Working Party on Agricultural Policies and Markets

AGRICULTURAL POLICY MONITORING AND EVALUATION 2015
PART I: DEVELOPMENTS IN AGRICULTURAL POLICY AND SUPPORT

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**Executive Summary**

**Part I – Developments in Agricultural Policy and Support**

**Part II – Developments in Agricultural Support by Country**
[TAD/CA/APM/WP(2015)7/FINAL]

**Statistical Annex – Summary Tables of Estimation of Support**
[TAD/CA/APM/WP(2015)8/FINAL]


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CHAPTER 1
DEVELOPMENTS IN AGRICULTURAL POLICY AND SUPPORT

1.1. Key economic and market developments

1. Economic developments among the OECD countries and selected emerging economies covered in this report have continued to diverge in 2014. Economic growth has accelerated in the United States and the United Kingdom and these countries have surpassed their pre-crisis levels of GDP. Japan’s GDP has approached pre-crisis levels, but in the euro area it is still below. In the People’s Republic of China (hereafter “China”) and Indonesia activity has been relatively strong albeit slower than in preceding years, but stagnated in Brazil, the Russian Federation and Ukraine, and South Africa’s GDP grew only slowly. Falling commodity prices, political uncertainties and sanctions have contributed to lagging growth in those emerging economies.

2. World trade has grown roughly in line with GDP, which points to markedly different dynamics of global trade compared to pre-crisis levels when it grew twice as fast as global GDP.

3. Household consumption growth has been slow throughout the OECD area. Continued high unemployment and falling commodity prices, in particular energy prices, have kept inflation low in spite of accommodating monetary policies in OECD countries. While the US dollar has seen a significant appreciation in 2014, reduced monetary stimulus in the United States and further monetary easing in the euro area and Japan may imply further exchange rate movements.

4. Commodity prices declined broadly in 2014. Energy prices, and in particular oil prices, declined most, bringing an end to a four-year period of stable and high prices (World Bank, 2015). Crude oil prices roughly halved between June 2014 and January 2015 to reach a level below USD 50 per barrel. The low oil prices are spilling over to other energy markets as well, especially natural gas in Europe and Asia, and they reduce the profitability of biofuels produced from grains and oilseeds. The sharp decline in crude oil prices together with low prices of biofuel feedstock pushed ethanol and biodiesel prices down in 2014. The OECD-FAO Agricultural Outlook 2015 provides analysis of the impact of lower oil prices for agricultural markets (OECD/FAO, 2015). Prices of metals, minerals and agricultural crops all declined to different degrees with high global supplies, slow global economic growth and an appreciating US dollar. The lower natural gas price in the United States has been playing a key role in the declining prices for nitrogen fertilisers, a key input in crop production. The decline of fertiliser prices came to a halt, but prices are still 60% lower than during their high in 2008.

5. While global food prices fell on average by about 11% between January 2014 and January 2015 according to FAO statistics (FAO, 2015), the developments differed markedly between crops and livestock products: lower prices for cereals, oilseeds, sugar and cotton, and strong prices for meat. Prices for dairy products dropped in the second half of the year.

6. Record harvests for maize, wheat and oilseeds resulted in low prices and ample stocks in 2014, with wheat prices reaching their lowest level since 2010. International rice prices remained under pressure. International sugar prices continued their decline as production exceeded consumption and as the Brazilian real depreciated against the US dollar. Global cotton production exceeded consumption in 2014, and international prices remained under pressure with global stocks rising, in particular in China.
7. Beef prices reached record levels in 2014, driven by slow build-up of herds, especially in the United States, and pig meat prices were pushed upwards by smaller supplies of pig meat in the wake of an outbreak of Porcine Epidemic Diarrhoea virus (PEDv) disease in the United States and African swine fever in Belarus and the European Union. High beef and pig meat prices also pulled poultry prices up.

8. While the beginning of 2014 was characterised by continued high milk prices, they started to decline amidst lower import demand in China, increasing production in major exporters and the import ban in the Russian Federation on dairy products from several major producing countries. Milk production in the European Union increased in anticipation of the abolition of the milk quota in early 2015.

9. As will be seen throughout this report, declining agricultural prices on international markets tend to increase the level of transfers from consumers to agricultural producers as the transmission of lower prices to consumers is often happening only slowly or not at all, in particular in those countries where policies disconnect domestic prices from world markets.

10. While low energy prices are welcome for energy importing countries and contribute to stimulating non-energy consumer spending, weak commodity markets are weighing on economic growth of commodity exporters. Growth has already slowed in many oil-exporting countries, including Canada, Brazil and the Russian Federation, and with the broader fall in commodity prices, exporters of metals, coal and some agricultural commodities also face less favourable growth prospects.

Table 1.1 Key economic indicators
OECD area, unless noted otherwise

<table>
<thead>
<tr>
<th></th>
<th>Average 2002-2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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<tr>
<td><strong>Real GDP growth</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>World</td>
<td>3.8</td>
<td>3.1</td>
<td>3.1</td>
<td>3.3</td>
</tr>
<tr>
<td>OECD</td>
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<td>1.3</td>
<td>1.4</td>
<td>1.8</td>
</tr>
<tr>
<td>United States</td>
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<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>Euro area</td>
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<td>-0.7</td>
<td>-0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Japan</td>
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<td>1.5</td>
<td>1.5</td>
<td>0.4</td>
</tr>
<tr>
<td>Non-OECD</td>
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<td>5.2</td>
<td>5</td>
<td>4.8</td>
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<tr>
<td>Brazil</td>
<td>3.8</td>
<td>1</td>
<td>2.5</td>
<td>0.3</td>
</tr>
<tr>
<td>China</td>
<td>10.6</td>
<td>7.7</td>
<td>7.7</td>
<td>7.3</td>
</tr>
<tr>
<td>Colombia</td>
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<td>4.7</td>
<td>4.9</td>
</tr>
<tr>
<td>Indonesia</td>
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<td>6.3</td>
<td>5.8</td>
<td>5.1</td>
</tr>
<tr>
<td>Russia</td>
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<td>3.4</td>
<td>1.3</td>
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<tr>
<td>South Africa</td>
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<td>2.5</td>
<td>1.9</td>
<td>1.3</td>
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<tr>
<td><strong>Output gap</strong></td>
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<td>-2.1</td>
<td>-2.3</td>
<td>-2.3</td>
</tr>
<tr>
<td><strong>Unemployment rate</strong></td>
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<td>7.3</td>
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<tr>
<td><strong>Inflation</strong></td>
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<td>2</td>
<td>1.3</td>
<td>1.6</td>
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<td><strong>World real trade growth</strong></td>
<td>5.6</td>
<td>3</td>
<td>3.3</td>
<td>3</td>
</tr>
</tbody>
</table>

1. Year-on-year increase; last three columns show the increase over a year earlier.
2. Moving nominal GDP weights, using purchasing power parities.
3. Percentage of potential GDP.
4. Percentage of labour force.
5. Private consumption deflator. Year-on-year increase; last 3 columns show the increase over a year earlier.

1.2. Main features of agricultural policies

11. Agricultural policies of the 49 countries covered in this report respond to diverse challenges reflecting the heterogeneity of the roles that agriculture plays in their economies. Lower income countries tend to have a larger share of agriculture in economic activity than high income countries, with a large share of the population deriving its income from farming. Some countries are relatively abundant in natural resources used in agriculture, notably land and water, while in other countries those resources are relatively scarce. Such differences in levels of income and factor endowments influence the size and structure of the agricultural sector and the patterns of specialisation in production and trade, and they influence agricultural policies in a variety of ways.

12. A broadly shared set of challenges is a common driver of agricultural policies, irrespective of the structural differences across countries: assuring economic viability of the agricultural sector, producing enough and nutritious food to cater to the needs of the population, and improving the environmental sustainability of production. Countries’ policy approaches attach different weights to those challenges. Some emphasise the realisation of the economic potential of agriculture as a contributor to jobs and growth, especially in rural areas; others put more weight on dealing with environmental and natural resource constraints within which the sector operates, and yet others emphasise raising the level of domestic food production.

13. The set of policy instruments used to support these broad objectives has been developing since the OECD started monitoring and evaluating agricultural policies in the mid-1980s. Supporting domestic prices and hence stimulating production and raising farm incomes has been a dominant feature of policy
strategies used by many countries, and this continues to be the case for many of the countries covered in this report. Over the years, the policy set has evolved as countries have developed more sophisticated, and less market distorting, ways to address farm income problems, the management of risks, the challenges associated with negative and positive environmental externalities related to agriculture and the long term needs of the sector to innovate in more productive and less environmentally demanding ways. The scope to shift from instruments that effectively transfer resources from consumers to producers through high prices for foodstuffs to instruments that provide direct budgetary transfers to producers is naturally larger for countries that have the fiscal capacity to do so.

14. Agricultural policy frameworks are well established and stable in most of the countries covered in this report and changes in policies occur only slowly. Several countries have recently renewed their frameworks for agricultural policies for the years ahead, and those adjustments do not generally imply drastic changes from existing policies, but rather adjust the policy set marginally. Those include Canada (2013-18), the European Union (2014-20), Japan (2015-20), Kazakhstan (2013-20), Korea (2013-17), Mexico (2013-18), the Russian Federation (2013-20), Switzerland (2014-17) and the United States (2014-18).

15. The policies of individual countries and the European Union are documented in detail in the country chapters contained in Part II of this report, and a quantitative assessment based on a set of OECD indicators of support to agriculture is provided in the next section. While many countries have a mix of policy measures and programmes and policy designs differ between countries, the landscape of agricultural policies is roughly characterized by five different approaches:

1. Emphasis on market price support through border measures and domestic market policies. Those policy instruments prevail in China, Colombia, Iceland, Indonesia, Israel, Japan, Kazakhstan, Korea, Norway, the Russian Federation, Switzerland and Turkey.
2. Emphasis on reducing costs of purchased inputs and capital. Subsidies to farm-purchased variable inputs, such as energy and fertilizers have recently become more important in Indonesia and Mexico. Concessional credit schemes to stimulate agricultural investments are a cornerstone of policies in Brazil and Colombia and an important component of the policy set in the Russian Federation and Kazakhstan.
3. Emphasis on policies that mitigate the downside risks to revenue and income. This has recently been reinforced in the renewed policy framework of the United States and is a long-standing feature in Canada.
4. Emphasis on direct payments to farmers. Recent policy changes in the European Union and Switzerland fine tune the support given to farmers through direct payments, including through enhancing provisions to improve the environmental performance of agriculture.
5. Emphasis on enabling business environment for agriculture: Countries that focus their policy instruments on general services with a public good character include Australia, Chile, New Zealand and South Africa.

16. These broad categories are not mutually exclusive, as most countries combine elements in their policy set. For example, Canada, while emphasising the management of downside risks to farm revenue and income, also has supply management systems in place that lead to high levels of price support in some commodities. Switzerland, while having a very elaborate system of direct payments to farmers also uses import measures to sustain domestic prices. Norway supports market prices for a range of commodities and also uses various forms of direct payments. China, Japan, Korea and the Russian Federation have more recently been introducing direct payments, which complement rather than substitute for market price support schemes. Assisting farmers to cope with risks, especially ex-post assistance related to offsetting the loss of farm-owned capital though natural disasters or livestock diseases is present in all countries, but only
in a few cases are those schemes based on clear definitions of when and to what extent the government provides support.

