



COMMITTEE ON COMMODITY PROBLEMS

Seventy-second Session

Rome, 26-28 September 2018

MEDIUM-TERM AGRICULTURAL OUTLOOK: TRENDS AND EMERGING ISSUES

Executive Summary

This document presents the findings of the OECD-FAO Agricultural Outlook 2018–2027, which was launched on 3 July 2018. It assesses the demand, supply, trade and price trends for major agricultural commodities over the next decade.

The findings indicate that real prices of the main agricultural commodities will decline slightly during the next 10 years. Declining rates of population growth will be the main factor behind the projected weakening of demand growth and most additional food demand should originate in regions with high population growth rates. On the supply side, global agricultural and fisheries production is projected to grow by around 20 percent over the projection period. The increase can mainly be attributed to intensification and efficiency gains, while the enlargement of the production base is expected to play a smaller role. Despite a significant slowdown in growth, agricultural trade is projected to continue to play an important role in contributing to food security, underscoring the need for an enabling trade policy environment.

Suggested action by the Committee

The Committee is invited to:

- Take note of the medium-term projections produced jointly by FAO and the OECD and discuss their possible implications for food security and agricultural development;
- Advice on the usefulness and relevance of the projections to inform policy decisions;
- Highlight the importance of liaising with national and regional institutions to increase the uptake and use of the projections for informing policy decisions;
- Advise on actions that could be taken to increase the update of the projections and use of the models by governments and other stakeholders.

*This document can be accessed using the Quick Response Code on this page;
an FAO initiative to minimize its environmental impact and promote greener communications.
Other documents can be consulted at www.fao.org*



Queries on the substantive content of the document may be addressed to:

Boubaker Ben-Belhassen
Secretary of the Committee on Commodity Problems (CCP)
Email: boubaker.benbelhassen@fao.org

I. Introduction

1. The medium-term outlook offers policy makers and stakeholders an assessment of national, regional and global market prospects in the coming decade for major agricultural commodities, biofuels and fish. The baseline projection is not a forecast about the future, but rather a plausible scenario based on specific assumptions regarding macroeconomic conditions, agriculture and trade policy settings, weather conditions, long-term productivity trends and international market developments. They represent a metric against which stakeholders can assess variations in key determinants of market developments, such as crop yields, shifts in consumption patterns or changes in domestic and trade policies. Its underlying modelling system ensures the consistency of baseline projections and is an instrument for the quantitative analysis and assessment of policy options and resource allocation decisions. The findings of this document are based on the 2018–2027 OECD-FAO Agricultural Outlook, which brings together the commodity, policy and country expertise of both organisations and inputs from collaborating member countries, to provide an annual assessment of medium-term prospects of global agricultural markets.

A. Current market conditions

2. The medium-term projections are influenced by an assessment of the current state of agricultural markets and by assumptions on the medium-term trends of the macro-economic, demographic and policy environment. The baseline projections also assume current policy settings will continue unchanged in the future¹.

3. World agricultural markets have changed markedly since the food price spikes of 2007–8. Responding to high prices, production reached record levels in 2017 for cereals, most meat types, dairy products, and fish. At the same time, consumption growth has started to weaken, resulting in an accumulation of grain stocks, reaching new record levels at the beginning of this outlook. Since 2007, almost 300 million tonnes have been added to global grain inventories, which are now considered adequate, all but eliminating the demand for stocks in the coming decade. Additionally, the biofuel boom in the United States of America and European Union has practically come to an end. Together with the economic cooling off in China, the focus of agricultural growth has returned to population developments.

B. Macroeconomic projections underlying the agricultural outlook

4. Macro-economic projections suggest that prospects remain uneven. Economic growth in industrialised economies is estimated at 1.6 percent–1.7 percent p.a. while China's growth is projected to slow to 5.8 percent p.a., with India expected to be at 8.1 percent p.a. on average over the decade.

5. Economic growth in the Middle East and North Africa region is recovering to 3 percent p.a. over the outlook period, although growth is uneven across countries. Emerging economies in Southeast Asia continue their robust growth in the 4 percent–7 percent p.a. range. Sustained growth in most Sub-Saharan countries will be contingent on firm commodity markets and domestic policy reforms.

6. World population growth is expected to slow to 1 percent p.a. over the decade, equivalent to about 785 million additional people by 2027. Africa is expected to have the fastest growth rate at 2.4 percent p.a., adding about 344 million people, while the Asia and Pacific region will account for about 350 million (0.75 percent p.a.).

¹ The decision of the United Kingdom to leave the European Union, officially communicated by the British government on 29 March 2017, is not included in the projections; therefore, the projections for the United Kingdom are retained within the European Union aggregate.

7. Assumed crude oil prices (Brent) follow the World Bank Commodities Price forecasts (October 2017), going from 55 USD/bbl in 2017 to 76 USD/bbl in 2027.

II. Projection highlights

A. Consumption

8. Agricultural commodities are consumed mainly as food, feed and in industrial applications, including fuel. The future evolution of food consumption is determined by demographic and economic developments, and, increasingly by trends in dietary patterns and other consumer preferences. Demand for animal feed is closely linked to the demand for livestock products, such as meat, eggs and milk, however it is also driven by the evolution of livestock production technology. General economic developments, regulatory policies and technological advances shape the industrial utilization of primary agricultural commodities, mostly biofuel and other chemical industry applications.

