digital Markets Act (DMA) of 2022 gives the European Commission powers to designate large online platforms as “gatekeepers”, which will be subject to certain obligations, including a ban on ranking their own services ahead of rivals and an obligation to allow users to access their own data and take them to other competing services. The Commission has the powers to carry out market investigations in relation to the gatekeeper function of large online platforms. In case of systematic infringement of the DMA, the Commission may impose behavioural or structural remedies. The latter can range from forced divestments against companies up to the break-up of platforms (European Commission, 2022[97]). Indeed, in the area covered by the act – core services of large online platforms designated as gatekeepers – the DMA will reduce fragmentation in digital markets because EU countries are prohibited from imposing further obligations on gatekeepers with the same purpose as the DMA. However, the DMA applies only to a limited number of undertakings designated as gatekeepers in relation to a limited number of core platform services. It does little to mitigate regulatory fragmentation in areas falling outside of its scope. Moreover, both EU competition law and the national competition rules continue to apply. In Germany, for instance, online platforms can be subject to additional and more stringent competition rules, provided that the undertaking is of paramount significance for competition across markets in Germany. The DMA allows the German authorities to apply these competition rules with respect to undertakings other than gatekeepers under the DMA or to impose further obligations on gatekeepers. Accordingly, there can be differences in the obligations imposed on platforms within the EU. Such variation in rules faced by firms could hamper the growth of European digital platforms and opens the door to regulatory arbitrage. Thus, there is a need for stronger harmonisation of national regulations on online platforms in areas outside the scope of the DMA.

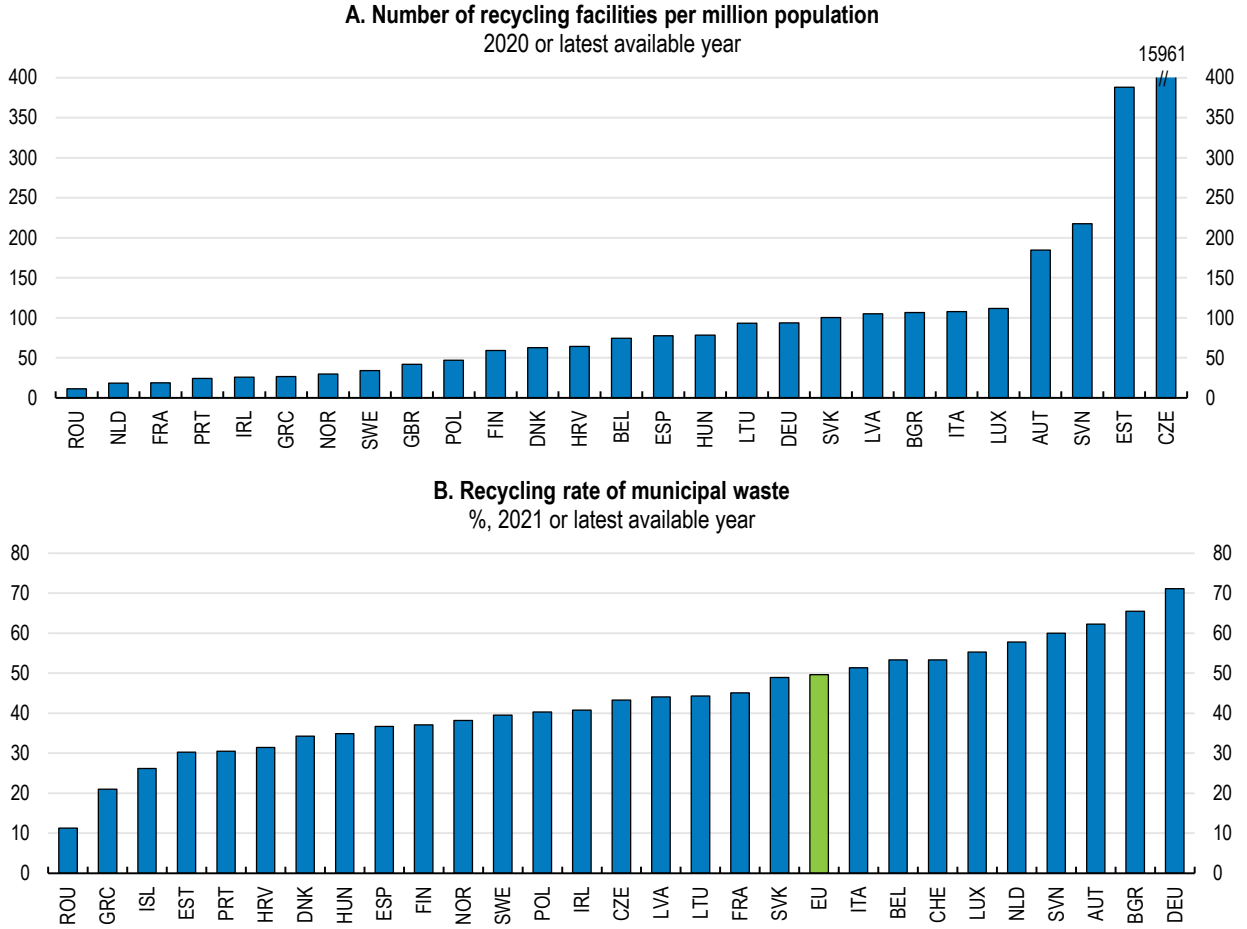
National rules for the circular economy often contradict EU-wide harmonisation efforts, such as material efficiency standards for electronics and electronic waste. For instance, France introduced material efficiency standards for smartphones despite work at the EU level covering the same product categories. This may lead to inconsistencies between EU and national measures. In addition, implementation of European legislation regarding electronic waste is uneven and differs among countries, hindering the free movement of goods and creating new bureaucratic costs. For example, certain used electronic goods and photovoltaic modules are classified as electronic waste in Germany, which means they cannot be sold to other EU countries, despite buyers willing to repair and continue using them (Pinto and Renda, 2022[98]).

Looking ahead, reducing the material use of electronic devices is important for sustainability and the circular economy. To reduce material use and negative environmental impacts of products more broadly, the EU Commission proposed in 2022 common reparability and re-use requirements for goods placed in

the Single Market, including electronics, as well as improved information on products through a digital product passport (European Commission, 2022[99]). Such common requirements and material efficiency standards are welcome. The EU should ensure that national rules and standards for material efficiency and electronic waste are aligned with EU rules to ensure a level playing field. Reducing material use will also help the green transition, as emissions embedded in electronic devices are projected to rise from 1% of EU GHG emissions in 2020 to 3% in 2025 (The Shift Project, 2019[100]; IEA, 2022[101]; Freitag et al., 2021[102]).

A more secure supply of raw materials will also require higher recycling rates, as envisaged by the EU Critical Raw Materials Act (European Commission, 2023[89]). However, fragmented waste regulation across EU countries hampers the development of secondary markets for recycled raw materials. Such markets can help reduce the need to extract raw materials and the associated environmental impacts. For instance, different technical standards for recycled materials hinder cross-border trade (European Environment Agency, 2022[103]). Moreover, low user charges often render secondary material markets uncompetitive, with only four EU countries having set up full cost recovery charges that also include environmental costs (Salvetti, 2021[104]). This results in small, fragmented markets and largely varying waste recycling rates across EU countries (Figure 1.32). Hence, waste regulations should be harmonised to promote efficient markets for secondary raw materials. This entails introducing common Ecodesign standards to bolster recycling of raw materials as described in more detail in the 2021 *OECD Economic Survey of the European Union* (OECD, 2021[1]).

Figure 1.32. Recycling rates of waste differ across EU countries



Note: In Panel B, data refers to the 27 EU Member countries.
Source: Eurostat Waste database; Eurostat Population database; Eurostat Sustainable development indicators database; and OECD calculations.

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More harmonisation is also needed in building codes to reduce fragmentation among EU countries and even regions. Diverging technical standards for buildings reduce competition and lead to higher costs as architects, developers, and builders limit their services to national or local markets. A similar fragmentation prevails in standards for construction materials (European Commission, 2022[105]). A related issue is the lack of information about raw materials used in a building. Such information is essential for recycling strategies in the construction industry. Material passports, for example, could provide detailed specifications of raw materials used in a building but they require common standards for construction materials (World Bank, 2022[106]). Harmonised construction standards will lower the costs of the green transition. Another area for more harmonisation is energy efficiency standards for buildings (Chapter 2).

Increased labour mobility can mitigate skills shortages and deepen the Single Market

Labour mobility in the EU can act as a balancing tool for domestic labour markets experiencing excessive slack or tightness. After a decrease in labour mobility during the pandemic, labour mobility picked up in 2021. The most prevalent category in 2021 consisted of long-term movers, about 8 million persons in working age according to LFS data, followed by 2.2 million posted workers and 1.7 million cross-border workers. About 81% of EU movers or 6.5 million individuals were active on the labour market in 2021, compared to 79% of nationals and 70% of third-country nationals (European Commission, 2023[107]). Despite the stock of active movers constantly increasing from 2012 to 2021, cross-country flows of workers remain too limited to significantly reduce unemployment in origin countries (Elsner and Zimmermann, 2016[108]).

The remaining issues hindering labour mobility in the EU include the recognition of professional and academic qualifications across jurisdictions, which is still often made on a case-by-case basis as well as linguistic and cultural diversities, which could be alleviated by an enhanced Erasmus+ program offering resources for learning and training abroad to young people. Moreover, improvements in the portability of pension rights and the exportability of unemployment benefits as well as full implementation of the Electronic Exchange of Social Security Information (EESSI) system would enable quicker calculations of workers' social security benefits and favour labour mobility. Policies that could help support intra-EU labour mobility are discussed in detail in Chapter 2 and the 2021 *OECD Economic Survey of the euro area* (OECD, 2021[43]).

The posting of workers to another country is a common form of short-term labour mobility in the EU. However, it is quantitatively limited and concentrated among several EU countries, such as Poland, Germany, France and Belgium. In 2021, there were about 2.2 million posted workers and 3.6 million of work postings in the EU, alongside 1.7 million cross-border workers (European Commission, 2023[107]), representing together about 2% of total EU employment. European legislation in this area – the Posting of Workers Directive and its Enforcement Directive – aims at ensuring equal treatment of posted and regular workers in the host country regarding minimum wage, remuneration, working hours and safety. However, businesses, in particular SMEs, continue to view the administrative burden stemming from rules on the posting of workers as one of the main Single Market obstacles (Eurochambers, 2019[109]). The administrative requirements are often heavy, and the regulatory burden continues to vary across countries. Language barriers and the need to translate contracts and other documents can often increase costs. As a result, the recently estimated effort required to register a posting to Austria and Germany is 66 minutes, to Italy 71 minutes, and to France 80 minutes (Stiftung Familienunternehmen, 2023[110]). Since companies need to register their posted workers in the host country, the burden of national regulation falls mainly on foreign companies, and national administrations have limited incentives to improve their services.

Harmonised EU-wide rules defining standard documentation requirements and a common list of exemptions would help reduce the costs associated with posting of workers. Similarly, merging the application process for posted workers and A1 certificates required for reporting social security contributions while abroad would help simplify posting requirements. Further exempting short-term work,

such as repairs, maintenance services or emergency assignments, from positing requirements under the Directives could also be considered.

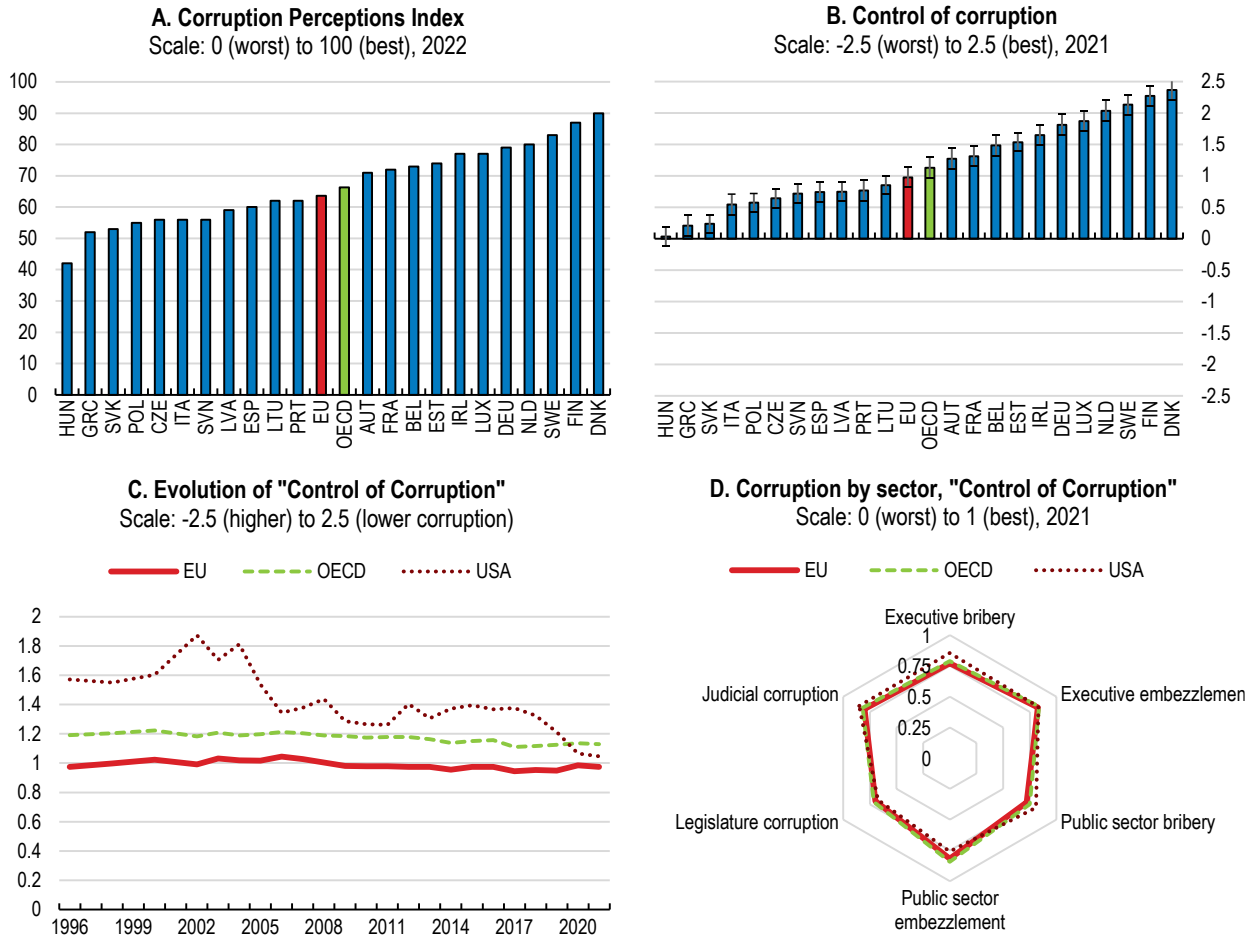
Table 1.6. Supporting an inclusive recovery across the EU

Main recommendations of the 2021 Survey	Action taken since 2021
Introduce requirements for the use of digital tools to provide information on products, including on their recycling and repair possibilities.	The Commission proposed in March 2022 the digital product passport (DPP) as part of the new Ecodesign for Sustainable Products Regulation (ESPR). If adopted, this new tool will allow digital access to sustainability information for all products covered by the regulation.
Conduct pilot projects to introduce innovative circular economy business models, such as digital-based ride sharing.	No action taken.
Develop a methodology for providing information on durability for selected products and integrate it in the Ecodesign Directive.	The ESPR is meant to replace the existing Ecodesign Directive, extending it to more products and more environmental aspects beyond energy efficiency. The existing approach is complemented by incentives to boost demand for sustainable products, for example through mandatory green public procurement criteria.

Strengthening the anti-corruption framework of EU countries and institutions

Corruption reduces economic efficiency, leads to waste of public resources, widens economic and social inequalities, and undermines citizens' trust in public institutions (OECD, 2017[111]). The Commission has a leading role in coordinating and fostering the implementation of an anti-corruption framework across EU countries with multiple areas of intervention, such as the judicial system, anti-money-laundering (AML), whistle-blowers' protection, investigation and prosecution of high-level corruption cases, transparency and lobbying (European Commission, 2023[112]) (EUCRIM, 2020[113]). Despite progress made in these areas, challenges remain as the effectiveness of the legislative and policy frameworks varies across the EU and the perception of corruption is relatively high in some countries (Figure 1.33). The new anti-corruption package (see below), launched by the Commission in May 2023, aims at further strengthening the anti-corruption framework and harmonising rules across countries (European Commission, 2023[114]) (European Commission, 2023[115]).

Figure 1.33. The perception of corruption is high in some EU countries



Note: Panel B shows the point estimate and the margin of error. Panel D shows sector-based subcomponents of the "Control of Corruption" indicator by the Varieties of Democracy Project.

Source: Panel A: Transparency International; Panels B & C: World Bank, Worldwide Governance Indicators; Panel D: Varieties of Democracy Project, V-Dem Dataset v12.

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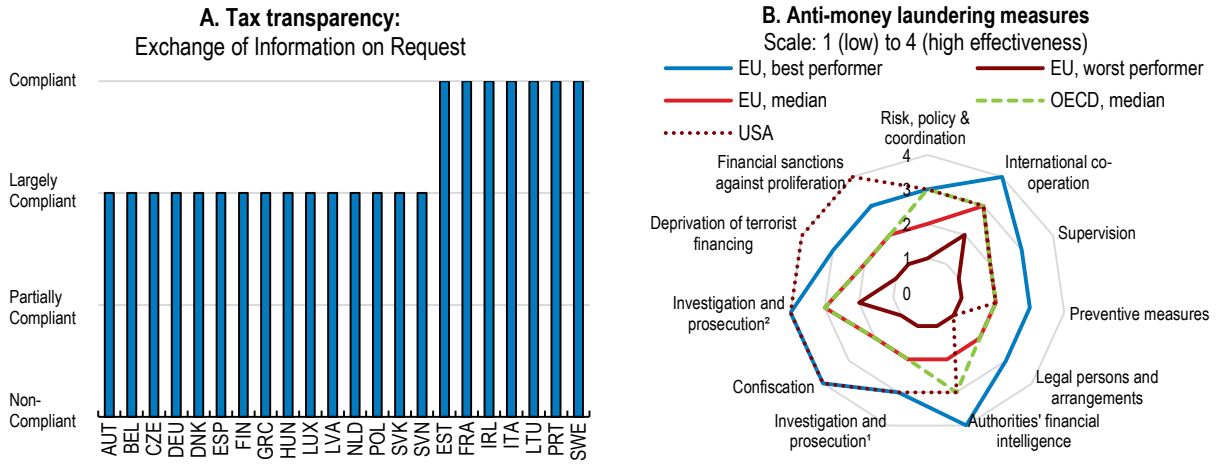
In the area of Anti-Money Laundering and Combating the Financing of Terrorism (AML/CFT), the Commission proposed four legislative instruments in July 2021, notably a new regulation (AMLR) and a directive (AMLD), a regulation establishing a new AML Authority (AMLA), and a revised regulation on transfers of funds expanding traceability requirements to crypto-assets (European Commission, 2021[116]). The European Parliament and the Council reached a political agreement on the revised regulation on transfer of funds in June 2022. The Council adopted its position on the proposals between June and December 2022, while the responsible committees in the European Parliament adopted their position at the end of March 2023, hence opening the way to the "trilogue" negotiations for the adoption of the new "EU AML rulebook" and the new AMLA Regulation (Figure 1.34) (European Council, 2022[117]) (EUCRIM, 2022[118]). The new measures proposed include the extension of AML requirements to operators involved on behalf of third country nationals in the context of investor residence schemes and crowdfunding service providers, and the extension of due diligence measures obligations on all customers of crypto-asset service providers for transactions over 1 000 euro (European Commission, 2021[119]) (European Commission, 2021[120]). Finally, the legislative package proposes more detailed and harmonised rules on beneficial ownership aiming to improve transparency through better identification of complex multi-layered ownership and control structures, and contains a provision preventing traders in goods or services from accepting

cash payments of over 10 000 euro for a single purchase while allowing member states to maintain lower ceilings for large cash transactions. (European Commission, 2021[121]).

Figure 1.34. Anti-money laundering measures can be strengthened



Note: Panel A summarises the overall assessment on the exchange of information in practice from peer reviews by the Global Forum on Transparency and Exchange of Information for Tax Purposes. Peer reviews assess member jurisdictions' ability to ensure the transparency of their legal entities and arrangements and to co-operate with other tax administrations in accordance with the internationally agreed standard. The figure shows results from the ongoing second round when available, otherwise first round results are displayed. Panel B shows ratings from the FATF peer reviews of each member to assess levels of implementation of the FATF Recommendations. The ratings reflect the extent to which a country's measures are effective against 11 immediate outcomes. "Investigation and prosecution¹" refers to money laundering. "Investigation and prosecution²" refers to terrorist financing.
Source: OECD Secretariat's own calculation based on the materials from the Global Forum on Transparency and Exchange of Information for Tax Purposes; and OECD, Financial Action Task Force (FATF).

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The new AML/CFT proposal provides a list of minimum categories of information to which financial intelligence units (FIUs) must have access in order to improve their ability to conduct strategic and operational analysis, disseminate the results to the competent national and EU investigative authorities and reply to requests for information by their counterparts from other member states. FIUs are central national agencies disseminating financial intelligence to competent authorities investigating and prosecuting money laundering, its predicate offences and terrorist financing. The new measures contained in the package would continue to also grant access to information in the beneficial ownership register for some natural and legal persons with legitimate interest, such as journalists and civil society organisations. In the 5th AML Directive, access to such information was granted to any member of the public. In November 2022, the EU's Court of Justice judged this provision to be invalid, as it infringed the Charter of Fundamental Rights in the matter of personal data protection and respect for private life (Court of Justice of the EU, 2022[122]). AML/CTF measures should ensure that information on beneficial ownership of companies can be accessed by users pursuing anti-money laundering objectives, while also determining sufficient data protection safeguards. This aspect should be considered during the "trilogue" negotiations.

Until now, the AML/CFT supervision has been led at national level and characterised by uneven effectiveness, quality and resources (European Commission, 2021[123]). The proposed new Authority (AMLA) would coordinate national supervisory authorities to ensure uniform implementation of EU rules and elimination of differences in national practices. The Authority would ensure the proper functioning of the EU supervisory system, including by coordinating mutual assistance and thematic reviews. It would also supervise some entities in the financial sector (including crypto asset service providers), with sanctioning powers in case of breaches of the AML requirements. The Authority would also have coordination and oversight powers in the non-financial sector. Finally, it would enhance cooperation as well as the exchange of information among EU financial intelligence units. This could improve the detection

and handling of major money laundering cases, which often involve several EU countries, especially if it will become fully operational at the end of 2026. The Authority would gradually take over the European Banking Authority's competencies in AML/CFT (European Commission, 2021[116]).

Investigation and prosecution of cases related to fraud and violation of EU financial interest have improved. The adoption in 2017 of the Directive on the fight against fraud to protect the Union's financial interests by means of criminal law (the "PIF Directive") and the amendment of the "OLAF Regulation" governing the European Anti-Fraud Office (OLAF) have strengthened the financial protection of the EU budget, as discussed in the 2021 *OECD Economic Survey of the European Union* (EUCRIM, 2021[124]; OECD, 2021[1]). The "PIF Directive" is an essential instrument for the harmonisation of criminal law across the member states in the area of crimes against the Union budget, which are investigated and prosecuted by the EPPO. The amended "OLAF Regulation" introduced improvements for the cooperation between the EPPO and OLAF, which is responsible for administrative investigations. Overall, in 2021, following OLAF's reporting, the EPPO opened investigations on crimes with damage estimated at €2.2 billion (OLAF, 2022[125]) (EPPO, 2021[126]).

Future EPPO-OLAF cooperation can help to improve the indictment rate, as the share of cases submitted to national judicial authorities that resulted in indictment is currently low, at 35% between 2017 and 2021 (OLAF, 2022[125]). Since OLAF's powers are limited to administrative investigations and recommendations, any follow-up and criminal prosecutions remain in the hands of the national judicial authorities. Further strengthening cooperation between OLAF and countries' judicial actors can help to reduce the number of OLAF recommendations that are dismissed at an early stage by national authorities. Moreover, the full transposition of the "PIF Directive", setting the EPPO's area of intervention, needs to be concluded as early as possible. Currently, there are 17 infringement procedures ongoing mainly in relation to the non-conformity of transposition of the definition of criminal offences (i.e., fraud, corruption and misappropriation), sanctions and limitation periods (European Commission, 2022[127]). Also, processes for the definition and finalisation of the EPPO's bilateral working arrangements with non-participating countries (currently five) advance at different speeds and should be accelerated (European Commission, 2021[128]).

While OLAF's anti-fraud supervision is important, countries should improve and build up their national anti-fraud capacities. The Union Anti-Fraud Programme (UAFP) launched by OLAF in 2021 was established for this purpose and commands a budget of €181 million to be allocated over the period 2021-27. The UAFP budget is devoted to activities strengthening the cooperation and assistance between national authorities, for example to prevent and detect custom irregularities (OLAF, 2022[125]). OLAF's support to customs authorities has been particularly evident in the context of the green transition and sustainable development. Given that the green transition is among the top priorities of the Commission (Chapter 2) and the volume of EU funds allocated is sizable, OLAF has conducted investigations in 2021 that helped prevent illicit trade of environmentally harmful goods, such as waste, pesticides and gases, including refrigerant gases - potent greenhouse gases on which the EU has imposed an import threshold. In the area of green funding protection, OLAF issued 10 financial recommendations in 2021 on the recovery of misused funds, whose recipients were proposed to be included in the debarment list of the Early Detection and Exclusion System (EDES) (OLAF, 2022[125]).

EDES, the EU's debarment tool for excluding persons or entities that represent risks to the Union's financial interests from receiving EU funds, is a powerful instrument for the prevention of fraud, corruption, participation in a criminal organisation as well as tax evasion and insolvency, such as non-payment of taxes or social security contributions (OECD, 2021[129]). Like the 5th AML Directive (discussed above), EDES has faced constrains regarding publication of information on persons and entities representing risk. To ensure compliance with the Charter of Fundamental Rights in the area of personal data protection, publication was limited to the most severe cases. Moreover, the scope of EDES' intervention is restricted to economic operators receiving EU Funds under direct or indirect management, representing only 24% of the EU budget. The Commission has already put forward a proposal to amend the Financial Regulation, to extend EDES to also cover funds disbursed under shared management and direct management with

member states (e.g., the Recovery and Resilience Facility). As recommended by the European Parliament, member states should also consider excluding persons and entities on the EDES debarment list from national government budget funding (European Commission, 2018[130]) (European Commission, 2019[131]) (European Parliament, 2021[132]) (European Court of Auditors, 2022[133]).

The recently introduced Conditionality Regulation is another tool to protect the EU's financial interest, which applies to all EU funds. The regulation became applicable in January 2021 and sets the criteria for the application of different budgetary measures, such as the suspension of payments from the EU budget to countries that breach the principles of the "rule of law", such as legal certainty, independence of the judicial system, separation of powers, non-discrimination and prohibition of arbitrariness of the executive powers. The regulation applies where such breaches affect or seriously risk affecting the sound financial management of the EU budget or the protection of the financial interests of the EU (European Parliament and Council, 2020[134]). In February 2022, the EU's Court of Justice dismissed the actions brought by two member states questioning the conformity of the Regulation with the EU Treaties (Court of Justice of the EU, 2022[135]). The Conditionality Regulation mechanism was formally used for the first time by the Commission in April 2022, with regard to one member state. Breaches were found in compliance with EU principles in the areas of public procurement, the effectiveness of prosecutorial action and the fight against corruption (European Commission, 2022[136]) (European Commission, 2022[137]). In December 2022, the Council adopted measures suspending 55% of the Commission's budget commitments with the country (amounting to approximately €6.3 billion), concerning three operational programmes under the EU Cohesion Policy, and prohibiting entry into new legal commitments with any public interest trusts (or entities maintained by them) where the Commission implements the EU budget under direct or indirect management (European Council, 2022[138]).