17. The specific dualistic nature of the sector in many emerging economies often leads to a twin-pillar policy approach. One set of policies addressing the competitive commercial segment, and another set addressing a struggling small-scale segment. Brazil, Chile and South Africa explicitly differentiate their policies between those segments and typically provide support to small farmers through a variety of measures that reduce costs of capital and other purchased inputs and facilitate better market integration.

18. Several countries make efforts in agricultural innovation systems to improve productivity and sustainability in the long term. Much of those efforts occur outside the field of more narrowly defined agricultural policies, which would typically cover expenditures on extension and farm advisory services, and is embedded in national innovation strategies. Australia and Canada are amongst the countries that enhance policy effort in that direction, as are the European Union and Brazil.

19. With agriculture contributing directly and indirectly about a quarter of global greenhouse gas (GHG) emissions, climate change mitigation is increasingly on the agricultural policy agenda. With a few exceptions, actual policy efforts are relatively limited, however. Exceptions include New Zealand where agriculture has started reporting to the national emission trading scheme, and Norway and Japan which are linking support payments to climate-friendly farming practices. Australia includes agriculture in emissions trading and provides funding for mitigation projects through an Emissions Reduction Fund.

20. Meanwhile, preparations are ongoing for the 21st annual Conference of Parties (COP21) that will take place in Paris in 2015, with the aim to achieve a climate agreement applicable to all countries, and with legal force, to keep global warming below 2°C. This climate agreement is not expected to have direct sector-specific commitments for GHG reductions, but technical discussions related to agriculture are ongoing, see Box 1.1.

21. After the ministerial meeting of the members of the World Trade Organisation in Bali in December 2013 discussions continued, and by late November 2014 WTO members agreed to implement the trade facilitation agreement and other reforms with a commitment to seek a permanent solution in the issue of stockholding programmes for food security purposes. Members also agreed to develop and agree on the future work programme mandated in the Bali decision by July 2015, see Box 1.2.
The 21st annual Conference of Parties (COP21) will take place in Paris in 2015 and will aim at achieving a climate agreement applicable to all countries, and with legal force. Beyond discussions on countries’ pledges regarding their emission reductions, also financial pledges to the Green Climate Fund (GCF) with a goal to finance adaptation and mitigation efforts in developing countries are expected to be addressed. More countries will be invited to pledge funds to GCF, which will start mobilizing about USD 10 billion. Several developing countries have also already pledged to GCF in addition to financial pledges by Annex 1* countries.

The potential agreement that countries are striving to achieve in Paris will unlikely be prescriptive about how countries approach sectoral emissions reduction or adaptation. Specific challenges related to agriculture are not expected to be discussed at COP 21, despite the sector together with forestry and other land use contributing directly and indirectly to around 24% to global GHGs emissions (IPCC, 2014), and facing potentially serious consequences of climate change, but agriculture is included in the land sector negotiation text. Food security may be raised in the discussions and prepare the way for more in depth negotiations after COP21. Some countries have already submitted their Intended Nationally Determined Contributions (INDC) to the future agreement. These may include countries’ strategies to reduce emissions from different sectors. The United States and the European Union are amongst those who have submitted their INDCs and they both make brief reference to the land use sector (agriculture, forestry). The European Commission contribution mentions in particular that: "Policy on how to include Land Use, Land Use Change and Forestry into the 2030 greenhouse gas mitigation framework will be established as soon as technical conditions allow and in any case before 2020." (http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx).

The Subsidiary Body for Scientific and Technological Advice (SBSTA) under the COP is going to undertake work of relevance to the agricultural sector in the following areas: (http://unfccc.int/land_use_and_climate_change/agriculture/items/8793.php)

- Development of early warning systems and contingency plans in relation to extreme weather events;
- Assessment of risk and vulnerability of agricultural systems to different climate change scenarios at regional, national and local levels;
- Identification of adaptation measures, taking into account the diversity of agricultural systems:
- Identification and assessment of agricultural practices and technologies to enhance productivity in a sustainable manner, food security and resilience, considering the differences in agro-ecological zones and farming systems, such as different grassland and cropland practices and systems.

1. Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Cyprus*, Czech Republic, Denmark, Estonia, European Union, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, the Russian Federation, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, and the United States.

*Note by Turkey: The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

*Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.
### Box 1.2. Developments post the 2013 Bali WTO Ministerial

In December 2013, an agreement was reached at the 9th WTO Ministerial Meeting in Bali on a package of reforms comprising: trade facilitation, agriculture and food security, and development issues. This package, while covering a much smaller range of issues than the original Doha agenda, represented a partial step towards completing the remaining negotiating issues of the Doha round.

Briefly, the main provisions under the Bali agreement as they related to agriculture and food security were:

- **General services**: a range of programmes related to land reform, drought and flood management and rural employment programmes were explicitly considered as falling within the range of general services permitted in Annex 2, paragraph 2 of the Uruguay Round Agreement on Agriculture (URAA).

- **Public stockholding for food security purposes**: responding to proposals from the G33 an “interim solution” in the form of a peace clause exempting existing public stockholding for food security purposes of food acquired at administered prices from challenge under the terms of Annex 2 of the URAA provided certain conditions are met (including a safeguard requirement that the programmes do not distort trade and do not adversely affect the food security of other Members). It was envisaged that a “permanent solution” would later be found.

- **Tariff rate quota administration**: included strengthened provisions concerning publication, notifications and processing of applications, but most significantly, introduced measures to be taken when there is systematic underfill of Tariff Rate Quotas (TRQs) that cannot be explained by normal commercial conditions. The trigger definition of systematic underfill is less than 65% for two consecutive years. The intent is to ensure an effective re-allocation of quota in these cases.

- **Export competition**: re-affirmed the Ministerial commitment to elimination of all forms of export subsidies and disciplines on all export measures with equivalent effect. Ministers committed to enhanced transparency and improved monitoring in relation to all forms of export subsidies and all export measures with equivalent effect.

- **Cotton decision**: Ministers undertook to enhance transparency and monitoring in relation to the trade-related aspects of cotton and to that end to hold a dedicated discussion on a biannual basis in the context of the Committee on Agriculture in Special Session to examine relevant trade-related developments across the three pillars of Market Access, Domestic Support and Export Competition.

- **Trade facilitation**: an agreement was reached incorporating reforms of border procedures to reduce costs, remove bottlenecks and speed up transit times will apply to all goods, including food and agriculture products. The agreement was a mix of binding commitments and “best endeavours” language.

However, uncertainty over the interim solution with respect to public stocking for food security purposes delayed the implementation of the trade facilitation component of the Bali package and stalled progress in negotiations on other issues. Issues related to the uncertainty over what would happen if no permanent solution was agreed by the 2017 deadline, or if there were delays in reaching agreement.

In late November 2014, the impasse surrounding public stockholdings that delayed the final agreement of the Bali package of reforms was resolved. WTO members agreed to implement the trade facilitation and other reforms with a commitment to honouring the peace clause on stockholding programmes for food security purposes. Further, a commitment was made by members to develop and agree on the future work programme mandated in the Bali decision by July 2015. Members also agreed to separately pursue a solution on public stockholding, with a target date for agreement of December 2015. However, it was agreed that if no permanent solution was found, this should not delay broader agreement in the Doha round.


[http://wto.org/english/tratop_e/minist_e/mc9_e/balipackage_e.htm](http://wto.org/english/tratop_e/minist_e/mc9_e/balipackage_e.htm)
1.3. Developments in agricultural support

22. This section provides a quantitative assessment of policy support to agriculture, based on a set of OECD indicators. These indicators express the diversity of support measures applied in different countries in a few simple numbers that are comparable across countries and over time, with different indicators focusing on different dimensions of support policies. Annex 1.A1 provides definitions of the indicators used in the report, including the recently revised methodology for estimating general services transfers applied for the first time for the emerging economies covered in this report.

Countries’ importance in global agriculture has changed since the mid-1990s – and so has their role in supporting agriculture

23. Countries covered in this report account for about 88% of global value added in agriculture (agriculture GDP). But their relative positions have undergone important changes over time, as can be seen from their shares in aggregate agricultural GDP (Figure 1.2). The European Union, China, the United States and Japan were the key agricultural producers in the mid-1990s, accounting together for more than three-quarters of agricultural GDP among countries covered in this report and contributed respectively, 28%, 18%, 15% and 9% to the total. In recent years, China accounted for more than 43% of the total agricultural GDP of the countries covered, with the European Union, the United States and Japan contributing smaller, but still significant shares (15%, 11% and 2% respectively). This impressive increase in the weight of China is not limited to agricultural production and value added: in parallel China has significantly increased its policy support to the sector.

24. The development of countries’ relative weight in supporting the farm sector is illustrated by the broadest indicator of support, the Total Support Estimate (TSE) in Figure 1.2. The TSE combines transfers to agricultural producers individually (measured by the Producer Support Estimate, the PSE), policy expenditures that have primary agriculture as the main beneficiary, but that do not go to individual farmers (measured by the General Services Support Estimate, the GSSE) and budgetary support to consumers of agricultural commodities (the Consumer Support Estimate, the CSE net of the market price element that is already accounted for in the PSE). The European Union, Japan and the United States accounted for most of the transfers related to agricultural policy in the mid-1990s. Their shares in the total TSE for all countries together were 40%, 23% and 14% respectively, while China was relatively small in terms of providing policy support to its farm sector. In the most recent period China’s share has risen to 41%, while the European Union, the United States and Japan accounted for smaller shares, with 15%, 13% and 9%, respectively.
Figure 1.2. Country shares in total agricultural GDP and in total TSE, 1995-97 and 2012-14

Note: Because of data availability, countries are ranked according to their shares in total agricultural GDP in 2011-13. TSE corresponds to 2012-14. Agricultural GDP is measured as agricultural value added.

1. EU15 for 1995-97; EU27 for 2012-13 and EU28 from 2014 when available.
2. For Mexico, 1995-97 is replaced by 1991-93.


Total monetary transfers to the agricultural sector were stable in some countries, but increased significantly in others

25. Monetary transfers associated with support to agricultural sector, measured by the nominal TSE, have been relatively stable over time in OECD countries, except for Turkey and Mexico (Figure 1.3). In most of the emerging economies, however, the monetary value of total agricultural support has been increasing over time. The increase was particularly rapid in Indonesia, the Russian Federation, Brazil, Kazakhstan and China where the average annual real growth rates of the TSE over the 1995-97 to 2012-14 period were 43%, 33%, 26%, 25% and 22%, respectively.
Figure 1.3. Evolution of Total Support Estimate, 1995-97 to 2012-14

Average annual real growth rate

1. For Brazil 1995-97 is replaced by 1996-98.
2. For Turkey 1995-97 is replaced by 2002-04.
3. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.
4. EU15 for 1995-97; EU27 for 2012-2013; and EU28 from 2014 when available.


