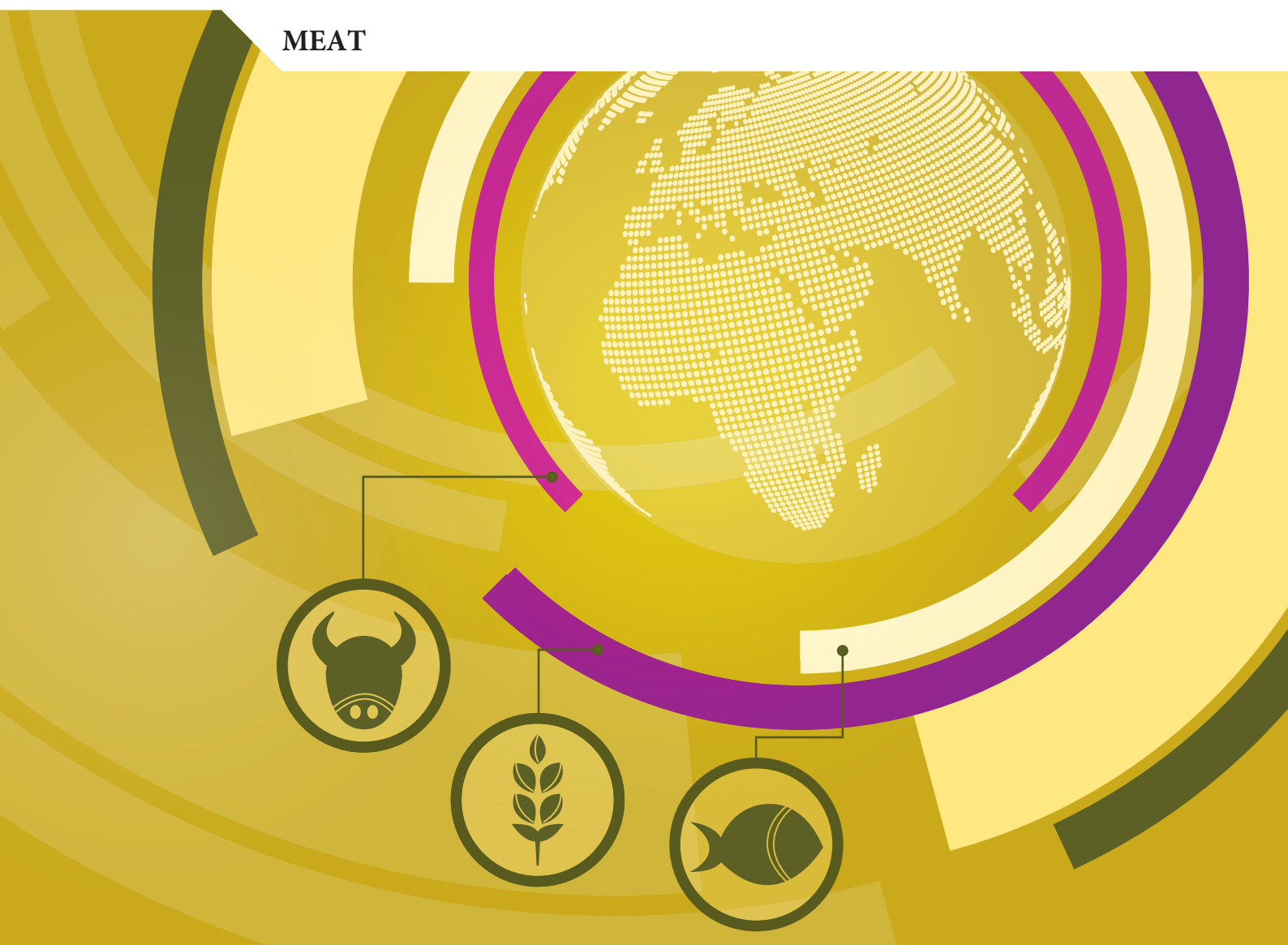




OECD-FAO Agricultural Outlook 2018-2027

MEAT



Chapter 6. Meat

Market situation

Overall world meat production increased by 1.25% to 323 Mt in 2017, with moderate increases in the production of bovine and poultry meats and more modest gains in pig and sheep meat. Much of the world meat production expansion originated in the United States but other main contributors were Argentina, India, Mexico, the Russian Federation and Turkey. Meat production in the People's Republic of China (hereafter "China"), the world's largest meat producer, increased little overall mainly because of the lower growth in poultry meat production as several Avian Influenza (AI) outbreaks affected the country. Nevertheless, China remained the second largest contributor to the 2017 increase in meat production.

Measured by the FAO Meat Price Index, the monthly average for the whole of 2017 was 9% higher than in 2016, but 2.3% below the average of the preceding three years.. International meat prices rose in the first half of 2017, underpinned by a significant increase in import demand for bovine and pigmeat categories. Short availability of export supplies of sheepmeat provided some additional support. As of July, prices began to level off and declined moderately as export supplies increased and import demand weakened. Across the four main meat categories, from January to December 2017, ovine meat prices rose by 35%, and bovine, poultry and pigmeat increased, respectively, by 7.7%, 3.2% and 2.9%.

World meat trade increased to 31 Mt in 2017, 1.5% higher than in 2016, but growth was slower than the 5% registered in 2016. Across categories, world trade expanded in bovine meat by 4.7% and poultry by 1%, while those shipments of pigmeat declined by 0.7% and sheepmeat by 3%. Somewhat sluggish growth in trade in 2017 compared to 2016 reflects a slowdown in imports by China, the European Union, Egypt, Saudi Arabia, Turkey, and the United States, in some cases caused by larger domestic supplies and in others due to falling demand. Meat imports, however, increased in several countries, notably Angola, Chile, Cuba, Japan, Mexico, Korea, Indonesia, Iraq, the United Arab Emirates, Ukraine, and Viet Nam. The expansion of world meat trade exports in 2017 was largely led by Argentina, Canada, India, Thailand, the United States, and Ukraine whereas sales by the European Union and New Zealand declined.

Projection highlights

This year's *Outlook* projects an expansion in meat supply which should result in short-term meat prices declining relative to 2017. The herd rebuilding cycle observed in several regions is nearing an end and additional supply is expected to enter the market in the early years of the projection period. Feed grain prices are also projected to remain low during this period, benefitting regions – such as the Americas, Australia and Europe – where feed grains are more intensively used in meat production. Over the medium term prices will strengthen as per capita meat consumption expands in key developing

countries, in particular Latin America and Asia. The projection indicates that per capita consumption growth, when compared to the base period (average 2015 to 2017), will increase by 2.8 kg retail weight equivalent (r.w.e.) in developed countries and by half this amount in developing countries. Incomes in least developed countries (LDC) are projected to increase somewhat, leading to a small increase in per capita meat consumption in LDC countries. At the global level, per capita meat consumption will increase slightly more than 1 kg r.w.e.

Global meat production is projected to be 15% higher in 2027 relative to the base period. Developing countries are projected to account for the vast majority of the total increase, with greater use of a grain-intensive feeding system in the production process, resulting in increased carcass weight. Poultry meat remains the primary driver of the growth in total meat production, but in the coming decade this growth will slow significantly compared to that of the previous one. Growth in global demand for animal protein in the next decade is projected to slow down for poultry and pigmeat, but increase for beef and sheep meat. Lower product prices have contributed to making poultry and pigmeat the meat of choice, particularly for consumers in developing countries. With income growing over the projection period, those consumers are expected to increase and diversify their consumption towards more expensive meat protein such as beef and sheep.

In the bovine meat sector, cow herds have been rebuilt faster than expected in North America, which will lead to rising slaughter numbers and ample supply of meat on the world market for the coming years. Production will further increase as countries in the herd rebuilding phase, such as Australia, and Brazil are further along the cycle, providing additional supplies of meat in the early years of the projection period. Pigmeat production will also increase, driven by steady herd expansion in China which was slowed by more stringent environmental regulations and animal welfare concerns affecting the pork sector.

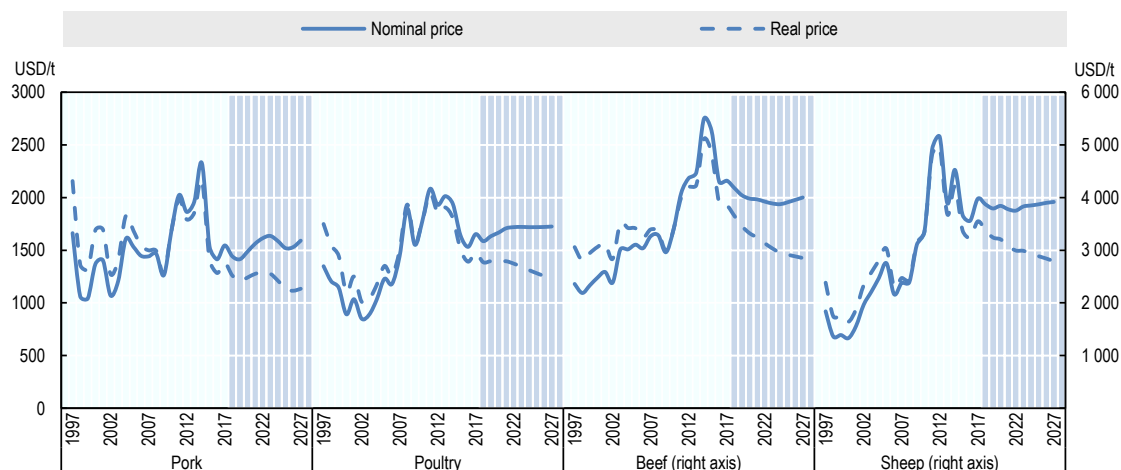
The year 2017 was affected by numerous outbreaks of Avian Influenza (AI) around the world which resulted in a slower increase in world output. China, the second largest producer after the United States, was particularly affected by several outbreaks over the last years and this *Outlook* assumes a return to historical trend growth in China poultry production from 2018 onwards. Production is also expected to increase in the sheepmeat sector with an expected global growth of 1.8% p.a., a higher rate than in the last decade. Production increases will be led by China, but increases will also occur in India, Nigeria, Oceania, Pakistan, Turkey, and Yemen.

Globally, the share of meat output traded is expected to remain constant over the projection period, at around 10%, with most of the increase in volume coming from poultry meat. The projected production growth in developing countries remains insufficient to satisfy demand growth, particularly in Asia and Africa. Consequently, import demand is expected to remain strong throughout the outlook period. The most significant growth in the share of additional meat import originates from the Philippines and Viet Nam. Developed countries are still expected to account for more than half of global meat exports by 2027, but their share decreases slightly relative to the base period. The combined share of the two largest meat exporting countries, Brazil and the United States, is expected to increase to around 47%, contributing nearly two-thirds of the expected increase in global meat exports over the projection period.

At the start of the outlook period, nominal meat prices are projected to be marginally lower as the supply expands and exerts downward pressure on prices. Meat nominal prices are projected to gradually increase until 2027 relative to the earlier years of the

projections. By 2027, the price for beef is projected to increase to USD 4 000/t carcass weight equivalent (c.w.e.) and to increase to USD 3 900/t c.w.e. for sheepmeat, while world pigmeat and poultry prices are expected to rise to around USD 1 600/t c.w.e. and USD 1 700/t product weight (p.w.) respectively. In real terms, prices are expected to trend downwards for all meat types (Figure 6.1), although meat-to-feed price margins will generally remain within historical levels.