As of 2022, the Commission is also making recommendations to EU member countries in its annual Rule of Law report, which covers the fight against corruption as one of its four pillars. The objective is to help countries to identify areas where challenges remain and encourage them to put in place the necessary reforms to fully comply with the EU's "rule of law" principles. For example, concerns remain with respect to the full and timely transposition of the 2019 whistle-blower protection Directive, which aims to strengthen and harmonise protection across countries. Whistle-blower protection is an important building block of the EU's fight against corruption but infringement procedures started in January 2022 are still ongoing, as eight member states have not notified the full transposition of the Directive. It is important that the transposition process is accelerated (European Commission, 2023[139]) (European Commission, 2022[140]) (European Commission, 2022[141]) (European Commission, 2022[142]).

Challenges also remain in the investigation and prosecution of high-level corruption cases (European Commission, 2022[137]). Short statutes of limitations and inefficient procedures for lifting immunities are among the factors hindering the finalisation of complex high-level cases, especially when combined with lengthy court proceedings. As a consequence, in some EU countries, results in tackling high-level corruption are still limited, both in terms of investigation and final convictions. On the other hand, good practices in other countries have produced positive results. For example, the use of digital tools in the justice system helped improve the efficiency of judicial proceedings and reduce their length (European Commission, 2022[143]). Furthermore, the extension of the statutes of limitation for corruption cases has reduced the risk of impunity for this type of misconducts (European Commission, 2022[144]). This was also achieved by establishing ad hoc parliamentary investigation committees, to tighten the scrutiny of political corruption cases, and with the institution of a dedicated central office responsible for investigation of high-level corruption cases (European Commission, 2022[145]) (European Commission, 2022[146]). However, countries' commitment is uneven and a more coordinated and operational approach could foster progress in this field.

The Commission launched a new anti-corruption package in May 2023 (European Commission, 2022[147]) (European Commission, 2023[114]) (European Commission, 2023[115]). The proposals for a new directive on combating corruption through criminal law will have to be adopted by the European Parliament and the

Council before becoming effective, while the establishment of a dedicated sanction regime to target "corruption worldwide" under the Common Foreign and Security Policy (CFSP) will have to be approved by the Council. Measures under consideration aim to improve the effectiveness of the EU framework for fighting corruption, for example by dealing with existing legislative and operational barriers and limited prevention measures. Aligning minimum standards across countries, setting minimum rules and boosting coordination at the EU level could improve the effectiveness of anti-corruption measures in several areas. To this end, the proposed Directive would update the EU legislative framework, including by incorporating international standards, such as those in the UN Convention Against Corruption (UNCAC). The aim is to ensure that all forms of corruption are criminalised in all member states, that legal persons may also be held responsible for such offences, that aggravating and mitigating circumstances are harmonised and that offences incur effective, proportionate and dissuasive penalties. The proposed Directive also has a focus on prevention and requires that countries analyse and reduce the risk of corruption, including through building their own information and awareness-raising campaign to create a culture of integrity, but also through the research and education system and civil-society participation programmes. Furthermore, the proposal aims to strengthen enforcement, by providing minimum rules to reduce obstacles to effective investigation and prosecution, such as difficult procedures for lifting immunities or short statutes of limitation for corruption offences.

Further efforts are also needed to strengthen public integrity in EU institutions. In December 2022, a corruption scandal related to lack of controls in the European Parliament underscored deficiencies in the integrity framework in EU institutions. Investigations have resulted in charges with membership of a criminal organization, corruption and money laundering for some members of the European Parliament and connected NGOs, related to presumed bribes from third-country authorities to influence Parliament decisions. While investigations are ongoing, in January 2023 the European Parliament reacted by announcing new measures and tightening existing rules on transparency and lobbying. For example, the obligation to publish information on meetings with lobbyists or campaign groups will be extended to all legislators and members of their staff, while until now this requirement only concerned some Parliamentarians (European Parliament, 2023[148]). Rules on revolving doors will become stricter, by limiting the access to the Parliament of former members. Informal groups promoting external interests will also be prohibited. More substantial measures, such as the creation of an EU-wide independent ethics body as well as an inquiry into corruption in the Parliament have also been announced but will require more time to be implemented (European Parliament, 2022[149]) (European Parliament, 2022[150]) (European Parliament, 2023[151]). Despite these welcome proposals and immediate actions, the scandals may have worsened perceptions of corruption by EU citizens and businesses. Similarly, this may have had a negative impact on trust in EU public institutions worldwide. (European Commission, 2022[152]) (Eurofound, 2022[153]). An in-depth analysis of the deficiencies in the EU's public integrity framework and swift implementation of the announced measures are crucial to rebuilt trust in European institutions.

Table 1.7. Past recommendations on anti-corruption policies

Main recommendations of the 2021 Survey	Action taken since 2021
Step up national efforts to fight corruption and fraud, notably through full and timely transposition of relevant Directives and stronger co-operation with dedicated EU bodies.	The 2022 annual Rule of Law report introduced recommendations to help countries to identify areas where challenges remain and reforms are necessary to fight corruption. The Commission presented an anti-corruption package in May 2023, including proposals for a Directive on combating corruption through criminal law and establishing a dedicated sanctions regime to target serious acts of "corruption worldwide" under the Common Foreign and Security Policy. 17 infringement procedures opened in 2022 in relation to the non-conformity of transposition of the "PIF Directive".
Enforce the suspension of payments from the EU budget or other measures in case of relevant breaches of the rule of law. Assess in due time the effectiveness of the measures adopted and consider tightening this conditionality if needed.	Following breaches of the principles of the rule of law in a member state affecting the EU budget, in December 2022, the Council adopted measures to suspend a share of commitments under certain programmes and prohibit entering into new legal commitments with certain entities.
Set up an independent EU direct anti-money laundering (AML) supervisor and increase co-operation between national authorities.	The Commission proposed four legislative instruments in July 2021, notably a new regulation (AMLR) and a directive (AMLD), a regulation establishing a new AML Authority (AMLA), and a revised regulation on transfers of funds expanding traceability requirements to crypto-assets. The package is currently under "trilogue" negotiations.
Ensure full and timely transposition of the "whistleblower Directive" into national legislation and increase whistleblower protection also in cases of breaches of national law.	Notification of formal letters to 24 countries in January 2022 to ensure the full transposition of the "whistleblower Directive". Infringement procedures started in February 2023 on 8 member countries in relation to the non-conformity of transposition of the Directive.

Table 1.8. Recommendations on selected policies of the Key Policy Insights Chapter

Main findings	Recommendations (Key in bold)
Reduce inflation durably and protect financial stability through targeted policies	
Inflation has become more broadly based and more dispersed across euro area countries.	**Maintain a restrictive monetary policy stance, as needed and depending on data, to ensure inflation expectations remain firmly anchored and inflation decreases durably toward its medium-term target.** Clearly communicate the need to prevent second-round effects of inflation including through wage-price spirals and rising profit margins. Continue the process of quantitative tightening, in a gradual and predictable manner.
Increasing interest rates raise risks to financial stability. Risks are on the rise in the commercial and residential housing sectors degrading asset quality of banks and the non-bank financial sector.	**Continue to use macroprudential policy, including countercyclical capital buffers, to bolster the resilience of the banking sector.** Use targeted instruments to address individual vulnerabilities, if needed. Continue to manage financial risks through effective supervision and resolution plans.
The European banking system is not well integrated. Fragmentation in supervision and oversight as well as inconsistencies in national insolvency frameworks are obstacles to further financial integration.	**Complete the Banking Union by addressing all outstanding issues in a holistic manner.** Harmonise the use of national deposit guarantee schemes and the rules for resolution of banks.
Enhance fiscal sustainability	
A broadly neutral fiscal stance and backloading of the fiscal effort to 2024 weakens the effect of the ongoing monetary policy tightening.	**Implement prudent fiscal policy, consistent with the return of inflation to target, while ensuring that income support for high energy prices is temporary and targeted and preserves energy saving incentives.** Phase out the EU gas price cap. Continue providing technical support to help implement Next Generation EU spending plans.
The Stability and Growth Pact has not delivered countercyclical fiscal policy or ensured a downward path to more prudent debt levels.	**Refocus fiscal rules on debt sustainability and multiannual expenditure plans.** Consider strengthening the role and institutional framework for national IFIs. Make the European Fiscal Board institutionally independent and provide it with sufficient resources.
Protect the Single Market while strengthening resilience and autonomy	
Most state support lies outside the scope of the EU state-aid rules, which have been relaxed during the pandemic.	**Protect the Single Market and avoid relaxing the state-aid rules further.** Improve the governance of the Important Projects of Common European Interest framework and speed up the approval process.
The size of the European support for renewables production is considerable. Effective use of existing EU resources could avoid further common borrowing.	**Re-direct existing EU budgetary resources towards support for green R&D, innovation and early-stage support coordinated at the EU level.** To ensure efficient use of the NGEU funds, focus on result indicators and allow more flexibility in national recovery and resilience plans.
Digital and green transitions are hampered by continuing fragmentation of regulations and standards across the EU.	**Coordinate harmonization of national regulations and their alignment with EU rules for digital services provision, the circular economy and building codes**. Streamline the permitting procedures for new projects in the area of critical raw materials and clean technologies. Introduce sustainability requirements to prioritize clean technologies produced to European standards. Introduce harmonised Ecodesign standards to bolster circularity and recycling of raw materials.

Increase labour mobility	
The administrative requirements for posting of workers are often onerous and the regulatory and administrative burden continues to vary across countries.	Reduce the costs of posting workers by introducing a common EU declaration system and harmonized documentation requirements, including exemptions.
Strengthen the anti-corruption framework	
Corruption reduces economic efficiency, leads to waste of public resources and undermines citizens' trust in public institutions.	**Continue to coordinate national efforts to fight corruption and fraud.** **Align minimum standards across countries and strengthen prevention measures.**
Rules to protect the EU's financial interest have been strengthened but challenges remain, notably in the transposition of Directives and the prevention of fraud and financial crimes.	Ensure that information on beneficial ownership of companies and on persons/entities representing risks to the Union's financial interest can be accessed by users pursuing anti-money laundering and anti-fraud objectives, while determining sufficient protection of personal data in compliance with the Charter of Fundamental Rights. Extend the Early Detection and Exclusion System's (EDES) scrutiny to economic operators that are under shared management.
Lack of controls and misuse of resources in the European Parliament revealed weaknesses in public integrity and rules on transparency and lobbying.	Accelerate the establishment of an EU-wide independent ethics body and strengthen rules on transparency and lobbying regulating the activity of Members of Parliament.

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2 Accelerating the green transition

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The EU's ambitious Green Deal aims at achieving net zero emissions by 2050. The EU is starting from a relatively good position. It has successfully reduced greenhouse gas emissions over the past decade. But further efforts are needed to reach the net zero target. These include an extension of emission trading to agriculture and the phase-out of generous subsidies for fossil fuels. Such efforts should be complemented by additional measures to shift to clean energy, notably more integrated electricity markets and deeper capital markets that provide the necessary investment in new technologies. Accelerating the green transition will also involve costs for displaced workers. Bolstering workers' mobility and training will help improve labour reallocation and reduce transition costs.

Over the past decade, the European Union (EU) has reduced greenhouse gas (GHG) emissions through improvements in energy efficiency, and a gradual switch to less polluting energy sources, including an expansion of renewables. However, emission reduction happened mostly in energy and industrial sectors covered by the EU's Emission Trading System (ETS). This also reflects lower abatement costs in these carbon-intensive sectors. Sectors not covered by the ETS, notably agriculture, buildings, and transportation, have contributed little to the overall emission reduction. Looking ahead, further efforts are needed across all sectors, but particularly in non-ETS sectors, to reach the ambitious net zero emission target by 2050. This entails using the entire toolbox of mitigation policies, including stronger carbon pricing, subsidies for new technologies, and regulatory measures.

This chapter provides recommendations to achieve emission reductions effectively and equitably. The transition to a low-carbon economy will have to overcome challenges at the Member State, EU, and international level. But there are also opportunities, as Russia's war of aggression against Ukraine increased the impetus to speed up investments in clean energy to secure energy supply. This chapter focuses on the internal market reforms needed to achieve the EU's climate change mitigation objectives. A discussion of climate change adaptation in EU countries can be found in *OECD Environmental Performance Reviews*.

The remainder of the chapter is structured as follows. The first section reviews progress towards the new emission reduction targets. An overview of the main mitigation policies to reach the new emission reduction targets follows. The third section discusses mitigation policies to reach the net zero emission target by 2050 in a more cost-effective way, including the expansion of the ETS. The fourth section focuses on policies for the three main emitting sectors: agriculture, energy, and transportation. The final section concludes with a discussion of policies to reduce reallocation costs for workers affected by the green transition.

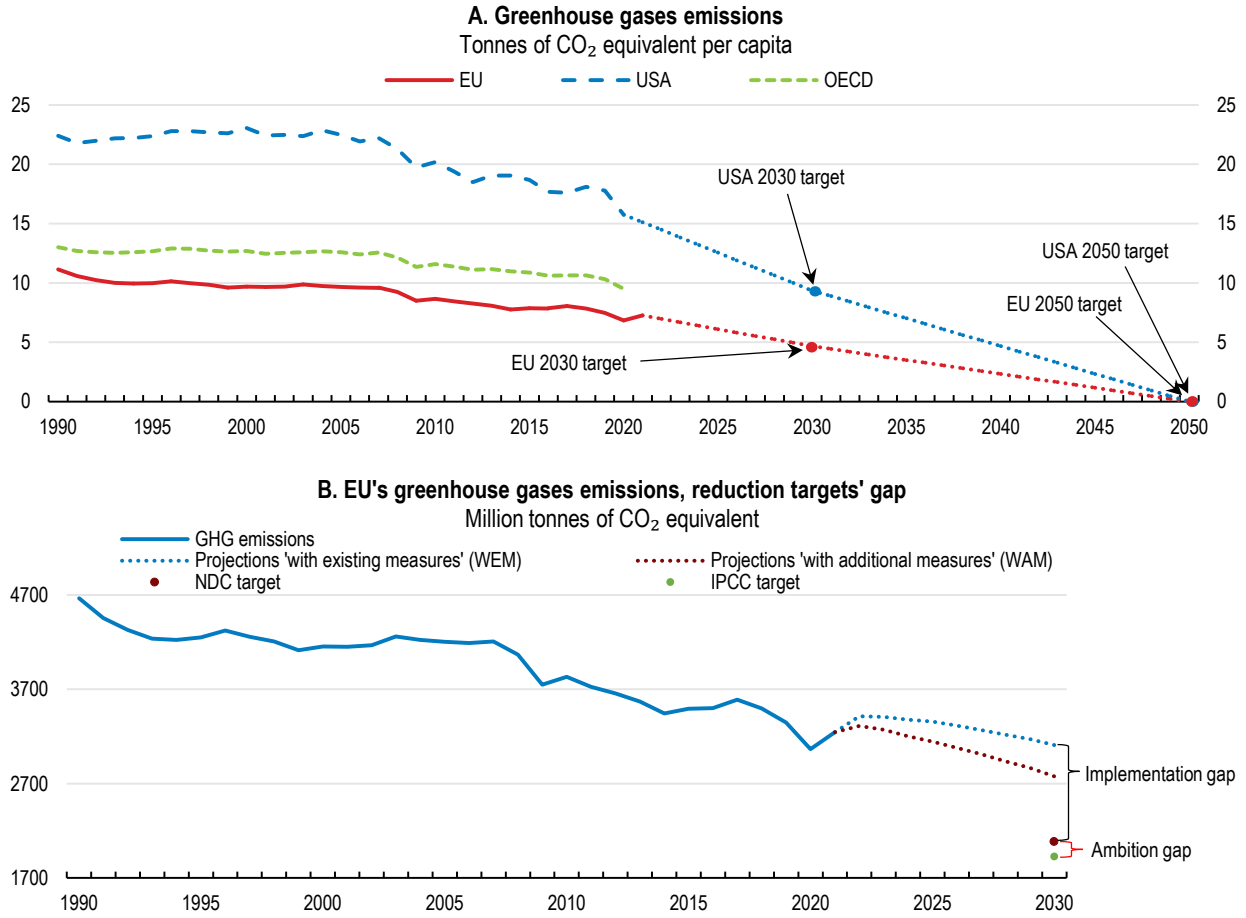
Progress towards net zero

The main objective of the EU's climate policy is to achieve net zero GHG emissions by 2050 (European Commission, 2020[1]). In addition, there is an intermediate target of reducing GHG emissions by 55% in 2030 (compared to 1990). Other targets include increasing the share of renewables to 42.5% of final energy consumption by 2030, provided that the agreement on a revised Renewable Energy Directive is adopted, and reducing final energy consumption by at least 11.7% by 2030 (compared with the energy consumption forecasts for 2030 made in 2020).

The EU is starting from a relatively good position to reduce emissions: it has reached its previous climate targets for 2020, including the targets for GHG emissions reductions and the share of renewable energy in final energy consumption. GHG emissions were reduced by 34% between 1990 and 2020, well above the 20% reduction target (EEA, 2021[2]). Similarly, the share of renewables in energy consumption stood at 21.3% in 2020, above the 20% target. Nonetheless, the EU's new and more ambitious target of a 55% reduction in GHG emissions by 2030 (relative to 1990) will require a significant acceleration of emission reduction efforts (Figure 2.1). To illustrate the challenges ahead, reaching the 2030 target requires a doubling of the rate of emission reductions relative to 1990 and 2020 (European Environment Agency, 2022[3]). Similarly, the rate of deployment of renewables would need to triple compared to the period 1990 to 2020 to reach the new target of 42.5% of renewables in the energy mix by 2030 (IEA, 2022[4]).

Figure 2.1. Reductions in greenhouse gas emissions need to accelerate

Net greenhouse gases emissions, tonnes of CO_2 equivalent per capita



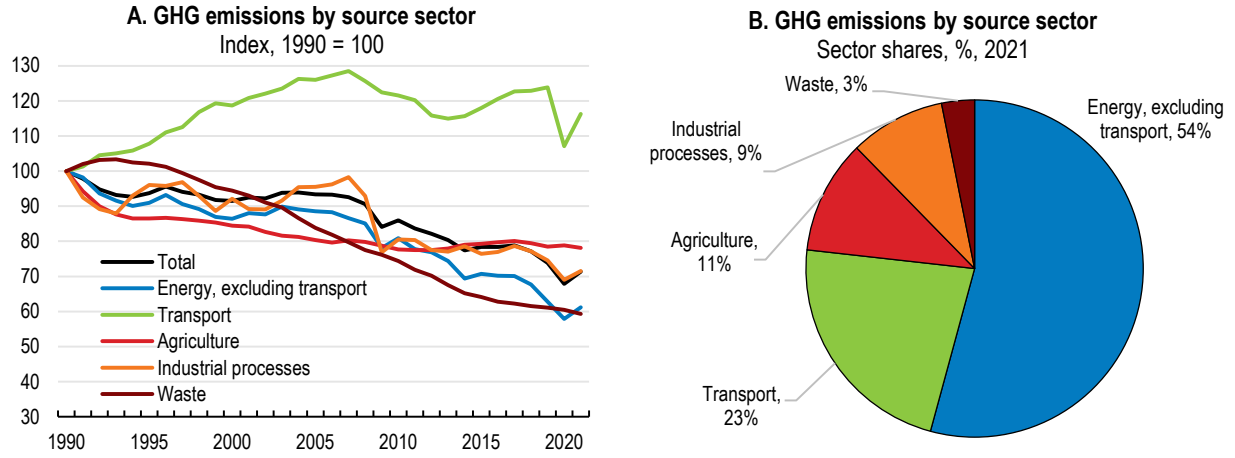
Note: Greenhouse gas (GHG) emissions include those from the land use/land use change and forestry sector (LULUCF). Data on the EU's GHG emissions for 2021 are taken from the European Environment Agency (2022). In Panel B, projections "with existing measures" (WEM) refer to 2019 EU policies and "with additional measures" (WAM) to new policies under the more ambitious FIT for 55 package. GHG emissions as projected by the respective country. NDC stands for Nationally Determined Contributions under the 2015 Paris Agreement. IPCC stands for the Intergovernmental Panel on Climate Change. The IPCC target is equivalent to a 43% reduction compared to 2019 emissions, which is needed to limit global warming to around 1.5°C according to the IPCC (2022).

Source: Eurostat; OECD Environment database; OECD Population database; European Environment Agency; IPCC (2022[5]); United Nations (2022[6]); and OECD calculations.

StatLink https://stat.link/2u5k74

The sectors that produce the most emissions are energy (power and heat generation, including in industry and buildings), transport and agriculture, accounting for nearly 90% of total EU GHG emissions (Figure 2.2). Over the past two decades, the most notable emission reductions happened in sectors covered by the ETS, which includes energy-intensive industry and power generation. GHG emissions declined by 41% in these sectors between 2005 and 2020, driven mainly by power generation. This also reflects lower abatement costs of these carbon-intensive sectors. In contrast, emissions in transportation increased (except during the pandemic), while they remained flat in agriculture (EEA, 2021[7]). Achieving emission targets will require all sectors to reduce their emissions and can be reached with a substantial acceleration of emission reductions in agriculture, buildings, and transportation. Such an acceleration of emission reductions could prove much more difficult due to the higher abatement costs in in agriculture, buildings, and transportation.

Figure 2.2. Energy, transport, and agriculture account for a large share of emissions



Note: Excluding land-use, land-use change and forestry (LULUCF).
Source: OECD Environment Statistics database.

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The EU's climate mitigation policies

The EU decided on a set of more ambitious climate mitigation policies in 2023 (Box 2.1). The EU has been a frontrunner in mitigation policies and introduced in 2005 the world's first and so far, the largest emission trading system. Apart from emission trading, climate objectives are pursued through a toolbox of mitigation policies, including subsidies as well as regulatory measures. The latter include stricter minimum energy efficiency standards for buildings, and more stringent emissions standards for cars. Taxation is mainly the domain of EU countries, although the EU sets minimum tax rates for energy, including transportation and heating fuels.

Box 2.1. The EU's new climate mitigation policies

The 'Fit for 55' package is a set of proposals to revise the EU's climate-related legislation in order to achieve at least 55% emissions reductions by 2030 (relative to 1990, against a previous target of 40%), and net zero emissions by 2050 (European Council, 2023[8]). The 2050 net zero emission target is set at the EU level, but the Effort Sharing Regulation sets 2030 emission reduction targets for EU countries to help the EU reach net zero CO_2 emissions by 2050. The 'Fit for 55' package includes, among other things, the following policies:

- Extension of the EU's emissions trading system (ETS) to maritime transport. The ETS will apply to intra-European Economic Area (EEA) voyages and to half of the emissions on voyages from and to the EEA from third countries. The ETS already covers power generation, energy-intensive industry, and intra-European aviation.
- A more ambitious emission-reduction target for ETS sectors and emission sources, amounting to a 62% reduction of emissions in 2030 (compared to 2005 levels), against the previous 43% target.
- Creation of a separate new emission trading system for fuel combustion in buildings, road transport and industry (ETS 2). The objective is to reduce emissions in road transportation, buildings and industrial heating processes by 42% in 2030 (compared to 2005 levels). The carbon price is expected to be lower in the new ETS than in the traditional ETS. A potential merger of the new ETS with the traditional ETS will be reviewed in 2031.

- More ambitious emission reduction targets for non-ETS sectors: The Effort Sharing Regulation (ESR) sets legally binding 2030 emissions reduction targets for each Member State for sectors not covered by emission trading. These current non-ETS sectors are responsible for nearly 60% of the EU's total emissions and include road transport, buildings, agriculture, waste management and small industry, although emission trading will be expanded to fossil fuel producers in transport and buildings (see above). The EU-level emission reduction target for 2030 for these sectors was increased from 29% to 40% (compared to 2005 levels), with updates for national targets. However, there is no target for emission reductions in these sectors beyond 2030.
- More ambitious targets for net CO_2 removals from the land use, land-use change and forestry (LULUCF) sector. CO_2 removals by the LULUCF sector are accounted for in the overall 2030 emission reduction target. The target for net CO_2 removals from the LULUCF sector was increased from 225 million tonnes (Mt) of CO_2 equivalent to 310 Mt CO_2 equivalent in 2030. This translates into higher national targets for 2030 for the increase of CO_2 removals.
- Starting in 2026, a carbon border adjustment mechanism (CBAM) will impose a charge on the emissions embodied in specific carbon-intensive EU imports, including aluminium, cement, electricity, fertilisers, hydrogen, iron, and steel, based on their carbon content. The importer will be charged the EU ETS price, deducting any carbon price effectively paid in the country of origin. CBAM will be based on the actual emission content of goods, declared by importers and verified by experts, thus allowing to take into account the effect of non-pricing policies on the emission content.
- Phasing out of the free allocation of emission allowances to aviation by 2026. Free emission allowances will also be phased out for sectors covered by the CBAM over a nine-year period (from 2026 to 2034). In industry and transport, a decision has yet to be taken on the phase-out of free ETS allowances.
- A revised Energy Taxation Directive will broaden the energy tax base. Tax exemptions and reduced rates, including for biomass and gas heating, will be phased out and the tax base will be expanded to include fuels for intra-EU aviation and maritime transport by 2033. It will also set minimum energy tax rates for transportation and heating fuels based on energy content and environmental performance, with fossil fuels being taxed most heavily. So far, energy taxation was based on volume (see below). Discussions are still ongoing in the Council and any change to the Energy Tax Directive will require unanimity.
- More stringent emission standards for new vehicles foresee a complete halt to the sale of combustion engines from 2035, except for internal combustion engine cars running on e-fuels. This means that permitted emissions would be gradually lowered so that after 2035 new vehicles would be only allowed to emit zero CO_2.

The RePowerEU plan is a response to Russia's war of aggression against Ukraine and aims at making the EU independent from Russian fossil fuels before 2030 and strengthen energy security. The plan proposes to revise the Recovery and Resilience Facility to make available EUR 225 bn in unused loans and 20 bn in unused grants. Its main elements include:

- An increase of renewable energy sources in the overall energy mix to at least 42.5% by 2030. This should be accomplished via the tripling of the level of solar photovoltaic and wind capacity from 350 GW in 2021 to 1080 GW by 2030 (600 GW of solar and 480 GW of wind).
- Additional investments of EUR 245 billion in energy security, including 210 billion in gas pipelines, LNG terminals and the power grid by 2030.

Source: European Council (2023[8]).

Meeting the more ambitious emission targets will require higher carbon pricing, together with more stringent regulations. Based on model simulations conducted for this *Survey*, and with the assumed regulatory changes, the ETS carbon price would need to increase roughly five-fold to reduce GHG emissions by 55% in 2030 (relative to 1990 levels), compared to the previous target of 40% emission reductions in 2030. This translates into an ETS price of roughly EUR 210 per CO_2 tonne in 2030 (in 2023 prices), up from around EUR 90 per CO_2 tonne in mid-June 2023 (Figure 2.3). The higher ETS carbon price reflects that additional emission reduction efforts in sectors covered by the ETS will need to happen in activities with higher abatement costs, now that cheaper abatement options have already been exhausted. Such an increase in the carbon price will also lead to economic costs in terms of real incomes and competitiveness (Box 2.2). Still, these costs are necessary to avoid the potentially much higher economic costs from failure to reduce global emissions and limit climate change, which are not considered in the simulations.

Figure 2.3. The ETS price has risen recently

ETS carbon price, Euro per CO_2 tonne

Source: Investing.

StatLink https://stat.link/bv7gtc

Carbon pricing is the first best and the most efficient measure to reduce emissions. In this regard, it is welcome that the EU is extending carbon pricing to maritime transport, road transport and heating fuels (see below). To address the impacts of higher carbon prices on households most affected by the green transition, ETS revenues are being given back to countries, including via the Social Climate Fund (see below). However, given the need to accelerate the green transition, carbon pricing alone will not be sufficient to reach net-zero emissions by mid-century (D'Arcangelo et al., 2022[9]). Simulations conducted for this *Survey* show that reaching the more ambitious 2030 emission reduction target will also require more stringent emission standards for vehicles, improvements to energy storage, and a more integrated European electricity market. This needs to be complemented by national policies such as the coal phase out (Chateau, Miho and Borowiecki, 2023[10]). Reducing barriers to the deployment of clean energy, including lengthy permitting processes, may have a strong impact in the short term. In addition, subsidies can help lower the costs of new low-emission technologies and accelerate their adoption, although they can be costly and inefficient. Also, carbon pricing can have potentially important social repercussions and there are concerns that higher carbon pricing will lead to a political backlash. Ways to increase public acceptance of carbon pricing include using carbon pricing revenues for income tax reductions, for example (Dechezleprêtre et al., 2022[11]).