...while the relative cost of agricultural support for the economies has decreased significantly over time in most of the countries

26. The TSE expressed as a percentage of GDP (%TSE) measures the overall burden of the support to agriculture on the economy. In most countries covered in this report %TSE has decreased, but there are some striking exceptions (Figure 1.4). In Indonesia, the %TSE has increased strongly between 1995-97 and 2012-14 from 0.8% of GDP to 3.6% of GDP placing Indonesia at the top in terms of transfer of resources to agriculture relative to the size of the economy. A similarly significant increase occurred in China, where the %TSE rose from 1.4% of GDP in 1995-97 to 3.2% of GDP in 2012-14. These increases occurred despite the rapid expansion of the two economies during that period and against a shrinking share of the agricultural sector in the economy, to a lesser extent in Indonesia than in China. Brazil, which used to tax its agriculture sector in the mid-90s, now provides positive support to agriculture of around 0.4% of its GDP. In other emerging economies the %TSE fell to 1.7% in Colombia, 1.1% in Kazakhstan, 0.7% in the Russian Federation and 0.3% in South Africa in the most recent period.

27. In OECD countries the relative importance of total support to agriculture halved from 1.5% of OECD aggregate GDP in 1995-97 to less than 0.8% in 2012-14. The most significant reductions occurred in countries where historically the relative cost of the overall agricultural support was the highest, including Korea, Mexico and Switzerland. Nevertheless, the %TSE was still relatively high in several OECD countries: in Turkey, Korea, Japan, Iceland and Switzerland the TSE exceeds 1% of GDP. For Turkey, this mostly reflects the relatively large share that agriculture occupies in the overall economy, while for remaining countries where agriculture represents a far smaller share it is mostly due to high support.
Figure 1.4. Total Support Estimate by country, 1995-97 and 2012-14

Percentage of GDP

Note: Countries are ranked according to the TSE levels in 2012-14.
1. EU15 for 1995-97; EU27 for 2012-2013; and EU28 from 2014 when available.
2. For Mexico, 1995-97 is replaced by 1991-93.
3. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.
4. The OECD total does not include the non-OECD EU Member States. The Czech Republic, Estonia, Hungary, Poland, the Slovak Republic and Slovenia are included in the OECD total for both periods and in the EU for 2012-14.


The total agricultural support is dominated by support to agricultural producers, while expenditures on key general services to the sector are relatively small

28. Figure 1.5 decomposes the aggregate Total Support Estimate into its main elements. In most of the countries covered, the PSE predominates, accounting, on average, for more than 80% of the total support. Exceptions are the United States, where a large share of the TSE is devoted to supporting consumers and New Zealand, where expenditures on general services constitute most of the support to agriculture. GSSE expenditures are also relatively important in Australia, Chile and South Africa, accounting for about half of the TSE.
Average support to agricultural producers in OECD countries and emerging economies is converging…

29. In the countries covered in this report, about one-sixth of gross farm receipts on average is due to public policies that support farmers (Figure 1.6). The percentage Producer Support Estimate (%PSE) was around 17% in 2012-14, edging up slightly in the most recent year and reaching USD 601 billion (EUR 450 billion) in value terms. This year-on-year increase is mostly related to developments in world prices for agricultural commodities, increased output of supported commodities and exchange rate movements, rather than explicit policy changes.

30. Over the longer term, the level of support has, on average, been following a downward trend: the %PSE for all countries has decreased from 21% in 1995-97 to 17% in 2012-14. However, these average results hide an important difference between OECD countries and emerging economies: while in the former support levels have been, on average, declining, the latter, on average, have passed from taxing their agriculture to providing significant levels of support that in most recent years have begun to converge to the levels of support provided by the OECD countries. This trend was mostly driven by increasing support in Indonesia and China, but also in Kazakhstan.
1. The OECD total does not include the non-OECD EU member states. The Czech Republic, Estonia, Hungary, Poland, the Slovak Republic and Slovenia are included in the OECD total for all years and in the EU from 2004.

2. The emerging economies are Brazil, China, Colombia, Indonesia, Kazakhstan, Russia, South Africa and Ukraine.


… while short and long-term changes across individual countries remain very uneven

31. Changes between 2013 and 2014 were very uneven across individual countries, with increases in some, while decreasing in others (Figure 1.7). In particular, producer support has increased significantly in Iceland and Switzerland (by 6 and 4 percentage points respectively), but also in Israel, Indonesia and the United States (by 3 percentage points each), and to a lesser extent in Mexico, Brazil, China and Norway (by 2 percentage points in Mexico and 1 percentage point in each of the other three). On the other hand, the producer support decreased significantly in Kazakhstan (8 percentage points) and to a lesser extent in Japan (3 percentage points), the Russian Federation (3 percentage points), the European Union (2 percentage points), Colombia (2 percentage points) and Canada (2 percentage points). In Ukraine, taxation of farmers has further increased reflecting economic and political instability. Support to producers in other countries stayed almost the same.

32. Box 1.3 demonstrates that these changes were driven to a large extent by price developments on international markets and exchange rate movements, but also by changes in budgetary payments in some countries, particularly in Brazil, the United States, Kazakhstan and Mexico.
Figure 1.7. Producer Support Estimate by country, 2013 and 2014

Percentage of gross farm receipts

1. EU27 for 2013 and EU28 from 2014 when available.
2. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.
3. The OECD total does not include the non-OECD EU member states.


Box 1.3. What drove changes in the monetary value of producer support in 2014?

Figure 1.8 presents contributions of various factors to the annual changes in the monetary value of support. Panel A maps the contributions of market price support (vertical axis) and budgetary payments (horizontal axis) to the total PSE. Two diagonal lines are the locus where these contributions are equal. The farther the country points are from the horizontal axis, the higher the contribution of changes in market price support to the change in PSE, while the farther the country points are from the vertical axis, the higher the contribution of budgetary payments.

In 2014 the changes in monetary support across countries covered in the report were driven both by changes in market price support and changes in budgetary payments, though to a different extent for different countries. Both factors contributed to increase of support in the United States, Mexico, Switzerland, and to a lesser extent in Turkey and Norway. Kazakhstan, Chile and Canada have raised their budgetary support, while lower market price support lead to an overall decrease in support to agricultural producers. The European Union and Colombia have experienced a modest decrease in both market price support and budgetary payments. Support in the Russian Federation has decreased mainly due to lower budgetary payments, while in Australia more budgetary support lead to a small increase in overall support. In New Zealand, Indonesia, Iceland and China the overall support increased mainly due to higher market price support, while this contributed to marginally lower support in Japan and Korea and to a much larger decrease in support in Ukraine.

Panel B further disaggregates changes in the market price support by its two components – the gap between domestic and border prices (vertical axis) and quantities of production which receive this support (horizontal axis). Country points are clustered around the vertical axis, indicating that the variations in market price support were predominantly driven by the changes in the price gaps and to a smaller degree by changes in quantities. The effect of larger price gaps on support was particularly important in New Zealand, Indonesia, the United States, Mexico and Iceland. This was mostly driven by the decrease of world prices, particularly for dairy. Ukraine has experienced an enormous decrease in the price gap leading to even more negative support to producers. This was only partially
compensated by smaller quantities of products receiving negative support. More narrow price gaps have contributed to a decrease in support in Brazil, Canada, Chile and the European Union. A higher quantity produced also contributed to the increase, or the dampened reduction of support to producers in, South Africa and New Zealand and to a lesser extent in Iceland, China and Korea.

Figure 1.8. Contribution of various factors to the change in the Producer Support Estimate in 2014

A. Contribution of MPS and budgetary payments to the change in the PSE

B. Contribution of price gap and quantities to the change in MPS


1. In New Zealand, price support is measured only for poultry and eggs and is due to non-tariff protection applied on SPS grounds.

33. As countries get richer they have more policy options at hand. Some may choose to provide more support to producers or maintain it at high levels, while others may choose to reduce it and invest instead in the enabling environment for agriculture to develop into a modern competitive sector. Figure 1.9 plots the relationship between countries’ income levels, measured by per capita GDP at constant prices, and the level of producer support, measured by the Nominal Assistance Coefficient (NAC), which is a ratio that indicates by how much total gross farm receipts are higher than if they were generated at world market prices and without budgetary support. The data pools all observations for all countries and years between 1986 and 2013. At lower levels of economic development, support to agriculture is rather small and some countries even tax the sector by transferring resources into other sectors of the economy. This is shown by the data points just above or below the value of 1, which indicates no support to agricultural producers. With increased income levels, on the other hand, data points become very scattered: some still remaining at low levels, while others reaching very high levels, indicating a wide spread of policy approaches. Some of the extreme points illustrate countries that historically used to provide large support, but have reduced it over time. In some countries this was dictated by systemic changes rather than changes in agricultural policy. Such was the case, for example, for Ukraine and the Russian Federation, where the collapse of the
Soviet Union and the associated rapid economic adjustments led to a sharp decrease in the overall support levels. In Korea, too, there has been a significant decrease in support, but this was mainly driven by increasing international prices that led to fall of the market price support as domestic prices remained high. Other countries, such as Switzerland, have reformed their agricultural policies, which gradually reduced the large gap between domestic and international prices and moved the NAC from about 4 to about 2.

Figure 1.9. Evolution of producer support at different stages of economic development, 1986 to 2013

Nominal Assistance Coefficient

Note: Nominal Assistance Coefficient (NAC): the ratio of gross farm receipts inclusive of market price support and budgetary payments over gross farm receipts without such support. Each data point corresponds to a NAC observed for a country in any given year between 1986 and 2013.


34. The long-run changes in levels of producer support are even more visible in Figure 1.10. In the long run, the support declined in most countries, although the observed reduction was more pronounced in some countries than in others. In Norway, Switzerland, Japan, Korea and Iceland over 40% of gross farm receipts are still derived from agricultural support, while Australia, New Zealand, South Africa and Chile today have support levels lower than 3% of their gross farm receipts. Indonesia, China, Kazakhstan, and Brazil have seen their support levels increase over time and, in the case of Indonesia and China, exceeding the average for the OECD countries. Ukraine is the only country that still taxes its agricultural sector, though the taxation level decreased to about 3% of gross farm receipts.
Figure 1.10. Producer Support Estimate by country, 1995-97 and 2012-14

Percentage of gross farm receipts

Note: Countries are ranked according to 2012-14 levels.

1. EU15 for 1995-97; EU27 for 2012-2013; and EU28 from 2014 when available.
2. For Mexico, 1995-97 is replaced by 1991-93.
3. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.
4. The OECD total does not include the non-OECD EU Member States. The Czech Republic, Estonia, Hungary, Poland and the Slovak Republic are included in the OECD total for all years and in the EU from 2004. Slovenia is included in the OECD total from 1992 and in the EU from 2004.