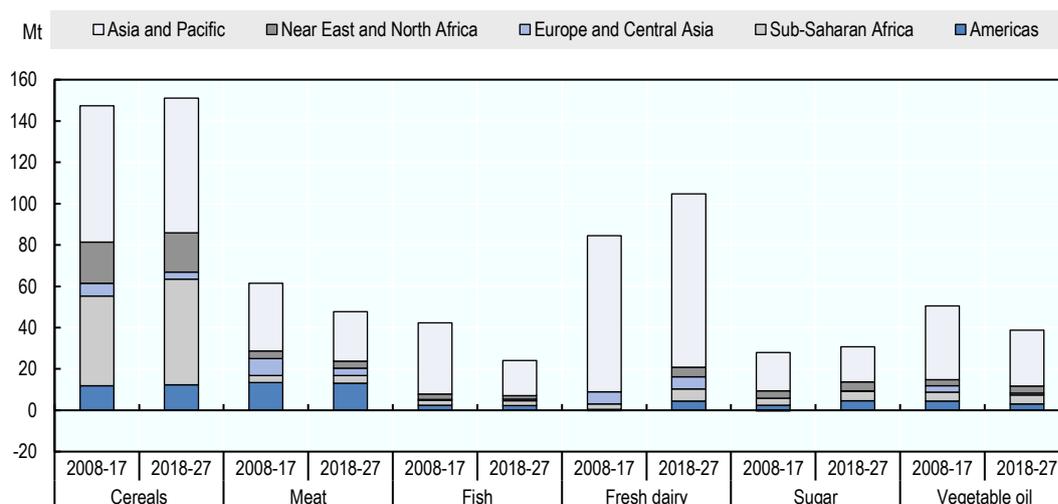
B. Food

9. Per-capita food consumption of many commodities is reaching saturated levels in an increasing number of countries; therefore, the relative impact of demographic developments on the demand for agricultural commodities is expected to increase. Most notably this trend matters for staple foods such as cereals, roots and tubers, as income growth in emerging markets and advanced economies will predominantly support consumption of value added commodities. The influence of income on dietary patterns tends to be constrained by cultural preferences, slowing the global convergence of eating patterns. Increasingly, sustainability and health concerns as well as regulatory policies at the consumer level will induce shifts in the demand for food commodities.

10. Global average calorie availability is projected to rise to over 3 050 kcal/day by 2027, an average increase of almost 140 kcal per day. In all regions, the share of animal products in total protein intake will rise, as will the share of calories due to sugar, vegetable oil and animal fat. Least Developed Countries (LDCs) are expected to increase their calorie availability at a slower rate in the coming decade, adding only 85 kcal per day by 2027 to reach 2 505 kcal per day. This outcome indicates their difficulties to convert economic growth into broad-based food security improvements. Consequently, malnutrition will remain an ongoing concern in LDCs.

11. Total food consumption will continue to expand, primarily due to population growth and higher per capita income in the developing world. Regional differences in population and income growth combined with dietary preferences will result in specific trends for individual commodities (Figure 1).

Figure 1. Regional contributions to food consumption growth, 2008-17 and 2018-27

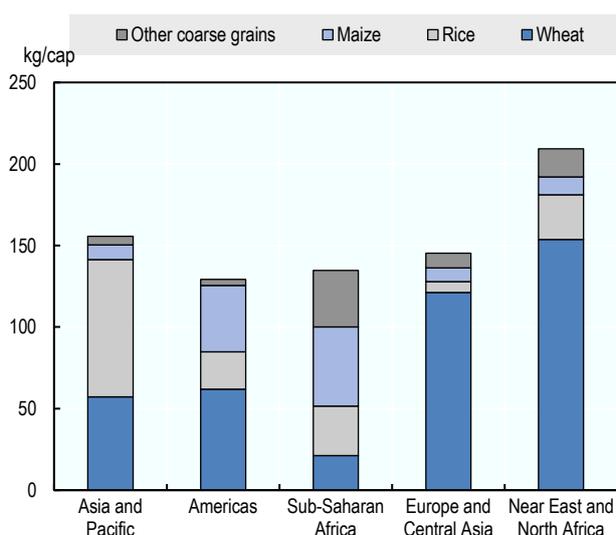


Note: Each column shows the increase in food consumption over a ten-year period / Source: OECD and FAO Secretariats

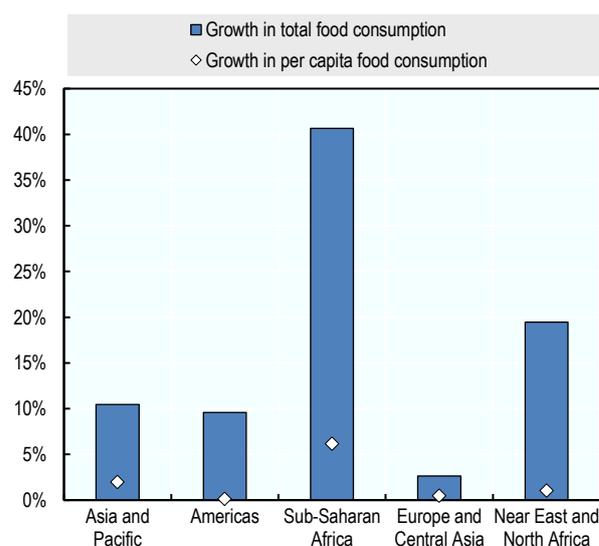
12. Population growth is the main determinant of cereal food consumption growth in the coming decade. The regions with the largest population expansion (Sub-Saharan Africa, India, the Middle East and North Africa) will account for the bulk of the additional food use. Globally, per capita food consumption is projected to increase by less than 2 percent, due to the near-saturation level of cereals in human diets in many regions across the world. Since cereals consumption has reached near-saturation levels in many countries, in those with higher income and more diversified diets, cereals consumption accounts for only one-third of calories. Significant per-capita growth is only expected in low-income regions where available income constrains the diversification of diets, and cereals will still account for about two-thirds of dietary energy in 2027. For regional details, see Figure 2.

Figure 2. Cereals: Availability for food consumption

a) Per capita food consumption by crop and region, 2027



b) Growth rates of per-capita and total food consumption over the outlook period



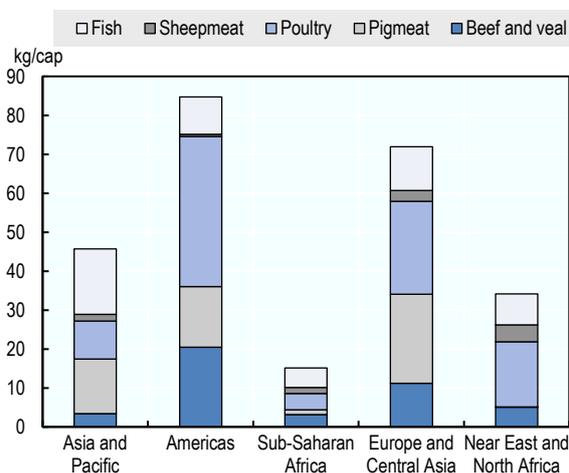
Note: The Agricultural Outlook measures consumption in terms of food availability in national balance sheets / Source: OECD and FAO Secretariats

13. Consumption of meat and fish differs significantly across regions according to dietary patterns and income levels. At a global level, total consumption of meat and fish is expected to increase by

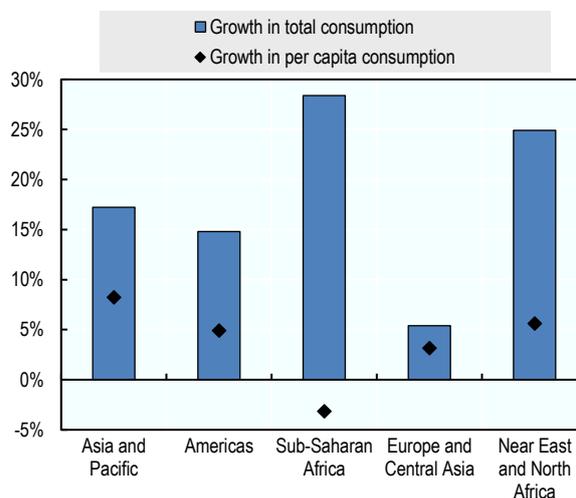
15 percent over the outlook period, while per capita consumption will rise by only 3 percent, with stark variations across regions (Figure 3).

