European Commission

EU AGRICULTURAL OUTLOOK

Prospect for the EU agricultural markets and income 2016-2026

December 2016

Agriculture and Rural Development

NOTE TO THE READER

This report presents the medium-term outlook for the major EU agricultural commodity markets and agricultural income to 2026, based on a set of coherent macroeconomic assumptions deemed most plausible at the time of the analysis. The projections assume a continuation of current agricultural and trade policies.

Our analysis is based on information available at the end of September 2016 for agricultural production and on an agro-economic model used by the European Commission.[1] It is accompanied by an uncertainty analysis quantifying potential variations of the results, stemming in particular from fluctuations in the macroeconomic environment and yields of the main crops.

As part of the validation process, an external review of the baseline and the uncertainty scenarios was conducted at an outlook workshop in Brussels on 25-26 October 2016. Valuable input was collected from high-level policymakers, European and international modelling and market experts, private companies and other stakeholders, and international organisations such as the OECD, the FAO, the IEA and the World Bank.

This European Commission publication is a joint effort between the Directorate-General for Agriculture and Rural Development and the Joint Research Centre (JRC). Responsibility for the content rests with the Directorate-General for Agriculture and Rural Development. While every effort is made to provide a robust agricultural market and income outlook, strong uncertainties remain – hence the importance given to the uncertainty analysis. This publication does not necessarily reflect the official opinion of the European Commission.

In the Directorate-General for Agriculture and Rural Development, the publication and underlying baseline were prepared by Koen Dillen, Sophie Hélaine, Pierluigi Londero, Koen Mondelaers, Fabien Santini (coordinator) and Benjamin Van Doorslaer. The Directorate-General's outlook groups contributed to the preparation of the baseline.

At the JRC, the team that helped prepare the baseline, organise the outlook workshop and carry out the uncertainty and scenario analysis included Thomas Chatzopoulos, Els De Rademaeker, Thomas Fellmann, Giampiero Genovese, Hans Jensen, Silvia Kanadani Campos, Ignacio Perez Dominguez (coordinator), Simone Pieralli and Leonor Rueda. Jesús Barreiro-Hurle, Mihaly Himics, Guna Salputra (JRC D.4), María Bielza, Adrian Leip, Jean-Michel Terres and, Franz Weiss (JRC D.5) also contributed to the work.

We are grateful to participants in the outlook workshop and many other colleagues for feedback received during preparation of the report.

1 EU version of the OECD-FAO AGLINK-COSIMO model.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This report presents the medium-term outlook for the major EU agricultural commodity markets and agricultural income up until 2026, based on a set of macroeconomic assumptions.

In a general environment of lower energy and commodity prices, EU cereals prices are expected to range between 160 EUR/t and 170 EUR/t on average. Steadily growing world demand and affordable feed prices should favour the livestock sector. Therefore, despite the difficulties currently faced in the milk market, there could be opportunities for the EU dairy sector to expand, including in response to increasing demand within the EU. After a strong recovery in 2014 and 2015, EU meat consumption *per capita* is expected to decline slightly, except for poultry whose market share could marginally increase. A small increase in pigmeat production will be driven by export demand, while beef production is expected to moderately decrease. Finally, recent trends of stagnant consumption and growing value for specialised crops are expected to continue.

ARABLE CROPS

In the cereal outlook, a further concentration towards the main commodity crops like common wheat, maize and barley is expected, at the expense of other cereals. EU cereal demand could increase by 6% by 2026, mainly due to dynamic feed use, mainly maize. Export prospects remain positive for common wheat and, to a lesser extent, barley. The stock-to-use ratio is expected to stabilise at fairly low levels, while cereal prices, above their long-term average, are expected to remain lower than their recent peaks, between 160 EUR/t and 170 EUR/t by 2026.

For oilseeds, the gradual shift from rapeseeds towards soybeans is becoming more apparent, with the area devoted to the cultivation of rapeseed decreasing and soybean imports increasing. This trend, which marks a reversal from the last decade, is expected to continue over the outlook period, as feed use will become the predominant driver in the oilseed complex, given the stagnation in biofuels demand due to policy uncertainty.

Driven by a favourable policy environment, protein crops recently experienced a strong revival. Over the outlook period, downwards pressure on feed prices could lead to a halt in the growth of protein crop cultivation area, but some yield improvements will lead to a moderate increase in protein crop production.

With more, poultry meat, dairy production and pigmeat expected over the outlook period, total compound feed use could rise further by 2.9% to reach 270 million t, up from around 263 million t today. Feed compound prices should remain below the high levels of recent years, thus contributing to an increase in animal production. The intensification of livestock production in the Member States that joined after 2004 could trigger a shift towards more protein-rich feed.

Down from a global oversupply, the sugar market entered a period in which consumption exceeds production, thus leading to strong price increases in the world market prices. In this new global market environment, the expiry of sugar and isoglucose quotas in 2017 could have a significant impact on the EU sweetener market. Despite lower domestic prices, EU production is expected to initially increase significantly, with the EU sugar output expected to be 6% above the current production level by 2026. The increase will be concentrated in the most cost-effective regions, driven by a sustained sugar beet yield increase. In the domestic market, EU sugar will have to compete with isoglucose, which is expected to become an important sweetener in regions with a deficit in sugar production. By the end of the outlook period, the EU should be a net exporter of white sugar to nearby markets.

The increase in EU biofuel demand and production is expected to pick up again towards 2020 to reach a 6.5% proportion of biofuels in total transport energy by 2020 (as calculated under the Renewable Energy Directive – RED). However, most of this increase will come from non-agricultural feedstock and imports rather than domestic feedstock, with the exception of maize used to produce ethanol. However, developments beyond 2020 are hard to anticipate as they will take place in a new, yet undecided policy environment. In this outlook, the biggest driver post-2020 is the strong reduction in overall petrol and diesel use following new energy efficiency legislation.

MILK AND DAIRY PRODUCTS

World dairy markets have been in turmoil during the last two years, as the introduction of the Russian import ban and the sharp decrease in Chinese purchases coincided with unprecedented increases in world production. During the next decade, global and EU production growth is expected to be more moderate, driven by a sustained increase in world demand, albeit at a slower pace than in the past decade. Further short-term disequilibria between global supply and demand cannot be excluded and could contribute to price volatility, as observed in the EU since 2007.

After more than 30 years in a production quota environment, market fundamentals will be the main drivers of EU supply developments. This required, and still requires, an adjustment from farmers and other market operators. Environmental constraints will also play a major role in the future, limiting production development in certain areas of Europe (and elsewhere). Therefore, the rise in EU milk production in the next decade is expected to be moderate (+1.3 million t of milk per year on average) and lower than in recent years.

Still, the EU is expected to become the world's top exporter of dairy products by 2026, just ahead of New Zealand. However, despite the expected strong increase in exports, by 2026 more than 85% of EU milk and dairy products will be consumed within the EU. The decrease in fresh milk consumption is expected to continue, but the use of cheese and butter by households and for processing is expected to increase further, which, together with expected population growth, would support consumption.

MEAT

World population and income growth are expected to support higher global meat demand and contribute to higher EU meat exports. World meat consumption is expected to increase by 13.5%, or 42.6 million tonnes, between 2016 and 2026. This is less than in the previous decade, but still almost equivalent to a year's total meat production in the EU.

Thanks to the economic recovery and slightly lower prices, overall meat consumption *per capita* in the EU recovered by an unexpected 1.9 kg in 2015. The increase is expected to continue at a slower pace in 2016, to reach 68.4 kg/ca (retail weight). By the end of the outlook period, *per capita* consumption is expected to remain stable, with poultry taking small proportions of market share from other meats. Still, 90% of total EU meat production will go to EU consumers.

EU beef production continues to be driven mainly by dairy herd developments. After the increase in 2015 and 2016, it is expected to return to its long-term decreasing trend, albeit at a slower rate than in the past, and to reach 7.5 million tonnes by 2026. After decreases over several years, the production of sheep and goat meat is expected to stabilise at current levels thanks to improved profitability and demand that remains steady despite higher prices.

Following a strong recovery in 2014 and 2015, pigmeat production is now expected to expand only marginally (by less than 1.3% by 2026 compared to its 2016 high levels). In the context of only limited increase in domestic consumption, pigmeat exports are expected to grow steadily, supported by sustained world demand and low feed prices. Price competition from the USA and Brazil is expected to be strong, however.

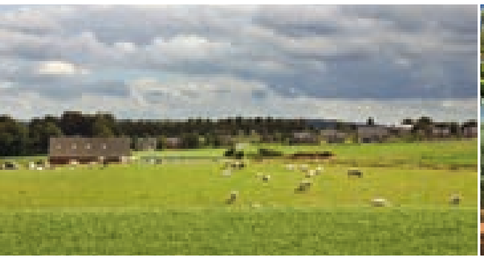
EU poultry meat production should expand by around 5% over the outlook period. Driven by promising growth in world import demand, EU exports are expected to reach 1.7 million t by 2026 (+15%). However, prices will be under pressure and will stay below the levels seen in 2011-2015 as a result of increased competition in the world market.

OTHER SECTORS

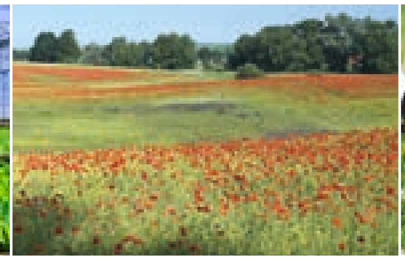
This report includes a first attempt to cover the outlook for the markets of several specialised crops, such as fruit and vegetables (apples and tomatoes), olive oil and wine. These sectors represent a significant proportion of EU agriculture's value added, exports and employment. Each of these sectors has its specificities. However, some common drivers can be identified, among them a relative decline or stagnation of *per capita* consumption at EU level. Each sector adapts to these trends in a different way, but there are two important common elements. Firstly, trade, both extra-EU and within the EU from producing to non-producing areas, is crucial to these sectors, for which the EU often has an offensive position in trade negotiations. Secondly, consumption may decrease in overall quantities, but it does not decrease in value, as more higher value-added products are supplied and consumed.

AGRICULTURAL INCOME

Real agricultural income per annual work unit (AWU) is expected to increase slightly (+2%) over the outlook period due to lower total income in the sector and further structural change, including a continuing reduction of the labour force. Total agricultural income is expected to decline considerably in real terms over the outlook period (-14%), mainly due to fairly low agricultural prices and increasing costs.






ENVIRONMENTAL ASPECTS

This report also tries to translate the market outlook into environmental indicators related to emissions (greenhouse gas (GHG) and air pollutants) and nutrient surplus. For emissions, the evolution of livestock sectors is a key element: the majority of GHG emissions in agriculture stem directly or indirectly from animal production. With a projected decrease in total number of livestock in the EU, total emissions are expected to decrease in the next decade, by 1 % compared to 2008 for GHG and by 7 % for ammonia emissions. The dairy and beef sector for GHG emissions and the pigmeat sector for ammonia are the ones most concerned by such issues. At the regional level, some regions with a high density of livestock (occasionally still increasing) seem to accumulate environmental concerns, and potentially face a change in the specialisation trends that characterised them in the past decade.

MAIN ASSUMPTIONS

The present outlook assumes a continuation of current agricultural and trade policies, normal agronomic and climatic conditions, and no market disruption. These assumptions imply relatively smooth market developments because they correspond to the average trend agricultural markets are expected to follow if policies remain unchanged; in reality markets tend to be much more volatile.

The medium-term outlook reflects current agricultural and trade policies, including future changes already agreed upon. Account was taken of common agricultural policy (CAP) implementation options, but the level of aggregation of the model does not allow for all details to be modelled. However, preliminary results from the greening review after one year confirm the main assumption that greening has a limited effect on overall production developments, although it leads to significant changes at farm level.

Only free-trade agreements that are already in place or are about to enter into force are taken into account. This means that the recent agreements with Canada, the Southern African Development Community (SADC) and the update of the agreement with the Ukraine are included, but not other trade agreements that have been negotiated but not signed. The import ban on agricultural products and foodstuffs formally imposed by Russia until August 2017 is taken into account and assumed to be lifted by the end of 2017.

Macroeconomic assumptions include a continued low oil price level in the short term, albeit with a moderate increase over the outlook period to reach USD 94 per barrel by 2026, a lower level than assumed in previous outlooks. The current situation of a competitive euro is likely to continue in the short term. Then, the exchange rate is assumed to appreciate moderately over the medium term and reach USD 1.22/EUR by 2026. Economic growth in the EU is expected to remain lower than previously thought, at around 1.6 % to 1.8 % until 2026. The economic growth path will be more dynamic in the EU-N13, at a growth rate of over 3 % per year. The economic outlook takes into account actual changes in macroeconomic conditions following the UK vote of June 2016, in terms of economic growth rate and exchange rate. However, since little is known so far about when and under which conditions the UK would want to leave the EU, a European Union of 28 Member States, i.e. including the UK, is covered throughout the projection period.

UNCERTAINTY ANALYSIS AND CAVEATS

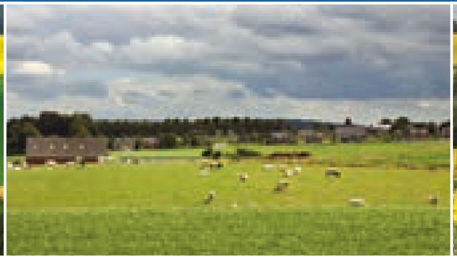
This outlook for EU agricultural markets and income is based on a specific set of assumptions regarding the future economic, market and policy environment. The baseline assumes normal weather conditions, steady yield trends, and no market disruptions (e.g. from animal disease outbreaks, food safety issues, etc.).

An uncertainty analysis accompanying the baseline quantifies some of the upside and downside risks and provides background on possible variation in the results. In particular, it takes account of the macroeconomic environment yield variability for the main crops, and selected scenarios: a change in the Chinese maize policy, the removal of the first generation biofuel policy in the EU, and the potential impact of climate mitigation policies on EU agriculture.

ABBREVIATIONS

AD	Anti Dumping
ASF	African swine fever
AWU	annual working unit
CAP	EU common agricultural policy
CETA	Comprehensive Economic and Trade Agreement
CGF	Corn Gluten feed
CH4	Methane
CO_2	Carbon Dioxide
CPI	Consumer Price Index
DCFTA	Deep and Comprehensive Free Trade Area
DDG	Distillers Dried Grains
DME	dimethyl ether
EAA	economic accounts for agriculture
EBA	'everything but arms'
EC	European Commission
EEA	European Environmental Agency
EFA	ecological focus areas
EIA	US Energy Information Agency
EPA	Economic Partnership Agreement
EU	European Union
EU-N13	EU Member States which joined in 2004 or later
EU-15	EU Member States before 2004
EU-28	current EU Member States
EUR	euro
FAME	fatty acid methyl ester
FAO	Food and Agriculture Organisation of the United Nations
FCR	Feed Conversion Ratio
FQD	Fuel Quality Directive
FSS	Farm Structure Survey
FTA	free-trade agreement
GDP	gross domestic product
GHG	greenhouse gas
GM	genetically modified
HFCS	High Fructose Corn Syrup
HPF	High Protein Feed
HVO	Hydrotreated vegetable oil
IEA	International Energy Agency
IGC	International Grain Council
ILUC	Indirect Land Use Change
JRC	Joint Research Centre
LPF	Low Protein Feed
LULUCF	Land Use, Land Use Change and Forestry
ME	Middle East
MPF	Medium-Protein feed
N	Nitrogen
N2O	Nitrous Oxide
NA	North Africa
NBM	No biofuel mandate scenario
NBP	No biofuel policy scenario
NH3	Ammonia
OECD	Organisation for Economic Cooperation and Development
OPEC	Organization of Petroleum Exporting Countries
PDO	protected designation of origin
PEDv	porcine epidemic diarrhoea virus
PGI	protected geographical indication
PPS	Purchasing Power Standard
PSA	private storage aid
RED	Renewable Energy Directive
SADC	South African Development Community
SMP	skimmed milk powder
SPS	sanitary and phytosanitary
SSA	Sub-Saharan africa
TRQ	tariff-rate quota
UAA	Utilised Agricultural Area
UHT	Ultra-High Temperature processing
UK	United Kingdom
UNFCCC	United Nations Framework Convention on Climate Change
USA/US	United States of America
USD	US dollar
USDA	US Department of Agriculture
VCS	voluntary coupled support
WMP	whole milk powder
WTO	World Trade Organisation
1st-gen.	first-generation
bbl	barrel
hl	hectolitres
kg	kilograms
t	tonne
t.o.e.	t oil equivalent
w.s.e.	white sugar equivalent
c.w.e.	carcass weight equivalent
r.w.e.	retail weight equivalent
CV	coefficients of variation

1. INTRODUCTION – BASELINE SETTING

This report presents the medium-term outlook for the major EU agricultural commodity markets and agricultural income to 2026, based on a set of coherent macroeconomic assumptions. The baseline assumes normal agronomic and climatic conditions, steady demand and yield trends, and no particular market disruption (e.g. from animal disease outbreaks, food safety issues). In addition, the medium-term projections assume current agricultural and trade policies, including future changes that have already been agreed upon.

> These assumptions result in relatively smooth market developments. In reality, markets are likely to be more volatile. Therefore, the outlook cannot be considered to be a forecast. More precisely, these projections correspond to the average trend agricultural markets are expected to follow were policies to remain unchanged, in a given macroeconomic environment that is plausible at the time of analysis, although not certain.

The projections are based on the OECD and FAO Agricultural Outlook 2016-2025[2] updated with the most recent global macroeconomic projections and market data. Macroeconomic projections stem from the European Commission macroeconomic forecasts[3] and those provided monthly by IHS Markit[4]. The EU statistics and market information for the EU are those available at the end of September 2016[5].

As yield expectations and macroeconomic forecasts are by nature surrounded by uncertainty, we performed a systemic uncertainty analysis around the baseline. Such analysis makes it possible to illustrate a range of possible developments caused by the uncertainty in which agricultural markets operate. Throughout this report possible price range around the expected baseline are regularly presented.

2 OECD/FAO (2016): 'OECD-FAO Agricultural Outlook 2016-2025.' OECD Publishing, Paris. http://www.agri-outlook.org/

3 European Economic Forecast, Autumn 2016, institutional paper 038, November 2016. http://ec.europa.eu/economy_finance/eu/forecasts/2016_autumn_forecast_en.htm

4 https://ihsmarkit.com/

5 See autumn 2016 edition of the Short-term outlook for the arable crop, dairy and meat markets: http://ec.europa.eu/agriculture/markets-and-prices/short-term-outlook/index_en.htm

A more systematic representation of the variability in agricultural markets stemming from these uncertainties is summarised at the end of the report. In addition, to try to quantify the potential impact of selected uncertainties, specific scenarios are analysed and presented in dedicated text boxes throughout the report. These include the impact of maize de-stocking in China, a removal of EU biofuel policies and the implementation of climate change mitigation measures in the EU.

For the second consecutive year, this report provides an outlook at Member State level for a specific sector: this year we focused on the dairy sector.

Environmental and climate change constraints are increasingly driving the evolution of agricultural markets. The conclusion of the Paris agreement in December 2015 and its entry into force in November 2016, after its ratification by the EU, will further impact agricultural market developments. A specific chapter has been added to illustrate the environmental impact of this market outlook in terms of greenhouse gas (GHG) and ammonia emissions, nitrates balance and soil erosion.

DOMESTIC POLICY ASSUMPTIONS

Our policy assumptions take account of the 2013 common agricultural policy (CAP) reform, which entered into force fully in 2015. The following aspects of the reform have or are expected to have a particular impact on market and income developments:

- **expiry of milk quotas** in April 2015;
- **expiry of the quota system for sugar and isoglucose** on 30 September 2017;
- **intervention mechanisms:** up to 3 million t a year of common wheat, 50 000 t of butter and 109 000 t of skimmed milk powder (SMP) can be bought each year at fixed intervention prices. Beyond these limits, intervention is by open tender. In 2016, these ceilings were increased for SMP up to 350 000 t under safety-net measures adopted to support the dairy sector. The Commission may also decide to open intervention by tender for durum wheat, barley, maize, paddy rice, and beef and veal;
- **private storage:** the Commission can activate the private storage aided schemes (PSAs) for certain products (white sugar, olive oil, linseed, beef, pigmeat, sheep and goat meat, butter, SMP and PDO/PGI cheeses) if the market situation so requires. Since no specific trigger is laid down, these measures are not explicitly modelled. However, they have been implemented in 2015 and 2016 for pigmeat, SMP, butter and, exceptionally, cheese;
- **decoupled basic payment scheme**[6]**:** while decoupled payments do not affect production decisions directly, further convergence of direct payments among farmers may sometimes lead to major changes in farmers' subsidies and income. In addition, the redistribution of direct payments between Member States leads to a global gradual increase of direct payments in the EU-N13 in parallel with a reduction in the EU-15;
- **coupled payments:** Member States can couple up to 8 % of their direct payments envelope (up to 13 % in particular situations, or more, subject to Commission approval). In 2014, 27 Member States decided to apply voluntary coupled support (VCS) between 2015 and 2020 for an amount of EUR 4.2 billion per year. Coupled payments are granted per ha or per head within maximum limits. They are added to commodity prices as a top-up to the revenue that can influence production decisions.

Exceptional market measures can be deployed to address severe market disturbances. These are not explicitly modelled in the long run, as decisions are taken case by case. Nevertheless, we have taken into account the effects of the measures adopted in support of the dairy sector between 2014 and 2016, such as exceptional targeted aids to the livestock sectors and the aid for the voluntary reduction of milk production.

The effects of '**greening**' are also taken into account to the extent possible. In 2016 the European Commission produced a review of greening after one year[7]. A more detailed description of this review is described in section 2.1. Three main components for greening could have an impact on the outlook: first, under the crop diversification component, the main crop of concerned farms should not represent more than 75 % of the farm's total arable land. The objective is to preserve agricultural diversity. Second, the permanent grassland component of greening should slow down the reduction of areas with permanent grasslands. The third greening rule requires that 5 % of a farmer's arable land should be an ecological focus area (EFA). This figure may increase to 7 %. Farms under 15 ha and farms with high shares of permanent grassland are exempted. While these environmental measures concern many farmers and a very large share of agricultural area, overall EU production levels are not expected to be heavily impacted.

6 Historical budget expenditure and future budget envelopes are used to calculate average per ha decoupled payments for the EU-15 and the EU-N13 (after applying transfers between the direct payment and the rural development budgets as notified by the Member States).

7 Commission staff working document, Review of greening after one year, SWD(2016)218 final, 22.06.2016.

Given the geographical aggregation of the model, it is not always possible to capture the redistribution of direct payments between and within Member States or the targeted allocation of all coupled payments. Similarly, the voluntary capping of payments over EUR 150 000 and specific schemes for small farmers and young farmers are not accounted for. The effect of the redistributive payment, a top-up to the basic payment for the first ha of the holding, as implemented by nine Member States, is also not taken explicitly into account in this outlook. Nevertheless, several of these elements are included in the expert judgement used to produce the projections.

Environmental policies are not explicitly taken into account in this model. However, the effects of the Nitrates Directive and other environmental rules on water or air quality, as well as the need to reduce GHG emissions, are factored into the analysis.

TRADE POLICY ASSUMPTIONS

On international trade negotiations and agreements, it is assumed that all commitments under the Uruguay Round Agreement on Agriculture, in particular on market access and subsidised exports, are met. No assumptions are made as to the outcome of the Doha Development Round. The implications of the Nairobi Package of December 2015, in particular the Ministerial Decision on Export Competition Declaration, are taken into account, in particular the definitive phasing-out of all export subsidies.

Since last year, two new bilateral trade agreements have been signed and implemented. The tariff concessions have been incorporated into the modelling exercise as well as the potential developments in trade in agricultural commodities induced by such agreements. The first of these new trade agreements is the Economic Partnership Agreement (EPA) with SADC (South African Development Community) comprising Botswana, Lesotho, Mozambique, Namibia, South Africa and Swaziland. The agreement was signed in June 2016 and took effect on 10 October 2016. The second new trade agreement is the Comprehensive Economic and Trade Agreement (CETA) with Canada, which was adopted by the Council and signed at the EU-Canada Summit on 30 October 2016. The European Parliament must give its consent to CETA for it to enter into force provisionally. As such approval is reasonably foreseeable in the near future, the present outlook assumes CETA will be implemented as from 2017, including new tariff-rate quotas for Canada (beef, pigmeat and wheat) and for the EU (notably cheese). Additionally, the updated concessions for Ukraine under the deep and comprehensive free trade area were also incorporated into the modelling exercise.

However, the exercise does not take into account bilateral and regional trade deals still to be signed or ratified, e.g. the FTAs with Vietnam, the text of which was published on 1 February 2016.

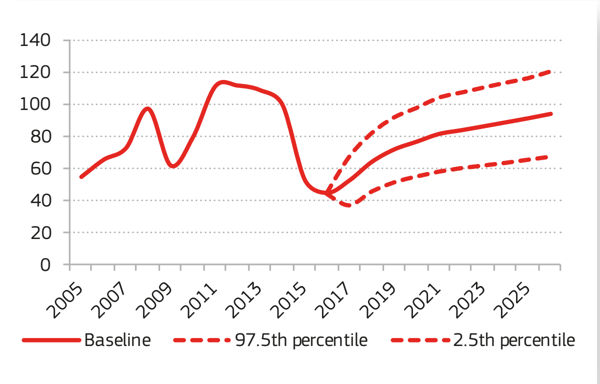
Russia's food embargo against the EU countries, the US, Canada, Australia and Norway introduced on August 2014 (and further expanded in 2015 and 2016 to Albania, Montenegro, Iceland, Lichtenstein and Ukraine) was extended in June 2016 until the end of 2017 (despite some exceptions for goods intended for baby food).

MACROECONOMIC ENVIRONMENT

Macroeconomic assumptions are based on a combination of the European Commission economic outlook for the period until 2018 and for the longer term on mainly IHS Markit macroeconomic forecasts, combined with other sources like the International Monetary Fund, the World Bank or the US Energy Information Agency and expert judgement validated at a workshop held in October 2016 in Brussels[8]. Such assumptions cover energy prices (through the world oil price), population trends and several macroeconomic indicators such as economic growth, inflation and GDP deflator, as well as exchange rates, for around 55 countries and groups of countries in the world.

Concerning oil price, since the sharp fall in oil prices at the end of 2014 and the record low of early 2016 at USD 30 per barrel, the Brent crude oil price has picked up slightly throughout 2016, reaching USD 50 in October 2016, still much lower than 2 years ago (Graph 1.1). The overall 2016 average oil price is USD 43 per barrel. Lower prices in the last 2 years can be explained by a combination of lower demand (due to slow economic growth and higher use efficiency) and abundant supply: return to the market of some traditional players such as Libya or Iran, strong output increase in the USA and no downward adjustment in production by Russia and the OPEC[9] countries. This led to an increase of inventories and low prices.

Graph 1.1 • Oil price assumption (USD/bbl) and uncertainty range



From large global oil surplus in 2015 (1.6 million barrels per day), the situation evolved throughout 2016 towards a global match of supply and demand. Supply decreased in non-OPEC countries, particularly in the US, following investment cutbacks in the last 2 years which have their effect on supply now. In September OPEC, possibly supported by Russia, decided to limit output. Even though demand is expected to keep growing only moderately, the expected supply evolution should result in an increase in the oil price in 2017 to above 50 USD per barrel.

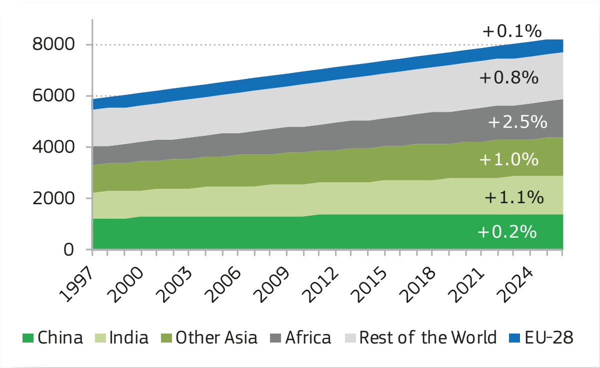
For the near future upside price risks stem from stronger production cuts by OPEC, disruptions in supply in less stable countries like Libya, Nigeria or Venezuela or lower global economic growth. Downside risks are linked to a possible failure of the recent OPEC agreement or earlier than expected supply response, particularly from US shale oil rigs which are currently on stand-by.

In the longer term, the assumption is that the oil price will rise to reach USD 94 per barrel (in nominal terms) by 2026. There is a large consensus among oil price projections[10] on a gradual increase of the oil price in the coming 10 years. This reflects a continuing demand growth, particularly from emerging economies and higher extraction costs for the non-conventional oil that will be needed to meet the increasing world demand. The actual price level in 2026 is hard to pin down, as reflected by the fact that projections for 2025 from different international organisations range from about USD 80 to 120 per barrel in nominal terms. Our assumption is intermediate, with an oil price of USD 94 per barrel. In terms of uncertainty, this outlook considers that in 95 % of cases, the oil price should be between USD 67 and 121 per barrel in 2026.

Oil price affects the agricultural outlook in several ways: it impacts production costs (directly or indirectly through the cost of fertilisers and other inputs) and has an effect of the demand for biofuels.

Continued world **population** growth and economic growth drive demand and support prices for agricultural commodities. However, population growth is slowing down in Europe, North America, Russia and China. In the latter, the average annual growth rate expected over the period 2017-2026 is +0.2 %, while in the previous decade it amounted to +0.5 %. The change in demographic objectives (two-child policy) is not expected to have effects before the end of the projection period. Russia is expected to see further depopulation: its population is expected to decrease by -0.2 % annually until 2026.

Graph 1.2 • Assumed development of world population (million inhabitants and annual % growth 2017-2026)

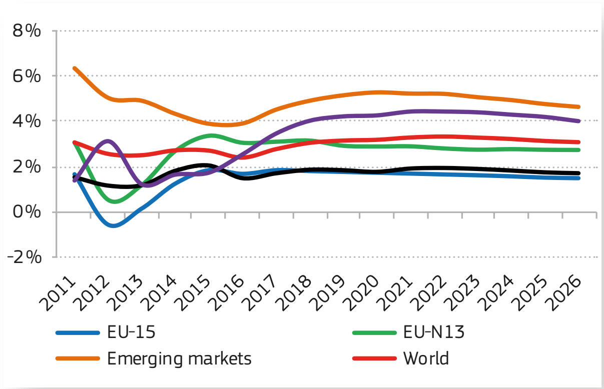


Source: DG Agriculture and Rural Development and IHS Markit

The population growth is concentrated in Africa and Asia. The annual population increase, currently around 80 million people per year, should decelerate by 2026 to around 74 million people per year. In Europe the continued growth in EU-15 is partly offset by a depopulation trend in the EUN-13. Moreover, for the years 2015 and 2016, the annual EU-15 population growth was adjusted upwards by 0.1 percentage points compared to last year's outlook, mostly linked to the recent increase in the number of asylum seekers from the Middle East and north Africa.

EU **economic growth** in 2016 and 2017 is expected to be slightly lower than was initially expected at the beginning of 2016. Certain factors weighed negatively on the economic growth path of the EU, such as an elevated level of geopolitical uncertainty, the global slowing down of world growth and world trade and some legacies from the recent economic and financial crisis (in terms of public and private debt, ongoing recovery process in the banking sector, etc.). EU-15 economic growth is therefore expected to remain limited to 1.5 % or 1.6 % per year in the short run (0.2 to 0.4 percentage points below last year's assumptions).

Graph 1.3 • Economic growth assumptions (%)



Source: DG Agriculture and Rural Development, based on OECD-FAO Agricultural Outlook 2016-2025

World economic growth is also assumed to be slightly below last year's assumption, by around 0.2 percentage points, despite the fact that Russia, Brazil and other commodities-dependent economies are likely to exit crisis. Economic growth directly impacts the demand in agricultural commodities, both domestically and in main export markets.

Potential growth in EU exports is also affected by **exchange rate** developments, which have a direct effect on export competitiveness. In the short run (for the 3 to 4 years to come), it is generally expected that the exchange rate between the euro and the US dollar will remain between 1.1 and 1.15, similar to 2015 and 2016. However, the relation to the other currencies of our main competitors and markets (other than the US) is likely to evolve towards an appreciation of the euro, hampering the development of our exports. The appreciation of the euro is assumed to continue throughout the period. From 2019 onwards the euro is also assumed to appreciate versus the dollar.

The macroeconomic conditions are particularly uncertain, and there may be more downward than upward risks. The European economic forecasts mention in particular factors which could potentially weigh on economic growth such as:

- external geopolitical conflicts;
- the adjustments still expected in China;
- the extent to which the EU banking sector will be able to enhance investment;
- anticipation effects of what will be the future agreement between the EU and the UK following the June 2016 vote;
- the impact on global trade of the growing opposition to globalisation and free trade arrangements.

The report includes a systemic uncertainty analysis, which is described in Chapter 8.

Table 1.1 • Baseline assumptions on EU key macroeconomic variables

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
EU Population growth	**0.2 %**	**0.2 %**	**0.3 %**	**0.4 %**	**0.4 %**	**0.3 %**	**0.1 %**	**0.1 %**	**0.1 %**	**0.1 %**	**0.1 %**	**0.1 %**	**0.0 %**	**0.0 %**
EU-15	0.4 %	0.4 %	0.6 %	0.6 %	0.5 %	0.2 %	0.2 %	0.2 %	0.2 %	0.2 %	0.2 %	0.1 %	0.1 %	0.2 %
EU-N13	-0.2 %	-0.2 %	-0.2 %	-0.2 %	-0.2 %	-0.2 %	-0.3 %	-0.3 %	-0.3 %	-0.3 %	-0.3 %	-0.4 %	-0.4 %	-0.3 %
EU Real GDP yearly growth	**0.2 %**	**1.6 %**	**2.2 %**	**1.8 %**	**1.6 %**	**1.8 %**	**1.7 %**	**1.7 %**	**1.8 %**	**1.7 %**	**1.7 %**	**1.7 %**	**1.6 %**	**1.6 %**
EU-15	1.2 %	1.8 %	2.2 %	1.5 %	1.6 %	1.6 %	1.6 %	1.7 %	1.6 %	1.6 %	1.5 %	1.5 %	1.5 %	1.6 %
EU-N13	2.7 %	3.3 %	3.5 %	3.1 %	3.1 %	2.9 %	2.9 %	2.9 %	2.8 %	2.7 %	2.7 %	2.7 %	2.7 %	2.9 %
World	2.5 %	2.7 %	2.7 %	2.4 %	2.8 %	3.1 %	3.2 %	3.2 %	3.3 %	3.3 %	3.3 %	3.2 %	3.1 %	3.1 %
EU Inflation (CPI)	**1.5 %**	**0.6 %**	**0.0 %**	**0.3 %**	**1.5 %**	**1.6 %**	**1.9 %**	**1.9 %**	**1.9 %**	**1.9 %**	**1.9 %**	**1.9 %**	**1.9 %**	**1.9 %**
EU-15	0.6 %	0.1 %	0.3 %	1.5 %	1.6 %	1.9 %	1.9 %	1.9 %	1.8 %	1.9 %	1.8 %	1.8 %	1.8 %	1.9 %
EU-N13	0.3 %	-0.4 %	-0.4 %	1.4 %	2.0 %	2.2 %	2.1 %	2.0 %	2.0 %	2.2 %	2.2 %	2.1 %	2.1 %	2.1 %
Exchange rate (USD/EUR)	**1.33**	**1.33**	**1.11**	**1.11**	**1.10**	**1.10**	**1.17**	**1.20**	**1.21**	**1.21**	**1.21**	**1.21**	**1.21**	**1.21**
Crude oil price (USD per barrel Brent)	**109**	**99**	**54**	**44**	**52**	**64**	**72**	**76**	**81**	**84**	**86**	**89**	**91**	**94**

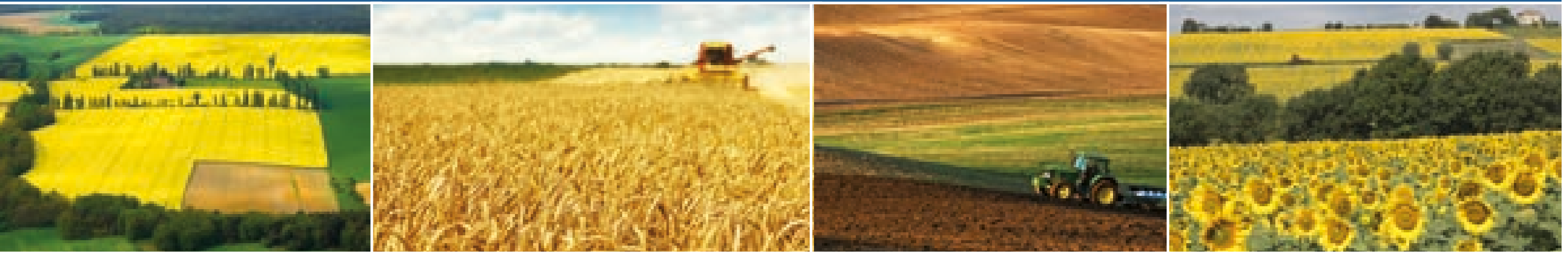
Sources: DG Agriculture and Rural Development estimates based on European Commission macroeconomic forecasts and IHS MarkitSources: DG Agriculture and Rural Development estimates based on European Commission macroeconomic forecasts and IHS Markit

8 http://publications.jrc.ec.europa.eu/repository/bitstream/JRC104101/outlook2016_proceedings.pdf

9 The Organization of Petroleum Exporting Countries (OPEC) is a permanent intergovernmental organisation of 14 oil-exporting developing nations that coordinates and unifies the petroleum policies of its Member Countries. http://www.opec.org

10 US Energy Information Agency (EIA) (2016). 'Annual Energy Outlook 2016' http://www.eia.gov/forecasts/aeo/

2. ARABLE CROPS



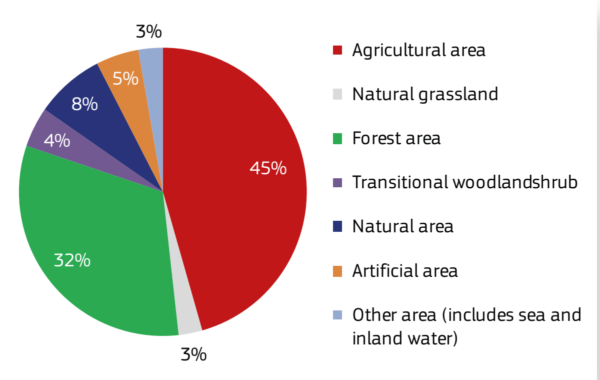
The arable crop area in the EU is expected to continue its slow decline, which, together with stagnating yield growth, limits further expansion in production. EU domestic demand for cereals and oilseeds remains mainly driven by increased feed use as demand growth for first-generation biofuel production slows down. The medium-term outlook for arable crops also shows solid world demand creating opportunities for increased EU cereal exports.

This chapter provides an overview of the outlook for arable crops (common wheat, durum wheat, barley, maize, rye, oats, other cereals, rapeseed, sunflower seed, soybeans, rice and sugar beet) and some processed products (sugar, vegetable oils, protein meals, biodiesel and ethanol). It looks first at land-use developments and continues with two particular sectors, biofuels and sugar, for which planned policy changes give rise to uncertainty. The chapter then looks at the main cereals, including rice, at oilseeds and at the feed complex.

LAND-USE DEVELOPMENTS

Currently about 45 % of the EU is covered with agricultural land (Graph 2.1).

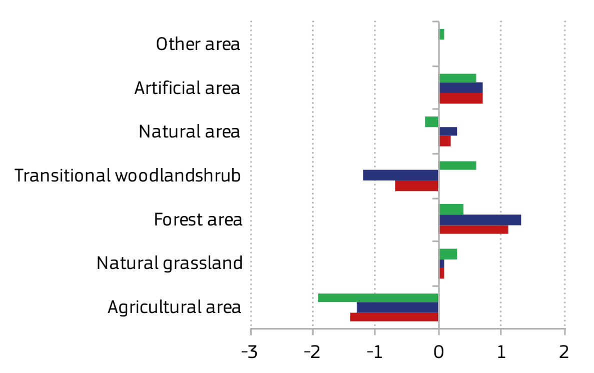
Graph 2.1 • Share of agriculture in total land cover



Source: DG Agriculture and Rural Development, Context indicator CCI 31 Land cover

While forest area, natural area and artificial area increased over time (Graph 2.2), agricultural area decreased. According to EEA (2016) land converted for urban, infrastructure and industrial purposes exceeds 1 000 km² per year in the EU, with over half of this surface being defined as 'sealed' by construction and urban infrastructure. It is projected that in a business-as-usual scenario, land take in the EU will continue at a fast pace, of 900–1 200 km² per year, until 2030.

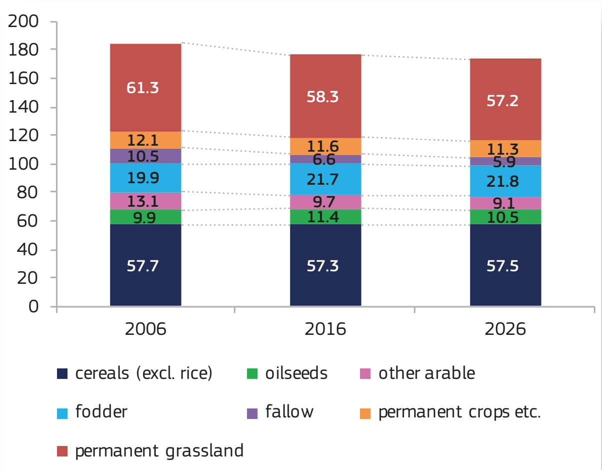
Graph 2.2 • Change in land cover (%) between 2000 and 2012



Source: DG Agriculture and Rural Development, Context indicator CCI 31 Land cover

While in recent years there was already a slowdown in the reduction of utilised agricultural area (UAA, -0.3 % per year between 2010 and 2015 compared to -0.8 % per year between 2005 and 2010), this trend is expected to continue, though at a slower rate (-0.2 % per year between 2015 and 2026), bringing UAA to 173 million ha by 2026. The downward trend is slightly weaker than in last year's outlook, due to revisions of historic Member State data.

Graph 2.3 • Agricultural land-use developments in the EU



The expected decrease in arable crop area in the outlook is less pronounced than in the previous decade in the EU-15 and the EU-N13. The main reductions are in:

- fallow land area (-1.1 % or 73 000 ha per year, compared with -4.5 % per year in the previous decade);
- oilseeds area and arable crops other than cereals and oilseeds (both -0.8 % per year).

The potato area is projected to continue its significant decrease, especially in the EU-N13 where it has been mainly substituted by maize so far. Nearly a third of agricultural land is permanent pasture, and this proportion is expected to remain stable over the outlook period.

In both the EU-15 and the EU-N13, fodder crop area increased strongly in the past decade. The increase was more pronounced in the EU-15, mainly due to the increased use of green maize as feedstock for the production of biogas, as well as to temporary grass and grazing for livestock production. Contrary to the EU-15, the increase is projected to continue in the EU-N13, driven by the expected further intensification of livestock production.

SLIGHT CHANGES IN LAND USE LINKED TO THE CAP REFORM

The implementation of the CAP reform is resulting in a slight change in agricultural land-use patterns. CAP budget reallocation between Member States and between farmers within Member States gives an impetus to some regions to expand or change production while restraining others. Secondly, the targeted use of voluntary coupled support is aimed at maintaining the production of some specific crops such as sugar beet, rice, protein crops and durum wheat. Finally, the 'greening' provisions on direct payments are likely to affect various land-use categories. According to the review of greening after one year mentioned above, 72 % of the total EU agricultural area is currently subject to at least one green direct payment obligation.

The greening measure aimed at preserving permanent grassland should help to slow down the decline of pasture area. We anticipate a further decline over the outlook period, although at a slower pace. The permanent grassland measure is only binding in few Member States. However, over the outlook period, the share of permanent grassland in total UAA is expected to remain stable at around one third. Overall it is estimated that the total area of permanent grassland could be 3 % higher in 2026 than what it would have been in the absence of greening measures.

Concerning the greening measure on ecological focus areas (EFAs), in 2015 about 68 % of arable land was subject to this requirement. The inclusion of EFAs should slow down the significant decrease in fallow land area observed since 2008, when compulsory set-aside ended. Currently fallow land accounts for about 7 % of arable crop area. Leaving land fallow is only one of the practices qualifying for the EFA measure: in many Member States, farmers can use other options to meet the EFA requirement on arable land such as:

- planting areas with nitrogen-fixing crops (pulses for example);
- catch crops or green cover;
- landscape features (such as hedges or buffer strips).

Currently, the ratio of the EFA area to total arable land, as calculated after weighting factors are applied, is 9 % of the total arable land. The sum of the three main types of EFA – land lying fallow (21 %), nitrogen-fixing crops (45 %) and catch crops (28 %) – amounts to 92 % of the total area concerned. The European Commission put forward in October 2016 amendments to simplify greening provisions, among which the introduction of a ban on using plant protection products on EFA productive areas (land lying fallow, catch crops and nitrogen-fixing crops). This might have implications on the development of nitrogen-fixing crops such as protein crops and soybean in the future but is not taken into account at this stage.

While the greening rule on crop diversification has an impact at farm level it is not expected to lead to major area changes at aggregate level. First results of a quantitative analysis performed by the Joint Research Centre (JRC) seem to suggest that farms having to relocate part of their arable land represent about 8 % of the total EU arable land, according to the review of greening after one year. However, the total area for which change of crop allocation is concretely needed is only about 1 % of the total EU arable land (as crop allocation does not need to be changed for all the area of the farms concerned). This reflects the fact that many farmers comply with the requirements. The crop diversification measure impedes farmers from further reducing diversity on their field.

CROP AREA AND YIELD CHANGES

The cereal area has declined slightly in the past 20 years, but yields and production have increased, even though yields have shown declining growth rates. These trends are not expected to change in the coming decade.

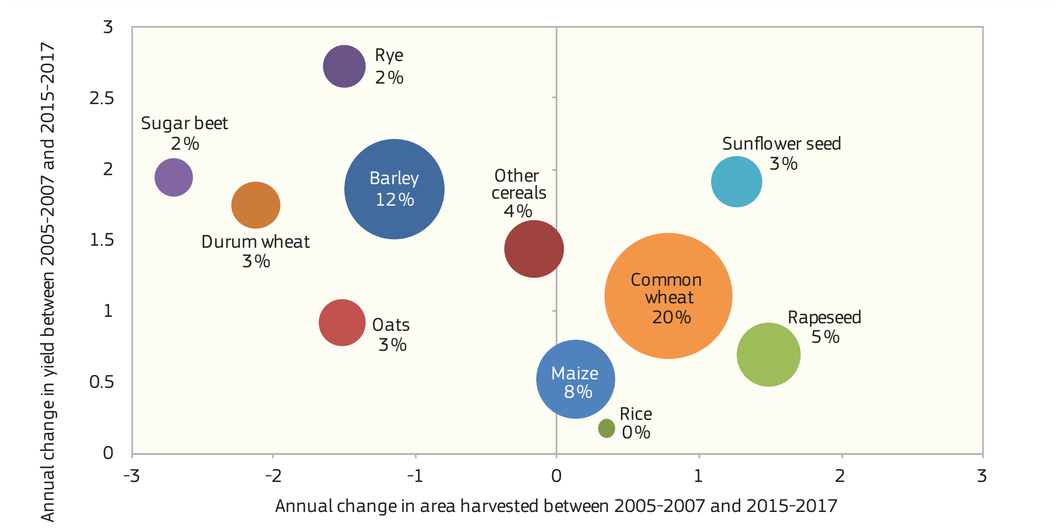
Graph 2.4 compares historical land-use and yield developments for individual crops on the basis of average annual changes between 2005-2007 and 2015-2017. The most dynamic crops were the oilseeds. Soybean (beyond the scale of the graph) saw a quick revival after hitting the bottom in 2013 (+22 % in 2014 and again +55 % in 2015, followed by a stabilisation (-4 %) in 2016, driven by a favourable policy environment (with voluntary coupled support and EFA eligibility) and premium prices for non-GM soy. The rapeseed area also expanded strongly (about 1.5% on average), driven by biofuels policy and technological breakthroughs, closely followed by sunflower seed. For cereals, the most notable area shift is from barley, durum wheat, rye and oats to soft wheat, while the maize area remained stable. This contraction of other coarse grains to the more productive regions allowed for considerable yield increases (up to 2% per year for barley). The sugar beet area also fell significantly as a result of the 2006 sugar market reform and improved aggregate yields following the concentration of production in productive regions.