Differences in policy approaches are also reflected in policy instruments

35. The composition of support is arguably as important as the total level. Assistance may be provided by supporting market prices, or by giving a subsidy to reduce the cost of inputs; support may take the form of a payment per hectare, per animal, or as a top-up to farmers’ income. Support may be given under the condition that farmers are actually engaged in production, or without such a condition. Payments can be conditional on the respect of specific production practices. These distinctions are important as support delivered in these various ways has different impacts on agricultural production, trade and incomes. Also, some forms of support are more suitable for targeting to specific objectives and beneficiaries. For example, support based on farming area, animals kept, or farm income can be targeted to specific farms or locations, and the amount of outlay can be tailored to the problem at hand. In contrast, blanket price support cannot discriminate between beneficiaries.
Figure 1.11 shows that countries differ greatly in the way they provide support to their producers. Japan, Korea, Indonesia, Israel, Turkey, Colombia, China, Kazakhstan and Iceland are among countries that provide most of their support in the form of influencing market prices and through output-linked payments, accounting for over 70% of the total PSE in 2012-14. These transfers are also important in the composition of support in Switzerland, the Russian Federation, Norway and Canada where they account for between a third and two-thirds of all the producer support (41%, 49%, 50% and 63% respectively). In Ukraine, the market price support is negative indicating that producers receive prices below those prevailing on international markets and are de facto taxed. Support to input use constitutes an important share of support measures in Chile (over 90% of total PSE), Brazil (66%) and Mexico (47%) and to a lesser extent in the Russian Federation and Ukraine.
Figure 1.12. Composition of payments based on area, animal numbers, receipts and income by country, 1995-97 and 2012-14

Percentage of PSE

Note: Countries are ranked according to 2012-14 levels.
1. EU15 for 1995-97; EU27 for 2012-2013; and EU28 from 2014 when available.
2. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.
37. Other countries covered in this report provide most of the support via tax-financed payments based on area, animal numbers, farm receipts or farm income. The share of such payments in the overall PSE has increased significantly since 1995-97 in a number of countries (Figure 1.12). The increase was the most significant for the European Union (from 32% of PSE in 1995-97 to more than 60% of PSE in 2012-14), the United States (from 21% to 47%), Switzerland (from 24% to 44%) and Australia (from 15% to 44%), though the latter is very small in the value terms. Kazakhstan and Mexico have also seen a big increase, but these payments account for less than a quarter of the overall PSE, and the Russian Federation introduced a new area payment in 2013. Further, some important programmes such as Single Payment Scheme in the European Union, Direct Payments in the United States, which are now phased out, area payments in Switzerland and exceptional circumstance payments and environmental payments in Australia do not require farmers to produce in order to obtain the support.

_Most countries are moving towards less distortive policy mix by reducing agricultural protection…_

38. The Nominal Protection Coefficient demonstrates how much output prices received by farmers differ from those prevailing in international markets. Figure 1.13 shows that only prices received by producers in Australia, Chile, New Zealand and Brazil are closely aligned with international levels. In all other countries prices received by producers are on average higher than border prices, except for Ukraine where producer prices were lower than border prices. In a number of countries the divergence between domestic and border prices has fallen sharply, particularly those countries that have had historically high levels of price support including Korea, Japan, Norway, Iceland and Switzerland. Despite these reductions, positive gaps between domestic and international prices remain significant in these countries, particularly in Korea and Japan, where domestic prices are almost twice the international level. Significant progress has also been made in Mexico, the European Union, South Africa, Israel and the United States. On the contrary, domestic prices in China and Indonesia that were close to international levels in 1995-97 have significantly increased in the most recent period, and are now more than 20% above the international level.
Figure 1.13. Producer Nominal Protection Coefficient by country, 1995-97 and 2012-14

Notes: Countries are ranked according to 2012-14 levels.
1. The OECD total does not include the non-OECD EU Member States. The Czech Republic, Estonia, Hungary, Poland and the Slovak Republic are included in the OECD total for all years and in the EU from 2004. Slovenia is included in the OECD total from 1992 and in the EU from 2004.
2. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.
3. EU15 for 1995-97; EU27 for 2012-2013; and EU28 from 2014 when available.
4. For Mexico, 1995-97 is replaced by 1991-93.


…and by providing less support tied to production of specific commodities…

39. As most countries shift away from support based on commodity output towards other types of transfers that are to different degrees delinked from commodity production, farmers have more flexibility in their production choices, thus strengthening the role of market signals in guiding their decisions. As a consequence, support tied to individual commodities as measured by the producer Single Commodity Transfers (SCT) has, on average, decreased over time from 15% to 11% of gross farm receipts (for the OECD total it was 24% and 11% respectively). Individual commodity SCTs have generally fallen, though for several commodities an increase can be observed. This is particularly the case for soybean and sorghum, where the average SCT more than doubled mainly thanks to a significant rise in China (soybeans), the United States (both soybeans and sorghum) and Mexico (sorghum). Export taxation was a driver of the negative transfers to sunflower seeds (taxed in the Russian Federation and Ukraine) and palm oil (taxed in Indonesia). Those were the only two commodities that were taxed, and the taxation has increased over time. In value terms, the average commodity SCTs were all below 20% of gross commodity receipts except for rice, for which support still accounts for two-thirds of the gross receipts (Figure 1.14). Reductions of market price support and payments per tonne of output were the most important drivers of lower SCTs, but for rice those policy measures show remarkable persistence.
Figure 1.14. Single Commodity Transfers, all countries, 1995-97 and 2012-14
Percentage of gross farm receipts for each commodity

Note: Commodities are ranked according to % SCT levels in 2012-14.

... and make payments conditional on specific production practices

40. Payments are increasingly used to stimulate specific production practices considered to improve environmental performance or the treatment of animals. There are three main approaches: the first is to make receipt of direct payments fully or partially conditional on the adoption of certain production practices. Chile, the European Union, Switzerland and the United States are increasingly using such "cross-compliance" conditions, which can cover up to half of the total support to farmers, see Figure 1.15. Second, support to farmers provided through subsidies to inputs can be subjected to constraints that limit the total amount used or the type of input purchased with the subsidy, for example seeds, fertilizers or pesticides. While subsidies to variable inputs have been playing a diminishing role in OECD countries some support to fixed capital formation is tied to investments in environmental and animal welfare friendly production facilities. A form of conditional input subsidies is also provided in Brazil that has recently made all its credit and insurance programmes subject to complying with an elaborate zoning scheme that determines the best time of planting based on a set of criteria related to weather, soil and the crop cycle. Third, payments can be made available to farmers who opt-in to specific agri-environmental programmes, and are hence subject to voluntary environmental constraints. In many cases those three approaches co-exist.
Limited resources are devoted to general services for the sector and priority areas differ

41. In addition to support provided to producers individually (the PSE), the agricultural sector is assisted through public financing of services to the sector (the GSSE). The methodology used to measure the GSSE has been revised to clarify the definition of the indicator and its components and applied for the first time to OECD countries in the 2014 edition of the report. The 2015 edition applies the new methodology for the first time to the emerging economies covered in the report. Box 1.4 summarises the main characteristics of the new methodology, while Annex 1.A2 describes in more detail the various implications of the more restricted definition and data improvements on estimates of the level and composition of GSSE by country.
Box 1.4. The revised GSSE methodology

In this report, the revised methodology to calculate General Services Support Estimate (GSSE) has been applied for a second time to OECD countries and for the first time for emerging economies. As the GSSE is a component of the Total Support Estimate (TSE), both GSSE and TSE data series have been revised over the whole 1986-2014 period, and differ from those published in the 2013 report (OECD, 2013a).

The revised methodology clarifies the boundaries of the GSSE indicator and its components:

- The boundaries of the GSSEs have been re-defined to cover policies where primary agriculture is the main beneficiary. This definition is narrower than the one applied previously because it now excludes support to services for which primary agriculture is not the main beneficiary. It should be noted, however, that governments fund rural services, which benefit primary agriculture, even if farmers are not the main beneficiaries, and provide support to upstream and downstream industries, which indirectly benefits the primary sector, but are no longer covered by OECD indicators of support to agriculture.

- The definitions of GSSE categories have been clarified and sub-categories added in order to better reflect recent changes in policy priorities. The new categories and sub-categories are defined in Box 1.A1.2 (Annex 1.A1).

The main changes include:

- The removal of expenditures that do not correspond to the narrower definition of the GSSE. This includes expenditures for rural infrastructure, which do not benefit farmers primarily; the US Supplemental Nutrition Assistance Programme (SNAP, formerly known as “food stamp”) expenditure as far as it relates to the expenditure share that does not directly benefit primary agriculture level (i.e. the share that ends up in processing, retail, and other services involved in delivering the programme); investment subsidies in food processing, and others.

- The transfer of some GSSE expenditures from one GSSE category to the other, or to the CSE (e.g. support to individual first stage processors).

- The addition of some new expenditure categories such as the financing of knowledge dissemination or agriculture input control.

The revised definition of the GSSE and its components helps improve the consistency and comparability of the estimates and clarifies the policy coverage. When implementing the revised methodology, efforts were made to improve the coverage and consistency of estimates across countries. Changes in the GSSE (PSE, CSE and TSE) series reflect these improvements as well as changes in definition. It should be noted, however, that while significant improvements were achieved during this first year of implementation, efforts to improve coverage and consistency will continue in the future.

Annex 1.A1 includes revised definitions of the GSSE and its components as applied in this report. Annex 1.A2 outlines main changes in definition, classification and results by country. The most frequent changes in GSSE are found in expenditure on agricultural knowledge transfer and reflect the fact that expenditure on agricultural education are now fully included in the measure of policy effort, while in the previous methodology, expenditure on students, which did not remain in the agri-food sector, was excluded. While a new expenditure item was added in the inspection and control category (for farm input), numbers change only marginally in most countries. This might indicate that information is not yet available. Expenditure on infrastructure development and maintenance and on marketing and promotion is generally lower due to the narrower definition, focusing on primary agriculture. In the US estimate, this leads to the removal of major programmes, which results in a striking reduction of expenditures for marketing and promotion. The revision of the GSSE definition also results in support to individual first-stage processors being moved from the GSSE, which includes only support to collective schemes under the category marketing and promotion, to the CSE, which captures support to processors being considered as first-stage consumers. The detailed review of GSSE measures also resulted in some being reclassified as PSE measures in some countries.

A detailed description of the revised GSSE methodology is also available on the OECD public website in the Compendium of the PSE/CSE/GSSE methodology (the PSE Manual) (www.oecd.org/tad/agricultural-policies/psemmanual.htm).
As discussed above, GSSE accounts for a much smaller share of total support to agriculture than the PSE, except for New Zealand, Australia, Chile and South Africa where a large proportion of support is devoted to the provision of services and infrastructure that are crucial for longer term sector development. Priorities attached to these expenditures differ (Figure 1.16). In 2012-14 the agriculture knowledge and innovation system was the most supported category of general services in Australia, Norway, New Zealand, Mexico, Switzerland, Ukraine, Israel and the Russian Federation (see Box 1.5). Expenditures on infrastructure were the most important in Turkey, Indonesia, Japan, Colombia, Brazil, Chile and Korea. Kazakhstan devoted large shares of the GSSE spending to inspection and control services. The latter were also major GSSE elements in Iceland and Canada, together with costs of public stockholding (Iceland) and agriculture knowledge and innovation systems (Canada). South Africa and China allocated most of the resources to agriculture knowledge and innovation systems and on infrastructure. In the European Union and the United States GSSE spending was mainly allocated to agricultural knowledge and information systems, infrastructure, marketing and promotion, and inspection and control.