Figure 3. Meat and fish: Per capita availability for food consumption

a) Per capita meat and fish consumption by type and region, 2027



b) Growth rates of per-capita and total meat and fish consumption over the outlook period



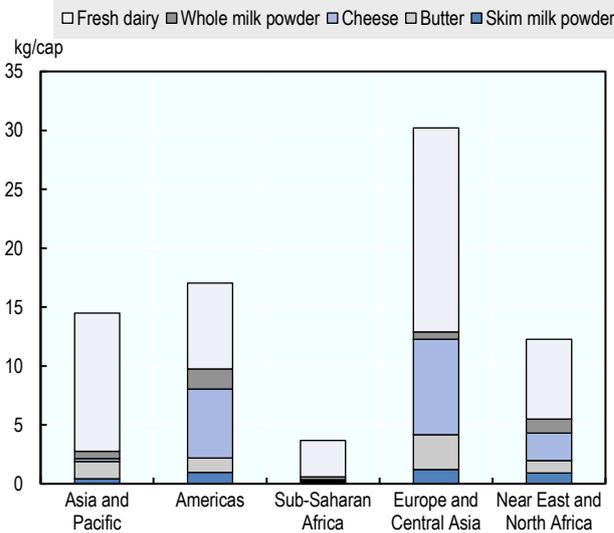
Note: The Agricultural Outlook measures edible weight consumption in terms of food availability in national balance sheets
Source: OECD and FAO Secretariats

14. Particular to the meat sector is a projected widening of the consumption gap between industrialised and low income countries. Consumers in industrialized countries are expected to respond to lower prices by adding another 2.9 kg/capita to their already relatively high meat consumption, while in low and middle income countries only 1.4 kg/capita will likely be added by 2027. This difference can be attributed to income constraints, undeveloped meat marketing chains, and regional dietary preferences in low and middle income economies. Poultry will account for the bulk of the additional consumption given its affordability and reputation as the “healthy choice”.

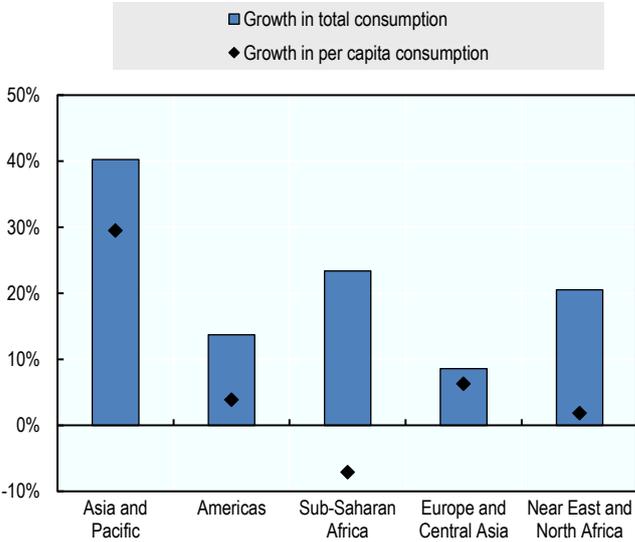
15. Milk is predominantly consumed in fresh form in low and middle income countries, while processed products such as butter, and cheese are preferred in industrialised countries. Regional details are shown in Figure 4.

Figure 4. Global consumption of dairy (in milk solids), 2008-2027

a) Per capita dairy product consumption by type and region, 2027



b) Growth rates of per-capita and total dairy product consumption over the outlook period



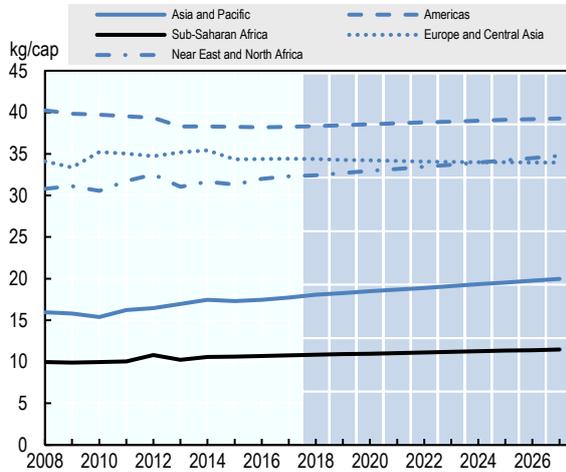
Note: Food consumption of dairy products in milk solid equivalents (fat and non-fat). The Agricultural Outlook measures consumption in terms of food availability in national balance sheets / Source: OECD and FAO Secretariats

16. These preferences are projected to persist, as consumers in low and middle income countries are increasingly consuming fresh dairy products, adding 8.4 kg/capita by 2027, while consumers in industrialised countries continue to shift towards processed dairy products.

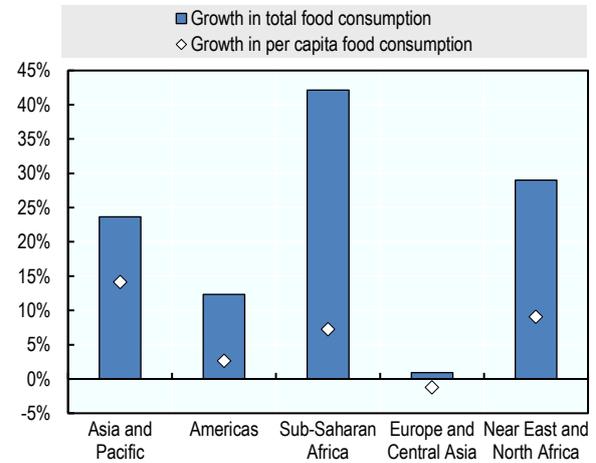
17. Income growth and lifestyle changes due to ongoing urbanisation in low and middle income countries lead to increased consumption of processed and convenience foods, typically high in sugar and fat. The growth in global sugar demand is concentrated in Asia (60 percent) and Africa (25 percent), two sugar-importing regions with substantial population and per capita consumption growth. In recent years health concerns have prompted a reduction in sugar consumption in several industrialised countries, a trend that is expected to continue. Projection details are shown in Figure 5.