Figure 6.1. World meat prices



Note: US Choice steers, 1 100-1 300 lb dressed weight, Nebraska. New Zealand lamb price dressed weight, all grade average. US Barrows and gilts, No. 1-3, 230-250 lb dressed weight, Iowa/South Minnesota. Brazil: Export unit value for chicken (f.o.b.) product weight.

Source: OECD/FAO (2018), “OECD-FAO Agricultural Outlook”, OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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Global meat consumption per capita is expected to increase to 35.4 kg r.w.e. by 2027, an increase of 1.1 kg r.w.e. compared to the base period. Despite high population growth rates in much of the developing world, total consumption is also expected to increase by 1.4 kg r.w.e., half of the increase expected in developed countries. Additional per capita consumption at the global level will consist mainly of poultry with 0.8 kg r.w.e., while beef, sheepmeat and pigmeat will change marginally. In per capita terms the growth will be fastest in Latin America, with an increase of 3.7 kg r.w.e. In absolute terms, total consumption growth quantities in developed countries over the projection period is expected to be approximately a fourth of that in developing regions, where rapid population growth and urbanisation remain the core drivers. These drivers are particularly important in Africa, where the rate of total consumption growth over the outlook period is faster than any other region. Import demand is also expected to grow the fastest in Africa.

Globally, animal disease outbreaks (e.g. swine fever), sanitary restrictions, and trade policies remain the main factors driving the evolution and dynamics in world meat markets. The projections reflect the implementation of various trade agreements, domestic policies and sanitary and phytosanitary restrictions announced or in place by 1 January 2018. Uncertainties related to existing or future trade agreements over the outlook period could impact and diversify meat trade patterns. Domestic policies development could also impact the meat sector such as the review in 2018 of the US

Farm Bill. Further factors that could impact the meat outlook include consumer preferences and attitudes towards meat consumption. Consumers are showing a preference for free-range meat and antibiotic-free meat products, but the extent to which they are willing and able to pay a premium for them remains unclear.

Prices

Despite rising during the first half of 2017, meat prices have declined from recent peaks, in both nominal and real terms. Over the outlook period, meat prices will increase marginally in nominal terms due to sustained economic growth in developing countries. Real term meat prices will continue to trend down following the recent price peak. The actual path over time will differ by meat type.

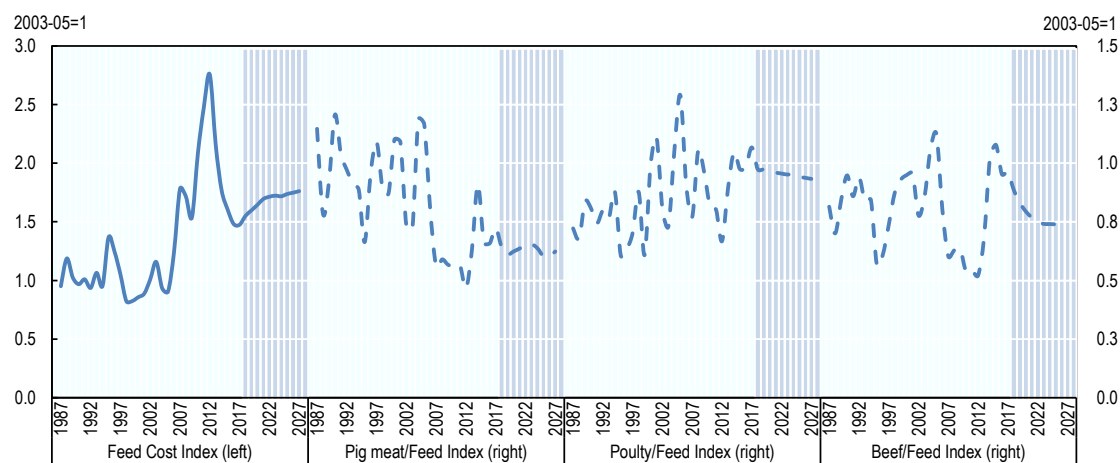
In the short term, beef prices will decline due to ample beef supply from North America following the rapid rate of herd rebuilding. In line with the expansion of output in key production regions, nominal bovine meat prices will decline until 2024. However, as the beef cow herd declines and the rate of production growth slows down, prices will start to increase until the end of the projection.

Nominal pigmeat prices will decrease from 2017 and are expected to oscillate in a typical cycle for the projection period, declining in real terms. Notable features of the global sector that shape this trend are increased supply from Brazil, China, the United States and Viet Nam, and higher imports from Mexico and Philippines.

The effect of an increasing poultry flock – the spread of AI is assumed to be contained by 2018 – combined with slowly rising feed costs (Figure 6.2) result in a moderate poultry price increase in the medium term. This is further supported by increasing income over the projection that will stimulate demand growth, particularly from Asia, Latin America and Africa. In real terms, prices will decline throughout the projection period.

Nominal sheepmeat prices are expected to increase marginally, due partly to weak import demand growth from China and the Middle East combined with a gradual increase in lamb production in Algeria, Australia, China, Ethiopia, India, New Zealand, Nigeria, Pakistan and Turkey. After several years of decline, the European Union's declining trend in production was reversed in 2015, and is projected to increase marginally from the current level with an increased profitability of sheep farms in Romania and Cyprus, and implementation of voluntary coupled support in the main sheep producing Member States.

For the medium term, production will benefit from positive meat-to-feed price ratios (Figure 6.2) resulting in herd and flock expansion in key producing regions. Increased productivity in those regions will also support a supply-driven market that will lower meat prices over the early part of the projection period. However, prices are expected to increase moderately in the latter part of the projection period as per capita meat consumption grows. Lower product prices have contributed to making poultry and pigmeat the meat of choice for consumers in developing countries but rising income levels allow those consumers to diversify meat consumption, gradually consuming more of the more expensive meat varieties such as beef and lamb. Nevertheless, poultry meat remains the primary driver of the growth in total meat production. Low production costs, high feed conversion ratios, and low product prices have contributed to making poultry the meat of choice, both for producers and consumers.

Figure 6.2. Feed cost index and meat to feed price ratios

Source: OECD/FAO (2018), “OECD-FAO Agricultural Outlook”, OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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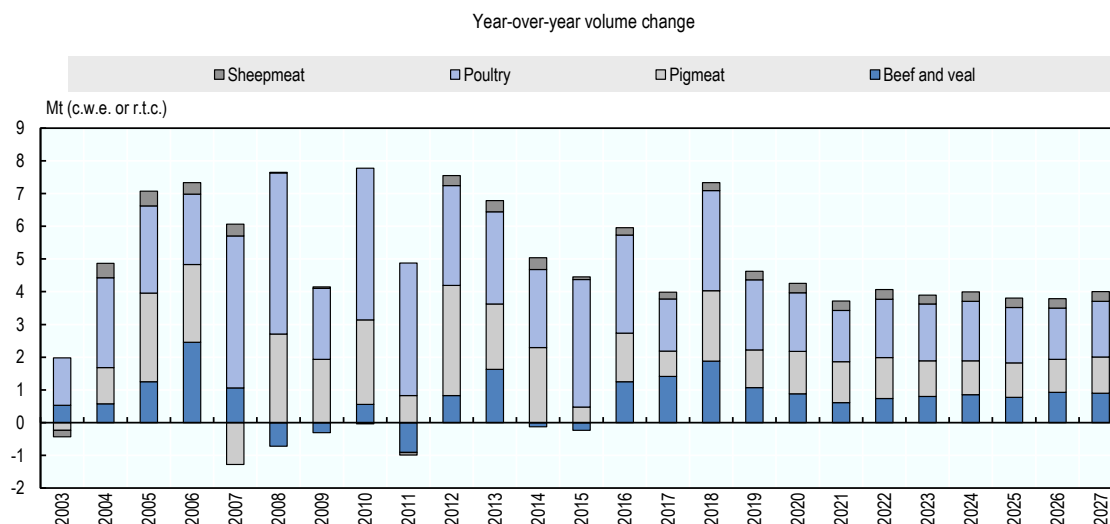
Production

Livestock supply responses to market signals are mainly influenced by the availability of natural resources and the possibilities for increases in productivity; however, both of these factors are increasingly controlled by environmental legislation, such as the Paris climate agreement and food safety regulations (Box 6.1). As such, there is potential for production growth in many developing countries where natural grasslands and agricultural land abound for producing feed grains, e.g. South America.

Total meat production is projected to expand by slightly more than 48 Mt by 2027, reaching nearly 367 Mt. The yearly increase in the overall quantity of meat produced should be relatively constant after 2018 (Figure 6.3). This development occurs predominantly in developing countries which will account for 76% of the additional output (Figure 6.4).

In some developing countries, production growth is supported by increasing productivity in the form of higher carcass weight per livestock unit and improving feed use efficiency. Least developed countries are not foreseen to improve productivity at the same rate as smallholder structures and lack of investments in the livestock sector limit technological improvements and commercialisation of production.

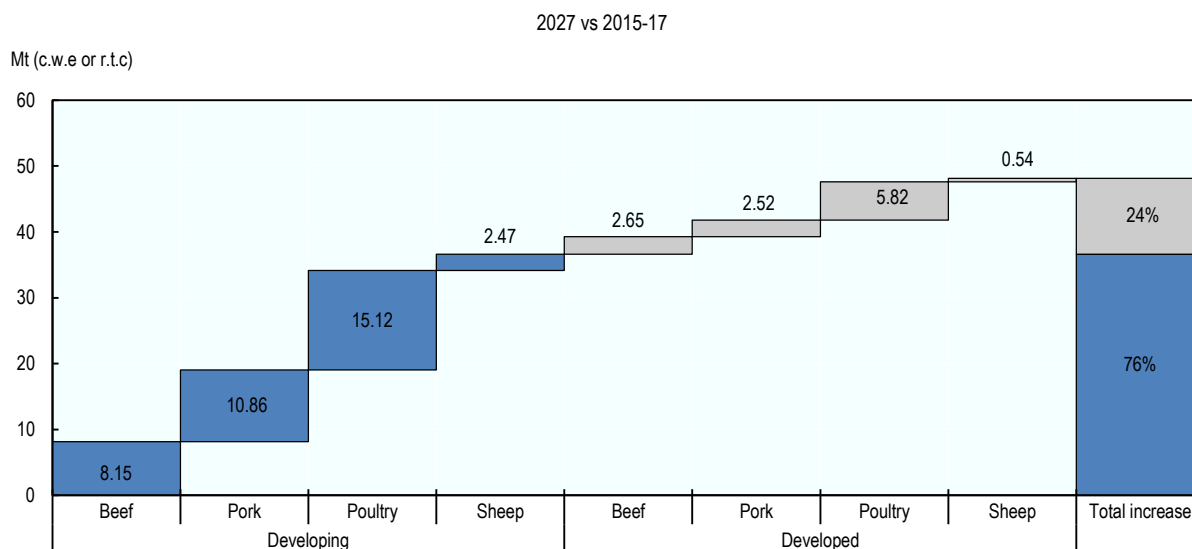
Meat production continues to be dominated by Brazil, China, the European Union, the Russian Federation, and the United States. Brazil’s production growth will benefit from abundant supply of natural resources, feed, grassland availability, productivity gains, and to some extent the devaluation of the Real. China’s production will benefit mostly from growing economies of scale as small production units grow into larger and increasingly commercial enterprises. United States production will benefit from strong domestic demand and higher slaughter weight, while production in the European Union will remain stable reflecting a decline in fresh domestic meat consumption balanced by increasing use of meat products as ingredients in processed products. Finally, the meat import ban put in place by the Russian Federation increased domestic prices and stimulated domestic meat production.