In several Member States, we are approaching a yield plateau. A hypothesis that can explain such yield stagnation is that average farm yields are approaching the biophysical ceiling for the crops concerned. This seems to be the case in high-yield systems for wheat in northwest Europe (the United Kingdom, France, Germany, the Netherlands, Denmark) and maize in south Europe (Italy and France). Several EU directives (such as the Sustainable Use Directive and the Nitrate Directive) might have an impact on the potential attainable yield. In addition, since 2014, in response to growing concerns about the impact of neonicotinoids on honey bees, Regulation (EU) No 485/2013 restricts the use of imidacloprid, clothianidin and thiamethoxam for seed treatment, soil application (granules) and foliar treatment in crops attractive to bees, while EC Regulation (EU) No 781/2013 bans fipronil treatments. Temporary suspensions had previously been enacted in France, Germany and Italy. The ban is most relevant for maize, rapeseed and sunflower, although it allows for a number of derogations. It is still early to say whether the ban has an impact on attainable yield and farm economics as research is ongoing. More recently, due to growing criticism on the side effects of the herbicide Glyphosate, its authorisation for use in the EU has only been prolonged for 18 months, until the end of 2017. Meanwhile, additional research should demonstrate whether there is a risk for environmental and human health or not.

Given the above, area and yield trends in the coming decade are generally expected to converge and grow at a much slower pace (as can be seen from the change in scale in Graph 2.5 Graph 2.6). Fewer changes in production are therefore foreseen. The area devoted to sunflower and rapeseed is expected to decrease, driven by the decrease in demand for vegetable oils and biodiesel, while the soybean area is expected to grow only mildly (+0.2% per year).

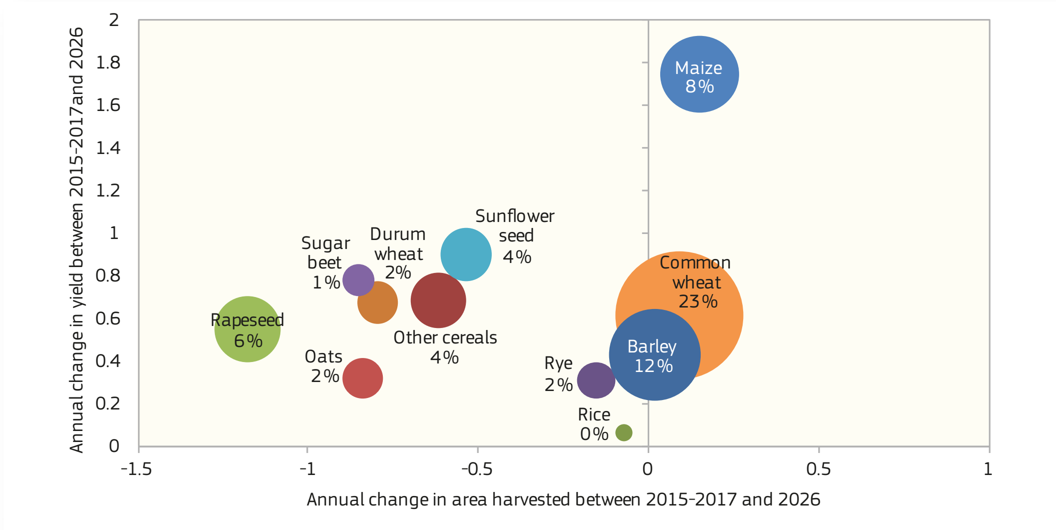
In the cereals sector, common wheat and maize are expected to further expand marginally at the expense of the other cereals. The main driver for soft wheat is its competitiveness on the world market. Maize yield is expected to continue its stronger growth than other cereals, as there is scope for a further yield increase, especially in the EU-N13, given the considerable gap with the EU-15. The barley area is relatively stable: recent past growth due to Chinese demand has come to a temporary stop, but is expected to resume again later in the outlook period. The other cereals (rye, oats and triticale) continue to see their area contract following the concentration of cereals production in the most competitive areas.

Graph 2.4 • Annual changes in area and yields by crops between 2005-2007 and 2015-2017 in the EU (%)



Note: the size of the bubble refers to the share in area harvest on average in the years 2005-2007

Graph 2.5 • Annual changes in area and yields by crops between 2015-2017 and 2026 in the EU (%)



Note: the size of the bubble refers to the share in area harvest on average in the years 2015-2007

BIOFUELS

Trends in recent years, characterised by policy uncertainty and a general decline in the use of transport fuel, seem to limit the further expansion of biofuels by 2020. Production is set to increase by about 8% by 2020 compared to today. However, most of the increased production is from non-agricultural feedstock and imports rather than domestic feedstock, with the exception of an expansion of maize for ethanol production. The projections assume a 6.5% proportion of biofuels in total transport energy by 2020 (as counted under the Renewable Energy Directive).

EU POLICY FRAMEWORK EVOLVING

The growth of the biofuel industry since the early 2000s has been driven by the European legislative framework. Three pieces of EU legislation determine the current EU demand and to a large extent EU production by setting out sustainability criteria for production and procedures for verifying compliance:

- the Renewable Energy Directive (RED), which entered into force in 2009, set an overall binding target of sourcing 20% of EU energy needs from renewables such as biomass, hydro, wind and solar power by 2020. Member States have to cover at least 10% of their transport energy use from renewable sources (including biofuels);
- the Fuel Quality Directive (FQD), which requires fuel producers to reduce the GHG intensity of transport fuels by 2020;
- the 'ILUC Directive'[11] from 2015, which amended both the RED and FQD. This Directive tries to address the risk that some production pathways may increase overall GHG emissions due to indirect land-use change (ILUC). It did this by introducing a 7% cap on renewable energy in the transport sector coming from food or feed crops.

These legislative texts are expected to be replaced soon in the light of a new package on ENERGY and climate policies. The 2030 energy and climate strategy was agreed on by the European Council towards the end of 2014 and sets overall 2030 targets of a 40% cut in GHG emissions (1990-2030), 27% renewable energy and an increase in energy efficiency of at least 27%, to be reviewed by 2020 with a target of 30% in mind.

In the meantime, the European Commission has been working on a legislative package that should translate these general targets into concrete legislative proposals, taking into account the UN agreement on climate change signed last year in Paris (COP21). The Commission Communication 'A European Strategy for Low-Emission Mobility'[12] adopted in July 2016, contained a specific reference to biofuels. In line with the rationale behind the ILUC Directive and the public debate on the use of food crops for energy production, the text states: 'The Commission already indicated that food-based biofuels have a limited role in decarbonising the transport sector and should not receive public support after 2020'. On the other hand, the text stresses the role of advanced biofuels in the mix of renewable energy sources. By the end of the year, the European Commission is expected to present a more detailed proposal for a new RED for 2020-2030. At the time of writing, the legal proposal was not yet adopted. Moreover, the final market impact will depend on Member State implementation choices, which will take some additional time to materialise.

Although the above policy framework gives a clear direction for the future of EU biofuel markets, uncertainty around the projections post-2020 period persists.

11 Directive (EU) 2015/1513 of the European Parliament and of the Council of 9 September 2015 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources (OJ L239, 15.9.2015, p. 1).

12 COM(2016) 501 final, adopted together with two climate-related proposals (ESR and LULUCF).

Besides the EU climate and energy policy, EU trade policy might also be due for amendment soon. On September 15 2016, the EU General Court ruled that the anti-dumping duties on Argentinian and Indonesian biodiesel imports need to be eliminated, while on October 6 the WTO came to a similar conclusion for the Argentinian biodiesel anti-dumping duties. Both rulings criticised in particular the calculations that were used to set the duty. The final implementation of both judgments could increase the share of biodiesel imports in EU demand. However, Argentina in the meantime announced it would reduce its export tax on soybeans, one of the tools used by the country to lower domestic soybean prices and hence increase biodiesel competitiveness, which would again alter its competitive position.

Furthermore, on 9 June 2016, the European Court of Justice decided to annul the anti-dumping duties on bioethanol imports from specific US companies. These duties were implemented in 2013 for a period of 5 years. The EC appealed the Court's decision through support in the European Council. The outcome is not yet known and again creates some uncertainty when looking at the EU biofuel markets.

In order to cope with this regulatory and market uncertainty, this outlook is based on specific transparent, but strong, assumptions. In general the outlook assumes a policy status quo, post-2020: in other words, biofuel mandates will remain in place in their current form. To complement this view, the report also presents an extreme alternative where EU support to food and feed-based biofuels is entirely removed from 2021 onwards. These two antagonistic scenarios aim at representing a range of potential biofuel situations post-2020.

As the outlook mainly focuses on agricultural markets, the biofuel outlook is highly simplified and distinguishes only two types: ethanol and biodiesel. The land-use implications of advanced biofuels are not modelled explicitly as they are still in their infancy. Our specific assumptions for biofuels are:

- consumption estimates for diesel and petrol-type fuels are taken from the EU reference scenario 2016 developed by the Joint Research Centre and the Commission's Directorate-General for Climate Action using the POLES model;
- the proportion of total 'RED-counted' transport energy consumption in the EU accounted for by biofuels will reach about 6.5% in 2020 and then remain stable. This translates into a 4.6% proportion for first-generation or food-based biofuels by 2020, after which it will decrease to 4.4% by 2026; and
- the current lack of long-term investments is assumed to hamper the development of advanced biofuels (excluding biodiesel based on waste oils) especially in the first years of the outlook period, so that they account for only 0.2% of all transport energy consumed by 2026. This could change significantly depending on the implementation of the EU 2030 energy and climate package.

MATURE EU BIODIESEL PRODUCTION FROM RAPESEED; SOME FURTHER INCREASE IN MAIZE-BASED ETHANOL

Despite the strong decrease in the crude oil price in 2015 and 2016 and hence the increased price wedge between conventional energy and biofuels, the regulated biofuel market did not contract significantly as most Member States' legislation does not allow a sharp decline or transfer of consumption between them. In reality, low fossil fuel prices even support biofuel demand in the EU as most mandates are share-based and have not been altered in the last years. Hence, the changes in overall fuel use become a key driver of biofuel demand. Indeed, low diesel prices led to increased diesel consumption in 2015-2016 and a halt to the strong decline in gasoline use seen in earlier years.

Worth noting is the switch of Germany's biofuel policy in 2015 towards a GHG accounting-based legislation, which also ended the double counting rules. In the first year of implementation official data indicate a decrease of bioethanol use by 5% and by 7% for biodiesel year to year in Germany. This is taking into account the overall increase in diesel use which offset part of the drop. The feedstock composition slightly changed, substituting rapeseed for palm oil as they have different GHG reduction potential. Additionally, the altered accounting rules led to some trade of waste oil based biofuels towards other Member States with traditional energy-based mandates and double counting rules.

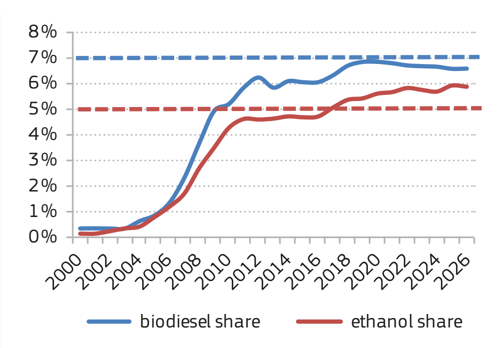
Going forward, some Member State policies are expected to change their legislative targets, bringing some additional growth in the market. The German GHG reduction target increases from -3% to -4% in 2017, which will increase domestic consumption again after the aforementioned drop in 2015-2016. However, the percentage share will increase also in mandate-driven markets such as Finland, Italy, Netherlands, Poland, Spain, Slovakia, Croatia and Belgium. This should increase demand for biofuels in 2017 given that we expect almost stable diesel and petrol use in the EU for 2017.

Production has been relatively stable over the period 2014-2016, which means we saw a slight increase in imports for both ethanol and biodiesel, particularly in 2016 (including blends). For 2017 the trade situation might be different as the ethanol production is expected to increase for a variety of reasons:

- an important plant in Rotterdam should return to production after a temporary closure due to problems in the parent company. Moreover, some factories in the UK and France are anticipated to be used at higher or full rates again;
- a new factory will come into production in Hungary (linked to a new isoglucose production site);
- a good harvest for wheat and maize in EU-N13 countries is resulting in sufficient supply at reduced prices.

Over the period 2017-2020 both EU production and consumption are expected to further increase, driven by the RED. The demand progress is indicated in Graph 2.6. On average, the EU remains under the 'blend wall', i.e. the proportion of biofuels that can be mixed with fossil fuels for use in the current fleet. Diesel cars are currently certified for blends with up to 7% biodiesel by volume (fatty acid methyl ester (FAME) or dimethyl ether (DME), which is found under the name of B7 in most Member States). However, as the average hides significant variation between Member States, the outlook requires the use of drop-in diesel substitutes such as hydrotreated vegetable oil (HVO) or engines adjusted to use higher blends. For ethanol the blend wall is higher at 10% ethanol in volume (around 6.7% in energy terms). However, the most used blend is E5, which contains only 5% bioethanol. Therefore, the projections require several Member States to offer E-10 as a petrol of choice at the pump. In the near future this might happen in the UK, Poland and Belgium but others will need to follow to reach the outlook demand levels. Alternatively, the consumption of E-85 could be promoted but this seems less likely as it requires specific engines and the share has been decreasing in Sweden, the biggest E-85 market in the EU.

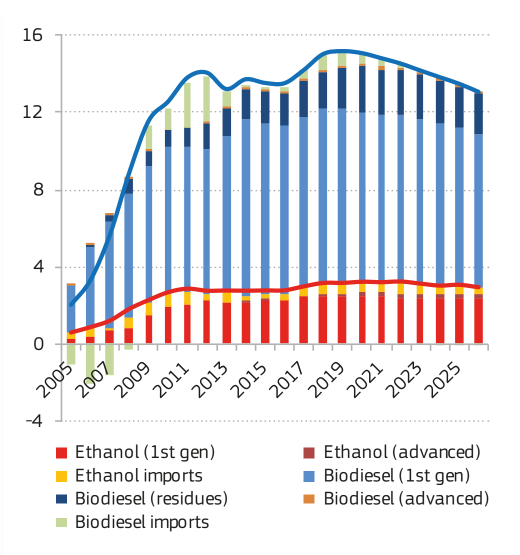
Graph 2.6 • Biofuel share in total petrol and diesel use in the EU (in volume share) and the most common blends



With biofuel shares stable post-2020, demand changes will be driven by overall changes in fuel use. Both diesel and petrol use is supposed to decrease significantly by 2026 compared to 2016 (-11% and -13% respectively), in line with the EU requirement for new passenger cars to emit less than 95 g CO_2/km from 2020 onwards and the anticipated increase in oil price.

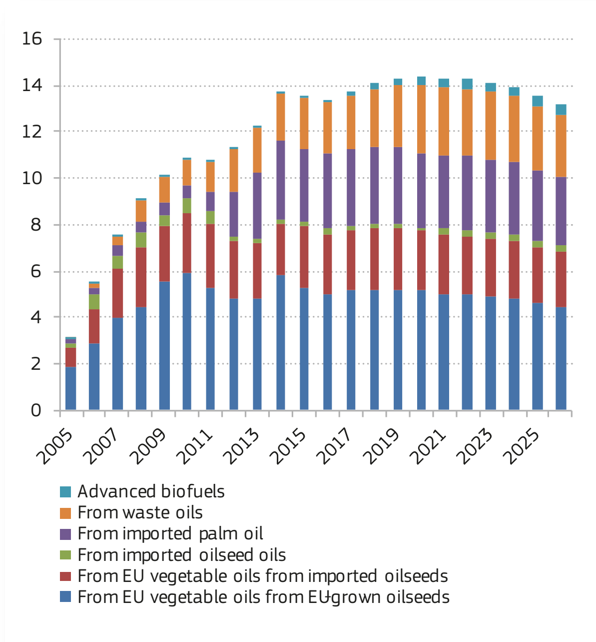
Fuel use of ethanol is expected to decrease by -9% and biodiesel by -13% in the period 2020-2026 (see Graph 2.7). Although we predict a slight increase in biofuel imports to fulfil EU demand, its magnitude is conditional on two assumptions. First, the future of the anti-dumping duties as described above and secondly the future of the US biodiesel mandate as the US market now absorbs a large share of the palm oil-based HVO available on the world market.

Graph 2.7 • EU biofuel consumption by source (million t.o.e.)



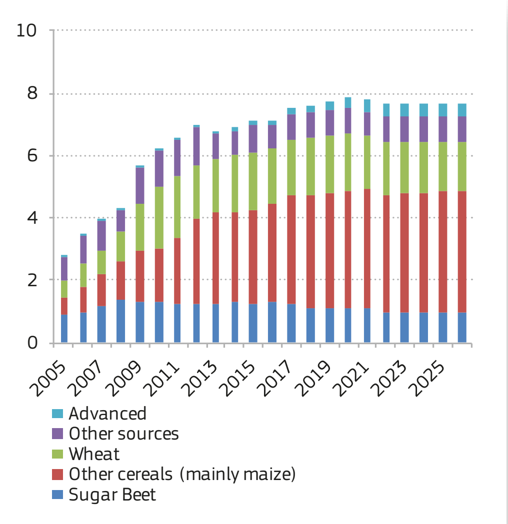
Biodiesel production is expected to increase to 14.2 billion litres in 2020, decreasing slightly afterwards following the drop in demand. Looking at the feedstock used, we see that the growth towards 2020 is driven by biodiesel based on waste such as tallow and used cooking oil. This is a direct effect of the RED regulation, which provides for double counting for this type of feedstock as it provides additional environmental benefits. However, further growth is limited by availability and the cost of sourcing these used vegetable oils. All other feedstock uses, including the use of palm oil, are expected to be stable between 2016 and 2020. By 2020, 44% of the demand for vegetable oils could come from biofuel demand, indicating the importance of the sector in the total oil demand. From 2020 the only expected growth is in the advanced biofuels, while the other feedstock use will go down following decreased energy demand on the EU market.

Graph 2.8 • EU biodiesel feedstock (billion litres)



The outlook for ethanol production is projected to see an increase to 7.8 billion litres by 2020 and stability up to 2026 following its better competitive position. Feedstock use will, however, be more dynamic than in the case of biodiesel. In recent years maize has replaced wheat as the most important feedstock and this trend is expected to continue over the outlook period.

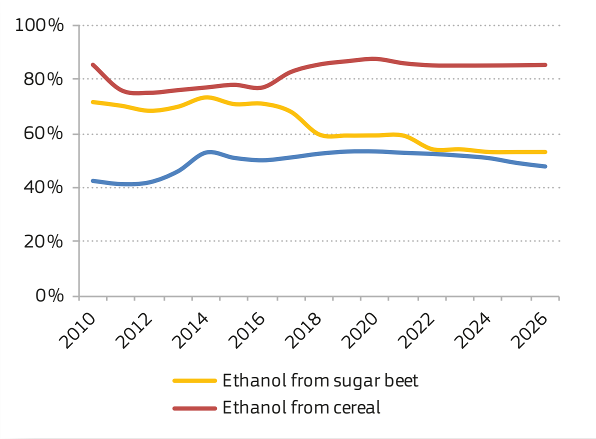
Graph 2.9 • EU ethanol feedstock (billion litres)



The share of sugar beet used has been rather stable but is expected to decrease following sugar quota expiry in 2017. Prices for industrial sugar beet are expected to increase following the abolition of the sugar quota. It decreases competitiveness vis-a-vis cereals which are expected to be available at relatively low prices. As most sugar beet-fuelled ethanol plants are located in the efficient sugar producing regions and linked to sugar factories, the exact share will depend on the relation between the world market price for sugar and the EU ethanol price.

On the one hand, by 2020 about 3.5 % of the EU wheat demand is expected to come from biofuels while for the other cereals the figure amounts to almost 5 %. On the other hand, the share of sugar beet production going into biofuel production will decrease to about 9 %, a combined effect of less sugar beets used and a general increase in sugar beet production post-quota (see sugar chapter).

Graph 2.10 • Share of EU production capacity used



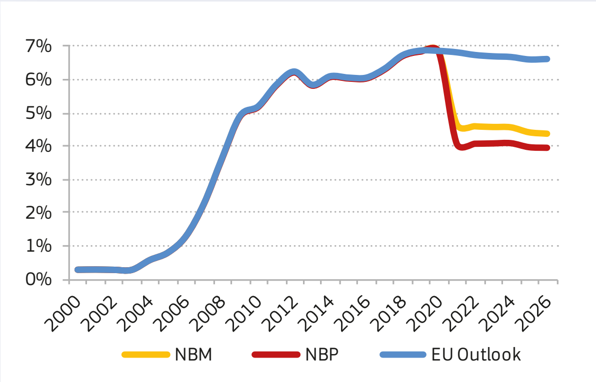
Graph 2.10 translates the production outlook into capacity use rates. Despite difficulties in gathering these data two observations should hold in general. First, the capacity for biodiesel seems under-used at around 50 % while the ethanol capacity is used at rates around 80 %. This seems to confirm the lower margin in the biodiesel sector compared to the ethanol sector. Secondly, the use rate for sugar beet-based ethanol goes down after the quota abolition (assuming the infrastructure is kept in place). Although the EU biofuels sector may have a high production capacity on paper, some of the plants were built in the early 2000s and there will be a need for investment in economically and ecologically more efficient plants. It could be the case especially if, like in Germany, GHG-based legislation is introduced, which will mean that industry has to consider more carefully the efficiency of the production process.

Box 2.1 • EU biofuel policy reform: What are the alternatives for biofuel mandates after 2020?

This box provides some quantitative assessment following the assumptions of the 'European Strategy for Low-Emission Mobility'[13], which presumes that public support to food-based biofuels in the EU will gradually decrease after 2020. To understand the potential economic impact of this policy shift on the EU agricultural sector two hypothetical scenarios are analysed here (see Graph 2.11 and Graph 2.12):

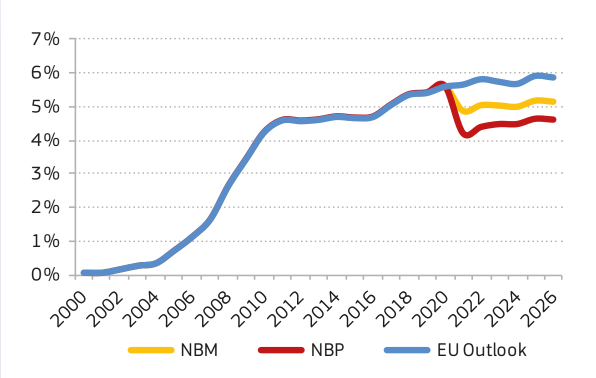
- NBM ('no biofuel mandate'): elimination of the first-generation biofuel mandate in 2021, and
- NBP ('no biofuel policy'): elimination of the first-generation biofuel mandate and tax exemption for biofuels in 2021.

Graph 2.11 • Volume share of biodiesel in the baseline and two simulated scenarios



13 COM(2016) 501 final.

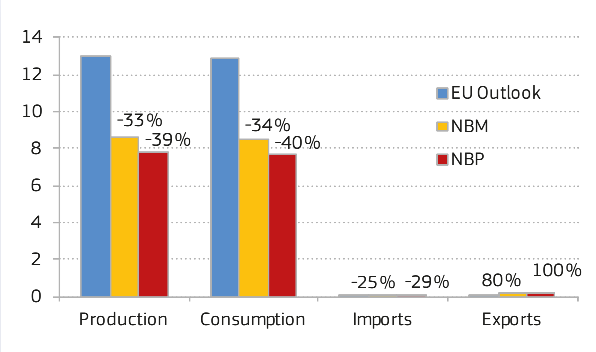
Graph 2.12 • Volume share of ethanol in the baseline and two simulated scenarios



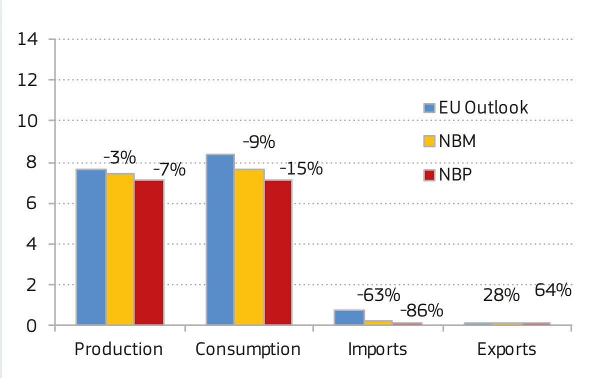
When interpreting the results of both scenarios it is important to note that post-2020 the crude oil price is expected to remain above 80 USD per barrel Brent and that the EU demand for protein meals is expected to be supported by the livestock sector demand. Moreover, the production capacity for biofuels is already in place, which leads to a certain degree of inertia in the system. Therefore, the elimination of the mandate is not likely to cause production to revert to the pre-mandate area.

In line with earlier research and the differences in the processor margin, the analysis shows a larger impact on biodiesel markets than on ethanol. Biodiesel production and consumption are projected to decrease between 30 % and 40 % depending on the scenario, with little effects on the trade side (see Graph 2.13 and Graph 2.14). Ethanol consumption is expected to decrease by 15 %. As about 30 % of EU ethanol production is used in other sectors, the impact on production is limited (-7 %). Ethanol imports decrease significantly in both scenarios.

Graph 2.13 • Impacts on biodiesel sector in the NBM and NBP scenarios, in 2026 (billion litres)

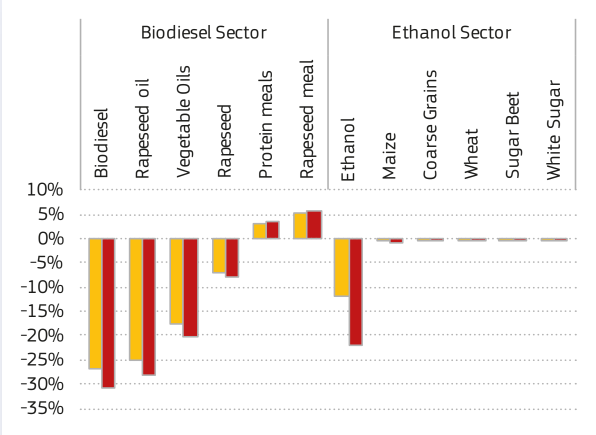


Graph 2.14 • Impacts on ethanol sector in the NBM and NBP scenarios, in 2026 (billion litres)



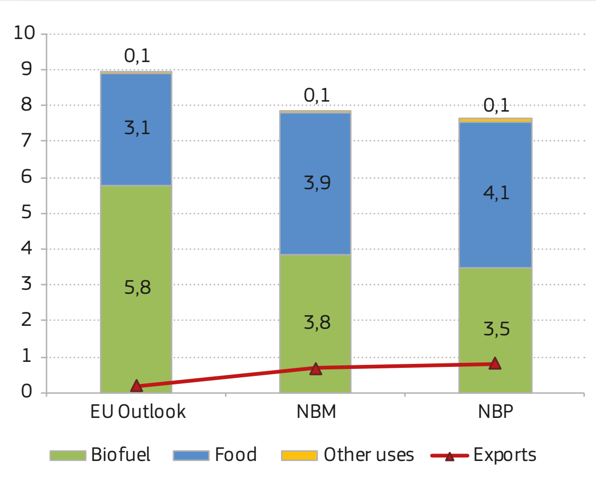
The impacts on the EU prices are also larger in the biodiesel sector. With the removal of the mandate (NBM scenario) domestic biodiesel prices would decrease by 27 % and ethanol prices by 12 % (see Graph 2.15). As for the impacts for the main biodiesel feedstocks, vegetable oil prices are expected to drop by 18 %, the larger part coming from rapeseed oil prices (-25 %).

Graph 2.15 • Impacts on biodiesel, ethanol and feedstock prices, in the NBM and NBP scenarios, in 2026



Total consumption of rapeseed oil would decrease by 12 % in the NBM scenario and by 15 % in the NBP scenario. However, with lower prices, consumption for food will increase by 27 % in the NBM scenario and 32 % in the NBP scenario (see Graph 2.16), partly compensating for the lower biofuel use. At the same time, rapeseed oil exports would increase by 670 and 817 thousand tonnes respectively. In addition, imports of palm oil would decrease by 16 % in the NBM scenario and 19 % in the NBP scenario.

Graph 2.16 • Rapeseed oil consumption by use and exports in the NBM and NBP scenarios, in 2026 (million t)



By contrast, protein meals, the other valuable product produced when crushing oilseeds, are expected to gain value. This price increase would offset part of the oil price decrease in the crushing margin. With higher prices, the consumption of rapeseed meal is expected to decrease around 4 %, replaced by soybean meal, maize, wheat and imported rapeseed meal in the feed ration.

On the ethanol side, feedstock prices remain almost unchanged in both scenarios as the share of EU demand used for biofuels is much smaller than for vegetable oils, where the share is above 40 %.

The removal of the biofuel mandate and the biofuel tax exemption and the resulting effect on the crushing volume and margin has an effect on the EU rapeseed area. However, with price decreases of 7 % and 8 % for rapeseed, the production effect is rather limited given the crop's high profitability in most regions. The area contraction is limited to -2.1 % (117 thousand hectares) in the NBM scenario and -2.4 % in the NBP scenario (135 thousand hectares). It will be partly replaced by wheat, with an increase of about 90 thousand hectares. Some increase in the area for maize, other coarse grains and sugar beet is expected as well, but not enough to compensate for slight decline in the total EU harvested area.

These results should be interpreted cautiously as only the agricultural sector is covered in the analysis and the biofuel policy reforms in non-EU countries are not taken into account. Moreover, a larger restructuring of the biofuel industry cannot be excluded over a longer time horizon in this new policy environment.

SUGAR

The sugar sector is going through interesting times, both in the EU and worldwide. From a global oversupply the sugar market has entered a period where consumption is greater than production, which has led to strong price increases on the world market. Within this new global market situation the expiry of sugar and isoglucose quotas in 2017 will have a profound impact on the EU sweetener market. Despite lower domestic prices, EU production is expected to increase significantly in the first post-quota years. Over the medium term sugar production is expected to be 6 % above the current five-year average. The increase will be focused in the most cost-effective regions and be driven by a sustained sugar beet yield increase. On the domestic market, EU sugar will have to compete with isoglucose, for which the production quota will also expire, and which is expected to become an important sweetener in regions with a sugar production deficit. By the end of the outlook period, the EU should become a net exporter of white sugar to nearby high-value markets.

STRONG WORLD SUGAR PRICES AND LOW EU STOCK LEVELS GOING INTO THE POST-QUOTA SUGAR MARKET

World sugar consumption has seen a continuous growth over the last decade with annual increases of about 4-5 million tonnes annually, driven by the population increase but also increased consumption *per capita* in large parts of the world. Despite this strong growth world sugar production has outpaced consumption in 2010-2014. Most of the growth took place in Brazil supported by a strong devaluation of the real, favouring the profitability and competitiveness of Brazilian sugar industry. However, in 2015/2016 consumption grew faster than production and the 2016/2017 marketing year is forecasted to also have a negative production balance. As a result world stock levels are decreasing, making the sector less agile to respond to possible adverse weather events in the near future and contributing to a strong support for world sugar prices in the coming months and campaign.

In September, London white sugar No 5 averaged 510 EUR/t, a 200 EUR/t increase from the year before. Besides market fundamentals there is also a large net speculative position in the market held by investment funds. This money from outside agriculture presents a downside price risk if investment funds were to move out, e.g. if the US interest rate is increased.

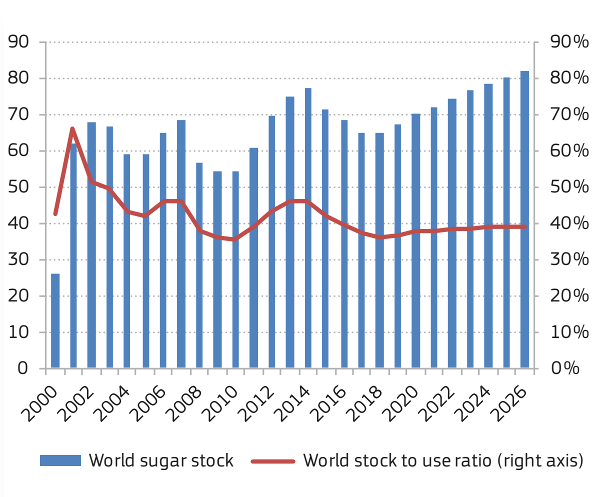
The EU white sugar price also increased steadily over the last year, by 5 %, but lagged behind world sugar prices. In fact, since July the world market price is higher than the monitored EU sugar ex-factory price. By nature, this monitored EU price follows world market price developments with a certain delay as it covers to a large extent sugar under longer term contracts being delivered now. The EU spot prices for sugar more closely track the London sugar price and are substantially higher. The EU white sugar price is expected to further increase in the coming months, reflecting the current contract prices and expected low stock levels by the end of the 2016/2017 campaign.

These price increases came too late to influence the sowing for the 2016/17 campaign, which is anyway still determined by the EU quota regime. At just under 17 million tonnes of white sugar, the EU production for 2016/2017 can be categorised as an average production year, up from the low production in 2015/2016. Combined with normal consumption and trade, this would lead to an estimated EU stock level of around 0.9 million ton. This low stock level is in line with the incentive of the sugar sector to limit the stocks going into the post-quota environment.

STRONG INCREASE IN EU WHITE SUGAR PRODUCTION IN THE FIRST YEARS AFTER THE QUOTA, LEVELLING OFF IN LATTER PART OF THE PERIOD

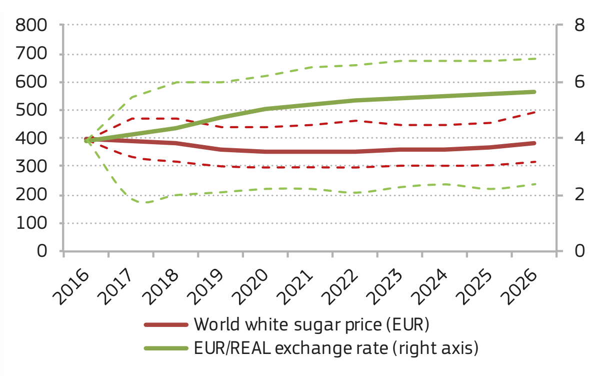
Graph 2.17 shows the outlook for the world sugar stocks. Sugar stocks are expected to increase again from 2017/18 onwards as the high sugar price should support investment and production expansion in different parts of the world. However, the stock-to-use ratio is expected to be relatively stable over the whole outlook period as consumption keeps on growing. Hence, in the medium term market fundamentals seem to support a relative strong price for sugar in the coming decade.

Graph 2.17 • World sugar stock and stock-to-use ratio (million t)



However, the exchange rate of the Brazilian real and the US dollar will play a key role in the final price level. This outlook foresees continued devaluation of the real versus the euro, as shown in Graph 2.18. As a result Brazilian sugar producers would experience an increasing raw sugar price despite it being flat in US dollar terms throughout the outlook period. This would result in a strong production increase in Brazil and slightly lower world sugar prices of around 360 EUR/t throughout the outlook period. If the Brazilian exchange rate devaluates less, the world price is likely to be higher. This uncertainty is represented in Graph 2.18. Depending on the final exchange rate, the world white sugar price can range between 300 and 450 EUR/t. Therefore it is important to stress the conditionality of this EU outlook on the path of the Brazilian exchange rate. With higher world prices EU production is likely to be higher than presented and vice versa.

Graph 2.18 • World sugar price in relation to exchange rates



Note: Dotted lines represent the 95 % percentile of the uncertainty analysis

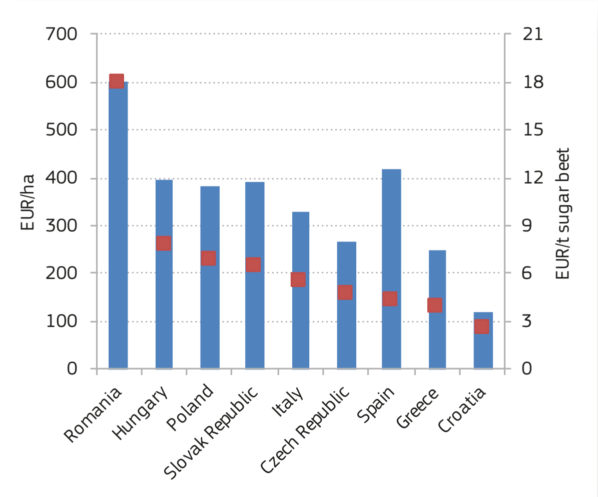
World sugar prices at around 400 EUR/t in 2017 provide for a lower bound for the EU domestic white sugar price in the first year post-quota. This should provide an incentive for efficient sugar producers to increase sugar production post-quota, as reflected in several industry statements pointing towards a strong increase in for instance France and Germany. Alongside this price push towards production increases, sugar producers have other incentives to increase sugar production in 2017-2018:

- fixed production costs can be reduced by using the existing capacity at full rate. This includes the extension of the processing campaign;
- the importance of trading and storage capacity to ensure a good market positioning and margins;
- competition with other sugar producers in order to capture market share post-quota.

At the same time sugar beet growers have incentives to cultivate sugar beet which will ensure ample supply:

- incentive to sign (longer-term) delivery contracts to ensure potential delivery rights in the future;
- relatively low arable crop prices favour the competitiveness of sugar beet, especially in the vicinity of sugar factories;
- the capital tied up in specialised machinery;
- the use of voluntary coupled support in 10 Member States, increasing the revenue for sugar beet cultivation with the aim to avoid a decrease in areas (Graph 2.19).

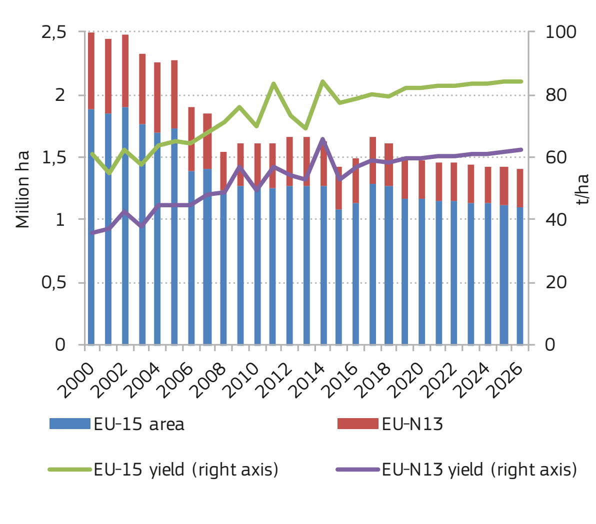
Graph 2.19 • Voluntary coupled support as notified by Member States in 2020



In the outlook all these incentives lead to a production of 19.6 million tonnes of white sugar in 2017/2018, an increase of 2.8 million t compared to 2016/2017. This additional supply would be partly exported, as the EU will not be bound by the WTO export limit of 1.4 million tonnes, and partly used to rebuild some stocks. Imports, by contrast, are expected to fall back substantially following the reduction of the price gap between the EU price and the world price, making the EU a less attractive export destination. Most post-quota imports will come under the duty-free agreements as the CXL duty[14] of 98 EUR/t will be challenging for most exporters. Imports are expected to be below 2 million tonnes annually.

However, over the medium term EU sugar prices around 400 EUR/t and resulting sugar beet prices just above 25 EUR/t are expected to lead to some market adjustments, with production reductions in some less productive areas. After the initial strong production increase, EU production is estimated at about 18.4 million tonnes by 2026. The sugar beet area is expected to expand in 2017-2018 but contract afterwards, compensated by a continued strong yield increase. The EU-15 area is expected to contract the most as several major EU-N13 beet producing countries are using voluntary coupled support, which has a stabilising effect on the production area.

Graph 2.20 • EU sugar beet area and yield



Two other market developments are expected as a result of quota expiry. First, with the expiry of the sugar quota in 2017 the production quota for isoglucose (or HFCS) will also disappear. This starch-based sweetener competes with sugar in products such as soft drinks, fresh dairy products and breakfast cereals. Especially in regions with a sugar deficit and excess supply of cereals, isoglucose is expected to be competitive once the sugar market stabilises post-quota. New production facilities are anticipated to become operational as early as 2017 (e.g. in Hungary). By 2026 production could amount to 1.9 million tonnes, up from 0.7 tonnes of quota. This would represent just below 10% of the EU sweetener market.

Secondly, the use of sugar beet for biofuel is expected to decrease. As explained in the chapter on biofuels, the expansion of biofuel production over the medium term is limited. Moreover, sugar beet is expected to lose competitiveness vis-a-vis cereals as the supply of cheap, out-of-quota industrial sugar beet will disappear.

All factors combined, the EU might become a net exporter of sugar in the post-quota period. The exact export volume will depend on the climatic environment and the world-level price. Given the price premium for high-quality white sugar from the EU, the vicinity of sugar deficit regions such as the Mediterranean and Gulf countries and the existing export infrastructure should allow for substantial exports from efficient production areas such as France. However, EU sugar producers will have to compete with an increasing number of raw cane sugar refineries that are being built in that region.

14 The CXL duty corresponds to the WTO commitments of the EU.

CEREALS

EU cereal production is expected to grow further to 333 million t by 2026 driven by feed demand (in particular for maize) and good export prospects (in particular for wheat). Stronger growth is constrained by the gradual reduction in arable land and slower yield growth in the EU as compared with other regions of the world. Maize stocks are assumed to recover from their current low level while wheat and barley stocks remain significantly above the 2012 level over the projection period, albeit below historical levels. Prices are expected to stay relatively low, recovering towards the end of the period to close to 170 EUR/t for common wheat.

AMPLE GLOBAL SUPPLY IN CURRENT MARKETS BUT LOWER CEREALS HARVEST IN EUROPE

Both the International Grain Council (IGC) and the US Department of agriculture (USDA) expect world cereal production for 2016/2017 to set a new all-time record in quantity, with around 2 070 million t produced. This is true also for individual crops such as wheat (743 million t, with some concerns about milling quality) and maize (1 030 million t according to the IGC). In parallel, world production levels of rice are also at peak for 2016/2017. These ample supplies coincide with good levels of stocks at the beginning of the marketing year, leading to a record level of availabilities of over 2.5 billion t of cereals. Wheat production is excellent in all major exporting areas except the EU, particularly in the former Soviet Union. Contrary to what was generally anticipated, world maize production finally reached bumper levels in the US and South America. With such ample supplies and availabilities, world prices of grains are expected to remain at low levels in the coming months. This is particularly the case for wheat, whose prices have reached low levels not seen since 2005, getting closer to maize and barley world price levels.

The overall usable cereal production in the EU for 2016/2017 is estimated to reach 294 million t. This is slightly below (by 2.5%) the 5-year average, mainly due to adverse weather during the cropping season. Total EU soft wheat harvest is expected to be 3.1% below the last 5-year average (134.2 million t). Maize production also has suffered from unfavourable weather conditions for the second year in a row. EU total production is expected to reach 59.7 million t in 2016/2017. This level is 11% below the last 5-year average and equivalent to last year's bad harvest. With a lower than average harvest in 2016/2017, EU cereals exports are expected to decrease in the coming marketing year, driven by supply factors (lack of availability of soft wheat, lower quality for milling wheat and malting barley), as well as demand concerns (decreased barley imports from China, strong competition from other origins in soft wheat). EU imports of maize and quality milling soft wheat are also likely to increase in 2016/2017. Animal coarse grain feed use might further increase slightly up to 175 million t in 2016/2017. This increase is modest due to the developments in the animal sectors, and is likely to follow a switch from maize (poor supply) to wheat (milling wheat of insufficient quality declassified into feed wheat) and barley in the short run. Contrary to the world situation, EU stock levels are expected to decrease to low levels in these conditions, down to their lowest point in the last 10 years.

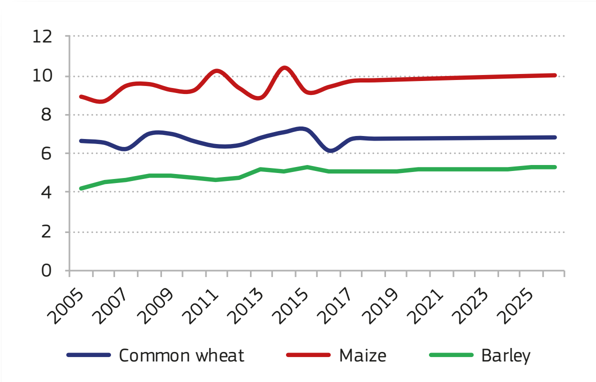
THE SHIFT TOWARDS MAIN CEREAL CROPS EXPECTED TO CONTINUE

Advances in breeding and pest control techniques mainly tailored to the main cereal crops of wheat, maize and to a lesser extent barley, together with better demand prospects are expected to propel their relative profitability further compared to the smaller cereal crops. The drive towards economies of scale is demonstrated by several recent consolidation waves in the seed and chemical input sectors, dominated worldwide by only a few players, who are among themselves engaged in merger talks. The demand side is also dominated by a few large processors and traders, who operate in a global market, shipping large volumes with relatively small margins.

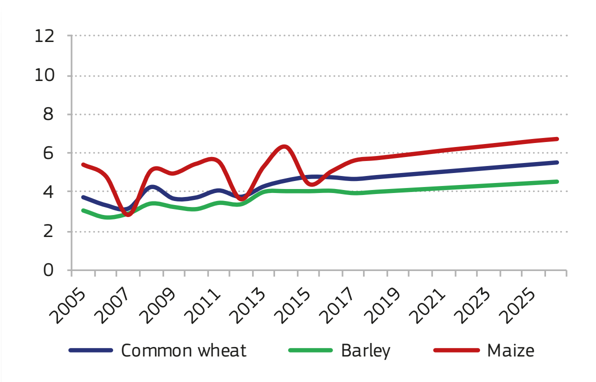
This drive towards further consolidation is also expected to continue in the EU agricultural sector, with a (slightly) increasing area for soft wheat and maize, and stabilisation for barley at the expense of the other cereals (Graph 2.21). Yield increases are mainly to be expected in the EU-N13 (Graph 2.22), as yields in the EU-15 are close to their agro-economic maximum (Graph 2.23).

For cereal yields to grow more strongly than anticipated in this outlook there would need to be further technological breakthroughs. Although several innovations are at various stages of development (precision farming, different delivery mechanisms for fertilisers and pesticides, 'big data', improved breeding, etc.), they are not always targeting primarily yield improvement and still have limited availability and uptake.