Figure 5. Food consumption of sugar, 2008–2027

a) Per capita sugar consumption by region, 2027



b) Growth rates of per-capita and total sugar consumption over the outlook period

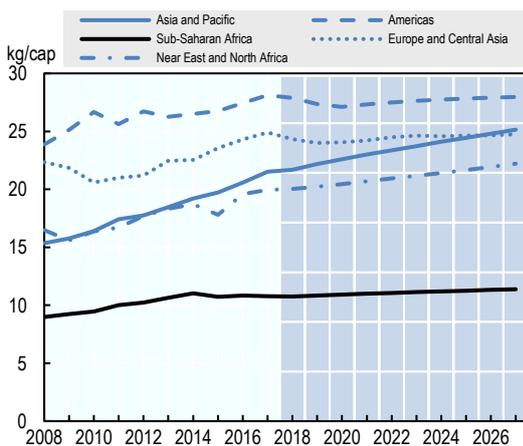


Note: Charts show food consumption of sugar from sugarcane and sugar beet (i.e. excluding other sweeteners such as high-fructose corn syrup). The Agricultural Outlook measures consumption in terms of food availability in national balance sheets / Source: OECD and FAO Secretariats

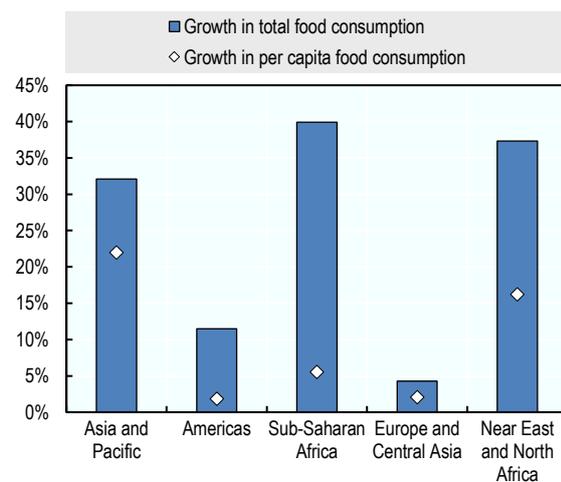
18. Similar factors as mentioned for sugar consumption are expected to drive the expected growth in food demand for vegetable oil. Globally, per capita food use of vegetable oil will increase from 21 kg to 23 kg. In several low and middle income countries, per capita consumption is approaching levels common in the industrialised world. By contrast, per capita consumption in Sub-Saharan Africa will remain at levels far below the global average. Vegetable oil consumption regional details are illustrated in Figure 6.

Figure 6. Food consumption of vegetable oil, 2008–2027

a) Per capita vegetable oil consumption by region, 2027



b) Growth rates of per-capita and total vegetable oil consumption over the outlook period



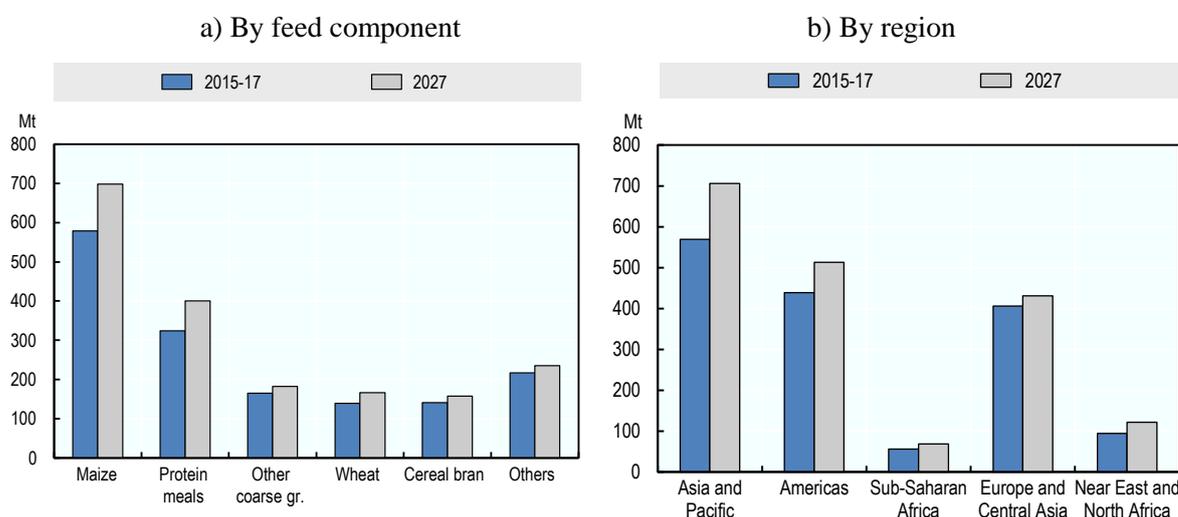
Note: Charts show food consumption of vegetable oil (i.e. excluding use as feedstock for biodiesel and other uses). The Agricultural Outlook measures consumption in terms of food availability in national balance sheets / Source: OECD and FAO Secretariats

C. Feed

19. Non-food uses have gained importance in the demand for basic agricultural commodities in recent decades. Based on the growing consumption of animal products and expected intensification of livestock production, global animal feed use reached 1.6 billion tonnes in 2015–7, and is expected to increase further to 1.9 billion tonnes by 2027. As shown in Figure 7, maize and protein meal will remain the most important feed commodities, accounting for 60 percent of all feed by the end of the decade.

20. The intensification of livestock production will support global protein meal use as many countries move towards compound feed based livestock production systems. By contrast, the reduction of maize support prices in China since 2016 will raise the share of maize in the feed mix, slowing soybean meal use. Despite the overall waning of Chinese food demand and the structural change in its agricultural sector, around 30 percent of the additional feed demand will originate there. Growth rates in the European Union and United States of America are considerably lower, reflecting the mature state of their livestock sectors.