Figure 6.3. Annual growth of meat production by type

Note: c.w.e. is carcass weight equivalent, r.t.c. is ready to cook equivalent.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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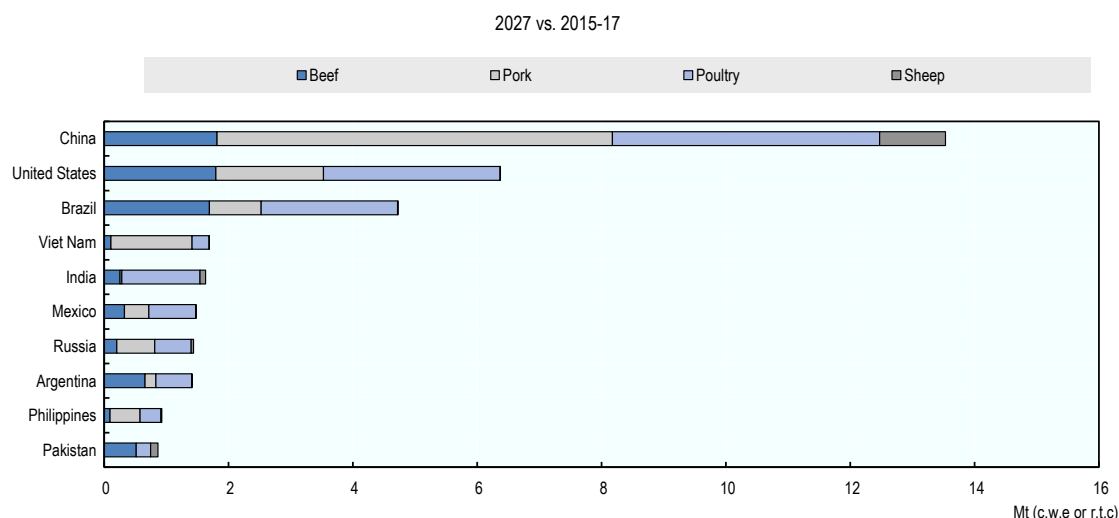
Figure 6.4. Growth of meat production by region and meat type

Note: c.w.e. is carcass weight equivalent, r.t.c. is ready to cook equivalent.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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Other developing countries with noteworthy potential contributions to additional meat production include Argentina, which benefits from favourable policies for exports, which stimulates herd expansion; India, Mexico and Viet Nam (Figure 6.5).

Figure 6.5. Countries with the greatest share of additional meat production by meat type

Note: c.w.e. is carcass weight equivalent, r.t.c. is ready to cook equivalent.

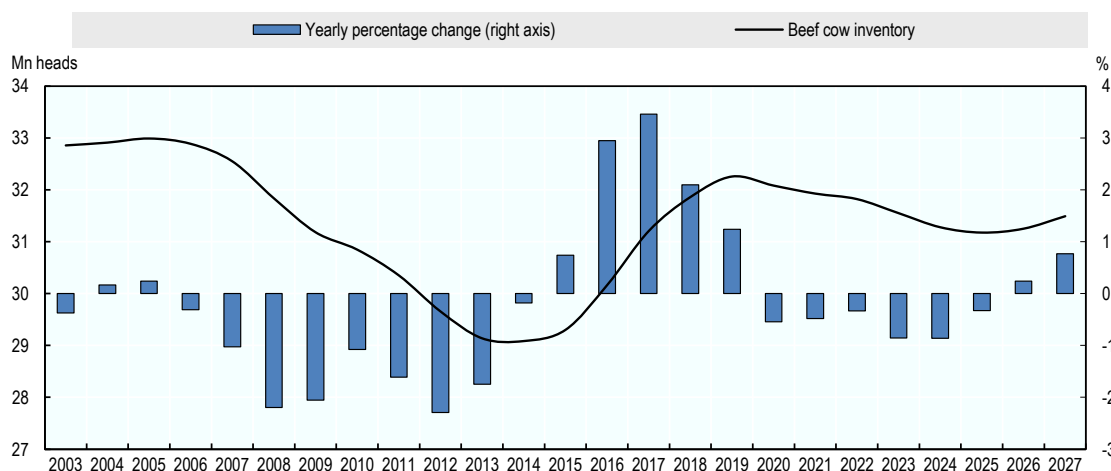
Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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For the outlook period, beef production continues to grow across the main producing countries (Figure 6.5). Beef production in developing countries is projected to be 21% higher in 2027, relative to the base period, with these countries accounting for 75% of the additional beef produced. The majority of this expansion is attributed to Argentina, China, Brazil, Pakistan, and Turkey. While India is an important bovine producer, production growth is projected to slow down as sales of cattle for slaughter remains a sensitive issue that is creating significant uncertainty amongst producers. In developed countries, production will be 9% higher by 2027 compared to the base period, virtually all of this increase being due to high growth in the United States. Whilst the expansion cycle in the United States is nearing its end, the herd expansion cycle in other countries, such as Australia, Brazil, Mexico, is expected to slow down at a later time. Moreover, the removal of export taxes on beef has promoted beef herd rebuilding in Argentina which is expected, in turn, to increase the beef production back to historical levels over the medium term. The feeder cattle and bovine for breeding import and distribution policies favouring young farmers in Turkey are expected to lead to growth in production in the medium term. However, beef production in the European Union¹ is expected to enter a downward trend as dairy breeds make up approximately two-thirds of the bovine meat supply, and productivity gains in the milk sector will somewhat decrease beef production. This limits the sector's potential to adjust to changes in market signals.

In the short term, production will be supported by both higher carcass weights arising from low feed costs and improved genetics, as well as increased slaughter numbers as final herd rebuilding in several producing regions becomes evident in higher livestock numbers. In the United States, the total beef cow number is projected to increase and reach its peak, much faster than expected in last year's *Outlook*. Domestic and foreign demand has been stronger in the near term, but is expected to slow in the latter years of the outlook period. Declining domestic per capita beef consumption in the latter part of the next decade underpins the projection that the US cow herd will enter a declining cycle post-2020 (Figure 6.6)

Figure 6.6. US beef cow inventory



Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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The expansion in global pork production will decelerate over the next decade. China's production growth is expected to provide nearly half of the additional global output. The total global volume will remain in line with the demand recovery, which is significantly lower relative to the past decade. Strong production growth rates over the outlook period are also expected in Brazil, Mexico, Philippines, the Russian Federation, the United States and Viet Nam. The European Union's pigmeat production is projected to decline marginally, as domestic consumption stabilises and competition from the world market increases.

Poultry will continue to strengthen its dominant position within the meat complex, accounting for nearly 45% of all additional meat that will be produced over the next decade. Its short production cycle allows producers to respond quickly to market signals, while also allowing for rapid improvements in genetics, animal health, and feeding practices. Production will expand rapidly in countries producing surplus feed grains, such as Brazil, the European Union and the United States. Rapid expansion is also foreseen in Asia, led by China (where the *Outlook* assumes no further outbreaks of AI) and India.

Sheepmeat production will experience a higher rate of growth than that of the previous decade, with developing countries accounting for the bulk of the additional output. Growth in domestic sheepmeat production in the MENA region is projected to increase despite limitations linked to urbanisation, desertification and the availability of feed in some countries. China, the leading sheepmeat-producing country, will contribute slightly more than 36% of additional production as domestic demand continues to grow. Australia and New Zealand's global share of sheepmeat production is expected to slightly decline throughout the outlook period, despite increasing domestic output. The EU flock is expected to increase in the first half of the outlook period, as profitability improves, followed by a marginal decline towards 2027, as competition from Oceania limits exports potential. The share of the African region in sheepmeat production will slowly increase and contribute up to 26% of the additional global supply.

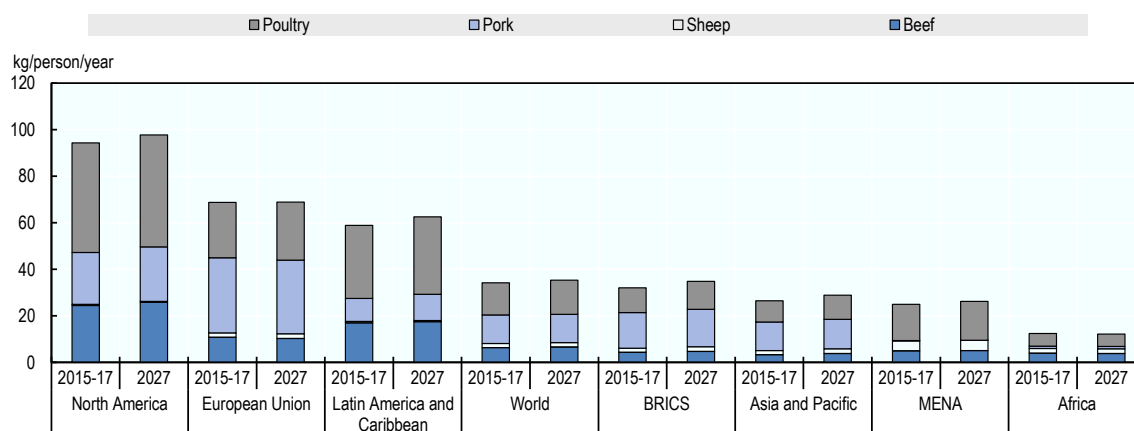
Consumption

In much of the developing world, per capita meat consumption remained stable in 2017 as income growth slowed, particularly in regions highly dependent on commodity imports. Although growth in the demand for meat is expected to recover over the outlook period, particularly in the developing world, growth rates are generally expected to be lower than in the past decade. Growth will stem from a combination of income and population growth, especially in countries with large middle classes. Africa's rate of growth in consumption will be the highest of all continents however, dominated by population growth resulting in a decline in per capita consumption. In developed countries, consumption levels are already high, but meat demand generally continues to increase, particularly in the United States where per capita consumption and meat prices will return to the same levels as a decade ago. Nevertheless, growth rates are generally lower than those in the developing countries (Figure 6.7).

In LDCs with high population growth rates, meat consumption has been growing rapidly, albeit from a low base. This is notably the case in Africa, where poultry accounts for the bulk of additional consumption in the region, followed by beef. Whereas the bulk of the sheep consumption is produced within the African region, a substantial share of additional beef, pigmeat and poultry consumption will be imported.

Beef consumption will increase gradually over the next ten years. By 2027, it is expected to be 8% higher than in the base period in developed countries, whereas in developing regions it is expected to increase be 21% higher. In per capita terms, beef consumption in the developing world remains low relative to developed countries, at about one-third in volume terms. Population increases in Asia are the major driver of growth, together with the positive perception of Chinese buyers' that bovine meat is healthier and disease-free. Increased beef and buffalo consumption levels are also expected in Kazakhstan, Turkey, and Viet Nam. The result is an expected 24% increase in beef consumed in Asia over the next decade.

Figure 6.7. Per capita meat consumption by region



Note: Per capita is expressed in retail weight.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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Global pigmeat consumption on a per capita basis remains stable over the outlook period with consumption in most developed countries reaching saturation levels. Within developing countries, significant regional differences are evident in per capita pigmeat consumption. Growth is sustained in most of Latin America, where it has grown rapidly over the past few years. Growth is fuelled by favourable relative prices that have positioned pork as one of the favoured meats, along with poultry. Several Asian countries with favourable economic conditions which traditionally consume pork such as China, Philippines, Thailand, and Viet Nam – which is projected to become the highest consumer of pork on a per capita basis – are increasing consumption on a per capita basis at the regional level. Population expansion still supports growth in total pork consumption in these regions.