Graph 2.21 • EU-15 yield development (t/ha)



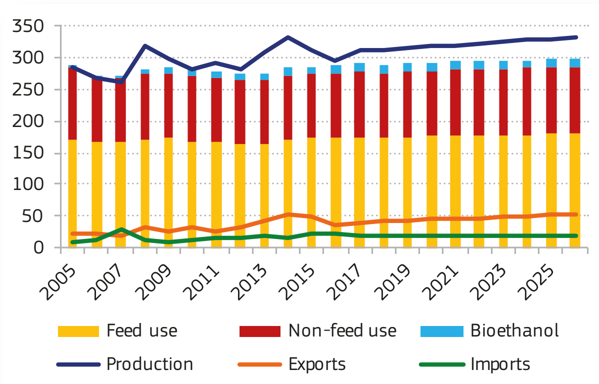
Graph 2.22 • EU-N13 yield development (t/ha)



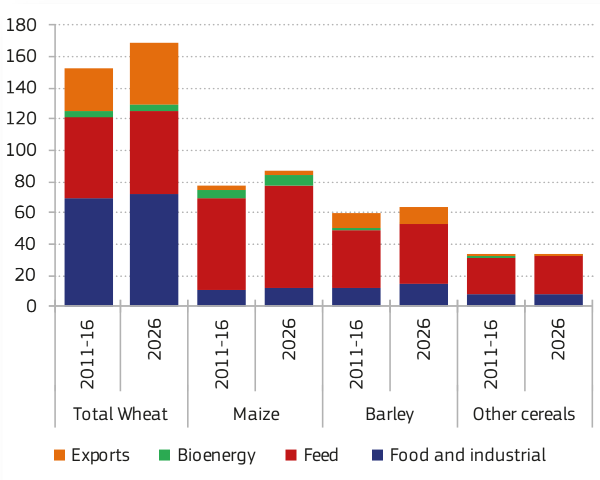
DEMAND GROWTH PROPELLED BY GOOD FEED AND EXPORT PROSPECTS

The EU cereal demand is expected to increase by 6 % in 2026 as compared with 2011-2016. This is driven predominantly by developments in the feed market (Graph 2.24). Feed demand is expected to grow together with the increase in dairy and meat production, in particular for maize. Demand for cereals is also driven by a further small increase in ethanol production, although its overall share in total cereals domestic demand remains limited at 4 %. Industrial and food use of maize is also expected to increase together with the increased production of isoglucose as an alternative to sugar.

Graph 2.23 • EU cereal market developments (million t)



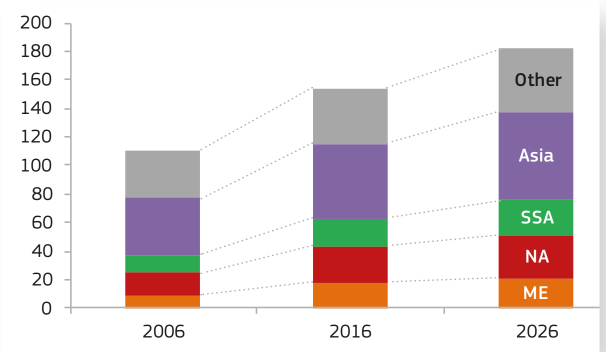
Graph 2.24 • Demand for EU cereals (million t)



The prospects for EU cereal exports are positive, with a further 33 % increase over the 2011-2016 average, with particular export opportunities for wheat in the Mediterranean and the Gulf (Graph 2.25). While traditional wheat producing countries such as the US, Australia and Canada are expected to stabilise their exports, Russia, Ukraine and Kazakhstan continue their recent expansion (Graph 2.26). Given its competitive prices, the EU is projected to increase its share of global exports further from 16 % in 2016 to around 20 % in 2026. Barley exports are expected to recover only towards the second half of the outlook period, when the trade towards China may resume once that country's excessive maize stocks are reabsorbed (see Box 2.3).

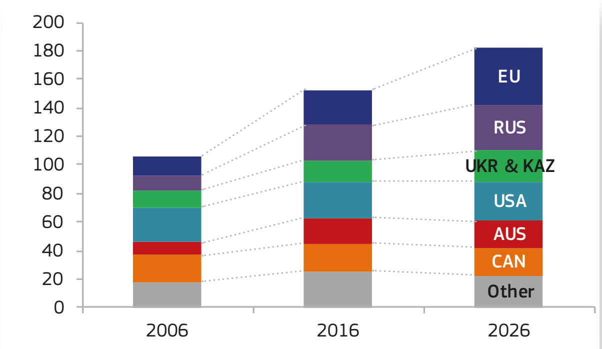
With small rises in cereal production and strong exports, imports of cereals (mainly maize) are expected to increase by 12 % over the outlook period to cover EU demand.

Graph 2.25 • Main common wheat importing regions (million t)



Note: SSA = sub-Saharan Africa; NA = North Africa; ME = Middle East

Graph 2.26 • Main common wheat exporting regions (million t)

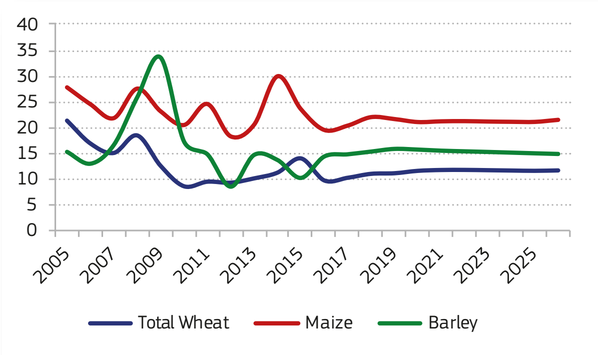


Note: RUS = Russia; UKR & KAZ = Ukraine and Kazakhstan; AUS = Australia; CAN = Canada

STOCK-TO-USE RATIOS NORMALISE AT FAIRLY LOW LEVELS

The EU maize stock-to-use ratio in 2016 is down to 19 % after 2014's comfortable high of 29 %. Stocks are expected to stabilise around a ratio of 21 % during the outlook period. Wheat and barley stock-to-use ratios are also projected to remain rather stable to 2026, at around 12 % and 15 % respectively. These levels are higher than the 2012 low, but remain well below before 2010 levels (Graph 2.27).

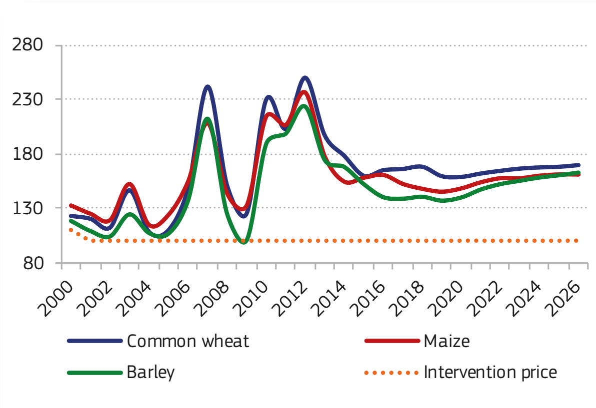
Graph 2.27 • EU stock-to-use ratios (%)



PRICES REMAIN UNDER PRESSURE

Cereal prices are expected to remain low but above the long-term average, between 161 EUR/t and 170 EUR/t in 2026 (Graph 2.28).

Graph 2.28 • EU cereal prices (EUR/t)

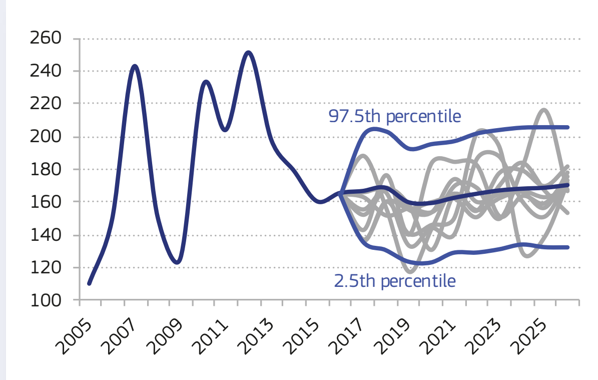


Prices in the early years of the projection period are lower than in the longer term, driven by ample global supply, low energy and input costs and a depreciated euro. Barley prices are particularly low due to low grain quality, ample availability of other coarse grains and a total cease in demand from China, driven by that country's maize destocking policy (see Box 2.3). Towards the end of the outlook period, when the Chinese demand is expected to resume, barley prices are expected to align again with maize prices. Due to good export demand, soft wheat prices are assumed to remain above coarse grain prices over the outlook period, although from 2019 they are expected to be affected by an assumed re-appreciation of the euro against the US dollar. Generally, all prices show an upward path from 2020 onwards. This may be related to the increasing energy and input costs assumed to take place in the second half of the outlook period. The relatively low stock-to-use ratios indicate that prices may react to any production shortfall in the EU or major supplying regions.

Box 2.2 • Price uncertainty in the medium-term outlook

While the baseline assumes normal weather conditions, allowing for stable yield development, and a specific macroeconomic environment, reality might differ considerably. To account for uncertainty about future yields and macroeconomic indicators, alternative baseline projections are simulated following a partial stochastic simulation approach (Chapter 6). Although not all sources of uncertainty are incorporated, this approach enables us to illustrate different potential price paths around the core baseline, as demonstrated for soft wheat in Graph 2.29. The different paths can be interpreted as alternative prospects under different weather and macroeconomic conditions.

Graph 2.29 • Possible price paths for common wheat in the EU (EUR/t)

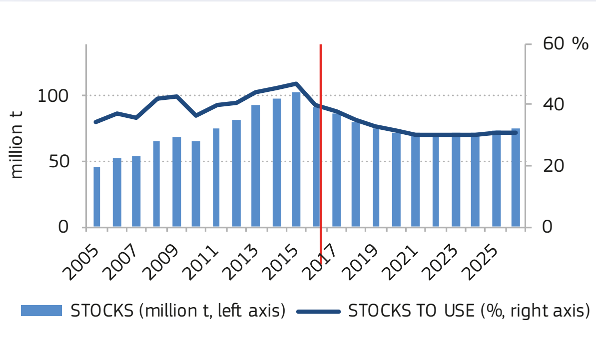


The smooth baseline price line (in dark blue) can be interpreted as an average of the potential price paths. As an example, the grey lines show 10 different price paths out of almost 1 000 possible paths derived from the uncertainty analysis. These vary strongly between marketing years.
Two additional lines are included to present the 2.5th and 97.5th percentiles. Each year in 2.5 % of the 1 000 simulations, prices are below/above the 2.5th/97.5th percentiles, but these low/high price levels are determined by some extreme macroeconomic assumptions or rather unlikely high/low yields. However, as not all sources of uncertainty are included in this assessment, there is always a possibility that the price will move outside this range in specific conditions.

Box 2.3 • The uncertain effects of the end of the maize stockpiling policy in China: hard or soft landing for maize stocks?

Before 2008, China was a net exporter of maize, with approximately 5.5 million t in the 2006/2007 marketing year. This radically changed in 2008, when China introduced a policy to support farmers' incomes through high domestic prices and public intervention purchases of maize. As a result of high domestic prices, China became a net importer of maize, profiting from the differential between domestic and international prices. The extra supply of maize was purchased in large volumes through a public temporary reserves programme, which increased public maize stocks (see Graph 2.30). This phenomenon enabled cheaper import substitutes to enter the Chinese feed market, especially at a low import tariff[15]. For instance, in 2015, China imported 2.5 million t of maize but also other coarse grains such as barley (7 million t) and sorghum (8.1 million t), cassava (6 million t or about 54 % of world trade in 2015) and distilled dried grains (or DDGs, 5.4 million t or about 40 % of world trade in 2015)[16].

Graph 2.30 • Chinese maize stocks and stock-to-use ratio



The EU outlook expects that in the coming 10 years feed consumption in China will grow by 1.2 % per year, with an additional 1.2 % increase in maize consumed as food. However, the EU outlook also expects a 2.2 % decrease in industrial uses of maize, which result in a moderate increase of 0.5 % per year in Chinese total maize consumed over the outlook period and a moderate reduction in maize stocks (see Graph 2.30). As part of the supply-side structural reform of Chinese agriculture, China decided to end Chinese maize support policy starting from 1 October 2016, i.e. at the beginning of the 2016/2017 marketing year. The end of the Chinese maize support policy is an important event for international agricultural markets. The Government has 'pledged to introduce more active, forward-looking and well-targeted policies and measures to balance supply and demand'[17]. As part of the same effort, the Chinese Government has decided to change the way it provides support to farmers, moving towards direct payments. In the Chinese agricultural outlook, maize prices are expected to drop substantively in 2016 and until 2020. After that period, the maize price is projected to be more closely aligned to international market prices. In the Chinese agricultural outlook and in the latest 'China Country Brief of the Global Information and Early Warning System' published by the FAO, imports of maize and its substitutes are also expected to decrease substantially in the 2016/2017 marketing year and in the years beyond, until 2021.

15 In China maize is mainly used for feed (60% of total consumption) or for industrial use (30%). Other less relevant uses are food and biofuels.

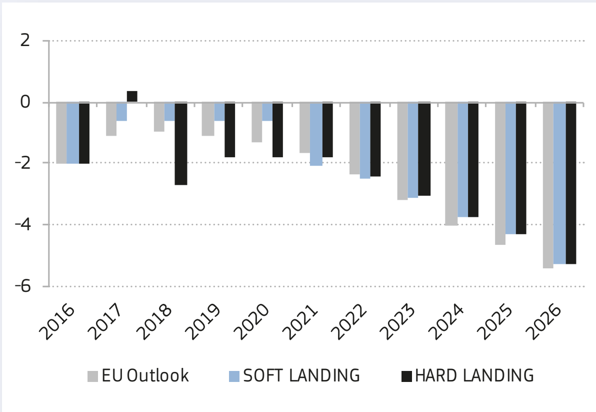
16 At the time of writing this report, China has imposed a 33.8% import tariff on DDGs coming from the US. This decision will potentially have other effects not considered in this scenario. This would, however, diminish even further DDGs imports in China, i.e. magnify the scenario effects. We can thus consider the effects in this report as a conservative scenario.

17 Ministry of Agriculture of the PRC, 2016.

The end of the support policy and the release of stocks on the market effectively mean finding a place for extra maize supply in the years to come, either domestically or on the foreign market. One of the main drivers of uncertainty is the amount of stocks and the final use of the released stocks. There is also uncertainty about the quality of the stocks. Depending on these factors, the effects on potential maize substitutes coming from trading partners would also be different.

The EU agricultural outlook assumes a smooth decrease of Chinese maize stocks of about -4 % per year until 2022, totalling 30 million t less than in 2015. After 2022 stocks will slightly recover again. Relative to this development, this box presents two counterfactual scenarios, which differ in the speed of stock depletion. The first scenario is a 'soft landing scenario' where maize stocks linearly decrease until reaching 48 million t in 2020. The second scenario is a 'hard landing scenario' where stocks abruptly decrease in 2017 to 48 million t.

Graph 2.31 • Chinese maize net trade (million t)



In the case of a 'soft landing' scenario, net trade (i.e. exports minus imports) remains negative during the whole outlook (see Graph 2.31) but considerably less negative than the baseline in the first part due to considerably lower maize imports. By contrast, in the 'hard landing' scenario China is projected to become again a net exporter of maize in the first year of the outlook. This positive net trade is, however, not continued in subsequent years due to the price rebound effect. Compared to the baseline, Chinese maize prices are expected to decline by 10 % and 51 % in the first year of the 'soft landing' and 'hard landing' scenarios respectively. Due to the drop in public maize stocks and consequent fall in prices, the profitability of Chinese maize at the farm level is expected to decrease. This is the reason for an increase of up to 4 % in the soybeans area as a result of the shock in the 'hard landing' scenario with respect to the baseline in 2017, and only up to an average 1 % for the 'soft landing'. As the effect on yield is rather limited, soybean quantities produced in the projection period change proportionally to the area change.
Trade effects for the EU are limited due to the variable maize import duty, which is activated once the world price drops below the trigger price[18]. On the world markets, maize prices decrease by 4 % in the first year of the 'hard landing' scenario and by less than 1 % on average in the first 4 years of the 'soft landing' scenario. Similar price effects are expected in the world markets for maize substitutes such as barley (3 % decrease in the first year of the 'hard landing' scenario and 0.5 % decrease on average in the first 4 years of the 'soft landing') and DDGs (7 % decrease and 1 % decrease respectively in the same periods of the two scenarios). The price effects in the EU are more modest both for barley (-3 % in the first year of the 'hard landing' scenario and -0.6 % on average in the first 4 years of the 'soft landing' scenario) and for DDGs (-5 % and -0.7 % respectively in the same periods of the two scenarios). The corresponding price effects in China are instead stronger, with a 5 % decrease for other coarse grains, principally barley, in the 'hard landing' scenario (against only an 0.8 % average decrease in the first 4 years of the 'soft landing' scenario) and an 11 % decrease for DDGs in the 'hard landing' scenario (against only a 2 % average decrease in the first 4 years of the 'soft landing' scenario).

This analysis shows that a 'softer' policy on maize destocking in China has less disruptive but more prolonged effects in both domestic and international markets. It also highlights that China could return as a net exporter of maize in the near future, but only for a limited period of time and under the assumption that the destocking would take place in a very short time period. The products most affected by this policy change in the short run are likely to be maize substitutes such as barley and DDGs. Finally, a word of caution is needed because substitution effects with other crops, especially soybeans, may be even more marked than shown in these scenarios if other supply-side support policies for maize production were also to be removed.

18 Commission Regulation (EC) No 642/2010 of 20 July 2010 on rules of application (cereal sector import duties) for Council Regulation (EC) No 1234/2007 (codified version).

RICE

STABLE RICE PRODUCTION IN THE EU

Reaching nearly 500 million tonnes, 2016/2017 world rice production further increased marginally on the previous year. The increase in production was fully absorbed by increasing demand, leaving stocks unchanged.

In the EU the rice marketing year came to an end with high supply due to solid production (1.8 million t, +1 %), record imports (1.7 million t, +10 %) and stable demand (both domestic and exports), resulting in high final stocks (0.6 million t). Over the years production remained relatively stable around 1.8 million t.

The rice market is characterised by the existence of two main types of rice: Japonica (short/medium grain) and Indica (long grain). Japonica, the traditional European rice, accounts for approximately 75 % of EU rice production. This proportion has fluctuated in recent years depending on the respective prices of both types, with a recent increase in Japonica production.

Due to agronomic constraints, rice production is restricted to a few Member States, with Italy and Spain responsible for 80 % of EU production. The specific agronomic and environmental characteristics required for paddy fields mean that the sector has limited capacity to expand production, but also that farmers growing rice cannot easily use the same fields for other crops in delta-based production systems. The application of voluntary coupled support in most producing countries (seven out of the eight rice-producing Member States: Spain, Italy, Greece, Hungary, Portugal and Romania, and France from 2017 onwards) should further support the stabilisation of EU rice production. As yield growth is also small, it is anticipated that EU rice production will remain stable over the next decade on a slightly decreased area.

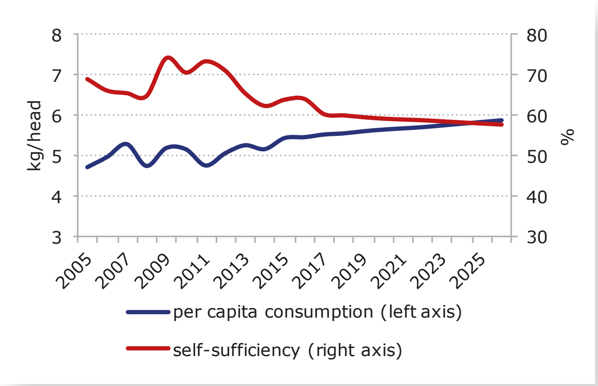
DEMAND GROWTH STIMULATES FURTHER IMPORTS

Consumption of rice has increased from 4.7 kg in 2005 to 5.5 kg *per capita* in 2016, as consumers' diets have diversified from traditional starch components such as bread, pasta or potatoes (Graph 2.32). Towards the end of the outlook period we anticipate a further increase to around 5.8 kg *per capita*. Indica varieties, including Basmati, represent close to 60 % of EU consumption and Japonica varieties around 40 %. Consumption of the two varieties also varies geographically, with Japonica more in demand in southern Member States (for speciality dishes such as paella and risotto) and long-grain Indica in the rest of the EU. The consumption increase has been mainly for Indica and this trend is assumed to continue.

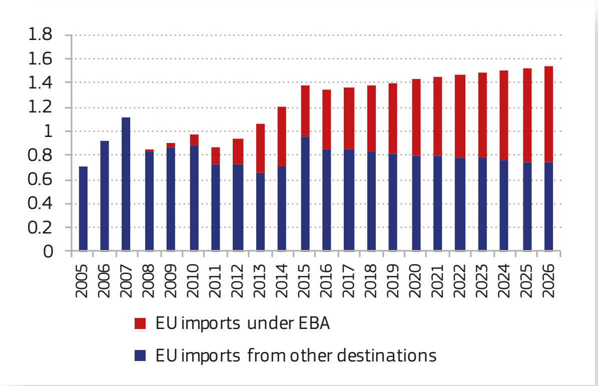
Given the limited capacity for the EU to expand production, the expected increase in domestic demand will be met by increased Indica imports. Since 2010, duty-free imports under the 'everything but arms' (EBA) agreement have started to crowd out imports from other regions. Currently about 27 % of our imports originate from EBA countries Cambodia and Myanmar, while traditional suppliers Thailand and India have a share of 18 and 23 % respectively. This shift towards EBA imports is expected to continue, with a share of around 50 %

by 2026 (Graph 2.33). This import increase will further decrease our self-sufficiency rate to slightly below 60 % (Graph 2.32).

Graph 2.32 • Main indicators for the EU rice market



Graph 2.33 • EU rice imports (million t)



PROTEIN CROPS

Driven by a favourable policy environment, protein crops recently experienced a strong revival. However, over the outlook period, given pressure on feed prices, area growth is coming to a halt. Together with some yield improvements, this will lead to a moderate increase in production.

The main protein crops grown in the EU are field peas, broad and field beans and lupines. Field peas are mainly grown in France, Spain and Germany, broad and field beans in the UK and France, and lupines in Poland. While popular in the past, protein crop production has decreased considerably in the last two decades, mainly because of economic unattractiveness and comparatively low yields, but also due to duty-free imports of protein crops and oilseeds, mandatory set-aside and other policy changes, and a lack of research and extension projects. After the specific support for protein crops was decoupled in 2009, some Member States decided to grant coupled support[19]: France, Spain and Poland in 2010 and Finland as from 2011. With the new CAP, several Member States opted for voluntary coupled support for protein crops and 27 Member States consider areas planted with (one or more types of) such protein crops eligible as EFA, as they are nitrogen-fixing.

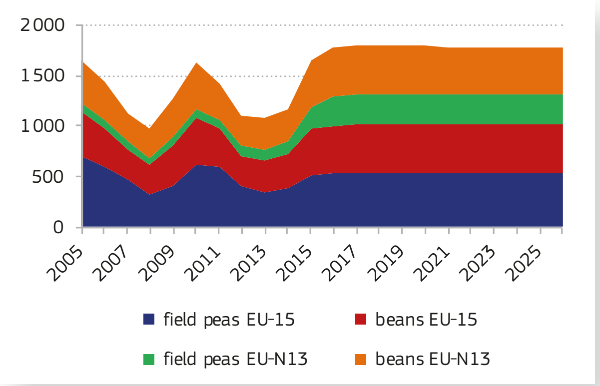
The protein crop area benefited from these policy changes and shows continuous growth since 2013, also thanks to a strong protein demand from more intensive livestock production. A significant expansion occurred in 2015, especially in the EU-N13 (Graph 2.34). The area increased further in 2016, but at a lower rate, showing some signs of stabilisation.

For the outlook period we project a further stabilisation of the protein crop area, given the rather low prices of competing feed crops having a bearing on protein crop profitability.

A potential policy change restricting the use of pesticides on EFA might affect protein crop production in more intensive production regions such as those in France and the UK. With a share of only 1.4 % of total crop area, the protein crop area will remain limited.

Protein crops yields were higher in the past, especially in the EU-15 for field peas, but fell in response to declining research activity and experience among farmers, coupled with relocation to less productive areas. The renewed interest in protein crops is, however, also expected to have a positive impact on yield developments (Graph 2.35). Partly due to favourable cropping conditions, significant increases in field pea and broad and field bean yields were achieved in 2014 and 2015, especially in the EU-N13. In 2016 there was a slight decline which can be mainly linked to the adverse agro-climatic conditions, with an overly wet spring followed by a dry period early summer.

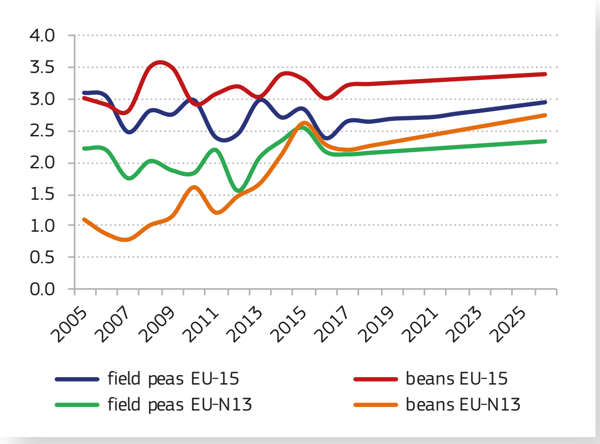
Graph 2.34 • Protein crop area in the EU (1 000 ha)



Slight yield increases on a stabilising area will result in moderate production growth, from around 1.9 million t in 2016 to 2.3 million t in 2026 for field peas and from around 2.5 million t in 2016 to 2.8 million t in 2026 for broad beans.

19 Under Article 68 of Regulation (EC) No 73/2009, which allows Member States, under restrictive conditions, to grant specific support for certain agricultural products in order to maintain production.

Graph 2.35 • Protein crop yield in the EU (t/ha)



OILSEED COMPLEX

The gradual shift from rapeseed towards soybean is becoming more apparent, with a decreasing rapeseed area and increasing soybean imports. This trend, which indicates a reversal from the last decade, is expected to continue over the projection period, as feed use will become the predominant driver of the oilseed complex, given uncertainty regarding first-generation biofuels.

According to the USDA, total world oilseeds production in 2016/2017 is projected around 550 million tonnes, global soybean production around a record high of 336 million tonnes, while rapeseed with 68 million t saw a decline compared to the 3 previous years. Despite the record high supply, a steady demand keeps prices stable.

At the EU level, the 2016/2017 oilseeds harvest is confirmed to be lower than last year. Total areas planted were 1 % below the average of the last 5 years. The rapeseed and sunflower area decreased by 2.2 % and 3.6 % respectively, while the soybean area increase was consolidated (+61 %), but remains relatively small.

THE TREND REVERSED: DECREASE IN RAPESEED AREA

Both the surge of the policy-driven biofuel market and the intensification in animal production in the last decade stimulated the development of rapeseed area and production. While rapeseed oil is the main domestic feedstock for biodiesel, rapeseed meal is an important component of compound feed, especially for dairy cattle and pig production.

The demand from the biofuel sector for domestically produced oilseed oils, in fact mainly rapeseed oil, is expected to decrease towards the end of the outlook period (Chapter 2.2). Hence, developments in the oilseed complex will be largely determined by developments in the animal and feed sector. In the feed sector rapemeal faces competition from sunflower meal and especially soymeal as protein-rich alternatives. Not only will the choice for rapeseed be affected by developments in the biofuel and feed sector, but also by:

- the crop's high inclusion in the rotation;
- possible agronomic constraints linked to the ban on neonicotinoids;
- potentially reduced availability of pesticides.

The EU rapeseed area contracted by about 200 000 ha the last 2 years, especially in Poland, UK and Germany. It is expected to drop further from 6.5 million ha in 2016 to around 5.7 million ha in 2026.

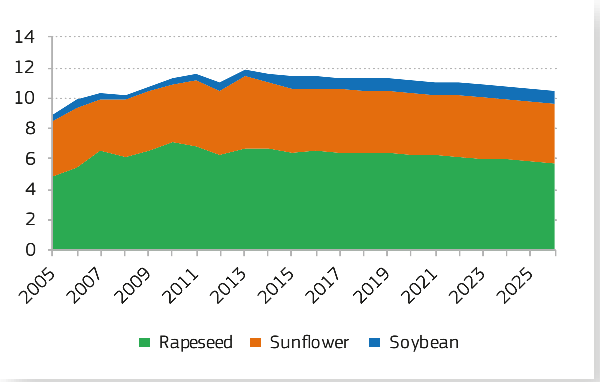
For EU soybean production, however, prospects look different. On the policy side, some major producers (Italy, France and Hungary) grant voluntary coupled support. In addition, soybean counts for EFA in 15 Member States. On the market side, soybean's high protein content makes it a valuable feed alternative to rapemeal, while it can also profit from premium prices compared to imported GM soy. After 2 years of strong area increases (+72 % or 235 000 ha compared to 2013), there is a first sign of slowdown with a drop of 32 000 ha (-4 %) in 2016, mainly in the EU-N13, particularly in Bulgaria. While the area in some Member States keeps on growing, it is stabilising or contracting in others. Over the outlook period we anticipate a further small area decrease of about 4 % to a little over 830 000 ha. Changes in area will depend on:

the relative profitability of soybean compared to its main substitutes maize and rapeseed;

- the price premium for non-GM soy (which could amount to more than 150 EUR/t in key countries such as the UK and Germany[20]);
- further advances in breeding for this relatively new commercial crop in Europe;
- developments in the greening rule on EFA.

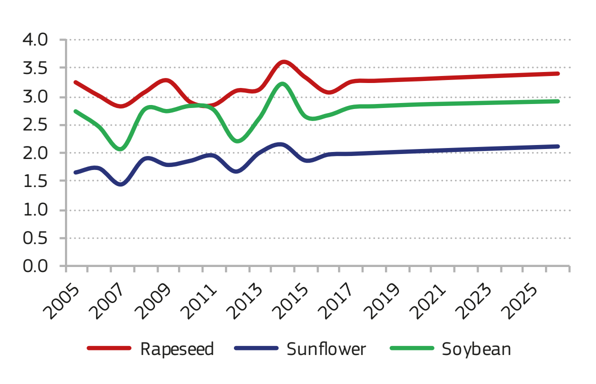
Soybean and rapeseed yield will continue to outperform sunflower yield. Yield growth is projected to remain largely on trend (Graph 2.36 and Graph 2.37), indicating only modest growth in the coming decade.

Graph 2.36 • EU oilseed area (million ha)



20 Tillie, P. and Rodriguez-Cerezo, E. (2015). Markets for non-genetically modified, identity-preserved soybean in the EU. Report 95457, Joint Research Centre.

Graph 2.37 • EU oilseed yield (t/ha)



SCOPE FOR INCREASED SOYMEAL IMPORTS

As explained in the following chapters, EU meat and dairy production are set to expand further. For pigmeat and poultry, livestock numbers will rise, while dairy production will mainly increase productivity. To achieve this, a higher inclusion of protein meals in the feed ration will be necessary.

While rapemeal was increasingly included in the feed mix in the last decade at the expense of soymeal, the trend is again reversing. The first signs of higher soymeal use and import recovery were already apparent last year. This year soymeal imports further increased, while rapeseed and rapemeal production, use and imports decreased considerably. Nutritional and economic factors hamper the inclusion of more rapemeal in the feed mix. The current inclusion of soymeal in feed rations is still relatively low, but it contains essential nutrients such as lysine and other essential proteins. Alternative products cannot supply these without significant area increases.

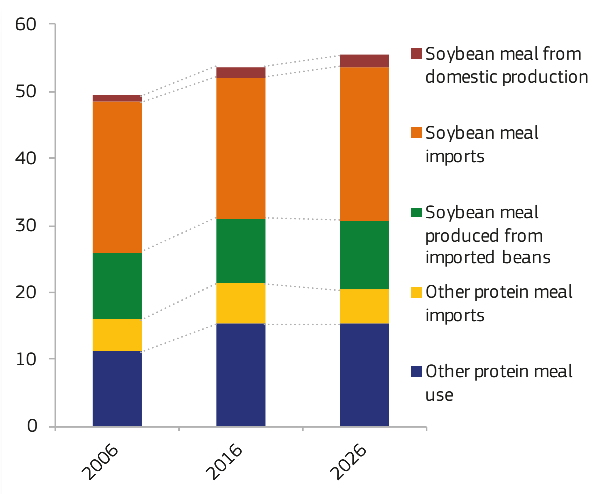
Compared to today, world soybean production is expected to expand considerably by 25 % by 2026, to reach nearly 400 million t. This expansion will mainly occur in Brazil (which will become the largest producer), USA and Argentina. Some uncertainties remain around the Argentinian policy to reduce the export tax on soymeal, which could increase its competitiveness on the world market. Although devaluation of the Brazilian and Argentinian currencies stimulate exports, some of the increased production will support the expansion of their domestic meat production. On the demand side, China currently imports about 62 % of world soybean traded, and this share is going to increase to 65 % by 2026. The Chinese do not import meals as they mainly crush domestically. As one of its measures to reduce the large maize stocks (see Box 2.3), China has launched a support programme for the production of domestic soybeans, which may stabilise or even decrease its soybean import dependency (around 88 % currently).

The EU imports around 10 % of the soybeans traded, but we also import a large share of meals (32 % of protein meals traded, mainly soymeal). Import prices for soybeans and soymeals are projected below the recent high levels and this will stimulate imports further.

The majority of the oilseeds produced in the EU are crushed domestically (mainly in the EU-15), as is the case for imported soybeans. The crushing margin[21] will remain slightly below the previous decade's levels, especially for rapeseed, given changes in the biofuels market, low crude oil prices and generally low feed prices. The soybean crushing margin will remain largely stable, as it is mainly determined by developments in the meal complex, while rapeseed's crushing margin follows more closely the developments in the biofuel sector, with the crushing margin increasing towards 2020 from the current dip and then slightly decreasing again afterwards. Some crushing plants are set up so as to be able to switch more easily between different oilseeds in response to market signals.

As indicated in Graph 2.38, these developments will increase further the quantities of imported soybeans and especially soymeals in the EU. Imports of other protein meals are projected to decline, as they will be partly substituted by increased soymeal production from domestic beans but mainly by more competitive soymeal on the world market.

Graph 2.38 • Sources of EU protein meal (million t)

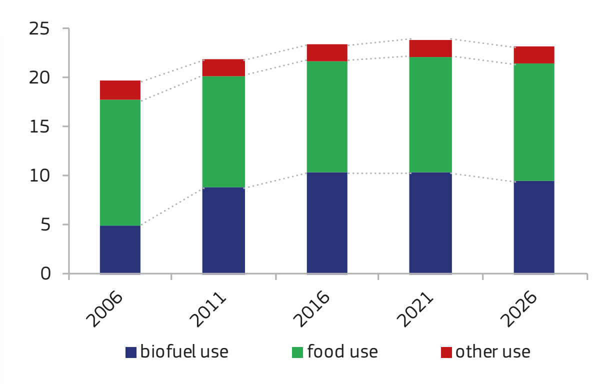


VEGETABLE OIL FOOD USE CANNOT COMPENSATE FOR DROP IN BIOFUEL USE

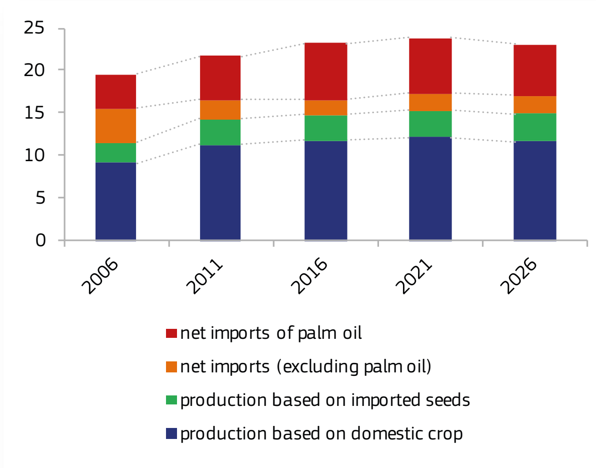
Vegetable oil use developments in the last decade were driven entirely by the surge of the biofuels sector (Graph 2.39). The share of vegetable oils in the biofuels complex is projected to decrease in favour of waste oils and residues. Of the vegetable oils going to biofuels, in the EU the largest share comes from rapeseed oil (around 62 %), followed by palm oil (around 33 %). Total food use is expected to increase over the outlook period, although marginally (from 11.4 million t in 2016 to 11.9 million t in 2026, a level already reached in 2015).

21 The crushing margin is determined by the crushing yields multiplied by the prices of oils and meals divided by the oilseed price.

Graph 2.39 • EU vegetable oil use (million t)



Graph 2.40 • EU vegetable oil origin (million t)

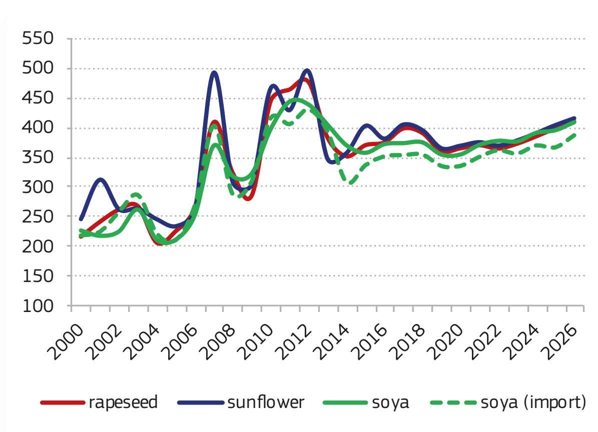


In retail and food services sunflower oil is the most popular oil, although its total volume has decreased since the middle of the last decade in favour of rapeseed oil, which receives a price premium in some key markets. Its total food use, however, keeps on growing, also considering industrial use for food preparation. Total palm oil food use shows a decreasing trend since 2009 after years of increases, because of increased competition with biofuel use and health and environmental concerns. It is expected that these concerns will further contribute to the decrease in food palm oil use (from 2.9 million t in 2016 to 2.6 million t in 2026). Rapeseed and sunflower oil food use are expected to increase only marginally, supported by a shift towards high-oleic sunseed and rapeseed varieties, given the health benefits and associated price premiums. Some of the vegetable oils' market share is captured by butter, which is increasing in popularity again with ample supply on the European market (see section 3).

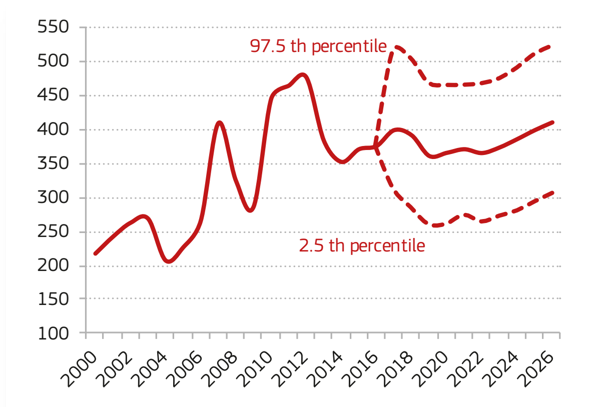
PRICES HOVER AROUND 400 EUR/T

EU oilseed prices had been quite firm, but were brought down by ample supply availability in 2014. They recovered partly in 2015, particularly for sunflower seed driven by lower availability, while in 2016 they converged due to relatively higher availability of sunflower compared to rapeseed and a sustained world soy demand in the second part of the year. From 2018, prices are likely to slightly decline in line with general crop price projections, the assumed re-appreciation of the euro against the dollar and low crude oil prices. Towards the end of the outlook period, prices will recover again in line with expected rising crude oil, energy and other input prices. The domestic price wedge between types is expected to close, especially for the EU soybean producer price, as domestic production may be boosted by domestic demand for non-GM identity-preserved soybean, for which Brazil is expected to further reduce its supply. The uncertainty analysis of the macroeconomic environment and the weather (Graph 2.42) indicates that rapeseed prices might well exceed the 2012 high, but will most probably remain above the 2005 low over the outlook period.

Graph 2.41 • EU oilseed prices (EUR/t)



Graph 2.42 • Projected price and possible paths for EU rapeseed price (EUR/t)



FEED

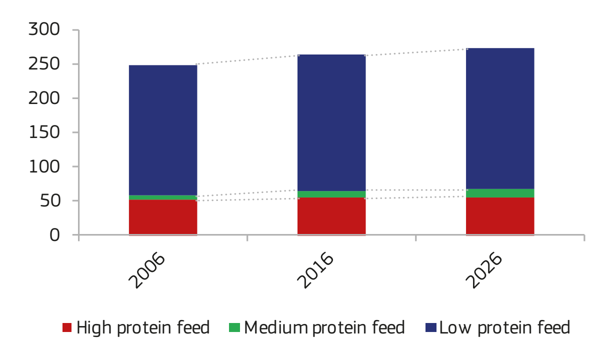
With more pigmeat, poultry and dairy production projected over the outlook period, total compound feed use is expected to rise further by 2.9% to close to 271 million t, from around 263 million t today (Graph 2.43). Feed compound prices, while remaining below the high levels of recent years, will contribute to the animal production increase. Most (around 80%) of compound feed is consumed in the EU-15 and this should remain the case. The intensification of livestock production in the EU-N13 is triggering a shift to more protein-rich feed, further closing the gap with the EU-15.

Depending on protein content, a distinction can be drawn between:

- low-protein feed (LPF), consisting of coarse grains, wheat, rice, cereal bran, molasses, roots and tubers;
- medium-protein feed (MPF), such as corn gluten feed, distiller dried grains, field peas and whey powder; and
- high-protein feed (HPF), such as protein meals, fish meal, SMP, meat and bone meal.

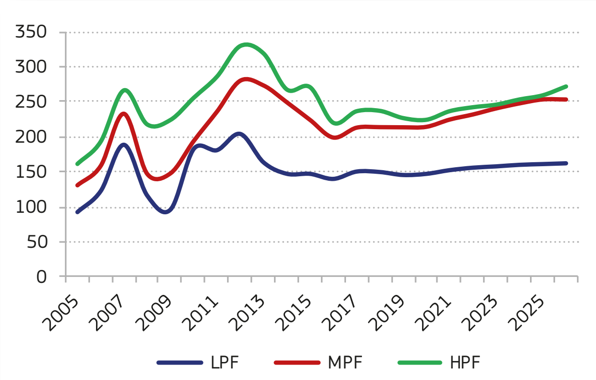
The EU-N13 uses slightly more LPF than the EU-15 (79% vs 75%), but there is a shift from LPF towards MPF and HPF during the outlook period, reflecting intensification in the EU-N13. In the EU-15, the main growth area is MPF, with strong increases in distiller dried grain (DDG) use in the first years of the outlook period, driven by the expansion of ethanol production, while the use of field peas and broad beans is expected to increase throughout the period, given a favourable policy environment.

Graph 2.43 • EU compound feed use by protein content (million t)



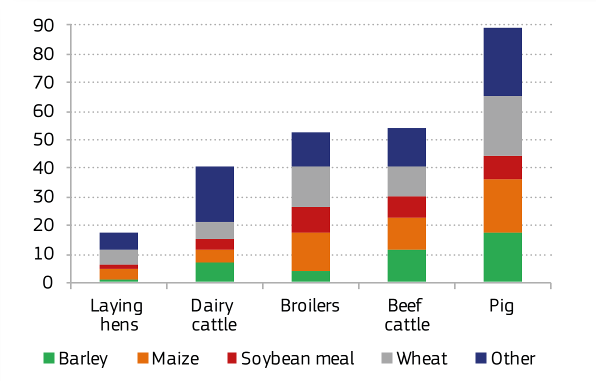
Feed prices (Graph 2.44) follow the same price path as the main crops, with a slight decrease towards the middle of the outlook period, driven by higher availability, re-appreciation of the euro and generally low energy and commodity prices, after which prices start to rise on the back of higher input costs and inflation. Overall, the wedge between LPF and MPF increases slightly across the outlook period, as more intensive animal production increases demand for MPF, leading to tighter protein supplies at world market level and oilseed prices more directly linked to recovering crude oil prices. The composition of compound feed is also very sensitive to relative changes in the prices of different feedstocks.

Graph 2.44 • EU compound feed prices (EUR/t)



Graph 2.45 shows a breakdown of the main feedstock over the main animal types raised in the EU for the marketing year 2015/2016. The top feed destination is pig production, with about 90 million t annually, followed by beef cattle (54 million t) and broilers (53 million t). Maize is the most important feedstock for feed with a share of around 23%, followed by feed wheat (20%) and barley (16%), while soymeal fluctuates around 11%. The feed ration of broilers is dominated by wheat and maize use, while soymeal is also used extensively. Barley has a relatively high share in the feed mix of pigs and beef and dairy cattle. Grain maize use is relatively low in dairy cattle rearing (unlike silage maize).

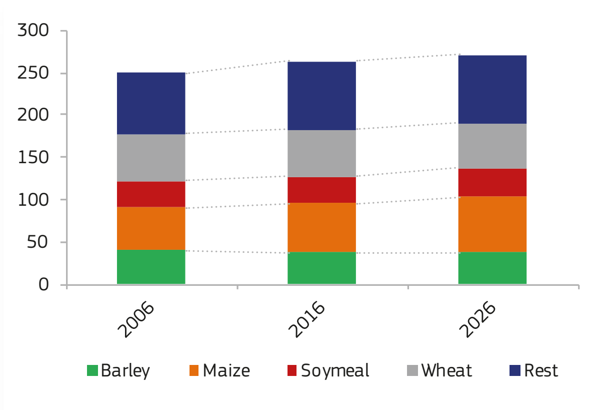
Graph 2.45 • EU feed use per animal type in 2015/2016 (million t)



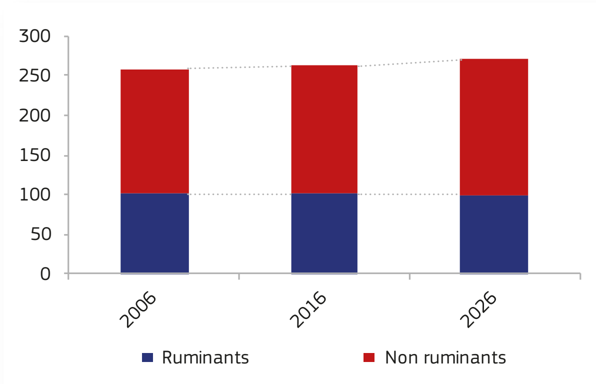
Note: compound and on farm feed
Source: DG Agriculture and Rural Development

The share of barley increased for all animal types between 2011 and 2016, driven by relatively high availability of feed barley and poor maize harvests in 2015 and 2016. Maize feed use, however, increased substantially in the years before, with maize production and imports increasing at the expense of other coarse grains throughout the EU. This trend is expected to continue in the future. Wheat use for feed decreased in the last decade as a result of its higher valuation on the world market, but increased again in 2015 and 2016 due to two subsequent years of poor maize harvests.

Graph 2.46 • EU compound feed use per type of feedstock (million t)



Graph 2.47 • EU compound feed use per animal type (million t)

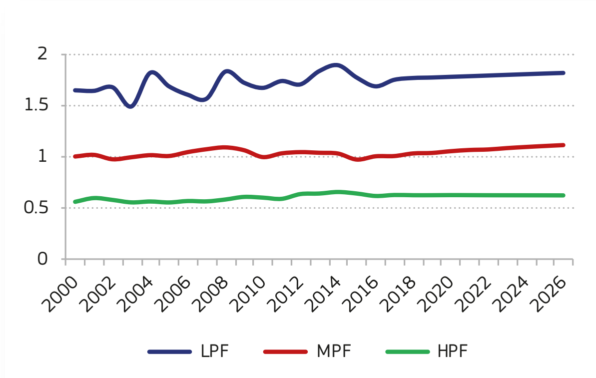


Wheat feed use is expected to stabilise to pre-2016 levels during the outlook period, while feed barley will recover to levels prior to the biofuels surge in the EU (Graph 2.45).