Figure 7. Feed use of major crops



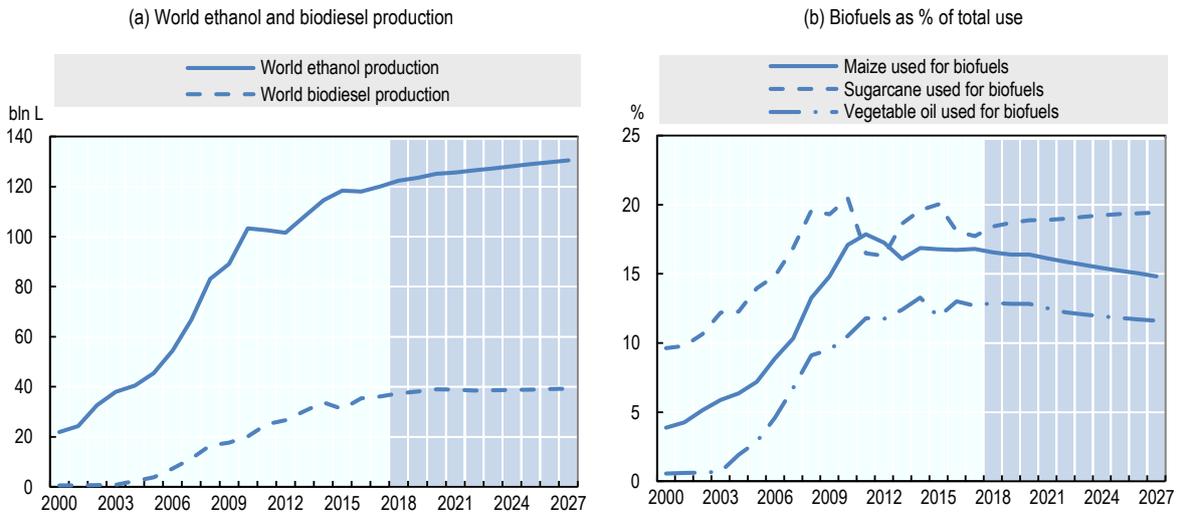
Source: OECD and FAO Secretariats

D. Biofuel

21. Over the next ten years, the use of biofuel feedstocks is expected to stabilise, since mandatory blending requirements in the main markets are not expected to rise at the same pace as over the past ten years, and the biofuel boom in the United States and European Union has practically come to an end (Figure 8). Existing biofuel policies in the European Union and United States ensure the continuation of the current level of feedstock use but are not likely to support further expansion. Mandated quantities are largely met and the outlook for only moderately rising crude oil prices suggests that there will be practically no additional market demand for biofuel feedstocks. Future demand growth will come from Argentina, Brazil, China, Indonesia and Thailand, maintaining their biofuel support policies. Consequently, the use of sugarcane is expected to increase, while cereal and vegetable oil use remains stable during the coming decade. Biofuel production in China could increase further with the implementation of the country's proposed new ethanol blending mandate of 10 percent.

22. As with ethanol, biodiesel production is expected to decline in the European Union and the United States. Instead, an expansion is expected in Brazil, Argentina, and Indonesia, all supported by domestic blending mandates.

Figure 8. Biofuel production and feedstock use of agricultural commodities, 2000-2027