Consumption of poultry meat increases regardless of region or income level. Per capita consumption will grow, even in the developed world, but growth rates will remain higher in developing regions. In China, consumption suffered from the AI virus outbreaks which affected humans in the last years. The *Outlook* assumes that consumption will not be much affected in 2018 and will return to the historical trend afterwards. Among all the additional meat consumed over the next decade, poultry is expected to account for 44%.

Sheepmeat consumption worldwide on a per capita basis will reach 1.8 kg r.w.e. by 2027. Sheepmeat consumption per capita in Africa, North and Latin America, and Oceania is expected to decline slightly. In contrast, sheepmeat will continue to expand in several Asian countries, such as China, where consumers associate sheepmeat with quality and nutritional benefits. An increase in per capita consumption of sheepmeat is projected for the MENA region, where it is traditionally consumed. Demand growth in this region is tightly linked to the oil market which heavily influences both the disposable income of the middle class and government spending patterns.

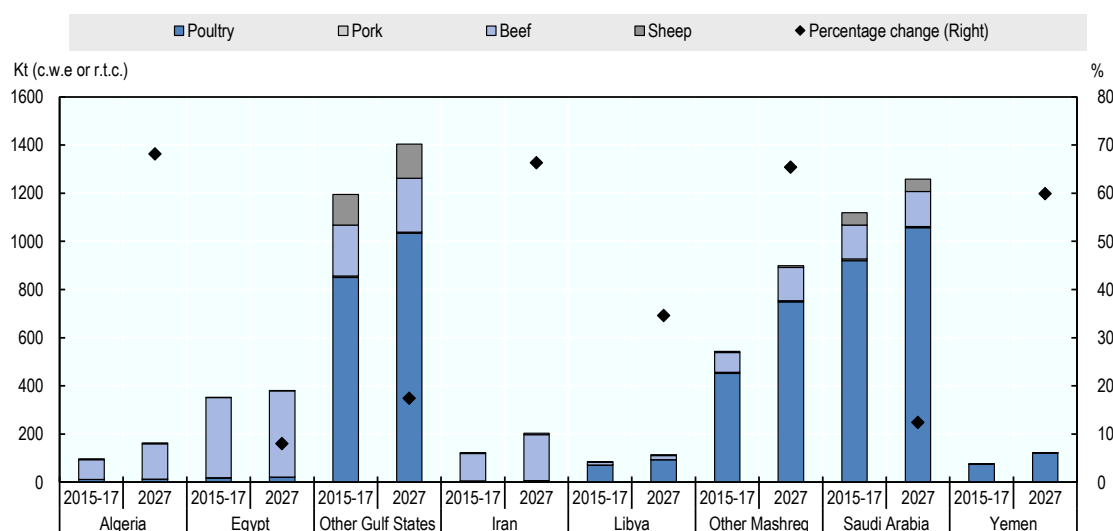
Trade

At the global level, meat exports (excluding live animals) are projected to be 20% higher in 2027 than in the base period. This represents a slowing down of meat trade growth to an annual average rate of 1.5% compared to 2.9% during the previous decade. However, the share of total meat output traded on the global market will remain similar in 2027 to the base period, at slightly below 10%. Global imports will increase, particularly for poultry and bovine meat which will account for the majority of the additional meat traded in 2027. Asia will account for the greatest share of additional imports, with the greatest increases in the Philippines and Viet Nam, where consumption growth is outpacing domestic production expansion. Meat imports into Asia account for 56% of global trade, and poultry will constitute more than half of this additional import demand. Rapid growth in imports from Africa is projected to increase the import share of the region by 2027. The MENA region will also increase its import of meat, the bulk of this growth will accrue to Saudi Arabia and the other Gulf States (Figure 6.8).

Although by 2027 developed countries are expected to account for slightly more than half of global meat exports, their share will decrease steadily relative to the base period. Meat exports will become increasingly concentrated, with Brazil expected to capture more than one third of total trade expansion and the United States more than a quarter. Exports from the European Union, strongly influenced by the exchange rate, will grow at a much slower rate. The European Union has improved its access to Asian markets, but competition from North and South America will prevent it from taking full advantage of this opportunity. In the Americas, traditional exporting countries are expected to retain a

high share of the global meat trade. Argentina, Brazil, Mexico and the United States are expected to increase their share of world meat exports somewhat benefiting from the depreciation of their currencies.

Figure 6.8. Meat imports in selected MENA countries



Note: c.w.e. is carcass weight equivalent, r.t.c. is ready to cook equivalent. Other Gulf States are Bahrain, Kuwait, Oman, Qatar and the United Arab Emirates.

Source: OECD/FAO (2018), “OECD-FAO Agricultural Outlook”, OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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The highest meat import demand in 2017 was from Japan, which saw a rapid expansion of beef imports that triggered special safeguard (SSG) for frozen beef imports from countries without free trade agreements. Import demand from Japan will slowly decrease as its population declines by nearly 4 million by 2027. For the projection period, China’s increase in meat production will not be enough to meet its increasing domestic demand, which implies the need to continue importing at current high levels. Viet Nam and the Philippines are expected to capture a larger share of additional imports for all meat types, supported by favourable economic growth. Africa is another fast-growing importing region, although many countries start from a low base. In the Russian Federation, the long-term effects of the 2014 import ban on meat have permanently reduced the level of imports, which are projected to decline further as a result of the stimulus to domestic production.

Meat import growth in volume at the global level is driven by poultry meat, the bulk of which is imported by developing countries. The vast majority of the additional growth in bovine meat will be traded between developing countries; however, developed countries will supply the bulk of additional exports in pigmeat.

It is anticipated that Brazil and the United States will benefit from strong poultry demand from the developing world where diets are diversifying towards higher animal protein consumption levels.

Australia and New Zealand will continue to supply global sheepmeat markets as the middle class in China and the Middle East continues to expand. Australia is expected to

increase lamb production at the expense of mutton. In New Zealand, export growth will be marginal as land use has shifted from sheep farming to dairy.

Main issues and uncertainties

Trade policies remain a major factor impacting the dynamics of world meat markets. As a result, the projection and implementation of various trade agreements over the outlook period could diversify or consolidate meat trade considerably. Multilateral trade agreements are proving difficult to ratify, which may favour bilateral trade agreements.

Unilateral and/or unexpected trade policy decisions are another risk factor in the projections. For example, in 2017 the Russian Federation extended until the end of 2018 the ban on imports of food from the United States, Australia, Norway, Canada, and the European Union in response to economic sanctions. This ban has resulted in a large decline in meat imports, higher producer price volatility, and higher consumer prices. Domestic policies also influence the competitiveness of meat producers. For example, the Turkish government increased domestic beef production by subsidising feeder cattle and bovine for breeding import and distribution which helped to rebuild the domestic cattle inventory. Another example is found in Argentina which in 2017 introduced a refund scheme on turnover and other provincial value added taxes that are applied to meat and other products that are exported. This should increase Argentina's competitiveness on the world meat market and open new opportunities for exports.

An important factor that could impact the outlook relates to sanitary and food safety concerns arising from animal diseases outbreaks (e.g. swine fever). For example, Brazil could be declared free of Foot and Mouth Disease (FMD) with vaccination in 2018 and FMD-free without vaccination in 2023, which could open a larger market for Brazilian beef and pork from countries which prohibited imports from areas where the disease existed. Depending on the duration, intensity, potential government and consumer reactions, and trade restrictions, diseases could impact domestic and regional meat production, consumption and trade. For example, the outlook for meat production and consumption will depend on how quickly the Human AI virus will be contained in China. A concern is the further spread of the virus during the outlook period. The Chinese government is closely monitoring the situation in all provinces affected by AI outbreaks.

Finally, changing consumer preferences, such as the rise in vegetarian or vegan lifestyles, are relatively new and difficult to assess. They, however, somewhat affect global meat markets if they are adopted by an increasing share of the population.

Box 6.1. The economics of antimicrobial resistance in livestock production

There is growing global awareness that the high level of antibiotic use in food animal production is closely linked to the risk of antimicrobial resistance (AMR) as bacteria mutate and develop traits that become resistant to the commonly used antibiotics. Not only are there concerns over the AMR effects on animal production and productivity, but on the transmission of resistant genes and bacteria between different species. At issue is the frequent and inappropriate use of antibiotics on animals and humans which accelerates the emergence and spread of resistant pathogens. Indeed, many antibiotics used in animal husbandry are used also in human medicine, thus increasing the risks of cross-over and the emergence of multi-resistant pathogens. Studies have estimated this problem could generate up to ten million deaths by 2050 and a reduction in global GDP of 2%-3.8% (WHO, 2015; WB, 2016). Estimates also show that by 2050 the potential impact of AMR on

animal production could reduce global animal production by 2.6% to 7.5%, with the most severe impact likely to occur in low-income countries, which would suffer an estimated decline of up to 11% (WB, 2016).

Antibiotics have been widely used over the last 30–40 years in animal production to treat (therapeutic), prevent (prophylactic) and control (metaphylactic) disease outbreaks, and to increase the growth rate of animals and improve their productivity. The use of antibiotics in animal production is complex and difficult to estimate at the industry and species level due to lack of reliable data. At the farm level, the optimal level of use is largely an economic decision by the farmer within the context of good animal health and animal welfare. As large intensive animal production operations, particularly in emerging economies, have developed over the last 30 years, global demand for veterinary antibiotics has increased sharply. In many countries, the use of antibiotics in animal production is substantially larger than in human medicine.

OECD and the BRIICS account for about four-fifths of global meat production, with poultry, pig meat and beef accounting for more than 70% of the total. The use of antibiotics is closely related to the size of the farm animal population, the intensity of the production system, and how that system is managed. Four countries – China, the United States, India, and Brazil – are estimated to account for over three-fifths of global antibiotic use in animal production. Studies of the productivity impacts from such use in feed or water have concluded that the benefits are declining in most countries in view of improvements in animal management, nutrition, breeding, and biosecurity measures. For example, although several recent studies have estimated the gains from using antibiotics at 1% and 3% for pig and poultry production, respectively, producers in emerging economies often experience much higher gains due to the lower starting point in terms of management and biosecurity standards.

Much of the current AMR focus is on the potential cost burden to the public health sector, and the benefits and costs for livestock production. Findings from recent studies in Denmark, Netherlands, Belgium, France, and Sweden show that the use of antibiotics in pig and poultry production can be reduced by more than 50% without adversely affecting animal productivity, animal health, or the profitability of the farm provided that good management and biosecurity measures are implemented. Alternatives to antibiotics currently under review include vaccinations, probiotic, bacteriophages, and the use of heavy metals, as well as other substitutes including better management and hygiene measures.

At the international level, AMR is a high priority at the UN General Assembly (2016) and for the G20 countries. The WHO's Global Action Plan 2016 (GAP) on antimicrobial resistance sets out several broad recommendations to contain the growth in AMR and which is implemented through the work of the Tripartite (WHO/OIE/FAO) which seeks to improve awareness, education and training, in addition to developing measurement standards and surveillance systems. The work of the Tripartite is undertaken in close co-operation with the OECD and World Bank, both of which assess in particular the potential economic impacts of AMR on human health and food animal production. As AMR is a global issue, the "One Health Framework" has been adopted by most countries tackling this issue. Most WHO member countries have developed specific National Action Plans with specific targets to reduce antibiotic use and, consequently, AMR in human medicine and animal food production.