Over the projection period, the main increase in compound feed use comes from granivores (poultry and pigs; Graph 2.47). This increase is expected to materialise mainly in the later years of the projection period, when the growth of pigmeat and poultry production is highest, although less than the previous decade. Soymeal and especially maize are expected to expand further, driven by this increase in pig and poultry production, as well as production expansion in the main maize and soybean production areas (the Americas, but also the EU, especially EU-N13).

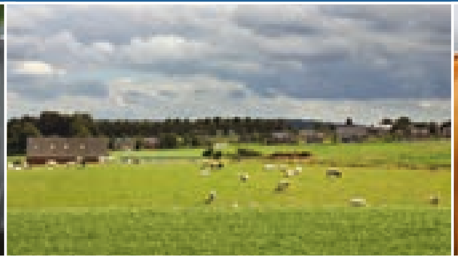
The feed conversion ratio (FCR) index, indicating the change in the amount of feed used per kilogram of meat (or milk) produced, shows a steady decrease for granivores, indicating feed-use efficiency gains in line with past achievements. The decrease is more pronounced in the EU-15, due to genetic improvements, productivity gains following further restructuring of the sector and feed rationing triggered by environmental concerns. For ruminants, the FCR is projected to stabilise, as improvements in genetics and management are expected to compensate for the intensification of herd rearing.

Graph 2.48 • Protein feed self-sufficiency (in % of weight)



The EU is projected to become more self-sufficient in its provision of low-protein feed, as our wheat and coarse grains production increases (slightly) faster than feed consumption. The EU is also projected to increase self-sufficiency in medium-protein feed, which is partly linked to the advances in ethanol production, of which DDG and CGF (Corn Gluten Feed) are by-products, and partly to the projected increase in whey powder as dairy production further expands (Graph 2.48). The EU, however, is not projected to further improve its high protein feed self-sufficiency (which slightly decreases below 33%), as domestic oilseed production will stabilise while imports of soybean and meal are projected to increase.

3. MILK AND DAIRY PRODUCTS

The world dairy market has been in turmoil in the last 2 years, as the introduction of the Russian import ban and the sharp decrease in Chinese purchases coincided with unprecedented increases in world production, driven by high milk prices in previous years and favourable weather conditions, as well as the expiry of EU dairy quotas. In the next decade, global and EU production growth is expected to be more moderate, driven by a sustained increase in world demand, albeit at a slower pace than in the past decade. Further short-term disequilibria between global supply and demand cannot be excluded and will contribute to price volatility, as observed in the EU since 2007.

Market fundamentals will represent the main drivers of EU supply developments after a period of significant change in policy, which required and still requires adaptation by market operators. Environmental constraints will also play a major role in the future, constraining production development in certain areas of Europe (and elsewhere).

The EU is expected to become the leading world exporter of dairy products by 2026, just in front of New Zealand. In spite of an expected strong increase in exports, by 2026 more than 85 % of the milk will still be consumed domestically.

TOWARDS THE END OF THE DAIRY CRISIS

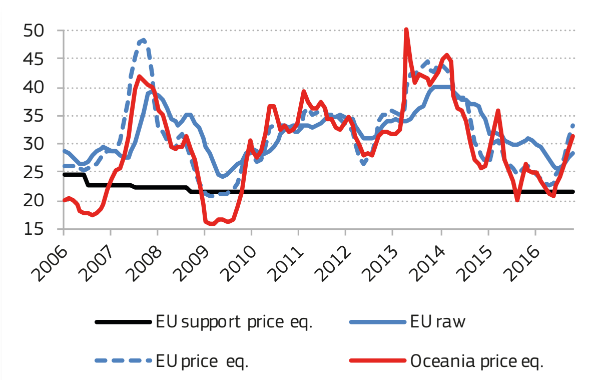
In July 2016, the EU raw milk price reached its lowest level since 2009, at 25.7 EUR/kg (Graph 3.1), following a fall in all dairy product prices. The EU skimmed milk powder (SMP) price remained around intervention price level (1 698 EUR/t) during the 15 months from June 2015 until August 2016. By contrast, the EU butter price remained significantly above intervention price level: the lowest EU butter price, 2 540 EUR/t in April, was still 30 % above the support price. The EU milk price equivalent, based on SMP and butter prices, reached its lowest level in April 2016, at 22.8 EUR/100 kg. Since then, prices have started to recover strongly for butter and to a less extent for SMP.

The dairy crisis was global and due to a general oversupply. In 2015, the reduction in Russian and Chinese purchases was compensated by higher imports from other regions of the world. However, at the same time, milk production increased strongly, by close to 15 million t in 2 years, in major exporting countries (EU, New Zealand and the US). This rise in production was stimulated by high milk prices in 2013/2014, the end of the milk quota system in the EU and very favourable weather conditions.

Price recovery in the EU started in April 2016 for dairy products and in August for raw milk, driven by:

- the withdrawal from the market, via public purchases, of approximately one third of EU SMP production, i.e. 355 000 t;
- EU milk monthly production below last year's level since June and an additional reduction to be expected (further encouraged by the aid schemes adopted in September 2016);
- a strong fall in milk production in Argentina, Uruguay and Australia due to unfavourable weather conditions;
- rising world import demand for cheese and butter, benefiting particularly the EU. Imports grew in China, the US, the Philippines, Mexico and Russia (although for the latter this did not directly benefit the EU and other countries subject to the Russian import ban);
- increasing domestic consumption of cheese and butter in the EU, more than offsetting the decline in liquid milk sales.

Graph 3.1 • EU milk price and world milk price equivalent (EUR/100 kg)



Note: Milk price equivalent based on Butter and SMP
Source: DG Agriculture and Rural Development

In October 2016, butter prices reached the high levels seen in 2013. EU cheese and whole milk powder (WMP) prices were only 5 % to 8 % below the last 5-year average prices. The EU raw milk price recovered with some delay and at a slower pace than dairy product prices and reached 28.3 EUR/100 kg in October 2016, still 20 % below the last 5-year average.

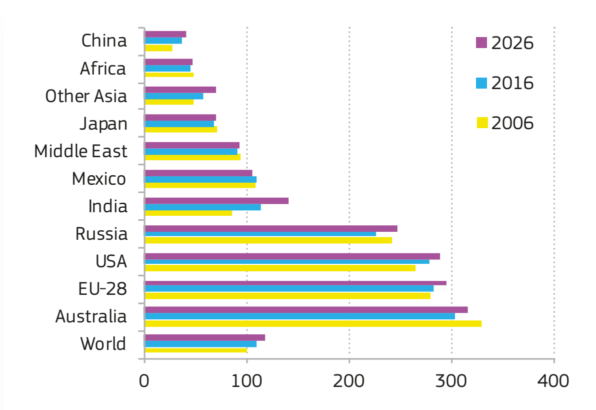
However, the magnitude of the recovery in EU milk and dairy product prices remains uncertain; all the more in a context of continued expansion of US production and to a lower extent EU milk production (in 2016 US milk production is expected to be 2 % higher than 2015, against 0.6 % in the EU). In addition, the SMP price stagnated at 2 000 EUR/t in October, highlighting how much lower exports and ample private and public stocks weigh on the market. The high level of stocks might contain SMP prices in the next few years, but the Commission will release intervention stocks in such a way as to avoid any disturbance of the market.

BACK TO AN INCREASING WORLD IMPORT DEMAND

After one year of stagnation in 2015, world demand is expected to resume growing, although at a slower pace than in the past decade. This is also due to the slowdown in population growth, including in China. However, the increase of income in developing countries, urbanisation and a growing middle-class population remain the main drivers of a consumption pattern change towards more dairy proteins in the diet.

World consumption of milk and dairy products is expected to grow annually by 1.8 % in the next decade, i.e. by 16 million t of milk equivalent per year.

Graph 3.2 • *Per capita* consumption of dairy products in the world (kg of milk equivalent)



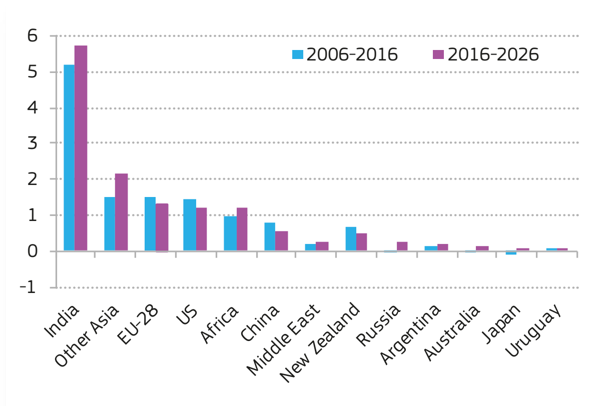
Note: World consumption estimated based on projected world milk production and population forecast. For other regions, apparent consumption is estimated as milk supply minus net trade of WMP, SMP, cheese and butter in milk equivalent.

Source: DG Agriculture and Rural Development, based on OECD-FAO Agricultural Outlook 2016-2025

Per capita consumption of dairy products in the world is expected to grow from 110 kg of milk equivalent in 2016 to close to 120 kg in 2026 (Graph 3.2). The highest growth is expected in India, to around 140 kg of milk *per capita* per year by 2026. Consumption is also expected to grow in regions with higher intake levels (close to 300 kg *per capita* and above) such as in Australia, the EU and the US. In Asia, where intake levels are much smaller, consumption is expected to stabilise in Japan around 70 kg but continue growing in China and in the rest of Asia to reach around 50 kg and 80 kg respectively. In Africa, the yearly intake could increase in certain regions but the main driver of consumption will be population growth (e.g. in Nigeria, which has seen its population increase by 2.7 % per year in the last decade). *Per capita* consumption is expected to remain stable, below 50 kg.

Higher demand will drive production growth, especially in developing countries. In India, milk production is expected to grow by 5.5 million t per year (Graph 3.3) to supply the growing domestic consumption. While India is self-sufficient, in other parts of the world, such as Africa, China, other Asian countries and the Middle East, consumption exceeds production and is projected to grow faster than production, leading to an average expansion of trade by close to 2 % every year (i.e. + 1.3 million t per year of cheese, SMP, WMP, whey and butter, expressed in milk equivalent).

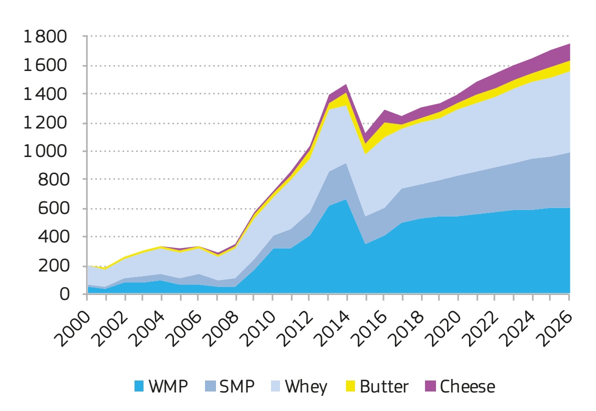
Graph 3.3 • Annual change in milk production in the next decade compared to the last decade (million t)



Source: DG Agriculture and Rural Development, based on OECD-FAO Agricultural Outlook 2016-2025

China will remain the main importer of dairy products, absorbing around 15 % of world trade by 2026. However, Chinese imports of WMP are not projected to reach again the exceptional 2014 level of 670 000 t (Graph 3.4). By contrast, China is expected to increase imports of SMP for its domestic production of fresh dairy products and whey, mainly for infant formula. Imports of added value products such as cheese, butter, UHT milk and liquid cream, which can be used to produce pastry, are also expected to increase. China is the leading customer of the EU in volume and value when accounting for infant formula.

Graph 3.4 • Chinese imports of dairy products (1 000 t of product weight)



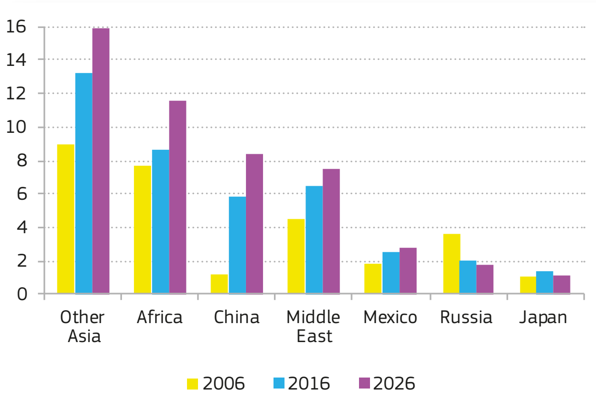
Source: DG Agriculture and Rural Development, based on OECD-FAO Agricultural Outlook 2016-2025 and GTA for 2015 and 2016 update

Japan mainly imports cheese. By 2026, while Japan's total dairy imports are expected to remain stable, the share of cheese in them is expected to reach 80%. Like China, imports from other Asian countries will increase significantly, although less than in the past decade. But this vast region is expected to gather 27% of world dairy products imports in 2026, mainly powders.

Shipments to north and sub-Saharan Africa are expected to increase much faster than in the past decade (Graph 3.5). This region is expected to make up 20% of world imports by 2026. The main imported products are powders, not only SMP and WMP, but also fat-filled milk powders, where the dairy fat is replaced by vegetable fat, a cheaper alternative. By contrast, Egypt will mainly import more cheese and butter.

The Middle East is expected to keep importing 13% of world dairy products traded volumes and as in Egypt cheese and butter will gain importance.

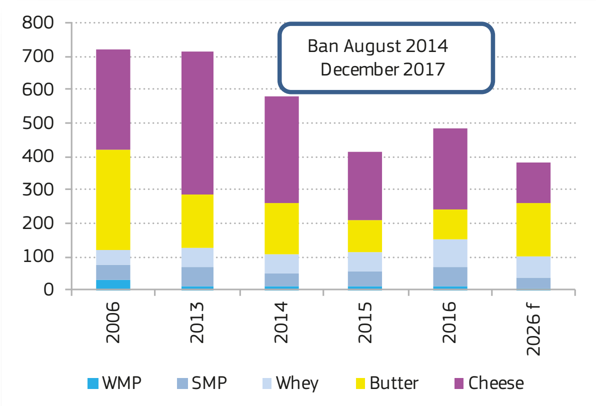
Graph 3.5 • Development of world imports of WMP, SMP, cheese and butter (million t of milk equivalent)



Source: DG Agriculture and Rural Development, based on OECD-FAO Agricultural Outlook 2016-2025

With the introduction of the import ban in August 2014, Russian imports decreased from 700 000 t of product weight to 400 000 t in 2015. In the short run, Russian imports could increase slightly after the ban is removed, though they are not expected to reach their former level because of lower purchasing power due to low economic growth and currency devaluation. In the long run, the increase in domestic milk production and population reduction (-0.2% p.a.) are expected to limit imports to a level below 400 000 t of products.

Graph 3.6 • Russian imports of dairy products (1 000 t of product weight)



Source: DG Agriculture and Rural Development, based on OECD-FAO Agricultural Outlook 2016-2025 and GTA for 2015 and 2016 update

THE EU TO BECOME THE MAIN WORLD SUPPLIER OF DAIRY PRODUCTS

In the next decade, the highest milk production increase among exporting countries is expected in the EU, by 1.3 million t per year, closely followed by the US (+1.2 million t). The expected average milk production expansion in New Zealand (+0.5 million t per year) is smaller than in the past because of environmental and resource constraints limiting herd developments. In addition, to keep their competitive advantage linked to a grass-fed system, farmers may hesitate to use large quantities of feed concentrates.

Domestic use will absorb a large share of this production expansion, especially in the US, limiting the projected US export expansion to 0.14 million t per year. In the EU, half of the additional milk produced is expected to be exported. All additional milk produced in New Zealand will be channelled to export products.

FURTHER YIELD GROWTH DRIVING A DECLINE IN HERDS

World import demand and domestic use are expected to drive an increase in milk production in the EU of 0.8% per year on average to reach 177 million t by 2026. A slower growth is expected in the EU-N13, where restructuring continues and the share of milk delivered to dairies is rising significantly, by 7 percentage points to 81% by 2026; by comparison the rate of deliveries in the EU-15 is above 97%.

Significant efficiency gains are expected to take place in the EU-N13, where the average yield in 2016 at 5 340 kg/cow is 30% below the EU-15 average. By 2026, it could reach 6 730 kg per year, a yield much closer to the average yield expected in the EU-15 (8 310 kg/cow). Genetic improvement is the main driver of yield increase. Moreover, herd management, an increase in concentrated feed in the diet and robotisation of milking will contribute to yield progress. However, yield growth will be more limited than in the past, also because of the increasing proportion of grass-fed systems and organic farms in the EU. In 2015, 4% of EU milk production was organic and it is expected to further grow, all the more because during the recent milk price crisis the organic sector was more resilient, with prices for organic milk up to 10 cents per kg higher than for conventional.

In view of the expected production increase and efficiency gains, the downward trend for the EU dairy cow herd will resume after 3 years of exceptional increases due to the high milk price and preparation for the quota expiry.

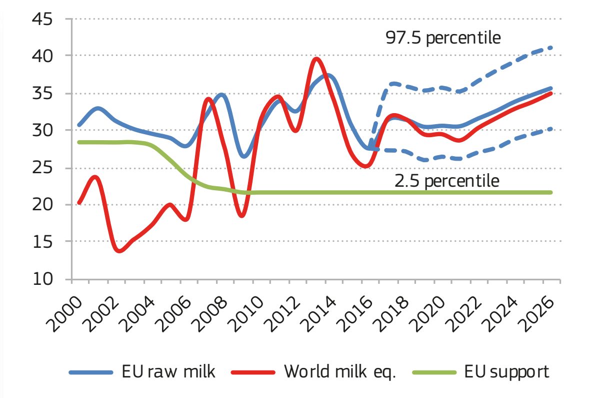
The rise in milk production in the next decade is expected to be moderate and smaller than what occurred in the recent past. It is indeed anticipated that after these few exceptional years linked to some extent to quota expiry, market fundamentals will drive the market. In addition, environmental constraints will limit production expansion: e.g. phosphates in the Netherlands, Denmark and the UK, nitrates in France, Denmark and the UK, ammonia in the Netherlands, Denmark and partly Ireland. If any specific target to reduce greenhouse gas emissions were to be implemented by a Member State, it could affect strongly a number of Member States (e.g. the Irish cattle herd). This will reduce the concentration of production in most competitive regions. The maintenance of production supported by voluntary coupled support in other regions will also limit production concentration.

A MILK PRICE UNDER PRESSURE BECAUSE OF THE ACCUMULATED STOCKS

The EU raw milk price is expected to recover from the current low price level. However, the current high level of public SMP stock, equivalent to 2.7 million t of milk, weighs on the market and may limit the price upturn in the next years. Even though a large share of milk is channelled into cheese, the EU price is strongly correlated to changes in butter and SMP prices on the European and world market. Therefore, the EU yearly average milk price is projected to increase significantl (above 32 EUR/100 kg) only in the second part of the projection period. However, as feed prices are expected to remain rather low, profitability should remain rather stable.

Moreover, it can be foreseen that any possible short-term disequilibria between supply and demand will contribute to price volatility. In addition, other uncertainties will affect margin levels, such as the world crude oil price and the yields, which are the two main drivers behind feed prices. The projected EU milk price is therefore to be considered as a trend, around which prices could vary within a certain range, as presented in Graph 3.7.

Graph 3.7 • EU raw milk price (EUR/100 kg)



MORE EXPORTS MAINLY OF POWDERS AND MORE CHEESE AND BUTTER FOR THE DOMESTIC MARKET

In the EU, around 30% of the milk total solids are channelled into fresh dairy products (including UHT milk), more than 20% into cheese[22], 10% into butter, 20% into powders and the rest in a variety of products (such as ice cream, milk protein concentrates, whey protein concentrates and fat- filled milk powders).

Although the EU exports only a small share of its milk production, 11% in 2016 (Graph 3.8), exports are expected to strongly support production expansion in the next decade. Close to half of additional milk availabilities (supply and stock release), around 7 million t of milk equivalent, is expected to be exported, mainly in the form of powders: by 2026, SMP, WMP and whey could represent close to 70% of EU dairy product exports, in milk equivalent (Graph 3.9). The overall share of EU dairy production that is exported could reach 14% (up from 11% in 2016).

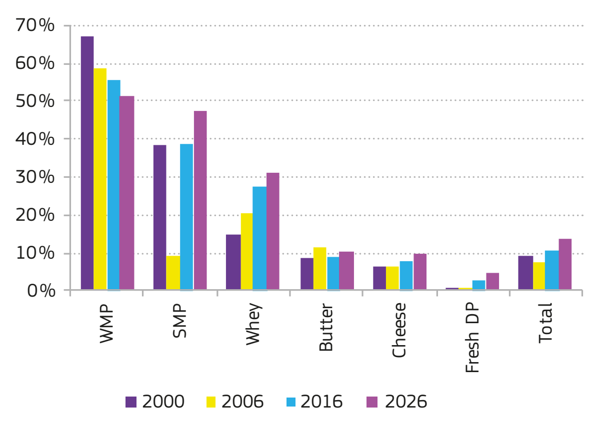
While EU's first export destination used to be Russia, it is now China both in quantity (13% in 2015) and also value (16%) if accounting for infant formula[23]. Excluding infant formula, the US is the main destination in value of EU dairy products. The other main EU customers are Algeria, Saudi Arabia and Indonesia.

The domestic market will remain the main outlet for dairy products, especially for fresh dairy products, cheese and butter (Graph 3.8). This highlights the importance of assessing consumption trends correctly. Health recommendations have changed recently, putting dairy fat in a positive light. In developed countries, cheese, butter and cream consumption is promoted by various cooking programmes. By contrast, lactose intolerance is a growing concern. In addition, several campaigns argue against the consumption of animal products including dairy products for health, ethical and environmental reasons. All these factors drive an increasing consumption of alternative products.

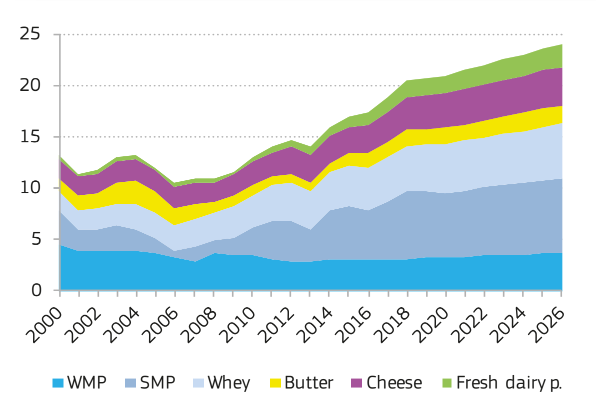
22 A larger share of the fat and proteins of milk is channelled into cheese (40%) but milk is also composed of lactose and minerals, which are the main components of whey (the by-product of cheese processing).

23 In 2015, EU exports of infant formula to China and Hong Kong amounted to EUR 2 million out of EUR 13 million of total EU exports.

Graph 3.8 • Share of exports in EU production of dairy products (%)



Graph 3.9 • EU exports of dairy products (million t of milk equivalent)



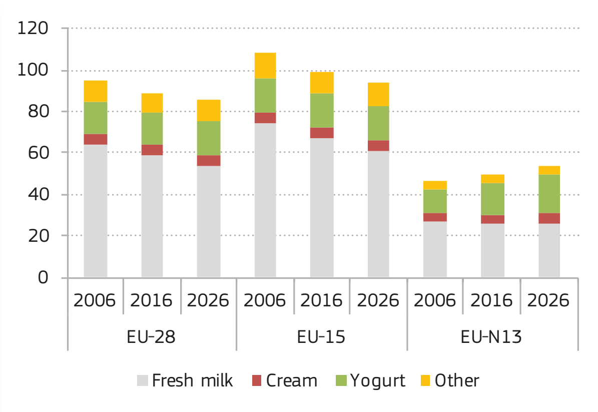
A DECLINING CONSUMPTION OF FRESH DAIRY PRODUCTS COMPENSATED BY HIGHER EXPORTS

EU consumption of cows' drinking milk is on a downward trend, because of a change in life style but also due to concerns of certain consumers highlighted above. *Per capita* consumption decreased by close to 5 litres in the last 10 years. This decline was only very partially compensated by higher purchases of alternative drinks, such as soy drink (+0.8 kg *per capita* in 10 years – Graph 3.11). In the next decade, the downward trend is expected to continue at the same pace, down to 53.8 kg *per capita* by 2026. By contrast, the downward trend in yogurt consumption seems to have come recently to a halt and consumption could stabilise, while cream consumption should continue growing slowly, although not enough to offset milk consumption decline.

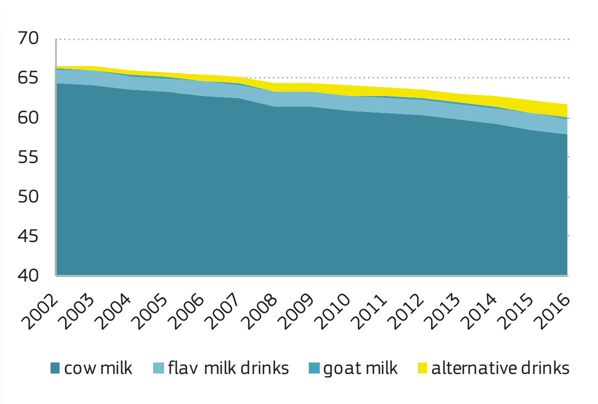
Until recently, the trade of fresh dairy products was very limited but lately exports increased strongly (by a rate of 55% in 2 years), especially to China. This expansion in trade is expected to slow down because exporting liquid milk (with a water content of 80%) is not economically sound, even if transport costs are reduced thanks to the use of containers otherwise empty on their way back to China. EU milk could be partly replaced on shelves by local milk or milk coming from geographically closer origins in Oceania. However, there should be market opportunities for liquid cream. By 2026, exports of fresh dairy products are expected to reach close to 2 million t of milk equivalent.

These exports and population growth are not expected to compensate for the reduction in total *per capita* intake of fresh dairy products and production could decline slightly to around 46 million t by 2026.

Graph 3.10 • EU consumption of fresh dairy products (kg/capita)



Graph 3.11 • EU consumption of milk and alternative drinks (kg/capita)



Note: Retail sales and foodservices, without industrial use

Source: DG Agriculture and Rural Development, based on Euromonitor

MORE CHEESE IN EU DIETS

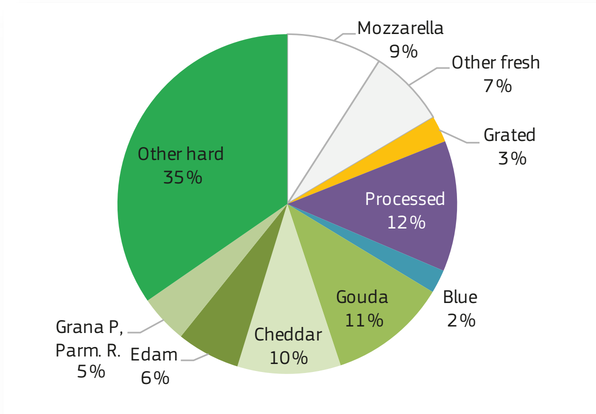
In the last 3 years, cheese *per capita* consumption increased by 1 kg in the EU. In the next decade, a further rise by 1.3 kg is expected, reaching 19.5 kg by 2026. In the EU-N13, where the consumption level is smaller, a faster growth is expected, reaching 17.2 kg in 2026 and reducing the gap with the EU-15 to less than 3 kg. Retail sales represent around 50% of cheese use. In 2016, 50% of cheeses sold by retailers and used in food services in the EU were hard cheeses, 35% were soft cheeses and 15% processed cheeses. Because of the increasing use for processed food products (e.g. pizzas), the production and exports of mozzarella-type cheeses is increasing.

Besides food services, cheese is increasingly used in the industry to produce foods like pizzas and sandwiches. This segment is particularly supporting the rise in overall cheese consumption, projected at 10.1 million t in 2026.

Around 10% of EU cheese production is traded and exports are expected to increase by 270 000 t to reach 1 million t by 2026. The recently signed trade agreement with Canada (CETA) will support this increase (a tariff-rate quota (TRQ) of 18 000 t soon provisionally available for the EU). In addition, the end of the Russian embargo assumed here to take place at the end of 2017 is expected to drive additional exports in 2018, but limited to one third of previous shipments to Russia (70 000 t). However, as explained above, in the long-term Russian self-sufficiency is expected to increase, leading to lower imports. In addition, consumer taste might have changed further, leading to the development of 'analogue'[24] production in Russia (supported by increasing imports of SMP).

The majority of the volume of EU cheeses exported is represented by soft and hard cheeses. In this category, Gouda is the main exported product, closely followed by Cheddar, which is on an increasing trend, while the share of Edam exports is declining slowly. Blue cheeses represent a small and stable share of EU exports (2%) as grated and powdered cheese (3%). The share of processed cheese in total exports is also rather stable at 12% in 2015. By contrast, exports of fresh cheeses increased very strongly in the past decade from 9% of total cheese exports in 2005 to 16% in 2015, mostly at the expense of soft and hard cheeses.

Graph 3.12 • EU cheese exports in volume by type in 2015

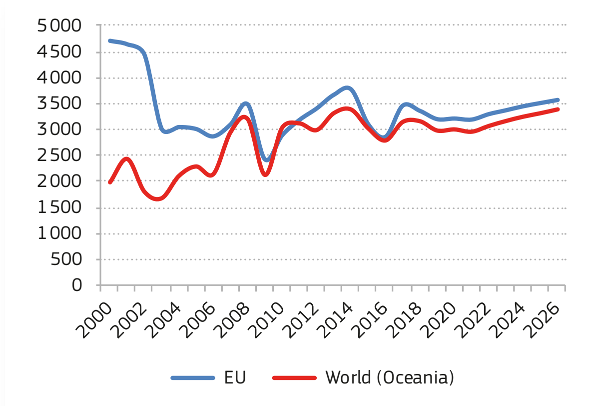


Source: DG Agriculture and Rural Development, based on Eurostat

The EU's main customers should remain the US, Japan, Switzerland, Saudi Arabia and South Korea. Recently, the EU increased cheese shipments to Japan, where the EU is taking market share thanks to the change in consumer taste towards more speciality cheeses. By 2026, the EU is expected to supply close to 40% of world cheese imports (Graph 3.8).

24 Product similar to cheese, prepared with dairy proteins and vegetable fat.

Graph 3.13 • EU and world cheese price developments (EUR/t)



As a consequence, EU cheese production is expected to increase slightly faster than in the past decade to 11 million t in 2026.

World demand for cheese is expected to be sustained and this is expected to drive some price increases at the end of the projection period. The Cheddar price is expected to reach 3 560 EUR/t in 2026. The gap between EU and Oceania Cheddar prices closed sharply in 2007 and since then both prices remained very close. A small gap is expected to remain in the next decade, because of the higher diversity and quality of EU cheeses.

BUTTER TO REMAIN FASHIONABLE

Changes in health recommendations as well as the image of natural products supported a strong increase in butter use and exports in the last 3 years.

In the EU, retail sales of butter increased by 7% in the past decade, while margarine sales decreased by 8%. Additionally, more butter is used for bakery products, the production of which is on an increasing trend and where butter is making a return in some recipes. The development of this industrial use of butter might be more difficult in the future if butter prices are high and supply of vegetable fats ample. Anyhow, *per capita* consumption is expected to increase further, especially in the EU-N13, to reach 3.9 kg *per capita*, still below the consumption level in the EU-15 at 4.9 kg.

Since 2013, EU butter exports almost doubled, driven mainly by US, Saudi Arabian and Egyptian demand, which together account for one third of butter purchases. With the opening of the Iranian market, EU butter shipments to Iran quadrupled in 2016. An increasing share of butter is exported in the form of butteroil (25% of butter exports in 2016). By 2026, butter exports are expected to further increase by 60 000 t to 274 000 t. This would represent 10% of EU production.

MORE SMP MAINLY FOR EXPORTS

SMP exports have tripled since 2009 and reached a record level of 690 000 t in 2015, 50% of EU production. The reduction in support prices included in the 2003 CAP reform allowed for the convergence of EU and world prices, with the EU becoming very competitive: the share of EU exports in world trade reached 30%, while in 2006 it was below 10%.

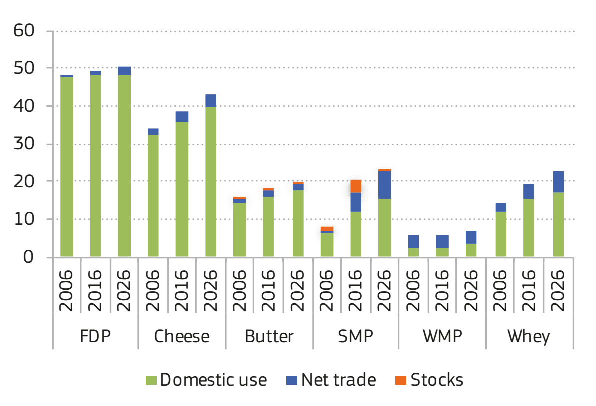
By 2026, exports are expected to reach 950 000 t. In the short run, low SMP prices and stock releases will rapidly drive additional exports after the 2016 slowdown. During this period, the use for feed (mainly for calve fattening) might increase before resuming its downward trend. In the longer run, exports are expected to further expand but at a slower pace. Despite falling shipments, Algeria remains the number one destination for EU SMP, followed by China, Indonesia, Saudi Arabia, Egypt and the Philippines. In the next decade, with the expected recovery in oil price, shipments to oil producing countries are expected to recover from current lows.

Compared to WMP, a larger share of SMP is used domestically (Graph 3.8). It is used notably to produce fresh dairy products (yogurt and dairy desserts), ice cream, bakery, fat-filled milk powders and infant formula as well as in sport and nutrition foods. In the next decade, this domestic use could also expand, supported by sustained demand for infant formula, sport nutrition and increasing demand for fat-filled milk powders, especially for the west African market.

Fat-filled milk powders are well adapted to countries with high temperatures and have a longer shelf life than WMP. In addition, except in crisis times, they are often cheaper than WMP because palm oil costs less than dairy fat. Gira[25] estimated world production in 2015 at close to 900 000 t, half of it being produced by the EU, mainly by Ireland and the Netherlands. The main destination of EU products is western Africa, especially Nigeria and Senegal. Without accounting for a change in consumption patterns, population growth in this region will drive a significant increase in demand for this product, thus a higher use of SMP within the EU for the elaboration of such products.

Driven by this rising demand, EU SMP production is expected to reach 2 million t by 2026. This represents a slower growth than in the past decade, when SMP production increased by 730 000 t to 1.6 million t in 2016. In 2015 and 2016, public stocks increased by 355 000 t. In line with earlier experience it is expected that these stocks will be released in the next couple of years.

Graph 3.14 • Use of milk in the EU (million t of milk equivalent)



25 Gira is a consultancy and market research firm operating in the drink and food sectors and the food-based retail chain http://www.girafood.com/

A SLOW INCREASE IN WMP PRODUCTION

The EU is not strongly competitive on the WMP market, which is dominated by New Zealand, with its sales to China. EU WMP production represents less than half of SMP. Back in 2000 the EU exported close to 70 % of its production (Graph 3.8). The situation has changed over time: the EU has lost significant market shares (Graph 3.15) and the level of EU WMP production varies with the relative milk valorisation when processing WMP compared to processing butter and SMP. The sustained demand for butter and the various uses for SMP, including for the production of high value products (for infant formula and sport nutrition), are expected to limit WMP production growth, projected at 930 000 t in 2026.

By 2026, slightly more than half of the production is expected to be exported, while chocolate processing will remain the main domestic outlet for WMP. The main EU trade partners are Oman and Algeria. Keeping its 13 % world market share will already be a challenge for the EU.

AN EXPANSION OF WHEY PRODUCTION TECHNICALLY LIMITED WHILE DEMAND IS STRONG

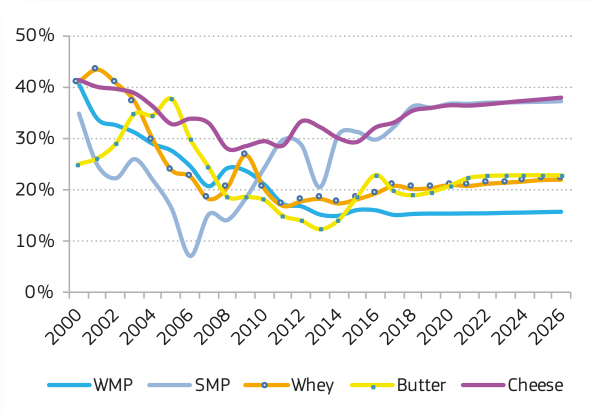
Whey is a by-product of cheese production that in the past was disposed of as waste. Roughly speaking, for 5 t of cheese, 1 t of whey powder is produced. In the past decade, with the increasing market opportunities for whey, whey collection increased significantly, especially in the EU-N13. However, it can be assumed that all the whey available for processing is now already collected. Therefore, whey production development is limited by increases in cheese production.

As EU is the largest cheese producer it is also the world's leading whey supplier. The EU produces 60 % of world whey in the form of whey powder, whey protein concentrates, whey protein isolates and demineralised whey – the use of liquid whey is now very small and limited to feed use. This particularity attracted various foreign investments in Europe, especially from China and New Zealand, focusing on the production of infant formula, of which whey is one of the main components.

Whey powder is the main whey product produced in the EU (60 %). It has the lowest protein content estimated at 13 %, while the protein content of whey isolates can reach more than 90 %. More than half of whey powder was still used for feed in 2016, however the downward trend of whey for feed use will continue and by 2026 it is expected that less than 45 % of whey will be used in feed processing. This will increase whey availabilities for the processing of higher value added products, for instance ice cream, confectionery, chocolate and infant formula. Fast growing sectors such as sport, senior and clinical nutrition use whey with higher protein concentration.

Whey powder production is projected to increase to 2.3 million t by 2026. With half of it going for exports, the EU share in world market is expected to stabilise at around 20 %. The main EU customer of whey powder is China, followed by Indonesia, Malaysia and Thailand. These countries use the whey powder to produce infant formula locally. Infant formula is also a lucrative export market for the EU of 3.7 million EUR in 2015.

Graph 3.15 • Share of EU exports in world trade (%)



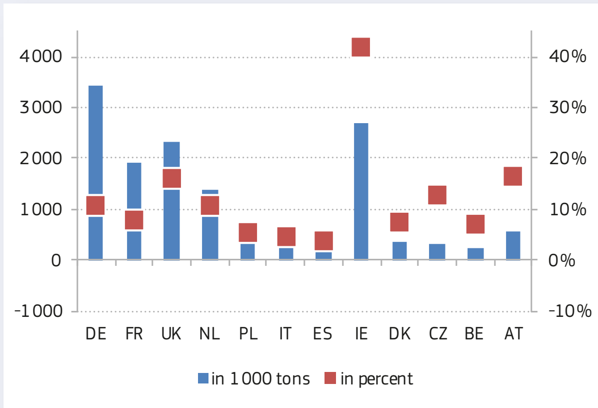
Source: DG Agriculture and Rural Development, based on OECD-FAO Agricultural Outlook 2016-2025

Box 3.1 • Insights on developments in selected EU Member States

PRODUCTION GROWTH IN MOST MEMBER STATES

The projected increase in total EU milk production is also reflected in most Member States, although the magnitude can substantially differ. About 75 % of the EU's expected total milk supply increase between 2016 and 2026 (+13 million t) will be realised in five Member States, namely Germany, Ireland, the UK, France and the Netherlands (Graph 3.16). Over that period, Ireland is expected to show the highest percentage growth (+41 %) and Germany the largest volume increase (+3.4 million t). The Netherlands, Czech Republic and Belgium exhibit a moderate supply increase in the range of 6 to 12 % while Poland, Italy, Spain and Denmark show slower growth.

Graph 3.16 • 2016-2026 change in milk production for selected EU Member States



Source: AGMEMOD simulation

These differences reflect variations in yield growth, dairy herd evolution, competitiveness and environmental constraints. Above average yield growth rates are projected for Ireland, Spain and the Czech Republic, even in Member States where the level of milk yield is currently already high. With the exception of Ireland, where cow numbers are projected to continue to grow, a decline in the size of the dairy herd is projected across the EU. Changes in the size of the herd are a combination of the net exit rate of dairy farms and the average increase in herd size per farm. This process of structural change varies across and within Member States and is likely to be influenced by the initial farm size distribution, farmer age distribution and geographical characteristics (e.g. areas with natural handicaps).

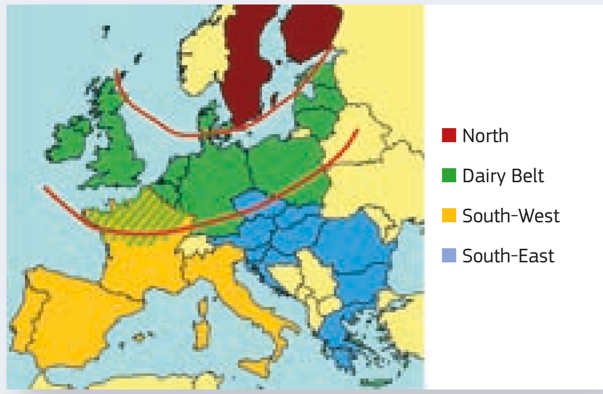
Member State policies, as well as private dairy industry strategies, also play a role in these projections. Voluntary coupled support may prevent a decline in milk production, e.g. in Finland, where there is a significant amount of coupled aids (including State aids). Moreover, some dairy industry policies constrain farm milk deliveries (e.g. the dual price system policy operated by some French and Austrian dairy processors). The UK is a special case, where following a recent contraction, a relatively quick recovery of the milk supply is projected. This is due to the depreciation of the British pound, which should favour UK dairy farmers, as it will increase milk price and direct payments expressed in pounds by about 15 %.

In the Netherlands, projected future milk production will be restricted by environmental constraints, although policy uncertainty over the implementation of specific measures still exists. For other Member States environmental issues are also of concern (e.g. Germany, Denmark, France, Ireland and Italy).

LITTLE CHANGE IN REGIONALISATION OF EU DAIRY PRODUCTION

Milk production is dispersed across the EU territory, but there is some regional concentration. In Map 3.1, four different dairy production regions are distinguished: the North, the Dairy Belt, the South-West region and the South-East. The Dairy Belt is projected to concentrate 80 % of the milk production increase by 2026 (i.e. 10.4 million t). Production in the North region is expected to remain stable, while the projected increase in milk supply in the South-West and South-East regions is about 1.1 million t and 1.5 million t respectively.

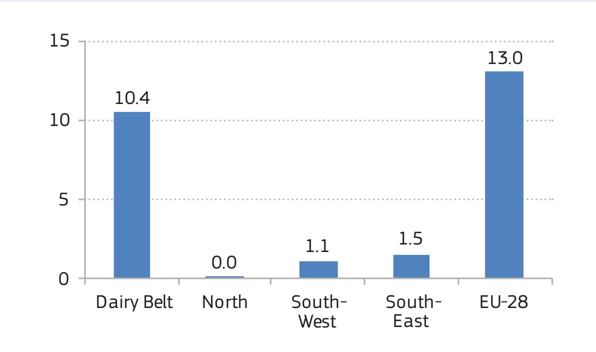
Map 3.1 • Regionalisation of EU milk production



Source: AGMEMOD simulation

By 2026, the share of the EU Dairy Belt is projected to increase only slightly up to 68 % of EU-28 cows' milk production, compared to 67 % in 2015. Following EU milk quota expiry in 2015, it was expected that specialisation and associated relocation of EU milk production would lead to stronger regional shifts. However, milk production in the Dairy Belt is projected to grow only slightly faster than elsewhere in the EU. Besides the factors mentioned already (voluntary coupled support, environmental constraints), the concentration process will be limited by the significant supply of local products to regional dairy demand. However, at regional level, specialisation may be observed in the north-west of France and in certain regions of Poland, Germany, Spain and Ireland.

Graph 3.17 • 2016-2026 change in milk production for selected EU Member States



CHEESE SHOWS STRONGEST GROWTH IN *PER CAPITA* CONSUMPTION OF DAIRY PRODUCTS

Across Member States, apparent domestic consumption is affected by a number of factors, such as the evolution of total population and its age structure, income growth, changes in consumer dairy prices and especially in consumer preferences. Such preferences reflect drivers such as an increased demand for tasty products with a higher fat content or conversely trends towards a lower intake of animal products in general due to ethical or health concerns. Projected changes until 2026 in population by IHS Markit vary considerably between different Member States, showing decreases in Spain, Germany and Poland (Table 3.1) and population growth in the UK, Denmark and France. However, future developments in migration flows may change the picture in Germany especially.

Per capita consumption of drinking milk is projected to decline in France, the Netherlands and Spain, due to changes in breakfast habits, the number of children per household and substitution with other products. In other Member States (Poland, Czech Republic), *per capita* consumption is expected to increase, mainly due to income growth.

Per capita consumption of butter is projected to remain stable or slightly increase in most Member States in line with recent developments, with Germany being a notable exception. Such change is driven by greater use of butter in cooking and further processing. Cheese *per capita* consumption is projected to remain stable in Germany, France, the UK and Spain and to increase moderately in the Netherlands, Italy and Denmark. In the eastern part of Europe (e.g. Poland and Czech Republic) the increase is projected to be significant.

THE INTERNAL DAIRY MARKET (INTRA-EU TRADE) IS DOMINATED BY BUTTER AND CHEESE TRADE

On trade, the Dairy Belt produces a significant net surplus, which is available for export. In particular for cheese and butter, EU domestic demand is an important driver of intra-EU trade. As Table 3.2 shows, the Netherlands, Germany and France are the largest EU net exporters of cheese. In the next decade, net export growth is projected to be high in Germany, France and Ireland. The main cheese net importers are the UK, Italy and Greece. Close to two thirds of Member States' net exports are traded within the EU. This emphasises the persistent importance of the internal market.

As regards butter, the importance of intra-EU trade is of a similar magnitude in Ireland and the Netherlands (about 60 %). In 2016, France was the biggest net importer of butter, but its net imports are expected to decline strongly by 2026. By contrast, the UK is expected to become a much larger net importer over time.

Table 3.1 • Trends in *per capita* consumption of dairy products in selected EU Member States (2016-2026)

		DE	FR	UK	NL	IT	PL	ES	DK	CZ
Cumulative growth	Income p.c.	15.4	15.3	15.1	12.2	17.9	23.1	15.9	12.0	20.4
	Population	-0.7	4	6.3	3.6	-0.2	-1.7	-0.2	4.1	2.7
Consumption *per capita* trend	Drinking milk	0/+	-	0/-	-	0/+	+	-	0/+	++
	Butter	-	0/+	0/+	0/-	0/-	0/+	0/+	0/+	0/+
	Cheese	0/+	0/+	0/+	+	+	++	0/+	+	++

Table 3.2 • Net exporting and importing Member States for cheese and butter (volume in 1 000 t, product weight)

Cheese				Butter			
Member State	2016	2026	change	Member State	2016	2026	change
Net exporter				Net exporter			
Netherlands	537	568	32	Ireland	180	285	105
Germany	295	431	135	Netherlands	170	187	17
France	274	323	49				
Poland	228	247	19				
Ireland	167	207	40				
Net importer				Net importer			
United Kingdom	-380	-345	35	France	-111	-50	61
Italy	-170	-79	91	Italy	-80	-85	-5
Greece	-133	-160	-26	United Kingdom	-72	-141	-70
Belgium	-92	-125	-33				

Note: this work was prepared by the AGMEMOD consortium (Roel Jongeneel, Myrna van Leeuwen and Willy Baltussen from the Wageningen Economic Research, Petra Salamon and Martin Banse from Thünen Institute, Trevor Donnellan and Kevin Hanrahan from TEAGASC, with the assistance of the European Commission's JRC).