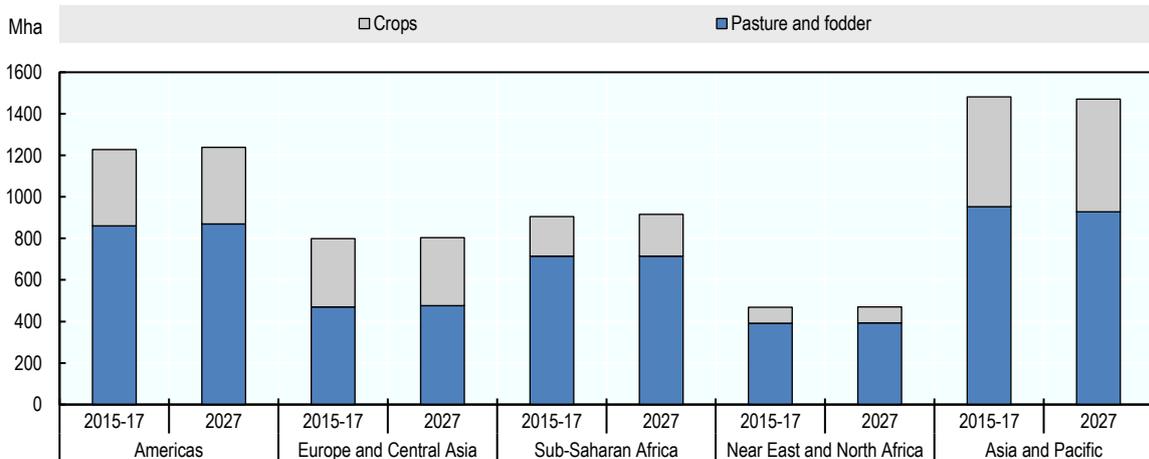


Source: OECD and FAO Secretariats

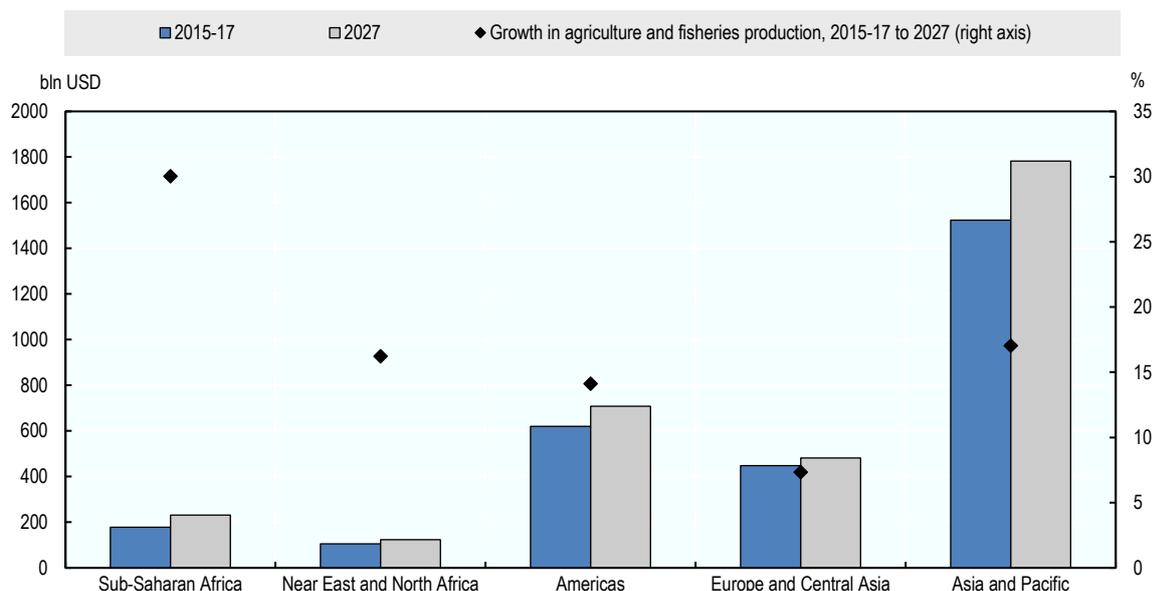
III. Production

23. The last high-price period that ended in 2015 triggered a global production response with annual growth rates of up to 2.5 percent. When prices fell due to the resulting investment overhang and slowing demand growth, production growth moderated again. Under the current set of assumptions, global agricultural and fish production is expected to grow at 1.4 percent p.a. on average over the coming decade. This deceleration of global agricultural production growth is expected mainly due to decreased profitability, based on higher prices of energy and labour and lower agricultural prices. Environmental degradation, including soil erosion and water pollution, introduce additional limitations to output growth, particularly in regions where land availability for agricultural expansion is already exhausted. Most growth will come from increased production intensity and improved productivity, without major expansions in agricultural land use (Figure 9). Over the coming decade, the expansion of agricultural production will be primarily concentrated in low and middle income countries (Figure 10).

Figure 9. Global agricultural land use, 2015-17 and 2027



Source: OECD and FAO Secretariats

Figure 10. Regional trends in total agricultural production

Note: Figure shows the estimated net value of total agricultural and fish production, in billions of USD, measured at constant 2004–6 prices
Source: OECD and FAO Secretariats

24. Sub-Saharan Africa's share of global agricultural production remains low in relation to its population and available land. Challenging agro-ecological conditions, limited access to technology, and low per-capita economic growth in many countries constrain potential improvements in productivity. Particular to the region is the fast growth in the available work force, which should support the strong expansion of labour intensive sectors, such as horticulture and other cash crops (not covered specifically in this Outlook) over the coming decade. The sector needs to employ the use of fertiliser, pesticides, improved seeds, as well as technologies and services such as mechanisation, irrigation and farmer training. Additionally, area expansions for maize, soybeans, and sugarcane will be needed to achieve the 25–30 percent output growth projected for the decade. The recent emergence of the Fall Armyworm, affecting 28 countries across the region, could threaten the region's expansion of maize, rice, sorghum, sugarcane and soybean production.

25. The **Asia-Pacific** region is the world's main producer for an array of agricultural products. Crop yield improvements will be in line with global trends, led by investment in production and information technologies. Despite facing serious constraints in terms of land, water, and workforce shortages, the region produces almost 44 percent of the world's output of cereals; nearly 90 percent of global rice output; close to 42 percent of global meat production; more than half of vegetable oil supplies; and nearly 70 percent of combined global capture and aquaculture fish production. In the coming decade, high output levels will have to be maintained amidst increasingly stringent standards for sustainable production.

26. Nonetheless, the region is expected to expand agricultural and fish production by 17 percent over the outlook period. Indonesia and Malaysia will continue to supply most of the world's palm-oil, as a result of yield improvements given the limited possibilities to expand the area, and the global pressure to improve the sustainability of palm oil production. The region will remain a major producer of meat and dairy commodities. Meat production is expected to expand about 20 percent in Asia and 5 percent in Oceania. Dairy production is set to expand by 41 percent in Asia, while the main Oceanic producers, Australia and New Zealand, will expand at 8 percent, a slower rate than in the last decade.

27. China's 13th five-year-plan will influence fish production from capture and aquaculture, reflecting plans to scale back fisheries production over the coming decade and introduce sustainable practices. If fully implemented, capture fisheries from China will contract by about 29 percent by 2027, and aquaculture will expand by 20 percent, instead of 31 percent in the absence of the plan. With limited global capacity to fill China's production gap under the five-year-plan, global fish prices would rise.

28. Biofuels production expansion in the region is also led by China, which is expected to become the world's third largest ethanol producer, annually producing 11 billion litres by 2027. The implementation of a recently proposed nationwide E10 ethanol mandate would raise Chinese ethanol output to 29 billion litres by 2027, similar to the expected output for Brazil.

29. The agricultural sector in the **Near East and North Africa**² has historically been constrained by unfavourable agro-ecological conditions for crop production as well as political instability. However, over the coming decade, improved economic growth should underpin 16 percent growth in agricultural and fish output. Greater agricultural production will depend on innovation to enhance productivity growth in the face of water and arable land scarcity across the region. Livestock activities serve as the main source of agricultural value added in the region, with regional production of meat and dairy largely taking place in Iran and Egypt. Mainly producing poultry, these two countries will pursue extensive growth and productivity improvements. Regional production of milk, maize and oilseeds will expand at faster rates than over the previous decade. Nonetheless, the region will remain a net importer of these and most major commodities, given its severe production constraints.

30. The **Americas** will remain a major producer and primary exporter of most commodities analysed by the Outlook. Crop production in the region is anticipated to grow by 14 percent, but there are diverging trends. Cereals area harvested in South America is projected to increase by about 3.5 million hectares, while it is anticipated to shrink by roughly the same amount in North America. In Brazil, double cropping of maize and soybeans will account for most of the expansion. The United States and Brazil will continue to lead global soybean and meat production with poultry accounting for the bulk of additional meat output. Fish production is expected to expand by 9 percent over the outlook period, with a major expansion in aquaculture (+35 percent), in particular in Brazil and Chile.