The ETS is the cornerstone of the EU's climate mitigation policy as it determines a market-based carbon price and maintains a level playing field across countries consistent with the Single Market. A carbon price should in principle apply to all polluting activities in line with their environmental impacts to equalise burden sharing and align marginal abatement incentives. Currently, the ETS covers the main emitting sectors power generation, energy-intensive industry, and intra-European aviation. The ETS will be extended to all domestic shipping emissions and half of emissions from international shipping, and a new emission trading system will be established for road transport and heating fuel suppliers as well as fuels for industrial heating processes currently not covered by the ETS, which is welcome (Box 2.1). The current limitation of emissions trading to industry and energy has historical reasons and no large country in the world currently employs uniform carbon pricing. When the ETS was set up in 2005, only large industrial enterprises and utility companies had emission monitoring and reporting systems in place to verify and price emissions. Since then, the ETS has been successful in reducing emissions (Dechezleprêtre, Nachtigall and Venmans, 2018[12]; Bayer and Aklin, 2020[13]).

The ETS is now well-established and widely accepted, suggesting it can be extended to shipping, transport and heating fuels but also to other sectors such as agriculture. The expansion of emission trading will require setting up systems for monitoring and reporting emissions. Pilots are already in place for agricultural emissions from livestock, peatland-rewetting, and agroforestry (European Commission, 2021[14]). These could serve as a starting point and be subsequently scaled up, although they are technically not easy to implement on a bigger scale. Moreover, expanding carbon pricing will take time. Other approaches to remove bottlenecks for the implementation of the transition, such as reducing barriers to the deployment of clean energy, may have a stronger impact in the short term.

The extension of emission trading will also involve costs. This reflects that sectors such as agriculture, transportation and buildings are difficult to integrate into emission trading. An exception is suppliers of transportation and heating fuels for which ETS 2 will apply from 2027 (see Box 2.1). There are many smaller producers involved that may have difficulties affording abatement technologies. Households would be affected by higher agricultural and fuel prices, although they will not be directly involved in emission trading. Moreover, monitoring costs are high as these sectors do not have systems in place for emission reporting and verification. Another issue is that emission reductions in current ETS sectors also reflect lower abatements costs of carbon-intensive power generation and energy-intensive industry. Achieving emission reductions in the agriculture and transport sectors could prove much more difficult due to their higher abatement costs. And finally, higher carbon pricing in these sectors will also have an impact on their competitiveness.

Setting legally binding emission targets can strengthen government accountability (D'Arcangelo et al., 2022[9]). In this regard, the overall net zero emission target by mid-century is welcome as it provides a clear long-term objective for governments, households, and businesses. However, the system of complex and overlapping medium-level climate targets may hamper the EU's progress towards emission reductions (see below). For example, achieving the 2030 renewable energy target (achieving 42.5% renewable energy production by 2030) relies on burning biomass, although biomass can be emission-intensive (Figure 2.4). Burning woody biomass immediately releases CO_2 in the atmosphere, while reforestation takes time. This means that the emission intensity of biomass depends on the time needed for reforestation and the type of feedstock (Brack, Birdsey and Walker, 2021[15]; Schnorf et al., 2021[16]).

Box 2.2. A Computable General Equilibrium analysis of the economic effects of the EU's 'Fit for 55' policies

The OECD ENV-Linkages model, a dynamic global Computable General Equilibrium (CGE) model, is used to analyse the economic effects of implementing the EU's 'Fit for 55' climate mitigation policies (Chateau, Dellink and Lanzi, 2014[17]). A 'Fit for 55' scenario, where GHG emissions are reduced by at least 55% in 2030 (compared to 1990 levels), is compared to an "EU reference scenario 2020" based on 2019 policies, i.e., a reduction of GHGs emission by 40% in 2030 (compared to 1990 levels). Another comparison is made to a scenario without any climate policy action. The model projects macroeconomic, sectoral, energy and emission trends for the EU as a whole, and for five larger EU economies separately (France, Germany, Italy, Poland and Spain), up to 2035. The policies implemented are based on the EU's 'Fit for 55' policies and national level policies, as described in National Energy and Climate Plans. The model also includes the effects of Russia's war of aggression against Ukraine on fossil fuel demand and prices in the EU. Other model assumptions include rising energy efficiency, although the model does not assume major technological innovations that reduce the costs of clean energy. Labour is uniform in the model, with workers having one type of skill, and labour reallocation from declining sectors (e.g., fossil fuel power generation) to growing sectors (e.g., renewable power generation) is assumed to be frictionless. The results are presented in more detail in the technical background paper for this *Survey* (Chateau, Miho and Borowiecki, 2023[10]).

- The **reference scenario** is calibrated to achieve the same emission reductions and carbon price as the EU Reference Scenario 2020 (European Commission, 2021[18]). It implies an EU-wide GHG emission reduction of 42.5% in 2030 (relative to 1990 values) in net terms, i.e., including emissions from the land use and forestry (LULUCF) sector. This translates into a 40% gross emission reduction (relative to 1990), i.e., excluding emissions from the LULUCF sector.
- The '**Fit for 55' scenario** assumes a more ambitious 2030 GHG emission reduction target for sectors covered by the ETS, rising to 62% from 43% in the reference scenario (relative to 2005). It also includes an increase in the emissions reduction target in 2030 for non-ETS sectors, up to 40% from 29% in the reference scenario. Final energy consumption decreases by 11% relative to 2023 and the share of renewables in the energy mix goes from 32.5% in 2023 to 42.5% in 2030. To achieve these targets, multiple policy instruments are implemented in the model to reflect new EU policies: i) the extension of the EU ETS system to maritime transport, ii) the creation of a carbon border adjustment mechanism (CBAM) for EU ETS sectors from 2026, iii) a new ETS 2 for fuel combustion in buildings, road transport and industry, as well as iv) national policies such as the Effort Sharing Regulation for non-ETS sectors (see above) and coal phase-outs in Germany, France, Italy, and Spain. The scenario also assumes that one third of ETS carbon price revenues are used to finance investment in the electricity grid, with the remaining two thirds given back to households as lump sum payments and subsidies for the take-up of electric vehicles and building renovations to make them more energy efficient.

Under the 'Fit for 55' scenario, the EU is projected to reach its target and reduce GHG emissions by 55% in 2030 (relative to 1990) (Table 2.1). This reflects, among other things, stronger abatement in the power sector, driven by a faster rollout of renewables, together with stronger energy saving efforts across all sectors. A key assumption is that the need for conventional backup capacity for renewable generation, notably gas, will fall significantly from about 40%-50% to 7% of total electricity generation on the back of improved energy storage and electricity transmission and distribution across the EU. Emission reductions are achieved in large part due to a stronger shift to renewables in Germany and Spain. In contrast, the electricity mix remains more carbon intensive in Poland, where emission reductions are driven by improvements in energy efficiency (Table 2.2).

Table 2.1. Economic effects of EU 'Fit for 55' policies in 2030

	Reference scenario	Fit for 55 scenario	Percentage change compared to reference scenario (in %)
Emissions and energy mix			
Total GHG emissions percent reduction vs 1990 (excluding LULUCF)	-42.4	-53.6	-11.2*
Total GHG emissions percent reduction vs 1990 (including LULUCF)	-45.4	-57.2	-11.8*
GHG emissions percent reduction in the ETS sectors vs 2005	-44.3	-59.1	-14.8*
GHG emissions percent reduction in the ETS 2 sectors vs 2005	-33.0	-42.2	-9.2*
GHG emissions percent reduction in the ESR sectors vs 2005	-29.7	-37.5	-7.8*
GHG per capita	5.6	4.4	-21.5
Total final energy consumption (million tons of oil equivalent)	1011.6	955.5	-5.5
Electricity generation (terawatt hour)	3063.7	3650.7	19.2
Share of renewables in electricity generation	57.1	70.3	13.2*
Share of fossil fuels in electricity generation	24.3	10.2	-14.1*
Macroeconomic effects			
Carbon price (EUR at 2020 prices) for EU-ETS	30.4	177.8	485.6
Real GDP per capita (EUR at 2014 prices)	32493.2	32157.3	-1.0
Real gross fixed investment (billion EUR at 2014 prices)	2.3	2.3	-0.5
Real private consumption (billion EUR at 2014 prices)	9.2	9.2	-0.5
Employment (million)	212.2	211.7	-0.2

Note: * denotes percentage point. Simulations are conducted using the OECD ENV-Linkages model. The table shows results from a scenario introducing the EU 'Fit for 55' targets, which means that the EU reduces net GHG emissions by 55% in 2030 (relative to 1990). Results are shown relative to the reference scenario, which is based on 2019 policies, meaning that the EU reduces its net GHG emissions by at least 42.5% in 2030 (relative to 1990). Non-EU countries are assumed to reduce emissions as in the reference scenario.
Source: Chateau et al., forthcoming.

Comparison of economic costs under 'Fit for 55' vs. the scenario without climate action. Overall, the economic costs of climate policies are higher when compared to a scenario of no policy action taken. In such a scenario, there is no emission trading in the power sector and energy-intensive industries and no regulatory measures to reduce emissions in transport and buildings sectors. Compared to such a scenario of no policy action, 'Fit for 55' policies are projected to lead to a loss in GDP per capita of 1.2% in 2030. As 'Fit for 55' policies are being implemented gradually until 2030, higher economic effects are projected to materialise only after 2030, leading to a loss in GDP per capita of 2.3% in 2035 (compared to the scenario of no policy action).

Comparison of economic costs between the two scenarios with climate action. The 'Fit for 55' policies are projected to lead to a moderate loss in GDP per capita of 1% in 2030 compared to the reference scenario, reflecting increasing production costs on the back of higher carbon pricing. Countries with a current larger emission intensity of production are projected to see higher income losses, notably Poland. Overall, employment will slightly decrease but this hides differences across countries.

The economic effects already consider benefits from using carbon pricing revenues to raise investment in the energy transition, notably in electricity grids. Without such growth-enhancing measures, the negative effect of climate policies on GDP would be higher. Other downside risks to the projections include higher-than-expected inflation, continued supply chain problems and skill shortages, as well as a slower-than-expected energy transition. Similarly, labour market rigidities are likely to raise the costs of labour reallocation across countries and sectors, adding to the costs of the green transition.

Under 'Fit for 55' policies, higher carbon pricing will lead to a loss of competitiveness of energy-intensive industries, as measured by losses in market share of energy-intensive industries on world markets, and losses to their gross output (compared to the reference scenario). Additional projections show that CBAM may mitigate only partly the loss of competitiveness of energy-intensive industries in the EU (Chateau, Miho and Borowiecki, 2023[10]).

Table 2.2. Economic effects of EU 'Fit for 55' policies in 2030, by country

Percentage changes compared to the reference scenario (in %)

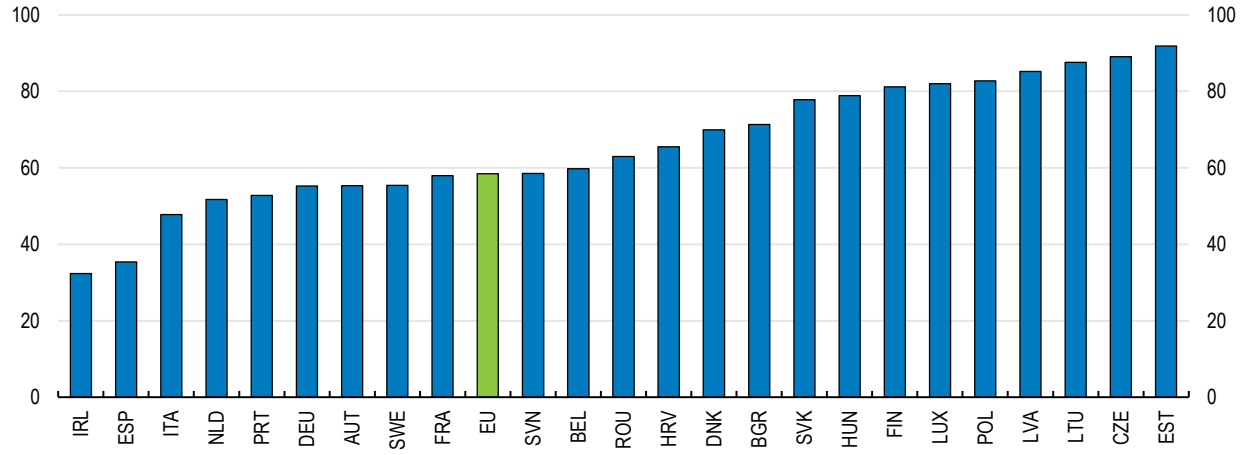
	EU	DEU	ESP	FRA	ITA	POL
Total GHG emissions reduction	-11.2*	-10.5*	-14.2*	-4.9*	-10.0*	-21.5*
GHG per capita	-21.5	-26.6	-19.9	-9.4	-18.4	-33.3
Total final energy consumption	-5.5	-5.6	-8.0	-2.0	-5.0	-11.0
Electricity generation	19.2	29.9	7.9	17.4	16.1	31.8
Share of renewables in electricity generation	70.3	87.2	87.4	44.2	73.9	73.0
Share of fossil fuels in electricity generation	10.2	12.8	3.5	2.3	26.1	27.0
Share of renewables in electricity generation, percentage point change compared to the reference scenario	13.2*	24.9*	4.9*	1.1*	19.9*	43.2*
Share of fossil fuels in electricity generation, percentage point change compared to the reference scenario	-14.1*	-24.9*	-5.3*	-2.5*	-19.9*	-43.2*
Real GDP per capita	-1.0	-1.1	-1.1	-0.6	-1.0	-3.0
Real gross fixed investment	-0.5	-0.5	-0.5	-0.3	-0.6	-0.8
Real private consumption	-0.5	-0.6	-0.3	-0.3	-0.6	-1.8
Employment	-0.2	-0.2	-0.2	-0.1	-0.2	-0.8
Market share of energy-intensive industries**	-1.0*	-0.2*	-0.1*	0.1*	0.0*	-0.1*
Real gross output of energy-intensive industries**	-3.9	-2.6	-4.9	-2.3	-2.6	-8.7

Note: * denotes percentage point. ** Energy-intensive industries are iron and steel, chemicals, pulp and paper, non-metallic minerals and non-ferrous metals. Simulations are conducted using the OECD ENV-Linkages model. The table shows results from a scenario introducing the EU 'Fit for 55' targets, which means that the EU reduces emissions by 55% in 2030 (relative to 1990). Results are shown relative to a reference scenario, which is based on 2019 policies, meaning that the EU reduces its emissions by 42.5% in 2030 (relative to 1990). Non-EU countries are assumed to reduce emissions as in the reference scenario.
Source: Chateau et al., forthcoming.

The analysis also studies the effect of Russia's war against Ukraine on reaching emission reduction targets. Without the war, the EU would have had access to cheaper Russian fossil fuels, resulting in 0.6% higher GDP per capita in 2030. But lower fossil fuel prices also lead to higher demand for fossil fuels. Such initially higher fossil fuel demand implies higher mitigation costs under the 'Fit for 55' scenario, leading to a loss in GDP per capita of 1.2% (relative to the no-war reference scenario), compared to a loss in GDP per capita of 1% under the 'Fit for 55' scenario with war in Ukraine (relative to its respective reference scenario). This reveals important costs from postponing climate change mitigation.

Figure 2.4. Biomass accounts for a large share of renewable energy supply

Biomass as a share of renewables total energy supply, %, 2021



Source: OECD Energy Statistics database; and OECD calculations.

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The structure of medium-level targets with multiple objectives makes it difficult to find market-based solutions that minimise abatement costs. For instance, if countries are not on track to meet the renewable energy target for 2030, additional investment in renewables will be needed. Such investment will not be driven by abatement cost considerations, but by the impetus to expand renewables to reach the target. Such an investment boost may lead to shortages of labour and key component and raw materials, including lithium, nickel and cobalt needed for renewables. In principle, a more cost-efficient approach would entail pricing all emissions and letting market forces determine the appropriate technology mix with lowest abatement costs to reduce emissions. Carbon pricing leaves the decision on when and where to cut emissions to those who know best about their abatement costs (OECD, 2005[19]).

But carbon pricing alone will not be sufficient to reach emission targets. Multiple market failures call for comprehensive mitigation strategies relying on a policy mix involving pricing and non-pricing policies. For instance, new technologies that are not yet cost competitive may require subsidies, including carbon capture and green hydrogen. The EU's flagship research and development programme Horizon Europe provides funding of EUR 95.5 billion (or 4.7% of the 2021-27 EU budget) for such technologies. Moreover, revenues from the ETS are used to support innovation, including EUR 40 billion (or 2% of the EU budget) for low-carbon technologies under the Innovation Fund (assuming an ETS price of EUR 75 per tonne of CO_2). Despite these efforts, the pace of climate-related innovation as measured by patent filings and venture capital funding going to climate-related start-ups has decreased over the past half decade (Cervantes et al., 2023[20]). This also reflects that EU countries' support for renewables mainly benefits mature technologies such as biomass, solar and wind energy (see below). This is despite the EU's state-aid framework, which encourages EU countries to steer subsidies towards new technologies that are not yet competitive.

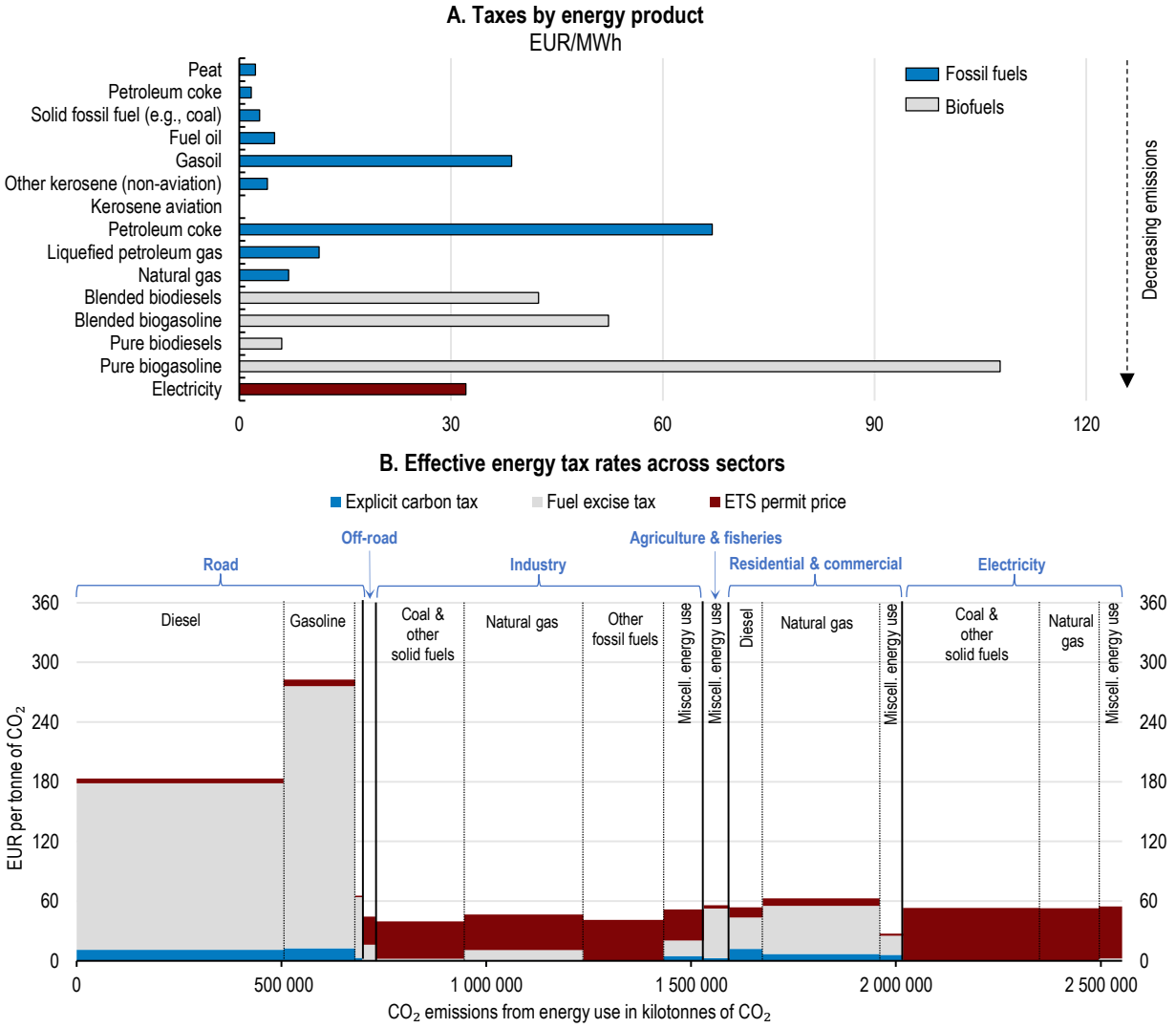
Frequent policy changes may increase the costs of achieving environmental objectives. The EU has recently set more ambitious emission reduction targets for 2050, which is welcome as it provides a clear path for emission reductions going forward. However, the overall 2050 target is complemented by more stringent intermediate 2030 targets for emissions, renewables, and energy efficiency (European Council, 2023[8]). All these changes to intermediate targets have been further compounded by the global energy crisis, which prompted the European Commission to call for a diversification of fossil fuel supplies and additional investments in gas pipelines and LNG terminals under the RePowerEU plan. These measures were taken by the EU Member States with a due regard to securing energy supplies and preventing a deterioration of their competitiveness. The EU is trying to accelerate the pace of the transition, which is

welcome. Nonetheless, frequent policy changes may lead to adverse social consequences, undermining social acceptance of climate policy. They may also lock in sub-optimal technology, making the transition more costly. Such contradictions and frequent alterations may come at the expense of the stability and predictability of climate policy. Policy stability is crucial to attract the private investment necessary to make the green transition.

Policy consistency is missing as national support for fossil fuels contradicts EU-wide decarbonisation efforts. Fossil fuels continue to benefit from tax reductions and exemptions, such as exemptions on aviation and maritime fuel as well as reduced rates for heating gas (Figure 2.5, Panel A). The EU Commission proposed to reform EU-wide minimum energy tax rates for energy products, including for fossil fuels, to encourage energy efficiency and the use of sustainable fuels. According to the proposal, exemptions, and reduced rates for fossil fuel should be phased out, and taxation of fuel would no longer be based on volume but on energy content and environmental performance, with fossil fuels being taxed most heavily. This would also include extending the energy tax base to fuels for aviation and maritime navigation, as well as to biomass. However, the proposal foresees only a gradual phase-out of reduced rates and exemptions for natural gas, maritime and aviation fuels until 2033, which is too late to help meet ambitious emission reduction and energy efficiency targets for 2030. Meanwhile, tax exemptions and reduced rates for fossil fuels reduce their effective carbon price (European Court of Auditors, 2022[21]) (Figure 2.5, Panel B). This is particularly a concern in cases when such exemptions and reduced rates lead to a lower effective carbon price than the ETS price. First, the EU should broaden the energy tax base by phasing out reduced rates and exemptions to make taxation of fossil fuels uniform across sectors and different uses of energy. Second, minimum tax rates for fossil fuels should be introduced that are based on energy content and environmental performance, as proposed by the Commission. Such minimum tax rates should be the same for all non-ETS sectors to ensure equal burden sharing and efficiency. Thereafter, these minimum tax rates can be gradually increased to the ETS price level where this is not the case yet. Such changes will be difficult to adopt as changes to energy taxation require unanimity among EU countries.

Apart from carbon pricing and subsidies, the EU also sets regulations and standards for agriculture, transportation, and buildings, among other things. In agriculture, the Nitrate Directive and the Water Framework Directive set stringent standards for water quality and nitrous oxide emissions from fertiliser use. In transportation, the EU announced a complete halt to the sale of combustion engines from 2035, with potential exceptions for vehicles powered exclusively by e-fuels. Another area is the insulation of buildings, where the EU Commission proposed minimum energy performance standards to increase energy savings, which will be key to reduce emissions from buildings (European Council, 2023[8]).

Figure 2.5. Fossil fuels benefit from a favourable tax treatment



Note for Panel B: Data refers to EU member countries that are also members of the OECD (22 countries). Effective carbon rates (ECRs) have been averaged by sector and energy category. Year of coverage is 2021, taxes as of 1st April 2021. ETS coverage estimates are based on OECD (2021[22]), with adjustments to account for recent coverage changes. Instrument coverage: specific fuel excise taxes, explicit carbon taxes, ETS (Emission Trading System) permit price includes German National ETS besides EU-ETS. No fossil fuel subsidies or other GHG are accounted for. The ETS permit price is the price of tradable emission permits in mandatory emissions trading and cap-and-trade systems representing the opportunity cost of emitting an extra unit of CO_2 equivalent, regardless of the permit allocation method. "Off-road" and the third portion of "Road" refer to "Miscellaneous energy use".
Source: European Court of Auditors (2022[21]), and OECD (2022), Pricing Greenhouse Gas Emissions: Turning Climate Targets into Climate Action, OECD Series on Carbon Pricing and Energy Taxation, OECD Publishing, Paris, https://doi.org/10.1787/e9778969-en.

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Towards more efficient mitigation policies

Phasing out free allowances could improve the effectiveness of the ETS carbon pricing. Likewise, aligning effective carbon rates across non-ETS sectors and countries would improve cost-efficiency of policy and lead to a more equal burden sharing between sectors and countries. Moreover, the EU could use an internal carbon price (or shadow carbon price or value) for budgeting and planning purposes to improve cost-efficiency of budgetary measures with environmental impact. But mitigation policy is not alone about carbon pricing. Equally, the mitigation policy toolbox includes regulations and standards. In the financial

sector, for instance, reducing overly restrictive regulations could help steer private finance towards sustainable investment.

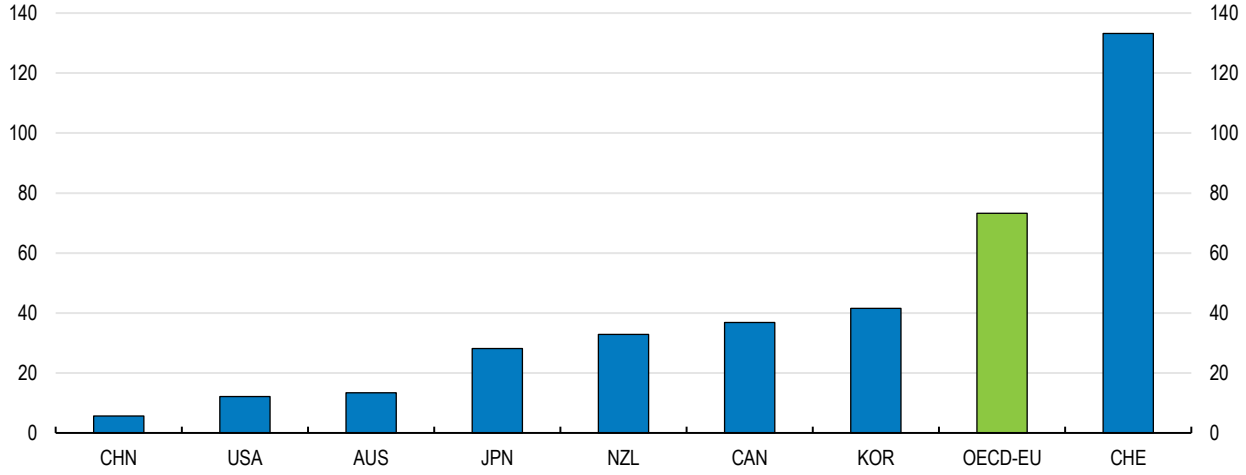
Free allowances reduce the effectiveness of carbon pricing

In principle, there is a unified carbon price in ETS sectors. Under the ETS, producers need to purchase emission allowances covering their carbon emissions via auctions or on the carbon market, where an ETS carbon price is set. However, the free allocation of allowances to industry reduces the effective carbon price compared to the energy sector where no free allocation takes place, muting the price signal. Specifically, industry receives free emission permits, covering 94% of the sectoral emissions in 2021. Such a system of free allowances reduces incentives to innovate and invest in cleaner production processes (Dechezleprêtre, Nachtigall and Venmans, 2018[12]; European Commission, 2019[23]; Pellerin-Carlin et al., 2022[24]). In contrast, the energy sector must buy all its emissions permits via auctions. The EU already announced a gradual phase-out of free ETS allowances over a nine-year period to 2034 for sectors covered by its Carbon Border Adjustment Mechanism, including aluminium, cement, hydrogen, electricity, fertilisers, iron, and steel. Installations that will still benefit from free ETS allowances will need to comply with conditionality requirements, including in the form of energy audits and climate neutrality plans for certain installations. Phasing out free allowances to industry would align effective carbon prices in the ETS system.