Sources: OECD (2018, forthcoming), *The economics of antimicrobial resistance in livestock production*, OECD Publications, Paris.

World Bank (2016), "Drug-Resistant Infections: A Threat to Our Economic Future. Part VI", in *Antimicrobial Use in Animals and AMR*, pp 65–78, The World Bank, Washington, D.C.

World Health Organisation (2015), *Global Action Plan on Antimicrobial Resistance*, World Health Organisation, Geneva.

See also Workshop on Economics of Antimicrobial Use and Resistance in the Livestock Sector website. <http://www.oecd.org/tad/events/workshop-economics-antimicrobial-use-resistance-livestock-sector-october-2015.htm>.

Note

- ¹ Insight on beef sector developments in EU Member States is explained in more detail in Box 4.1 of the European Union (2017), “EU Agricultural Outlook for the EU agricultural markets and income 2017-2030”.

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Table A.4. World meat projections

Calendar year

		Average 2015-17est	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
WORLD												
BEEF AND VEAL												
Production	kt cwe	68 486	71 724	72 799	73 683	74 296	75 038	75 839	76 697	77 471	78 394	79 292
Consumption	kt cwe	67 977	70 932	72 105	72 908	73 509	74 250	75 056	75 913	76 690	77 617	78 510
PIGMEAT												
Production	kt cwe	117 547	120 708	121 855	123 151	124 401	125 644	126 731	127 759	128 807	129 820	130 930
Consumption	kt cwe	117 354	120 476	121 679	122 975	124 230	125 461	126 537	127 556	128 595	129 597	130 699
POULTRY MEAT												
Production	kt rtc	118 083	123 205	125 350	127 142	128 705	130 491	132 229	134 052	135 752	137 316	139 016
Consumption	kt rtc	118 018	123 121	125 248	127 050	128 624	130 401	132 142	133 966	135 669	137 234	138 921
SHEEP MEAT												
Production	kt cwe	14 417	14 872	15 128	15 413	15 708	16 002	16 276	16 559	16 848	17 138	17 430
Consumption	kt cwe	14 436	14 868	15 124	15 411	15 710	15 998	16 269	16 548	16 834	17 121	17 410
TOTAL MEAT												
Per capita consumption ¹	kg rwt	34.3	34.7	34.9	35.0	35.0	35.1	35.1	35.2	35.2	35.3	35.4
DEVELOPED COUNTRIES												
BEEF AND VEAL												
Production	kt cwe	29 543	30 883	31 167	31 326	31 234	31 330	31 516	31 727	31 839	32 030	32 196
Consumption	kt cwe	28 643	29 805	30 235	30 312	30 138	30 171	30 297	30 481	30 572	30 750	30 896
PIGMEAT												
Production	kt cwe	44 251	45 297	45 244	45 378	45 521	45 816	45 974	46 183	46 402	46 532	46 770
Consumption	kt cwe	40 773	41 634	41 718	41 852	41 992	42 257	42 350	42 468	42 588	42 579	42 739
POULTRY MEAT												
Production	kt rtc	48 947	50 868	51 460	52 063	52 398	52 845	53 262	53 696	54 101	54 430	54 763
Consumption	kt rtc	46 971	48 772	49 165	49 666	49 910	50 244	50 538	50 843	51 097	51 280	51 462
SHEEP MEAT												
Production	kt cwe	3 502	3 624	3 683	3 729	3 793	3 863	3 895	3 932	3 969	4 007	4 045
Consumption	kt cwe	2 846	2 915	2 959	2 994	3 037	3 079	3 101	3 128	3 155	3 183	3 210
TOTAL MEAT												
Per capita consumption ¹	kg rwt	68.0	69.7	70.0	70.2	70.1	70.3	70.4	70.6	70.7	70.7	70.8
DEVELOPING COUNTRIES												
BEEF AND VEAL												
Production	kt cwe	38 943	40 842	41 631	42 357	43 061	43 708	44 323	44 969	45 632	46 364	47 096
Consumption	kt cwe	39 334	41 126	41 870	42 595	43 371	44 079	44 759	45 432	46 118	46 867	47 613
PIGMEAT												
Production	kt cwe	73 296	75 411	76 611	77 773	78 880	79 828	80 756	81 576	82 405	83 288	84 160
Consumption	kt cwe	76 581	78 843	79 960	81 123	82 238	83 204	84 187	85 087	86 008	87 019	87 960
POULTRY MEAT												
Production	kt rtc	69 136	72 337	73 890	75 080	76 307	77 646	78 966	80 356	81 651	82 886	84 253
Consumption	kt rtc	71 047	74 349	76 083	77 385	78 714	80 158	81 604	83 123	84 572	85 955	87 458
SHEEP MEAT												
Production	kt cwe	10 915	11 249	11 446	11 684	11 915	12 139	12 382	12 627	12 878	13 131	13 385
Consumption	kt cwe	11 590	11 953	12 165	12 418	12 673	12 919	13 168	13 420	13 679	13 938	14 200
TOTAL MEAT												
Per capita consumption ¹	kg rwt	26.4	26.8	26.9	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.9
OECD²												
BEEF AND VEAL												
Production	kt cwe	27 731	29 331	29 679	29 838	29 724	29 800	29 945	30 119	30 218	30 397	30 554
Consumption	kt cwe	26 736	28 259	28 705	28 777	28 596	28 623	28 741	28 920	29 003	29 176	29 323
PIGMEAT												
Production	kt cwe	42 062	42 982	42 920	42 990	43 107	43 372	43 518	43 720	43 938	44 050	44 271
Consumption	kt cwe	39 307	40 139	40 247	40 336	40 439	40 674	40 782	40 911	41 033	41 052	41 211
POULTRY MEAT												
Production	kt rtc	47 017	48 761	49 421	50 016	50 362	50 831	51 270	51 738	52 165	52 512	52 876
Consumption	kt rtc	44 688	46 380	46 820	47 336	47 626	48 004	48 337	48 686	48 976	49 193	49 424
SHEEP MEAT												
Production	kt cwe	2 721	2 797	2 846	2 877	2 926	2 980	2 997	3 018	3 040	3 062	3 086
Consumption	kt cwe	2 075	2 103	2 135	2 154	2 181	2 206	2 214	2 226	2 237	2 250	2 263
TOTAL MEAT												
Per capita consumption ¹	kg rwt	68.5	70.3	70.5	70.6	70.5	70.6	70.7	70.8	70.9	70.9	71.0

Note: Calendar Year; except year ending 30 September for New Zealand in aggregates.

Average 2015-17est: Data for 2017 are estimated.

1. Per capita consumption expressed in retail weight. Carcass weight to retail weight conversion factors of 0.7 for beef and veal, 0.78 for pigmeat and 0.88 for both sheep meat and poultry meat.
2. Excludes Iceland but includes all EU28 member countries.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database). doi: dx.doi.org/10.1787/agr-outl-data-en

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Table A.25.1. Meat projections: Production and trade

Calendar year

	PRODUCTION (kt cwe) ³		Growth (%) ⁴		IMPORTS (kt cwe) ⁵		Growth (%) ⁴		EXPORTS (kt cwe) ⁵		Growth (%) ⁴	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	318 533	366 668	1.90	1.15	29 572	35 294	2.92	1.54	30 131	36 051	2.90	1.50
NORTH AMERICA	47 955	54 825	0.62	0.76	2 783	2 869	2.70	0.83	8 726	10 680	1.04	1.50
Canada	4 754	5 250	-0.28	0.80	692	792	0.37	1.32	1 913	2 198	0.68	0.95
United States	43 202	49 575	0.72	0.75	2 092	2 077	3.60	0.65	6 814	8 482	1.14	1.64
LATIN AMERICA	51 489	61 199	2.02	1.38	4 035	5 053	4.32	1.39	8 363	11 035	0.99	2.13
Argentina	5 410	6 825	1.46	1.66	47	49	-5.57	2.05	414	1 033	-5.55	5.88
Brazil	26 624	31 351	2.22	1.20	75	65	11.00	-1.82	6 320	8 375	0.96	2.27
Chile	1 468	1 646	1.06	1.36	470	641	13.29	1.81	327	275	2.77	-1.28
Colombia	2 653	3 152	3.60	1.45	157	265	14.33	3.19	17	4	-16.56	-18.10
Mexico	6 342	7 821	1.84	1.74	1 769	1 967	5.02	0.65	294	369	15.30	1.37
Paraguay	804	979	3.44	1.75	31	40	6.86	2.43	359	380	7.45	0.52
EUROPE	61 835	64 267	1.76	0.26	3 216	3 097	-6.25	-0.63	5 049	5 528	6.41	0.91
European Union	46 859	47 277	0.96	0.00	1 362	1 571	-1.23	0.85	4 247	4 553	5.27	0.89
Russia	9 966	11 404	5.99	0.97	1 171	799	-10.87	-3.57	159	279	20.78	4.01
Ukraine	2 180	2 399	2.31	1.28	225	250	-9.55	-0.24	268	282	32.10	-0.55
AFRICA	16 323	20 370	2.17	2.27	2 769	3 931	5.88	3.29	317	268	12.78	0.06
Egypt	2 207	2 931	3.33	2.51	352	380	5.59	2.09	10	6	16.10	-1.08
Ethiopia	596	719	0.10	2.24	0	0	-8.59	9.22	17	22	10.08	3.73
Nigeria	1 260	1 514	1.68	2.01	3	3	15.51	1.41	1	1	-12.83	-2.42
South Africa	3 202	3 802	3.15	2.08	600	777	9.82	1.31	185	159	34.05	1.32
ASIA	134 479	158 566	2.41	1.43	16 203	19 698	5.11	1.73	4 413	4 864	8.58	0.79
China ¹	83 280	96 813	2.00	1.27	2 675	2 860	13.35	0.25	534	627	0.97	1.35
India	6 814	8 445	2.46	1.81	1	2	-11.13	3.85	1 696	1 740	12.96	0.02
Indonesia	3 362	4 036	3.91	1.81	147	298	7.72	4.32	1	1	-10.04	-1.21
Iran	2 675	3 245	1.81	1.87	122	204	-4.81	3.70	92	148	14.95	7.53
Japan	3 284	3 350	0.48	0.09	2 871	2 900	2.28	-0.51	15	20	6.06	2.13
Kazakhstan	835	971	0.22	1.42	188	298	-0.15	4.06	1	1	2.01	-1.41
Korea	2 432	2 586	3.56	0.63	1 212	1 376	5.19	1.13	32	10	-0.04	-2.52
Malaysia	1 982	2 272	4.11	1.28	339	460	6.77	2.91	178	187	5.04	0.33
Pakistan	3 236	4 101	3.66	2.31	34	105	17.40	9.49	66	8	9.89	-20.56
Philippines	3 471	4 397	2.93	1.95	480	887	8.33	5.85	11	10	-1.41	-0.72
Saudi Arabia	705	921	2.63	2.21	1 119	1 259	5.04	1.58	103	91	38.65	-1.46
Thailand	3 393	4 101	4.50	1.51	29	20	13.73	-1.20	1 037	1 377	6.62	2.14
Turkey	3 417	4 342	7.96	2.07	18	8	8.86	-3.03	422	444	18.42	0.88
Viet Nam	4 777	6 467	3.02	2.75	1 649	2 291	14.42	3.63	31	20	3.33	-5.93
OCEANIA	6 451	7 441	1.57	1.33	566	648	3.03	2.12	3 262	3 676	2.11	1.71
Australia	4 935	5 837	2.04	1.55	334	365	2.80	2.29	2 186	2 629	2.76	2.39
New Zealand	1 376	1 456	0.11	0.56	77	67	5.92	-1.01	1 073	1 045	0.82	0.17
DEVELOPED COUNTRIES	126 243	137 775	1.32	0.59	10 485	10 928	-0.74	0.28	17 258	20 078	2.74	1.36
DEVELOPING COUNTRIES	192 290	228 893	2.30	1.50	19 086	24 365	5.52	2.16	12 873	15 973	3.12	1.69
LEAST DEVELOPED COUNTRIES (LDC)	8 781	11 054	3.44	2.27	1 142	1 972	5.24	4.94	22	17	4.21	-1.94
OECD²	119 532	130 787	1.08	0.60	11 142	12 113	2.89	0.63	17 342	20 033	2.60	1.32
BRICS	129 885	151 814	2.36	1.28	4 522	4 503	1.25	-0.42	8 894	11 180	3.07	1.86

Note: Calendar year; except year ending 30 September for New Zealand.