4. MEAT PRODUCTS

EU meat production is expected to increase only slightly in the next 10 years to reach 47.6 million t, driven by sustained demand in the EU and worldwide. Production of poultry is expanding, driven by a favourable domestic market. Pigmeat production is expected to increase slightly, despite the environmental concerns. After a few years of increase, beef production is expected to return to its downward trend in the coming years. By contrast, production of sheep and goat meat is likely to remain relatively stable after years of decline. As EU consumption will not absorb the entire increase in production, the EU will depend partly on increased exports to a challenging international market. Meat prices might face a drop in the coming years due to increased competition and relatively low feed prices in the first part of the outlook period, followed by a recovery in the second part, thanks to growing global demand.

INCREASING WORLD IMPORT DEMAND FOR MEAT OPENS OPPORTUNITIES FOR EU EXPORTS

Population and economic growth in developing countries, albeit slower than in the previous decade, are expected to support higher meat demand and contribute to growth of EU meat exports. World meat consumption is expected to increase by 1.3 % a year between 2016 and 2026, slower than in the previous decade (+2 % per year), reaching almost 360 million t or 35.3 kg *per capita* (+1 kg in 10 years).

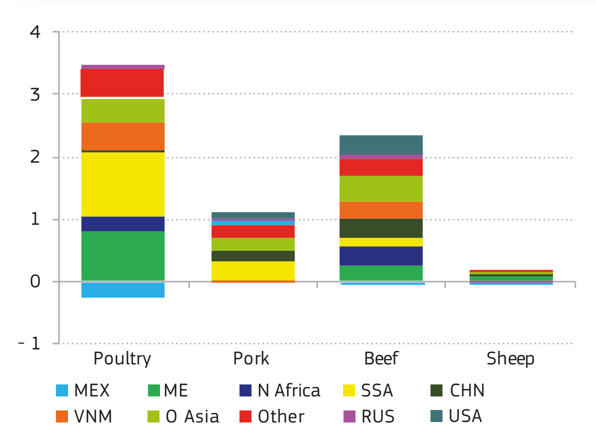
World import demand for poultry meat is expected to increase by 3 million t compared to 2016, reaching 17 million t by 2026. This equals almost the combined increases for the other types of meat (beef, pigmeat and sheep and goat meat). Important growing markets are located in Asia, sub-Saharan Africa and the Middle East (mainly for poultry). In the US, beef production is expected to lag behind domestic demand, resulting in increased imports, while the import demand for poultry meat in Mexico is expected to decline (Graph 4.1).

PER CAPITA MEAT CONSUMPTION IN THE EU-N13 IS CATCHING UP, WHILE CONSUMPTION IN THE EU-15 IS STABILISING

In the period 2008-2015, EU meat demand was significantly influenced by the economic crisis, the supply of (beef and pig) meat in the EU and changing price levels. Therefore, simple trend estimates of future consumption developments based (in part) on this period may be biased in direction or magnitude.

In 2012 and 2013, overall meat consumption contracted by almost 2 % because of lower availability, higher meat prices, the ongoing economic downturn and the resulting high unemployment rates (especially in southern European countries). Total meat consumption reached its lowest level for 11 years (64.6 kg *per capita*)[26] in 2013. In addition, consumers turned away from pigmeat to cheaper poultry meat and more affordable cuts.

Graph 4.1 • Changes in world imports of meat and live animals, 2026 vs. 2016 (million t)



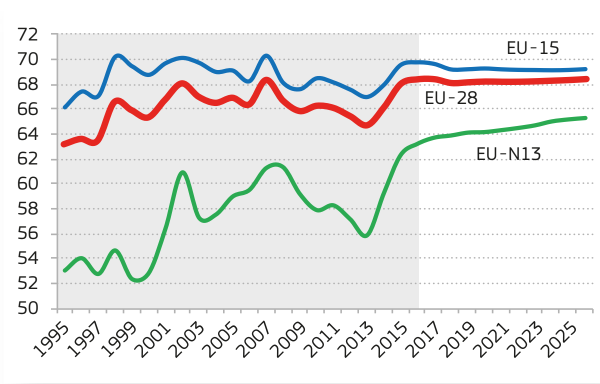
Note: ME: Middle East, SSA: sub-Saharan Africa, N Africa: northern Africa, VNM: Vietnam, CHN: China, O Asia: Other Asian countries, RUS: Russia, MEX: Mexico, Other: rest of the world

Source: DG Agriculture and Rural Development, based on OECD-FAO Agricultural Outlook 2016-2025

26 Consumption *per capita* is measured in retail weight. Coefficients to convert carcass weight into retail weight are 0.7 for beef and veal, 0.78 for pigmeat and 0.88 for poultry and sheep meat.

In 2014 and 2015, by contrast, EU *per capita* meat consumption recovered strongly, by 1.5 kg in 2014 and 1.9 kg in 2015 respectively, thanks to ample supplies of all meat categories at moderate prices. In 2016, meat consumption continued to increase despite a lower share of EU pigmeat production staying on the EU market, but at a slower pace (+0.4 kg *per capita*). The improved economic situation leaves consumers with more disposable income, which contributed to the recovery in meat consumption in recent years.

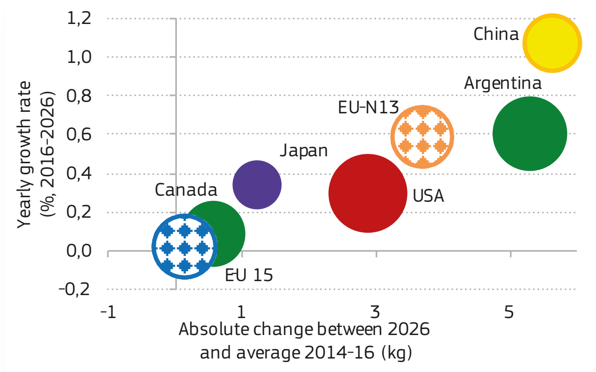
Graph 4.2 • Total meat consumption in the EU in kg per capita (retail weight)



After the recent recovery, EU-28 *per capita* consumption of meat products is expected to rise only slightly over the projection period, mainly as a result of the increase in meat consumption in the EU-N13 (+2.2 kg). Looking at a long-term outlook, *per capita* meat consumption in the EU-15 was following an upward trend until the economic crisis in 2008, at least over the three last decades. Due to growing social concerns (animal welfare and carbon footprints), health concerns and an ageing European population (eating less meat *per capita*), meat consumption in the EU-15 is expected to decrease after the recent jump and then stabilise around 0.5 kg below the 2015-2016 level. Some of these factors serve to favour poultry over other meats. Despite changing dietary patterns, especially among younger consumers, a clear downward trend in overall meat consumption is not visible when looking at available statistics and at the medium-term outlook. The decrease in meat consumption observed in the period 2008-2013 could have been seen as a turning point, but is difficult to disentangle this from the impact of the economic crisis and of the availability of meat on consumption, as demonstrated by the strong increase in 2014-2016. A stabilisation of consumption from 2017 could be a first indication that the trend will switch to a more pronounced decline while the exact turning point may happen in the longer run. Therefore, by the end of the outlook period, *per capita* consumption in the EU is expected to reach 68.4 kg per year (in retail weight) on average. In a global comparison and over the same period, the changes in meat consumption in the EU-15 are very similar to what is expected to happen in Canada (Graph 4.3), while in Japan and the USA a stronger increase of consumption is expected. The pattern in the EU-N13, on the other hand, is still characterised by a gap between the actual average level of *per capita* meat consumption and the consumer's preferred level of consumption. Therefore, the yearly growth rate is expected to be closer to that of Argentina.

However, as population growth also determines total meat consumption (not only *per capita*), when we factor in total meat consumption the picture is almost reversed. The population in the EU-N13 is projected to decline in the next years at such a rate that the *per capita* increase in meat consumption is almost completely flattened out, resulting in only 35 000 t additional meat consumed by 2026. In the EU-15, by contrast, the population is still increasing and therefore, with stable *per capita* consumption, total meat consumption goes up significantly, adding 600 000 t to current meat demand by 2026.

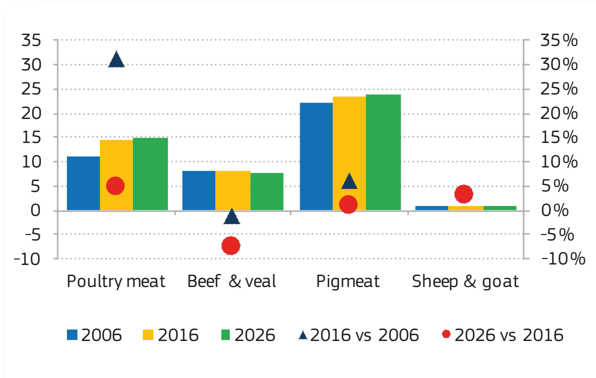
Graph 4.3 • Changes in *per capita* meat consumption (retail weight)



Note: The size of the bubble represents the absolute quantity of per capita meat consumption (kg/capita/year)

Source: DG Agriculture and Rural Development, based on OECD-FAO Agricultural Outlook 2016-2025.

Graph 4.4 • EU meat production (million t) and change (%)



As a result, total EU meat production is expected to grow only slightly in the next 10 years, reaching 47.6 million tonnes. This can be mainly attributed to an increase in poultry meat production and to a lesser extent pigmeat production, while beef and veal production will decrease substantially. Growth rates in the period 2016-2026 are clearly much lower than in the previous decade (see Graph 4.4).

BEEF AND VEAL

After the recapitalisation of the dairy herd in 2012-2014, beef production recovered in 2014-2016 and is expected to stagnate in 2017, before returning to a downward trend, mainly dictated by the declining size of the cow herd and lower demand.

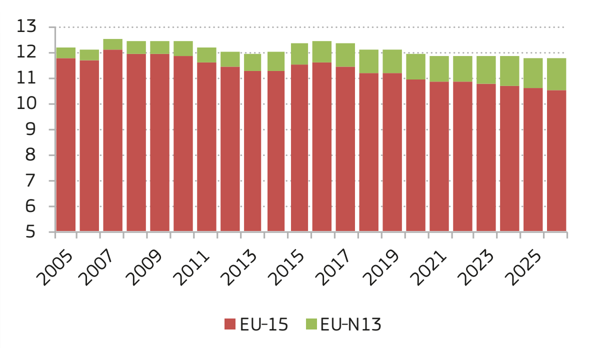
RESTRUCTURING IN MILK SECTOR LIMIT BEEF PRODUCTION POTENTIAL

Given that around two thirds of EU beef comes from the dairy herd, changes in the dairy sector have a major impact on beef supply. EU dairy cow numbers had been falling steadily for many years. By contrast, herds in the EU-15 started to grow between 2012 and 2014 because of high milk prices and in anticipation of the milk quota expiry. This contributed to a decline in beef production in 2012-2013, while 2014 already recorded an increase thanks to the bigger cow herd. The low milk price in 2016 led to a restructuring of the sector and culling of cows or a partial reconversion to beef production. As a result, the number of dairy cows decreased in 2016 and this is expected to continue as milk yields benefit from productivity gains. The dairy cow herd in the EU-N13 has been declining for more than a decade and is likely to follow this downward trend, albeit a lower rate.

Another important driver of developments in the cow herd is the implementation of voluntary coupled support (VCS). Many Member States opted for VCS in the beef sector, mainly in the form of suckler cow payments, in order to maintain a specialised beef herd. However, some Member States with an important suckler cow herd, like the UK (excluding Scotland) and Germany did not implement VCS in the beef sector. Ireland did not use the possibility to grant VCS either, but made provision for a specific beef scheme in their rural development programme.

The ceiling (the maximum number of head that can be granted a payment) and the exact implementation of the payments in the Member States has a significant impact on the development of herd size. Specialist cattle fatteners may not take full advantage of the coupling allowed, as in most Member States the premium is linked mainly to cows and heifers. In addition, the intensive beef production systems could be affected by the internal convergence of decoupled direct payments, which could entail a decrease in their direct payment references. By contrast, extensive systems might be eligible to more payments. Competition with other agricultural activities such as dairy production is likely to reduce suckler cow herds further in certain EU regions, while the current low milk prices may provide incentives for a (short-term) shift to beef production.

Graph 4.5 • EU suckler cow herd (million heads)



Overall, the suckler cow herd in the EU-15 is expected to fall to around 10.5 million head by 2026 (-8.6% or 1 million head as compared with 2016). By contrast, and contrary to the development of the dairy herd, the EU-N13 suckler cow herd is likely to record an increase from 850 000 head to 1.2 million, especially in Poland, Hungary and Bulgaria, in line with trends observed in the last 5 years (Graph 4.5).

PRODUCTIVITY GAINS IN MILK SECTOR LIMIT BEEF PRODUCTION POTENTIAL

Beef production is expected to increase in 2016 (by 3.3%) and to stay at a high level in 2017, mainly as a result of the continually high number of dairy cows that are slaughtered and adaptation of the beef herd to the new CAP, before starting to decline again. By the end of the projection period, beef production is expected to fall to 7.5 million t, mainly driven by developments in the cow herd and consumer demand, but slower than was seen in 2005-2013. Even though the suckler cow herd will expand in the EU-N13, this cannot compensate for the decline in the dairy herd, resulting in a significant decrease in beef production in the EU after a surge in 2016-2017.

EU exports of live animals showed an increase of 34% in the first half of 2016 on the already high 2015 figures, thanks to the continuing demand and high domestic beef prices in Turkey. Lebanon and Israel are two other significant destinations. As it is uncertain whether access to the Turkish market will be maintained and due to increasing competition from other players, we expect a gradual decline in exports of live animals to Turkey over the projection period. Exports of meat are expected to drop in the first half of the projection period due to competition with Brazil, Argentina and the USA on the world market but then recover slightly afterwards thanks to improving prices. It is very likely, however, that a shift will be seen in export destinations. Russia is expected to import much less from the EU (even after removal of the import ban assumed to happen at the end of 2017) due to lower demand and sourcing from other countries, while demand from Asian countries (Hong Kong, China, the Philippines, Thailand and South Korea) and the Middle East could offer new opportunities. A preference for importing animals for local slaughtering (halal) rather than meat could lead to a higher proportion of live exports to the Middle East, while sanitary issues or ethical and animal welfare concerns could act as a downward risk for live exports. The removal of certain SPS (sanitary and phytosanitary) barriers could offer significant trade opportunities and negotiations with the USA and other countries have recently led to the lifting of bans on beef imports from certain Member States, although the shipped quantities remain so far relatively low.

In 2015 and 2016, the USA and China (including Hong Kong), attracted beef from the world market, especially from Australia and Brazil, due to high internal prices and insufficient domestic production. The big exporters' focus thus turned to the USA. Moreover, the expected downturn of Australian beef exports, suffering from significant destocking due to a combination of continuing unfavourable weather conditions, is finally visible in the 2016 trade statistics. As a result, these exporting countries left opportunities in the rest of the world to other players, including EU exporters, which increased their exports by 17% in the first half of 2016 compared to 2015.

As regards EU's beef imports, its TRQs for fresh and frozen beef (especially for high-quality produce) are expected to be almost filled, while total preferential access will increase gradually over the outlook period up to a lower level than the current trade agreements (up to 346 000 t in c.w.e.). Nevertheless, some out-of-quota imports will occur, just like in previous years. This outlook takes into account an increase in beef imports resulting from the FTA with Canada (additional TRQ of 46 000 t of fresh beef)[27], but assumes that the quota will be filled by less than half only. By contrast, the beef TRQ for Ukraine is not expected to be used for SPS reasons.

Although the economic recession in Brazil has an impact on the development of its beef sector, Brazil is expected to continue playing a major role on the world beef market, for three reasons: a competitive real over the whole projection period; lower domestic consumption in the short term due to a shift to cheaper poultry meat; and direct access to the main importing countries.

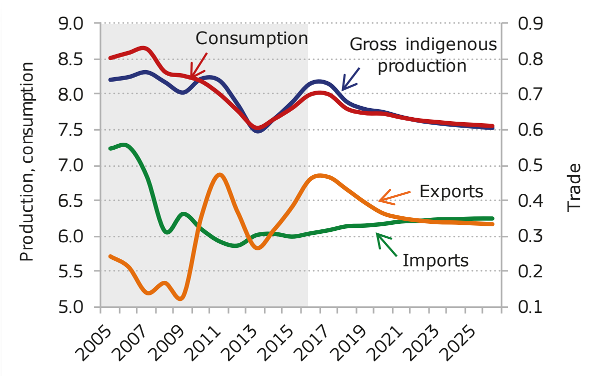
Increasing domestic consumption and a recapitalisation of the herd in Argentina over the short term will limit its export potential. Although the type of meat is different (with a larger share of buffalos and zebus), Indian exports are expected to play a role in certain Asian markets, accounting for 2.1 million tonnes (equal to Canada and USA together).

CONSUMPTION BACK TO ITS DOWNWARD TREND AFTER RECOVERY IN THE SHORT RUN

EU *per capita* beef consumption continued to go up slightly in 2015 and 2016, especially in the EU-N13, thanks to the improved economic climate and a favourable price development driven by increased availabilities, reaching an overall figure of 11 kg *per capita*. Nevertheless, consumption is expected to resume its downward trend after 2016. By the end of the outlook period, beef consumption is expected to decline to 10.2 kg *per capita* (retail weight). This figure masks a significant gap between the EU-15 (11.8 kg) and the EU-N13 (3.7 kg).

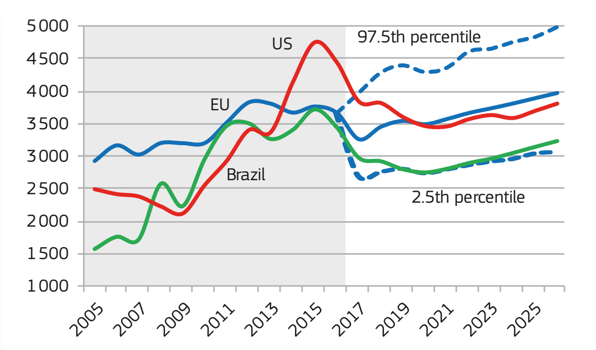
27 The TRQs under the Comprehensive Economic and Trade Agreement were split into 35 000 t of fresh and 15 000 of frozen beef, but this includes Canada's 4 160 t under the existing hormone-free erga omnes TRQ. The additional TRQ is therefore 46 000 t.

Graph 4.6 • EU beef market developments (million t)



Note: trade includes live animals

Graph 4.7 • Beef prices and possible price paths (EUR/t)



Note: The US reference is the price of choice steers, 1100-1300 lb lw, Nebraska – lw to dw conversion factor 0.63; The Brazil reference is the price of frozen beef, export unit value, product weight

The EU beef price remained quite firm in 2015 but started to fall in 2016 due to the continuous inflow of dairy cow slaugterings despite renewed EU demand and good exports of live animals. The herd recapitalisation observed in the USA and the expected high supplies, mainly from Brazil, in a context of moderate feed prices, are expected to push the world price further down in 2017 and put further pressure on EU beef prices. The scale of the price decrease will depend greatly on the impact of the economic recession on the sector and on local consumption in Brazil, determining how much beef will be available for exports and to serve the beef demand in the USA. The restructuring in the dairy sector in the EU will limit beef production potential and a new equilibrium between supply and demand might push prices upwards after 2017, contrary to developments in the world market price.

In the second half of the outlook period, the EU beef price is likely to improve further, driven by the price developments on the world market, reaching around 4 000 EUR/t by 2026. The price path presented is an average projection and developments may not be as smooth as indicated, given the uncertainties over yields (feed costs and forage availability) and the macroeconomic environment. The 2.5th and 97.5th percentiles shown in Graph 4.7 (blue dotted lines) give an indication of the price variation one could expect given this uncertainty.

SHEEP AND GOAT MEAT

After several years of continuous decline, sheep and goat production and consumption are expected to stabilise or increase marginally, thanks to improved profitability and the implementation of voluntary coupled support. However, EU prices might face a drop in the next few years, due to world price developments, followed by a more positive medium-term outlook.

EU SHEEP AND GOAT HERD STABILISING OR INCREASING SLIGHTLY

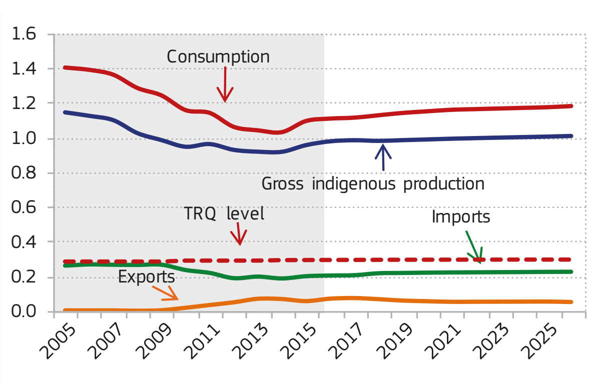
The EU sheep and goat flock has shrunk steadily over years, but the situation was reversed in 2013-2014, although significant differences between Member States were noted. According to the Eurostat December 2015 Livestock survey, the EU-15 sheep flock had increased by almost 1.1 million head, or almost 2%, to 72 million head. This increase came almost solely from Spain and the UK. The EU-N13 flock recorded an increase of 300 000 head, following the trend of the last 4 years, mainly coming from Romania. The goat flock in the EU-15 fluctuated in recent years at around 10.4 million head, while the EU-N13 recorded a slight increase of around 200 000 head in the last 2 years to reach 2.3 million head. Although widely diverging developments are expected across Member States, the EU sheep and goat flock as a whole is expected to increase only by 0.1% per year until 2026.

PRODUCTION LEVELS EXPECTED TO INCREASE MARGINALLY OVER THE COMING DECADE

The historically declining trend in the production of sheep and goat meat[28] seems to have reversed in recent years, thanks to increased profitability of sheep farms and demand for live animals. In addition, a majority of the main sheep-producing Member States decided to implement voluntary coupled support for sheep farming. Coupled payments and 'article 68' payments.[29] were applicable until 2014. Nevertheless, generation renewal is an issue in some EU regions. In the first half of 2016, sheep and goat meat production increased by 1.6%. By contrast, accounting for the price pressure at world level from New Zealand and Australia in the coming years and the low change in domestic demand, EU production is expected to stabilise at around 1 million t (+30 000 t or average yearly growth of 0.3%), masking significant variation between Member States.

Imports are expected to remain within TRQ levels, albeit increasing over time, representing 20% of total world imports. In the short term, New Zealand and Australia are not expected to fill their quotas, due to growing opportunities in other markets, especially Asia and the Middle East, and the rebuilding of their herds. Both Australia's and New Zealand's sheep herds suffered from droughts, which had an impact on the export potential in the short term. However, production potential should recover over the medium term in Australia, while expansion of sheep production in New Zealand is expected to stabilise, limited by competition with the dairy sector for pasture and by environmental concerns.

Graph 4.8 • EU sheep and goat meat market developments (million t)



EU exports of both meat and live animals rose continuously between 2010 and 2013, but stabilised in the following years. Exported quantities remain relatively low. Meat exports (predominantly frozen meat) went mainly to Hong Kong, while live animals were exported to Libya, Turkey and Lebanon. Tough competition from Australia and New Zealand, representing 85% of international trade, limits the export potential, despite slightly increased world import demand. In view of the above, the EU's total exports are expected to go down slightly over the outlook period to around 53 000 t (c.w.e) by 2026, limited to existing trading partners in the Mediterranean region. Exports to Hong Kong were reduced significantly in 2015-2016 and seem to be lost as a future export destination as mainland China favours direct imports.

The EU sheep meat price[30] follows the world price path, which is expected to show a drop in the coming years. The outlook for the end of the projection period is slightly more positive, due to steadily growing demand in Asia (in particular China) and the Middle East (notably Saudi Arabia). There continues to be a relatively significant gap between the EU and world price level as a result of EU border protection. Uncertainties related to the macroeconomic environment and changes in yields could, however, see prices fluctuating between 4 000 and 6 000 EUR/t.

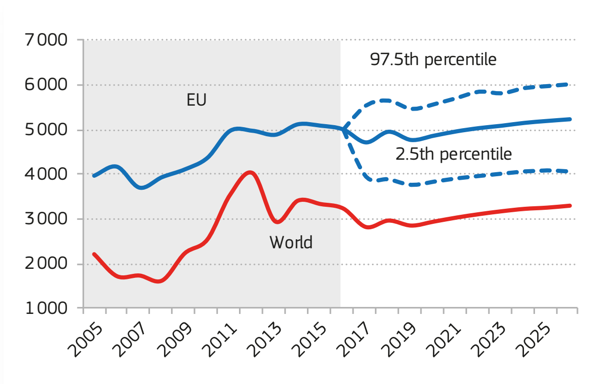
Sheep meat is the meat consumed least in the EU, accounting for only 2.9% of total meat consumption or 2 kg *per capita* (retail weight) in 2026. Total consumption is expected to stabilise at around 1.2 million t by 2026 (consumption of this type of meat is assumed to stay relatively stable regardless of price developments). The EU's growing Muslim population and specific promotion programmes targeting consumers unfamiliar with sheep meat may push consumption upwards.

28 This refers to 'gross indigenous production', i.e. including trade in live animals.

29 Article 68(1) of Regulation (EC) No 73/2009, repealed by Regulation (EU) No 1307/2013.

30 The EU price relates to the price of 'heavy lamb'.

Graph 4.9 • Projected sheep prices and possible price paths (EUR/t)



Note: The reference for the world price is New Zealand

PIGMEAT

After the implementation of the new animal welfare rules in the sector, pigmeat production recovered remarkably in 2014 and 2015, after 2 years of relatively high prices. Pigmeat production is expected to increase only marginally over the coming decade (+0.1% a year) because of only marginal increase in EU consumption. However, EU pigmeat exports are expected to grow, supported by sustained world demand and favourable feed prices but at competitive international pigmeat prices.

PRODUCTION SET TO EXPAND MARGINALLY FOLLOWING RECOVERY IN RECENT YEARS

The increased production capacity in certain parts of the EU and continued low feed prices resulted in an increase in pigmeat production in 2015, despite the Russian import ban,[31] putting pressure on prices. Due to the time-lag before pig production adjusts to these price developments and short-term economic behaviour to cover at least partly the investment costs, slaughterings stabilised in 2016, following the reduction in reproductive herd, as observed in the December 2015 and June 2016 livestock surveys.

Environmental[32] and social concerns, which have led among other things to national and subnational legislation on various aspects of manure management, will probably limit expansion of production in the current hotspots without bringing it to a halt. A possible way out, as already seen in Denmark, is to specialise in piglet production while pigs are fattened in other regions of the EU. Another option observed at more regional level is to treat and transport manure to what are called 'N-deficit areas'. Trade-offs between higher production and logistical costs on the one hand and opportunity costs of delocalising on the other, including the feed and processing chain, will play an important role in decisions on new investments. Another way to cope with decreasing margins or to increase competitiveness is vertical integration, as observed in Spain and northern Italy. Changes in EU consumption patterns may limit domestic demand but world import demand is still increasing, giving way to additional exports. Taking into account these elements, EU pigmeat production is expected to grow slowly in both the EU-15 and the EU-N13, by 300 000 t over 10 years.

WORLD DEMAND TO SUPPORT EU EXPORTS

Due to a boost in Chinese pigmeat demand on the international market in 2016, EU exports have hit a record level, slowing down the foreseen readjustment in EU production and even resulting in an erosion of EU consumption. According to the Chinese agricultural outlook, a significant yearly import demand for pigmeat is projected to continue over the medium term but at a lower level, as seen today (close to 900 000 t by 2026). World import demand for pigmeat is expected to remain strong, but to grow more slowly than in the previous decade (+1.2 million t), reaching 8.5 million t by 2026, mostly from existing EU trade partners in Asia and sub-Saharan Africa.

Although it is assumed that Russia will continue to ban imports of pig products for sanitary and economic reasons until the end of 2017, the country's ambitious self-sufficiency targets and the decreased purchasing power will lead in any case to lower imports from the EU after the ban is assumed to be lifted. In addition, in order to secure supply in the absence of banned EU and US meat, Russia has been looking for other suppliers, some of whose exports it had previously restricted. Moreover, EU volumes that under normal market conditions would have gone to Russia have found their way to other destinations, mainly Japan, South Korea, the Balkan countries and the Philippines.

Driven by consumption developments, the Philippines, a market with over 100 million consumers, imported 190 000 t from the EU in 2015. Imports are expected to continue at this level. The USA, the EU's main competitor on the world market, has recovered from the 2013 outbreak of porcine epidemic diarrhoea virus (PEDv) and gradually increased its pigmeat supply, competing directly with the EU on the South Korean market. US pigmeat exports are likely to return to growth over the outlook period at competitive prices, encouraged by a weaker USD. They are expected to increase market share slightly while the EU's share remains stable.

In view of the above, EU exports are expected to reach around 2.8 million t at the end of the outlook period. This also reflects the EU pig market's increasing dependency on exports, which are expected to go from less than 9% to 12% by 2026.

CONSUMPTION LEVELS GOING IN OPPOSITE DIRECTIONS

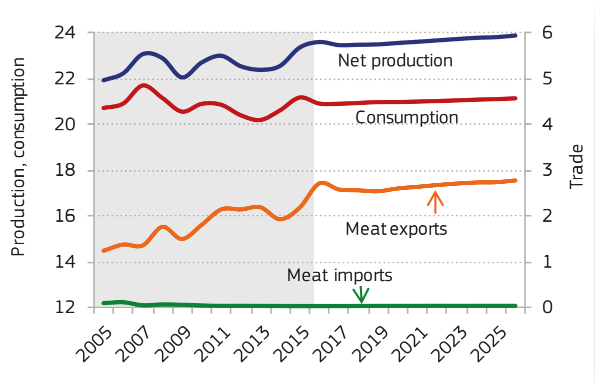
Per capita pigmeat consumption experienced an enormous boost in 2014 and 2015, especially in the EU-N13, gaining 3.6 kg in 2 years and bringing total EU consumption back to pre-crisis levels. In 2016, EU consumption decreased, mainly due to lower availability of pigmeat on the domestic market. In the longer run, consumption in the EU-15 will start to fall again

31 Russia imposed a sanitary ban on imports of EU pigmeat in February 2014, following the outbreak of African swine fever (ASF) in Poland, Estonia and Latvia. In August 2014, it imposed a second (economic) ban on most pig products.

32 In response to the Nitrates Directive, some Member States (e.g. Denmark, France and the Netherlands) have introduced regulations limiting the expansion of pigmeat production. GHG emissions from enteric fermentation and manure management in the sector totalled 25.4 million t, or around 5.3% of total agricultural emissions in 2012 (EEA, 2015).

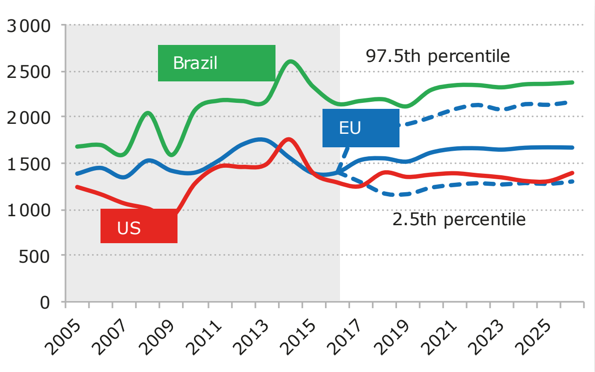
slowly to 31.2 kg *per capita* by 2026, as pigmeat loses out to poultry meat, but total consumption in the EU-15 will increase due to population growth (+150 000 t). Consumption in the EU-N13, on the other hand, is expected to increase gradually, to reach a record high of 34.5 kg *per capita* by 2026, driven mainly by growing demand in Poland and Romania.

Graph 4.10 • EU pigmeat market developments (million t)



Thanks to the strong import demand from China among others, pigmeat prices went up again in 2016 after 2 years of lower prices. EU prices are expected to strengthen only slowly over the outlook period, due to sustained price competition with the Americas (USA, Brazil). Prices are predicted to reach an average of 1 670 EUR/t in 2026. Uncertainties relating to the macroeconomic environment and to changes in yields could, however, see pigmeat prices fluctuating between 1 300 and 2 160 EUR/t.

Graph 4.11 • Projected pigmeat prices and possible price paths (EUR/t)



Note: The US reference is the price of barrows and gilts, No. 1-3, 230-250 lb lw, Iowa/South Minnesota – lw to dw version factor 0.74; The Brazil reference is the price of frozen pigmeat, export unit value, product weight

POULTRY MEAT

Poultry meat is the only meat for which both production and consumption are expected to expand over the 2016-2026 outlook period (by 5.1% and 4.5% respectively). Supported by continued expanding global demand, the EU will increase its exports thanks to the valorisation of different cuts of poultry meat and offal and a wide portfolio of destinations.

PRODUCTION OF POULTRY MEAT CONTINUES TO GROW

Poultry meat enjoys several comparative advantages over other meats, e.g. affordability, convenience, absence of religious guidelines limiting consumption, healthy image, limited GHG emissions, lower production costs, short rearing time and lower required investments. As a result, production and consumption have been increasing steadily for many years.

Looking also at recent investments in production and in slaughtering capacities, especially in the EU-N13, production of poultry meat is expected to continue to grow over the outlook period, but the rate of growth is likely to slow down to 0.5% per year, after having averaged 2.8% over the past 10 years. The strongest increase in production (1.3% a year) is expected in the EU-N13, due largely to sustained productivity gains and investments in Hungary, Poland and Romania. In a context of relatively low feed prices throughout the outlook period, strong domestic and world demand will together contribute to an expected growth of total EU production to 15 million t by 2026.

EU EXPORTS FOLLOW DEMAND ON THE WORLD MARKET

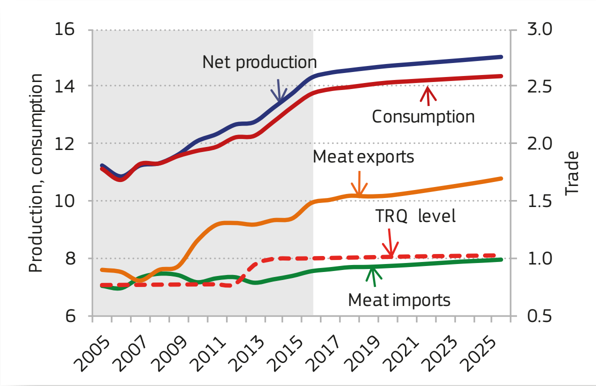
World import demand for poultry meat is expected to remain very strong (Graph 4.1), but to grow more slowly (by 2.4% per year over the next decade, as compared with 4.4% over the previous 10 years), reaching 15.2 million t in 2026. The additional demand is shared almost equally by the Middle East, sub-Saharan Africa and Asia.

Although it is assumed that the Russian import ban will be in place till the end of 2017, Russia's policy aim of self-sufficiency will lead to lower imports from the EU, even when the ban is removed. Increased competition is expected in certain markets (e.g. whole chicken), mainly from Brazil, which is able to export at cheaper prices also thanks to its currency devaluation. On the other hand, the economic downturn in Brazil has shifted part of local meat demand to more affordable chicken meat, which could lead to less competition in the first half of the outlook period. After the fall-out from avian influenza, the USA again has access to the South African market, where it will take back part of EU's current market share.

In view of the above, EU exports will continue to rise, but only moderately, by an average of 1.4% a year until 2026, reaching 1.7 million t, despite the absence of export refunds. A specific feature of the trade in poultry meat is that the EU is exporting lower-quality and cheaper cuts (such as legs and wings) less appreciated by European consumers and importing cuts with higher added value (such as breasts and cooked preparations).

In the past, poultry imports tended to settle around the TRQ level or even above (paying full duty). Although new TRQs introduced since 2013 are not yet fully used, imports are expected to grow gradually from the 2013-2014 lows to fairly close to the quota level (around 1 million t) by 2026, supported by increased production in two of EU's main supplier countries, Thailand and Brazil (where production is expected to rise by 19% and 24% respectively by 2026). In the context of the trade agreement with Ukraine, the EU opened two TRQs amounting in total to 40 000 t net weight by 2026. The TRQ for the imports of poultry meat and preparations is used at 100% while the second one for frozen chicken is only partially used, a situation which is assumed to continue over time.

Graph 4.12 • EU poultry meat market developments (million t)

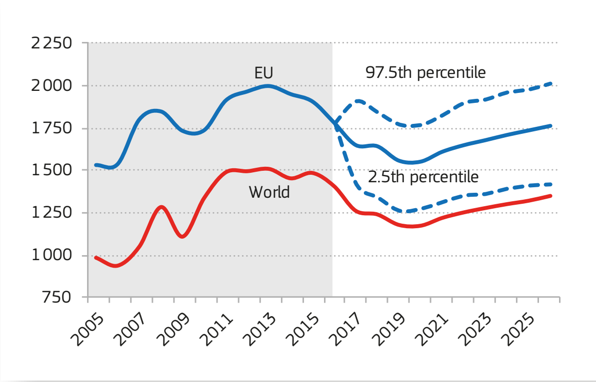


POULTRY MEAT CONSUMPTION STILL RISING BUT AT A LOWER RATE

Thanks to its relative cheapness and healthy image, poultry meat is the only meat for which consumption is expected to increase in both the EU-15 and EU-N13, with annual growth of 0.3%, reaching 24.4 kg *per capita* by 2026. The rate of growth in the EU-N13 will be less than in previous years due to markets reaching maturity, similar to the EU-15. EU-N13 *per capita* consumption has overtaken EU-15 levels since 2012.

After a big drop in the first half of the projection period, reflecting lower input prices, higher domestic production and increased competition (mainly from Brazil and the USA), prices for EU poultry meat are expected to recover. Prices are expected to follow world prices, but not beyond past levels, reaching around 1 750 EUR/t by the end of the outlook period. Depending on developments in the macroeconomic environment and in feed, prices could vary between 1 420 and 2 010 EUR/t over the outlook period.

Graph 4.13 • Projected price and possible paths for poultry meat (EUR/t)



Note: The reference for the world price is Brazil

Box 4.1 GHG • emission targets in agriculture: How could EU meat markets be affected?

The 'Economic Assessment of GHG mitigation policy options for EU agriculture (EcAMPA)' project is designed to assess some of the aspects of including the agricultural sector in the EU 2030 policy framework for climate and energy. The EcAMPA study aims at further enhancing the understanding on how non-CO_2 emissions from EU agriculture would evolve in a reference (business-as-usual) scenario, and to what extent technological (i.e. technical- and management-based) emission mitigation options could be applied by EU farmers and at what cost. Possible market effects and costs (and related policy options such as subsidies) are also assessed. The CAPRI modelling system was used[33] for the analysis. The study shows that the setting of GHG emission reduction obligations for the EU agriculture sector might especially affect production in the EU livestock sector. This box summarises the major results of two scenarios and their effect on the EU meat sector[34].

Main scenario assumptions: in both scenarios, a compulsory 15% mitigation target for EU agriculture is set, with heterogeneous emission reduction targets allocated to Member States following a cost-effective distribution. One scenario was run without subsidies and the other scenario with subsidies for adopting certain technological GHG mitigation options. Technological options considered in both scenarios related to:

- the livestock sector (anaerobic digestion at farm scale, low nitrogen feed, linseed as a feed additive, breeding programmes to increase milk yields of dairy cows and ruminant feed efficiency);
- the crop sector (precision farming, variable rate technology, better timing of fertilisation, nitrification inhibitors, measures related to rice cultivation, fallowing histosols[35], increasing the legume share on temporary grassland).

The results of the two scenarios reveal that effects on ruminant meats would generally be more pronounced than for other livestock products. However, when subsidies are paid for the uptake of mitigation technologies, the impacts on EU production are significantly diminished: for example, beef meat production falls by -1.7% in the scenario with subsidies, compared to -5.1% in the scenario without subsidies. As a major part of the mitigation obligations would generally be achieved by applying technological mitigation options instead of reduced animal herds and production, pigmeat and poultry meat production even show increases of 1.6 and 0.7% respectively in the subsidy scenario (see Graph 4.14).

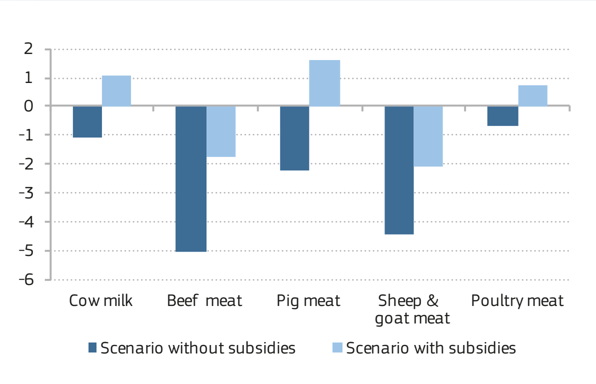
....

33 For more information on the model see the CAPRI webpage: www.capri-model.org

34 For the entire report, including background information and results of all scenarios, see: Pérez Domínguez, I., T. Fellmann, F. Weiss, P. Witzke, J. Barreiro-Hurlé, M. Himics, T. Jansson, G. Salputra, A. Leip (2016): An economic assessment of GHG mitigation policy options for EU agriculture (EcAMPA 2). JRC Science for Policy Report, EUR27973 EN, doi:10.2791/843461.

35 This option takes histosols (soils consisting primarily of organic materials) out of production.

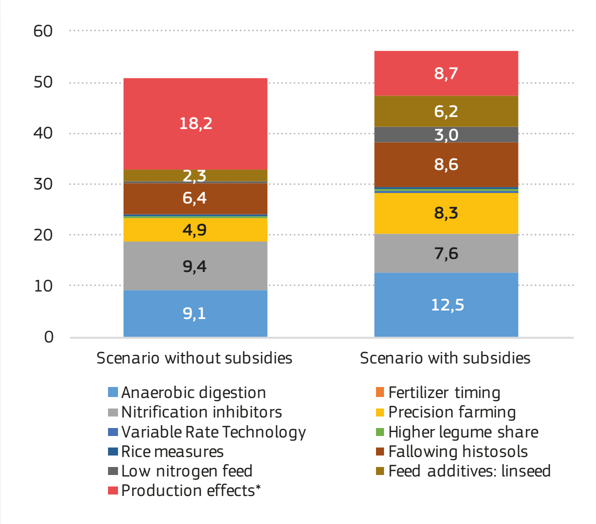
Graph 4.14 • EU meat production changes (% change to reference scenario, 2030)



In both scenarios, production impacts can vary quite significantly at regional level. This is exemplified in Map 4.1 with respect to the impacts on beef production. First, when comparing both scenarios, regional production results are less negative for the scenario with subsidies, especially in those regions where mitigation technologies are adopted to a larger extent. Second, within each scenario, regional differences are attributed to a combination of specific mitigation targets (differing by Member State, as explained above) and the relative profitability of beef production in each region.

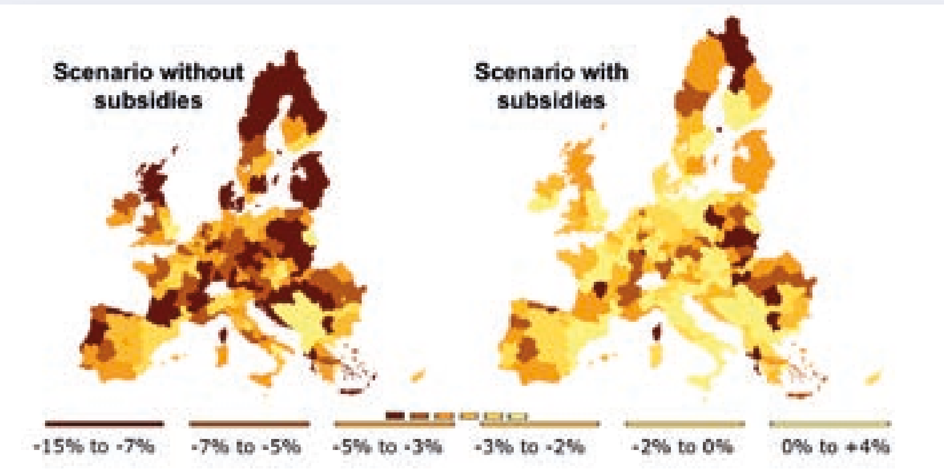
The overall EU mitigation achievement and contribution by technological mitigation option is presented in Graph 4.15. In the scenario without subsidies, 64% of the EU emission reduction would be achieved via the application of technologies, and 36% would be due to changes in production, mainly resulting in the aforementioned decreases in EU production. The decreases in domestic EU production would be partially offset by increased imports, again most pronounced in the livestock sector, which could lead to emission leakage, i.e. an increase in GHG emissions in other parts of the world through trade effects caused by the simulated EU emission mitigation target. However, when the application of mitigation technologies is subsidised, EU GHG emission reduction is 85% achieved via technologies, resulting in lower impacts on domestic production and trade, which also reduces the rate of emission leakage considerably.

Graph 4.15 • Overall mitigation achievement and contribution by technology (million t CO_2 eq mitigated, EU-28, 2030)



A key conclusion of this study is that GHG emission reduction obligations for the EU agriculture sector could provoke significant (negative) production effects in the EU livestock sector if no additional support is given to farmers. The adverse effects on EU agricultural production (and emission leakage) could be significantly reduced if subsidies for the application of mitigation technologies were to be implemented. However, this may also come with considerable budgetary costs for the EU. As a general caveat, it is important to note that not all mitigation technologies are considered here, and further research and development in new technologies, their potential as well as adoption by farmers and transactional costs are certainly needed.

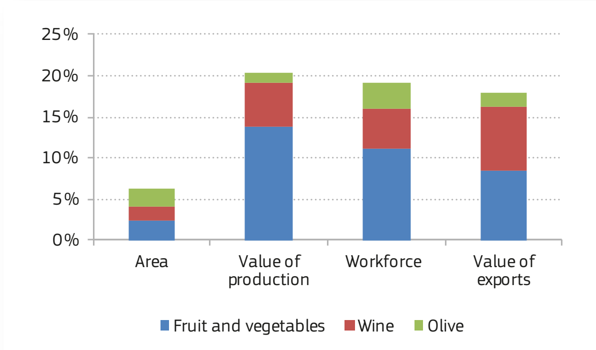
Map 4.1 • EU meat production changes (% change to reference scenario, 2030)



5. FRUIT AND VEGETABLES, OLIVE OIL AND WINE

The prospects for EU agricultural markets do not cover several specialised sectors that are important for land use, the jobs they create and the value added they generate. In this chapter, we look particularly at three sectors, fruit and vegetables, olives and wine, for which an assessment of the current situation is presented and some preliminary projections are shown. In the absence of a modelling tool covering these products, our projections are based on simple trends applied to area, yield, consumption and trade historical developments in the main Member States at stake. The projections do not take into account developments on the world markets (other than through expert judgement) and/or price impacts. At this stage, they also do not take into account the segmentation of these markets into sub-products and qualities. For fruit and vegetables in particular, given the diversity of production and supply chains involved in the sector, the exercise was limited to apples and tomatoes. Other sectors that are important to EU agriculture, such as flowers and ornamental plants, were left out of the scope of these projections.