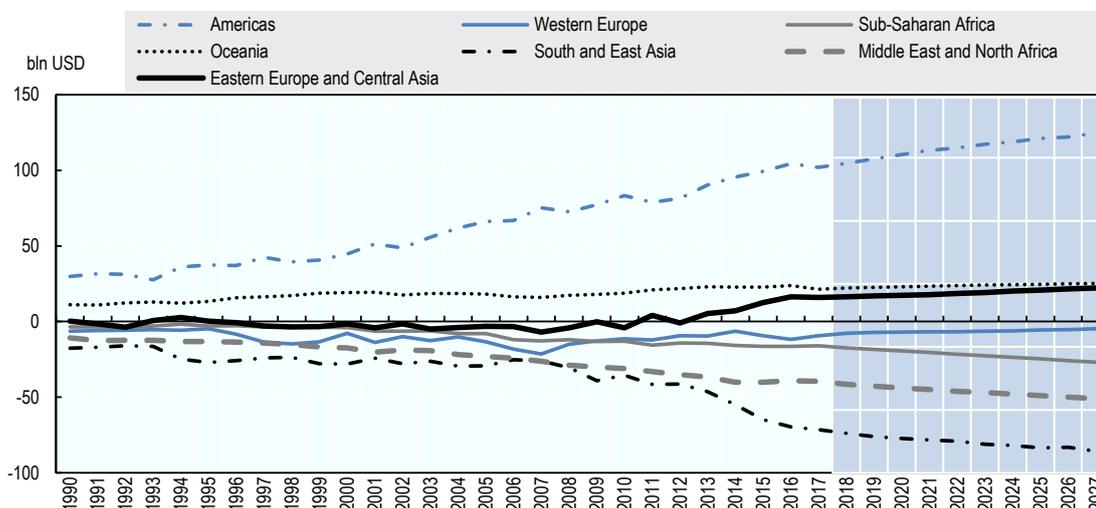
31. Agricultural production in **Europe and Central Asia** expanded rapidly over the previous decade due to an overall economic recovery and considerable investments into the modernisation of agriculture. In the coming decade, agricultural and fish production will expand by 9 percent, largely attributable to the expected growth in the Russian Federation. The region will maintain its position as the second-largest wheat producer, increasing its share of global production to almost 42 percent by 2027. Maize output will also expand by 18 percent over the outlook period, although the region's global share will remain at 12 percent by 2027. An area expansion in sunflower and rapeseed, offset by a reduction in the roots and tubers area, will increase the region's share in global oilseeds production. Growth in the livestock sector will be concentrated in meat, with poultry accounting for the largest share of the expansion. For the region as a whole, milk production is expected to expand by 9 percent over the decade, with an increasing share of milk being processed into cheese. The European Union sugar quota was abolished in 2017 and as European Union prices are expected to fall in line with global markets in the coming decade, sugar beet area is projected to return to pre-2017 levels, keeping sugar production just below 20 million tonnes in 2027.

² More details on the region's production trends can be found in Chapter 2 of the OECD-FAO Agricultural Outlook 2018-2027, which offers an in-depth discussion of the agricultural sector with disaggregated projections for most countries in the region.

IV. Trade

32. The historic and projected regional trade balances shown in Figure 11 confirm that the recent patterns of comparative advantages between regions are expected to persist in the coming decade.

Figure 11. Agricultural net trade by region, 1990-2027



Note: Net trade (exports minus imports) of commodities covered in the Agricultural Outlook, measured at constant 2004–06 USD
Source: OECD and FAO Secretariats

33. Traditional suppliers will expand their market shares for most commodities mainly by responding to growing international demand for maize, soybeans, protein meals and meat. Over the projection period, about 94 percent of the export growth for soybeans, 76 percent for maize, 87 percent for protein meals and 79 percent for meat are expected to originate in the Americas. The total trade surplus is split roughly equally between North and South America. Eastern Europe and Central Asia have also emerged as important agricultural exporters, mostly due to improved export performance of the Russian Federation and Ukraine in the cereals market, where they are expected to maintain their current market shares.

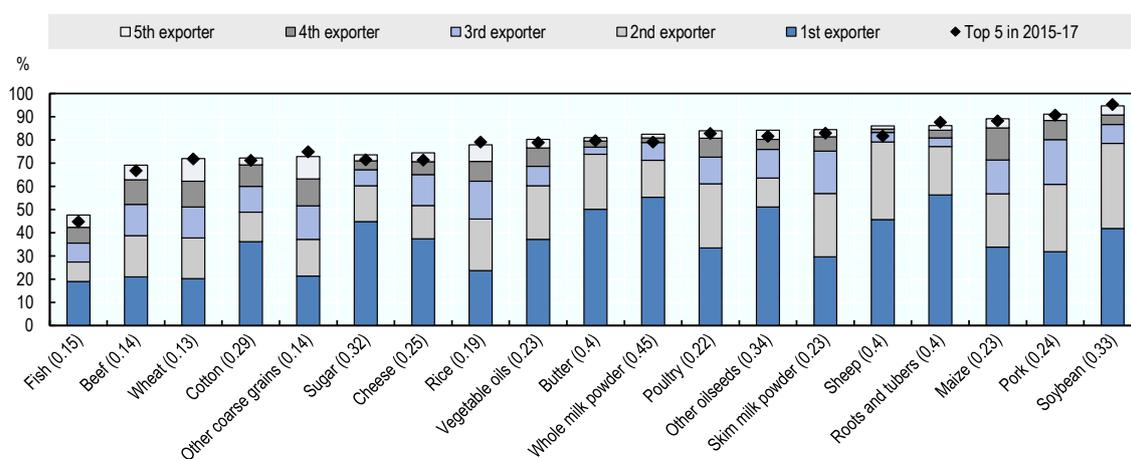
34. South and East Asia, the Near East and North Africa, and Sub-Saharan Africa are the major net importers, although aggregate figures for the regions hide considerable heterogeneity across countries. South and East Asia's growing livestock sector has to rely increasingly on imported feed. Consequently, the region has the largest deficit for feed crops. Net imports are expected to increase for coarse grains by 23 percent, oilseeds by 45 percent and protein meal by about 50 percent by 2027. Despite the projected increase in domestic production of meat in South and East Asia, imports are expected to rise by 31 percent by 2027, still maintaining a self-sufficiency rate of about 95 percent. Rice and vegetable oil surpluses are expected to persist.

35. Imports represent nearly 20 percent of consumption of major food commodities in Sub-Saharan Africa. Staples such as maize and coarse grains are traded mostly within the region as local varieties are preferred. The fast growing population in West Africa together with limited production capacity are the main factors behind rapidly increasing rice imports. Net imports of vegetable oil are projected to increase by about 57 percent, lowering the self-sufficiency rate of the region to below 50 percent. Similarly, net imports of sugar are expanding by 73 percent resulting in a reduction of self-sufficiency from 67 percent to 63 percent.