The rationale for free allowances has been that industry faces higher international competition than energy generation and could easily relocate production outside the EU, where carbon pricing is lower (Figure 2.6). Such a situation could result in an increase in global greenhouse gas emissions (so-called carbon leakage). Free allowances imply that most efficient EU firms do not face higher carbon costs compared to international competitors, while at the same time having marginal incentives to reduce emissions from the sale of the credits. The coverage of free allowances in the EU ETS is narrower compared to some other emission trading systems, with free allowances accounting for 43% of annual ETS emission allowances in 2019 (European Commission, 2023[25]; European Court of Auditors, 2020[26]). For example, the emission trading systems of South Korea and the metropolitan region of Tokyo allocate almost all emissions allowances for free (International Carbon Action Partnership, 2023[27]; Korean Ministry of Environment, 2018[28]). The lower share of free allowances reflects that the allocation of free allowances in the EU ETS is based on the risk of carbon leakage. However, the EU ETS treats equally all sectors that are deemed to be at risk of carbon leakage. This means that all sectors included in the carbon leakage list benefit from free allocation, irrespective of their emission intensity or trade exposure. In contrast, the US state of California and the Canadian province of Québec base free allowances on a more nuanced approach to the risk of carbon leakage, resulting in fewer free allowances (California Air Resources Board, 2023[29]; Quebecois Ministry for Environment, 2023[30]). Sectors are divided into low, medium, and high leakage risk based on their levels of emissions intensity and trade exposure. As a result, free allowances covered roughly 25% of total annual emission allowances in California in 2019, while they accounted for 30% of total annual emission allowances in Québec (Galdi et al., 2020[31]). The lower share of free allowances also reflects that both the ETS in California and Québec have a higher coverage of overall GHG emissions, with 75% and 80% of state GHG emissions covered, respectively. This compares to 40% of EU GHG emissions covered by the EU ETS.

Figure 2.6. The effective carbon price is relatively high

Average net effective carbon rates, EUR per tonne of CO_2 equivalent, 2021



Note: Effective carbon prices are averaged across all GHG emissions, excl. LULUCF, including those emissions that are not covered by any carbon pricing instrument. 2021 Fossil fuel subsidy estimates (component of net ECR).

Source: OECD (2022), Pricing Greenhouse Gas Emissions: Turning Climate Targets into Climate Action, OECD Series on Carbon Pricing and Energy Taxation, OECD Publishing, Paris, https://doi.org/10.1787/e9778969-en.

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To avoid carbon leakage, the EU Commission proposed to gradually replace the system of free ETS allowances with a carbon border adjustment mechanism (CBAM) (Box 2.3). Such a mechanism aims at equalising the carbon price of imports with those of domestic production, by charging the importer the EU ETS price deducting any carbon price paid in the country of origin. This system would apply to imports of aluminium, cement, hydrogen, electricity, fertilisers, iron, and steel. An alternative to CBAM would be better targeting of free allowances based on the risk of carbon leakage, for example by classifying sectors as highly exposed, moderately exposed, or lightly exposed, as done in the United States and Canada (see above).

Box 2.3. The EU's Carbon Border Adjustment Mechanism

From 2026, the carbon border adjustment mechanism (CBAM) will impose a charge on the emissions embodied in specific carbon-intensive goods imported by the EU and most at risk of carbon leakage. These include aluminium, cement, electricity, fertilisers, hydrogen, iron, and steel. The importer will be charged the EU ETS price, deducting any carbon price effectively paid in the country of origin. In practice, EU importers of goods covered by CBAM will have to purchase CBAM certificates, the price of which will be based on the weekly average auction price of EU ETS allowances. CBAM will be based on the actual emission content of certain goods, declared by importers and verified by experts, thus also allowing to take into account the effect of non-pricing policies in the country of origin on the emission content.

The EU indicates that measures were designed to make CBAM compatible with World Trade Organisation rules (European Commission, 2023[32]). It will be introduced gradually starting in 2026 to allow third countries to adjust to the new EU trade framework. So that EU importers are not at a disadvantage compared to EU producers, free emission allowances will be phased out for sectors covered by the CBAM over a nine-year period from 2026 to 2034. This means that until free allowances are completely phased out in 2035, the CBAM will apply only to the share of emissions not covered by free allowances under the EU ETS.

Source: European Commission (2023[32])

Strengthen carbon markets for sectors not covered by the ETS

There is no EU-level emission trading yet in non-ETS sectors such as transportation and buildings, although these sectors accounted for about 60% of EU emissions in 2021 (European Environment Agency, 2022[33]). According to the EU's Climate Law, in years when Member States are not on target to meet their annual emission limit in non-ETS sectors, they can borrow a limited amount of emission permits (annual emission allocations) from the following year, use a surplus of ETS emission allowances or the surplus of CO_2 removals generated in their land and forest sector. Countries that still miss their national emission reduction target for non-ETS sectors are obliged to purchase annual emission allocations bilaterally from countries that overfulfill their targets. However, there is no EU-wide mechanism in place for trading of annual emission allocations. So far only Malta and Germany had to buy allocations to fulfil their obligations and did so in bilateral deals with Bulgaria, the Czech Republic and Hungary. In contrast, Sweden cancelled its surplus emission allocations in 2015, meaning these could not be transferred to underachieving countries (Appunn, 2019[34]). The very limited amount of trade and the surplus of annual emission allocations during the period up to 2020 has kept prices of annual emission allowances low. During the period up to 2030, costs per ton of CO_2 could be significantly higher than those in the ETS with annual emissions allocations in short supply as more countries may fall short of their more ambitious 2030 targets (Gores and Graichen, 2021[35]). Without emission trading, these countries might need to drastically reduce emissions in a very short time span, potentially leading to economic and social disruptions. Looking ahead, the expansion of emission trading into road transportation and buildings in 2027 will reduce the need for such bilateral agreements. Until then, the EU should encourage countries to trade their annual emission allocations in non-ETS sectors, by setting up a market for annual emission allocations covering non-ETS sectors. Another option to encourage emissions reductions in non-ETS sectors is trade of international emission credits, but the EU has opted for a different approach with its Climate Law.

The EU also has penalties and sanctions at its disposal to encourage Member States to fulfil their emission reduction obligations in non-ETS sectors. If, in a given year, despite the above-mentioned flexibilities, a Member State does not meet its GHG emission reduction target in non-ETS sectors, the amount of GHG emissions in excess will be computed in that Member States' account of GHG emissions of the subsequent year, multiplied by a factor of 1.08. Hence, Member States have a strong incentive to avoid the application of the multiplication factor, as it will render the annual emission limit in non-ETS sectors of the subsequent year more difficult to achieve. In addition, the Commission may ask a Member State that is not on track to present a correction action plan setting out additional polices and measures to avoid excessive emissions in the future. Ultimately, if non-compliance remains, the European Commission may take an infringement legal action against the Member State before the Court of Justice of the European Union, which could result in financial sanctions.

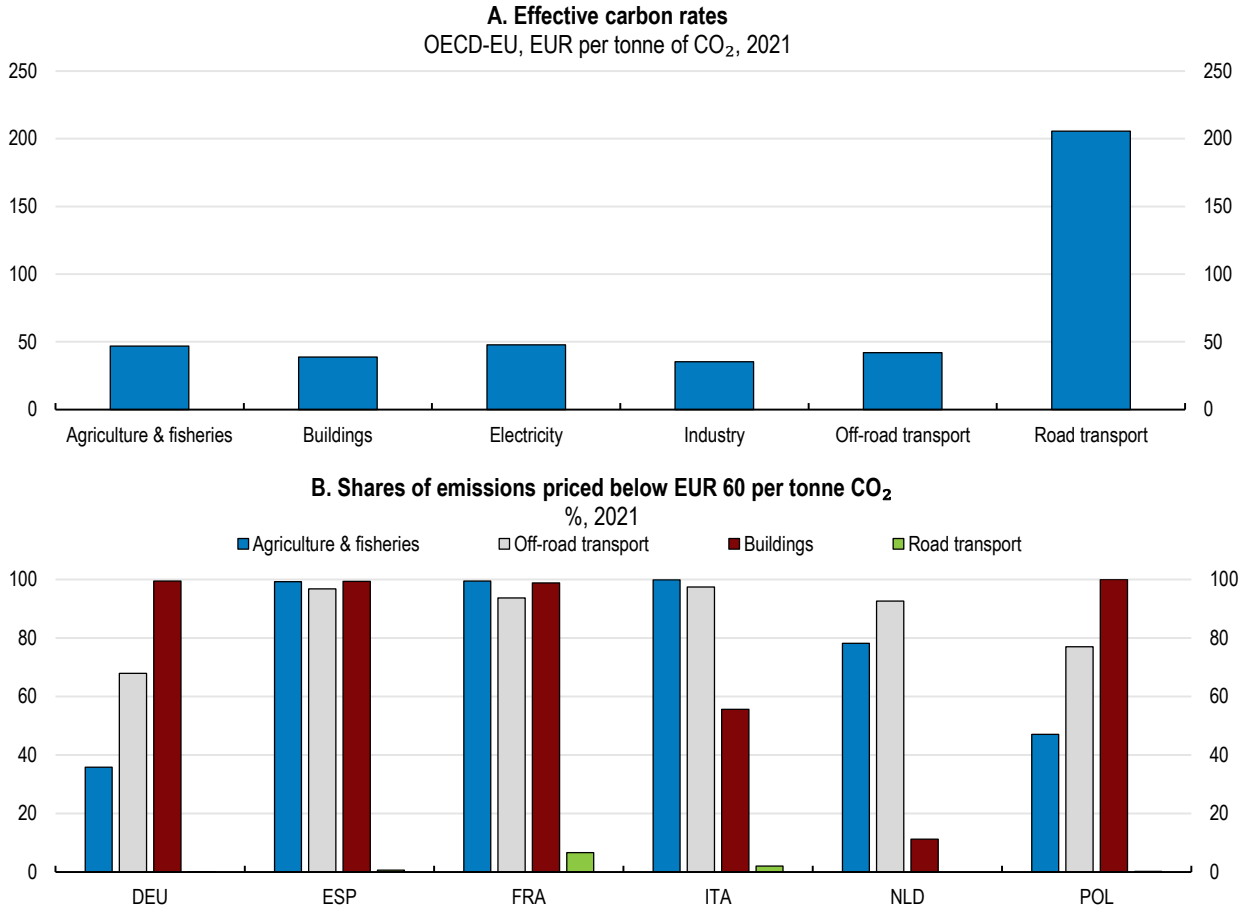
Effective carbon rates vary across countries and sectors

The EU already announced the establishment of a new emission trading system (ETS 2) for transportation and heating fuels as of 2027. However, the system is estimated to have a different ETS carbon price than the traditional ETS system (see below). A unified ETS carbon price for all sectors covered by emission trading would align marginal abatement incentives. Such a uniform ETS carbon price should then be extended to large producers in non-ETS sectors such as agriculture.

Non-ETS carbon prices vary across countries and sectors, leading to varying abatement incentives and reducing the effectiveness of the EU's climate policy. Taxation of carbon, such as fossil fuels, affects the effective carbon price (Figure 2.7). But in general, fossil fuel taxation imperfectly mirrors carbon-content. This reflects that exemptions and reduced rates lead to a lower effective energy tax rates for aviation and maritime fuels as well as heating gas, among others. There is scope to increase the effectiveness of the climate policy mix by aligning carbon prices and taxing polluting activities in line with their environmental impacts. The establishment of the ETS 2 for transport and heating fuels means that a uniform carbon price will be established in these sectors, although it will be lower than in the traditional ETS sectors (see above).

In addition, the EU Commission has proposed to broaden the energy tax base by phasing out tax exemptions and reduced rates and to introduce EU-wide minimum energy tax rates based on energy content and environmental performance, with fossil fuels being taxed most heavily. Currently, minimum tax rates are based on volume and do not consider environmental performance. As discussed above, the broadening of the energy tax base and minimum tax rates for fossil fuels based on environmental performance should be adopted, preferably the same for all sectors to ensure an equal burden sharing. Thereafter, minimum tax rates can be gradually increased. Ideally, the EU should announce clear time paths for the evolution of minimum tax rates to allow households and producers to adjust to the new energy tax framework. However, a concern is the interaction with the new emission trading system for transportation fuels, which will add to transport fuel prices (see below).

Figure 2.7. Carbon pricing differs considerably across sectors and countries



Note: Data includes CO_2 emissions from the combustion of biofuels. In Panel A, the effective carbon rate is a weighted average of the 22 OECD EU countries (plus Cyprus).
Source: OECD Effective Carbon Rates database.

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An internal carbon price can improve efficiency of public spending

The EU budget for the current period 2021-27 has a 30% spending target for climate objectives. In practice, the EU follows a scaled approach to determine whether budgetary items are helpful or harmful to reach climate objectives (OECD, 2016[36]; European Commission, 2011[37]). However, this approach has been criticised for overstating the budget's true contribution to emission reductions, particularly in the case of the Common Agricultural Policy (European Court of Auditors, 2022[38]). Notably, there is no accounting for spending with negative climate impacts. For example, direct payments to farmers support the agricultural use of drained peatlands, which is associated with 20% of all agricultural emissions (see below). Moreover,

the EU's approach does not allow to identify abatement costs across EU funded programmes and their cost-efficiency. To improve cost-efficiency, the EU could apply an internal carbon price (or shadow carbon price or value) to all public budgeting, planning, procurement and cost benefit analysis of EU-funded projects with a carbon impact, as done in the United Kingdom (Department for Business, 2021[39]). Ideally, such an internal carbon price should apply to all emissions resulting from EU spending and regulations, including agricultural funds and the pandemic recovery funds.

To promote green budgeting practices among Member States, the European Commission has developed an EU Green Budgeting Reference Framework (GBRF). The GBRF is currently used by 12 Member States. In addition, the Commission provides technical support on green budgeting to 23 Member States. However, countries that implement green budgeting differ in the way they identify the environmental impacts of their budgets. This reflects different budgetary frameworks with different underlying concepts and methodologies regarding environmental costs and benefits (Box 2.4). National budgetary frameworks are difficult to change, which has led the Commission to propose common guidelines instead. Nonetheless, to promote green budgeting practices, the EU should introduce a common methodology for countries assessing environmental impacts of public spending, including an EU-wide internal carbon price.

Making financial markets work for the green transition

The EU adopted a taxonomy of environmentally sustainable activities in 2020, which pursues multiple environmental objectives, including climate change mitigation. It includes low-carbon technologies such as solar and wind power, but also carbon-intensive forms of biomass. This reflects that the criteria for inclusion in the taxonomy do not follow a single approach based on carbon-intensity of economic activities. It results in activities equally included in the taxonomy despite significant differences in their contribution to decarbonisation. More recently, the Complementary Climate Delegated Act extended the taxonomy in 2022 to include nuclear energy and gas as interim solutions (European Commission, 2023[40]). Since 2023, large EU companies must report whether their business activities are aligned with the taxonomy of sustainable activities. This requirement will be extended to financial companies from 1 January 2024. However, the existing Non-Financial Reporting Directive, despite being mandatory, has proven inadequate to provide comparable and reliable information on the environmental impact of companies. This means that in most cases investors do not have the necessary information on the environmental impact of companies, potentially obscuring future costs and leading to unintended consequences of investment decisions. To tackle this problem of information asymmetry, the EU is currently working on extending sustainability disclosure requirements from 2024 to all large EU companies, as well as listed small and medium-sized enterprises. This will be done gradually and, in several stages, mandating larger companies to comply with the reporting standards first, followed by listed small and medium-sized enterprises.

Another issue is the lack of uniform reporting standards, which leaves scope for greenwashing in finance. For instance, roughly 40% of funds classified as sustainable invested at least 5% in fossil fuels in 2022 (EUROSIF, 2022[41]). This reflects that the sustainable finance framework is still under development. The EU has already adopted sustainability disclosure and reporting requirements for companies and investors active in financial markets, as well as for manufacturers of financial products and financial advisers. In 2020, the Platform on Sustainable Finance was established, which advises the European Commission on issues related to the implementation of the sustainable finance framework. Furthermore, the EU Commission requested in 2022 the European Supervisory Authorities to advise on issues relating to greenwashing in financial markets. In 2022, the EFRAG (formerly European Financial Reporting Advisory Group) developed common reporting standards for companies' GHG emissions and climate-related risks, as well as environmental and social standards (EFRAG, 2022[42]). Such reporting standards for corporates should be gradually introduced to allow them to adjust to the new compliance framework. To reduce compliance costs, the EU should ensure the consistency and close interoperability of EU standards with international standards. This will require cooperation with stakeholders (e.g., international accounting bodies and credit rating agencies) within and outside the EU, including the International Sustainability Standards Board (ISSB).

Box 2.4. Green budgeting across the OECD

Green budgeting refers to the use of budgetary tools to help achieve climate and other environmental objectives. Across the OECD, 24 of 36 countries had implemented green budgeting measures in 2022 according to the 2022 OECD Green Budgeting Survey (OECD, 2023[43]). Effective green budgeting depends on strategic and fiscal frameworks and clear institutional arrangements:

- Green budgeting is used by twelve countries, and it is part of the fiscal framework by law in eleven countries (i.e., Austria, Chile, France, Italy, Korea, Luxembourg, Mexico, the Netherlands, the Slovak Republic, Spain, and Sweden). Italy, a country with a longstanding tradition in this field, included specific environmental reporting requirements on budget spending in 2009.
- National strategies for decarbonisation are important for an effective green budgeting framework. Twenty OECD countries have developed strategies in the past years to inform green budgeting.
- A clear institutional arrangement is key. In several countries, the central budget authority has a leading role (e.g., in Denmark, Ireland and Mexico), while in other countries this responsibility is shared with other actors, such as the Ministry of Environment, or other government agencies (e.g., in Canada, which has a strong culture of cross-government collaboration). Eighteen countries established specialised entities (e.g., funds or green investment banks) to inform governments with an environmental perspective.

The most common methods for the execution of green budgeting are:

- ***Environmental cost-benefit analyses*** inform budget decision-making. In the United Kingdom, the Treasury provides the government with an overall assessment of climate-related impacts of all government programmes (the so-called Green Book).
- ***Ex-ante/ex-post environmental assessments*** are useful for in-year adjustments and to improve scrutiny of budget execution. In Italy, budget decisions are supported by reporting on environmental programmes in relation to both budget execution and final accounts.
- ***Carbon budgets*** set carbon emission ceilings for a specific period. France has adopted three carbon budgets since 2015. Similarly, Ireland adopted a five-year carbon budget in 2021.
- ***Carbon assessments*** provide estimates of GHG emissions associated with budget measures. Several OECD countries provide such carbon assessments (Austria, Canada, Denmark, Finland, Ireland, Korea, Lithuania, New Zealand, Norway, Sweden, and the United Kingdom).
- ***Green budgeting tagging*** assesses whether budget items are helpful or harmful to green objectives. For example, Ireland follows a binary approach, where the entire cost of a measure is tagged as green or not, while the EU, France and Italy use a scaled approach to determine the green content of budgetary items.
- ***Internal carbon price:*** Few countries use carbon pricing to assess cost-efficiency of budgetary measures. For instance, the United Kingdom uses an internal carbon price (or carbon value) to assess impacts on GHG emissions resulting from all public spending, taxation, or regulations.

Other instruments are green budget statements, as in France and Italy, and reporting on emission impacts of budget measures as in Denmark. Training organised by the central budget authority (e.g., in Austria, Canada, Colombia, Denmark, Mexico, and Portugal), detailed instructions in the annual budget circular (e.g., in France, Italy, Luxembourg, Mexico, Norway, Portugal and Sweden), and inter-agency groups to ensure coordination across the government and stakeholders (e.g., in Canada, Colombia, Denmark, France and Mexico) can support green budgeting activities.

While much progress has been made in green budgeting, challenges remain. Countries often lack adequate resources and methodologies to implement green budgeting. The EU's Green Deal and the related technical support on green budgeting offered to 23 Member States will likely encourage the use of green budgeting among EU countries. Moreover, the OECD Paris Collaborative on Green Budgeting is a helpful forum for countries to share best practices and foster their harmonisation in this area.

Source: European Commission (2022[44]); OECD (2021[45]); OECD and European Commission (2020[46]); EC-OECD-IMF (2021[47]); OECD (2021[48]); Braendle (2021[49]); and Blazey, A. and M. Lelong (2022[50]).

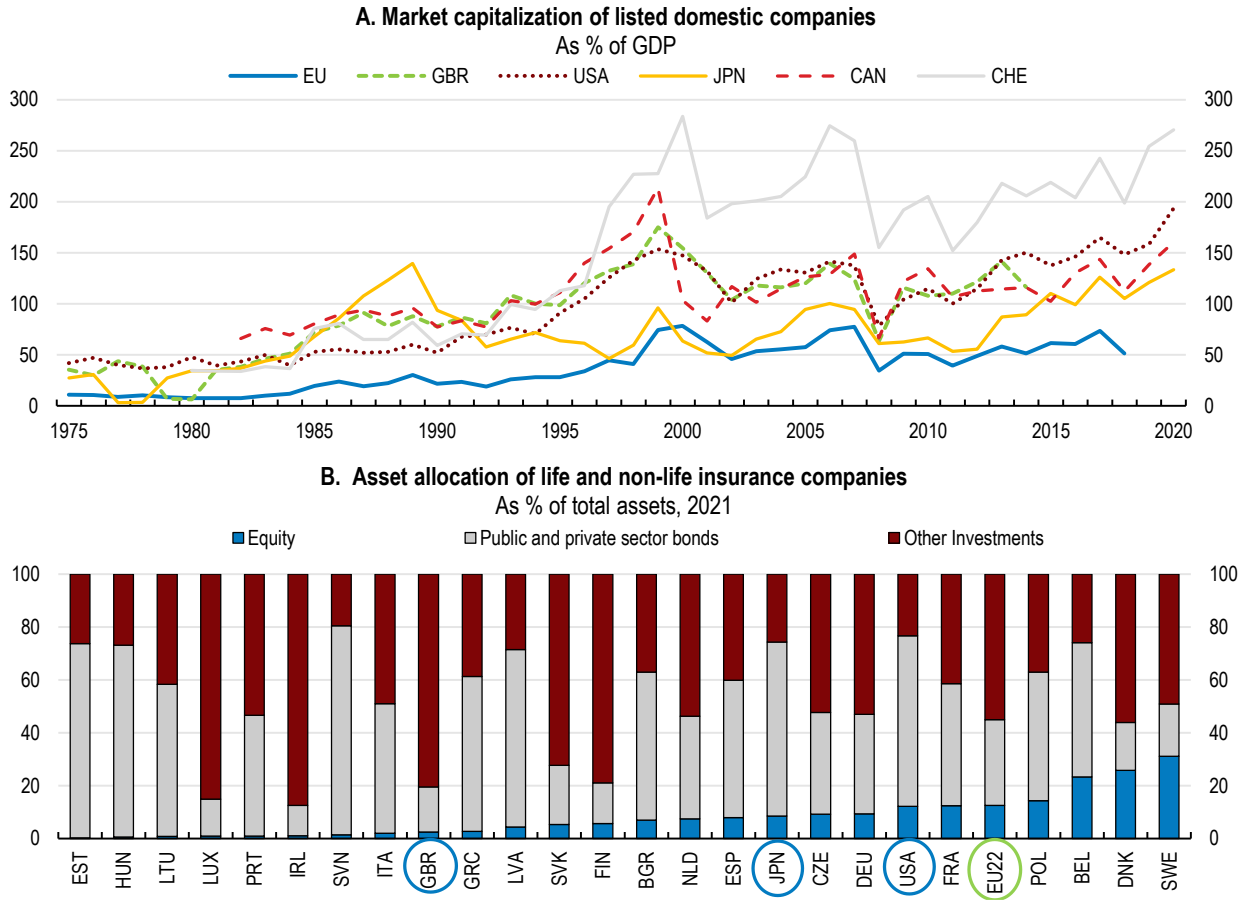
EU companies rely heavily on debt-based funding, highlighting the importance of banking for raising investment in the green transition (Carradori et al., 2023[51]). This is especially important for small and medium-sized companies as well as the housing sector, where bank lending constitutes an important source of financing of investment in abatement. The EU already adopted reporting and disclosure requirements for banks. The Capital Requirements Regulation and the Capital Requirements Directive require lenders to disclose their exposure to transition risk from 2023. This includes the amount of loans to, as well as bonds and equity holdings in, carbon-intensive industries and the fossil fuel sector, and the extent to which lenders finance their direct and indirect emissions. For mortgages, banks must report the energy performance of their real estate portfolios. The new regulatory disclosure requirements for banks aim at creating a wedge in financing costs between fossil fuel projects and sustainable investment, making the latter more attractive.

Investment needs in the insulation and renovation of buildings to reach energy efficiency targets are massive (see below). So far, such investments rely heavily on bank lending, often supported by government support schemes. To increase the role of financial markets, the European Commission proposed to introduce EU-wide mortgage portfolio standards to support the securitisation of mortgage portfolios. Such standards would reflect the energy efficiency performance of buildings and get more stringent over time, mirroring more stringent EU-wide minimum efficiency standards for buildings for 2033. Importantly, common standards would also ease securitisation, or the issuance of financial and debt instruments based on mortgage portfolios. However, a lack of common guidelines on how these standards are defined could result in a fragmented landscape of mortgage portfolio standards across the EU. Such a fragmentation would hamper securitisation and cross-border investments into the renovation and insulation of buildings (European Central Bank, 2023[52]). To make securitisation work to its full potential, the EU should harmonise minimum requirements for mortgage portfolio standards. Such harmonisation could facilitate cross-border investments by institutional investors in buildings' renovation in the context of the Capital Markets Union. Raising the contribution of financial markets to energy efficiency improvements of buildings would also reduce the reliance on bank lending and government support schemes.

A deeper Capital Markets Union can boost private investment needed for the green transition. Stock market capitalisation in the EU is lower than in peer economies (World Bank, 2022[53]) (Figure 2.8, Panel A). A factor behind shallower capital markets is the limited role of institutional investors, notably insurance companies. This is despite the well-developed insurance market in the EU. Insurers invest mostly in low-risk government and corporate bonds. Investment in equity by insurance companies, especially non-life insurers, is lower than in the United States (Figure 2.8, Panel B). This notably reflects more restrictive EU rules for insurers that encourage them to move into risk-free government bonds and other high-rated bonds. For instance, equity capital charges ranging between 22% and 49% add to the solvency requirement for insurers. There is a lower capital charge of 22% for long-term equity, although overly restrictive criteria mean that only an estimated 2% of all insurers' equity investment meets the criteria (High Level Forum on the Capital Markets Union, 2020[54]). The European Commission is reviewing the solvency rules, including the treatment of equity capital charges to ensure they better reflect the long-term nature of investment by institutional investors. There are prudential risks associated with this. In some cases, the risks may be lower if climate change risks are explicitly incorporated. The European Insurance and Pensions Authority is analysing those aspects (European Insurance and Occupational Pensions Authority,

2023[55]). Nonetheless, prudential regulation should ensure that risk in the insurance sector is properly managed.