Graph 5.1 • Share of fruit and vegetables, olive and wine sectors in the EU agriculture (2013[36])



Source: Eurostat (FSS, EAA), DG Agriculture and Rural Development

The weight of the three sectors concerned in the EU agriculture is substantial. In 2013, on a reduced area (6% of the UAA), the three sectors:

- generated a large share of the value of production (20%);
- employed a large share of the workforce (19% of the total annual working units); and
- accounted in value for 18% of the total exports outside the EU.

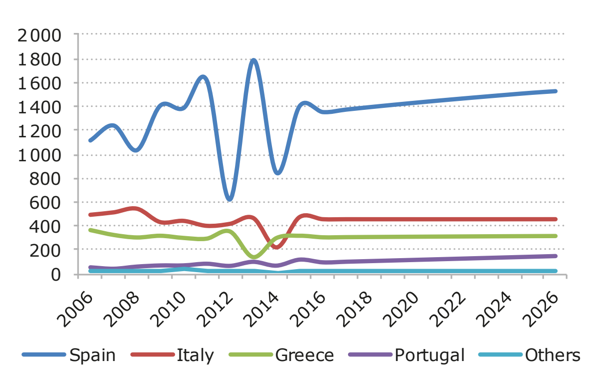
In the EUN-13, the importance of the wine sector is less pronounced and that of the olive sector is marginal (by contrast, fruit and vegetables are equally important for both the EU-15 and EUN-13). The prospects for the sectors covered by the present chapter are therefore important to complement the picture described in the previous sections of this report.

Olive oil production in the EU is strongly concentrated in four Member States: Spain, Portugal, Italy and Greece, which represent 99% of EU production (which in turn represents two thirds of the world production). The production dynamic in the producing Member States during the last decade is characterised, beyond a strong volatility caused by climatic conditions (in particular because of dry conditions), by an increasing production trend in Spain and Portugal. This trend is based both on growing areas and growing yields, with the development of irrigated and intensive olive groves substituting traditional extensive areas (mostly still in production). By contrast, in Italy and Greece, production stagnated over the past decade, with some area decrease in Italy.

The increase in irrigated areas in Spain slowed down during the financial crisis, but now seems to be recovering gradually (although not to the speed reached before the crisis, Graph 5.2). This should allow for a continuing steady increase in production in the Iberian Peninsula (by about 1% per year until 2026, 10% in total over the period). In Italy and Greece, production is expected to stabilise relatively, slightly decreasing in Italy (-1% over the coming decade) while slightly increasing in Greece (+2%) between 2015/16 and 2025/26. Such evolution might be affected by climate conditions specific to each year, in a general context where water availability and quality is a growing concern.

36 2013 for the FSS, 2013-2015 average for EAA and trade data.

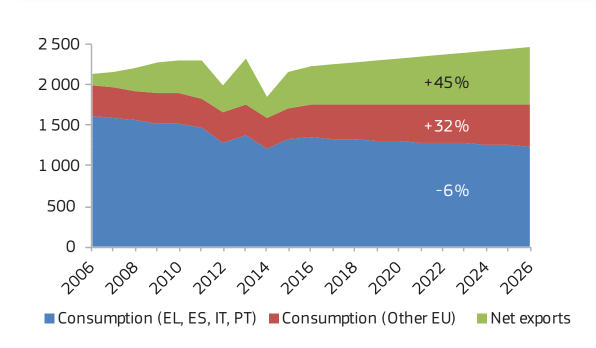
Graph 5.2 • Production of olive oil in the EU (1 000 t)



The evolution of consumption has been characterised by a regular decrease in the three main producing Member States in the last decade, with a steeper decrease during the financial crisis. The outlook is for a certain stabilisation and slower decrease (-6% in total for the consumption over the coming decade). This decrease in countries with a high per capita consumption (above 10 kg per person in each of them) means that large quantities of olive oil no longer finding a destination on these markets. However, it is largely offset by an increased consumption in the rest of the EU, still at a very low level of consumption *per capita* (around 1 kg per year), and in the rest of the world.

While EU imports of olive oil have decreased in recent years, it is expected that this trend will be reversed with the development of investments in modern olive groves in other Mediterranean countries and the possible use of the inward processing custom regime[37]. EU exports should, however, largely outpace imports. World demand and the capacity of EU bottlers to use advanced and modern branding strategies (relying both on renown trademarks and several geographical indications) should allow extra-EU exports to continue on a steep increasing trend (+60% over the last 10 years, +45% over the 10 coming years). Such growth in exports will be necessary to ensure a balancing of the EU olive sector.

Graph 5.3 • EU supply balance sheet of olive oil projected until 2026 (1 000 t)



37 Inward processing is a customs procedure under which certain goods can be brought into a customs territory conditionally relieved from payment of import duties and taxes; such goods must be intended for re-exportation within a specific period.

The EU is the world's leading producer of **wine**, with over 60% of the world production in 2013. Production occurs in many Member States, principally in the southern countries. However, three countries represent 80% of EU production (France, Italy and Spain). Projections for the EU wine market show a continuing downward trend for the consumption of wine in quantity within the EU, by around 0.5% per year in the coming decade (a slower decrease than in the previous decade, when consumption decreased by around 0.8% per year, Graph 5.4). Consumption is, however, expected to stay very dynamic in Asia and North America (and, for much smaller quantities, in developing countries), both for:

- relatively simple and increasingly fresh and sweet wine, particularly sparkling, at low prices, increasingly bottled at the market of destination after travelling massively in bulk; and
- a smaller segment of premium wines, in bottle, at relatively higher prices.

EU production trends are likely to follow a similar pattern, with a slower decrease in quantities produced, and an expected decrease by -0.4% per year in the coming decade (versus -1% per year in the past decade), although with annual variability due to climate conditions.

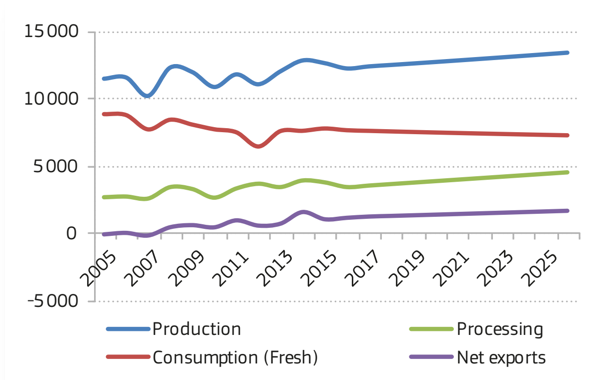
Graph 5.4 • EU supply balance sheet for wine projected until 2026 (million hl)

In terms of trade, imports followed an increasing trend in the past, which is likely to continue in the next 10 years at a rate of about 1% per year. The sector, benefiting from non-EU countries associating wine with a certain European lifestyle, is a net exporter, with exports increasing by 2.3% per year in the last decade. This trend should continue in future, with higher volumes exported in the future, offsetting decreasing domestic consumption and still increasing imports.

A similar exercise has been carried out for certain **fruit and vegetables**, specifically for apples and tomatoes.

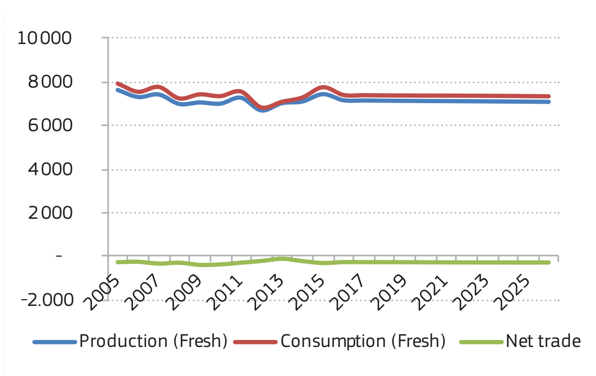
For **apples**, EU production is likely to increase in the future (Graph 5.5), particularly in Poland, while at the same time consumption of fresh apples *per capita* keeps on decreasing. Efforts are being made to limit this trend, such as promotion campaigns and the EU school fruit scheme. This implies that both net exports and use of apples for processing industries are expected to grow steadily in the coming decade following their current trends. Imports of fresh apples decreased in the last 10 years and are not expected to recover, while exports, affected by the Russian ban since 2014, are striving to find new outlets on the world market and should continue to do so.

Graph 5.5 • EU supply balance sheet for apples projected until 2026 (1 000 t)

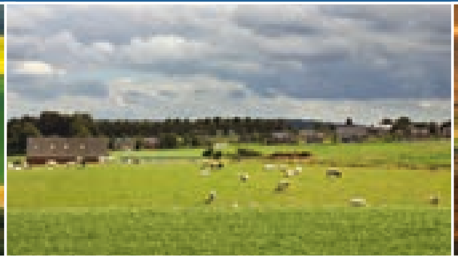


EU consumption of fresh **tomatoes** (Graph 5.6) is expected to remain stable or slightly decrease, with a stable net importing situation. However, the market for fresh tomatoes is characterised by strong segmentation into a large number of types of tomatoes with higher value added (in particular different miniature types, cherry and cocktail tomatoes). The stagnating production trend in quantity coincides therefore with an increasing trend in value: according to Euromonitor data on retail sales, quantities of tomatoes sold by retailers in France, Germany, Italy and Spain increased by 1% from 2006 to 2015 in quantity, but by 18% in value.

Graph 5.6 • EU supply balance sheet for fresh tomatoes projected until 2026 (1 000 t)



6. AGRICULTURAL INCOME

Agricultural income[38] per annual working unit (AWU) in the EU is expected to increase only marginally in the EU-15 (+1%) in real terms over the 2016-2026 outlook period. In the EU-N13, by contrast, a significant decrease of -5% is expected. As a result, the income gap between the EU-15 and the EU-N13 will not close further and remains substantial.

Total factor income in 2026 equals the 2014-2016 average as the 17% increase in total value of production by 2026 (as compared with the 2014-2016 average) virtually covers the 22% rise in costs. Therefore, the expected small increase in real income per AWU is due to a continued outflow of labour as a result of structural change.

Given the large number of small farms and the age of farmers in both the EU-15 and the EU-N13, structural change will continue over the outlook period, but at a slightly slower pace than in the pre-crisis period. The total EU agricultural labour force is expected to fall from 9.6 million AWU in 2015 to 7.9 million in 2026.

STRONG INCOME *PER CAPITA* INCREASED BEFORE THE CRISIS

Over the past decade (2005-2015), EU agricultural income per AWU increased in both nominal and real terms. This is the result of a moderate expansion in nominal income combined with a sharp reduction in the total workforce employed in agriculture.

Over this period, average growth in real agricultural income per AWU has been considerable, at 2.7% a year on average. However, the income pattern was relatively volatile, driven mainly by fluctuations in agricultural commodity prices. During the economic crisis, agricultural income fell substantially, by 9% in 2009 alone. This was followed by a strong rise of 27% between 2009 and 2013 driven by increased agricultural prices. In 2014 and 2015, income fell slightly again, by 3.6% in total, driven by low prices. Overall, between 2011 and 2015 real agricultural income per AWU remained fairly stable around EUR 15 000 per AWU, an increase of EUR 3 000 compared to 2001.

In relative terms, agricultural income is rising faster in the EU-N13 than in the EU-15. While real agricultural income per AWU in the EU-15 was 6% higher in 2015 than in 2001, in the EU-N13 it increased by 70%. This was mainly a result of the higher prices in the EU single market; greater public support for the farm sector, in particular by the progressive implementation of CAP payments, which now are fully deployed; and a substantial decline in the agricultural workforce.

The gap in real agricultural income, however, remains wide and stable in absolute terms: EUR 24 000 per AWU in the EU-15 in 2015 against EUR 5 300 in the EU-N13.

THE PROSPECTS POINT TOWARDS INCOME PER CAPITA STABILISATION

Total agricultural income is expected to decline considerably in real terms over the outlook period (-14%). However, real agricultural income per AWU will increase slightly due to further structural change and continued reduction of the labour force. Higher income growth together with less labour outflow in the EU-15 compared to the EU-N13 results in a stable but substantial income per AWU gap between the two.

SOME METHODOLOGICAL CONSIDERATIONS

The medium-term prospects for agricultural income have been calculated on the basis of the projections for the main agricultural markets presented in the earlier chapters and of the economic accounts for agriculture (EAA), which formed the statistical background for this analysis on agricultural income.

The results should be interpreted with several caveats specific to the income estimates. Key assumptions had to be made as to the prospects for agricultural sectors not covered by the outlook (such as fruit and vegetables, olive oil and wine), for the rate of fixed capital consumption and the pace of structural change in the next 10 years. The value of production for the main arable crops and animal products is derived directly from expected changes in producer prices and quantities produced along the next 10 years in the outlook. For products not covered in the model, which represent about 36% of total production value, the value of production is assumed to follow EU-15 and EUN-13 GDP growth rate and the expected changes in value of production of the commodities for which projections are made. The value of production of agricultural services (about 8% of the total) is assumed to follow the same linear trend as in 2000-2015.

Agricultural income (or total factor income) is obtained by subtracting intermediate costs and depreciation from the value of production, adding subsidies and deducting taxes. The main intermediate costs are:
- seeds (5% of intermediate costs in 2015);
- feed (36%);
- energy and fertilisers (19%);
- other costs (40%), such as plant protection products, maintenance of materials and buildings and services.

The depreciation of fixed capital, such as equipment and buildings, is a function of the increase in production and inflation. Subsidies include all coupled and decoupled payments, including State aid and production-related rural development support (e.g. for areas with natural constraints) but no investment subsidies. Over the outlook period, the subsidy component of agricultural income is expected to change in line with direct payment ceilings following the CAP reform. However, throughout the projected period, direct payments in the EUN-13 will no longer increase as much as in the previous decade. The distribution between coupled and decoupled payments takes into account the choices of the Member States.

LABOUR FORCE OUTFLOW AT LOWER PACE...

Agricultural workforce developments (a key factor for estimating agricultural income per AWU) are assumed to follow a downward trend in both the EU-15 and the EU-N13 given the large number of small farms and the age of farmers in both the EU-15 and the EU-N13.

However, in contrast to the past trend, the decrease in the labour force has recently slowed down in some Member States, mainly as a result of the economic crisis. Major agricultural countries such as Poland (1.9 million AWU in 2015) and Romania (1.3 million), but also Hungary (0.46 million), Lithuania (0.15 million), Slovenia (0.08 million), Denmark (0.5 million) and Greece (0.45 million) saw the labour decline come to a temporary halt in the wake of the economic crisis. In Ireland and the UK the labour force in agriculture has even increased (by 5% and 3% respectively).

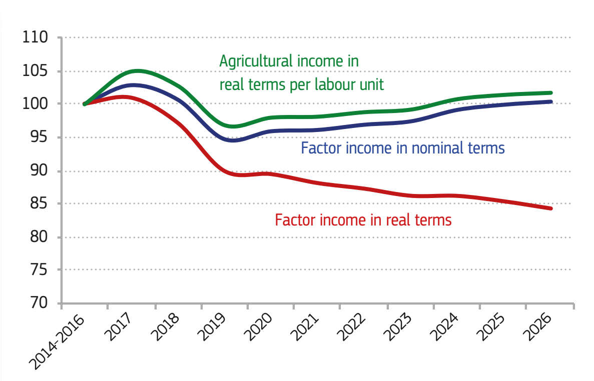
For this reason, the growth curves have been adapted to better reflect Member State-specific situations. In the past, growth curves for all Member States were based on the same period (from 2005 onwards). The period considered now is Member State-specific, based on observed trend breaks. The total EU agricultural labour force (including temporary labour) is expected to shrink further from 9.6 million AWU in 2015 to 7.9 million in 2026. It would have been 6.1 million AWU in 2026 if the pre-crisis (2001-2009) rate of decline had been maintained. If the temporary post-crisis (2010-2015) trend were to continue, the total EU agricultural labour force would reach 8.2 million AWU.

Under this assumption on labour force, the overall medium-term trend for agricultural income in real terms *per capita* is expected to be slightly positive (Graph 6.1). In 2026, real agricultural income per AWU is expected to be 2% above the 2014-2016 average, an average increase of 0.2% a year. This positive trend is the result of a steady drop in the workforce employed in agriculture (-17%), which offsets the expected deterioration in total factor income in real terms (-16%).

... WHILE REAL FACTOR INCOME FURTHER DETERIORATES

With the value of production not able to keep pace with increasing costs, total agricultural income in real terms is, however, going down.

Graph 6.1 • Change in EU agricultural income in the EU (2014-2016 average = 100)



On the revenue side, the total value of production[39] increases by 17% as compared with the 2014-2016 average. Growth in modelled commodities lags somewhat behind (+14%), with the main contributors being dairy (+24%), pigmeat (+18%) and eggs (+32%), while value of production decreases for sugar beet (-7%) and durum wheat (-1%). Non-modelled crops (+19%) and agricultural services (+34%) increase faster, linked to their past trend and the positive projection for GDP development.

On the cost side, the share of total costs increases further, from 76% to 79% of the level of total revenue. Over the outlook period, depreciation increases by 26%. After a drop at the beginning of the outlook period, driven by low commodity prices, seed and feed costs accelerate again towards the end of the outlook period. Costs for energy and fertilisers, heavily influenced by the crude oil price and exchange rate, start low at the beginning of the outlook period, increase steadily from 2017 onwards, and surpass the high level of 2013 again in 2018. Other intermediate costs, closely following the consumer price index, continue to increase (by 26% by 2026).

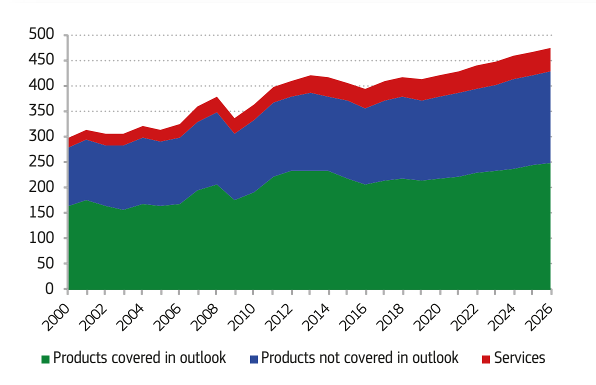
38 Agricultural income encompasses the total value of production, subsidies minus taxes, the costs of intermediate inputs and the depreciation of farm capital. The total labour force active in agriculture is expressed in annual full-time equivalents.

39 In nominal terms.

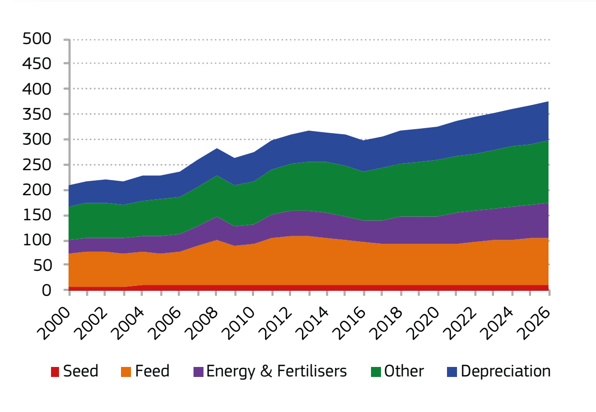
Consequently, the net value added[40] only increases marginally. In nominal terms, net value added increases by 2 % from the 2014-2016 average.

Real agricultural income per AWU in the EU is not expected to follow a steady pattern (Graph 6.1). In 2017, the value of production is expected to recover from the low in 2016 as prices for dairy normalise again, while maize and common wheat production resume after the poor harvest in 2016. The effect of low worldwide prices is tempered somewhat by the remaining depreciation of the euro against the US dollar. However, sugar prices decline with expiry of the quota arrangements, while cereals and meat prices also remain rather low. The main dip in income could occur in 2018 and 2019, when the euro is assumed to re-appreciate against the dollar, inflation comes back to its structural path of 1.9% per year and crude oil prices keep on recovering. Especially in 2019, when factor income in nominal terms is lowest, both animal and crop prices suffer, up to 3% for dairy, 5% for poultry and common wheat and even 8% for rapeseed and sunflower seed. Intermediate costs, especially those influenced mainly by inflation, react faster to the macroeconomic changes than agricultural prices, pushing factor income down. A further increase of agricultural prices beyond 2020, e.g. for pigmeat, eggs, oilseeds and coarse grains enables the trend of real income per AWU to reverse as from that date.

Graph 6.2 • EU value of production (EUR billion)



Graph 6.3 • EU intermediate costs and depreciation (EUR billion)

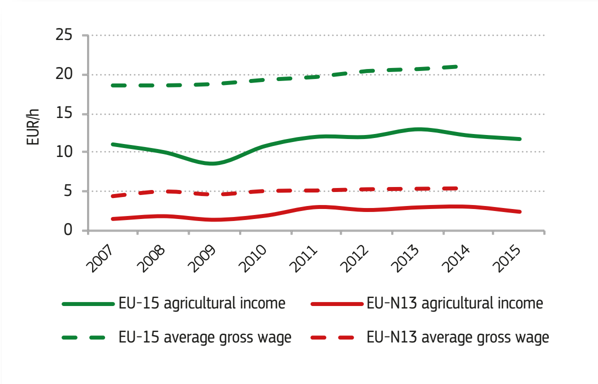


40 Value of production minus intermediate costs and depreciation.

DECREASING CONVERGENCE WITHIN THE EU

Average income trends for the EU-28 hide significant differences between the figures for the EU-15 and the EU-N13 (Table **6.1**). In the EU-15, real agricultural income per AWU is expected to stabilise by 2026 at the 2014-2016 average, whereas in the EU-N13 it is expected to decrease by -5 %. Consequently, the gap between absolute levels in the EU-15 and the EU-N13 will remain substantial (EUR 19 000, more than three times the expected EU-N13 *per capita* income). A similar gap is also a reality for the average wage throughout the economy (Graph 6.4).

Graph 6.4 • Average wage and agricultural income, in EU-15 and EU-N13 (EUR per hour)



Source: Adapted from Agricultural Context Indicators, C26, DG Agriculture and Rural Development

This is due to different factors interacting. The total agricultural labour force is currently about equally distributed between the EU-15 and the EU-N13 at around 4.7 million AWU. Although the pace of structural change is faster in the EU-N13, labour outflow has slowed down in the aftermath of the economic crisis. The total labour force in AWU is expected to drop in the EU-N13 to 3.8 million AWU by 2026, falling below that of the EU-15 (4.1 million), but at a slower pace than anticipated in previous outlooks.

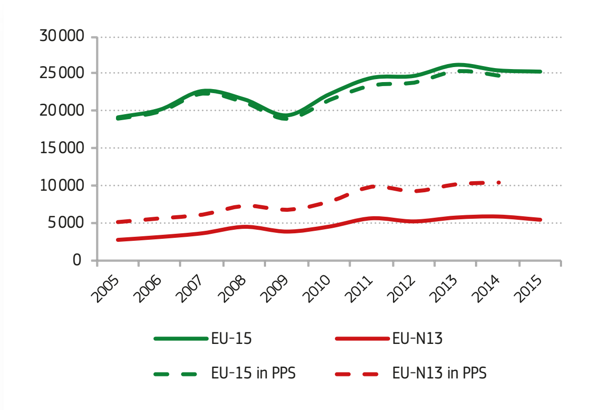
At the same time, the EU-N13 is expected to raise the value of production by 22 % from the 2014-2016 base, against only 16% in the EU-15. The difference is due mainly to a higher production increase in the EU-N13, while prices also converge.

The increase of production, however, comes with a stronger relative deterioration of costs in the EU-N13. While intermediate costs only rise by 19 % in the EU-15, they rise by 33 % in the EU-N13, linked to higher production growth and inflation. Feed costs increase faster, linked to stronger growth in the animal production sector. Energy and fertiliser costs are also expected to increase faster (57 % against 47 % in the EU-15). Depreciation, also linked to inflation, also accelerates faster (37 % against 24 % in the EU-15).

The 'external convergence' objective of the CAP, aimed at a fairer distribution of direct payments among Member States, contributes somewhat towards counterbalancing this trend, although subsidies in EU-N13 increase less than in the past.

The question remains whether this drive towards higher production and hence higher costs will trigger a stronger restructuration in the EU-N13 than anticipated here. However, when expressed in purchasing power parity (Graph 6.5), the gap in agricultural income per AWU is currently closing more rapidly, which might indicate that a small deterioration in real terms does not necessarily mean deterioration in purchasing power.

Graph 6.5 • Factor income per labour force in purchasing power standard (PPS, EUR/year)

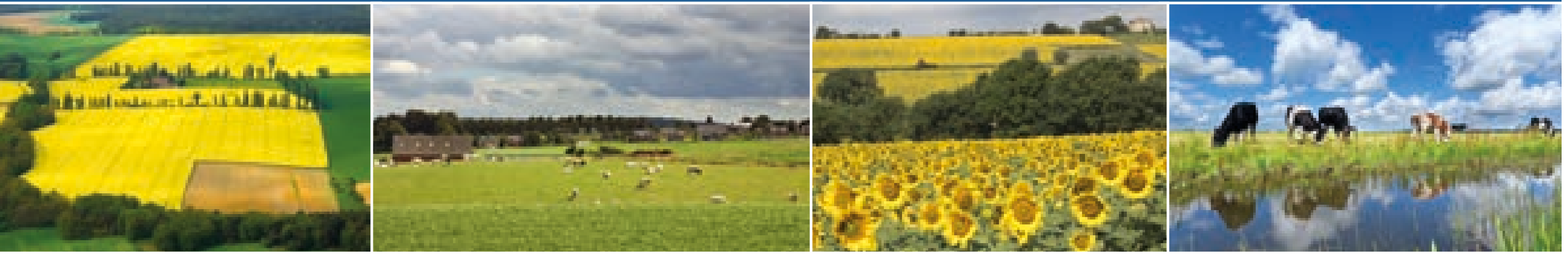


Source: DG AGRI calculations based on EAA

Table 6.1 • Outlook for agricultural income in the EU, 2016-2026 (2014-2016 average = 100)

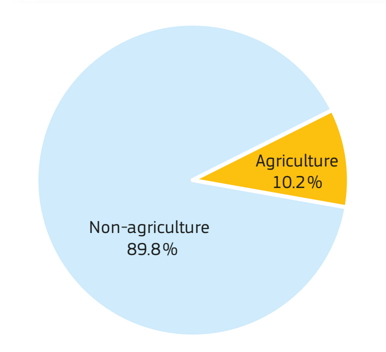
	2014-16	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Factor income in nominal terms											
EU-28	**100**	**103**	**101**	**95**	**96**	**96**	**97**	**97**	**99**	**100**	**100**
EU-15	100	103	102	96	98	98	99	99	101	102	102
EU-N13	100	100	95	88	88	89	90	90	92	92	93
Factor income in real terms											
EU-28	**100**	**101**	**97**	**90**	**89**	**88**	**87**	**86**	**86**	**85**	**84**
EU-15	100	102	98	92	91	90	89	88	88	87	86
EU-N13	100	98	92	83	82	81	80	79	78	77	76
Labour input											
EU-28	**100**	**96**	**94**	**93**	**91**	**90**	**88**	**87**	**85**	**84**	**83**
EU-15	100	97	95	94	93	91	90	89	88	86	85
EU-N13	100	95	93	92	90	88	86	85	83	82	80
Agricultural income in real terms per labour unit											
EU-28	**100**	**105**	**103**	**97**	**98**	**98**	**99**	**99**	**101**	**101**	**102**
EU-15	100	105	103	97	98	98	99	99	100	101	101
EU-N13	100	103	98	90	91	92	92	93	94	95	95

7. ENVIRONMENTAL ASPECTS



The environmental analysis below is based on the 2016 CAPRI baseline[41] that provides a medium-term outlook for the EU and global agricultural commodity markets. CAPRI is a comparative static partial equilibrium model of the agricultural sector[42]. The CAPRI baseline is aligned to the EU outlook of the previous year, providing harmonised projections for the main agricultural commodities (including land-use and herd sizes) at the Member State and regional level. The CAPRI baseline covers current CAP policies, assuming the continuation until 2025 of revealed CAP post-2013 Member State policy options, thus reflecting the impact on regional agricultural output development, including for livestock herd size, with a direct impact on environmental indicators.

Graph 7.1 • Total GHG emissions in EU28 in 2014[43]



Source: EEA[44] (2016)

41 The 2016 CAPRI baseline is calibrated to the mid-term outlook of the European Commission published in 2015, and provides projections for the agricultural sector for the year 2025.

42 www.capri-model.org

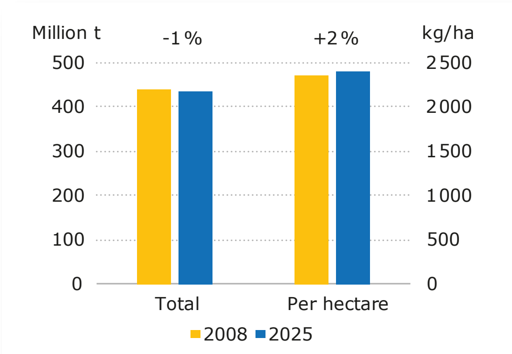
43 Land Use, Land Use Change and Forestry (LULUCF) net removals are not included in total greenhouse gas emissions. Emissions from agricultural transport and energy use are excluded, as they are not part of the agricultural sector by the current IPCC reporting guidelines.

44 EEA (2016): 'National emissions reported to the UNFCCC and to the EU Greenhouse Gas Monitoring Mechanism'. European Environment Agency. http://www.eea.europa.eu/data-and-maps/data/national-emissions-reported-to-the-unfccc-and-to-the-eu-greenhouse-gas-monitoring-mechanism-12

In the following we present an environmental analysis of the medium-term market developments of EU agricultural markets based on a set of environmental indicators provided by CAPRI, including non-CO_2 and ammonia emissions and the change in the nitrogen balance. The results of this analysis must be taken with cautious as this modelling exercise does not take into account direct environmental and climate restrictions in place at EU and national level.

According to the exercise referred to above, total non-CO_2 GHG emissions from agriculture are expected to decrease by 2025 (-1 %) compared to the reference year 2008, but GHG emissions per ha are expected to increase (+2 %). This is linked to an intensification of arable crops and fodder as well as of animal production on a decreasing total UAA (-3 %).

Graph 7.2 • Total expected GHG emissions in 2025 (vs 2008) (million t and kg/ha)



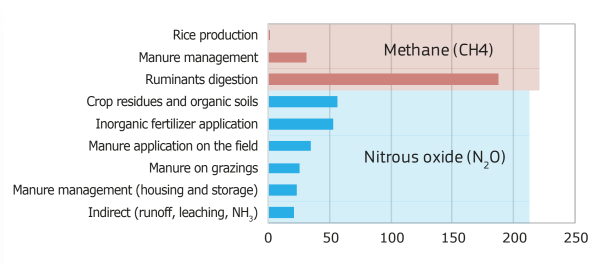
Source: 2016 CAPRI baseline

In 2025, livestock continues to be responsible for nearly all methane (CH4) emissions from agriculture, the biggest share coming from ruminants' digestion (enteric fermentation). The contribution of rice cultivation is very small (1 % of total emissions) due to the small area of rice in the EU-28.

The main sources of emissions for nitrous oxide (N2O) are related to crop production, mainly inorganic fertiliser application, crop residues and cultivation of organic soils (or histosols).

Overall, 51 % of N2O emissions in 2025 are associated with crops and grassland. Manure management accounts for 23 % of N2O emissions (housing and storage 11 % and manure on grazing land 12 %), while the rest (26 %) corresponds to manure fertilisation of fields and indirect emissions.

Graph 7.3 • Greenhouse gas emissions sources in EU-28 in 2025 (million t CO_2 eq)

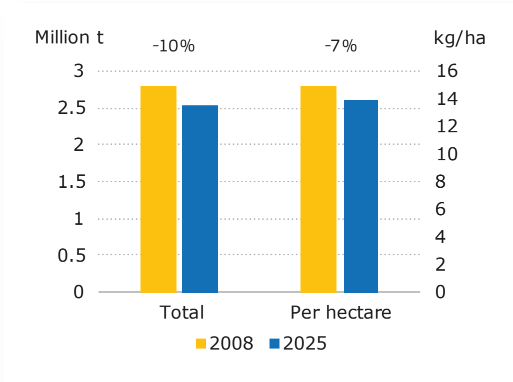


Source: 2016 CAPRI baseline

Animal sectors contribute directly to 72 % of the non-CO_2 GHG emissions of agriculture in 2025. Manure on the field has been included under animal activities. Crop and fodder areas generate the residual 28 % of GHG emissions and part of these emissions are linked to the production of feed.

Ammonia emissions[45] are expected to decrease, both in total and per ha. This is influenced both by the presumed changes in manure management techniques and by the decrease in the total number of head, particularly in the dairy cattle.

Graph 7.4 • Total expected ammonia emissions in 2025 (vs 2008) (million t and kg/ha)

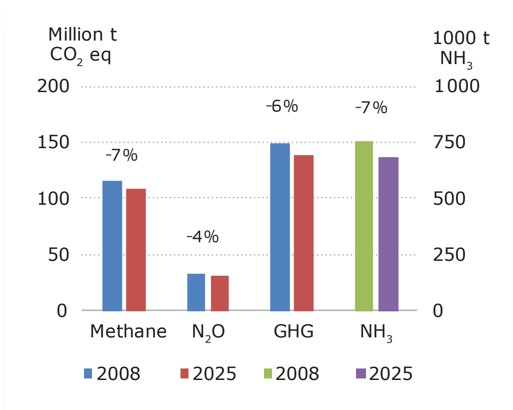


Source: 2016 CAPRI baseline

Total dairy GHG emissions (CH4, N2O) as well as ammonia are expected to decrease (-6 % and -7 % respectively by 2025 compared to 2008).

45 Ammonia (NH3) is a gas produced by the decay of organic vegetable matter and from the excrement of humans and animals. When released into the atmosphere, ammonia increases the level of air pollution. Once deposited in water and soils, it can potentially damage sensitive vegetation systems, biodiversity and water quality through acidification and eutrophication.

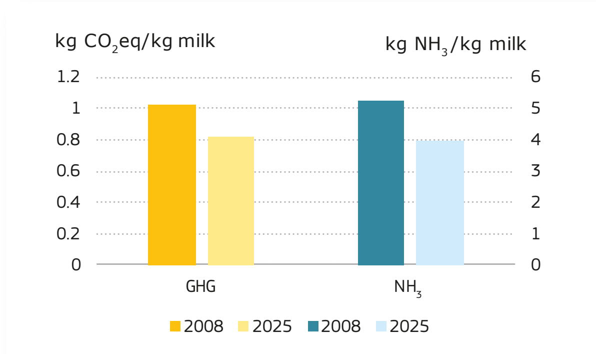
Graph 7.5 • Total expected GHG and ammonia emissions from dairy in 2025 (vs 2008)



Source: 2016 CAPRI baseline

These projections are due to the expected increased efficiency in milk production and decrease in number of animals involved in dairy production. As a consequence of the higher milk production per animal, the emissions per unit of milk produced decrease by -21 % for GHG and -24 % for ammonia.

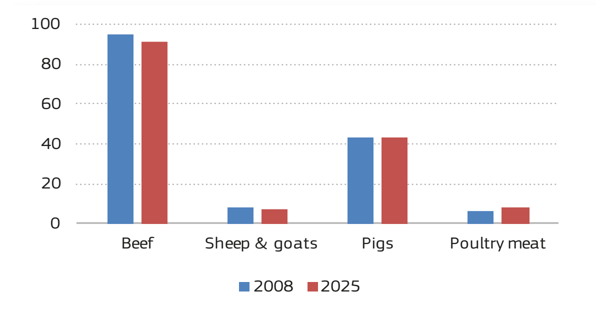
Graph 7.6 • Expected GHG and ammonia emissions per kg of milk in 2025 (vs 2008)



Source: 2016 CAPRI baseline

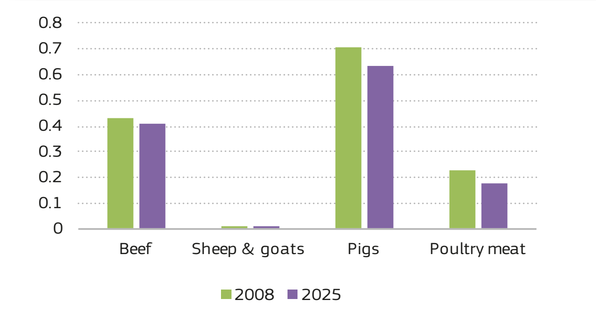
Total GHG emissions from meat are expected to decrease by -1 %, with a decrease in emissions of the beef and sheep and goat sectors (respectively by -4 % and -9 %) partly offset by an increase in particular of emissions of the poultry sector (+30 %), reflecting the production dynamics (Graph 7.7). Ammonia emissions from meat also decrease by -11 %, led by the poultry (-24 %) and pigmeat (-11 %) sectors. (Graphs 7.7 and 7.8)

Graph 7.7 • Total expected GHG emission from meat in 2025 (vs 2008) (million t CO_2 eq)



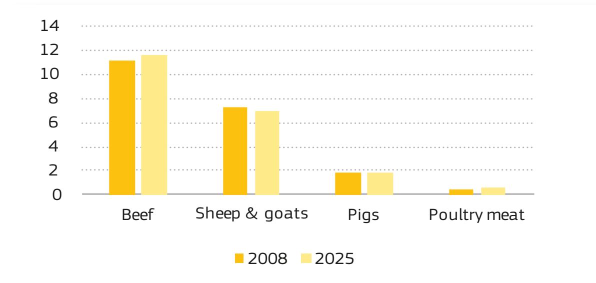
Source: 2016 CAPRI baseline

Graph 7.8 • Total expected Ammonia emission from meat in 2025 (vs 2008) (million t NH3)



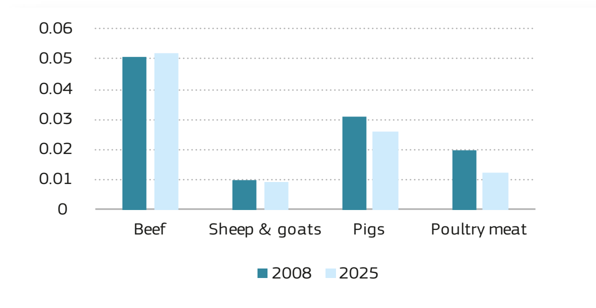
Source: 2016 CAPRI baseline

Graph 7.9 • Expected GHG emissions per kg of meat in 2025 (vs 2008) (kg CO_2 eq / kg of meat)



Source: 2016 CAPRI baseline

Graph 7.10 • Expected GHG emissions per kg of meat in 2025 (vs 2008) (kg CO_2 eq / kg of meat)

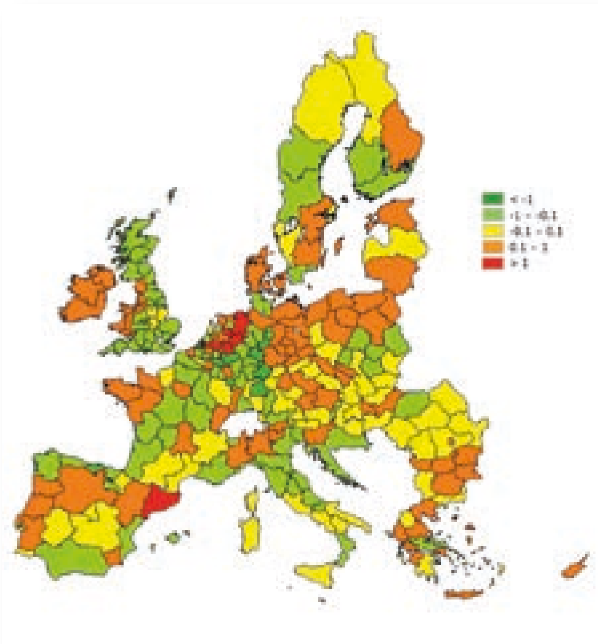


Source: 2016 CAPRI baseline

Changes in total emissions from meat activities are due both to changes in total production of meat and to emissions intensity (i.e. per kilo of meat produced). Graphs 7.10 and 7.11 compare the emissions of GHG and NH3 per kg of meat for the 4 main types of meat. Beef, sheep and goat show higher GHG emissions intensity than the other sectors, mainly due to their production of methane from ruminants' digestion[46], while for ammonia pigmeat and poultry sectors also show a significant intensity. Ammonia emission intensity is expected to decrease by 2025 for the pigmeat and poultry sectors (-37 % poultry, -15 % pigmeat) due to increased carcass weights and an improved manure management.

In 2025, maximum GHG emissions per ha (Map 7.2) would be recorded in Belgium and the Netherlands, with high levels also in north-western Germany, northern Italy and Ireland (above 5 t CO_2 eq/ha). Some of these regions correspond to those where GHG emissions are expected to increase between 2008 (reference year) and 2025 following the market projection (e.g. north-western Germany, the Netherlands and to a lesser extent Ireland and northern Italy), but other regions with less emissions per ha are also characterised by increasing emissions (e.g. north-eastern Spain) (Map 7.1). The factors driving these changes are mainly the increase in dairy and pork activities in those specific regions.

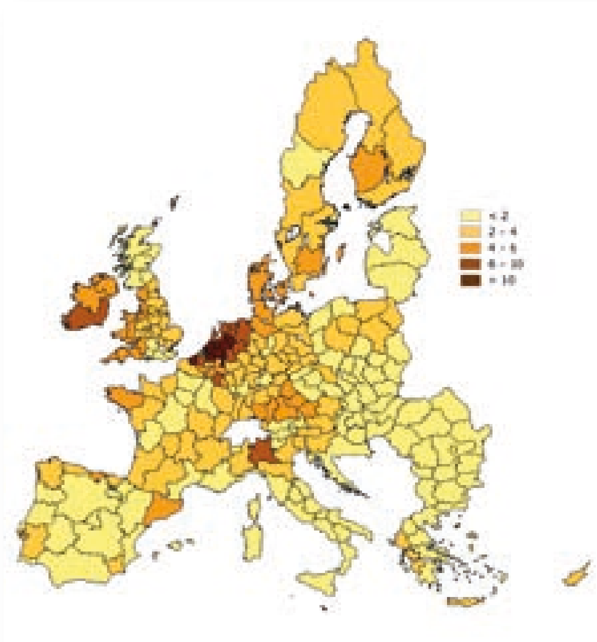
Map 7.1 • GHG change 2025-2008 (t CO_2 eq / UAA ha)



Source: DG JRC from 2016 CAPRI baseline

46 Cattle, sheep, goats and poultry intensity is slightly underestimated in these calculations as emissions from dairy activities (cows, ewes and goats) and from laying hens are not taken into account, while the meat produced from these animals is included. This assumption also explains the apparent beef meat emission intensity increase.

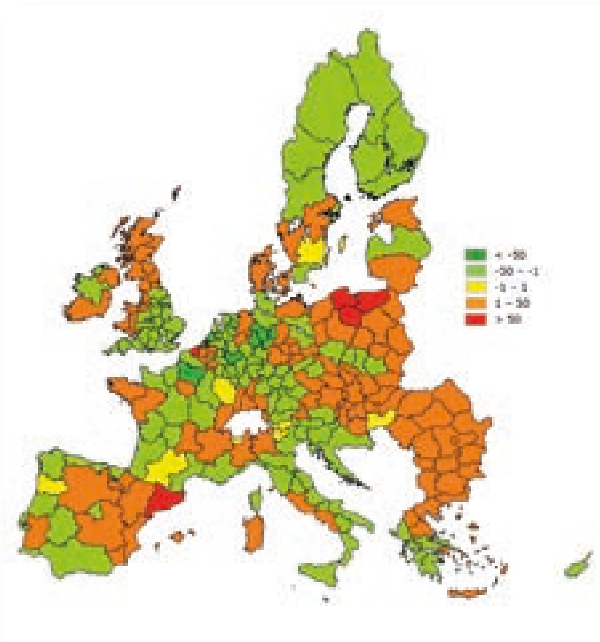
Map 7.2 • GHG emissions in 2025 (t CO_2 eq / UAA ha)



Source: DG JRC from 2016 CAPRI baseline

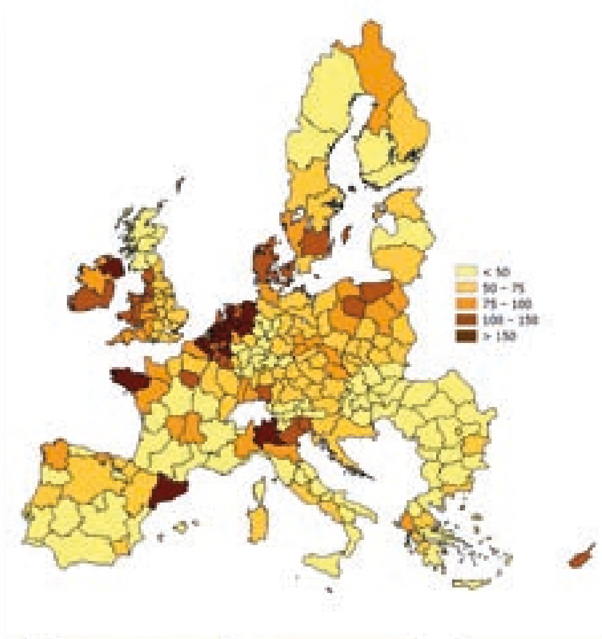
The nitrogen (N) surplus of a farm is the balance between inputs and outputs of N to and from the farm. It increases with mineral fertilisation as well as with animal feed or manure brought to the farm from outside. Several factors contribute to making it decrease, such as efficiency gains and cultivation of pulses. High levels of N surplus indicate higher losses of nitrogen to the atmosphere (ammonia and N2O emissions), and/or to water (nitrates and eutrophication).

Map 7.3 • N surplus change 2025-2008 (kg N / UAA ha)



Source: DG JRC from 2016 CAPRI baseline

Map 7.4 • N surplus 2025 (kg N / UAA ha)



Source: DG JRC from 2016 CAPRI baseline

For 2025, the average N surplus in EU-28 is close to 65 kg N/ha, similar to the value for 2008. However, decreases are expected in some regions (Map 7.3) mainly because of a reduction in herd size in those regions. By contrast, the average N surplus per hectare increases in other regions for different reasons, for example:

- in Catalonia (Spain) the increase coincides with a rise in pigmeat production (and a smaller increase in beef);
- in Lombardy (Italy) it coincides with a moderate increase in pigmeat and poultry;
- in Brittany (France), it is driven by a change of UAA with a stable animal production.

An increase in N surplus could be observed in some regions where there is already high N surplus (e.g. nitrate vulnerable zones). Map 7.4 illustrates for 2025 the regions with a high N surplus: north-western Germany, Belgium and Netherlands, Brittany, Catalonia, Lombardy and Northern Ireland. It must be stressed, however, that direct environmental restrictions (stemming from the Nitrate Directive or other EU or national rules) have not been taken into account in this modelling exercise. Such restrictions may end up reducing the extent of the N surplus by shifting production and N to other regions.

8. GENERAL CONSEQUENCE OF MACROECONOMIC AND YIELD UNCERTAINTIES

The baseline is a projection of agricultural market developments based on a set of assumptions which are considered plausible, based on a broad consultation of different market experts. Those assumptions are, however, only one of the possible futures as there is uncertainty surrounding key drivers of these markets. The partial stochastic analysis described in this section addresses part of these uncertainties and its potential impact on the projections. This kind of probabilistic analysis quantifies the range of possible outcomes around the central baseline value, by reproducing a portion of the past uncertainty observed for key factors.

Particular consideration is given to the uncertainty surrounding selected macroeconomic variables (GDP, GDP deflator, consumer price index, exchange rate and oil price) and crop yields. The analysis is partial as it does not capture variability possibly stemming from factors other than those selected (e.g. impact of an unforeseen food safety crisis or of a unilateral import ban).