Figure 1.16. Composition of General Services Support Estimate, 2012-14

**Percentage share in GSSE**

Agricultural knowledge and innovation system | Inspection and control | Development and maintenance of infrastructure | Marketing and promotion | Miscellaneous
--- | --- | --- | --- | ---
Australia | 42.5% | 5.6% | 0.0% | 0.0%
Norway | 48.0% | 15.5% | 0.0% | 0.0%
New Zealand | 47.0% | 15.1% | 0.0% | 0.0%
Mexico | 24.1% | 24.1% | 0.0% | 0.0%
Switzerland | 50.4% | 0.0% | 0.0% | 0.0%
Ukraine | 52.6% | 0.0% | 0.0% | 0.0%
Israel | 41.6% | 0.0% | 0.0% | 0.0%
Russia | 42.5% | 0.0% | 0.0% | 0.0%
South Africa | 53.8% | 0.0% | 0.0% | 0.0%
Canada | 51.5% | 0.0% | 0.0% | 0.0%
European Union | 50.4% | 0.0% | 0.0% | 0.0%
United States | 51.5% | 0.0% | 0.0% | 0.0%
China | 51.5% | 0.0% | 0.0% | 0.0%
Korea | 51.5% | 0.0% | 0.0% | 0.0%
Chile | 51.5% | 0.0% | 0.0% | 0.0%
Colombia | 51.5% | 0.0% | 0.0% | 0.0%
Brazil | 51.5% | 0.0% | 0.0% | 0.0%
Japan | 51.5% | 0.0% | 0.0% | 0.0%
Kazakhstan | 51.5% | 0.0% | 0.0% | 0.0%
Iceland | 51.5% | 0.0% | 0.0% | 0.0%
Indonesia | 51.5% | 0.0% | 0.0% | 0.0%
Turkey | 51.5% | 0.0% | 0.0% | 0.0%
OECD | 51.5% | 0.0% | 0.0% | 0.0%

**Notes:** Countries are ranked according to the percentage shares of Agricultural knowledge and innovation system 2012-14. A revised GSSE definition with new categories was introduced in 2014. When possible, the revision was implemented for the whole time series. The GSSE series and the resulting TSE are not comparable with the series published previously (for more detail, see Annex 1.A2).

1. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.
2. EU27 for 2012-13 and EU28 from 2014 when available.
3. The OECD total does not include the non-OECD EU Member States.

Innovation in food and agriculture

The food and agriculture sector is expected to provide healthy, safe and nutritious food for a growing and wealthier world population, feed for increasing farm animal populations, and fibre and fuel for a growing range of industrial uses, without depleting available land, water and biodiversity resources.

Governments and the international community recognise that innovation is essential to achieve the productivity growth required to meet these goals, while responding to sustainability and climate change challenges. In the last two decades, total factor productivity growth, driven by the adoption of innovation and by structural adjustment, has been the main source of increases in agricultural production. Evidence from a large range of econometric studies shows that the estimated benefits of agricultural R&D far exceed its costs with annual rates of return ranging from 20% to 80% (Alston, 2010). At the micro-economic level, it is clear that the adoption of innovation leads to better productivity performance (Kimura and Sauer, 2015). Innovations in farm inputs and farming practices have allowed improvements in sustainability performance in most OECD countries (OECD, 2013b). A number of technologies and practices, such as reduced tillage, crop rotation, soil cover or improved varieties, already allow for "sustainable production intensification". While large improvements could be realised with greater adoption of current technologies, in particular by smallholders, future challenges such as climate change require the creation of innovative solutions that are better adapted to evolving and diverse demands.

Drawing on the OECD innovation strategy, OECD work on innovation in food and agriculture has developed a framework to review policy incentives and disincentives to innovation in the sector. This framework has been applied to pilot country reviews, which consider the extent to which the general policy environment facilitates investment, and whether incentives to food and agriculture ensure that the agriculture innovation systems align the supply of innovation with sector demand and facilitate the adoption of innovation at farm and firm levels (OECD, 2013c, 2015c, 2015d, 2015e).

Innovation in agriculture is heavily influenced by policies that provide support to farmers, and that currently account for 18% of gross farm receipts on average for the OECD area (OECD, 2014b). Some countries continue to rely heavily on measures that distort production and trade, and tend to discourage innovation. Others provide more neutral income support, which improves producers’ investment capacity, but does not encourage adaptation. Incentives to improve sustainable use of resources often target the adoption of specific production practices rather than encouraging more flexible approaches to attaining environmental outcomes (OECD, 2012, 2013c).

Agricultural innovation systems often have their specific funding and specialised institutions and governance, although in most countries there are institutional linkages with the general innovation system. Public R&D intensity is generally higher than for non-agricultural activities (see figure below). Private investment is lower in the agricultural sector, possibly due to the small-scale of farms and farms. Private investment is concentrated in large input and food processing companies, and in areas such as farm equipment and seeds. In many countries, agricultural education fails to meet the changing needs of the sector. Technical assistance is provided by both public and private actors and is often subsidised. Adoption of innovation remains, however unequal.

Figure 1.17. Public R&D intensity in selected countries, agriculture and all activities

Government budget appropriations or outlays for R&D as a percentage of Gross Domestic Product

Notes: In 2006 classification changed from ISIC rev3 to rev4.
For 2011, Canada national agricultural GVA is an adjusted aggregate of regional values.
For OECD countries, public expenditure on R&D is Government budget appropriations or outlays for R&D from OECD R&D Statistics, and value-added of agriculture is from OECD Gross Domestic Product statistics. For non-OECD countries, agricultural R&D intensity from ASTI (Agricultural Science and Technology Indicators) is used.

Policy guidance

- Move away from farm income support to invest in knowledge, education and strategic infrastructure that can help improve the long-term productivity, sustainability, and profitability of the sector.
- Strengthen the governance of innovation in agriculture to improve the strategic orientation on long-term issues. Make systematic evaluation and integral part of public funding mechanisms for innovation.
- Strengthen co-ordination between agricultural innovation actors and policies to better connect supply and demand.
- Clarify public and private roles in innovation, identify areas for partnerships and design well working governance systems around public-private partnerships.
- Ensure that farmers have access to independent extension and advisory services to improve technical knowledge as well as professional skills.
- Strengthen co-operation through international, regional and sub-regional research networks to increase R&D spillovers and to enhance the efficiency of national innovation systems.
- Ensure that farmers have access to independent extension and advisory services to improve technical knowledge as well as professional skills.
- Facilitate access to information systems, such as genetic information and soil data.


Consumers of agricultural commodities are still bearing the costs of support to producers in many countries

43. Agricultural policies also affect consumers as they buy agricultural commodities on domestic markets at prices which are altered by the policies aiming at supporting producer prices. The Consumer Support Estimate (%CSE) expresses the monetary value of consumer costs to support agricultural prices as a percent of consumption expenditures (measured at the farm gate). When the %CSE is negative, it indicates an implicit tax imposed by policies that support agricultural prices. Consumers may be partially compensated, for example via direct budgetary subsidies to food processors or various forms of food aid programmes which are also taken into account when calculating the CSE.

44. Most countries covered in this report tax their consumers (Figure 1.18), however, the level of this taxation differs significantly. In general, the majority of countries reduced their implicit taxation on consumers between 1995-97 and 2012-14, though in a number of countries the %CSE is still very substantial including Iceland, Japan, Korea, Norway and Switzerland where the %CSE is around -30% or more. In Indonesia and China, consumers are increasingly taxed, with the %CSE reaching around -20% in 2012-14. This trend is particularly worrying, as many agricultural producers in emerging economies are also consumers and may be net buyers of agricultural products as was demonstrated in the 2014 study on Indonesia (OECD, 2015b). As a result, the support to agricultural producers may be ineffective in reaching those in need, while introducing significant distortions into the economy. Australia, Chile and New Zealand are among the countries where the implicit taxation of consumers is very small, mainly due to the absence of significant market price support in these countries. The United States and Ukraine are the only two countries where consumers, on average, are not taxed by agricultural price support but this happens in very different ways: in Ukraine consumers benefit from depressed prices, while in the United States higher domestic prices are more than offset by expenditures on broad nutrition programmes. Of the total nutrition assistance programme of more than USD 76 billion in 2014, only the part that is considered to be directly related to domestic farm production, USD 19.9 billion, is included in the CSE. The expansion of those programmes in the United States has led to a significant increase in %CSE from 4.3 in 1995-97 to 15.6 in 2012-14 making the United States a country with the highest consumer support among all countries covered in the report.
Figure 1.1. Consumer Support Estimate by country, 1995-97 and 2012-14

Percentage of consumption expenditure at the farm gate

Note: Countries are ranked according to 2012-14 levels. A negative percentage CSE is an implicit tax on consumption.

1. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.
2. EU15 for 1995-97; EU27 for 2012-2013; and EU28 from 2014 when available.
3. For Mexico, 1995-97 is replaced by 1991-93.
4. The OECD total does not include the non-OECD EU Member States. The Czech Republic, Estonia, Hungary, Poland and the Slovak Republic are included in the OECD total for all years and in the EU from 2004. Slovenia is included in the OECD total from 1992 and in the EU from 2004.


1.4. Assessing support and reforms

45. Collectively, the countries covered in this report transferred annually an average of USD 601 billion (EUR 450 billion) to agricultural producers in the years 2012-14 and they spent an additional USD 135 billion (EUR 103 billion) on general services that support the functioning of the sector. Those transfers are burdening consumers and tax payers, and reforms could improve the effectiveness and efficiency of policies.

46. For the OECD area as a whole, gradual progress has been made in bringing down the level of support to farmers and in introducing less distorting forms of support. The level of support was reduced and the share of most production and trade distorting support fell. Those changes occurred to different degrees and at different speeds, with slow changes particularly in the group of countries that rely heavily on instruments that support prices and production. These developments are consistent with OECD reform
principles and some steps are taken towards addressing long-term priorities expressed by OECD Ministers of Agriculture (OECD, 2010), such as sustainability, innovation and risk management.  

47. The budgetary expenditures of emerging economies covered in this report tend to focus on infrastructure and other general services supporting the sector. At the same time, the increased use of instruments such as market price support and input subsidies is worrying as this increases distortions on domestic and international markets and is a rather cost-ineffective way to provide assistance.

48. All countries covered in this report should focus their efforts to address long–term issues related to productivity and sustainability of agriculture. The leading question for policy makers should be to “future-proof” the sector for the multiple challenges it will be facing in the medium to long run: global agriculture must produce more food for a growing and more affluent population that demands a more diverse diet. It must contribute to economic growth and poverty alleviation in many developing countries. Agriculture has to face the challenges of increased competition for alternative uses of natural resources, in particular land and water, while contributing to preserving biodiversity, restoring fragile ecosystems and contributing to mitigating climate change. Agriculture will also have to adapt to climate change which will bring higher average temperatures, more extreme and more frequent extreme events, such as temperature peaks, droughts and floods which add to the risks to food security. To facilitate working towards coherent policy responses to realize more of the opportunities and avoid some of the threats to the global food and agriculture system, the OECD has developed long term scenarios for food and agriculture, see Box 1.6.