Figure 2.8. Capital markets are less developed than in peer economies



Note: In Panel B, the "Others" category includes investments in private equity funds, hedge funds, structured products, collective investment schemes, cash and deposits, loans, and land and buildings. The EU22 aggregate includes 22 EU countries (all EU27 member countries except Austria, Cyprus, Croatia, Malta, and Romania for which data is unavailable).
Source: World Bank; and OECD Global Insurance Statistics database.

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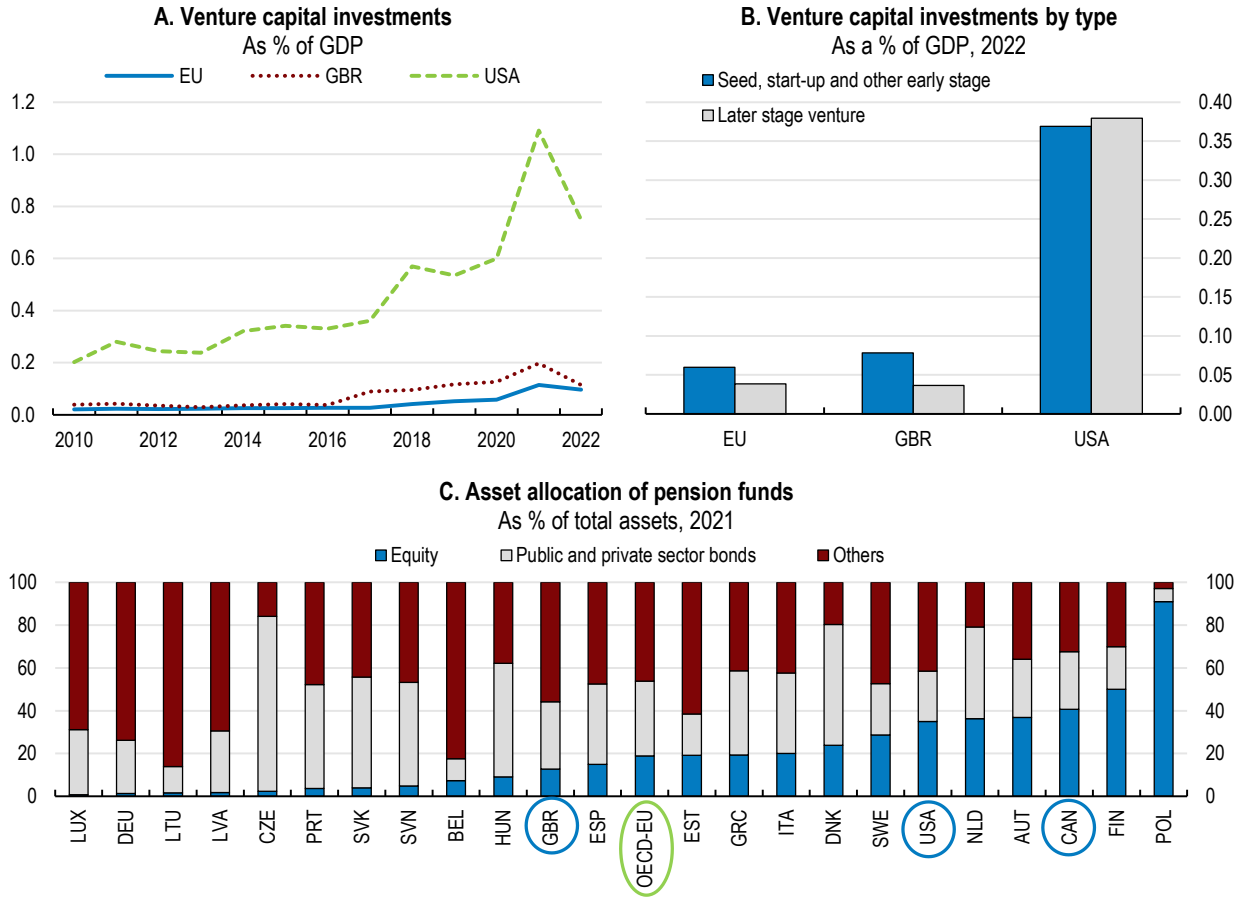
The mobilization of household savings can support investment. For instance, the pensions system, and particularly capital-based pensions systems, can contribute to providing sufficient long-term-risk capital to support the green transition. Many EU countries have quantitative restrictions on pension funds in place that limit investment in private equity and venture capital (OECD, 2022[56]). Existing restrictions reduce funding options for start-ups. Limited financing contributes to slowing the development and commercialisation of new technologies. A particular concern is low funding for the scale-up of innovative start-ups (Figure 2.9). Prudent regulations are important to protect pensioners' contributions. However, quantitative restrictions may currently be too restrictive to make greater use of pension funds for raising private finance for the green transition (OECD, 2022[57]). Hence, easing quantitative restrictions on pensions funds could unleash investment in green technologies. There are prudential risks associated with relaxing rules. Safeguards and appropriate investment regulations need to be in place to ensure that pension providers continue acting in the best interest of members (OECD, 2022[57]). In the longer term, bolstering capital markets could be achieved through a stronger take-up of capital-funded pensions. This could entail auto-enrolment in occupational pension schemes, although this is under the responsibility of EU countries (High Level Forum on the Capital Markets Union, 2020[54]).

Figure 2.9. Venture capital remains relatively low



Note: EU corresponds to the average of EU OECD countries, according to data availability. In Panel B, 2019 data for USA. In Panel C, the "Others" category includes cash and deposits (including those of mutual funds), land and buildings (including those of mutual funds), loans, hedge funds, structured products, unallocated insurance contracts, derivatives, commodities, trade credits and advances and other accounts receivables and payables. OECD-EU is an average of the OECD-EU countries presented in the graph.
Source: OECD Enterprise Statistics database; and OECD calculations.

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Targeting mitigation policies to sectors

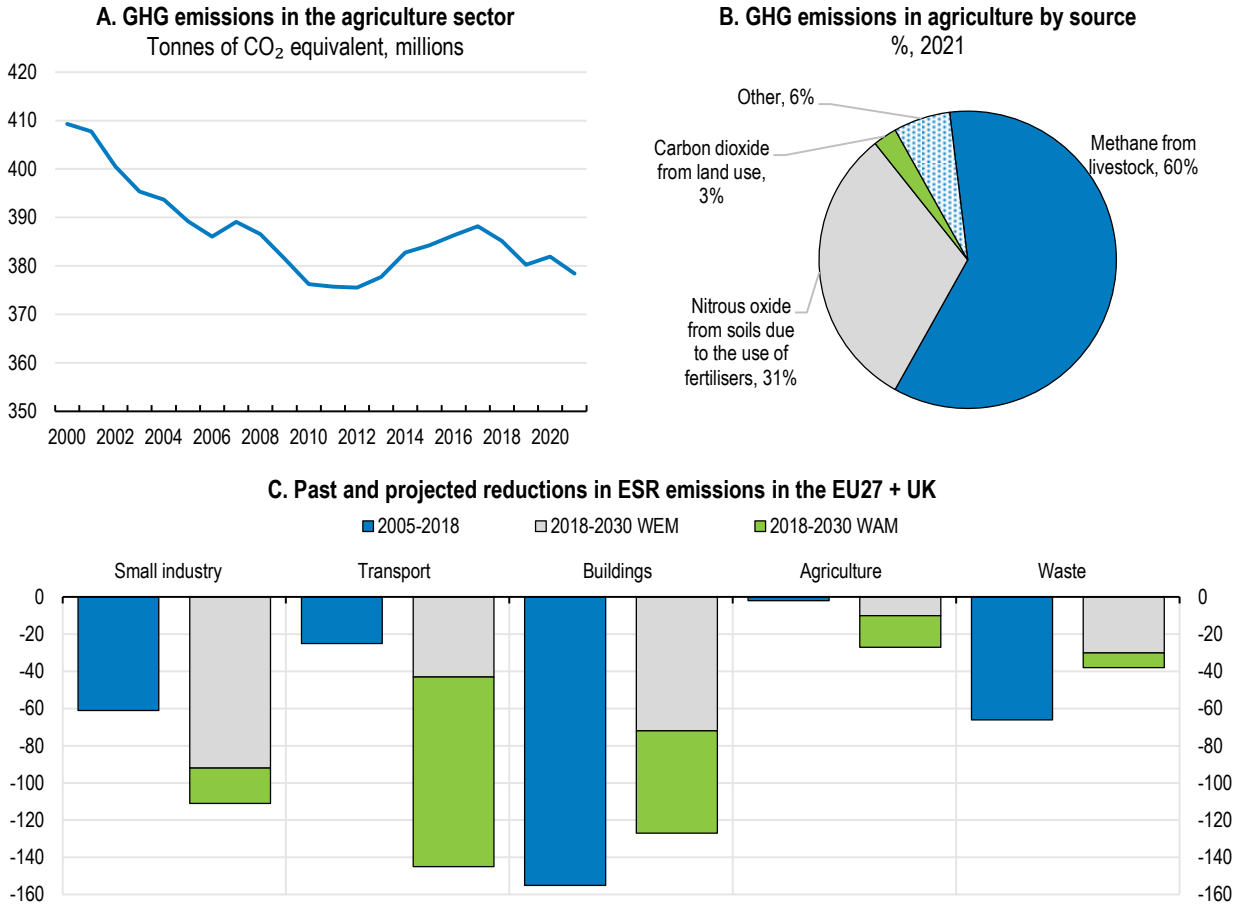
Achieving the ambitious emission targets requires a comprehensive strategy to tackle a broad range of sectors. A key challenge remains the decarbonisation of the energy sector. A significant acceleration of emission reductions is also necessary in agriculture and transportation, which have contributed little to emission reduction targets so far.

Ramping up mitigation in agriculture

The EU has successfully reduced its emission intensity in agriculture since 1990 as agricultural emissions grew slower than agricultural output, reflecting a decoupling of emissions from production. Emission reductions happened in the 1990s and 2000s due to falling cattle livestock numbers, but also better use of fertilisers (OECD, 2023[58]). More recently, however, progress has stalled. Carbon emissions in agriculture have hardly been reduced over the last decade, pointing to inconsistencies between the EU's climate policy and agricultural policy. This is despite climate action being a core objective of the Common Agricultural Policy (CAP) since 2013 (Box 2.5). In 2014-20, a quarter of CAP spending was deemed to contribute to

climate mitigation and adaptation according to the European Commission (2019[59]). However, an assessment of the European Court of Auditors (2021[60]) found that CAP funds attributed to climate action have contributed little to emission reductions, which have not changed significantly since 2010. Moreover, EU countries are not projecting significant emissions reduction in the agricultural sector by 2030, choosing instead to focus on other sectors (Figure 2.10). Apart from emission reductions, there are other important environmental challenges in agriculture, including biodiversity, water, air, and soil quality, which are discussed in more detail in the *OECD Economic Surveys of Denmark, France, Germany, Sweden, and the United Kingdom* for example (OECD, 2021[61]; OECD, 2021[62]; OECD, 2022[63]; OECD, 2023[64]; OECD, 2023[65]).

Figure 2.10. Agricultural emission reductions have stalled



Note: In Panel C, ESR refers to Effort Sharing Regulation, which sets national emission reductions targets for EU countries. The bars represent changes in emissions between 2005-2018 and 2018-2030 based on inventories, approximated estimates for 2018 (proxy) and projections "with existing measures" (WEM) and "with additional measures" (WAM) under more ambitious FIT for 55 targets.
Source: Eurostat; and EEA (2021), Effort Sharing targets 2021-2030 (Effort Sharing Regulation, ESR).

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Box 2.5. The EU's Common Agricultural Policy and climate action

For the 2021-27 financing period, EUR 387 billion in funding has been allocated to the CAP (or 19% of the EU budget including Next Generation EU funding), of which 75% are allocated to Pillar 1, and the remaining 25% to Pillar 2:

- Pillar 1 mainly provides direct income support to agricultural producers. A small share of 5% of Pillar 1 funds is also used to intervene in certain agricultural markets in case of adverse shocks to food prices. The underlying rationale is that the agricultural sector is crucial for the food supply for the EU. Until 2003, direct payments to farmers were based on production volumes. Since then, such payments based on production were reduced and replaced by payments based on eligible hectares.
- Pillar 2 finances rural development activities as well as increasingly environmental and climate objectives. It requires co-financing of 40% by Member States.
- The EU Commission monitors the work of national agencies and is accountable for the use of EU funds, while EU countries are responsible for making payments and carrying out checks on recipients.

Climate action is a core objective of the CAP since 2013, complementing the other objectives of maintaining agricultural incomes and rural development (European Parliament and the Council of the European Union, 2013[66]). For the period 2021-27, about 40% of CAP funding is dedicated to climate action, corresponding to 28% of overall spending on climate action under the EU budget for 2021-27 (European Commission, 2022[67]).

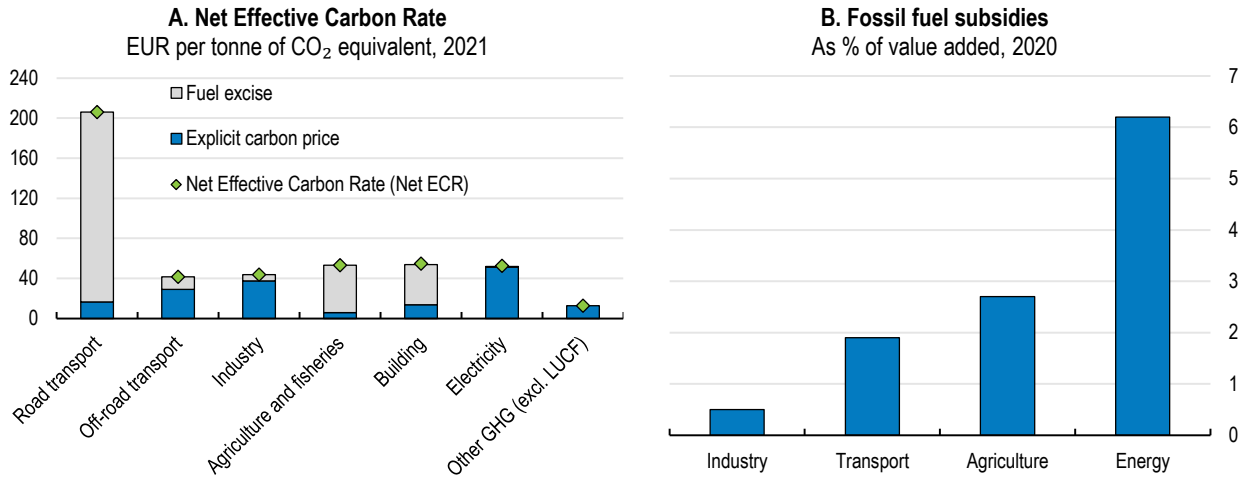
- Since 2015, a third of all direct payments to agricultural producers under Pillar 1 (or 24% of the CAP budget) have been subject to compulsory agricultural practices that are beneficial for the climate and the environment (green direct payments). Such practices include the maintenance of permanent grassland, crop diversification, and practices to safeguard and improve biodiversity of arable land (such as nitrogen-fixing crops, fallow land and catch crops).
- In addition, all direct payments to farmers are subject to meeting certain environmental and public health standards (cross-compliance provisions).
- As of 2023, a quarter of the direct payments will be dedicated to eco-schemes to provide stronger incentives for environment-friendly farming practices, including organic farming.
- About 13% of rural development funds (or 3.3% of the CAP budget) pay farmers for achieving certain environmental objectives that go beyond the compulsory green direct payment and cross-compliance requirements. The more ambitious environmental objectives relate mostly to biodiversity, organic farming, and the conservation of landscape features.
- Spending directly related to GHG emissions reduction and carbon conservation is considerably smaller, with 0.9% of the CAP budget, according to latest available data for 2014-20 (European Network for Rural Development, 2021[68]).

Source: OECD (2023[58]), *Policies for the Future of Farming and Food in the European Union*, OECD Agriculture and Food Policy Reviews, OECD Publishing, Paris.

The polluter-pays principle rarely applies to emissions from agricultural activities. Carbon taxation is little used, as reflected in a low explicit carbon price. Fuel excise taxes, indirectly pricing emissions, cover less than 10% of the sector's GHG emissions, mainly stemming from farm vehicles which in large part run on diesel (Figure 2.11). However, large fossil fuel subsidies in the form of reduced rates and exemptions for diesel in agriculture reduce the effective carbon price (European Commission, 2022[69]; European Court of Auditors, 2022[21]). Moreover, agricultural emissions do not fall under the EU's emission trading system. As a result, carbon pricing does not apply to most of the sector's GHG emissions, which consist of methane mostly from livestock, nitrous oxide from soils due to the use of fertilisers, and carbon dioxide from land

use. Without stronger price incentives to reduce emissions, agriculture is set to become one of the biggest emitting sectors in the EU by 2030 (Chateau, Miho and Borowiecki, 2023[10]). To make polluters pay for their emissions, environmentally harmful fossil fuel subsidies should be phased out (see above).

Figure 2.11. The effective carbon price in agriculture is relatively low



Note: In Panel A, the net effective carbon rate and its components are averaged across all GHG emissions of the 22 OECD EU countries (plus Cyprus), including those emissions that are not covered by any carbon pricing instrument. LULUCF refers to land use change and forestry. Data excludes CO_2 emissions from the combustion of biofuels. In Panel B, fossil-fuel subsidies (in the form of fuel consumption support, such as reduction or exemption of fuel taxes) refers to the EU27 aggregate and are based on estimates from the EC's 2022 Report on Energy Subsidies in the EU and on value added data by sector sourced from Eurostat's database.
Source: OECD Net Effective Carbon Rates database; European Commission (2022[69]); Eurostat National Accounts database; and OECD calculations.

StatLink https://stat.link/ldoi71

Bringing agricultural emissions on a downward track will require, first, phasing out environmentally harmful fossil fuel subsidies, and second, higher carbon pricing. Higher carbon pricing could entail expanding emission trading to include agriculture, as announced for transportation and housing. Extending emission trading is a gradual process that should eventually lead to the extension of emission trading to agriculture. An alternative to emission trading is a carbon tax on agricultural emissions, as planned in Denmark and New Zealand (OECD, 2022[70]). However, carbon pricing in agriculture comes with challenges as it is technically not easy to implement. Farm-level emissions for inclusion in emission trading are challenging to calculate. Nonetheless, there are already pilot monitoring systems in place for emissions from livestock, peatland-rewetting, and agroforestry. Before emission trading is extended to agriculture, such monitoring systems could be scaled up and introduced more broadly in agriculture, although emission reductions from improved agricultural practices for soil management are more challenging to measure (European Commission, 2021[14]). The extension of emission trading will require stronger support for farmers to set up systems to monitor and report emissions, by diverting agricultural funds to support low-income farmers most vulnerable to higher mitigation costs as these often cannot pass on higher costs to consumers (see below). Lessons could be learned from New Zealand, where the government and the agricultural sector are working towards a system for farm-level carbon pricing for emissions from livestock and fertiliser use (Box 2.6). Several safeguards aim to ensure that farmers are not overburdened with the new carbon pricing framework, including a gradual phase-in and free allowances. However, policies are still experimental, and it is not yet clear what works. In addition, it will be more difficult to replicate emission monitoring and reporting for small agricultural producers and part-time farmers, which are often family-run and lacking the expertise to implement such approaches. Another challenge to carbon pricing is strong resistance from companies in the sector that needs to be overcome (D'Arcangelo et al., 2022[9]).

The extension of emission trading to agriculture will also involve costs. Achieving emission reductions in agriculture could prove much more difficult than in power and industrial sectors due to higher abatement

costs. For instance, many smaller agricultural producers may not be able to afford abatement technologies and practices. The EU supports carbon mitigation activities of farmers, but funding is limited, with 0.9% of the CAP budget for 2014-2020 (see above). At the same time, there will be social costs as households will be affected by higher agricultural prices.

Box 2.6. New Zealand's approach to carbon pricing in agriculture

New Zealand plans to introduce carbon pricing in agriculture from 2025. The government and the agricultural sector are working towards a system for farm-level carbon pricing covering emissions from livestock. This includes ongoing consultations on farm-level pricing of synthetic nitrogen fertiliser emissions, recognition for some types of carbon removals from 2025, and a processor-level carbon levy as a transitional step if farm-level carbon pricing cannot be implemented by 2025. If such a system is not implemented by 2025, the Climate Change Response Act states that agricultural emissions will be priced under the emission trading system.

Agricultural producers will have to report livestock emissions as of 2024. The agricultural sector already has experience with emission reporting. Companies in the agricultural supply chain (e.g., meat processors, dairy processors, nitrogen fertiliser manufacturers and importers) are required to monitor and report their agricultural emissions within the framework of the ETS. A simplified accounting approach is expected to increase incentives for participation in the ETS.

Source : Pareliussen et al. (2022[71])

A relatively straightforward way to reduce emissions in agriculture is the restoration of drained peatlands. Drained peatlands account for 20% of EU agriculture emissions (or 3% of EU emissions), although they represent only 2% of the total cropland and grassland area in the EU. The EU has proposed a new law on nature restoration that aims to restore degraded ecosystems, including drained peatlands. However, direct payments under the CAP continue to promote agricultural use of drained peatlands, despite their negative impact on the climate. Only six EU countries used CAP funding to restore drained peatlands, and the uptake was too low to have a meaningful impact on emission reductions (European Court of Auditors, 2021[60]). In 2023, the EU introduced new stringent rules regarding the protection of wetland and peatland, making direct payments to farmers conditional on complying with these rules (so-called cross-compliance provisions). However, compliance with cross-compliance provisions has been low, reflecting low penalties (see below). Hence, direct payments for the agricultural use of drained peatlands should be linked to the rewetting of peatlands.

Mitigation policies involve mainly voluntary measures with a low potential to reduce emissions (European Commission, 2017[72]). Green direct payments for farmers to adopt potentially climate-friendly practices have had a limited impact, with an uptake of environmentally beneficial agricultural practices observed on only 5% of EU farmland (European Court of Auditors, 2017[73]). The low impact is due to low ambitions as green requirements mostly reflect established farming practice. This means that farmers are not required to introduce new mitigation practices. Similarly, the agri-environmental payment schemes underperform in achieving environmental objectives (OECD, 2023[58]). The underperformance reflects that those payments are not linked to achieving specific environmental outcomes. For instance, the schemes support an expansion of organic farming, although the impact of such practices on greenhouse gas emissions is unclear (European Court of Auditors, 2021[60]). To better link payments to environmental outcomes, reforms to the CAP will see stronger conditionality of direct payments based on agricultural practices beneficial to the environment from 2023 (see below). To further improve cost-efficiency, payments should be made conditional on achieving emission reductions (OECD, 2022[74]). Results-based payments come with difficulties since emission monitoring and reporting is not in place in agriculture. Initially, such outcome-based payments could be introduced in areas where emission monitoring systems can be more easily introduced, such as peatland-rewetting, agroforestry, and livestock farming (see above).

Agricultural producers receive direct payments conditional on compliance with agricultural practices beneficial to the environment. This includes maintaining a minimum soil cover or limiting the use of nitrogen fertilisers. Non-compliance with these so-called cross-compliance provisions can lead to a reduction in direct payments, which is an effective mechanism to protect the environment. Compliance is enforced through on-the-spot controls of agricultural producers. Every year, about 2% of farms that apply for CAP support are selected for on-site checks on whether they follow cross-compliance provisions. However, enforcement of environmental legislation remains insufficient. Penalties are low at around 3% of the amount granted as direct payment (European Commission, 2022[75]). Low penalties reduce the deterrent effect, as reflected in high rates of infringements (European Court of Auditors, 2016[76]). In fact, one in four inspected farmers had their aid reduced for non-compliance with regulations. To encourage stronger compliance with environmentally beneficial practices, enforcement of cross-compliance provisions should be strengthened. This entails higher penalties reflecting the environmental damage resulting from the violation (OECD, 2014[77]).

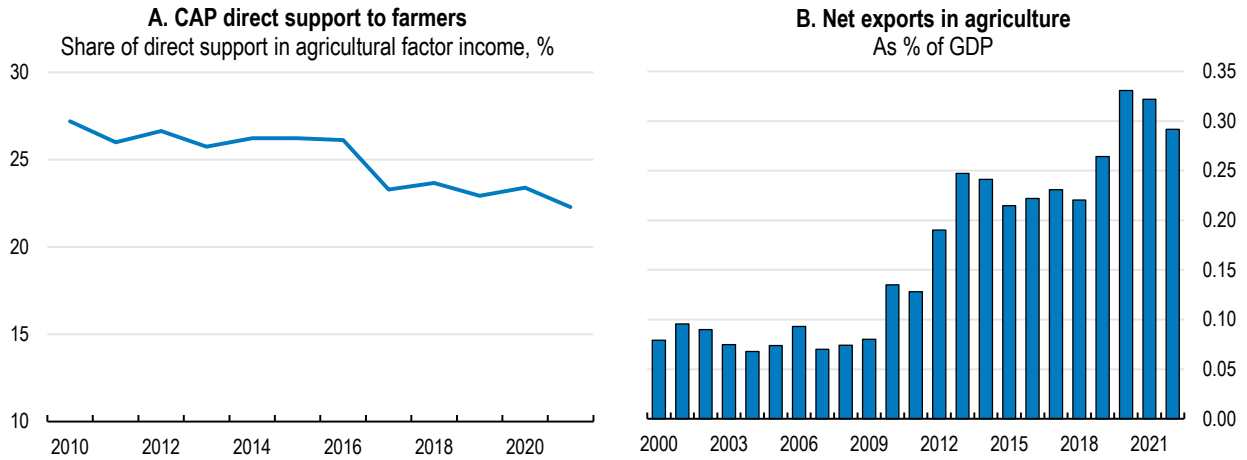
There are contradictions between emission reduction incentives and incentives for emission-intensive meat production. One channel that actively prevents the reduction of emissions are direct payments based on livestock numbers (or coupled payments). Overall, a positive development has been that direct payments based on production volume have been reduced since 2003. However, about 8% of direct payments to agricultural producers continue to support livestock farming, which accounts for half of all agricultural emissions, although the EU cattle herd has decreased by 2% between 2010 and 2020 (European Commission, 2018[78]; European Commission, 2023[79]). Agricultural producers can receive coupled payments irrespective of their profitability. This means that unprofitable farms also receive support. For the period 2021-27, the ceiling for coupled payments was raised from 11% to 13% of direct payments, and the effective share of coupled payments reached 11.2% of direct payments in 2022 (European Commission, 2022[80]). Such support encourages the maintenance of high livestock numbers because agricultural producers would receive less payments if they reduced livestock numbers. The European Commission estimates that coupled payments have increased beef production by 2.4% and lowered beef prices by 3.9% between 2007 and 2015 (European Commission, 2018[81]). Such a practice also keeps fertiliser use high, as more nitrogen is required for animal products than for plant-based foods. Withdrawing support for high livestock numbers could help reduce agricultural GHG emissions (Jansson et al., 2020[82]). However, without coupled payments, farming in poor regions would be difficult to maintain and additional mitigation costs would make it even more difficult. In addition, withdrawing coupled payments may lead to lower meat production and higher meat prices. Lower meat production would not endanger food security as the EU is self-sufficient in this area, but higher meat prices may have an impact on food affordability for low-income households (European Commission, 2022[83]). Hence, the EU should withdraw direct payments based on livestock numbers. This should be done gradually to dampen the impact on food prices. If such a phase-out of coupled payments is politically not feasible, the EU should ensure that coupled payments at least do not lead to higher livestock numbers and are more targeted.

Another measure to reduce livestock emissions is the Industrial Emission Directive, which also regulates pollution from industrial-scale intensive livestock farms, such as nitrogen oxide, methane, and carbon dioxide. The Directive is currently under revision to strengthen the rules and cover more farms, including emission limits for key pollutants, which is welcome. Nonetheless, a policy push towards lower animal production, if not accompanied by a shift in EU consumer behaviour towards lower meat content diets, may have little effect on global emissions due to carbon leakage.