EXOGENOUS SOURCES OF UNCERTAINTY

The selection of variables for which the uncertainty is represented is driven by two considerations, namely the need to cover the major sources of uncertainty for EU agricultural markets while keeping the analysis simple enough so that the main sources of uncertainty can be identified in each market. In total, 39 country-specific macroeconomic variables, the crude oil price and 85 country- and crop-specific yields, shown in Tables 1 and 2, are treated as uncertain within this partial stochastic framework.

The procedure followed consists of three steps:

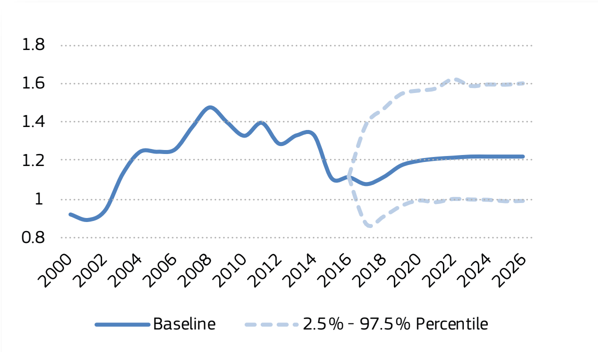
- (i) the quantification of the past uncertainty for each variable concerned;
- (ii) the generation of 1 000 sets of possible values for these stochastic variables;
- (iii) the execution of the AGLINK-COSIMO model for each of these 1 000 alternative scenarios. These three steps are explained in more detail below;
- Step (i): Past variability around the trend is quantified for each macroeconomic and yield variable separately.

For macroeconomic variables, the estimation is based on forecast errors for the period 2003-2015. In addition, the correlation between the forecast errors in each year for the different variables is considered (i.e. the correlation between forecast errors is used as a proxy to replicate the correlation between macroeconomic variables).

Table 8.1 summarises the simulated variability for macroeconomic variables in 2026. The variability of each outcome is measured through the coefficient of variation in 2026 (CV2026), defined as the ratio of the standard deviation of the variable relative to its mean, and calculated using the 2026 values. By selecting the last year of the outlook period (2026), the CV accounts for the accumulated uncertainty over time. It is assumed that stochastic variables follow in each year a multivariate normal distribution.

The coefficients of variation given in Table 8.1 show the variability relative to the mean and do not provide information about the actual level of the variable itself. It is therefore also useful to look at the 2.5th and 97.5th percentiles of the stochastic simulations (Graph 8.1 and Graph 8.2).

Graph 8.1 • Exchange rate USD/EUR



Graph 8.2 • Oil price in USD/bbl

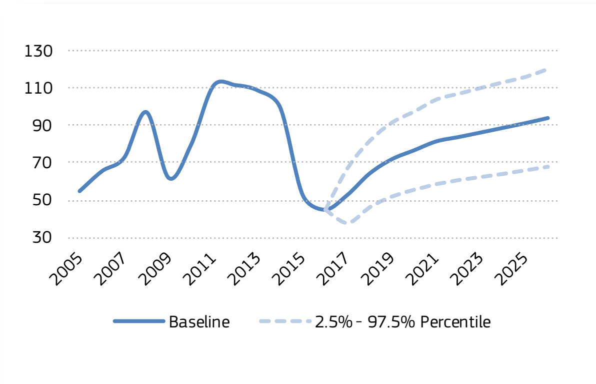


Table 8.1 • Coefficients of variation for macroeconomic variables in 2026 (%)

	CPI (consumer price index)	GDP deflator	GDP index	Exchange rate (national currency/USD)	Oil price
Australia	2	4	1	16	
Brazil	7	5	4	26	
Canada	1	2	2	11	
China	5	8	5	5	
EU1	2	3	2	12	
Japan	2	2	4	16	
New Zealand	3	2	2	14	
Russia	7	10	8	20	
USA	1	2	2		
World					17

For yields, the uncertainty is based on the deviation between the yield predicted by the model[47] and the actual yield during the period 1996 to 2016. Correlation between yield errors for a given commodity is calculated by regional block, but is assumed to be zero between countries in different regional blocks. The errors are assumed to follow a multivariate truncated normal distribution with different characteristics in each regional block. Regional blocks are shown in Table 8.2, as well as the coefficient of variation for the yields in year 2026.

Step (ii): 1 000 sets of possible values are generated for the stochastic variables

The second step involves generating 1 000 sets/scenarios of possible values for the stochastic variables, reproducing the variability determined in step (i) for each of the years of the period 2017-2026. During this period, both macroeconomic forecast errors and yield variations in a given year are independent of what occurred in the previous year.

Step (iii): the AGLINK-COSIMO model is run for each of the 1 000 alternative 'uncertainty' scenarios

The third step involves running the AGLINK-COSIMO model for each of the 1 000 alternative 'uncertainty' scenarios generated in step (ii). In order to better discern the effect of each source of uncertainty, this is first done only with yield uncertainties, then only with the macroeconomic uncertainties and finally combining both macroeconomic and yield uncertainties. This procedure yielded 1 000, 982 and 976 successful simulations respectively. In some cases the model does not solve; this can occur as the model is a complex system of equations and policies which, when exposed to extreme shocks for one or several of the stochastic variables, may not find a solution.

47 Ordinary least squares regression.

Table 8.2 • Coefficients of variation for crop yields in 2026 (%)

CV2026	Europe		Black Sea area			South America				North America			South-East Asia						
	EU-15	EU-N13	Kazakhstan	Ukraine	Russia	Argentina	Brazil	Paraguay	Uruguay	Canada	Mexico	US	Indonesia	Malaysia	Thailand	Vietnam	Australia	China	India
Common wheat	7	14	34	22	13	19	18	33	30	7	10	7					24	5	6
Durum wheat	15	40																	
Barley	6	13				52				6							22		
Maize	8	21		23		25	11	31	34	5	8	9						5	
Other Coarse grains				19				39	16										
Oats	7	12								6									
Rye	13	12																	
Other cereals	8	10																	
Rice	5											5			6	3		2	5
Other Oilseeds			41	16				40											
Soybean	12	23	22	21		18	8	24		7		6							
Rapeseed	10	21								7							26		
Sunflower seed	9	19			16	12													
Palm oil													9	8					
Sugar beet	9	12			14							8						11	
Sugar cane						15	6					8			11		11	10	9

MAIN IMPACTS OF MACROECONOMIC AND YIELD UNCERTAINTIES

This section presents briefly the global results of the uncertainty (partial stochastic) analysis. Some of the results were already presented in the previous sections (for example, the price fans shown in the description of baseline results for each sector).

Yield uncertainty overall affects the crop market balances. It directly alters production, hence demand, imports, exports and stocks will adjust accordingly to the impact on prices and form a new equilibrium. This effect is transferred to other commodities such as animal production (dairy and meat), mainly through feed, but the effect is diluted because of substitution effects.

Livestock production is affected similarly by both macroeconomic and yield uncertainties; important factors in these markets include the world crude oil price and the price of protein meals. For biofuels production, the main driver is the crude oil price, which has a direct impact on the consumption of biofuels as both are linked through policies such as the blending mandate. Imports and exports are mainly affected by macroeconomic uncertainty, specifically exchange rates, which affect the competitiveness of the EU-28 on world markets through relative prices. This affects mainly those sectors that are well integrated in world trade, such as dairy.

For crop prices in the EU-28, a stronger reaction comes from macroeconomic uncertainties than from yield variation. The effect of both sources of uncertainties simultaneously is the largest, although they are not additive. In some of the world's markets, yield plays a major role in the price variation. This is because the EU-28 has lower yield variation than other regions of the world (e.g. Argentina and the Black Sea region countries). The effect of the uncertainties comes together at the level of the EU farm income. The CV2026 income per AWU (annual working unit) due to macroeconomic uncertainty is 18.9 % (in nominal terms 19.3 %). For yield uncertainty the figure is 4.2 % (in nominal terms 4.2 %). For combined uncertainties, the figure is 19.8 % (in nominal terms 20.1 %).

Table 8.3 • Impact in 2026 of macroeconomic and yield uncertainties on production, consumption and trade of agricultural commodities, CV2026 (%)

CV2026 (%)	Production			Consumption			Exports			Imports		
	Macro	Yield	Combined	Macro	Yield	Combined	Macro	Yield	Combined	Macro	Yield	Combined
Cereals	**0.5**	**2.9**	**3.0**	**0.4**	**0.4**	**0.6**	**4.5**	**11.3**	**12.2**	**8.5**	**20.8**	**23.0**
Wheat	1.1	3.6	3.8	1.1	1.1	1.6	4.7	12.0	12.9	2.1	7.5	8.1
Coarse grains	0.3	3.2	3.2	0.9	0.9	1.3	5.7	12.4	13.4	12.1	28.7	32.3
Barley	0.5	2.9	2.9	0.6	1.2	1.3	3.9	15.2	15.7	0.7	1.8	1.9
Maize	0.4	5.9	5.9	1.6	1.7	2.4	12.5	13.6	18.6	12.6	29.9	33.9
Oilseeds	**1.0**	**3.9**	**3.9**	**0.7**	**1.5**	**1.6**	**7.7**	**23.1**	**24.1**	**1.8**	**4.0**	**4.4**
Sunflower	0.9	6.8	6.9	1.3	3.5	3.8	8.6	31.5	32.3	8.6	30.6	31.8
Rapeseed	1.1	5.1	5.2	0.8	2.3	2.5	10.7	34.7	36.4	4.3	13.2	13.6
Soybean	1.3	6.3	6.3	2.2	3.7	4.3				2.5	4.2	5.0
Protein meal	**0.6**	**1.4**	**1.5**	**0.9**	**1.2**	**1.5**	**1.6**	**3.4**	**3.8**	**1.6**	**1.4**	**2.1**
Veg. oils	0.5	1.4	1.5	1.8	1.3	2.2	4.3	4.8	6.2	3.7	3.1	4.6
Sugar	1.3	4.3	4.6	1.4	0.6	1.5	11.3	20.1	23.2	5.4	9.7	11.2
Ethanol	1.2	0.9	1.4	0.2	0.1	0.2	13.2	6.9	13.7	12.9	9.4	14.7
Biodiesel	4.7	3.2	5.4	4.8	3.2	5.5	18.8	11.2	22.1	9.7	5.7	11.3
Meat	**0.6**	**0.3**	**0.6**	**0.4**	**0.1**	**0.4**	**4.9**	**2.3**	**5.4**	**1.8**	**0.9**	**2.2**
Beef	0.5	0.5	0.7	0.6	0.2	0.7	6.1	3.4	6.8	6.9	3.9	8.6
Sheep meat	0.5	0.1	0.6	0.7	0.2	0.8	0.2	0.1	0.2	4.5	1.1	4.7
Pigmeat	1.2	0.4	1.2	1.1	0.1	1.1	6.8	3.1	7.4	4.7	0.8	4.9
Poultry meat	0.8	0.4	0.9	1.1	0.3	1.1	9.9	3.4	10.6	0.5	0.2	0.5
Milk	**0.4**	**0.3**	**0.5**									
Butter	0.7	0.5	0.8	0.4	0.3	0.5	6.8	3.9	7.8	5.8	4.6	7.4
Cheese	0.6	0.2	0.6	0.6	0.1	0.6	3.5	1.9	4.0	3.5	2.3	4.2
SMP	2.4	1.1	2.6	0.7	0.7	0.9	5.2	2.6	5.8			
WMP	2.4	1.8	3.0	0.6	0.2	0.7	4.9	3.5	6.1			

Table 8.4 • Impact in 2026 of macroeconomic and yield uncertainties on consumption by type of use of agricultural commodities, CV2026 (%)

CV2026 (%)	Consumption			Food use			Feed use			Biofuel use		
	Macro	Yield	Combined	Macro	Yield	Combined	Macro	Yield	Combined	Macro	Yield	Combined
Cereals	**0.4**	**0.4**	**0.6**	**0.3**	**0.3**	**0.4**	**0.6**	**0.5**	**0.8**	**1.7**	**1.2**	**1.9**
Wheat	1.1	1.1	1.6	0.4	0.4	0.5	2.2	2.6	3.5	5.3	5.8	8.1
Coarse grains	0.9	0.9	1.3	0.5	0.4	0.7	1.3	1.2	1.8	2.4	2.7	3.6
Oilseeds	**0.7**	**1.5**	**1.6**									
Protein meal	0.9	1.2	1.5				0.9	1.2	1.5			
Vegetable oils	1.8	1.3	2.2	1.6	1.3	2.1				4.8	3.2	5.4
Sugar Sugar beet	1.4	0.6	1.5	1.4	0.6	1.5				1.1	0.5	1.2
Meat	**0.4**	**0.1**	**0.4**	**0.4**	**0.1**	**0.4**						
Beef and veal	0.6	0.2	0.7	0.6	0.2	0.7						
Sheep meat	0.7	0.2	0.8	0.7	0.2	0.8						
Pigmeat	1.1	0.1	1.1	1.1	0.1	1.1						
Poultry meat	1.1	0.3	1.1	1.1	0.3	1.1						
Butter	0.4	0.3	0.5	0.4	0.3	0.5						
Cheese	0.6	0.1	0.6	0.6	0.1	0.6						
SMP	0.7	0.7	0.9	0.3	0.1	0.3	6.4	7.5	9.9			
WMP	0.6	0.2	0.7	0.6	0.2	0.7						

Table 8.5 • Impact in 2026 of macroeconomic and yield uncertainties on EU domestic and world prices of agricultural commodities, CV2026 (%)

CV2026 (%)	EU-28 domestic price			World price		
	Macro	Yield	Combined	Macro	Yield	Combined
Cereals	**8.8**	**5.4**	**10.1**	**6.6**	**5.7**	**8.9**
Wheat	9.7	5.9	11.2	6.2	5.4	8.5
Coarse grains	7.9	5.4	9.4	7.1	6.7	9.9
Barley	9.4	6.1	11.2	6.5	5.4	8.7
Maize	7.5	5.8	9.2	7.4	7.6	10.8
Oilseeds	**9.6**	**8.4**	**12.7**	**8.4**	**10.0**	**12.9**
Sunflower	8.8	8.6	12.4			
Rapeseed	9.9	9.7	13.8			
Soybean	11.4	12.1	16.6			15.5
Protein meal	9.4	6.3	11.3	3.7	8.2	8.9
Vegetable oils	9.9	6.5	11.9	6.5	12.1	11.0
Sugar (white)	10.8	4.7	11.4	3.2	3.1	10.9
Ethanol	12.8	5.5	12.9	14.4	3.9	18.0
Biodiesel	10.1	6.5	12.0	26.0	5.1	9.3
Meats	**10.6**	**2.8**	**10.7**	**6.8**	**2.6**	**7.3**
Beef and veal	11.6	4.1	11.9			
Sheep meat	9.5	1.3	9.5	6.6	1.2	6.8
Pigmeat	13.1	2.5	13.2			
Poultry meat	8.2	2.8	8.5	7.3	3.1	7.9
Milk	**7.6**	**2.6**	**7.9**			
Butter	7.5	3.1	8.0	4.3	3.7	8.9
Cheese	7.8	2.6	8.1	4.3	2.6	7.7
SMP	8.1	2.2	8.3	4.3	2.7	6.1
WMP	7.9	2.4	8.3	5.6	2.5	7.3

9. MARKET OUTLOOK DATA

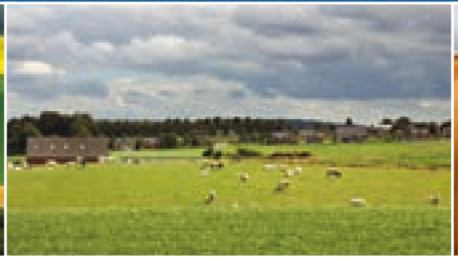



Table 9.1 • Area under arable crops in the EU (million ha)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Cereals	**57.6**	**57.9**	**57.3**	**57.3**	**57.3**	**57.2**	**57.1**	**57.0**	**57.0**	**57.0**	**57.0**	**57.0**	**57.0**	**57.0**
of which EU-15	34.9	35.2	34.7	34.7	34.8	34.8	34.7	34.7	34.7	34.8	34.8	34.8	34.8	34.8
of which EU-N13	22.7	22.8	22.6	22.7	22.6	22.4	22.4	22.3	22.3	22.2	22.2	22.2	22.2	22.2
Common wheat	23.4	24.4	24.3	24.2	24.2	24.1	24.1	24.1	24.2	24.2	24.3	24.3	24.4	24.5
Durum wheat	2.4	2.3	2.5	2.6	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.3
Barley	12.4	12.4	12.2	12.4	12.4	12.3	12.3	12.2	12.2	12.3	12.3	12.3	12.3	12.3
Maize	9.8	9.6	9.2	8.8	9.0	9.1	9.1	9.1	9.1	9.2	9.2	9.2	9.2	9.2
Rye	2.7	2.2	2.0	2.1	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.1	2.1	2.1
Other cereals	7.0	7.0	7.1	7.1	7.0	6.9	6.9	6.8	6.8	6.8	6.7	6.7	6.6	6.6
Rice	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Oilseeds	**11.9**	**11.5**	**11.5**	**11.4**	**11.4**	**11.3**	**11.2**	**11.2**	**11.1**	**11.0**	**10.8**	**10.7**	**10.6**	**10.5**
of which EU-15	6.4	6.1	6.0	6.0	5.9	5.9	5.8	5.8	5.8	5.7	5.6	5.6	5.5	5.5
of which EU-N13	5.5	5.5	5.5	5.5	5.4	5.4	5.4	5.4	5.3	5.3	5.2	5.1	5.1	5.0
Rapeseed	6.7	6.7	6.5	6.5	6.4	6.4	6.3	6.3	6.2	6.1	6.0	5.9	5.8	5.7
Sunseed	4.7	4.3	4.2	4.2	4.1	4.1	4.1	4.1	4.0	4.0	4.0	4.0	4.0	3.9
Soybeans	0.5	0.6	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Sugar beet	1.7	1.6	1.4	1.5	1.7	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4
Potatoes	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4
Protein crops	0.8	0.9	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Other arable crops	3.8	4.8	4.9	4.6	4.4	4.5	4.7	4.8	4.8	4.8	4.9	4.9	4.9	5.0
Fodder (green maize, temp. grassland etc.)	23.2	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.8	21.8
Utilised arable area	**101.1**	**100.5**	**100.2**	**100.1**	**99.9**	**99.7**	**99.6**	**99.5**	**99.4**	**99.3**	**99.2**	**99.1**	**99.0**	**98.9**
Set-aside and fallow land	7.0	6.8	6.7	6.6	6.6	6.6	6.5	6.4	6.3	6.2	6.1	6.0	6.0	5.9
Share of fallow land	*6.9%*	*6.8%*	*6.7%*	*6.6%*	*6.6%*	*6.6%*	*6.5%*	*6.4%*	*6.3%*	*6.3%*	*6.2%*	*6.1%*	*6.0%*	*6.0%*
Total arable area	**108.1**	**107.4**	**106.9**	**106.7**	**106.5**	**106.3**	**106.1**	**105.9**	**105.7**	**105.5**	**105.3**	**105.2**	**105.0**	**104.8**
Permanent grassland	58.1	58.3	58.5	58.3	58.2	58.0	58.0	57.8	57.7	57.6	57.5	57.4	57.3	57.2
Share of permanent grassland	*32.6%*	*32.9%*	*33.0%*	*33.0%*	*33.0%*	*33.0%*	*33.0%*	*33.0%*	*33.0%*	*33.0%*	*33.0%*	*33.0%*	*33.0%*	*33.0%*
Orchards and others	12.1	11.7	11.7	11.6	11.6	11.5	11.5	11.5	11.5	11.4	11.4	11.4	11.3	11.3
Total utilised agricultural area	**178.3**	**177.5**	**177.1**	**176.6**	**176.2**	**175.9**	**175.6**	**175.2**	**174.9**	**174.6**	**174.2**	**173.9**	**173.6**	**173.3**

Table 9.2 • EU cereals market balance (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**307.6**	**330.9**	**313.4**	**296.6**	**310.8**	**313.1**	**315.3**	**317.6**	**320.2**	**322.8**	**325.3**	**327.8**	**330.3**	**332.7**
of which EU-15	212.4	225.2	218.1	197.5	210.9	211.7	212.3	213.1	213.8	214.6	215.3	216.0	216.6	217.3
of which EU-N13	95.3	105.8	95.3	99.1	100.0	101.4	103.0	104.5	106.4	108.2	110.1	111.9	113.7	115.3
Consumption	**276.0**	**283.8**	**286.5**	**287.4**	**291.0**	**289.4**	**291.6**	**292.3**	**293.7**	**294.7**	**295.6**	**296.7**	**297.7**	**298.8**
of which EU-15	217.7	225.1	227.6	227.5	230.9	228.9	231.0	231.2	232.4	233.4	234.1	235.0	235.9	236.8
of which EU-N13	58.3	58.7	59.0	59.8	60.1	60.4	60.6	61.1	61.3	61.3	61.5	61.7	61.8	62.0
of which food and industrial	99.5	100.1	100.0	100.3	102.8	101.3	102.8	103.0	104.0	104.5	104.8	105.2	105.6	106.1
of which feed	164.9	172.0	174.4	174.8	175.3	174.8	175.4	175.9	176.6	177.3	178.0	178.6	179.3	179.9
of which bioenergy	11.6	11.8	12.1	12.2	12.9	13.2	13.4	13.4	13.1	12.9	12.9	12.8	12.8	12.8
Imports	19.2	15.6	20.5	20.6	19.7	19.5	19.2	19.2	19.3	19.3	19.4	19.5	19.9	20.0
Exports	43.5	51.7	50.8	36.1	38.9	40.8	42.9	44.2	45.3	47.2	49.0	50.6	52.4	53.2
Beginning stocks	32.8	40.2	51.2	47.8	41.5	42.1	44.5	44.6	45.0	45.5	45.7	45.8	45.8	46.0
Ending stocks	40.2	51.2	47.8	41.5	42.1	44.5	44.6	45.0	45.5	45.7	45.8	45.8	46.0	46.6
of which intervention	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stock-to-use ratio	*15%*	*18%*	*17%*	*14%*	*14%*	*15%*	*15%*	*15%*	*15%*	*16%*	*15%*	*15%*	*15%*	*16%*

Note: the cereals marketing year is July/June

Table 9.3 • EU wheat market balance (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**144.3**	**157.3**	**161.4**	**143.7**	**152.0**	**152.8**	**154.0**	**155.0**	**156.2**	**157.4**	**158.7**	**160.1**	**161.4**	**162.8**
of which EU-15	104.7	113.9	116.4	98.6	108.3	108.6	109.0	109.3	109.5	109.8	110.1	110.5	110.8	111.1
of which EU-N13	39.6	43.5	44.9	45.1	43.7	44.2	45.0	45.7	46.7	47.6	48.6	49.6	50.6	51.6
Consumption	**116.2**	**126.1**	**130.0**	**130.5**	**129.2**	**128.1**	**128.6**	**128.1**	**128.4**	**128.4**	**128.3**	**128.4**	**128.3**	**128.6**
of which EU-15	95.5	104.1	107.6	107.9	106.7	105.5	106.1	105.6	105.9	105.9	105.9	105.9	105.9	106.2
of which EU-N13	20.7	21.9	22.5	22.6	22.5	22.6	22.5	22.5	22.5	22.5	22.4	22.4	22.4	22.3
of which food and industrial	68.8	68.7	69.0	70.0	70.2	70.0	70.6	70.4	70.9	70.9	71.1	71.2	71.3	71.6
of which feed	43.0	52.5	56.1	56.1	54.3	53.3	53.2	53.1	53.1	53.1	53.1	53.1	53.0	52.9
of which bioenergy	4.4	4.9	4.9	4.5	4.7	4.8	4.8	4.6	4.3	4.4	4.2	4.1	4.1	4.0
Imports	3.7	5.7	6.6	6.1	5.5	5.2	5.3	5.3	5.3	5.3	5.4	5.4	5.4	5.4
Exports	31.1	34.6	33.9	24.8	27.8	29.1	30.4	31.7	32.9	34.4	35.8	37.1	38.5	39.5
Beginning stocks	10.9	11.6	14.0	18.1	12.5	13.1	14.0	14.2	14.7	14.9	15.0	14.9	14.8	14.7
Ending stocks	11.6	14.0	18.1	12.5	13.1	14.0	14.2	14.7	14.9	15.0	14.9	14.8	14.7	14.9
of which intervention	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: the wheat marketing year is July/June

Table 9.4 • EU coarse grains market balance (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	163.3	173.6	152.0	152.9	158.9	160.2	161.3	162.6	164.0	165.4	166.6	167.8	168.9	169.9
of which EU-15	107.7	111.3	101.7	98.9	102.6	103.1	103.3	103.8	104.3	104.8	105.1	105.5	105.9	106.2
of which EU-N13	55.7	62.3	50.3	54.0	56.3	57.1	58.0	58.8	59.8	60.6	61.5	62.3	63.1	63.7
Consumption	159.8	157.8	156.5	156.8	161.9	161.3	163.0	164.2	165.3	166.3	167.3	168.3	169.4	170.3
of which EU-15	122.2	121.0	120.0	119.6	124.3	123.4	124.9	125.6	126.5	127.5	128.2	129.1	130.0	130.6
of which EU-N13	37.6	36.8	36.5	37.3	37.6	37.9	38.1	38.6	38.8	38.9	39.1	39.2	39.5	39.7
of which food and industrial	30.6	31.4	31.0	30.4	32.6	31.4	32.3	32.6	33.1	33.6	33.7	34.0	34.4	34.5
of which feed	121.9	119.5	118.3	118.7	121.1	121.5	122.2	122.8	123.5	124.2	124.9	125.6	126.4	127.0
of which bioenergy	7.3	6.9	7.2	7.8	8.2	8.5	8.5	8.8	8.8	8.5	8.7	8.7	8.7	8.8
Imports	15.5	9.9	13.9	14.5	14.1	14.2	14.0	14.0	14.0	14.0	14.0	14.1	14.5	14.6
Exports	12.4	17.1	16.8	11.3	11.1	11.7	12.4	12.5	12.4	12.8	13.2	13.4	13.9	13.8
Beginning stocks	21.9	28.5	37.2	29.7	29.0	29.1	30.6	30.4	30.3	30.5	30.7	30.9	31.0	31.2
Ending stocks	28.5	37.2	29.7	29.0	29.1	30.6	30.4	30.3	30.5	30.7	30.9	31.0	31.2	31.7
of which intervention	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: the coarse grains marketing year is July/June

Table 9.5 • EU common wheat market balance (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**136.2**	**149.7**	**152.8**	**135.3**	**143.4**	**144.3**	**145.5**	**146.5**	**147.7**	**149.0**	**150.3**	**151.6**	**153.0**	**154.4**
of which EU-15	96.8	106.4	108.1	90.6	100.0	100.4	100.7	101.1	101.3	101.6	101.9	102.3	102.7	103.0
of which EU-N13	39.4	43.3	44.7	44.7	43.5	44.0	44.7	45.5	46.4	47.4	48.3	49.3	50.3	51.3
Consumption	**107.5**	**117.4**	**121.1**	**121.5**	**120.1**	**118.9**	**119.4**	**118.8**	**119.1**	**119.1**	**119.1**	**119.1**	**119.0**	**119.3**
of which EU-15	88.7	97.3	100.5	100.8	99.6	98.3	98.8	98.3	98.6	98.6	98.6	98.6	98.7	99.0
of which EU-N13	18.8	20.0	20.5	20.6	20.6	20.6	20.6	20.5	20.5	20.5	20.5	20.5	20.4	20.4
of which food and industrial	60.2	60.1	60.3	61.2	61.4	61.1	61.5	61.3	61.9	61.9	62.0	62.1	62.2	62.5
of which feed	42.9	52.4	55.8	55.8	54.1	53.1	53.0	52.9	52.9	52.9	52.9	52.9	52.8	52.7
of which bioenergy	4.4	4.9	4.9	4.5	4.7	4.8	4.8	4.6	4.3	4.4	4.2	4.1	4.1	4.0
Imports	1.8	2.9	4.1	4.0	3.6	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Exports	30.0	33.3	32.7	23.5	26.3	27.7	28.9	30.2	31.4	32.9	34.3	35.7	37.0	38.0
Beginning stocks	10.6	11.1	13.0	16.1	10.4	11.0	11.9	12.2	12.8	13.2	13.3	13.2	13.2	13.2
Ending stocks	11.1	13.0	16.1	10.4	11.0	11.9	12.2	12.8	13.2	13.3	13.2	13.2	13.2	13.4
of which intervention	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yield	**5.8**	**6.1**	**6.3**	**5.6**	**5.9**	**6.0**	**6.0**	**6.1**	**6.1**	**6.1**	**6.2**	**6.2**	**6.3**	**6.3**
of which EU-15	6.8	7.1	7.2	6.1	6.7	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
of which EU-N13	4.3	4.6	4.8	4.7	4.7	4.7	4.8	4.9	5.0	5.1	5.2	5.3	5.4	5.5
EU price in EUR/t	197	179	160	165	166	168	160	159	162	165	167	168	168	170
World price in EUR/t	240	205	201	194	196	195	185	184	187	190	192	194	194	196
World price in USD/t	318	272	223	216	216	215	217	220	226	231	234	235	236	238
EU intervention price in EUR/t	101	101	101	101	101	101	101	101	101	101	101	101	101	101

Note: the common wheat marketing year is July/June

Table 9.6 • EU durum wheat market balance (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**8.1**	**7.7**	**8.6**	**8.4**	**8.5**	**8.5**	**8.5**	**8.5**	**8.5**	**8.4**	**8.4**	**8.4**	**8.4**	**8.4**
of which EU-15	7.9	7.5	8.3	8.0	8.3	8.3	8.3	8.2	8.2	8.2	8.2	8.2	8.1	8.1
of which EU-N13	0.2	0.2	0.3	0.4	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
Consumption	**8.7**	**8.7**	**9.0**	**9.0**	**9.0**	**9.1**	**9.2**	**9.2**	**9.2**	**9.2**	**9.3**	**9.3**	**9.3**	**9.3**
of which EU-15	6.8	6.8	7.0	7.1	7.1	7.2	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
of which EU-N13	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0
of which food and industrial	8.6	8.6	8.7	8.8	8.8	8.9	9.0	9.0	9.0	9.0	9.1	9.1	9.1	9.1
of which feed	0.1	0.1	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
of which bioenergy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Imports	1.9	2.8	2.5	2.1	1.9	2.0	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3
Exports	1.1	1.2	1.2	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Beginning stocks	0.3	0.5	1.1	2.0	2.2	2.1	2.0	1.9	1.9	1.8	1.7	1.6	1.6	1.5
Ending stocks	0.5	1.1	2.0	2.2	2.1	2.0	1.9	1.9	1.8	1.7	1.6	1.6	1.5	1.4
Yield	**3.4**	**3.3**	**3.5**	**3.2**	**3.4**	**3.4**	**3.4**	**3.5**	**3.5**	**3.5**	**3.5**	**3.5**	**3.6**	**3.6**
of which EU-15	3.4	3.3	3.5	3.1	3.4	3.4	3.4	3.4	3.5	3.5	3.5	3.5	3.6	3.6
of which EU-N13	3.7	4.1	4.3	4.4	3.6	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8	3.8

Note: the durum wheat marketing year is July/June

Table 9.7 • EU barley market balance (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**61.1**	**60.7**	**61.2**	**60.1**	**59.9**	**60.0**	**60.2**	**60.3**	**60.8**	**61.3**	**61.8**	**62.2**	**62.7**	**63.2**
of which EU-15	49.9	48.8	49.7	48.3	48.6	48.6	48.7	48.7	49.0	49.3	49.6	49.9	50.1	50.4
of which EU-N13	11.2	11.9	11.5	11.8	11.3	11.4	11.5	11.6	11.8	12.0	12.2	12.4	12.6	12.8
Consumption	**49.4**	**48.7**	**49.0**	**50.1**	**51.7**	**51.5**	**51.6**	**52.0**	**52.6**	**52.7**	**52.8**	**52.9**	**53.0**	**53.1**
of which EU-15	39.2	38.2	38.8	39.7	40.8	40.6	40.7	41.1	41.6	41.8	41.9	42.0	42.1	42.1
of which EU-N13	10.1	10.5	10.2	10.3	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9
of which food and industrial	12.4	12.4	12.3	12.2	13.2	13.0	13.0	13.3	13.8	14.0	14.0	14.1	14.2	14.2
of which feed	36.6	35.9	36.3	37.4	38.0	38.0	38.1	38.1	38.2	38.2	38.2	38.3	38.3	38.3
of which bioenergy	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.5	0.5	0.5	0.5	0.5
Imports	0.0	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Exports	8.8	12.7	14.2	8.0	7.8	8.4	8.4	8.5	8.4	8.8	9.2	9.6	10.0	10.4
Beginning stocks	4.2	7.2	6.6	4.9	7.1	7.6	7.8	8.1	8.1	8.1	8.0	8.0	7.9	7.9
Ending stocks	7.2	6.6	4.9	7.1	7.6	7.8	8.1	8.1	8.1	8.0	8.0	7.9	7.9	7.8
of which intervention	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yield	**4.9**	**4.9**	**5.0**	**4.8**	**4.8**	**4.9**	**4.9**	**4.9**	**5.0**	**5.0**	**5.0**	**5.1**	**5.1**	**5.1**
of which EU-15	5.2	5.1	5.3	5.1	5.1	5.1	5.1	5.2	5.2	5.2	5.2	5.2	5.3	5.3
of which EU-N13	4.1	4.1	4.1	4.1	4.0	4.1	4.1	4.2	4.3	4.3	4.4	4.4	4.5	4.6
EU price in EUR/t	175	168	153	140	139	141	137	140	148	153	156	159	161	163
World price in EUR/t	185	156	166	140	139	141	137	140	148	153	156	159	161	163
World price in USD/t	246	207	184	156	154	155	161	168	178	185	189	193	195	198

Note: the barley marketing year is July/June

Table 9.8 • EU maize market balance (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**67.0**	**77.9**	**58.3**	**59.9**	**65.7**	**66.9**	**67.9**	**69.1**	**70.1**	**71.0**	**71.9**	**72.6**	**73.4**	**74.0**
of which EU-15	38.2	43.8	34.0	33.4	36.0	36.5	36.6	37.0	37.2	37.4	37.6	37.7	37.8	37.9
of which EU-N13	28.9	34.1	24.2	26.5	29.7	30.5	31.3	32.1	32.9	33.6	34.3	34.9	35.6	36.1
Consumption	**76.5**	**76.2**	**74.6**	**74.1**	**75.5**	**76.2**	**77.6**	**78.9**	**79.5**	**80.4**	**81.4**	**82.3**	**83.4**	**84.3**
of which EU-15	57.8	58.1	56.7	55.4	56.7	57.3	58.4	59.2	59.6	60.4	61.0	61.8	62.7	63.3
of which EU-N13	18.7	18.1	17.9	18.7	18.7	18.9	19.2	19.7	19.9	20.1	20.3	20.5	20.7	21.0
of which food and industrial	9.9	10.6	10.6	10.2	10.3	10.3	11.0	11.4	11.4	11.7	11.7	12.0	12.3	12.4
of which feed	60.8	60.0	58.5	57.9	58.7	59.4	60.0	60.7	61.3	62.0	62.6	63.3	64.2	64.8
of which bioenergy	5.8	5.6	5.6	6.0	6.5	6.5	6.6	6.8	6.8	6.8	7.0	7.0	7.0	7.0
Imports	15.0	9.4	13.3	14.0	13.6	13.7	13.3	13.3	13.3	13.3	13.3	13.4	13.8	13.9
Exports	3.1	4.0	2.2	3.0	3.0	3.0	3.7	3.7	3.7	3.7	3.7	3.5	3.6	3.1
Beginning stocks	13.2	15.6	22.8	17.5	14.3	15.2	16.7	16.7	16.5	16.7	17.0	17.1	17.3	17.5
Ending stocks	15.6	22.8	17.5	14.3	15.2	16.7	16.7	16.5	16.7	17.0	17.1	17.3	17.5	18.0
of which intervention	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yield	**6.9**	**8.1**	**6.3**	**6.8**	**7.3**	**7.4**	**7.5**	**7.6**	**7.7**	**7.7**	**7.8**	**7.9**	**8.0**	**8.1**
of which EU-15	8.9	10.4	9.2	9.4	9.7	9.8	9.8	9.8	9.9	9.9	9.9	10.0	10.0	10.0
of which EU-N13	5.3	6.3	4.4	5.0	5.6	5.7	5.8	6.0	6.1	6.2	6.4	6.5	6.6	6.7
EU price in EUR/t	177	154	158	160	152	148	145	148	154	157	157	160	161	161
World price in EUR/t	153	129	150	153	150	151	145	146	150	153	154	155	159	161
World price in USD/t	203	172	167	170	165	167	170	175	181	186	187	189	193	195

Note: the maize marketing year is July/June

Table 9.9 • EU other cereals* market balance (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**35.2**	**35.0**	**32.5**	**32.9**	**33.3**	**33.2**	**33.2**	**33.2**	**33.1**	**33.0**	**33.0**	**32.9**	**32.8**	**32.7**
of which EU-15	19.6	18.7	18.0	17.2	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	17.9
of which EU-N13	15.6	16.3	14.6	15.7	15.3	15.2	15.2	15.1	15.1	15.0	15.0	14.9	14.9	14.8
Consumption	**33.9**	**33.0**	**32.9**	**32.7**	**34.7**	**33.6**	**33.8**	**33.3**	**33.3**	**33.2**	**33.2**	**33.1**	**33.0**	**32.9**
of which EU-15	25.1	24.7	24.5	24.5	26.7	25.5	25.8	25.3	25.3	25.3	25.3	25.3	25.2	25.1
of which EU-N13	8.8	8.3	8.3	8.2	8.0	8.0	8.0	8.0	8.0	7.9	7.9	7.8	7.8	7.8
of which food and industrial	8.3	8.4	8.1	8.0	9.0	8.1	8.3	7.9	7.9	7.9	7.9	7.9	7.9	7.8
of which feed	24.5	23.6	23.5	23.4	24.4	24.1	24.1	24.1	24.0	24.1	24.0	24.0	23.9	23.9
of which bioenergy	1.1	1.0	1.2	1.2	1.3	1.4	1.4	1.4	1.4	1.2	1.2	1.2	1.2	1.2
Imports	0.4	0.4	0.3	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Exports	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Yield	**3.6**	**3.8**	**3.6**	**3.6**	**3.6**	**3.6**	**3.6**	**3.7**	**3.7**	**3.7**	**3.7**	**3.7**	**3.8**	**3.8**
Beginning stocks	4.6	5.7	7.7	7.3	7.5	6.2	6.0	5.6	5.6	5.7	5.7	5.8	5.8	5.9
Ending stocks	5.7	7.7	7.3	7.5	6.2	6.0	5.6	5.6	5.7	5.7	5.8	5.8	5.9	5.9

** Rye, oats and other cereals Note: the other cereals marketing year is July/June*

Table 9.10 • EU rice market balance (million t milled equivalent)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**1.7**	**1.6**	**1.8**	**1.8**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.7**	**1.8**	**1.8**
of which EU-15	1.7	1.6	1.7	1.7	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7
of which EU-N13	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Consumption	**2.7**	**2.6**	**2.8**	**2.8**	**2.8**	**2.9**	**2.9**	**2.9**	**2.9**	**2.9**	**3.0**	**3.0**	**3.0**	**3.0**
of which EU-15	2.2	2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4
of which EU-N13	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Imports	1.1	1.2	1.4	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5
Exports	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3
Beginning stocks	0.5	0.5	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Ending stocks	0.5	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Yield	**4.0**	**4.0**	**4.1**	**4.1**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.0**	**4.1**	**4.1**	**4.1**
EU price in EUR/t	511	578	596	602	611	627	628	634	642	653	661	663	665	665
World price in EUR/t	402	327	356	359	368	378	355	351	352	357	361	362	364	364
World price in USD/t	534	435	395	400	406	417	417	420	426	433	438	439	441	441

Note: the rice marketing year is September/August

Table 9.11 • EU oilseed* (grains and beans) market balance (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**31.7**	**35.3**	**31.7**	**30.3**	**31.4**	**31.5**	**31.5**	**31.5**	**31.3**	**31.2**	**31.0**	**30.8**	**30.6**	**30.4**
of which EU-15	18.2	20.2	18.3	16.5	18.1	18.1	18.0	18.0	17.8	17.7	17.6	17.5	17.3	17.2
of which EU-N13	13.5	15.2	13.3	13.8	13.3	13.4	13.5	13.5	13.5	13.4	13.4	13.3	13.2	13.2
Rapeseed	21.0	24.3	21.6	19.9	21.0	20.9	20.9	20.8	20.6	20.4	20.2	20.0	19.8	19.5
Sunseed	9.5	9.2	7.8	8.3	8.3	8.3	8.3	8.3	8.3	8.4	8.4	8.4	8.4	8.4
Soybeans	1.2	1.8	2.3	2.1	2.2	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Consumption	**48.5**	**49.5**	**50.0**	**47.1**	**48.5**	**48.6**	**48.7**	**48.9**	**48.9**	**48.8**	**48.7**	**48.6**	**48.5**	**48.5**
of which EU-15	40.0	40.1	41.3	38.9	40.0	40.0	40.1	40.2	40.2	40.2	40.2	40.1	40.0	40.1
of which EU-N13	8.5	9.4	8.7	8.2	8.5	8.6	8.6	8.7	8.6	8.6	8.6	8.5	8.5	8.4
of which crushing	44.6	45.5	45.7	43.1	44.7	44.7	44.7	44.8	44.8	44.7	44.5	44.5	44.3	44.2
Imports	18.0	16.0	19.1	17.8	17.7	17.9	18.0	18.2	18.3	18.4	18.5	18.7	18.8	18.9
Exports	1.1	1.3	0.9	1.2	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9
Beginning stocks	2.4	2.6	3.2	3.1	2.9	2.8	2.7	2.7	2.6	2.6	2.5	2.4	2.4	2.4
Ending stocks	2.6	3.2	3.1	2.9	2.8	2.7	2.7	2.6	2.6	2.5	2.4	2.4	2.4	2.3
EU price in EUR/t (rapeseed)	382	351	370	374	397	390	360	364	369	364	372	384	397	409
World price in EUR/t (soybean)	392	307	335	350	352	353	334	334	349	360	355	368	365	385
World price in USD/t (soybean)	521	407	372	390	388	390	392	400	422	437	430	447	443	468

** Rapeseed, soybean, sunflower seed and groundnuts Note: the oilseed marketing year is July/June*

Table 9.12 • EU oilseed yields (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Rapeseed	**3.1**	**3.6**	**3.3**	**3.1**	**3.3**	**3.3**	**3.3**	**3.3**	**3.3**	**3.3**	**3.4**	**3.4**	**3.4**	**3.4**
of which EU-15	3.4	3.9	3.7	3.2	3.6	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.7
of which EU-N13	2.8	3.2	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9
Sunflower seed	**2.0**	**2.2**	**1.9**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.1**	**2.1**	**2.1**	**2.1**	**2.1**	**2.1**
of which EU-15	1.7	1.8	1.5	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
of which EU-N13	2.2	2.4	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.4
Soybeans	**2.6**	**3.2**	**2.6**	**2.7**	**2.8**	**2.8**	**2.8**	**2.9**	**2.9**	**2.9**	**2.9**	**2.9**	**2.9**	**2.9**
of which EU-15	3.0	3.6	3.3	3.1	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.3	3.3	3.3
of which EU-N13	2.0	2.6	1.9	2.1	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.5

Table 9.13 • EU oilseed meal* market balance (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**28.0**	**28.0**	**28.8**	**27.1**	**28.0**	**28.1**	**28.1**	**28.2**	**28.2**	**28.2**	**28.1**	**28.1**	**28.1**	**28.0**
of which EU-15	23.6	23.1	24.1	22.8	23.5	23.5	23.6	23.6	23.7	23.7	23.7	23.7	23.6	23.6
of which EU-N13	4.4	4.9	4.6	4.3	4.5	4.5	4.5	4.6	4.5	4.5	4.5	4.5	4.4	4.4
Consumption	**49.4**	**49.0**	**51.3**	**51.3**	**51.8**	**52.0**	**52.2**	**52.4**	**52.5**	**52.6**	**52.7**	**52.8**	**52.9**	**53.0**
of which EU-15	40.8	40.4	42.5	42.3	42.8	42.9	43.0	43.1	43.1	43.1	43.1	43.1	43.2	43.1
of which EU-N13	8.6	8.6	8.8	9.0	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.7	9.8
Imports	22.1	22.0	23.5	25.1	24.9	25.0	25.1	25.3	25.4	25.5	25.6	25.7	25.7	25.8
Exports	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9
Beginning stocks	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5
Ending stocks	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5
EU price in EUR/t (soybean meal)	400	358	328	273	298	298	284	281	296	305	308	317	324	340
World price in EUR/t (protein meal)	365	282	283	260	284	284	270	268	282	290	293	302	309	323
World price in USD/t (protein meal)	484	375	314	290	313	314	317	321	341	352	356	367	375	392

** Rapeseed- soybean-, sunflower seed- and groundnut-based protein meals. Note: the oilseed meal marketing year is July/June*

Table 9.14 • EU oilseed oil* market balance (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**15.7**	**16.2**	**15.7**	**14.8**	**15.4**	**15.4**	**15.4**	**15.3**	**15.3**	**15.2**	**15.2**	**15.1**	**15.0**	**14.9**
of which EU-15	12.4	12.6	12.4	11.7	12.2	12.1	12.1	12.1	12.0	12.0	11.9	11.9	11.8	11.8
of which EU-N13	3.2	3.6	3.3	3.1	3.2	3.2	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2
Consumption	**15.4**	**16.1**	**16.0**	**15.4**	**16.0**	**16.0**	**16.0**	**15.9**	**16.0**	**16.0**	**16.0**	**15.9**	**15.8**	**15.7**
of which EU-15	12.6	13.3	13.2	12.7	13.2	13.2	13.2	13.1	13.2	13.2	13.2	13.1	13.0	12.9
of which EU-N13	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Imports	1.6	1.6	1.9	2.1	1.9	2.0	2.0	2.0	2.1	2.2	2.2	2.3	2.3	2.3
Exports	1.5	1.7	1.7	1.5	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4
Beginning stocks	0.8	1.1	1.1	1.0	0.9	0.8	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8
Ending stocks	1.1	1.1	1.0	0.9	0.8	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8
EU price in EUR/t (rapeseed oil)	731	669	710	688	734	763	740	756	763	765	764	776	779	791
World price in EUR/t (vegetable oil)	689	555	626	662	706	726	702	715	724	726	727	738	741	752
World price in USD/t (vegetable oil)	915	737	695	737	779	801	824	856	875	881	882	896	899	913