49. Improving the capacity of the agricultural sector to respond to those challenges and to realize its full economic potential reinforces the need to improve the wider policy environment in which the sector operates so as to attract financial and human resources and to foster an innovative agricultural sector that responds to societies’ needs. A comprehensive approach to improve coherence with other policies (macroeconomic, trade, social and environmental) and to reduce impediments to structural adjustment will in most countries be more effective than fine tuning existing agricultural policies.

50. Such a broader re-orientation of policy approaches requires a clear vision of the end-point of policy reforms at national and international levels. In the more immediate term important gains can be realized by improving the policy set:

- Market price support should be reduced with a view to eventual elimination. It is untargeted and does not necessarily reach the intended beneficiaries. Consumers pay the bill, and especially in low-income countries this is burdensome. If countries want to re-instrument, fiscal space must be available to do that. It also delinks farmers from market developments and has been shown to be highly production and trade distortive.

- Input subsidies are known to be particularly inefficient in assisting farmers as significant portions of them leak away outside the farm sector. They also increase the risk of over- or misuse of farm inputs such as fertilisers which can be environmentally harmful. Concessional credit schemes can pose a big burden to government budgets. Variable input support has also been shown to be particularly production and trade distortive.

- The design of income and revenue stabilisation measures should be carefully assessed. They can deliver modest benefits at high costs to taxpayers, the full extent of which becomes more visible when agricultural prices decline or yield is lost systemically. Some of the risks facing agricultural producers are marketable and government support should focus more on helping farmers to

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1. See for example OECD (2011b), OECD (2014d), and the references in Box 1.5 of this chapter.
manage catastrophic risks. While policies can assist in developing those markets, care should be taken that government support does not crowd out market solutions and farmers’ own risk management practices.

- Direct payments, if linked to clear objectives and targets, and well-tailored to the problem at hand, may be an efficient means in specific policy areas such as to achieve environmental benefits and supporting farm incomes. Blanket support to land owners is almost never justifiable, although direct payments can play an important transitory role in the process of reforming agricultural policies.

- Improving the enabling environment for a business oriented agricultural sector is important. At the same time, concerns about negative impacts of farming on the natural environment should be addressed through a mix of market-based solutions, regulation and taxation.

Box 1.6. OECD long-term scenarios for food and agriculture

During 2013-14, the OECD Secretariat jointly with officials from both member and non-member economies and a number of external experts developed and analysed a set of scenarios for the food and agriculture system towards 2050. In a highly interactive process involving two workshops and an online exchange platform, three alternative scenarios for global developments over the next several decades were developed, implications for market outcomes and key policy objectives were analysed, and major policy responses were discussed. The three scenarios were designed to provide contrasting views and based on alternative assumptions on, among others, the degree of international cooperation and the prominence of sustainability in societies’ mind-sets. The analysis of these scenarios was supported by the quantification of key elements by four global economic models, involving some of the main players in the analysis of long-term developments in agricultural markets.

While the medium term OECD-FAO Agricultural Outlook 2015 (OECD/FAO, 2015) projects a continuation in historical trends of falling real agricultural prices over the coming decade, the long-term scenarios suggest these price declines could significantly slow down or even reverse to an increase over the next 40 years. This has important implications for key policy objectives in agriculture. Food security may improve significantly if productivity growth and international cooperation allows for sufficient supplies and buffer of regional shocks – but under a business-as-usual context, progress may remain very limited. A greater focus on sustainability may reduce the production base (e.g. by restricting expansion into highly biodiverse or carbon-rich areas, or by limiting the use of harmful farm inputs) while changes in diets away from resource-intensive livestock protein could decrease pressures on the system, thus improve food security perspectives in addition to possible health benefits. Prospects worsen if the continued migration of production factors such as labour from agriculture to manufacturing and service sectors is hindered, e.g. by underdeveloped rural areas or by policies slowing it down. Structural change is likely to be accelerated by international cooperation both due to greater innovation and technological progress and due to enhanced agricultural trade, fostering regional reallocation.

There is little doubt that without major additional efforts, pristine forests and other high-value ecosystems are under continued pressure, and further losses in biodiversity are to be expected. The same holds for agricultural GHG emissions which are bound to increase significantly without corrective action. Greater focus on sustainability e.g. through biodiversity reserves and dietary changes has the capacity to significantly improve such developments on both accounts. Risks related to trans-boundary spreading of crop and livestock diseases or to food safety may both increase with enhanced international trade and, for food safety, with more international, longer and more complex food supply chains. On the other hand, international cooperation in prevention, identification and control of diseases or food safety risks, together with higher biodiversity and diversity of agricultural production systems and lower livestock and input intensities could help reducing such pressures.

What can governments, societies and the international community do to improve these outcomes? What are the key opportunities for different stakeholders, and what are the main areas of cooperation required? Two of the most important angles to make a difference include enhanced international efforts towards sustainable productivity growth and to mainstreaming the environmental and social footprint of food in consumers’ daily decision making in the supermarket. Sustainable agriculture and productivity growth represent two sides of the same coin rather than conflicting objectives, requiring that the concept of productivity growth needs to account for the use of natural resources and, in particular, of common pool resources. The development of related indicators in the context of OECD’s work on Green Growth, such as the Environmentally Adjusted Multifactor Productivity, is of key importance for
Some of the policies discussed in this report, such as high market price support or support for fertilisers to name two examples, bear substantial risks for sustainable productivity growth as they distort the incentives received by farmers, whereas an environment conducive to multidisciplinary research, development, extension and agricultural education will improve long-term outcomes.
REFERENCES


DEFINITION OF OECD INDICATORS OF AGRICULTURAL SUPPORT

Nominal indicators used in this report

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

**Market Price Support (MPS):** The annual monetary value of gross transfers from consumers and taxpayers to agricultural producers arising from policy measures that create a gap between domestic market prices and border prices of a specific agricultural commodity, measured at the farm gate level. MPS is also available by commodity.

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

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

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

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

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

**Consumer Support Estimate (CSE):** The annual monetary value of gross transfers from (to) consumers of agricultural commodities, measured at the farm gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on consumption of farm products. If negative, the CSE measures the burden (implicit tax) on consumers through market price support (higher prices), that more than offsets consumer subsidies that lower prices to consumers.
**General Services Support Estimate (GSSE):** The annual monetary value of gross transfers arising from policy measures that create enabling conditions for the primary agricultural sector through development of private or public services, institutions and infrastructure, regardless of their objectives and impacts on farm production and income, or consumption of farm products. The GSSE includes policies where primary agriculture is the main beneficiary, but does not include any payments to individual producers. GSSE transfers do not directly alter producer receipts or costs or consumption expenditures. GSSE categories are defined in Box 1.A1.2.

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

**Ratio indicators and percentage indicators**

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

**Percentage SCT (%SCT):** Is the commodity SCT expressed as a share of gross farm receipts for the specific commodity (including support in the denominator).

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

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

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

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

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

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

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

**Percentage GSSE (%GSSE):** Share of expenditures on general services in the Total Support Estimate (TSE).
Box 1.A1.1. Definitions of categories in the PSE classification

Definitions of categories

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

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

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

- **Variable input use** that reduces the on-farm cost of a specific variable input or a mix of variable inputs.

- **Fixed capital formation** that reduce the on-farm investment cost of farm buildings, equipment, plantations, irrigation, drainage, and soil improvements.

- **On-farm services** that reduce the cost of technical, accounting, commercial, sanitary and phyto-sanitary assistance and training provided to individual farmers.

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

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

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

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

- **Long-term resource retirement:** Transfers for the long-term retirement of factors of production from commodity production. The payments in this sub-category are distinguished from those requiring short-term resource retirement, which are based on commodity production criteria.

- **A specific non-commodity output:** Transfers for the use of farm resources to produce specific non-commodity outputs of goods and services, which are not required by regulations.

- **Other non-commodity criteria:** Transfers provided equally to all farmers, such as a flat rate or lump sum payment.

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

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

Definitions of labels

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

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

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

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

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

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

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

### Decomposition indicators

**Decomposition of PSE**

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

**Contribution of MPS to percentage change in PSE:** Percentage change in nominal PSE if all variables other than MPS are held constant.

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

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

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

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

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

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

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

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

**Definition of GSSE categories**

The general GSSE definition is complemented in Annex 1.A2 by more specific implementation guidelines, provided under the different categories in the GSSE classification.

More detailed information on the indicators, their use and limitations is available in the OECD’s *Producer Support Estimate and Related Indicators of Agricultural Support: Concepts, Calculation, Interpretation and Use* (the PSE Manual) available on the OECD public website (http://www.oecd.org/tad/agricultural-policies/psemanual.htm).
Box 1.A1.2. Definitions of categories in the GSSE classification

Agricultural knowledge and innovation system

- **Agricultural knowledge generation**: Budgetary expenditure financing research and development (R&D) activities related to agriculture, and associated data dissemination, irrespective of the institution (private or public, ministry, university, research centre or producer groups) where they take place, the nature of research (scientific, institutional, etc.), or its purpose.

- **Agricultural knowledge transfer**: Budgetary expenditure financing agricultural vocational schools and agricultural programmes in high-level education, training and advice to farmers that is generic (e.g. accounting rules, pesticide application), not specific to individual situations, and data collection and information dissemination networks related to agricultural production and marketing.

Inspection and control

- **Agricultural product safety and inspection**: Budgetary expenditure financing activities related to agricultural product safety and inspection. This includes only expenditures on inspection of domestically produced commodities at first level of processing and border inspection for exported commodities.

- **Pest and disease inspection and control**: Budgetary expenditure financing pest and disease control of agricultural inputs and outputs (control at primary agriculture level) and public funding of veterinary services (for the farming sector) and phytosanitary services.

- **Input control**: Budgetary expenditure financing the institutions providing control activities and certification of industrial inputs used in agriculture (e.g. machinery, industrial fertilisers, pesticides, etc.) and biological inputs (e.g. seed certification and control).

Development and maintenance of infrastructure

- **Hydrological infrastructure**: Budgetary expenditure financing public investments into hydrological infrastructure (irrigation and drainage networks).

- **Storage, marketing and other physical infrastructure**: Budgetary expenditure financing investments to off-farm storage and other market infrastructure facilities related to handling and marketing primary agricultural products (silos, harbour facilities – docks, elevators; wholesale markets, futures markets), as well as other physical infrastructure related to agriculture, when agriculture is the main beneficiary.

- **Institutional infrastructure**: Budgetary expenditure financing investments to build and maintain institutional infrastructure related to the farming sector (e.g. land cadastres; machinery user groups, seed and species registries; development of rural finance networks; support to farm organisations, etc.).

- **Farm restructuring**: Budgetary payments related to reform of farm structures financing entry, exit or diversification (outside agriculture) strategies.

Marketing and promotion

- **Collective schemes for processing and marketing**: Budgetary expenditure financing investment in collective, mainly primary, processing, marketing schemes and marketing facilities, designed to improve marketing environment for agriculture.