Since payments are based on hectares, the system of direct payments subsidises land use and keeps more agricultural land in use than would otherwise be the case. Currently, about 38% of the total land area of the EU is used for agriculture. Especially grassland used for emission-intensive livestock is dependent on direct payments as it is less productive than arable land. However, a growing trade surplus in agriculture over the past two decades, which reached 0.3% of EU GDP in 2021, questions the rationale for the continued high support for agricultural producers (Figure 2.12). Moreover, support is not targeted as larger

and more productive producers benefit disproportionally, with 80% of direct payments going to the largest 20% of agricultural producers (European Commission, 2022[84]). A reduction of direct payments could reduce agricultural emissions from land use (Brady et al., 2017[85]). The freed-up land could be made available for the large land needs of the renewable energy sector. At the same time, direct payments should be directed to mitigation activities of affected farmers (see below).

Figure 2.12. Agricultural income support remains high despite a growing trade surplus



Note: In Panel B, data refer to trade of the category "Food and live animals" of the SITC classification, including sub-category "Cereals and cereal preparations" but excluding sub-category "Fish (not marine mammals), crustaceans, molluscs and aquatic invertebrates, and preparations thereof".

Source: EC Farming Income Support database; Eurostat Trade Statistics database.

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Some measures to reduce emissions in agriculture may have adverse social consequences for the income of farmers. For example, reducing direct income payments based on the number of livestock could affect low-income farmers disproportionally. Analysing such social effects requires detailed data on direct income support by type of farmer and income group, as provided by the EU's Farm Accountancy Data Network (see below). Using such data will be important to better target direct payments to those who need it and those who produce with less emissions. Similarly, the extension of emission trading to agriculture, as proposed in this *Survey*, will involve costs for farmers. This entails setting up monitoring systems for emissions at the farm-level. More importantly, this will also include pricing agricultural emissions. Some of these costs will be passed on to consumers in the form of higher prices. But there is room to raise financial support for farmers' carbon mitigation activities, which remains limited with 0.9% of the CAP budget for 2014-2020 (European Network for Rural Development, 2021[68]). Hence, the EU should redistribute CAP funds to farmers' climate mitigation activities, so that the total burden to farmers can be limited.

The European Commission estimates that 40% of CAP spending between 2021 and 2027 will contribute to climate mitigation and adaptation. Reforms to the CAP will see an increase of funding for voluntary measures to encourage climate mitigation and adaptation, as well as more stringent mandatory rules to protect wetland and peatland. Climate mitigation efforts are stepped up due to restricted tillage as well as a ban on conversion, drainage, burning or extraction of peat. As part of the reformed CAP, the EU Commission will also assess EU countries' progress towards reaching climate objectives (Box 2.7). National CAP Strategic Plans aim at reducing greenhouse gas emissions and increasing carbon sequestration, by protecting and increasing carbon sinks, and addressing emissions from mineral fertilisers and livestock. Also, carbon removal is gaining more prominence. A voluntary certification scheme for carbon removals is being established, with carbon removal practices being funded by Horizon Europe and the Innovation Fund (see above). The enhanced requirement to maintain non-productive areas on at least 3% of arable farmland is also expected to increase carbon removal. In addition, the new CAP will incentivise farmers to store carbon in soil and biomass and reduce emissions on 35% of the EU's

agricultural area through appropriate management practices, such as extensive grassland management, organic fertilisation, and agroforestry.

Box 2.7. The new Common Agricultural Policy 2023-27

The CAP 2023-27 has a new governance model (new delivery model) with increased devolution to Member States, allowing for a more flexible implementation that considers local conditions and needs. At the same time, the new CAP has higher ambitions in terms of sustainability. It is built around ten specific objectives, including income support for farmers, climate change, landscape conservation, and biodiversity, among others. These objectives are also the basis upon which EU Member States have designed their national CAP strategic plans (CSPs). Each CSP combines a wide range of targeted interventions, addressing the specific needs of that Member State, with the view of delivering tangible results in relation to EU-level objectives, including "contributing to climate change mitigation and adaptation".

The new CAP includes a new 'green architecture'. Greening requirements were replaced by higher mandatory environmental requirements in cross-compliance (enhanced conditionality) and eco-schemes were introduced to encourage environmental and climate action funded under Pillar 1. Eco-schemes are voluntary measures that reward farmers for the management of land in a nature- and climate-friendly way. Supported action includes, among other, climate mitigation and adaptation, the prevention of soil degradation, soil restoration, the protection of biodiversity, restoration of habitats or species, reduced or sustainable use of pesticides, as well as improved animal welfare and anti-microbial resistance. Ring-fencing rules on spending have also been introduced: 40% of the CAP budget should be climate-relevant, with at least 25% of the budget in the first pillar allocated to eco-schemes, and at least 35% of funds in the second pillar allocated to measures supporting climate, biodiversity, environment, and animal welfare.

Enhanced conditionality increases the mandatory layer of the CAP, strengthening standards for good agricultural and environmental conditions (GAECs) in cross-compliance and greening commitments. Member States have a degree of flexibility to further increase mandatory measures under conditionality. Previous GAECs on the maintenance of permanent grassland and the ban on burning arable stubble have been modified, while new conditionality rules regarding climate have been introduced. The latter include the requirement to protect wetland and peatland.

An important innovation is that national CSPs include interventions under both pillars of the CAP and not only rural development interventions as previously. As for climate objectives, the 2023-27 CSPs cover a range of targeted interventions addressing country-specific climate-needs. Specifically, EU countries must demonstrate how their interventions contribute to the ambitions of the European Green Deal. The aim is stronger performance orientation based on result indicators. While these result indicators often still focus on practices, the use of indicators does reflect a step in the direction of a result-based policy. In this regard, a new set of indicators was established, allowing the European Commission to monitor national progress through annual performance reports and biannual performance reviews of the CSPs. Climate-related indicators include contributions to climate change mitigation; the share of livestock units under support to reduce GHG emissions; and the share of land under supported commitments to reduce GHG emissions or to maintain or enhance carbon storage. When submitting their CSPs, EU countries had to demonstrate increased ambition in their climate-related measures over the previous funding period ("no backsliding" clause).

CSPs are also intended to support the uptake of carbon removal methods (so-called carbon farming), either through Pillar 1 eco-schemes or Pillar 2 rural development schemes.

Source: OECD (2023[58]), *Policies for the Future of Farming and Food in the European Union*, OECD Agriculture and Food Policy Reviews, OECD Publishing, Paris.

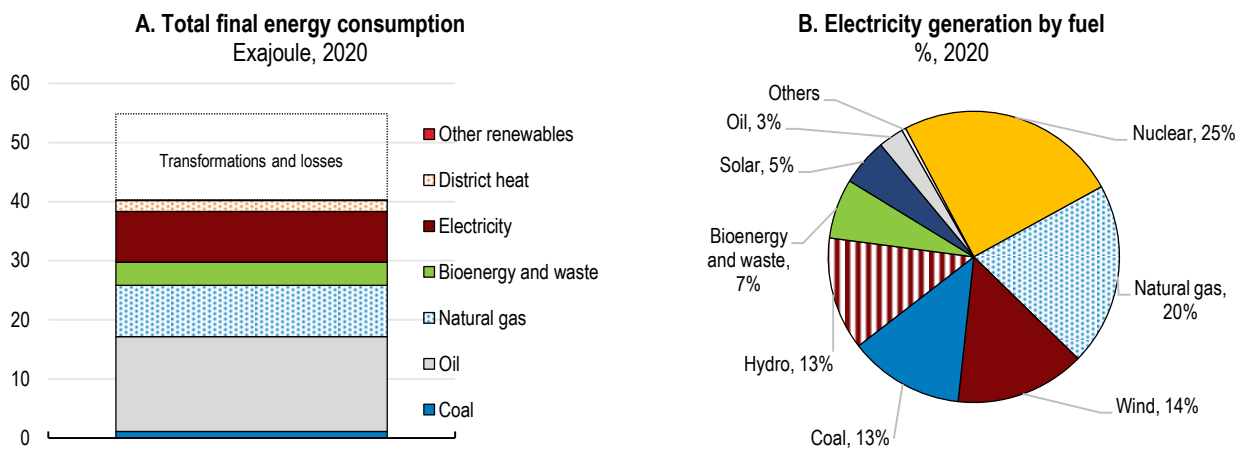
However, the Commission does not collect farm-level data on emissions that would allow a proper monitoring of greenhouse gas emissions in agriculture (OECD, 2023[58]). Such data could improve accountability of CAP spending and its impact on net greenhouse gas emissions. Hence, emission accounting should be extended to agricultural producers, as currently envisaged in Denmark (OECD, 2021[61]) (see above). As part of the Farm to Fork Strategy, the Commission has proposed in 2022 to improve farm level monitoring of environmental indicators through the transformation of the Farm Accountancy Data Network into the Farm Sustainability Data Network, which is welcome. In fact, a way forward would be to collect emission data as part of the questionnaire of the Farm Accountancy Data Network, which collects accountancy data from over 80 000 EU farms on a yearly basis (European Commission, 2021[86]). Initially, part-time farmers could be excluded.

Accelerating the energy transition

The energy transition will be key for reducing overall emissions and achieving energy security. To reduce emissions in the energy sector, the EU plans to decarbonise electricity production (European Commission, 2018[87]). In addition, consumers will have to move to higher electricity use. Momentum is strong as Russia's war against Ukraine increased the impetus to speed up investments in clean energy to secure energy supply.

Electricity accounts only for around 15% of energy consumption, reflecting that direct combustion of fossil fuels are still the dominant source of energy use (Figure 2.13). Thus, further decarbonisation of the sector will require a massive electrification of the economy and huge investments in additional supply and network infrastructure, as well as replacing existing fossil-fuel capacity (particularly coal) with cleaner technologies. This entails more integrated electricity markets to ensure electricity trade better balances supply and demand. Likewise, stronger price signals are needed to encourage investment in renewables and stronger demand response, while ensuring investment also flows into backup and storage capacities at times when solar and wind are not generating sufficient supply.

Figure 2.13. Energy consumption remains heavily reliant on fossil fuels



Note: Data refers to the European Union (27 countries). In Panel A, other renewables include hydro, solar and wind energy.
Source: IEA World Energy Balances database; and OECD calculations.

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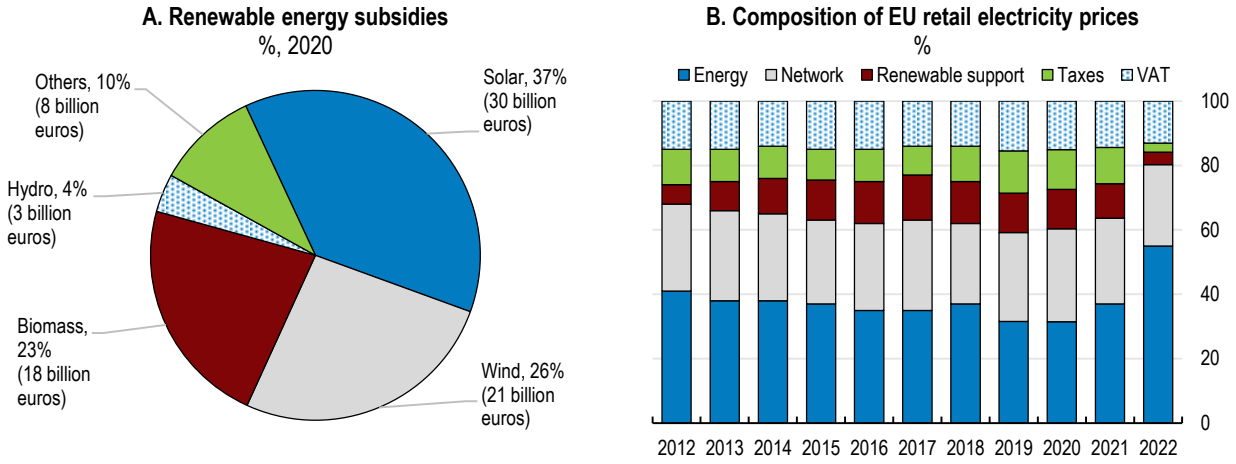
Currently, however, the rate of deployment of renewables is insufficient to reach the EU target of more than doubling the share of renewables in electricity generation to 69% by 2030 (European Commission, 2022[88]; European Commission, 2022[89]). Based on pre-2022 performance, the EU will need to add more than three times as much renewable capacity per year to achieve its target (IEA, 2022[4]). Moreover, reducing carbon-intensity of electricity has its limits. This reflects that renewable energy currently requires roughly 40-50% of backup capacity, notably gas, which is important at times when solar and wind are not

generating sufficient supply, although backup capacity needs can be reduced by enhanced capacity storage and demand response going forward (EASE, 2022[90]; IEA, 2020[91]).

Investment in renewables is encouraged by generous government support schemes such as feed-in tariffs, accounting for 13% of consumer electricity bills in 2021. In total, EU countries spent EUR 81 billion (or 0.6% of EU GDP) on such renewable subsidies in 2020, mostly benefiting biomass, solar and wind energy (Figure 2.14). National spending is enhanced by up to a third of EUR 800 billion pandemic funds and EUR 100 billion cohesion funds for the period 2021 to 2027 (or 0.4% of EU 2021 GDP a year). In contrast, competitive auctions are used less frequently (ACER, 2022[92]; IEA, 2020[93]). In 2020, only eight EU countries used competitive auctions for onshore wind and solar (Baringa Partners, 2022[94]). During auctions, firms compete for energy capacity allocations based on lowest price. Hence, competitive auctions encourage competition and may help minimise the fiscal cost of deploying renewables.

Figure 2.14. Government support for renewables remains high and mostly benefits solar and wind



Source: European Commission (2022[95]); Eurostat database.

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A temporary relaxation of state aid rules in response to the pandemic and then the energy crisis allows EU countries to spend more on renewable subsidies. The measure aims at accelerating the energy transition and is also a response to higher renewable spending in the United States (Box 2.8). State aid can support the development and upscaling of low-emission technologies that are not yet competitive, such as carbon capture and storage (see below). Strong support for wind and solar energy was called for when these technologies were still in their infancy and not cost-competitive. However, electricity generated from solar photovoltaic and onshore wind has become cost-competitive in most EU countries over the last decade, reducing the need for government subsidies such as feed-in tariffs. Moreover, EU subsidies are already generous, and these subsidies are associated with risks. For instance, relaxed state-aid rules risk distorting the Single Market. Another issue is whether subsidies are efficient (OECD, 2005[19]). The EU acknowledges these concerns and encourages EU countries to reduce subsidies for cost-competitive technologies (European Commission, 2022[96]). Generous subsidies for solar and wind should be phased out and rechannelled towards new technologies that are not yet competitive such as carbon capture and hydrogen (IEA, 2022[4]). Hence, the EU state-aid framework should ensure that state aid is only provided for renewable technologies that are not yet competitive (Chapter 1). At the same time, deeper capital markets could support technological breakthroughs (see above).

Box 2.8. US Inflation Reduction Act

Under the Inflation Reduction Act (IRA), the United States provides USD 38 billion a year in government support for renewables for the period 2023 to 2033. This adds to USD 25 billion a year in spending on energy-related programmes under the Bipartisan Infrastructure Bill for the period 2021 to 2025. Altogether, spending under the two Acts accounts for 0.3% of GDP in 2023, or half of EU countries' spending on renewable energy subsidies of 0.6% of GDP in 2020. The IRA also imposes domestic content rules. In practice, domestic requirements might be less stringent as sub-components can be imported (JDSupra, 2023[97]).

USD 5 billion a year are allocated to the clean-vehicle credit. US consumers who purchase new electric vehicles are eligible to receive a tax credit of up to USD 7 500. This applies only to cars produced in the US, Canada, and Mexico, and essentially amounts to an import tariff of about 15% for an electric vehicle with a price of USD 50 000. In comparison, the EU imposes a 10% tariff on imported cars.

The bulk of government support under IRA (USD 25 billion a year) consists of tax credits. For instance, wind installations can obtain a tax credit of USD 0.15 per kWh. If 40% of the manufacturing content of wind turbines are produced in the Unites States, the tax credit rises by 10% (White and Case, 2022[98]).

Source: US Department of Energy (2022[99]) and US Internal Revenue Service (2022[100]).

Excessively long permitting procedures slow down the deployment of renewables (Figure 2.15). As permitting is the responsibility of EU countries, the EU calls on EU countries to simplify procedures for new permits and has proposed to designate renewable projects as of public interest to shorten permitting times. In addition, the EU Commission proposed the Net Zero Industry Act in March 2023. It foresees that Member States are to designate a single national authority to act as a single point of contact in charge of coordination and facilitation of permitting (European Commission, 2023[101]). EU countries should aim to permit onshore wind turbines and solar parks within two years and offshore wind projects within three years. Another factor behind lengthy permitting times is understaffed permitting authorities (European Commission, 2022[102]). To accelerate the deployment of renewables, permitting times for new renewable installations need to be reduced, as done in Germany and Spain in 2023 (IEA, 2022[4]). This requires bolstering the resources of permitting authorities. Furthermore, designating more agricultural land for renewable projects would free up important space (see below). These measures, which are to be implemented by Member States, are discussed in more detail in the *OECD Economic Surveys of Germany and Sweden* for example (OECD, 2023[64]; OECD, 2023[65]).

A question is whether the expansion of renewables to reach the target is technically feasible. Estimates suggest that a decarbonised electricity system will require up to 5% of the EU's land surface to be occupied by solar power plants (van de Ven et al., 2021[103]). Such an area corresponds to the area of Greece and the Czech Republic combined. This is in addition to onshore wind farms and offshore wind farms at sea. Achieving the energy transition will necessitate a significant acceleration of land conversion, especially agricultural land. However local resistance to onshore wind parks may slow down such a conversion.

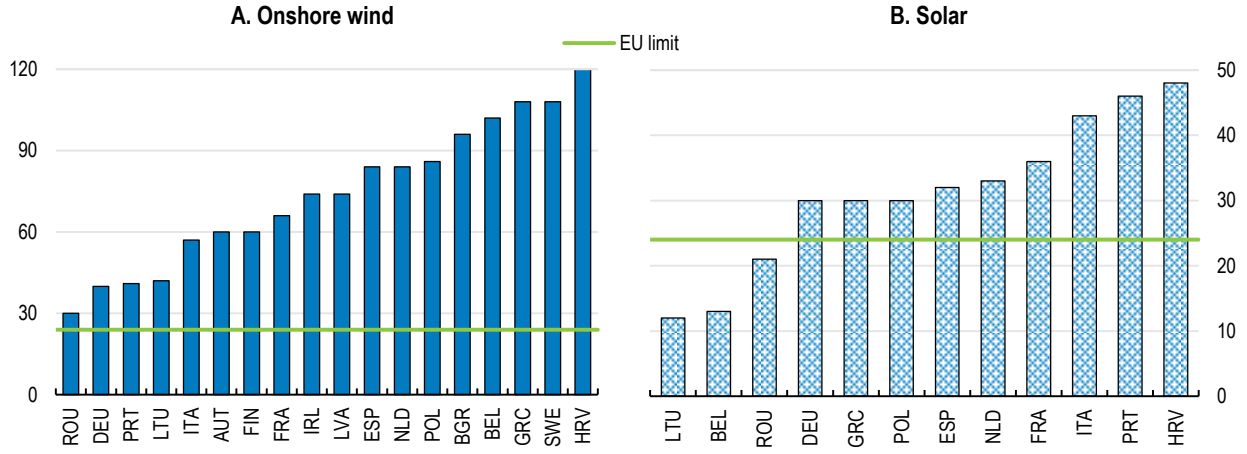
More integrated wholesale electricity markets are key for the transition towards a higher share of renewable electricity. For instance, countries with excess supply of wind and solar can export electricity to meet demand in other countries where supply is short. However, insufficient physical cross-border electricity grid connections hamper market integration. This is reflected in limited cross-border transmission capacity. Cross-border trade in electricity increased from 8% to 12% of final energy consumption between 2010 and 2015 but has remained stagnant since then. One of the central EU funding vehicles for cross-border grid investment, the Connecting Europe Facility, has a budget of less than EUR 6 billion (0.4% of EU GDP) in 2021-27. The REPowerEU plans to invest an additional EUR 29 billion in cross-border grid connections. Specifically, the REPowerEU chapters of national Recovery and Resilience Facility plans call for investments in infrastructure and cross-border projects. But the investments announced or already

underway in new grids for 2030 only cover about three quarters of the needed increase in cross-border interconnections (ENTSO-E, 2022[104]; ENTSO-E, 2022[105]). The case for additional EU funding is strong as many of the benefits of an integrated market accrue at the EU level. More integrated electricity wholesale markets will help to manage increased price variability of renewable electricity generation in a cost-effective way. Such an integrated market approach requires bolstering investment in cross-border connections. Hence, the EU should make more funding available for investment in cross-border grid connections by diverting funds to the Connecting Europe Facility or REPowerEU.

National transmission system operators (TSOs) are responsible for planning and building of electricity grids within and across EU countries. However, national plans for grid investment are not coherent, resulting in limited cross-border transmission capacity (European Court of Auditors, 2023[106]) (see above). The EU recognised limited coordination as a barrier to cross-border infrastructure investment and has started to establish a pan-EU governance structure for grid planning and building in 2018. As a first step, it mandated the European Network of Transmission System Operators for Electricity (ENTSO) to produce Ten-Year Network Development Plans (TYNDPs) on a biennial basis. With the TYNDPs, ENTSO assesses European electricity infrastructure needs and its future development, supply adequacy, and network resiliency, based on identified infrastructure bottlenecks. Efforts to reinforce coordination in grid infrastructure planning and investment should continue, especially through stronger coordination between TSOs. This should be combined with stronger resources and powers for the EU Agency for the Co-operation of Energy Regulators (ACER), the supervisory authority for electricity markets, to enforce EU rules regarding cross-border transmission capacity.

Figure 2.15. Lengthy permitting processes slow down the deployment of renewables

Permitting times, months



Note: In Panel A, EU limit of 24 months is stated in the Renewable Energy Directive (2018/2001). Countries analysed make up 96% of installed 2021 wind capacity and 91% of installed 2021 solar capacity and were chosen according to available data quality. Data only available for the countries presented in the Figure. Data extracted from an article published on 5 April 2022 (https://www.energymonitor.ai/policy/data-insight-the-permitting-problem-for-eu-wind-farms/).
Source: WindEurope; EMBER; and GlobalData.

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Another issue is how to set prices in a competitive electricity market when the marginal costs of renewable energy are zero. Day-ahead electricity wholesale markets are based on marginal pricing, where the price is set by the most expensive energy plant that is needed to meet demand. With falling costs of renewables, gas plants have become price setters. Gas plants have clear marginal costs, including the fossil fuel they burn. In contrast, renewables produce electricity at almost zero marginal cost. This means that an additional kilowatt hour of electricity is generated nearly for free once the solar or wind installations are set up and running. Nonetheless, fixed costs of solar and wind installations are high as these are capital-intensive. Higher interest rates in the medium-term are likely to raise such fixed costs further.

Looking ahead, the move towards renewables will have consequences for pricing in electricity markets. Electricity price volatility is set to increase. Electricity prices can fall to zero and become even negative when renewable energy is abundant. The opposite occurs when renewables are in scarce supply and demand is high, such as at night or during winters in the case of solar energy (IRENA, 2017[107]) Increased price volatility may reduce certainty in terms of long-term revenues, which renewable energy producers need in order to recover their fixed costs. In such a situation, investment in renewables may increasingly depend on markets for long-term electricity contracts (Barroso et al., 2021[108]). For instance, long-term commercial power purchase agreements (PPAs) allow companies to contract with renewable producers to buy the electricity from their plants for up to 20 years, reducing exposure to price volatility for businesses and providing producers with the needed revenue certainty to attract investment. The EU has made a proposal to reform the EU electricity market to strengthen long-term commercial contracts and contracts-for-difference capacity auctions (Box 2.9). With contracts-for-difference auctions, governments guarantee electricity producers a fixed minimum price for the capacity provided. However, the proposal foresees regulated retail electricity prices for consumers in times of emergency. In addition, contracts-for-difference auctions would set a maximum price for electricity at wholesale markets, effectively constituting a price cap. Such wholesale and retail price caps reduce investment incentives in renewables. Hence, there is a need to remove barriers to long-term electricity contracts, including regulated prices below market price.

Price volatility might also reflect the costs of back-up generation (such as gas power), which is needed at times when the sun and wind do not provide sufficient supply. An issue is how to remunerate providers of back-up capacity when they are only needed at times when there is not sufficient renewable electricity supply. Securing investment in additional energy supply may require long-term markets for back-up capacity, including capacity auctions.

Retail electricity markets are fragmented along national boundaries, as reflected in wide retail price differences across countries and sometimes within countries (European Court of Auditors, 2023[106]). To some extent price differences mirror taxes and levies. But the fragmentation also reflects that national markets are still not competitive and dominated by regulated retail electricity prices (Figure 2.16) (IEA, 2020[93]). Such a system of regulated retail prices reduces the effectiveness of the price signal as retail prices poorly reflect market demand (ACER/CEER, 2022[109]). As a result, electricity providers have reduced incentives to invest in cost-efficient low-carbon electricity generation. Moreover, retail price regulation reduces energy saving incentives and discourages consumers to reduce peak demand by shifting consumption to periods with lower prices. The EU Directive on Common Rules for the Internal Market for Electricity requires countries to phase out retail price regulation except if it is time-limited and for energy-poor or vulnerable households. The Directive also sets out that the protection of energy-poor and vulnerable households should be primarily through social policy or means other than price regulation. Further integration of wholesale electricity markets requires stronger price signals. This also entails making national retail electricity markets more competitive, reducing price divergence. Hence, the EU should ensure that countries fully implement the EU Directive on Common Rules for the Internal Market for Electricity by phasing out regulated retail prices. A more integrated wholesale electricity market will be also important to tackle the energy crisis and secure energy security.

Faced with higher price volatility and potential adverse social consequences, governments stepped in to subsidise fossil fuel consumption and regulate retail electricity prices in 2022. However, such interventions need to be assessed against the functioning of integrated electricity markets, which are estimated to have delivered price savings of 2.4% of GDP a year for consumers over the past decade due to lower electricity prices (ACER, 2022[92]). Targeted income support for low-income households can address social concerns while preserving energy saving incentives, although such targeted support also comes with implementation difficulties (OECD, 2023[110]).

Another issue holding back more competitive retail electricity markets is the lack of transparent pricing for electricity and gas in most EU countries. Despite EU regulations calling for countries to establish certified online tools for comparing retail electricity and gas prices, only seven EU countries provide such tools

(ACER/CEER, 2022[109]). Transparent pricing can support more competitive retail markets by encouraging consumers to switch to the cheapest supplier.

Box 2.9. The European Commission's proposal for a reform of the EU electricity market

In March 2023, the European Commission proposed to reform the EU electricity market in reaction to the energy price shock in 2022. The proposal aims to reduce price volatility for consumers, enhance long-term price stability, and encourage investments in renewables.

Protecting and empowering consumers

- Regulated retail prices for households and small and medium enterprises in case of an emergency.
- Consumers should have the right to choose between a fixed price contract and a dynamic price contract, providing options both for risk-averse and risk-taking consumers. A stronger uptake of dynamic pricing aims to encourage demand shifting to times when electricity prices are cheaper, such as at night.