** Rapeseed-, soybean-, sunflower seed- and groundnut-based oils. Note: the oilseed oil marketing year is July/June*

Table 9.15 • EU vegetable oil* market balance (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**15.7**	**16.3**	**15.8**	**14.9**	**15.5**	**15.5**	**15.5**	**15.4**	**15.4**	**15.3**	**15.2**	**15.2**	**15.1**	**15.0**
of which EU-15	12.5	12.7	12.5	11.7	12.3	12.2	12.2	12.2	12.1	12.1	12.0	12.0	11.9	11.9
of which EU-N13	3.2	3.6	3.3	3.1	3.2	3.2	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2
Consumption	**23.5**	**24.0**	**24.2**	**23.4**	**24.1**	**24.0**	**24.0**	**23.8**	**23.8**	**23.7**	**23.6**	**23.4**	**23.1**	**23.0**
of which EU-15	20.4	20.8	21.0	20.3	20.9	20.9	20.8	20.7	20.6	20.5	20.4	20.3	20.0	19.9
of which EU-N13	3.2	3.2	3.2	3.1	3.2	3.2	3.2	3.2	3.1	3.2	3.2	3.1	3.1	3.1
of which food and other use	14.0	13.0	13.7	13.0	13.6	13.4	13.4	13.5	13.5	13.5	13.5	13.5	13.5	13.6
of which bioenergy	9.5	11.0	10.5	10.3	10.5	10.6	10.6	10.4	10.3	10.2	10.1	10.0	9.6	9.4
Imports	9.8	9.6	10.2	10.1	9.8	10.1	10.1	9.9	9.9	9.9	9.9	9.8	9.7	9.7
Exports	1.6	1.9	1.8	1.7	1.6	1.5	1.5	1.4	1.4	1.5	1.5	1.5	1.6	1.6
Beginning stocks	1.2	1.6	1.6	1.5	1.3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Ending stocks	1.6	1.6	1.5	1.3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

** Rapeseed- soybean-, sunflower seed- and groundnut-based oils plus cottonseed oil, palm oil, palm kernel oil and coconut oil.*
Note: the vegetable oil marketing year is July/June

Table 9.16 • EU sugar market balance (million t white sugar equivalent)

8	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Sugar beet production (million t)	**109.0**	**131.0**	**101.8**	**110.1**	**125.4**	**121.4**	**116.0**	**115.0**	**114.4**	**113.9**	**113.5**	**113.0**	**112.9**	**111.6**
of which EU-15	88.8	106.7	84.5	89.6	103.8	101.5	97.0	96.3	95.8	95.3	94.9	94.8	94.7	93.4
of which EU-N13	20.2	24.3	17.3	20.5	21.6	19.9	19.0	18.7	18.6	18.6	18.7	18.3	18.3	18.2
of which for ethanol	12.6	13.2	12.7	12.7	12.1	10.9	10.8	10.8	10.7	9.8	9.8	9.6	9.6	9.6
of which processed for sugar	96.4	117.8	89.1	97.4	113.3	110.5	105.2	104.3	103.7	104.1	103.8	103.4	103.4	102.0
Sugar production*	***16.7***	***19.6***	***14.8***	***16.8***	***19.6***	***19.2***	***18.4***	***18.3***	***18.2***	***18.4***	***18.4***	***18.4***	***18.5***	***18.3***
Sugar quota	13.5	13.5	13.5	13.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
of which EU-15	13.5	16.4	12.2	13.7	16.4	16.2	15.5	15.4	15.4	15.5	15.4	15.5	15.5	15.3
of which EU-N13	3.2	3.2	2.6	3.1	3.3	3.0	2.9	2.9	2.9	2.9	3.0	2.9	3.0	3.0
Consumption	19.3	19.5	19.0	19.3	19.0	18.9	18.4	18.2	18.0	18.0	18.0	18.0	17.8	17.8
Imports	3.2	2.7	2.7	3.3	1.5	1.7	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7
Exports	1.5	1.5	1.4	1.4	2.0	2.0	2.0	2.0	2.2	2.3	2.3	2.3	2.3	2.3
Beginning stocks**	3.2	2.6	4.0	1.2	0.9	1.2	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.7
Ending stocks**	2.6	4.0	1.2	0.9	1.2	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.7	1.7
EU price in EUR/t	600	425	428	443	415	412	399	396	396	397	399	402	410	405
World price in EUR/t	355	351	388	395	392	381	358	355	355	356	359	363	368	382
World price in USD/t	457	376	450	440	432	421	421	424	429	432	436	440	447	464

** Sugar production is adjusted for carry-forward quantities and does not include ethanol feedstock quantities; ** Stocks include carry-forward quantities.*
Note: the sugar marketing year is October/September

Table 9.17 • EU isoglucose balance (million t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Isoglucose production	0.7	0.7	0.7	0.7	1.0	1.0	1.2	1.5	1.7	1.7	1.8	1.8	1.9	1.9
of which EU-15	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.7	0.8	0.8	0.8	0.8	0.9	0.9
of which EU-N13	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.9	0.9	0.9	0.9	1.0	1.0	1.0
Isoglucose quota	**0.7**	**0.7**	**0.7**	**0.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Isoglucose consumption	***0.7***	***0.7***	***0.7***	***0.7***	***0.9***	***1.0***	***1.2***	***1.4***	***1.6***	***1.6***	***1.6***	***1.7***	***1.8***	***1.8***
share in sweetener use (%)	*3.4*	*3.4*	*3.5*	*3.6*	*4.7*	*4.9*	*6.0*	*7.2*	*8.1*	*8.2*	*8.3*	*8.6*	*9.1*	*9.1*
Imports	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Table 9.18 • EU biofuels market balance (million t oil equivalent)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**13.0**	**14.2**	**14.2**	**14.1**	**14.5**	**14.8**	**15.0**	**15.1**	**15.0**	**14.9**	**14.8**	**14.7**	**14.3**	**14.1**
Ethanol	3.4	3.5	3.6	3.6	3.8	3.8	3.9	3.9	3.9	3.8	3.9	3.9	3.9	3.9
...based on wheat	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8
...based on other cereals	1.5	1.4	1.5	1.6	1.7	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9
...based on sugar beet	0.6	0.7	0.6	0.6	0.6	0.6	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5
...2nd-gen.	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Biodiesel	9.6	10.8	10.6	10.5	10.7	11.0	11.2	11.2	11.1	11.1	10.9	10.8	10.5	10.2
...based on vegetable oils	8.1	9.2	8.9	8.7	8.8	9.0	9.0	8.7	8.7	8.6	8.5	8.4	8.2	7.9
...based on waste oils	1.5	1.6	1.7	1.7	1.8	2.0	2.1	2.3	2.3	2.3	2.3	2.2	2.2	2.1
...other 2nd-gen.	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Consumption	**14.4**	**14.9**	**14.7**	**14.7**	**15.4**	**16.2**	**16.3**	**16.2**	**15.9**	**15.7**	**15.4**	**15.1**	**14.7**	**14.3**
Ethanol for fuel	2.8	2.7	2.8	2.8	3.0	3.1	3.2	3.2	3.2	3.2	3.1	3.0	3.1	2.9
Non- fuel use of ethanol	*1.2*	*1.2*	*1.2*	*1.3*	*1.3*	*1.3*	*1.3*	*1.3*	*1.3*	*1.3*	*1.3*	*1.3*	*1.3*	*1.3*
Biodiesel	10.4	10.9	10.7	10.7	11.2	11.8	11.9	11.7	11.5	11.2	11.0	10.8	10.4	10.2
Net trade	**-1.3**	**-0.4**	**-0.3**	**-0.5**	**-0.9**	**-1.4**	**-1.3**	**-1.1**	**-0.9**	**-0.8**	**-0.6**	**-0.4**	**-0.4**	**-0.3**
Ethanol imports	0.5	0.4	0.3	0.4	0.5	0.7	0.6	0.6	0.6	0.7	0.6	0.5	0.5	0.4
Ethanol exports	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Biodiesel imports	1.4	0.4	0.3	0.4	0.5	0.8	0.8	0.6	0.4	0.2	0.1	0.0	0.0	0.0
Biodiesel exports	0.6	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Petrol consumption	89.5	87.5	88.6	88.3	88.1	88.0	87.1	85.7	84.2	82.7	81.0	79.2	77.0	74.4
Diesel consumption	193.7	194.6	192.3	192.0	192.1	191.5	189.6	186.9	184.6	181.9	178.7	175.4	171.3	166.3
Energy shares:														
Biofuels (% RED counting)	**5.3**	**5.5**	**5.5**	**5.5**	**5.8**	**6.2**	**6.3**	**6.5**	**6.5**	**6.5**	**6.5**	**6.5**	**6.5**	**6.5**
1st-gen.	4.1	4.3	4.2	4.2	4.4	4.6	4.6	4.6	4.5	4.5	4.5	4.4	4.4	4.4
based on waste oils	0.5	0.6	0.6	0.6	0.6	0.7	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
other 2nd-gen.	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Ethanol in petrol	3.1	3.2	3.2	3.2	3.4	3.7	3.7	3.8	3.9	4.0	3.9	3.9	4.0	4.0
Biodiesel in diesel	5.4	5.6	5.6	5.6	5.8	6.2	6.3	6.3	6.3	6.2	6.2	6.2	6.1	6.1
Ethanol producer price in EUR/hl	58	50	47	40	51	52	50	51	53	55	56	56	57	54
Biodiesel producer price in EUR/hl	85	83	67	67	79	86	84	80	81	81	79	79	73	71

Table 9.19 • EU milk market balance

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Dairy cows (million heads)	**23.3**	**23.3**	**23.4**	**23.1**	**22.8**	**22.7**	**22.6**	**22.5**	**22.4**	**22.3**	**22.2**	**22.1**	**22.0**	**21.9**
of which EU-15	17.8	17.9	18.1	18.1	17.9	18.0	17.9	17.9	17.8	17.8	17.8	17.7	17.7	17.6
of which EU-N13	5.4	5.4	5.2	5.0	4.9	4.8	4.7	4.6	4.5	4.5	4.4	4.3	4.3	4.2
Milk yield (kg/cow)	**6489**	**6739**	**6859**	**6984**	**7107**	**7210**	**7310**	**7412**	**7512**	**7611**	**7709**	**7808**	**7907**	**8006**
of which EU-15	7040	7275	7356	7442	7529	7611	7695	7783	7867	7955	8042	8131	8221	8313
of which EU-N13	4684	4951	5130	5341	5554	5699	5839	5976	6111	6241	6366	6492	6612	6733
Dairy cow milk production (million t)	**150.9**	**157.1**	**160.3**	**161.3**	**161.9**	**163.9**	**165.3**	**166.7**	**168.1**	**169.5**	**170.9**	**172.3**	**173.8**	**175.2**
of which EU-15	125.4	130.5	133.5	134.4	134.9	136.7	137.9	139.2	140.4	141.6	142.8	144.1	145.4	146.6
of which EU-N13	25.5	26.6	26.8	26.9	27.0	27.2	27.4	27.6	27.7	27.9	28.1	28.2	28.4	28.6
Total cow milk production (million t)	**153.9**	**159.8**	**162.9**	**163.9**	**164.4**	**166.3**	**167.6**	**169.0**	**170.2**	**171.6**	**172.9**	**174.3**	**175.7**	**177.1**
of which EU-15	125.7	130.7	133.7	134.6	135.1	136.9	138.1	139.4	140.6	141.9	143.1	144.3	145.6	146.9
of which EU-N13	28.3	29.0	29.2	29.3	29.3	29.4	29.5	29.6	29.6	29.7	29.8	29.9	30.1	30.2
Delivered to dairies (million t)	**141.9**	**148.4**	**152.2**	**153.2**	**154.1**	**156.0**	**157.4**	**158.9**	**159.8**	**161.7**	**163.2**	**164.8**	**166.3**	**167.8**
of which EU-15	122.0	127.4	130.8	131.6	132.3	133.7	135.0	136.2	136.9	138.5	139.8	141.0	142.3	143.5
of which EU-N13	19.9	21.0	21.4	21.6	21.8	22.2	22.4	22.7	22.9	23.2	23.5	23.8	24.0	24.3
On-farm use and direct sales (million t)	12.0	11.3	10.7	10.7	10.3	10.4	10.2	10.1	10.5	9.9	9.7	9.5	9.3	9.3
of which EU-15	3.6	3.3	3.0	3.0	2.9	3.2	3.2	3.2	3.7	3.3	3.3	3.3	3.3	3.4
of which EU-N13	8.4	8.0	7.7	7.7	7.5	7.2	7.1	6.9	6.7	6.5	6.4	6.2	6.0	5.9
Delivery ratio (%)	92.2	92.9	93.4	93.5	93.7	93.8	93.9	94.0	93.9	94.3	94.4	94.5	94.7	94.8
of which EU-15	97.1	97.5	97.8	97.8	97.9	97.7	97.7	97.7	97.3	97.7	97.7	97.7	97.7	97.7
of which EU-N13	70.2	72.4	73.4	73.8	74.5	75.6	76.1	76.8	77.3	78.0	78.7	79.3	79.9	80.6
Fat content (in %)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Non-fat solid content (in %)	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3
EU milk producer price in EUR/t (real fat content)	365	372	308	275	314	315	305	306	306	316	327	339	349	358

Table 9.20 • EU fresh dairy product supply (1 000 t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**46773**	**46480**	**46941**	**46710**	**46650**	**46642**	**46585**	**46524**	**46460**	**46394**	**46327**	**46258**	**46187**	**46098**
of which EU-15	40384	40069	40343	39980	39820	39725	39599	39470	39338	39203	39066	38928	38788	38646
of which EU-N13	6389	6410	6598	6730	6830	6917	6986	7054	7123	7192	7261	7330	7400	7452
of which fresh milk	31767	31404	31346	31137	30931	30820	30705	30588	30461	30325	30189	30052	29915	29778
of which cream	2575	2624	2714	2726	2734	2760	2787	2814	2840	2867	2893	2920	2947	2973
of which yogurt	8076	7969	8055	8105	8134	8193	8247	8303	8359	8413	8469	8523	8578	8633
Net trade	**599**	**752**	**894**	**1164**	**1341**	**1339**	**1445**	**1535**	**1593**	**1685**	**1774**	**1861**	**1950**	**2041**
Consumption	**46173**	**45728**	**46048**	**45546**	**45412**	**45417**	**45316**	**45210**	**45102**	**44991**	**44878**	**44764**	**44649**	**44532**
of which fresh milk	31344	30803	30602	30220	29870	29662	29453	29242	29029	28813	28597	28379	28161	27941
of which cream	2471	2511	2598	2629	2617	2640	2663	2686	2709	2732	2755	2778	2801	2823
of which yogurt	8017	7935	8021	8079	8106	8162	8218	8274	8329	8384	8439	8494	8548	8603
per capita consumption (kg)	***91.2***	***90.1***	***90.4***	***89.1***	***88.6***	***88.5***	***88.2***	***87.9***	***87.6***	***87.4***	***87.1***	***86.8***	***86.5***	***86.3***
of which EU-15	101.9	101.0	101.4	99.4	98.5	97.9	97.3	96.8	96.2	95.7	95.1	94.6	94.1	93.5
of which EU-N13	50.0	48.1	48.2	49.2	50.1	51.6	52.2	52.8	53.4	54.1	54.7	55.3	56.0	56.7
of which fresh milk	61.9	60.7	60.1	59.1	58.3	57.8	57.3	56.9	56.4	55.9	55.5	55.0	54.6	54.1
of which cream	4.9	4.9	5.1	5.1	5.1	5.1	5.2	5.2	5.3	5.3	5.3	5.4	5.4	5.5
of which yogurt	15.8	15.6	15.8	15.8	15.8	15.9	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7

Table 9.21 • EU cheese market balance (1 000 t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**9369**	**9563**	**9893**	**9996**	**10094**	**10283**	**10385**	**10486**	**10584**	**10679**	**10774**	**10869**	**10963**	**11057**
of which EU-15	7974	8154	8426	8499	8569	8742	8818	8895	8968	9039	9108	9178	9247	9316
of which EU-N13	1395	1409	1467	1497	1525	1541	1567	1591	1616	1641	1666	1691	1716	1742
Consumption	**8660**	**8875**	**9207**	**9307**	**9406**	**9481**	**9556**	**9635**	**9707**	**9783**	**9858**	**9933**	**10008**	**10082**
of which EU-15	7342	7516	7769	7838	7893	7940	7988	8041	8087	8137	8186	8236	8286	8336
of which EU-N13	1318	1359	1438	1468	1513	1540	1568	1595	1620	1647	1672	1697	1722	1746
per capita consumption (kg)	***17.1***	***17.5***	***18.1***	***18.2***	***18.3***	***18.4***	***18.5***	***18.7***	***18.8***	***18.9***	***19.0***	***19.2***	***19.3***	***19.5***
of which EU-15	18.3	18.7	19.2	19.3	19.3	19.3	19.4	19.5	19.6	19.6	19.7	19.8	19.9	20.0
of which EU-N13	12.5	13.0	13.7	14.1	14.5	14.8	15.1	15.4	15.7	16.0	16.3	16.6	16.9	17.2
Imports	75	77	61	74	77	78	77	78	77	78	78	78	78	78
Exports	784	720	718	783	816	885	907	928	954	974	994	1013	1033	1053
EU price in EUR/t (cheddar)	3661	3765	3096	2858	3453	3353	3195	3207	3187	3291	3365	3441	3503	3562
World price in EUR/t	3299	3368	3007	2776	3130	3144	2967	2988	2944	3054	3149	3231	3297	3370
World price in USD/t	4381	4474	3336	3092	3456	3471	3483	3577	3557	3707	3822	3922	4002	4091

Table 9.22 • EU butter market balance (1 000 t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**2127**	**2237**	**2358**	**2429**	**2453**	**2478**	**2502**	**2532**	**2555**	**2582**	**2607**	**2634**	**2660**	**2687**
of which EU-15	1877	1976	2079	2141	2162	2182	2201	2225	2244	2265	2284	2305	2325	2346
of which EU-N13	250	261	279	287	291	296	301	307	311	317	323	329	335	341
Consumption	**2040**	**2098**	**2180**	**2229**	**2254**	**2260**	**2287**	**2310**	**2335**	**2353**	**2372**	**2391**	**2411**	**2433**
of which EU-15	1773	1824	1874	1904	1924	1923	1943	1958	1975	1985	1996	2007	2019	2032
of which EU-N13	267	275	305	325	329	337	345	352	360	368	376	384	392	401
per capita consumption (kg)	***4.0***	***4.1***	***4.3***	***4.4***	***4.4***	***4.4***	***4.4***	***4.5***	***4.5***	***4.5***	***4.6***	***4.6***	***4.7***	***4.7***
of which EU-15	4.4	4.5	4.6	4.7	4.7	4.7	4.7	4.7	4.8	4.8	4.8	4.8	4.9	4.9
of which EU-N13	2.5	2.6	2.9	3.1	3.2	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.8	3.9
Imports	21	25	3	4	8	12	15	20	20	20	20	20	20	20
Exports	113	134	171	214	232	230	230	241	240	249	255	262	269	274
Ending stocks	95	125	135	125	100	100	100	100	100	100	100	100	100	100
of which private	95	125	135	125	100	100	100	100	100	100	100	100	100	100
of which intervention	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EU price in EUR/t	3892	3417	3023	3093	3669	3508	3266	3217	2974	3071	3126	3184	3219	3264
World price in EUR/t	3023	2825	2869	2817	3455	3348	3015	3045	2702	2831	2912	2981	3021	3084
World price in USD/t	4015	3753	3183	3138	3814	3696	3540	3645	3265	3436	3535	3618	3667	3743
EU intervention price in EUR/t	2218	2218	2218	2218	2218	2218	2218	2218	2218	2218	2218	2218	2218	2218

Table 9.23 • EU SMP market balance (1 000 t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**1108**	**1457**	**1534**	**1602**	**1534**	**1489**	**1564**	**1684**	**1739**	**1794**	**1850**	**1907**	**1963**	**2020**
of which EU-15	958	1235	1321	1379	1323	1290	1345	1456	1502	1554	1602	1652	1702	1752
of which EU-N13	150	222	213	223	211	200	219	229	236	241	247	254	261	269
Consumption	**697**	**721**	**739**	**775**	**811**	**845**	**860**	**872**	**889**	**923**	**960**	**997**	**1034**	**1071**
of which EU-15	575	614	624	648	675	700	720	730	745	777	812	847	882	917
of which EU-N13	122	107	114	127	136	145	140	142	144	146	148	150	152	154
Imports	5	2	3	5	5	4	4	4	4	4	4	4	4	4
Exports	407	648	690	621	728	863	848	837	853	875	894	913	933	953
Ending stocks	80	170	279	490	490	275	135	115	115	115	115	115	115	115
of which private	80	170	250	135	135	155	135	115	115	115	115	115	115	115
of which intervention	0	0	29	355	355	120	0	0	0	0	0	0	0	0
EU price in EUR/t	3032	2693	1862	1803	2224	2189	2196	2116	2215	2331	2431	2533	2618	2708
World price in EUR/t	3312	2825	1951	1799	2158	2213	2163	2146	2239	2360	2467	2572	2658	2755
World price in USD/t	4399	3753	2165	2004	2382	2443	2539	2569	2705	2865	2995	3122	3227	3344

Table 9.24 • EU WMP market balance (1 000 t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**732**	**766**	**735**	**735**	**734**	**755**	**779**	**799**	**824**	**844**	**867**	**888**	**910**	**932**
of which EU-15	666	694	670	670	669	689	710	729	751	770	790	810	830	850
of which EU-N13	67	72	64	64	64	66	68	70	73	74	76	78	80	82
Consumption	**362**	**378**	**339**	**334**	**332**	**352**	**365**	**378**	**391**	**404**	**417**	**430**	**443**	**456**
of which EU-15	311	328	287	281	278	296	308	321	333	345	357	369	381	393
of which EU-N13	51	50	52	53	54	56	57	58	59	59	60	61	62	63
Imports	3	1	4	7	5	4	4	4	4	4	4	4	4	4
Exports	374	390	400	408	407	407	418	425	436	444	453	462	471	480
EU price in EUR/t	3 548	3 029	2 395	2 405	2 679	2 583	2 503	2 563	2 579	2 692	2 791	2 885	2 980	3 069
World price in EUR/t	3 537	2 836	2 229	2 212	2 544	2 535	2 432	2 487	2 506	2 629	2 741	2 835	2 930	3 019
World price in USD/t	4 698	3 768	2 474	2 463	2 808	2 798	2 855	2 978	3 028	3 191	3 328	3 442	3 557	3 665

Table 9.25 • EU whey market balance (1 000 t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**1 916**	**1 947**	**1 994**	**2 017**	**2 040**	**2 069**	**2 100**	**2 129**	**2 159**	**2 189**	**2 219**	**2 249**	**2 279**	**2 309**
of which EU-15	1 649	1 599	1 636	1 651	1 665	1 685	1 706	1 725	1 745	1 765	1 785	1 805	1 825	1 844
of which EU-N13	267	348	358	366	374	384	394	404	414	424	434	444	454	464
Consumption	**1 414**	**1 460**	**1 471**	**1 472**	**1 473**	**1 476**	**1 494**	**1 503**	**1 522**	**1 536**	**1 551**	**1 567**	**1 579**	**1 599**
Imports	8	8	7	7	7	7	7	7	7	7	7	7	7	7
Exports	510	495	530	551	574	601	613	633	643	660	674	689	706	716
EU price in EUR/t	1 017	964	755	715	885	871	870	840	877	924	964	1 006	1 041	1 074
World price in EUR/t	1 035	988	791	779	905	917	874	863	849	900	941	996	1 027	1 077
World price in USD/t	1 375	1 312	877	868	999	1 012	1 027	1 033	1 026	1 092	1 142	1 209	1 247	1 307

Table 9.26 • EU beef and veal meat market balance (1 000 t c.w.e.)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Total number of cows (million heads)	**35.2**	**35.4**	**35.7**	**35.5**	**35.1**	**34.8**	**34.7**	**34.4**	**34.2**	**34.1**	**34.0**	**33.9**	**33.8**	**33.6**
of which dairy cows	23.3	23.3	23.4	23.1	22.8	22.7	22.6	22.5	22.4	22.3	22.2	22.1	22.0	21.9
of which suckler cows	12.0	11.9	12.0	12.3	12.4	12.3	12.1	12.1	11.9	11.9	11.9	11.8	11.8	11.8
Gross indigenous production	**7 497**	**7 664**	**7 893**	**8 150**	**8 145**	**7 899**	**7 797**	**7 757**	**7 689**	**7 637**	**7 604**	**7 578**	**7 557**	**7 537**
of which EU-15	6 683	6 785	6 903	7 040	7 095	7 019	6 978	6 947	6 879	6 832	6 803	6 783	6 772	6 757
of which EU-N13	814	879	989	1 111	1 050	880	820	810	810	805	800	795	785	780
Imports of live animals	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exports of live animals	109	114	178	235	235	220	200	190	185	180	170	165	160	155
Net production	**7 388**	**7 550**	**7 715**	**7 916**	**7 911**	**7 679**	**7 597**	**7 567**	**7 504**	**7 457**	**7 434**	**7 413**	**7 397**	**7 382**
Consumption	**7 531**	**7 652**	**7 808**	**7 997**	**7 999**	**7 798**	**7 736**	**7 727**	**7 675**	**7 633**	**7 610**	**7 586**	**7 572**	**7 555**
of which EU-15	7 096	7 141	7 232	7 396	7 383	7 190	7 137	7 137	7 092	7 060	7 045	7 029	7 023	7 015
of which EU-N13	435	511	576	602	616	608	599	591	582	574	566	557	549	540
per capita consumption (kg r.w.e.)*	***10.4***	***10.6***	***10.7***	***10.9***	***10.9***	***10.6***	***10.5***	***10.5***	***10.4***	***10.3***	***10.3***	***10.3***	***10.2***	***10.2***
of which EU-15	12.4	12.4	12.5	12.7	12.6	12.2	12.1	12.1	12.0	11.9	11.9	11.8	11.8	11.8
of which EU-N13	2.9	3.4	3.9	4.0	4.1	4.1	4.0	4.0	3.9	3.9	3.9	3.8	3.8	3.7
Imports (meat)	304	308	300	309	318	329	331	336	343	345	349	349	351	351
Exports (meat)	160	206	207	227	233	213	196	176	168	165	171	175	178	180
Net trade (meat)	-143	-102	-93	-82	-85	-116	-135	-160	-175	-179	-178	-174	-173	-171
EU price in EUR/t	3 816	3 676	3 772	3 670	3 255	3 453	3 546	3 493	3 575	3 671	3 744	3 820	3 903	3 985
World price in EUR/t (Brazil)	3 257	3 399	3 710	3 431	2 968	2 918	2 796	2 748	2 805	2 892	2 959	3 045	3 138	3 227
World price in USD/t (Brazil)	4 326	4 515	4 116	3 820	3 277	3 220	3 283	3 289	3 389	3 511	3 592	3 697	3 810	3 917

** r.w.e. = retail weight equivalent; coefficients to transform carcass weight into retail weight are 0.7 for beef and veal.*

Table 9.27 • EU sheep and goat meat market balance, (1 000 t c.w.e.)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Gross indigenous production	**918**	**917**	**957**	**979**	**986**	**982**	**987**	**991**	**995**	**998**	**1 002**	**1 005**	**1 008**	**1 011**
of which EU-15	802	796	812	818	820	814	817	819	821	822	824	825	826	827
of which EU-N13	115	120	145	162	166	168	170	172	174	176	178	180	182	184
Imports of live animals	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exports of live animals	34	36	38	51	53	47	39	35	31	31	31	30	30	28
Net production	**884**	**881**	**919**	**929**	**933**	**935**	**948**	**956**	**964**	**968**	**971**	**974**	**978**	**984**
Consumption	**1 048**	**1 037**	**1 102**	**1 116**	**1 121**	**1 135**	**1 148**	**1 158**	**1 166**	**1 170**	**1 174**	**1 178**	**1 181**	**1 188**
of which EU-15	966	955	994	997	1 002	1 020	1 034	1 044	1 053	1 058	1 062	1 066	1 071	1 078
of which EU-N13	81	83	108	119	119	115	114	114	113	113	112	111	111	110
per capita consumption (kg r.w.e.)*	***1.8***	***1.8***	***1.9***	***1.9***	***1.9***	***1.9***	***2.0***	***2.0***	***2.0***	***2.0***	***2.0***	***2.0***	***2.0***	***2.0***
of which EU-15	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3
of which EU-N13	0.7	0.7	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Imports (meat)	200	189	202	206	208	220	222	224	225	226	227	228	229	229
Exports (meat)	36	32	20	19	20	21	21	22	23	23	24	24	25	25
Net trade (meat)	-164	-157	-183	-187	-188	-199	-201	-202	-203	-203	-203	-203	-204	-204
EU price in EUR/t	4 889	5 129	5 097	5 010	4 714	4 958	4 769	4 868	4 967	5 042	5 097	5 161	5 205	5 244
World price in EUR/t	2 940	3 406	3 329	3 229	2 817	2 962	2 849	2 939	3 028	3 105	3 169	3 222	3 250	3 293
World price in USD/t	3 905	4 526	3 694	3 595	3 109	3 269	3 345	3 518	3 658	3 769	3 847	3 911	3 945	3 997

** r.w.e. = retail weight equivalent; coefficients to transform carcass weight into retail weight are 0.88 for sheep and goat meat.*

Table 9.28 • EU pigmeat market balance (1 000 t c.w.e.)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Gross indigenous production	**22 385**	**22 569**	**23 384**	**23 629**	**23 490**	**23 512**	**23 528**	**23 592**	**23 647**	**23 708**	**23 769**	**23 826**	**23 855**	**23 930**
of which EU-15	19 278	19 285	19 949	20 109	19 953	19 873	19 927	19 971	20 006	20 048	20 088	20 125	20 157	20 192
of which EU-N13	3 107	3 284	3 436	3 519	3 537	3 639	3 602	3 622	3 641	3 661	3 681	3 701	3 699	3 738
Imports of live animals	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exports of live animals	26	36	21	13	13	20	20	20	20	20	20	20	20	20
Net production	**22 359**	**22 534**	**23 364**	**23 616**	**23 477**	**23 492**	**23 509**	**23 573**	**23 627**	**23 689**	**23 749**	**23 806**	**23 836**	**23 910**
Consumption	**20 177**	**20 609**	**21 186**	**20 914**	**20 905**	**20 941**	**20 980**	**20 984**	**21 003**	**21 028**	**21 055**	**21 089**	**21 113**	**21 149**
of which EU-15	16 066	16 261	16 683	16 503	16 487	16 496	16 513	16 525	16 541	16 561	16 578	16 591	16 615	16 659
of which EU-N13	4 110	4 348	4 503	4 411	4 418	4 445	4 467	4 459	4 462	4 468	4 477	4 499	4 498	4 491
per capita consumption (kg r.w.e.)*	***31.1***	***31.7***	***32.5***	***31.9***	***31.8***	***31.7***	***31.7***	***31.7***	***31.7***	***31.7***	***31.7***	***31.8***	***31.8***	***31.8***
of which EU-15	31.2	31.5	32.2	31.6	31.4	31.3	31.3	31.2	31.2	31.2	31.2	31.1	31.1	31.2
of which EU-N13	30.5	32.4	33.6	32.9	33.0	33.3	33.5	33.6	33.7	33.8	34.0	34.3	34.4	34.5
Imports (meat)	15	14	11	13	13	14	17	17	18	19	18	19	19	19
Exports (meat)	2 198	1 939	2 189	2 714	2 585	2 565	2 545	2 606	2 641	2 679	2 712	2 735	2 741	2 780
Net trade (meat)	2 182	1 925	2 178	2 701	2 572	2 551	2 528	2 589	2 624	2 660	2 694	2 717	2 722	2 761
EU price in EUR/t	1 753	1 564	1 396	1 400	1 536	1 556	1 521	1 617	1 660	1 665	1 650	1 671	1 675	1 672
World price in EUR/t (Brazil)	2 162	2 585	2 321	2 139	2 167	2 185	2 111	2 283	2 333	2 335	2 312	2 344	2 350	2 364
World price in USD/t (Brazil)	2 872	3 434	2 575	2 381	2 392	2 412	2 479	2 733	2 819	2 835	2 807	2 846	2 852	2 869
World price in EUR/t (US)	1 477	1 752	1 386	1 284	1 240	1 389	1 342	1 367	1 382	1 359	1 337	1 298	1 295	1 255
World price in USD/t (US)	1 961	2 328	1 538	1 429	1 369	1 533	1 575	1 636	1 670	1 650	1 623	1 576	1 572	1 524

** r.w.e. = retail weight equivalent; coefficients to transform carcass weight into retail weight are 0.78 for pigmeat.*

Table 9.29 • EU poultry meat market balance (1 000 t c.w.e.)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Gross indigenous production	**12 783**	**13 270**	**13 771**	**14 315**	**14 494**	**14 580**	**14 656**	**14 727**	**14 780**	**14 832**	**14 883**	**14 935**	**14 990**	**15 043**
of which EU-15	9 829	10 092	10 299	10 569	10 654	10 683	10 712	10 737	10 743	10 749	10 754	10 760	10 767	10 774
of which EU-N13	2 954	3 178	3 472	3 746	3 840	3 897	3 945	3 990	4 037	4 083	4 129	4 175	4 223	4 269
Consumption	**12 282**	**12 761**	**13 277**	**13 730**	**13 897**	**13 967**	**14 052**	**14 124**	**14 164**	**14 203**	**14 241**	**14 278**	**14 314**	**14 349**
of which EU-15	9 693	10 054	10 432	10 739	10 877	10 952	11 039	11 111	11 151	11 190	11 228	11 266	11 302	11 337
of which EU-N13	2 589	2 707	2 845	2 991	3 020	3 016	3 012	3 013	3 014	3 013	3 013	3 012	3 012	3 011
per capita consumption (kg r.w.e.)*	***21.3***	***22.1***	***22.9***	***23.6***	***23.8***	***23.9***	***24.0***	***24.1***	***24.1***	***24.2***	***24.2***	***24.3***	***24.3***	***24.4***
of which EU-15	21.2	22.0	22.7	23.2	23.4	23.4	23.6	23.7	23.7	23.8	23.8	23.9	23.9	23.9
of which EU-N13	21.7	22.7	23.9	25.2	25.5	25.5	25.5	25.6	25.7	25.7	25.8	25.9	26.0	26.1
Imports (meat)	791	821	852	895	913	931	934	942	950	961	972	983	990	1 000
Exports (meat)	1 293	1 331	1 346	1 480	1 509	1 544	1 539	1 545	1 565	1 589	1 614	1 640	1 666	1 695
Net trade (meat)	501	510	494	586	596	613	605	603	615	628	643	657	676	695
EU price in EUR/t	1 996	1 949	1 906	1 783	1 653	1 646	1 562	1 557	1 614	1 652	1 681	1 712	1 738	1 764
World price in EUR/t	1 516	1 460	1 493	1 414	1 267	1 245	1 183	1 178	1 224	1 257	1 283	1 307	1 327	1 356
World price in USD/t	2 014	1 940	1 656	1 574	1 399	1 374	1 389	1 410	1 479	1 526	1 558	1 586	1 611	1 646

** r.w.e. = retail weight equivalent; coefficients to transform carcass weight into retail weight are 0.88 for poultry meat.*

Table 9.30 • Aggregate EU meat market balance (1 000 t c.w.e.)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Gross indigenous production	**43 583**	**44 420**	**46 005**	**47 074**	**47 115**	**46 973**	**46 969**	**47 067**	**47 110**	**47 176**	**47 258**	**47 344**	**47 410**	**47 522**
of which EU-15	36 593	36 958	37 962	38 536	38 522	38 389	38 432	38 473	38 449	38 451	38 469	38 493	38 522	38 550
of which EU-N13	6 989	7 461	8 043	8 538	8 593	8 584	8 536	8 594	8 661	8 725	8 789	8 851	8 889	8 972
Imports of live animals	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Exports of live animals	169	186	236	299	302	287	259	245	236	231	221	215	210	203
Net Production	**43 414**	**44 234**	**45 769**	**46 775**	**46 814**	**46 686**	**46 710**	**46 822**	**46 874**	**46 945**	**47 038**	**47 129**	**47 201**	**47 320**
Consumption	**41 038**	**42 059**	**43 374**	**43 756**	**43 922**	**43 841**	**43 916**	**43 992**	**44 009**	**44 036**	**44 080**	**44 131**	**44 181**	**44 242**
of which EU-15	33 822	34 411	35 341	35 634	35 749	35 657	35 723	35 817	35 837	35 868	35 913	35 952	36 011	36 089
of which EU-N13	7 216	7 648	8 032	8 122	8 173	8 184	8 193	8 175	8 171	8 168	8 167	8 179	8 170	8 152
per capita consumption (kg r.w.e.)*	***64.6***	***66.1***	***68.0***	***68.4***	***68.4***	***68.1***	***68.2***	***68.2***	***68.2***	***68.2***	***68.2***	***68.3***	***68.3***	***68.4***
of which EU-15	67.0	67.9	69.5	69.8	69.6	69.2	69.2	69.3	69.2	69.1	69.1	69.1	69.1	69.2
of which EU-N13	55.8	59.2	62.3	63.2	63.7	63.8	64.1	64.1	64.3	64.4	64.7	65.0	65.1	65.2
of which Beef and Veal meat	10.4	10.6	10.7	10.9	10.9	10.6	10.5	10.5	10.4	10.3	10.3	10.3	10.2	10.2
of which Sheep and Goat meat	1.8	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
of which Pigmeat	31.1	31.7	32.5	31.9	31.8	31.7	31.7	31.7	31.7	31.7	31.7	31.8	31.8	31.8
of which Poultry meat	21.3	22.1	22.9	23.6	23.8	23.9	24.0	24.1	24.1	24.2	24.2	24.3	24.3	24.4
Imports (meat)	1 310	1 332	1 366	1 423	1 452	1 495	1 504	1 518	1 536	1 551	1 565	1 578	1 588	1 599
Exports (meat)	3 687	3 507	3 761	4 441	4 347	4 343	4 302	4 348	4 397	4 457	4 521	4 574	4 609	4 679
Net trade (meat)	2 376	2 175	2 396	3 019	2 895	2 848	2 797	2 830	2 861	2 906	2 956	2 996	3 021	3 081

** r.w.e. = retail weight equivalent; coefficients to transform carcass weight into retail weight are 0.7 for beef and veal, 0.78 for pigmeat and 0.88 for both poultry meat and sheep and goat meat.*

Table 9.31 • EU eggs market balance (1 000 t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**7 321**	**7 376**	**7 570**	**7 742**	**7 799**	**7 817**	**7 866**	**7 920**	**7 972**	**8 031**	**8 080**	**8 121**	**8 159**	**8 224**
of which EU-15	5 660	5 740	5 884	5 970	5 995	6 020	6 045	6 072	6 098	6 125	6 151	6 177	6 203	6 229
of which EU-N13	1 661	1 636	1 686	1 772	1 804	1 798	1 821	1 849	1 874	1 906	1 929	1 944	1 956	1 995
Consumption	**7 064**	**7 083**	**7 244**	**7 379**	**7 443**	**7 454**	**7 494**	**7 541**	**7 585**	**7 636**	**7 677**	**7 711**	**7 741**	**7 798**
of which EU-15	5 680	5 683	5 832	5 926	5 979	5 980	6 011	6 048	6 084	6 126	6 159	6 184	6 207	6 261
of which EU-N13	1 384	1 399	1 412	1 453	1 464	1 474	1 484	1 493	1 502	1 510	1 519	1 527	1 535	1 537
per capita consumption (kg)	***12.3***	***12.3***	***12.6***	***12.7***	***12.5***	***12.9***	***12.8***	***12.8***	***12.9***	***13.0***	***13.0***	***13.1***	***13.1***	***13.2***
of which EU-15	12.4	12.3	12.7	12.7	12.5	12.9	12.8	12.8	12.9	13.0	13.1	13.1	13.1	13.2
of which EU-N13	12.0	12.1	12.2	12.6	12.7	12.8	12.9	13.0	12.8	12.8	12.9	12.9	13.0	13.0
Imports	22	16	20	24	24	24	24	24	24	24	24	24	24	24
Exports	279	309	346	387	380	388	396	403	411	419	427	434	442	450

Table 9.32 • EU olive oil market balance (1 000 t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**2 483**	**1 435**	**2 313**	**2 218**	**2 245**	**2 272**	**2 297**	**2 322**	**2 346**	**2 369**	**2 392**	**2 414**	**2 436**	**2 455**
of which ES-PT	1 873	903	1 508	1 436	1 462	1 487	1 511	1 534	1 557	1 579	1 600	1 621	1 642	1 660
of which IT-FR	596	522	792	760	761	762	764	765	766	767	768	769	770	771
Consumption	**1 757**	**1 595**	**1 699**	**1 750**	**1 750**	**1 751**	**1 752**	**1 754**	**1 755**	**1 757**	**1 759**	**1 761**	**1 763**	**1 766**
of which ES-IT-GR-PT	1 381	1 217	1 320	1 347	1 334	1 323	1 312	1 302	1 292	1 282	1 272	1 263	1 254	1 245
of which Other EU	377	378	379	403	416	428	440	452	463	475	487	498	510	521
per capita ES-IT-GR-PT (kg)	*10.8*	*9.5*	*10.4*	*10.6*	*10.5*	*10.4*	*10.3*	*10.2*	*10.2*	*10.1*	*10.0*	*10.0*	*9.9*	*9.8*
per capita Other EU (kg)	*0.9*	*0.9*	*0.8*	*1.1*	*1.1*	*1.1*	*1.1*	*1.2*	*1.2*	*1.2*	*1.3*	*1.3*	*1.3*	*1.3*
Imports	45	236	99	78	79	80	85	90	95	100	105	110	115	120
Exports	601	492	561	557	578	602	629	657	685	712	735	762	788	810

Table 9.33 • EU wine market balance (million hl)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**169**	**159**	**165**	**159**	**157**	**157**	**156**	**156**	**155**	**155**	**154**	**154**	**153**	**153**
of which EU-15	156	149	155	147	147	146	146	145	145	145	144	144	144	143
of which EU-N13	13	10	10	11	11	10	10	10	10	10	10	10	10	10
Domestic use	**151**	**148**	**148**	**148**	**147**	**146**	**145**	**145**	**144**	**144**	**143**	**142**	**142**	**141**
of which EU-15	136	134	134	133	132	132	131	130	130	129	129	128	128	127
of which EU-N13	15	14	15	15	15	14	14	14	14	14	14	14	14	14
Direct consumption	126	123	124	123	122	122	121	121	121	120	120	119	119	119
per capita EU-15 (l)	***13.6***	***13.7***	***13.9***	***13.9***	***13.8***	***13.7***	***13.6***	***13.6***	***13.5***	***13.4***	***13.3***	***13.3***	***13.2***	***13.1***
per capita EU-N13 (l)	***14.1***	***12.6***	***13.3***	***13.3***	***13.3***	***13.4***	***13.4***	***13.4***	***13.4***	***13.4***	***13.4***	***13.5***	***13.5***	***13.5***
Other uses	25.4	24.3	24.9	24.6	24.4	24.1	23.9	23.7	23.5	23.4	23.2	23.0	22.9	22.7
Imports	14	14	14	15	15	15	15	15	15	16	16	16	16	16
Exports	21	22	22	26	25	26	26	26	26	27	27	27	27	27

Table 9.34 • EU apples market balance (1 000 t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**12 076**	**12 894**	**12 690**	**12 293**	**12 445**	**12 553**	**12 664**	**12 776**	**12 890**	**13 005**	**13 122**	**13 240**	**13 359**	**13 479**
of which EU-15	7 418	7 949	8 043	7 735	7 859	7 891	7 925	7 960	7 997	8 035	8 074	8 114	8 155	8 196
of which EU-N13	4 658	4 944	4 647	4 558	4 586	4 662	4 739	4 815	4 893	4 970	5 048	5 126	5 204	5 282
Consumption	**11 048**	**11 530**	**11 570**	**11 111**	**11 169**	**11 230**	**11 294**	**11 358**	**11 425**	**11 492**	**11 561**	**11 630**	**11 701**	**11 772**
of which EU-15	7 423	7 522	7 780	7 655	7 678	7 703	7 729	7 758	7 787	7 817	7 849	7 881	7 915	7 949
of which EU-N13	3 625	4 008	3 789	3 456	3 491	3 528	3 564	3 601	3 638	3 675	3 712	3 749	3 786	3 823
Use for processing and waste	3 491	3 954	3 823	3 492	3 596	3 699	3 803	3 906	4 010	4 114	4 217	4 321	4 424	4 528
-- EU-15	1 989	2 047	2 238	2 063	2 116	2 168	2 221	2 273	2 326	2 378	2 431	2 483	2 536	2 588
-- EU-N13	1 502	1 907	1 585	1 429	1 480	1 531	1 582	1 633	1 684	1 735	1 787	1 838	1 889	1 940
Use for fresh consumption	7 557	7 576	7 747	7 619	7 574	7 531	7 491	7 452	7 415	7 379	7 344	7 309	7 276	7 244
-- EU-15	5 433	5 476	5 542	5 592	5 562	5 535	5 509	5 484	5 461	5 439	5 418	5 398	5 379	5 361
--EU-N13	2 124	2 100	2 204	2 027	2 012	1 997	1 982	1 968	1 953	1 939	1 925	1 911	1 897	1 883
per capita fresh EU-15	*13.6*	*13.7*	*13.9*	*13.9*	*13.8*	*13.7*	*13.6*	*13.6*	*13.5*	*13.4*	*13.3*	*13.3*	*13.2*	*13.1*
per capita fresh EU-N13	*20.1*	*19.9*	*21.0*	*19.3*	*19.2*	*19.1*	*19.0*	*18.9*	*18.9*	*18.8*	*18.7*	*18.6*	*18.6*	*18.5*
Imports	1 042	744	812	531	517	504	491	480	469	458	449	439	430	422
Exports	1 786	2 359	1 887	1 713	1 793	1 827	1 861	1 897	1 934	1 972	2 010	2 049	2 089	2 129

Table 9.35 • EU tomatoes market balance (1 000 t)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Production	**14 436**	**16 573**	**17 625**	**18 828**	**15 757**	**15 718**	**15 681**	**15 646**	**15 614**	**15 583**	**15 554**	**15 526**	**15 500**	**15 474**
of which EU-15	12 802	14 849	15 876	16 827	14 079	14 035	13 993	13 954	13 918	13 883	13 850	13 819	13 789	13 761
of which EU-N13	1 634	1 724	1 749	2 001	1 678	1 683	1 688	1 692	1 696	1 700	1 704	1 707	1 710	1 714
Use for processing	**7 494**	**9 660**	**10 451**	**11 898**	**8 839**	**8 811**	**8 785**	**8 760**	**8 737**	**8 715**	**8 694**	**8 675**	**8 656**	**8 638**
-- EU-15	7 240	9 328	10 103	11 294	8 571	8 551	8 532	8 515	8 498	8 482	8 467	8 453	8 439	8 426
-- EU-N13	254	332	348	604	267	260	252	246	239	233	227	222	216	211
Consumption (Fresh)	**7 026**	**7 106**	**7 457**	**7 165**	**7 154**	**7 144**	**7 137**	**7 130**	**7 124**	**7 118**	**7 112**	**7 105**	**7 098**	**7 090**
of which EU-15	5 453	5 438	5 762	5 647	5 623	5 602	5 583	5 566	5 550	5 536	5 522	5 508	5 495	5 482
of which EU-N13	1 573	1 668	1 695	1 518	1 531	1 543	1 554	1 564	1 574	1 582	1 590	1 597	1 603	1 608
per capita fresh EU-15	*13.8*	*13.7*	*14.5*	*14.2*	*14.1*	*14.0*	*13.9*	*13.8*	*13.8*	*13.7*	*13.7*	*13.6*	*13.5*	*13.5*
per capita fresh EU-N13	*14.7*	*15.7*	*16.0*	*14.4*	*14.5*	*14.7*	*14.8*	*15.0*	*15.1*	*15.2*	*15.3*	*15.4*	*15.5*	*15.6*
Imports	441	488	481	482	489	496	502	508	513	518	523	528	533	537
Exports	364	301	202	247	253	258	261	264	266	268	271	275	279	284