- **Promotion of agricultural products**: Budgetary expenditure financing assistance to collective promotion of agro-food products (e.g. promotion campaigns, participation on international fairs).

Cost of public stockholding: Budgetary expenditure covering the costs of storage, depreciation and disposal of public storage of agricultural products.

Miscellaneous: Budgetary expenditure financing other general services that cannot be disaggregated and allocated to the above categories, often due to a lack of information.
ANNEX 1.A2.
REVISED GENERAL SERVICES SUPPORT ESTIMATE:
OVERVIEW OF MAIN CHANGES

Change in the definition of the General Services Support Estimate

The revised General Services Support Estimate (GSSE) is defined as “budgetary expenditure that creates enabling conditions for the primary agricultural sector through development of private or public services, institutions and infrastructure.” This definition replaces the previous, broader, definition of the GSSE as “payments to eligible private or public services provided to agriculture generally.”

The revised definition continues to apply the main distinction that: “Unlike the Producer Support Estimate (PSE) and the Consumer Support Estimate (CSE), the GSSE transfers are not destined to individual producers or consumers, and do not directly affect farm receipts (revenue) or consumption expenditure, although they may affect production or consumption of agricultural commodities in the longer term. While implementation criteria are used to distinguish whether the transfer is allocated to PSE or GSSE, the definition of the categories in the GSSE and the allocation of policy measures to these categories is according to the nature of the service” (PSE Manual).

The boundaries of the GSSEs have been re-defined to cover policies where primary agriculture is the main beneficiary. This definition is narrower because it excludes all payments to services for which primary agriculture is not the main beneficiary, such as rural infrastructure, and support to agro-industries further down the stream.

Change in GSSE categories

Table 1.A2.1 compares the different categories and sub-categories under the previous and the revised methodology. Main changes include:

- **A narrowing of the concept to primary agriculture**, which results in the inclusion of support to the processing industry for the financing of collective initiatives, the move of support to primary processors in the CSE and the exclusion of support to processors further down the stream from the TSE.

- **The principle that farmers are the main beneficiaries** of the services, which results in the exclusion of some rural infrastructure services.

- **More detailed sub-categories**, which allow payments previously included under a general category to be grouped under a sub-category (e.g. hydrological infrastructure, farm restructuring and institutions under “development and maintenance of infrastructure”; distinction of the type of inspection and control).

- **The addition of new measures**, such as the inspection and control of farm inputs under a new sub-category “Input control”, and the collection and dissemination of knowledge under the category “Agricultural knowledge and innovation system”.

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• **Clarifying that GSSE measures policy efforts** and not policy effect, which results for example in all payments to agricultural schools being included, even if students do not end up working in or for primary agriculture.

The definition of public stockholding and miscellaneous was not changed.

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<tr>
<th>Table 1.A2.1. GSSE categories</th>
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<td><strong>New classification</strong></td>
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<td>Collective schemes for processing and marketing</td>
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<td>Promotion of agricultural products</td>
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<tr>
<td>Public stockholding</td>
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<tr>
<td>Miscellaneous</td>
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**Guidelines for implementing the revised methodology**

The headings of the different categories in new the GSSE classification provide an idea of their broad contents, but more specificity is needed to specify the scope of information to be included. The guiding principles for the implementation of the new GSSE classification are provided below.

**Agricultural knowledge and innovation system**

**Agricultural knowledge generation**

This sub-category includes budgetary expenditure financing research and development (R&D) activities related to agriculture, irrespective of the institution (private or public, ministry, university, research centre or producer groups); irrespective of where they take place, the nature of research (scientific, institutional, etc.), or its purpose. The focus is on R&D expenditures on applied research related
to the primary agricultural sector (the definition in the Frascati manual\(^2\) may be a guidance). Social sciences related to agriculture are included. To the extent possible R&D related to forestry, fisheries etc. should be excluded and, if the information is not readily available, the method used to estimate their share should be clearly stated in the documentation.

This expenditure includes also transfers to finance ex situ conservation of livestock and plant species (e.g. gene banks). Data dissemination when primarily associated with research and development (knowledge generation) e.g. reports from research and databases developed as an adjunct to research also belongs to this sub-category.

**Agricultural knowledge transfer**

This sub-category includes budgetary expenditure to finance agricultural vocational schools and agricultural programmes in high-level education. The entire expenditure on those education activities is considered as related to agriculture, as the indicator measures policy effort.

This sub-category also includes budgetary expenditure financing generic training and extension advice to farmers, such as accounting rules or pesticide application methods). Expenditure on advice that are specific to individual farms (e.g. a farm business plan) are included in the PSE category for payment based on services.

Public expenditures on data collection and information dissemination networks related to agricultural production and marketing (e.g. information on technologies and production methods, price and market information) are also included in this sub-category.

**Inspection and control**

**Agricultural product safety and inspection**

This sub-category includes budgetary expenditure financing activities related to agricultural product safety and inspection. This includes only expenditures on inspection of domestically produced commodities at first level of processing and border inspection for exported commodities. Import control activities are not included. Production and trade data may be used to make an approximate estimation of a differentiation between export and import inspections. In case that such a separation is not possible, the entire expenditure on food safety and inspection should be included and mention should be made in the documentation.

**Pest and disease inspection and control**

This sub-category includes budgetary expenditures financing pest and disease control of agricultural inputs and outputs (control at primary agriculture level) as well as public funding of veterinary and phytosanitary services (for the farming sector).

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Input control

This sub-category includes budgetary expenditure financing the institutions providing control activities and certification of industrial inputs used in agriculture (e.g. machinery, industrial fertilisers, pesticides, etc.) and biological inputs (e.g. seed certification and control).

Development and maintenance of infrastructure

Hydrological infrastructure

This sub-category includes public investments into hydrological infrastructure (irrigation and drainage networks). Water subsidies granted to individual farmers and investment subsidies to on-farm irrigation infrastructure are included in the PSE. The expenditures related to hydrological network infrastructures are included according to the share which corresponds to farmer’s participation in that network (e.g. share of water used by agriculture, as reported in OECD agri-environmental indicators).

Flood prevention expenditures where agriculture is not the main beneficiary are not included. In the case of large investments, such as dams, with multiple outputs (irrigation, water retention, flood prevention, hydro-energy), the GSSE accounts only for the share of the outputs used by primary agriculture. Investment expenditure should be accounted in the year when it occurs.

Storage, marketing and other physical infrastructure

This sub-category includes budgetary expenditure financing investments and operating costs for off-farm storage and other market infrastructure facilities related to handling and marketing primary agricultural products (silos, harbour facilities – docks, elevators; wholesale markets, futures markets).

The item other physical infrastructure includes public investments to build and maintain other physical infrastructure related to agriculture. These are included in the GSSE only in cases when agriculture is the main beneficiary. In general the share of the primary agriculture should be above 50% of economic activity or regional employment or similar indicator. The choice of the indicator should be related to the nature of the policy and data available and should be clearly explained in the documentation.

Institutional infrastructure

This sub-category includes budgetary expenditure financing investments and operating costs to build and maintain institutional infrastructure related to the farming sector (e.g. land cadastres; machinery user groups, seed and species registries; development of rural finance networks; support to farm organisations, etc.).

As a rule, only the institutional infrastructure closely related to agriculture is included. The decision whether to include an institutional infrastructure should be clearly explained in the documentation.

Farm restructuring

This sub-category includes budgetary expenditure related to reform of farm structures. It includes measures related to “entry strategies” (such as assisting new farmers within the context of land reforms). Transfers provided directly to individual farmers within those programmes should be in PSE. It also

includes measures related to “exit strategies” and diversification strategies outside agriculture used in some developed countries, such as certain programmes in the European Union. However, support to diversification into other commodity sectors is included in the PSE.

Marketing and promotion

Collective schemes for processing and marketing

This sub-category includes budgetary expenditure financing investments in downstream activities (mainly at the level of primary processing) designed to improve the marketing environment for agriculture. It captures support to collective processing, marketing schemes and marketing facilities, while support to on-farm investments in processing activities is classified in the PSE; and support to individual firms (first processors) is classified in the CSE.

Promotion of agricultural products

This sub-category includes budgetary expenditure financing assistance to collective promotion of agro-food products (e.g. promotion campaigns, participation on international fairs), as well as those promoting food quality schemes. It does not include public expenditure related to export subsidies.

Cost of public stockholding

This category includes budgetary expenditure to cover the costs of storage, depreciation of the stocks and disposal of public storage of agricultural products. It includes cost of public stockholding related to market interventions (intervention storage) and storage of strategic reserves (stockholding for food security purposes, state reserves). This category does not include public expenditure related to export subsidies or buying into intervention stocks.

Miscellaneous

This category includes budgetary expenditure financing other general services that cannot be disaggregated and allocated to the above categories, often due to a lack of information. In such cases all efforts should be made to get more information concerning the implementation of the policy which will allow classifying in the categories mentioned above.

Main changes in GSSE and TSE estimates

Table 1.A2.2 compares estimates for 2011 for which data expenditures were considered final in the 2013 edition of the M&E report. Changes between the 2013 and 2015 editions reflect two factors: a) changes in the methodology and b) data improvements facilitated by the clarification of definitions. In addition, the estimates in the 2015 report contain for the first time the comparison for non-member economies, which were not included in the 2014 M&E report.

Changes in the GSSE are reflected in the TSE, which is the sum of PSE, GSSE and transfers from taxpayers to consumers. The revision of the GSSE definition also results in support to individual first-stage processors being moved from the GSSE, which includes only support to collective schemes under the category marketing and promotion, to the CSE, which captures support to processors being considered as first-stage consumers. The detailed review of GSSE measures also resulted in some being reclassified as PSE measures in some countries.
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Australia (Million AUD)</td>
<td>2015 monitoring report</td>
<td>2013 monitoring report</td>
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<td>Average %diff</td>
<td>2.579</td>
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<td>1.051</td>
<td>H1, H2, I, J, K, L, M</td>
</tr>
<tr>
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<td>2015 monitoring report</td>
<td>2013 monitoring report</td>
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<td>Average %diff</td>
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</tr>
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<td>2015 monitoring report</td>
<td>2013 monitoring report</td>
<td>%diff</td>
<td>Average %diff</td>
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<td>H1, H2, I, J, K, L, M</td>
</tr>
<tr>
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<td>2013 monitoring report</td>
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<td>Average %diff</td>
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<td>H1, H2, I, J, K, L, M</td>
</tr>
<tr>
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<td>2013 monitoring report</td>
<td>%diff</td>
<td>Average %diff</td>
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<tr>
<td>Israel (Million ILS)</td>
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<td>2013 monitoring report</td>
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<td>Average %diff</td>
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<td>-5.923</td>
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<td>H1, H2, I, J, K, L, M</td>
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<tr>
<td>Japan (Billion JPY)</td>
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<td>2013 monitoring report</td>
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<td>Average %diff</td>
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<td>2013 monitoring report</td>
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<td>%diff</td>
<td>Average %diff</td>
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<td>2.761</td>
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Table 1.A2.2. Estimate of support to agriculture for 2011 published in the 2013 and the 2015 reports
### Table 1.A2.2. Estimate of support to agriculture for 2011 published in the 2013 and the 2015 reports (cont.)