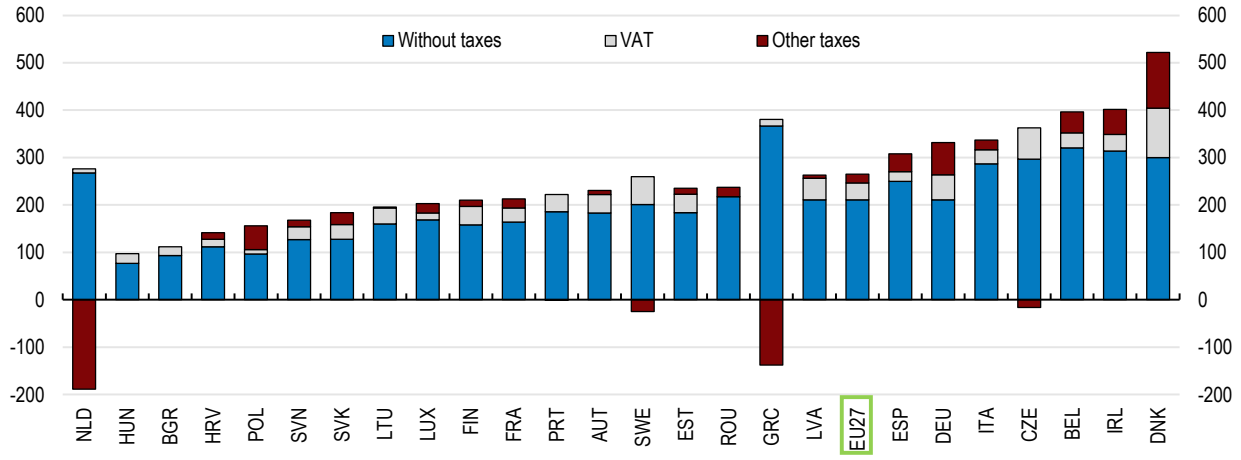
Enhancing energy costs' predictability and stability to boost industrial competitiveness

- Enhanced market access to long-term contracts, notably long-term commercial power purchase agreements (PPAs) and contracts-for-differences (CfDs):
- Member States would provide state guarantees to reduce the financial risks associated with payment default, which is often a major barrier to PPAs. Renewable energy providers participating in a public tender would have to reserve a share of the generation for sale through a PPA. In addition, electricity providers would be subject to more stringent hedging requirements, which is also expected to boost demand for PPAs.
- Through CfDs, governments guarantee electricity providers a minimum price. The proposal foresees 2-way CfDs for electricity providers, with a minimum price as well as a maximum price or price cap, so that any revenues above the price cap would have to be paid back to the government. CfDs would apply to solar, wind, geothermal, hydro, and nuclear energy providers.
- Improving the functioning of the short-term wholesale electricity market, by reducing the minimum bid size for intraday and day-ahead markets to improve liquidity.
- To improve the flexibility of the electricity system, Member States would be required to assess their electricity system needs and would have the possibility to introduce new support schemes especially for demand response and storage.
- The Agency for the Cooperation of Energy Regulators (ACER) would have enhanced ability to monitor energy market functioning. In particular, the updated Regulation on Wholesale Energy Market Integrity and Transparency would ensure better data quality as well as strengthen the agency's role in investigations of potential market abuse cases of cross border nature.

Source: European Commission (2023[111]).

Figure 2.16. Retail prices for electricity differ across EU countries

Electricity prices for households, EUR per MWh, 2022



Note: Electricity prices for household consumers in the consumption bands 2.5 MWh-5 MWh (band DC). "Other taxes" is negative when the environmental tax allowance's amount is higher than the amount of the environmental tax itself.
Source: Eurostat Electricity prices components for household consumers database.

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A related issue is price regulation in wholesale energy markets. High energy prices during the energy crisis in 2022 were a burden on many households, reducing their disposable incomes. In contrast, energy companies benefitted from high windfall profits on the back of rising wholesale energy prices. Such a situation led governments to tax the high profits of energy companies and use the tax receipts to finance energy support for households. In December 2022, EU countries agreed to introduce a temporary revenue cap for energy companies (so-called inframarginal technologies revenues). Specifically, revenues of non-gas electricity producers were capped at EUR 180 per megawatt hour at the wholesale market, including renewables. However, the drawback of such temporary measures is that they create more uncertainty and may discourage investment. The revenue cap corresponds to a 100% tax on revenues above the threshold in the energy sector. In general, such sectoral taxes on revenues distort activity. That is, the sectoral allocation of capital is distorted by differences in tax rates across sectors. In addition, the cap only applies for market revenues above EUR 180 per megawatt hour and thus may increase with the tax base. As a result, the tax burden may be higher for larger renewable producers, reducing their incentives for investment and expansion (IEA, 2022[4]). The revenue cap is explicitly designed as a temporary measure and will be reviewed in June 2023. Fostering investment incentives in the green transition requires a more predictable tax system for renewable producers. This entails ensuring that the cap on revenues remains exceptional by phasing it out.

A higher reliance on renewables will entail securing sufficient backup capacity. About 40-50% of the electricity mix currently consists of conventional energy sources, notably gas, to provide such backup capacity at times when solar and wind are not generating sufficient energy, such as at night or in winter in the case of solar energy (EASE, 2022[90]; IEA, 2020[91]). This means that for every additional megawatt hour of energy supply from renewables, an additional 0.4-0.5-megawatt hour of backup capacity is needed. However, price regulation and windfall taxes discourage investment in backup capacities as higher taxation of the energy sector reduces investment incentives. Most backup capacity continues to be provided by legacy gas, with little investment in new capacities (IEA, 2020[93]). A clear price signal and a stable business environment are essential to attract investment in backup capacities (see above). In addition, more integrated electricity markets will reduce the need for backup capacity as excess supply of wind and solar electricity can be exported to meet demand in other countries where supply is short.

The carbon intensity of electricity production differs significantly across EU countries. While some countries have a low-carbon intensity electricity mix due to high shares of renewables and nuclear, several Central

and Eastern Member States rely heavily on coal for electricity generation (EEA, 2022[112]). Coal remains the largest single contributor to emissions in the power sector, accounting for a third of all ETS emissions (Ember, 2022[113]). Four EU countries have already phased-out coal, with another 14 having announced they would do so by 2030. Several Central and Eastern EU countries remain committed to coal production after 2030, accounting for about 45% of current EU coal use (Ember, 2023[114]; Climate Action Network Europe, 2023[115]). Efforts to phase out coal need to accelerate if the EU is to meet the emission target in 2030 (IEA, 2021[116]).

Biomass has been the main driver behind the renewable rollout in the past decade, accounting for nearly 60% of renewable energy in 2020. This reflects generous government support for biomass, amounting to almost a quarter of total renewable support across EU countries (Figure 2.14). Biomass such as biofuels can be sustainable when produced with low-emission energy and made from wastes and residues. For instance, nearly 70% of renewable diesel and biojet fuel came from wastes and residues in 2021 (IEA, 2022[117]). However, some types of biomass, such as wood pellets, can be 1.8 times more emission-intensive than coal due to combustion and processing losses, especially when transported over distances of 145 kilometres or more (Schnorf et al., 2021[16]; Sterman, Siegel and Rooney-Varga, 2018[118]). Despite these concerns, the EU imports almost 40% of wood pellets for domestic consumption, mostly from the United States (Brack, Birdsey and Walker, 2021[15]). Another issue is that burning woody biomass immediately releases CO_2 in the atmosphere, while reforestation takes time. This means that depending on the time needed for reforestation and the type of feedstock, emissions may increase for decades before they are reabsorbed (IEEP, 2021[119]). Another negative environmental externality associated with biomass is worsened biodiversity (IEA, 2022[117]).

EU regulations do not discourage the use of woody biomass for energy. The ETS currently excludes emissions from burning of biomass, in line with international emission accounting rules. According to these rules, emissions from the use of woody biomass are reported in the land-use sector (LULUCF) and not in the energy sector to avoid double counting of emissions. This means that emissions from burning biomass count towards the national LULUCF commitments of the country where the wood is harvested. However, this practice may in effect subsidise energy installations for burning biomass since imported woody biomass emissions at combustion are not accounted for in the EU but in the exporting country, risking overstating the progress made by EU countries towards emission targets (Brack, Birdsey and Walker, 2021[15]). The EU's proposal for a revised Renewable Energy Directive therefore requires bioenergy generators to demonstrate that the country of origin has laws in place to protect against unsustainable harvesting of wood, and to report emissions from forest harvesting. It would also make government support for biomass conditional on more stringent sustainability criteria. Nevertheless, the Renewable Energy Directive and the taxonomy of environmentally sustainable activities continue to include woody biomass. In line with emission reduction targets, the EU should discourage government support for unsustainable biomass, by adopting the revised Renewable Energy Directive and ensuring that unsustainable biomass is clearly excluded for sustainable activities under the taxonomy.

Carbon removal from the atmosphere is essential, along with emissions' reductions, to achieve the net-zero target. However, carbon capture, storage and use efforts remain limited and happen almost entirely in agriculture and forestry. In these sectors the options for further carbon removals are limited and would require large reforestation and the conversion of urban and built-up land into agricultural land. Novel methods for carbon dioxide removal (CDR) outside these sectors accounted only for 0.1% of carbon removals in 2020 (Smith et al., 2023[120]). Examples include carbon storage pilots in the United States or Danish and Norwegian projects in the North Sea. In 2022, the EU proposed a voluntary framework to certify carbon removals but markets for carbon removals remain non-existent. Moreover, the deployment of novel CDR technologies does not seem to feature prominently in the EU's innovation policy, as reflected in low funding (Box 2.10) (Philp, 2023[121]). In comparison, the Unites States have expanded tax credits under the Inflation Reduction Act of 2022 to incentivise CDR deployment, complementing funding of 0.01% of GDP per year under the Infrastructure Investment and Jobs Act. CDR technologies are still in their

infancy and require stronger incentives. This entails an expansion of tax credits for carbon capture, which should be technology neutral. A more efficient solution would be the establishment of markets for carbon removals, for instance by including carbon removed from the atmosphere in emission trading.

Box 2.10. Policy support for carbon capture and storage

Carbon capture and storage in agriculture and forestry

Reforestation, rewetting of peatlands and other soil management techniques can capture and permanently store CO_2 in the soil. In the EU, the LULUCF sector (land use, land change, and forestry) was estimated to have absorbed about 230 mega-tonnes of CO_2 from the atmosphere in 2020, or 6% of total EU GHG emissions (European Environment Agency, 2022[122]). The EU has set an EU-wide target of 310 mega-tonne CO_2 for removals from the LULUCF sector by 2030, helped by generous support for conservation practices under the Common Agricultural Policy (European Commission, 2022[123]). Such support includes direct payments to farmers and voluntary agri-environmental payment schemes that provide funding conditional on certain conservation practices. In addition, the European Commission has made a proposal for an EU framework for carbon removal certificates to incentivise carbon removals, as already introduced in the United Kingdom (Scottish Forestry, 2022[124]).

Carbon capture and storage in industry and energy

Novel applications in industry and energy include direct air capture (DAC) and bioenergy with carbon capture and storage (BECCS), among other things. With carbon removal technologies still considered as immature, governments deploy subsidies to support research and development, pilot projects and the first utility-scale projects (IEA, 2022[125]).

European Union: The EU provides EUR 3.4 billion between 2021 and 2030 (or 0.002% of 2021 GDP per year) to support carbon removal technologies, with 3 billion coming from the 38 billion EU's Innovation Fund, and the remaining funding from Horizon Europe, the EU's programme on research, development and innovation (European Commission, 2022[126]; European Commission, 2023[127]). The Soil Mission programme under Horizon Europe finances large projects on carbon removal in agriculture (so-called carbon farming). In addition, national subsidy schemes exist, such as in Denmark and the Netherlands, although funding remains small compared to support for established wind and solar technologies (Figure 2.14).

United Kingdom: Research and development is supported through GBP 100 million (or 0.003% of 2021 GDP a year) between 2021 and 2024. In 2022, consultations have been launched by the government to expand the existing carbon removal certification system in agriculture and forestry to novel applications like BECCS and DAC with carbon storage (UK Department for Business, 2022[128]; UK Department for Business, 2022[129]). There is also a debate about extending the emissions trading system to carbon removals, with carbon removals incentivised by contracts guaranteeing a fixed price per tonne of CO_2 removed (Department for Business, 2022[130]).

United States: The 2021 Infrastructure Investment and Jobs Act provides approximately USD 12 billion (0.01% of 2021 GDP a year) in R&D support and loans for carbon capture and storage technologies over the period 2021 to 2025. In addition, the Inflation Reduction Act from 2022 increased tax credits to enhance the financial viability of carbon capture projects. It doubled the tax credit for carbon that is captured and permanently stored from power and industrial plants to USD 85 per tonne of CO_2, and more than tripled the tax credit for CO_2 that is captured and stored from direct air capture to USD 180 per tonne. Eligible projects need to demonstrate a capture and storage capacity of 18 750 tonnes per year for power plants and 12 500 tonnes per year for industrial facilities. The capture threshold to claim credit for direct air capture facilities was significantly lowered from 100 000 tonnes to 1 000 tonnes per year, making tax support more attainable (IEA, 2022[131]).

Improved energy efficiency standards can reduce emissions. One such area is improved insulation of buildings. Buildings account for 36 per cent of EU energy-related carbon emissions (Tsemekidi-Tzeiranaki et al., 2019[132]). Roughly three-quarters of that comes from running buildings, including heating, and reflects that three quarters of the EU building stock is energy inefficient. The market already ensures that insulation is better in colder climates. Nonetheless, insufficient insulation means that many EU countries have higher per capita energy consumption than their income levels would suggest (IEA, 2022[133]).

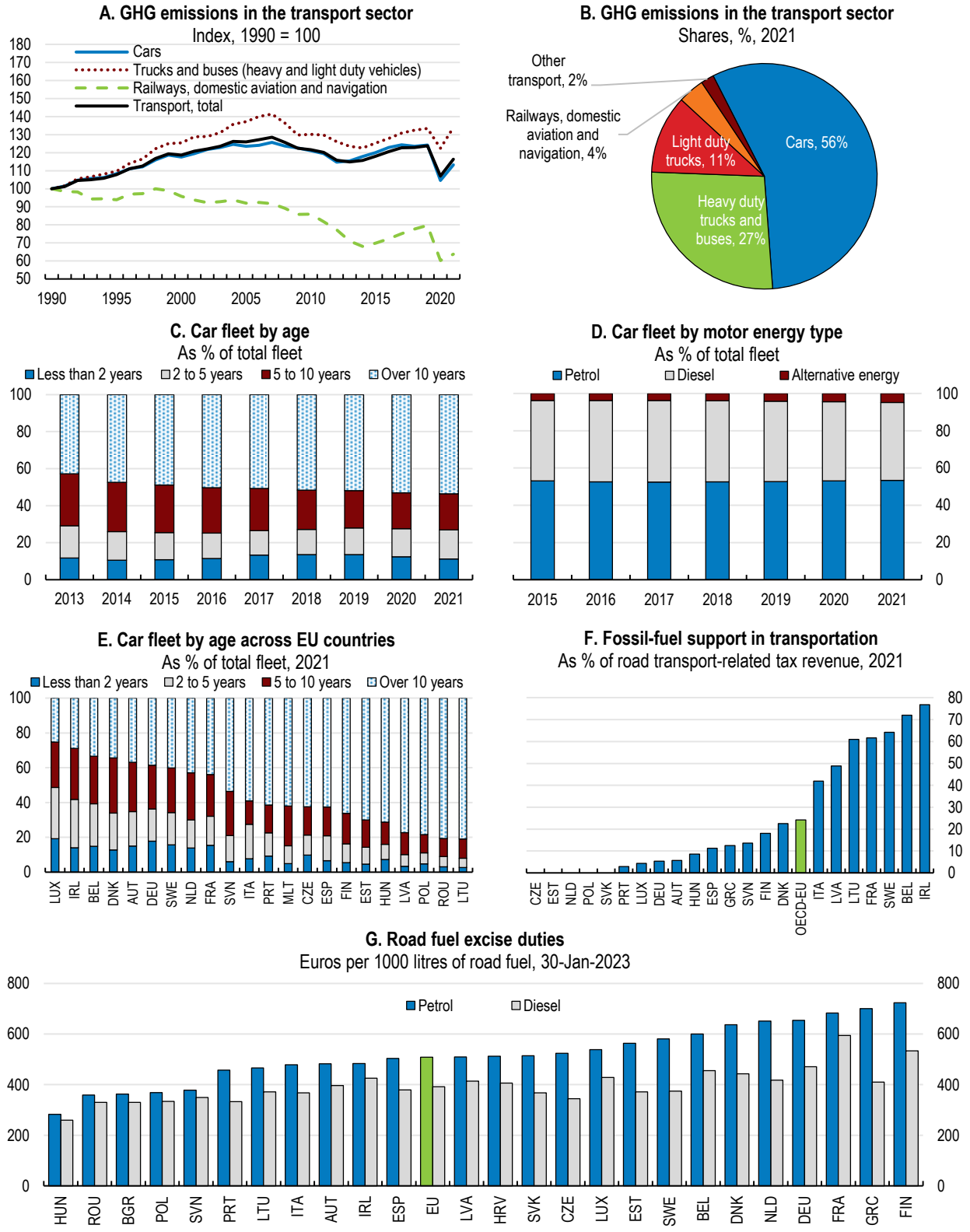
The EU addresses the issue of energy efficiency and provides subsidies to improve the energy and thermal efficiency of the housing stock. Poor insulation can also be addressed by regulation. For instance, the EU Commission proposed more stringent minimum energy performance standards to increase energy savings in buildings. Since EU-wide minimum energy efficiency standards were first introduced in 1993, energy consumption in new buildings has halved in 2020 relative to typical buildings from the 1980s (European Commission, 2020[134]). The proposal for more stringent minimum energy efficiency standards foresees that all new buildings emit zero emissions from 2028. More importantly, the proposal would also require the renovation of the existing housing stock, with the objective that all buildings should have at least energy efficiency label E by 2033, where class G is the lowest and class A the highest energy efficiency label. This means that in a 10-years-time it would be impossible to sell or rent the F or G energy class homes. Achieving this will require massive investment by EU countries in insulation and renovation, as about 15% of buildings in the EU have a G energy label (European Commission, 2020[134]; OECD, 2023[64]). However, the efficiency of such regulations is reduced by regulated retail energy prices for households, which reduce energy saving incentives. Domestic policies such as energy support measures should support common EU objectives.

Bringing down emissions in transportation

Emissions in transport have risen in recent years, reflecting increased economic activity and an ageing vehicle fleet that still relies heavily on fossil fuels (Figure 2.17, Panel A to E). Emissions fell only during the pandemic. The EU adopted a gradual reduction of CO_2 emissions from road light-duty vehicles leading to net-zero emission standards for new vehicles from 2035 and proposed a gradual phase-out of fossil fuel subsidies by 2033. However, many EU countries still have incentives for passenger road transport in place that contradict EU-wide green efforts, such as various tax reductions for transport fuels and commuting allowances (Figure 2.17, Panel F). For instance, all EU countries give preferential tax treatment to diesel relative to petrol despite diesel's higher carbon content (Figure 2.17, Panel G). There are also tax exemptions and reduced tax rates for fuels in aviation and shipping. To make polluters pay, a faster phase-out of environmentally harmful reduced rates and exemptions for fossil fuels should be envisaged. This should be complemented with taxation of fuels based on energy content and environmental performance.

Road transportation already faces high carbon prices in the form of fuel excise duties (see above). In contrast, transport fuels for aviation and shipping remain under-priced, reflecting lower energy tax rates and tax exemptions. To better reflect the carbon content of fossil fuels and align carbon pricing across sectors and different uses of energy, the EU will establish a new emission trading system for transport, industrial and residential heating fuels (Box 2.11). A similar emission trading system for transport and residential fuels was successfully introduced in Germany in 2021 (OECD, 2023[64]). Extending the ETS carbon price to transport fuel producers will strengthen the price signal for carbon and help direct emission reduction efforts to activities with the lowest abatement costs (OECD, 2022[70]).

Figure 2.17. Cars are the main source of emissions in the transport sector



Note: In Panel A and B, GHG emissions in the transport sector exclude emissions from international aviation and navigation. In Panel C and D, data refer to 24 EU countries (the 27 EU Members States, except Bulgaria, Greece, and the Slovak Republic).

Source: Eurostat; OECD Environment Statistics database; European Environment Agency; and OECD calculations.

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Box 2.11. EU Emission Trading System for buildings and road transport (ETS 2)

The EU will establish a new emission trading system for emissions from fuels used in road transport, buildings, and certain industrial process that are not covered by the existing ETS. This new ETS 2 will be launched in 2027, although it may be introduced a year later in the event of exceptionally high energy prices. The new ETS 2 will be separate from the existing ETS for emissions from energy, industry, maritime transport, and within-EU aviation.

ETS 2 will regulate fuel suppliers rather than end-consumers. Nonetheless, fuel producers are likely to pass on higher carbon costs to consumers. As in the traditional ETS, the ETS 2 will put an absolute cap on the covered emissions, which will decrease annually to achieve an emission reduction of 42% in 2030 (compared to 2005 levels). Emission allowances will be auctioned and there will not be free allowances. The carbon price is expected to be lower in the new ETS 2 system than in the traditional ETS system. A potential merger of the new ETS with the traditional ETS will be reviewed in 2031.

To mitigate the impact of higher fuel prices on households, a new Social Climate Fund will be established. The Social Climate Fund will mobilise EUR 86.7 billion, including 25% from co-financing from Member States. To complement this, Member States should spend the remaining emissions trading revenues on climate and energy-related projects and address social aspects of the transition.

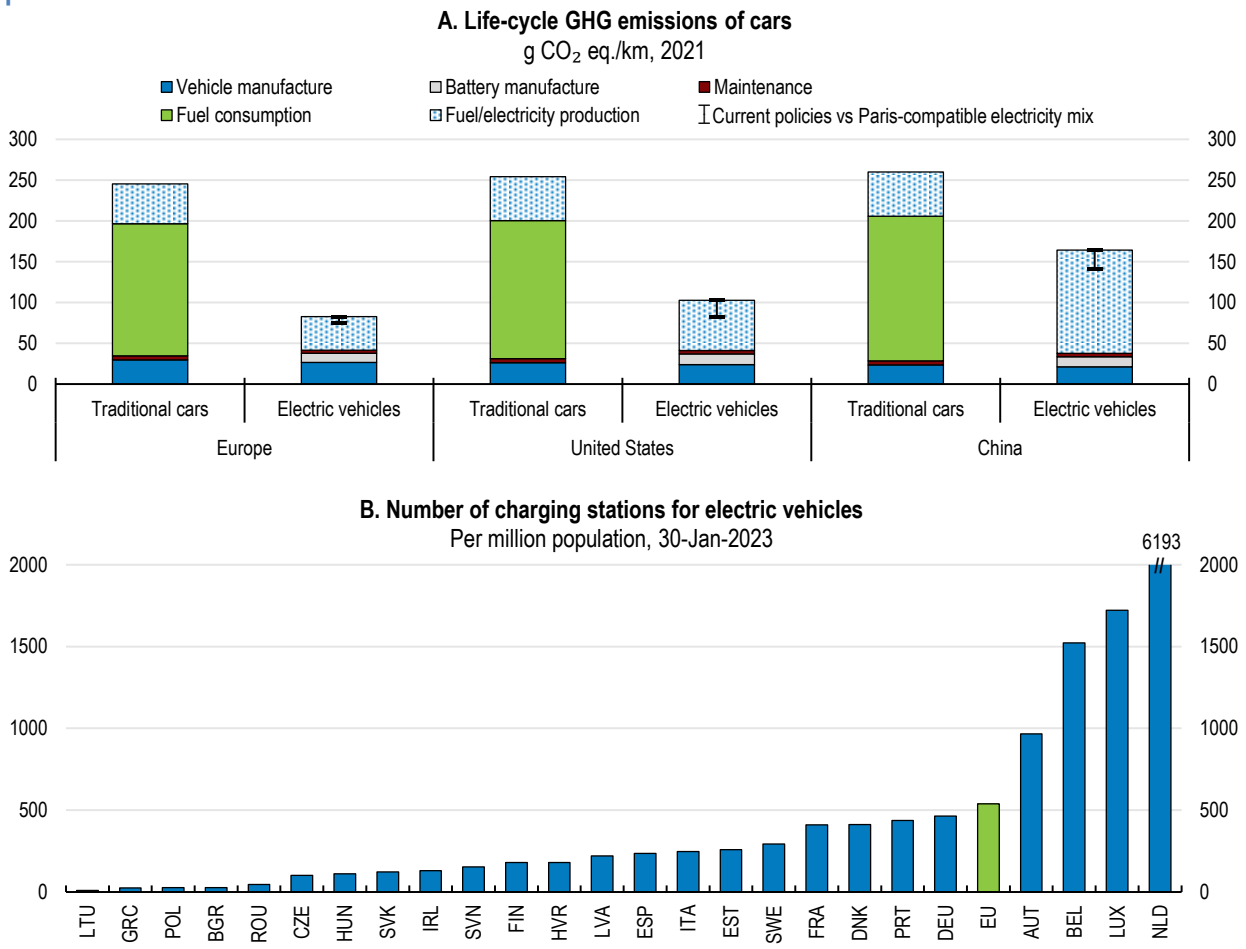
Source: European Commission (2023[135]).

Emission standards for new vehicles are an important regulatory measure to reduce emissions from road transportation. The EU announced more stringent emission standards that foresee zero CO_2 emissions for new cars and vans registered from 2035 onwards. The Commission will make a proposal for registering vehicles after 2035 that run exclusively on CO_2-neutral fuels. In practice, this entails gradually lowering the annual permitted emissions of new cars, so that after 2035 new cars are only allowed to emit zero CO_2. However, this regulatory measure will only affect new cars. It may not be sufficient to lower overall emissions in private transportation as the increasing average age of cars means that the composition of the car fleet only changes slowly. This is particularly the case as the resale value of used cars will fall, increasing incentives to extend the life stock of the existing car fleet. A factor behind the slow renewal of the car fleet are national purchase and registration taxes for cars, which often do not reflect carbon-intensity (ACEA, 2022[136]). Also, the production and use of electric vehicles causes emissions, albeit markedly lower than the production and use of combustion engine cars, once the electricity mix, battery production and decommissioning are taken into account. An issue is that electric cars produced in countries with high carbon-intensive energy mix, for instance based on coal, are also more carbon intensive, although not as much as combustion engine cars (Figure 2.18, Panel A) (Buberger et al., 2022[137]; Transport and Environment, 2022[138]; IEA, 2022[139]; Bieker, 2021[140]). For road transport to contribute significantly to emission reductions, national vehicle taxation should reflect carbon-intensity of cars in circulation and consider emissions over the life cycle of the car, including battery production and decommissioning.

Another factor is the slow rollout of electric cars, although this has started to pick up significantly since 2020. Almost all EU countries offer direct subsidies and tax incentives for the purchase of electric vehicles (ACEA, 2022[141]). Electric cars accounted for 18% of new sales in 2021, but their share in the stock of vehicles remains low at around 3% (EEA, 2022[142]; IEA, 2022[143]). The high price of electric cars compared to traditional cars remains a barrier to their uptake. Another factor behind the slow rollout of electric cars may be insufficient charging stations. In fact, the density of charging stations is higher in richer Western European countries, but even there it is mostly limited to urban areas, leaving rural areas with the greatest need for private cars underserved (Figure 2.18, Panel B) (Wappelhorst, 2021[144]; Colle, Micallef and Horstead, 2022[145]). Looking ahead, the uptake of electric cars will depend on sufficient charging infrastructure in rural areas. Regulations can help spur the rollout of home charging stations, especially in rural areas where distances to charging infrastructure are larger. In this respect, the EU's Alternative Fuels Infrastructure Regulation proposes to extend the coverage of recharging stations on main roads. There

should be recharging stations for electric vehicles at least every 60 kilometres on main roads by the end of 2025. In addition, the EU requires charging infrastructure for all new residential buildings with more than ten parking spaces, which is welcome. A higher uptake of electric cars should be supported by higher taxation of fossil fuels (see above).

Figure 2.18. The carbon-intensity of electric cars depends on the electricity mix of the country of production



Note: In Panel A, life cycle GHG emissions of average medium-size gasoline internal combustion engine and battery electric vehicles registered in Europe, the United States and China in 2021. The error bars indicate the difference between the development of the electricity mix according to stated policies (the higher values) and what is required to align with the Paris Agreement.

Source: International Council on Clean Transportation Europe (2021[146]); Electromaps (2022[147]); Eurostat Population database; and OECD calculations.