Average 2015-17est: Data for 2017 are estimated.

1. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
2. Excludes Iceland but includes all EU28 member countries.
3. Gross indigenous production.
4. Least-squares growth rate (see glossary).
5. Excludes trade of live animals.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database). doi: dx.doi.org/10.1787/agr-outl-data-en

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Table A.25.2. Meat projections: Consumption, food

Calendar year

	CONSUMPTION (kt cwe)		Growth (%) ³		FOOD (kg rwe/cap) ⁴		Growth (%) ³	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	317 785	365 539	1.89	1.15	34.3	35.4	0.76	0.19
NORTH AMERICA	42 172	47 298	0.63	0.60	94.4	97.7	-0.04	-0.10
Canada	3 136	3 398	0.16	0.70	69.5	69.0	-0.72	-0.08
United States	39 037	43 900	0.67	0.59	97.2	101.0	0.02	-0.10
LATIN AMERICA	46 723	54 683	2.38	1.23	58.9	62.6	1.35	0.37
Argentina	5 044	5 841	2.22	1.06	89.8	94.7	1.45	0.22
Brazil	20 082	22 724	2.64	0.82	76.9	81.3	1.83	0.21
Chile	1 605	2 006	3.10	1.94	71.8	83.2	2.19	1.26
Colombia	2 773	3 391	4.59	1.66	46.3	52.7	3.74	1.03
Mexico	7 601	9 145	2.21	1.50	48.6	51.9	0.88	0.44
Paraguay	477	639	1.19	2.60	53.0	62.2	-0.08	1.41
EUROPE	59 832	61 649	0.74	0.17	64.6	66.8	0.74	0.20
European Union	43 700	44 030	0.51	-0.04	68.7	68.9	0.43	-0.08
Russia	11 070	11 996	1.88	0.52	62.3	68.5	2.07	0.66
Ukraine	2 130	2 356	-1.08	1.37	39.1	45.9	-0.51	1.89
AFRICA	18 822	24 113	2.56	2.47	12.4	12.2	0.04	0.08
Egypt	2 580	3 331	3.69	2.45	21.5	23.2	1.69	0.87
Ethiopia	560	691	-0.44	2.32	4.2	4.1	-2.87	0.14
Nigeria	1 321	1 619	1.47	2.18	5.7	5.3	-1.31	-0.35
South Africa	3 684	4 420	3.35	1.85	54.4	58.2	2.10	0.80
ASIA	146 818	173 817	2.54	1.47	26.5	28.9	1.50	0.75
China ¹	85 401	98 950	2.27	1.24	48.7	55.0	1.72	1.05
India	5 109	6 696	0.19	2.33	3.2	3.8	-0.50	1.38
Indonesia	3 617	4 488	3.85	1.98	11.4	12.8	2.65	1.08
Iran	2 691	3 294	1.18	1.82	28.8	32.2	0.12	1.05
Japan	6 130	6 189	1.28	-0.26	38.5	40.3	1.43	0.08
Kazakhstan	1 025	1 271	0.18	1.98	45.1	50.7	-1.09	1.12
Korea	3 629	3 952	4.00	0.81	56.6	59.8	3.62	0.56
Malaysia	2 153	2 554	4.33	1.63	58.7	60.8	2.56	0.39
Pakistan	3 198	4 192	3.64	2.59	13.0	14.0	1.62	0.86
Philippines	3 944	5 277	3.49	2.51	30.9	35.4	1.97	1.10
Saudi Arabia	1 860	2 240	3.49	1.90	49.8	50.7	0.76	0.45
Thailand	2 199	2 539	3.83	1.17	26.3	30.1	3.72	1.11
Turkey	3 091	3 931	7.14	2.03	31.7	36.6	5.06	1.36
Viet Nam	6 457	8 791	5.23	2.98	53.7	66.4	3.98	2.12
OCEANIA	3 418	3 980	1.50	1.12	71.0	71.9	0.12	-0.07
Australia	2 714	3 171	1.71	1.07	91.7	94.3	0.39	0.01
New Zealand	411	449	0.43	0.80	72.2	71.8	-0.39	0.01
DEVELOPED COUNTRIES	119 233	128 308	0.87	0.44	68.0	70.8	0.56	0.17
DEVELOPING COUNTRIES	198 552	237 232	2.54	1.55	26.4	27.9	1.19	0.43
LEAST DEVELOPED COUNTRIES (LDC)	9 836	12 994	3.74	2.69	9.9	10.3	1.44	0.42
OECD²	112 806	122 221	1.02	0.48	68.5	71.0	0.53	0.10
BRICS	125 345	144 786	2.23	1.18	32.1	34.8	1.43	0.62

Note: Calendar year; except year ending 30 September New Zealand.

Average 2015-17est: Data for 2017 are estimated.

1. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
2. Excludes Iceland but includes all EU28 member countries.
3. Least-squares growth rate (see glossary).
4. Per capita consumption expressed in retail weight. Carcass weight to retail weight conversion factors of 0.7 for beef and veal, 0.78 for pigmeat and 0.88 for both sheep meat and poultry meat.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database). doi: dx.doi.org/10.1787/agr-outl-data-en

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Table A.26.1. Beef and veal projections: Production and trade

Calendar year

	PRODUCTION (kt cwe) ³		Growth (%) ⁴		IMPORTS (kt cwe) ⁵		Growth (%) ⁴		EXPORTS (kt cwe) ⁵		Growth (%) ⁴	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	68 486	79 292	0.66	1.08	8 722	10 392	3.59	1.61	9 034	10 853	3.15	1.47
NORTH AMERICA	12 308	14 262	-0.81	0.38	1 605	1 603	2.63	0.62	1 598	1 877	1.99	0.73
Canada	1 364	1 519	-2.18	0.87	190	195	-1.48	0.57	434	523	-1.35	1.08
United States	10 945	12 742	-0.62	0.32	1 416	1 409	3.33	0.62	1 164	1 354	3.53	0.60
LATIN AMERICA	18 010	21 280	0.74	1.31	704	890	-1.57	1.19	2 772	4 090	0.20	2.73
Argentina	2 723	3 379	-1.33	1.57	7	7	4.15	0.00	240	622	-7.95	6.08
Brazil	9 403	11 096	1.21	1.24	47	46	15.14	-0.55	1 428	2 356	-0.24	3.68
Chile	222	246	0.48	1.54	263	353	9.09	2.00	11	9	-2.31	-1.74
Colombia	834	943	-0.18	0.91	4	3	12.71	-3.65	13	1	-14.35	-29.33
Mexico	1 876	2 203	1.35	1.39	132	186	-7.79	0.69	183	218	24.30	0.96
Paraguay	604	739	3.97	1.81	3	3	12.00	0.18	354	375	7.42	0.56
EUROPE	10 785	10 693	-0.37	-0.08	949	850	-4.28	-0.82	401	397	4.00	-0.69
European Union	8 026	7 636	-0.27	-0.61	298	321	-1.20	0.19	240	226	7.07	-1.84
Russia	1 637	1 841	-0.82	1.60	552	423	-6.14	-1.73	11	12	-12.87	0.00
Ukraine	399	416	-1.73	1.08	2	3	-23.74	1.32	28	6	8.42	-11.84
AFRICA	6 185	7 715	1.39	2.34	666	895	2.91	3.09	130	109	14.82	1.97
Egypt	850	1 109	0.33	2.00	332	359	7.34	2.06	7	5	46.57	-0.29
Ethiopia	371	410	-0.67	1.52	0	0	..	..	0	0	0.31	-12.45
Nigeria	330	389	4.50	1.78	2	3	20.83	1.57	1	1	-12.83	-2.42
South Africa	918	1 105	3.12	3.09	25	40	14.55	-4.23	68	62	35.60	8.01
ASIA	17 952	21 726	2.03	1.54	4 744	6 094	7.88	2.14	1 900	1 927	12.13	-0.02
China ¹	7 037	8 850	1.63	1.71	581	889	71.46	3.18	16	10	-22.90	-0.79
India	2 632	2 888	0.86	0.67	0	0	..	-0.01	1 668	1 733	13.60	0.11
Indonesia	386	365	3.38	0.04	135	267	7.55	3.79	0	0	-8.15	-0.29
Iran	193	235	-4.07	1.48	113	190	-3.67	3.86	4	4	28.83	-1.44
Japan	469	456	-1.28	-0.35	765	857	1.69	0.34	3	3	18.29	0.00
Kazakhstan	420	495	0.75	1.54	17	47	-9.10	8.18	0	0	5.25	-2.16
Korea	294	321	1.87	0.31	430	490	4.95	1.04	7	4	14.59	-5.44
Malaysia	23	27	8.43	0.65	206	250	5.31	2.54	11	7	5.60	-2.48
Pakistan	1 762	2 275	2.95	2.40	4	23	4.06	19.50	34	2	8.05	-28.29
Philippines	305	398	0.91	2.57	149	189	1.07	1.61	3	3	-2.86	-0.27
Saudi Arabia	57	72	11.67	1.36	142	145	2.58	1.03	30	28	5.41	-1.02
Thailand	245	292	-1.23	1.14	18	10	15.07	-2.81	40	48	17.95	2.89
Turkey	1 028	1 528	14.27	3.06	11	4	47.23	-5.05	12	19	16.22	5.76
Viet Nam	337	446	-0.82	2.47	926	1 237	22.87	2.57	0	0	-0.29	-0.20
OCEANIA	3 245	3 617	1.04	1.11	54	60	1.74	1.91	2 233	2 453	2.26	1.73
Australia	2 562	2 954	1.19	1.39	14	14	5.14	0.00	1 641	1 892	2.47	2.31
New Zealand	663	648	0.42	0.01	12	10	9.32	0.00	589	559	1.63	-0.01
DEVELOPED COUNTRIES	29 543	32 196	-0.15	0.43	3 543	3 682	0.03	0.47	4 304	4 794	2.52	1.16
DEVELOPING COUNTRIES	38 943	47 096	1.30	1.56	5 180	6 711	6.73	2.29	4 730	6 059	3.74	1.73
LEAST DEVELOPED COUNTRIES (LDC)	3 025	3 859	1.67	2.49	135	271	-2.06	7.14	2	1	4.78	-2.03
OECD²	27 731	30 554	0.07	0.39	3 691	4 081	2.12	0.84	4 286	4 810	2.84	1.10
BRICS	21 627	25 780	1.21	1.43	1 205	1 398	3.98	1.13	3 192	4 173	5.03	2.07

.. Not available

Note: Calendar year; except year ending 30 September for New Zealand.