<table>
<thead>
<tr>
<th>Country (Million currency)</th>
<th>Total Support Estimate</th>
<th>Producer Support Estimate</th>
<th>Consumer Support Estimate</th>
<th>General Services Support</th>
<th>GSSE categories</th>
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<tr>
<td>Mexico (Million MXN)</td>
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<td>84 430</td>
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<td>101 945</td>
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<td>0%</td>
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<td>Norway (Million NOK)</td>
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<tr>
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<td>24 724</td>
<td>22 112</td>
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<tr>
<td>Russia (Million RUB)</td>
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<tr>
<td>South Africa (Million ZAR)</td>
<td>6 373</td>
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<td>Switzerland (Million CHF)</td>
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<tr>
<td>Turkey (Million TRY)</td>
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<td>-17 349</td>
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<td>34</td>
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<tr>
<td></td>
<td>31 747</td>
<td>29 357</td>
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<td>-8%</td>
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<td>131%</td>
<td>0%</td>
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<tr>
<td>Ukraine (Million UAH)</td>
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<td>-5 938</td>
<td>-6 185</td>
<td>5 384</td>
<td>582</td>
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<tr>
<td></td>
<td>-8 449</td>
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<tr>
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<td>-57%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>United States (Million USD)</td>
<td>83 824</td>
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<td>-51 011</td>
<td>5 751</td>
<td>2 227</td>
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<tr>
<td></td>
<td>143 778</td>
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<td>2 324</td>
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<td>-4%</td>
<td>-11%</td>
<td>-92%</td>
<td>-4%</td>
</tr>
<tr>
<td>OECD (Million USD)</td>
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<td>8 695</td>
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<tr>
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<td>-55%</td>
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</tr>
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</table>

1. See Table 1.A2.1 for descriptive labels of the GSSE categories under the 2015 and 2013 monitoring report. The 2013 estimates utilise the previous GSSE methodology and definitions. The estimates from the 2015 report use the revised GSSE methodology and may contain updated information across all agriculture support categories.


Most frequent changes are found in the category sub-category labelled H2 in Tables 1.A2.1 and 1.A2.2, which corresponds to expenditure on agricultural knowledge transfer. They reflect the fact that expenditure on agricultural education are now fully included in the measure of policy effort, while in the previous methodology, expenditure on students, which did not remain in the agri-food sector, was excluded. While a new expenditure item was added in the inspection and control category (for farm input), numbers change only marginally in most countries. This might indicate that information is not yet available. Expenditure on infrastructure development and maintenance and on marketing and promotion is generally lower due to the narrower definition, focusing on primary agriculture. In most countries the
aggregate indicators of support do not change very much, but the case of the United States is a notable exception.

The main changes for each country are described below:

**Australia:** There have been only minor changes in programmes that have been reclassified. The main change is due to the need to allocate programmes under “Marketing and promotion” into two new sub-categories. Most of these programmes have both a collective processing and promotion component resulting in an allocation to each sub-category in equal amounts. The change of the classification of measures within the General Services Support Estimate (GSSE) has no significant implications for the total GSSE or the Total Support Estimate (TSE).

**Brazil:** The change of the classification of measures within the GSSE has no significant implications for the total GSSE or the TSE. Since 2010 Agricultural Education is no longer disaggregated from national expenditures on education.

**Canada:** Canada was one of the pilot countries of new GSSE classification. Canada reviewed around 5 000 individual programmes under the current GSSE. The revisions were implemented for the whole period since 1986 and the programmes are aggregated by the level of new GSSE categories. The programmes providing support to downstream industry (such as subsidy to biofuel plants), general rural development measure and general R&D expenditure were removed. During the review process, some previous GSSE programmes went to PSE and CSE as well. Canada asked for a standard definition of “the primary processing” to maintain the consistency across countries. Overall, the change of the classification of measures within the GSSE resulted in a minor reduction of the total GSSE and the TSE.

**Chile:** A programme on Forestry Research was removed. Two new programmes were added: one on market information implemented by ODEPA agency and classified as GSSE C2; and another one on food quality and safety implemented by ACHPIA agency and classified as GSSE B1. The change of the classification of measures within the GSSE has no significant implications for the total GSSE or the TSE.

**China:** Some changes in the TSE and in the total GSSE were due to updates and changes in data with no significant implications resulting from the change of the classification within the GSSE estimate.

**Colombia:** For Colombia, the new GSSE classification was used for the first time in the calculations of indicators.

**European Union:** The new GSSE classification was implemented for the whole period starting in 1986. Generally sufficient documentation is available to inform classification decisions. Schemes that related to the production of specific products were removed, so was international food aid. Work is on-going to classify expenditures for which documentation is insufficient, this relates to both national and EU expenditure. In most cases these measures came to an end in the earlier years of the period covered by the indicators. As an example some further investigation is needed for the classification of some measures under the EAGGF that were phased out in 2007. Reclassification and better coverage of some items at member state level lead to an overall increase of the GSSE by 31%, which feeds into the rise in the TSE; also explained by a higher PSE. The CSE shows a bigger negative number due to a revised estimate of market price support for 2011.
Indonesia: The change of the classification of measures within the General Services Support Estimate (GSSE) has no significant implications for the total GSSE or the TSE.

Iceland: The change of the classification of measures within the General Services Support Estimate (GSSE) has no significant implications for the total GSSE or the TSE.

Israel: The change in the classification of measures within the General Services Support Estimate (GSSE) has no significant implications for the total GSSE or the TSE.

Japan: The change of the classification of measures within the GSSE has no significant implications for the total GSSE or the TSE.

Kazakhstan: The main change concerned GSSE category K. Marketing and promotion. Interest subsidies on credit subsidies to food processors were re-classified from this category to CSE category P.2. Non-commodity specific transfers to consumers. This led to a reduction in the GSSE and a decrease in the negative CSE value. Other GSSE changes concerned re-allocation of the moderate values across GSSE categories. These modifications were offsetting in terms of their effect on the TSE value. A modest increase in both TSE and PSE was due to a revised estimate of market price support and the updates to the budgetary data in the PSE.

Korea: The change of the classification of measures within the GSSE has no significant implications for the total GSSE or the TSE.

Mexico: There have been only minor changes in programmes that have been reclassified. The main change is due to the need to allocate programmes under Inspection Services and Marketing and promotion into new sub-categories. In particular the inspection and control programmes implemented by the inspection agency SENASICA include inspection, pest and diseases and input components. Good budgetary information for the allocation of this expenditure to different sub-categories was not available and allocation was provisionally done in equal amounts. New information is being collected with the view of improving this allocation in the next monitoring cycle. The change of the classification of measures within the GSSE has no significant implications for the total GSSE or the TSE.

New Zealand: The change of the classification of measures within the GSSE has no significant implications for the total GSSE or the TSE, with the exception of expenditures for agricultural university courses now being included in the GSSE category H2. Agricultural Knowledge Transfer. This addition results in a three-fold increase in expenditures within category H2 in 2011. The total GSSE and TSE for that year increased by 16% and 11%, respectively.

Norway: There have been only minor changes in programmes that have been reclassified. The existing programmes have been reallocated and more detailed information was provided to split the programmes into the new categories and sub-categories. In some cases there was not enough data to split the programmes for the early years in the time series. Support to production of potato spirit was moved to the CSE. The programmes classified in the category miscellaneous were removed as these were administration costs. In 2015, Norway updated the data on public spending in Universities and on Inspection and Control institutions in the whole time series. Overall, the change of the classification of measures within the GSSE resulted in a minor reduction of the total GSSE and TSE.

The Russian Federation: The main change concerned GSSE category K. Marketing and promotion. Interest subsidies on credit to food processors were re-classified from this category to CSE category P.2. Non-commodity specific transfers to consumers. This led to a reduction in the
GSSE and a decrease in the negative CSE value. A re-allocation within GSSE categories was also made affecting moderate values. Finally, GSSE category J. Infrastructure was also revised: the spending under the Federal Program of Social Development of Rural Areas was removed as being related to social area, such as assistance for construction of houses for rural people, improvement of water and electricity supply for rural settlements, etc. The latter modification had a downward effect on the TSE value, however, a modest decrease in the TSE, as well as in the PSE, was also due to a revised estimate of market price support the updates to the budgetary data in the PSE.

South Africa: The change of the classification of measures within the GSSE had limited implications for the total GSSE in South Africa (increase of 14%). The major shift is the twofold increase in spending on Marketing and Promotion (category K) due to inclusions of expenditures related to agriculture from the Rural Enterprise and Industrial Development Fund and a slight increase in spending on infrastructure due to inclusion of some expenditures (irrigation infrastructure) from the Rural Infrastructure Development Fund. On the other side, the changes in the expenditure in sub-categories H1 and H2 are only due to a shift of expenditures related to extension and training from Knowledge Generation (H1) to Knowledge Transfer (H2). This shift results in a five-fold increase in expenditures within category H2 in 2011 (from low base), while the reduction in H1 was only 20% (overall the spending in category H remains unchanged).

Switzerland: There have been only minor changes in programmes that have been reclassified. One programme was moved to the PSE and one to CSE. Outstanding issue: data on expenditure on agricultural universities were not available in 2014 and were made available for the 2015 estimates. Hence the spending for the Agricultural knowledge transfer (H2) in 2011 increased more than ten times (from CHF 12 million to CHF 129 million under the new classification). Additional data were also provided for Agricultural knowledge generation (H1) and the expenditure doubled compared to the “old” GSSE data. Overall, with the additional information made available the total GSSE increased by 45% and the TSE by 2%.

Turkey: The change of the classification of measures within the GSSE has no significant implications for the total GSSE or the TSE. Data on hydrological infrastructure have been improved. Overall, with the additional information made available, the total GSSE increased by 131% and the TSE by 3%.

Ukraine: Expenditures not related to primary processing were removed from GSSE category K. Marketing and promotion and re-classified to category J.2 Storage, marketing and other physical infrastructure. A re-allocation within GSSE categories was also made. Overall, these revisions did not lead to a change in the total GSSE value. TSE, PSE and CSE values changed due to a revised estimate of market price support.

United States: There have been major changes in the reclassification of some large US programmes and as a result a very significant reduction of the GSSE and TSE; these indicators drop by -92% and -42% respectively. The reduction results from the clarification in the new methodology that the GSSE encompasses only general services to the domestic primary agriculture sector. For the US, that narrowing of the GSSE boundaries leads to removal of two major sources of previously reported expenditures from the GSSE: 1) the share of the US Supplemental Nutrition Assistance Program (SNAP) expenditures (USD 62 billion in 2013) attributable to the food supply chain beyond the farm; and 2) expenditures on international food assistance (USD 1.6 billion in 2013), both of which had been included under “Marketing and promotion” under the previous GSSE. The share of SNAP expenditures attributable to farm level production (USD 16 billion) continues to be reported in the CSE. In addition to these two major items, some small additional changes
have been made, including moving reported expenditures for the Renewable Energy Program (USD 56 million for 2013) to the PSE under payments based on input use, fixed capital formation.