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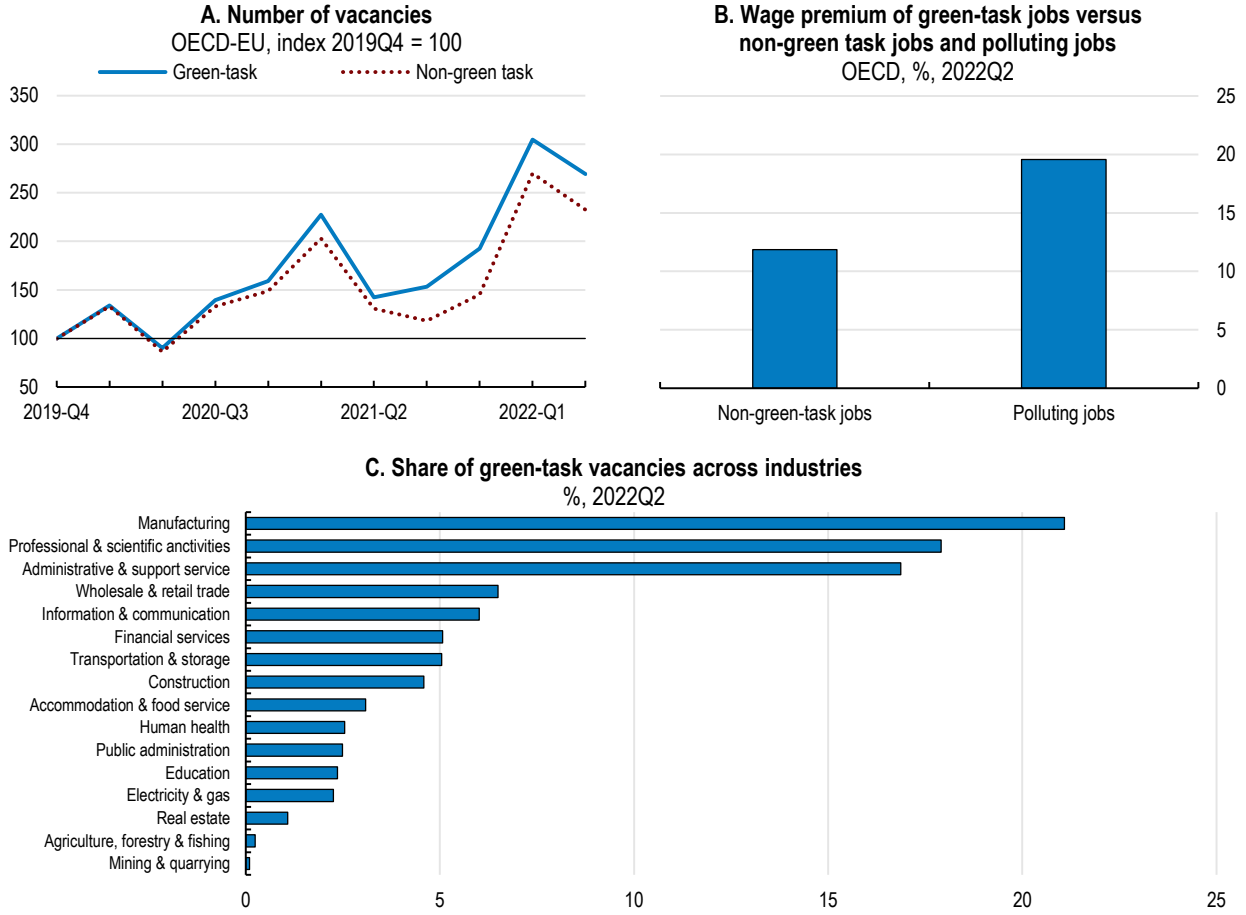
Rail has on average lower carbon emissions per kilometre than other forms of passenger transport (ITF, 2023[148]). Nonetheless, cross-border rail traffic remains underdeveloped across the EU as a whole, accounting for only 6% of passenger services in 2021. This share is somewhat higher for freight traffic (European Union Agency for Railways, 2022[149]). This reflects different security standards, signalling systems, national rules-induced red tape, and other technical and administrative systems that hamper the flow of international rail travellers and raise ticket prices. For instance, different technical systems mean that to start operating across borders, new trains need to be ordered that are specifically modified for the countries they pass through. Another example are different rules for brakes, which can lead to lengthy technical checks at the border of between 50 minutes and 9 hours (European Union Agency for Railways, 2022[150]). Also, national rail network operators charge foreign train operators rent for using locomotives, access to rails, and parking fees. Such charges can be set higher for cross-border services than domestic services, increasing fares, reducing entry, and leaving rail infrastructure underutilised. Other issues are

high rail track charges (amounting up to 40% of the ticket price), national regulations that forbid passenger transport at high-speed routes at night, and the lack of a unified and transparent ticketing system in Europe. All these barriers create the wrong incentives for cross-border trains (European Commission, 2021[151]). To bolster cross border trains and reduce waiting times at border crossings, national technical rules and infrastructure requirements should be harmonised. Moreover, the EU should ensure non-discrimination in locomotive lease prices and rail charges for domestic and foreign trains.

Limiting reallocation costs from the green transition

The green transition will entail social costs, including those arising from the reallocation of workers across sectors or regions. At the same time, population ageing is projected to lead to a smaller workforce. This will give rise to labour shortages, which is likely to help smooth the reallocation of labour from carbon-intensive sectors to non-carbon-intensive sectors. The wage premium associated with green jobs such as engineers and specialized construction workers may encourage workers to move into these activities (Figure 2.19). Nevertheless, there remains room for policy to support this process. Policy can ensure that barriers to job-to-job mobility are reduced, including flexible labour and housing markets. While this is primarily under the responsibility of EU countries, the EU also provides support to regions most affected by decarbonisation. Another important barrier to the green transition is skills shortages.

Figure 2.19. Vacancies and wage premia in green jobs are high



Note: In Panel A, data refer to OECD-EU countries. The numbers have been normalised so that demand equals 100 in the last quarter of 2019 and is a ratio of the demand in the following quarters to the demand in the last quarter of 2019. In Panel B, the average is calculated as a weighted sum of wage premiums in OECD countries, where the weights are equal to the share of OECD's labour force of each country. In Panel C, data refer to EU countries, Norway, Switzerland, and the UK.
Source: OECD (2023), Job Creation and Local Economic Development 2023: Bridging the Great Green Divide, OECD Publishing, Paris, https://doi.org/10.1787/21db61c1-en.

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The impact of decarbonisation policies will vary across regions. For instance, the coal phase out is estimated to lead to a loss of about 160 thousand direct jobs in coal regions by 2030 (Alves Dias et al., 2018[152]). The most affected regions are located in Member States such as the Czech Republic, Poland, and Romania, where coal regions already experience higher levels of unemployment. More broadly, higher carbon pricing is projected to lead to job losses in energy-intensive manufacturing, reflecting higher production costs (Chateau, Bibas and Lanzi, 2018[153]; Chateau, Miho and Borowiecki, 2023[10]). Job losses are expected to be more than compensated by job gains in less emission-intensive service sectors, mostly in urban regions, but labour market rigidities may slow the reallocation of workers across sectors and regions. Other barriers to labour reallocation include imperfect housing markets and skill mismatches (OECD, 2023[154]; Borgonovi et al., 2023[155]).

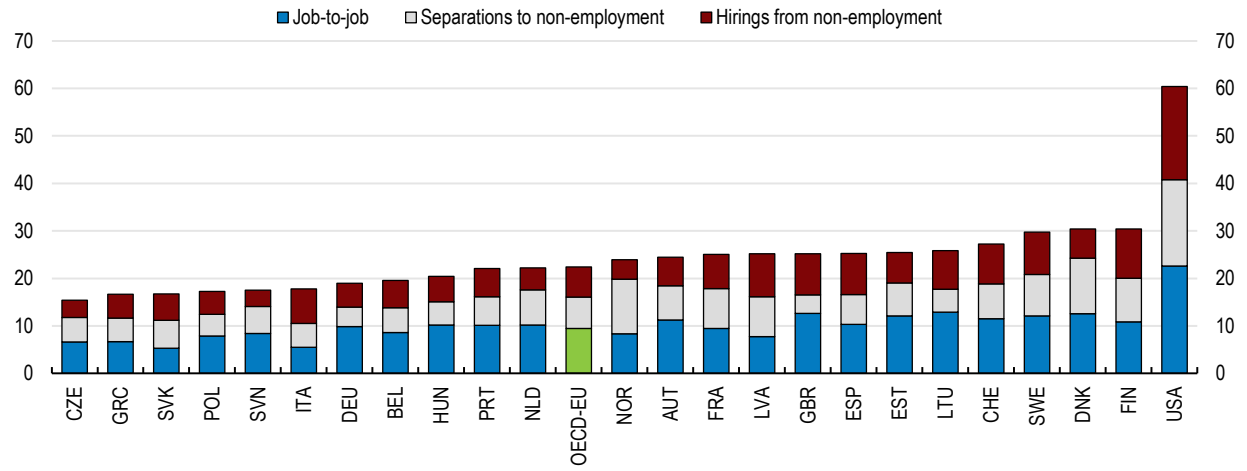
Labour mobility within EU countries is relatively low, which does not support the reallocation of workers (Figure 2.20). In addition to within-country mobility, there is also the issue of cross-border mobility. One barrier to labour mobility is an abundance of licensing and certification requirements, affecting roughly 40% of the European labour force (Figure 2.21). Such occupational entry barriers were shown to reduce labour reallocation in EU countries (Bambalaite, Nicoletti and von Rueden, 2020[156]). A concern is that the recognition of qualifications is a much higher barrier for third country professionals. Since 2018, the EU requires countries to assess the proportionality of such occupational entry barriers, although with limited success (European Commission, 2021[157]). Prior checks of qualifications for the provision of cross-border services have been abolished for two fifths of all regulated professions (Single Market Enforcement Taskforce, 2022[158]). The EU has several instruments to support cross-border mobility such as the European Professional Card, recognition of professional qualifications based on professional experience, and the automatic recognition of qualifications. Nonetheless, only seven professions across EU Member States allow for automatic recognition of qualifications, and none in jobs relevant for the green transition (such as engineers and construction workers) (European Commission, 2023[159]). The failure to assess the proportionality of occupational entry regulation has led the European Commission to open infringement proceedings against 18 Member States in 2021. Reducing licensing and certification requirements in sectors particularly relevant for the green transition would support employment transitions. This entails continued efforts to reduce entry barriers through proportionality tests. A more mobile European labour force would also help dampen skill shortages. Other barriers to cross-border mobility include language and housing markets (see below).

The lack of portability of social benefits across countries increases mobility costs. For instance, unemployment benefits are portable only for three months when moving to a different EU country. This may discourage cross-border mobility as jobseekers may not have sufficient time to search for new employment in other countries and employment that matches their skills. At the same time, mobility support for unemployed persons such as subsidies for housing are often not transferable, although the EU provides mobility grants for students and young workers via the Erasmus+ programme (European Commission, 2023[160]). Extending the benefit duration abroad to six months could improve cross-border mobility, especially from poorer regions into growing labour markets. The European Commission proposed to extend the period from three to six months and, optionally up to the end of the entitlements.

Another factor behind low geographical mobility is rigid housing markets. In many EU countries, housing supply is only slowly adjusting to demand, reflecting to some extent the prevalence of many regulated professions in construction (OECD, 2021[161]). Reducing the number of regulated professions in the construction sector may encourage a more flexible housing supply (see above). Geographical mobility is also restricted by high transaction costs when buying and selling property (Rupert and Wasmer, 2012[162]). The impact of such housing market frictions is amplified in EU countries with high rates of home ownership and small rental markets. However, housing policy is under the responsibility of EU countries and hence outside the scope of this chapter (OECD, 2021[163]; OECD, 2022[164]; OECD, 2021[165]).

Figure 2.20. Labour market churn is low on average

Labour market transitions, % of average employment, 2019



Note: Labour market flows for European countries are computed as the number of working-age individuals moving between two statuses from one year to another as a share of average employment between these two years. Job-to-job flows measure job changes from one job to another. Hirings from non-employment and separations to non-employment include flows from and to both unemployment and inactivity.
Labour market flows for the United States are available on a quarterly basis and defined as a share of the average number of jobs at the beginning and the end of quarter. Job-to-job flows include job changes within a quarter and from the previous to the adjacent quarter. Hirings from non-employment and separations to non-employment flows are from and to "persistent non-employment", defined as non-employment that lasts at least one quarter. Estimated annual transitions are obtained by summing quarterly rates.
Source: Causa, O., N. Luu and M. Abendschein (2021), "Labour market transitions across OECD countries: Stylised facts", OECD Economics Department Working Papers, No. 1692, OECD Publishing, Paris, https://doi.org/10.1787/62c85872-en.

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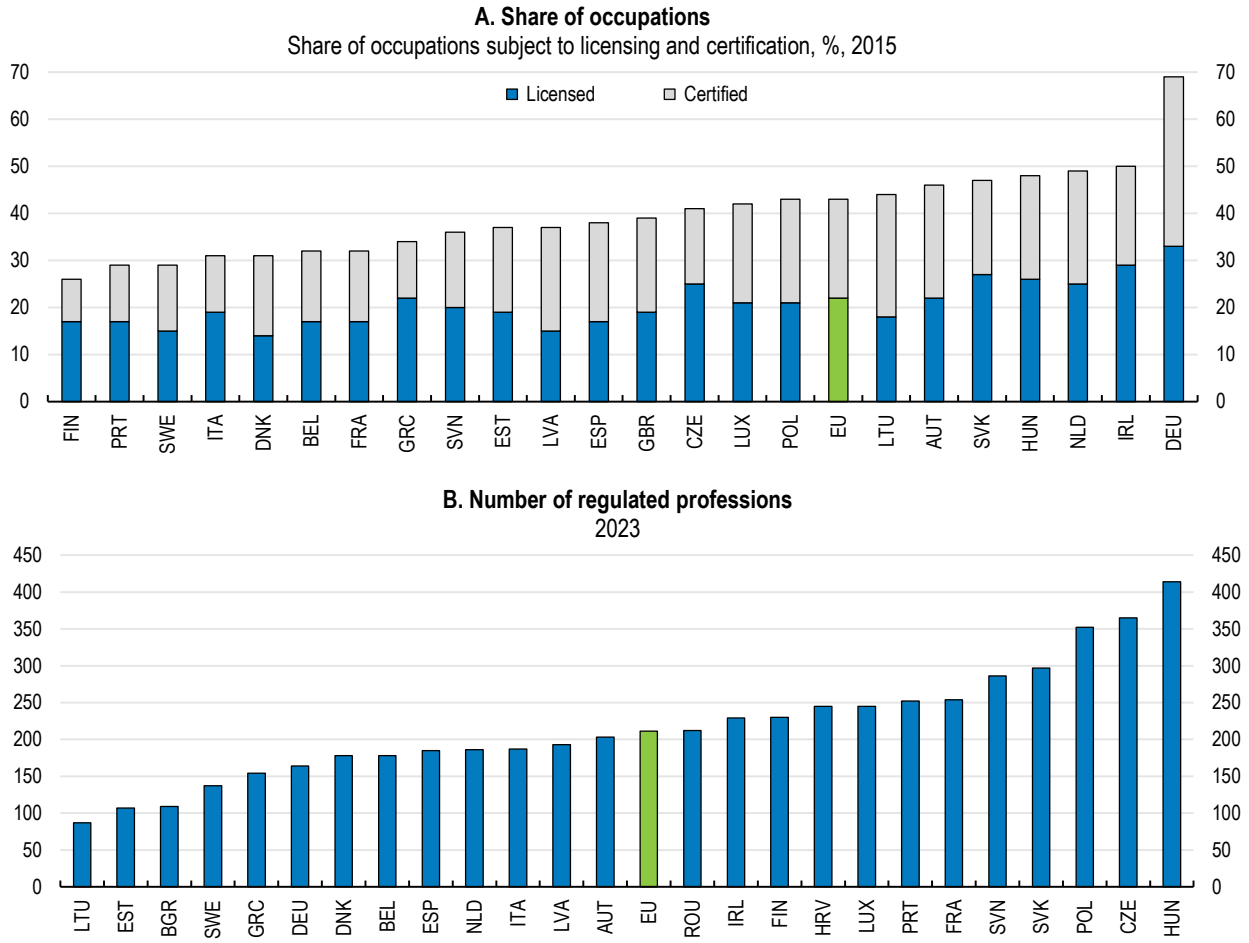
The EU provides support to regions most affected by decarbonisation. The European Social Fund+ is making available EUR 99 billion over 2021-27 (or 4.9% of the EU budget) to support employment and skills, which can be also used to support green skills and green jobs. This is complemented by spending under the Recovery and Resilience Facility as well as cohesion policy funds. In addition, the 2020 Just Transition Mechanism (JTM) aims to help the most affected regions manage the adverse effects of the green transition, including social and employment effects. The JTM focuses on regions dependent on the production of solid fossil fuels (such as coal, peat, and oil shale), as well as regions dependent on carbon-intensive industries (such as steel, cement, or chemicals). Although the JTM is complemented by other funds for cohesion policy, its limited financial resources of 1% of the EU budget do not match the wide-ranging ambitions of the project, which include supporting labour market transitions, economic revitalisation, and land restoration of regions most negatively affected by the transition. A more effective approach would be to concentrate the available resources under the JTM on policies with the highest impact on worker reallocation, including training, job placement and mobility support (OECD, 2021[165]; OECD, 2023[154]; OECD, 2023[64]). Another policy instrument is the Social Climate Fund to mitigate the social impacts of a new emissions trading system for buildings and road transport (Box 2.12). However, the Social Climate Fund will not come into force until 2026.

Figure 2.21. Occupational entry barriers remain high



Note: In Panel A, workers in licensed occupations declared that without having a professional certification, licence, or taking an entry exam, it would be illegal to practice their occupations. Workers in certified occupations proclaimed that they have a license, certificate, or that they passed an exam to practice their occupation. However, it would not be illegal to practice their occupations without it.

Source: Koumenta and Pagliero, 2017 and Koumenta and Pagliero, 2016, based on the EU Survey of Occupational Regulation; Bambalaite, I., G. Nicoletti and C. von Rueden (2020), "Occupational entry regulations and their effects on productivity in services: Firm-level evidence", OECD Economics Department Working Papers, No. 1605; and European Commission (2020[166]).

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Funding under the Just Transition Fund (JTF) is conditional on Territorial Just Transition Plans that set out local financing needs. However, in a few regions limited involvement of local stakeholders was found to hamper the discoveries of areas with highest need of support (CEE Bankwatch Network, 2022[167]; CEE Bankwatch Network, 2021[168]). This is even though all Member States adopted the 2022 Council Recommendation on ensuring a fair transition towards climate neutrality, which invites Member States to ensure a whole-of-society approach. It is essential to continue involving both the private sector and social partners in the development of transition plans to ensure that funding is tailored to local labour market needs, such as skills and training (Cameron et al., 2020[169]; OECD, 2021[165]). To better ensure this, funding could be made conditional on labour market outcomes such as job-to-job transitions, or transition from unemployment to employment in affected regions that result from active labour market support funded by the JTF. In practice, this means that EU funding would only be disbursed after a set of outcome-based milestones and targets are met. Such changes could be envisaged for the next round of JTF funding under the post-2027 Multiannual Financial Framework.

Box 2.12. Just Transition Mechanism and Social Climate Fund

Just Transition Mechanism

The JTM aims at making the green transition more inclusive, including by supporting workers in the regions most affected by mitigation policies. The Mechanism provides EUR 20.7 billion (1% of the EU budget) for the period 2021-27, with the aim to mobilise an additional EUR 34 billion in public and private funding:

- The Just Transition Fund (JTF) provides EUR 19.3 billion, complemented by national co-financing. Funding is provided for economic diversification, social and labour market policies, as well as the restoration of land affected by coal mining, among other things. This includes investment in SMEs, renewables, training of workers, and job-search assistance (European Commission, 2023[170]).
- The Public Sector Loan Facility will combine EUR 1.5 billion of grants from the EU budget with EUR 10 billion of loans from the European Investment Bank.
- The InvestEU Just Transition Scheme will provide EUR 15 billion in EU budgetary guarantees to attract private investment of EUR 34 billion in renewable energy deployment, innovation and digitisation, small and medium-sized businesses, and skills.

Social Climate Fund

Starting in 2026, the Social Climate Fund will provide EUR 86.7 billion (or 4.3% of the 2021-27 EU budget) to address the social impact of the expansion of emission trading to heating and road transportation fuels. The Fund will finance investments in energy efficiency, buildings renovation, low-emission heating and cooling systems, the purchase and charging infrastructure for electric vehicles, as well as public transportation. The Fund will also finance temporary direct income support to vulnerable households that are likely to be affected by the increase in road transport and heating fuel prices.

Initially, the Fund will be financed through EUR 50 million in revenues from auctioning ETS allowances in 2026. Once the ETS system for heating and transportation fuels (ETS II) enters into force in 2027, the Fund will be funded from auctioning ETS II allowances to reach EUR 65 billion, complemented by EUR 21.7 billion in national contributions. Looking ahead, the European Commission intends to fund the Social Climate Fund via the post-2027 Multiannual Financial Framework.

To receive funding, EU countries will have to submit Social Climate Plans that will be assessed by the European Commission and demonstrate the achievement of the milestones and targets defined in the Plan. These Plans are to be prepared in consultation with local and regional authorities, social partners as well as civil society.

Source: European Commission (2023[171]) and European Parliament (2022[172]).

Table 2.3. Recommendations

Main findings	Recommendations (key ones in bold)
Towards more efficient climate change mitigation	
The uneven coverage of the EU Emission Trading System (ETS) across sectors and differences across national tax systems impose heterogeneous abatement incentives across countries and sectors. Energy taxation maintains inequalities in tax treatment across sectors and different uses of energy. Reduced rates and tax exemptions for environmentally harmful fossil fuels, including heating gas, aviation, and maritime fuels, continue to undermine decarbonisation efforts.	**Continue expanding the coverage of ETS, for instance in agriculture, by establishing emission monitoring and reporting systems (e.g., for emissions from livestock and fertiliser use) and including emissions of large emitters.** **Bring forward the phase-out of free emission allowances.** **Revise the Energy Taxation Directive to introduce minimum tax rates for fossil fuels based on energy content and environmental performance, and broaden the energy tax base by phasing-out exemptions and reduced rates for fossil fuels. Announce clear time paths for the evolution of minimum tax rates for fossil fuels.**
Budgetary policies impose heterogeneous abatement costs across EU programmes.	Introduce an internal carbon price for all budget and planning preparations.
There is a lack of risk capital for financing new sustainable technologies. Sustainability reporting requirements will raise compliance costs for business.	**Promote the Capital Markets Union by reviewing the regulatory burden on institutional investors**. Ensure consistency and interoperability of EU sustainability reporting standards with international standards.
Ramp up mitigation in agriculture	
Direct payments continue to promote the environmentally harmful use of drained peatlands. Direct payments to agricultural producers based on livestock numbers have increased.	**Remove support for the agricultural use of drained peatlands.** **Gradually withdraw direct payments for high livestock numbers.**
Mitigation measures are voluntary and have a low potential to reduce emissions.	Make payments under the agri-environmental schemes conditional on achieving emission reductions.
Enforcement and inspection of cross-compliance provisions are low.	Increase the number of on-the-spot checks and adjust penalties to reflect the environmental damage resulting from the violation.
Accelerate emission reductions in energy and transportation	
Government support for renewables remains high and mostly benefits cost-competitive solar and wind. There is room to further increase the use of competitive auctions.	**Ensure that the EU state-aid framework allows government subsidies only for renewable technologies that are not yet competitive.**
Retail electricity markets are fragmented along national boundaries, reflecting price regulation. Insufficient investment in cross-border grid connections slows down the integration of wholesale electricity markets.	**Ensure that EU countries phase out regulated retail electricity prices by fully implementing the EU Directive on Common Rules for the Internal Market for Electricity.** **Increase investment in cross-border grid connections by diverting EU funds to the Connecting Europe Facility.**
The temporary cap on market revenues for non-gas electricity producers in wholesale electricity markets reduces investment incentives. Marginal cost pricing in wholesale electricity markets, along with the planned increase in the share of renewables (with very low marginal costs) in electricity generation poses long-term challenges for profitability and investment in electricity markets.	Do not renew the temporary cap on market revenues of non-gas electricity producers in wholesale electricity markets. In the longer-term, consider reforms to the wholesale electricity market pricing system, including a stronger reliance on long-term contracts, and capacity auctions for conventional backup capacity.
EU regulations encourage the use of emission-intensive biomass for energy.	**Ensure that EU countries do not support the use of unsustainable biomass, by revising the Renewable Energy Directive and ensuring that unsustainable biomass is excluded from the taxonomy of sustainable activities.**
Markets for carbon removal are non-existent.	Establish markets for carbon removals, for instance by including carbon removals in emission trading.
International rail traffic remains underdeveloped.	**Ensure non-discrimination in locomotive lease prices and rail track charges for domestic and foreign trains.**
Limit reallocation costs from the green transition	
Occupational entry barriers reduce labour mobility.	**Continue efforts to reduce occupational entry barriers.**
Spending efficiency is a concern for the inflow of EU funds under the Just Transition Fund.	**Concentrate future funding for alleviating the socio-economic impacts of the green transition on mobility support and training, and make it conditional on labour market outcomes.**
Unemployment benefits are portable only for three months when moving to a different EU country, discouraging cross-border mobility.	Consider extending the unemployment benefit duration to six months when moving to a different EU country.

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Études économiques de l'OCDE

UNION EUROPÉENNE ET ZONE EURO

En Europe, la reprise est mise à mal depuis le déclenchement de la guerre d'agression menée par la Russie contre l'Ukraine. Les mesures prises par l'UE, rapidement et de manière coordonnée, ont permis d'éviter une grave récession, mais les perspectives à court terme sont entourées d'incertitudes et de risques à la baisse. L'orientation des politiques monétaires et budgétaires doit devenir suffisamment restrictive pour qu'il soit possible de réduire durablement les tensions inflationnistes sous-jacentes. La viabilité des finances publiques devrait reposer sur des dépenses publiques efficientes et judicieusement hiérarchisées, ainsi que sur une meilleure gouvernance économique. Garantir des règles du jeu équitable grâce à un cadre robuste pour les aides publiques et approfondir le Marché unique offrirait aux entreprises des possibilités de croissance et d'innovation, facilitant ainsi l'évolution structurelle requise. Par ailleurs, atteindre l'objectif de neutralité des émissions nécessitera d'en accélérer la réduction. Des mesures supplémentaires s'imposent dans tous les secteurs, mais surtout dans ceux qui sont hors SEQE-UE, notamment l'agriculture, les bâtiments et les transports. Dans ces secteurs, la réduction des émissions devra s'appuyer sur des mesures réglementaires ainsi que sur l'alignement et la hausse progressifs des prix du carbone. Un volet important de la transition écologique consiste à pouvoir disposer d'une énergie sûre et bon marché, ce qui implique de renforcer l'intégration des marchés de l'électricité. Un approfondissement des marchés des capitaux permettrait d'étayer le développement des nouvelles technologies vertes. Par ailleurs, améliorer la mobilité et les compétences de la main-d'oeuvre contribuera à la réduction des coûts de transition.

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The European recovery has been disrupted since the onset of Russia's war of aggression against Ukraine. Co-ordinated and timely policy action helped avoid a severe downturn, but the near-term outlook is clouded by uncertainty and downside risks. Monetary and fiscal policy need to become sufficiently restrictive to reduce underlying inflationary pressures durably. Fiscal sustainability should be grounded in well-prioritised, efficient public spending and underpinned by improved economic governance. Protecting the level playing field through a strong state aid framework and deepening the Single Market would open opportunities for firms to grow and innovate, facilitating needed structural change. Furthermore, achieving the net-zero target by 2050 requires an acceleration of emission reductions. More action is needed across all sectors, but particularly in sectors not covered by emission trading, notably agriculture, building and transport. Reducing emissions in these sectors will rely on regulatory measures and a gradual alignment and raising of carbon prices. An important element of the green transition is affordable and secure energy, which requires more integrated electricity markets. Deeper capital markets could support the development of new clean technologies. Moreover, improving labour mobility and skills will help to reduce transition costs.

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