36. Close to 60 percent of all basic food consumed in the Near East and North Africa is currently imported. This share is expected to increase further, especially for high value commodities. Due to limited resources in the region, meat imports are expected to expand by about 29 percent and dairy products by 19 percent over the coming decade

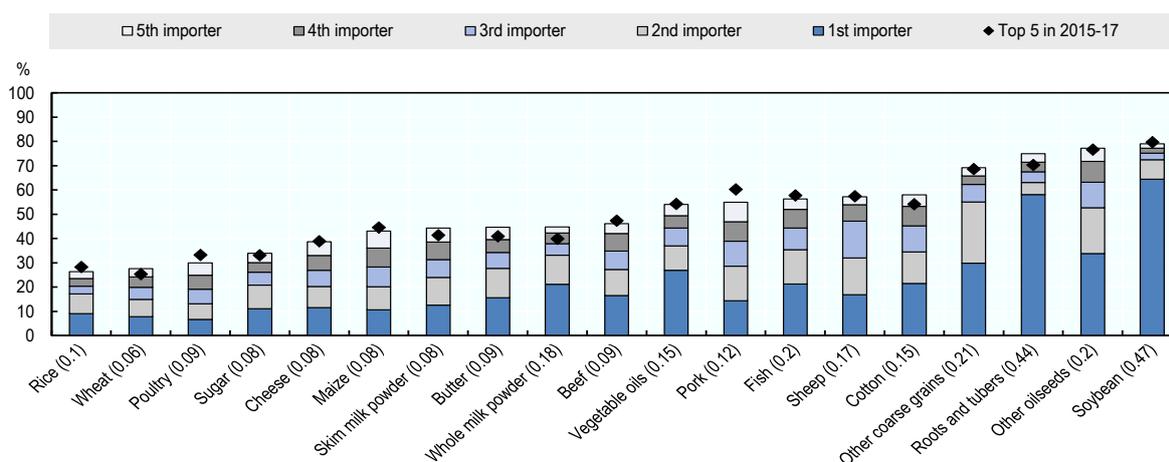
37. A small number of countries with comparative advantage in agricultural production is expected to continue to supply a large share of global exports during the next decade (Figure 12). For soybean and pork, the share of the five leading exporters exceeds 90 percent; for commodities with less concentrated markets, such as beef or wheat, they still account for more than two-thirds of the market. Soybean exports from the United States and Brazil to China will remain the most significant agricultural commodity trade flow.

Figure 12. Export shares of the top five exporters in 2027, by commodity



Note: The number in brackets denotes the Hirschman-Herfindahl Index of concentration of exports across countries. This index equals the sum of squared market shares, here rescaled between 0 and 1, where a value closer to 0 corresponds to the absence of concentration and a value of 1 corresponds to a single country being the sole exporter / Source: OECD and FAO Secretariats

38. Agricultural import markets are typically less concentrated (Figure 13). For most basic food commodities, the share of the five largest importers is less than 60 percent, for rice and wheat, it is less than 30 percent. Notable exceptions are oilseeds, roots and tubers, and other coarse grains, where Chinese imports account for large shares. Export and import concentration ratios will evolve over the next decade without any clear trends towards higher or lower values.

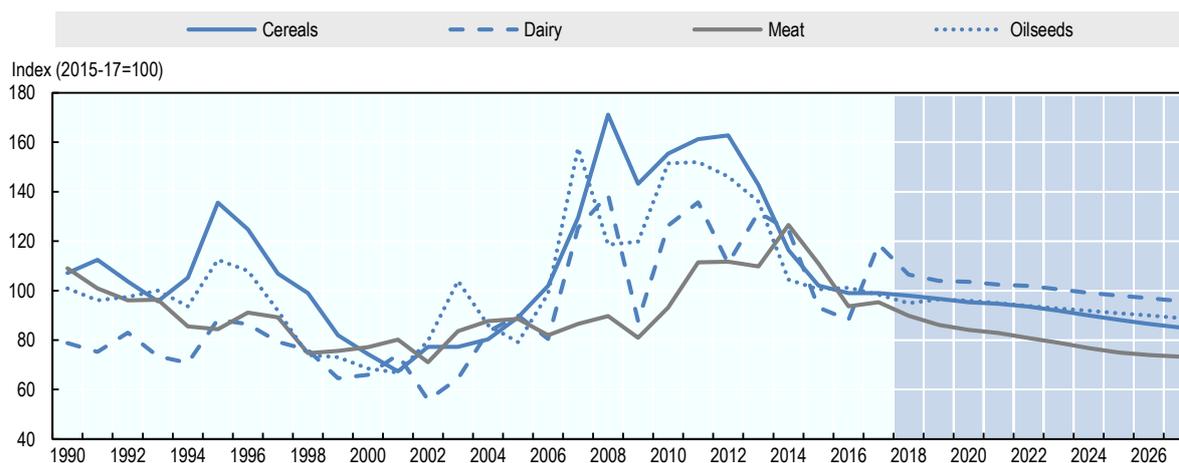
Figure 13. Import shares of top five importers in 2027, by commodity

Note: The number in brackets denotes the Hirschman-Herfindahl Index (see Figure 12 for details)
 Source: OECD/FAO (2018), OECD-FAO Agricultural Outlook*, OECD Agriculture statistics (database)

V. Prices

39. The medium term outlook projections use annual average price quotes at main market places as international reference prices in their forward looking simulations. Near-term price projections are influenced by the effects of recent market events, whereas in the outer years of the projection period, price trends are driven only by fundamental supply and demand conditions.

40. In the coming decade, prices for key commodity groups are projected to fall in real terms (Figure 14). Real prices are expected to be below the peaks seen in 2006–8 for cereals and oilseeds and in 2013–14 for meat and dairy, yet above the levels of the early 2000s. These patterns indicate that under the assumptions made in the medium-term outlook, the paradigm of declining marginal costs in agricultural production is still expected to hold in the coming decade.

Figure 14. Medium-term evolution of commodity prices, in real terms

Source: OECD and FAO Secretariats

41. Despite a general downward trend, a considerable risk of price peaks remains, as demand and supply are relatively unresponsive to short-term market disturbances. Therefore, any deviation from the projected consumption or production levels will have a relatively greater impact on prices.