Average 2015-17est: Data for 2017 are estimated.

1. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
2. Excludes Iceland but includes all EU28 member countries.
3. Gross indigenous production.
4. Least-squares growth rate (see glossary).
5. Excludes trade of live animals.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database). doi: dx.doi.org/10.1787/agr-outl-data-en

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Table A.26.2. Beef and veal projections: Consumption, food

Calendar year

	CONSUMPTION (kt cwe)		Growth (%) ³		FOOD (kg rwe/cap) ⁴		Growth (%) ³	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	67 977	78 510	0.63	1.09	6.4	6.6	-0.56	0.12
NORTH AMERICA	12 539	14 284	-0.75	0.37	24.5	25.8	-1.50	-0.34
Canada	883	920	-1.59	0.40	17.0	16.2	-2.59	-0.42
United States	11 655	13 364	-0.68	0.37	25.3	26.9	-1.41	-0.33
LATIN AMERICA	15 493	17 535	0.64	0.97	17.0	17.5	-0.49	0.12
Argentina	2 490	2 764	-0.38	0.77	39.8	40.1	-1.40	-0.08
Brazil	7 724	8 470	1.46	0.63	26.0	26.6	0.55	0.02
Chile	469	584	4.25	1.89	18.3	21.1	3.32	1.22
Colombia	805	924	0.96	1.17	11.6	12.3	-0.03	0.53
Mexico	1 598	1 885	-0.67	1.27	8.8	9.2	-2.07	0.20
Paraguay	252	367	0.24	3.25	26.3	33.7	-1.08	2.10
EUROPE	11 192	10 994	-1.19	-0.09	10.6	10.4	-1.30	-0.07
European Union	7 871	7 517	-0.69	-0.51	10.8	10.3	-0.85	-0.57
Russia	2 259	2 326	-2.83	0.86	11.0	11.5	-2.91	1.03
Ukraine	364	402	-3.08	1.59	5.7	6.7	-2.61	2.12
AFRICA	6 836	8 622	1.45	2.41	3.9	3.8	-1.13	0.02
Egypt	1 207	1 489	2.12	1.99	8.8	9.1	-0.02	0.37
Ethiopia	352	403	-1.22	1.70	2.4	2.1	-3.74	-0.55
Nigeria	384	489	3.55	2.43	1.4	1.4	0.83	-0.11
South Africa	927	1 070	2.16	2.07	11.6	11.9	0.80	1.03
ASIA	21 188	26 228	2.50	1.77	3.3	3.8	1.44	1.02
China ¹	7 615	9 753	2.87	1.84	3.8	4.7	2.32	1.63
India	964	1 155	-8.98	1.55	0.5	0.5	-10.10	0.57
Indonesia	646	797	2.94	1.50	1.7	1.9	1.67	0.59
Iran	304	422	-4.30	2.51	2.6	3.4	-5.46	1.75
Japan	1 241	1 310	0.60	0.10	6.8	7.4	0.69	0.45
Kazakhstan	440	546	0.19	1.96	17.1	19.2	-1.29	1.08
Korea	729	807	4.22	0.79	10.0	10.8	3.81	0.51
Malaysia	226	278	4.62	2.42	5.1	5.4	2.82	1.19
Pakistan	1 726	2 289	2.85	2.66	6.3	6.9	0.74	0.94
Philippines	455	587	0.96	2.25	3.1	3.4	-0.66	0.83
Saudi Arabia	170	190	1.08	1.49	3.7	3.5	-1.63	0.04
Thailand	168	171	-2.72	-0.08	1.7	1.7	-3.12	-0.16
Turkey	1 107	1 538	14.69	2.51	9.7	12.4	12.94	1.88
Viet Nam	1 325	1 737	12.62	2.45	9.8	11.7	11.39	1.57
OCEANIA	728	847	-2.47	-0.39	13.0	13.1	-3.99	-1.63
Australia	601	709	-2.21	-0.56	17.4	18.1	-3.66	-1.67
New Zealand	83	88	-5.11	0.10	12.5	12.1	-6.12	-0.70
DEVELOPED COUNTRIES	28 643	30 896	-0.63	0.32	14.2	14.9	-1.05	0.03
DEVELOPING COUNTRIES	39 334	47 613	1.63	1.62	4.5	4.9	0.25	0.49
LEAST DEVELOPED COUNTRIES (LDC)	3 135	4 131	1.66	2.82	2.8	2.8	-0.71	0.54
OECD²	26 736	29 323	-0.13	0.32	14.2	14.8	-0.69	-0.08
BRICS	19 489	22 774	0.68	1.27	4.4	4.8	-0.17	0.70

Note: Calendar year; except year ending 30 September New Zealand.

Average 2015-17est: Data for 2017 are estimated.

1. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
2. Excludes Iceland but includes all EU28 member countries.
3. Least-squares growth rate (see glossary).
4. Per capita consumption expressed in retail weight. Carcass weight to retail weight conversion factors of 0.7 for beef and veal, 0.78 for pigmeat and 0.88 for both sheep meat and poultry meat.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database). doi: dx.doi.org/10.1787/agr-outl-data-en

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Table A.27.1. Pigmeat projections: Production and trade

Calendar year

	PRODUCTION (kt cwe) ³		Growth (%) ⁴		IMPORTS (kt cwe) ⁵		Growth (%) ⁴		EXPORTS (kt cwe) ⁵		Growth (%) ⁴	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	117 547	130 930	1.67	0.91	7 422	8 133	3.32	0.73	7 584	8 185	3.09	0.71
NORTH AMERICA	13 256	15 111	1.11	0.79	717	788	3.36	1.36	3 708	4 230	2.15	1.04
Canada	2 035	2 159	0.08	0.48	215	290	1.89	2.06	1 308	1 481	1.71	0.89
United States	11 221	12 951	1.31	0.85	502	498	4.07	0.97	2 400	2 749	2.41	1.12
LATIN AMERICA	7 789	9 629	2.48	1.77	1 258	1 564	8.19	1.43	947	1 048	2.56	0.42
Argentina	518	696	9.23	1.88	29	36	-8.68	2.58	5	2	-2.67	1.77
Brazil	3 710	4 541	2.31	1.78	19	11	10.33	-6.84	641	720	1.60	0.43
Chile	514	580	-0.09	1.46	71	102	38.06	0.56	168	157	2.57	-0.55
Colombia	340	436	8.90	1.74	71	114	30.74	3.89	0	0	..	..
Mexico	1 324	1 715	1.91	1.95	763	870	7.96	0.63	109	146	9.04	1.84
Paraguay	178	219	2.61	1.91	2	2	10.82	0.53	3	3	22.90	-1.04
EUROPE	28 829	29 316	1.07	0.18	500	445	-11.73	-1.41	2 652	2 629	5.02	0.41
European Union	23 583	23 298	0.41	-0.04	12	35	-15.28	8.40	2 530	2 488	4.98	0.47
Russia	3 346	3 955	6.38	1.22	369	276	-11.35	-3.45	38	60	118.84	4.03
Ukraine	713	773	2.76	1.39	5	5	-38.24	4.19	13	6	46.09	-9.68
AFRICA	1 373	1 654	2.55	1.62	281	441	5.76	5.82	30	28	18.28	-0.78
Egypt	1	0	-2.64	-2.45	1	1	14.16	2.89	1	0	29.94	-2.81
Ethiopia	2	3	1.69	2.56	0	0	..	13.11	0	0	..	..
Nigeria	255	302	1.78	1.71	1	0	6.11	0.60	0	0	..	..
South Africa	253	325	-0.75	1.95	35	31	0.44	0.71	26	25	30.69	-0.71
ASIA	65 765	74 566	1.94	1.10	4 262	4 461	5.83	0.15	206	194	0.84	-0.58
China ¹	53 068	59 429	1.94	0.98	1 380	1 204	23.05	-1.99	110	111	-1.58	0.31
India	357	386	-0.79	0.65	1	1	-6.72	4.38	0	0	-26.21	..
Indonesia	799	971	2.30	1.83	6	7	26.93	3.59	0	0	-8.65	-2.19
Iran	0	0	..	..	4	5	26.36	0.00	4	5	31.88	0.00
Japan	1 271	1 266	-0.08	-0.04	1 233	1 216	1.69	-0.42	3	4	10.67	0.53
Kazakhstan	93	83	-11.05	-0.86	26	38	1.40	4.77	0	0	..	..
Korea	1 263	1 313	3.03	0.40	626	674	4.92	0.70	3	2	-4.04	0.00
Malaysia	218	229	0.51	0.45	28	43	16.99	3.25	5	5	3.80	-1.37
Pakistan	0	0	..	..	0	0	..	..	0	0	..	..
Philippines	1 863	2 346	1.97	1.78	112	289	9.48	9.32	3	2	2.45	-1.35
Saudi Arabia	2	5	0.00	0.00	6	5	-4.82	0.00	0	0	..	..
Thailand	1 065	1 188	1.38	1.11	2	2	24.26	0.27	28	26	7.61	1.10
Turkey	17	19	30.44	1.04	0	0	5.25	-0.25	9	11	20.09	0.25
Viet Nam	3 633	4 937	3.01	2.82	71	102	9.26	8.68	31	20	3.70	-5.99
OCEANIA	535	655	1.59	1.43	403	434	3.35	1.85	41	56	-2.80	2.22
Australia	396	484	2.30	1.23	320	351	2.71	2.39	41	55	-2.91	2.35
New Zealand	46	67	-0.92	3.49	60	53	6.39	-1.26	0	0	11.76	-11.08
DEVELOPED COUNTRIES	44 251	46 770	1.01	0.39	2 942	2 970	-1.64	0.22	6 431	6 944	3.26	0.80
DEVELOPING COUNTRIES	73 296	84 160	2.08	1.20	4 480	5 163	8.10	1.04	1 153	1 241	2.24	0.25
LEAST DEVELOPED COUNTRIES (LDC)	1 790	2 203	5.40	1.83	159	289	4.21	7.38	1	1	-1.56	-0.57
OECD²	42 062	44 271	0.74	0.37	3 817	4 106	3.78	0.61	6 572	7 096	3.23	0.82
BRICS	60 734	68 636	2.14	1.05	1 803	1 523	5.15	-2.27	814	916	2.20	0.58

.. Not available

Note: Calendar year; except year ending 30 September New Zealand.

Average 2015-17est: Data for 2017 are estimated.

1. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
2. Excludes Iceland but includes all EU28 member countries.
3. Gross indigenous production.
4. Least-squares growth rate (see glossary).
5. Excludes trade of live animals.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database). doi: dx.doi.org/10.1787/agr-outl-data-en

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Table A.27.2. Pigmeat projections: Consumption, food

Calendar year

	CONSUMPTION (kt cwe)		Growth (%) ³		FOOD (kg rwe/cap) ⁴		Growth (%) ³	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	117 354	130 699	1.66	0.90	12.3	12.2	0.46	-0.07
NORTH AMERICA	10 264	11 664	0.92	0.76	22.3	23.5	0.15	0.05
Canada	786	795	-0.19	0.08	16.9	15.6	-1.21	-0.74
United States	9 478	10 869	1.02	0.81	22.9	24.4	0.28	0.11
LATIN AMERICA	8 105	10 149	3.20	1.86	9.9	11.3	2.04	1.00
Argentina	542	729	7.83	1.91	9.6	11.8	6.73	1.05
Brazil	3 087	3 831	2.46	2.01	11.6	13.4	1.54	1.40
Chile	417	524	1.22	1.97	18.2	21.2	0.33	1.29
Colombia	410	551	11.10	2.14	6.6	8.2	10.02	1.49
Mexico	1 985	2 446	3.52	1.46	12.1	13.3	2.07	0.39
Paraguay	178	219	2.51	1.93	20.6	22.4	1.16	0.80
EUROPE	26 687	27 132	0.23	0.12	28.0	28.5	0.12	0.14
European Union	21 054	20 826	-0.01	-0.09	32.3	31.7	-0.18	-0.15
Russia	3 678	4 173	1.67	0.79	19.9	22.9	1.59	0.95
Ukraine	705	772	-1.15	1.59	12.4	14.3	-0.66	2.13
AFRICA	1 624	2 067	2.88	2.42	1.0	1.0	0.26	0.03
Egypt	1	1	-0.40	2.85	0.0	0.0	..	..
Ethiopia	2	3	1.78	3.30	0.0	0.0	..	..
Nigeria	257	303	1.84	1.70	1.1	1.0	-0.84	-0.81
South Africa	262	330	-1.84	2.07	3.6	4.1	-3.14	1.03
ASIA	69 773	78 654	2.15	1.04	12.2	12.6	1.09	0.30
China ¹	54 305	60 403	2.24	0.92	30.2	32.7	1.70	0.72
India	358	388	-0.74	0.67	0.2	0.2	-1.96	-0.30
Indonesia	788	968	2.49	1.94	2.4	2.6	1.23	1.02
Iran	0	0	..	..	0.0	0.0	..	..
Japan	2 500	2 426	0.75	-0.47	15.3	15.4	0.84	-0.13
Kazakhstan	119	121	-9.31	0.62	5.1	4.7	-10.65	-0.25
Korea	1 891	1 985	3.22	0.50	29.0	29.5	2.80	0.23
Malaysia	241	268	1.57	0.89	6.0	5.8	-0.18	-0.33
Pakistan	0	0	..	..	0.0	0.0	..	..
Philippines	1 972	2 633	2.29	2.36	14.9	17.0	0.64	0.94
Saudi Arabia	8	10	0.84	0.00	0.2	0.2	-1.79	-1.43
Thailand	915	1 044	0.78	1.15	10.4	11.7	0.36	1.07
Turkey	8	9	58.73	2.07	0.1	0.1	..	..
Viet Nam	3 673	5 019	3.15	2.97	30.3	37.5	2.03	2.08
OCEANIA	900	1 033	2.57	1.56	17.9	17.8	0.98	0.31
Australia	678	780	2.85	1.66	21.9	22.2	1.33	0.53
New Zealand	105	120	2.64	1.16	17.6	18.3	1.55	0.35
DEVELOPED COUNTRIES	40 773	42 739	0.43	0.30	22.6	22.9	0.01	0.02
DEVELOPING COUNTRIES	76 581	87 960	2.37	1.21	9.9	10.0	0.98	0.08
LEAST DEVELOPED COUNTRIES (LDC)	1 957	2 500	5.34	2.33	1.9	1.9	2.88	0.07
OECD²	39 307	41 211	0.65	0.30	23.2	23.2	0.08	-0.09
BRICS	61 690	69 124	2.18	0.97	15.3	16.1	1.32	0.41

.. Not available

Note: Calendar year; except year ending 30 September for New Zealand.

Average 2015-17est: Data for 2017 are estimated.

1. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
2. Excludes Iceland but includes all EU28 member countries.
3. Least-squares growth rate (see glossary).
4. Per capita consumption expressed in retail weight. Carcass weight to retail weight conversion factors of 0.7 for beef and veal, 0.78 for pigmeat and 0.88 for both sheep meat and poultry meat.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database). doi: dx.doi.org/10.1787/agr-outl-data-en

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Table A.28.1. Poultry meat projections: Production and trade

Calendar year

	PRODUCTION (kt rtc)		Growth (%) ³		IMPORTS (kt rtc)		Growth (%) ³		EXPORTS (kt rtc)		Growth (%) ³	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	118 083	139 016	3.03	1.33	12 459	15 716	2.34	1.99	12 455	15 820	2.75	1.97
NORTH AMERICA	22 297	25 354	1.19	0.95	342	362	1.86	1.03	3 408	4 560	-0.45	2.31
Canada	1 338	1 555	1.43	1.20	265	288	0.77	1.31	170	194	-1.18	1.08
United States	20 959	23 799	1.18	0.94	77	73	6.94	0.00	3 238	4 366	-0.41	2.36
LATIN AMERICA	25 303	29 867	2.91	1.31	2 047	2 577	5.22	1.46	4 628	5 878	1.27	2.06
Argentina	2 107	2 682	4.55	1.73	11	6	-6.86	1.78	166	407	-0.55	5.70
Brazil	13 393	15 585	2.98	1.02	4	3	15.71	0.00	4 251	5 299	1.30	1.95
Chile	716	807	2.22	1.30	135	186	17.65	2.18	143	105	3.64	-2.13
Colombia	1 470	1 762	5.28	1.69	82	148	7.44	2.87	4	3	-12.15	-0.28
Mexico	3 082	3 835	2.11	1.86	863	902	6.71	0.69	2	6	-11.51	6.91
Paraguay	19	16	-2.19	-2.18	26	35	6.11	2.78	2	2	1.30	-2.67
EUROPE	20 920	22 852	4.27	0.53	1 559	1 580	-5.17	-0.46	1 964	2 471	9.11	1.80
European Union	14 312	15 350	2.86	0.37	857	1 002	0.01	0.91	1 454	1 813	5.47	1.96
Russia	4 767	5 356	9.43	0.59	247	99	-16.41	-8.86	111	207	48.89	4.30
Ukraine	1 054	1 190	4.02	1.27	218	243	-3.07	-0.33	227	270	43.32	0.33
AFRICA	5 799	7 264	3.86	2.30	1 789	2 558	7.62	3.00	125	96	15.93	-1.92
Egypt	1 227	1 679	6.58	3.00	18	20	-7.64	2.58	2	1	-2.47	-3.50
Ethiopia	61	84	2.51	3.34	0	0	..	..	0	0	..	..
Nigeria	292	348	2.19	1.99	0	0	..	..	0	0	..	..
South Africa	1 831	2 138	3.98	1.67	531	697	11.23	1.72	90	71	37.52	-1.55
ASIA	42 284	51 907	3.43	1.78	6 640	8 514	2.94	2.41	2 268	2 726	7.44	1.61
China ¹	18 632	22 933	2.21	1.72	488	528	-4.75	1.77	406	502	4.07	1.65
India	3 086	4 343	5.66	2.88	0	0	-4.44	4.40	5	1	8.89	-11.11
Indonesia	2 071	2 565	5.09	2.05	3	10	3.33	10.03	0	0	..	..
Iran	2 171	2 660	2.71	2.00	2	2	-27.01	-0.63	84	139	14.02	8.37
Japan	1 544	1 628	1.58	0.33	853	810	4.29	-1.45	9	13	3.02	3.35
Kazakhstan	160	206	11.32	2.20	145	213	1.66	3.22	1	1	-15.82	-0.32
Korea	874	952	5.15	1.08	144	200	6.75	2.98	22	4	-0.84	0.00
Malaysia	1 740	2 015	4.59	1.39	71	123	7.55	3.85	161	175	5.05	0.52
Pakistan	998	1 230	6.25	2.17	29	83	23.95	7.93	24	5	67.29	-13.38
Philippines	1 247	1 585	5.27	2.06	218	407	17.22	6.25	5	5	-2.16	-0.64
Saudi Arabia	646	844	2.38	2.30	920	1 057	5.85	1.69	71	62	41.74	-1.66
Thailand	2 080	2 618	7.48	1.74	6	6	10.20	0.64	969	1 304	6.30	2.13
Turkey	1 992	2 324	6.45	1.48	5	4	-3.61	0.24	401	415	18.57	0.72
Viet Nam	799	1 075	5.25	2.53	651	947	7.92	4.67	0	0	..	..
OCEANIA	1 480	1 773	4.32	1.63	81	124	7.33	3.57	61	89	7.50	1.36
Australia	1 242	1 509	4.24	1.87	0	0	..	..	41	74	3.51	4.18
New Zealand	212	235	5.21	0.29	0	0	..	..	20	15	24.45	-6.62
DEVELOPED COUNTRIES	48 947	54 763	2.66	0.81	3 639	3 904	-0.47	0.14	5 550	7 216	2.47	2.05
DEVELOPING COUNTRIES	69 136	84 253	3.31	1.69	8 820	11 812	3.78	2.68	6 905	8 604	2.98	1.91
LEAST DEVELOPED COUNTRIES (LDC)	2 646	3 273	5.30	2.14	843	1 405	7.32	4.15	19	15	6.37	-1.99
OECD²	47 017	52 876	2.11	0.88	3 261	3 544	3.58	0.45	5 515	7 006	1.84	2.00
BRICS	41 711	50 356	3.43	1.46	1 270	1 328	-5.26	0.35	4 863	6 081	2.07	1.94

.. Not available

Note: Calendar year; except year ending 30 September for New Zealand.

Average 2015-17est: Data for 2017 are estimated.

1. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
2. Excludes Iceland but includes all EU28 member countries.
3. Least-squares growth rate (see glossary).

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database). doi: dx.doi.org/10.1787/agr-outl-data-en

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Table A.28.2. Poultry meat projections: Consumption, food

Calendar year

	CONSUMPTION (kt rtc)		Growth (%) ³		FOOD (kg rwe/cap) ⁴		Growth (%) ³	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	118 018	138 921	2.98	1.34	13.9	14.7	1.77	0.36
NORTH AMERICA	19 177	21 155	1.48	0.68	47.1	48.0	0.71	-0.04
Canada	1 429	1 649	1.62	1.23	34.7	36.5	0.59	0.41
United States	17 747	19 507	1.47	0.63	48.5	49.3	0.72	-0.07
LATIN AMERICA	22 722	26 566	3.47	1.17	31.4	33.3	2.31	0.31
Argentina	1 952	2 281	5.01	1.16	39.2	41.6	3.94	0.30
Brazil	9 146	10 289	3.83	0.57	38.8	40.7	2.89	-0.03
Chile	708	888	3.67	1.98	34.8	40.4	2.76	1.30
Colombia	1 547	1 907	5.49	1.78	28.0	32.0	4.46	1.13
Mexico	3 943	4 731	3.00	1.62	27.2	29.0	1.55	0.55
Paraguay	43	48	1.96	1.19	5.6	5.6	0.62	0.06
EUROPE	20 525	21 961	2.86	0.32	24.3	26.0	2.75	0.34
European Union	13 715	14 539	2.43	0.23	23.7	25.0	2.26	0.17
Russia	4 914	5 248	4.99	0.16	30.0	32.6	4.90	0.33
Ukraine	1 046	1 163	-0.20	1.14	20.7	24.4	0.29	1.67
AFRICA	7 463	9 726	4.54	2.53	5.4	5.4	1.88	0.14
Egypt	1 243	1 697	6.15	3.00	11.4	13.0	3.93	1.37
Ethiopia	61	84	2.45	3.34	0.5	0.6	-0.16	1.05
Nigeria	292	348	1.78	1.99	1.4	1.2	-0.89	-0.54
South Africa	2 271	2 764	4.79	1.78	35.7	38.7	3.40	0.75
ASIA	46 631	57 704	3.19	1.88	9.2	10.5	2.12	1.14
China ¹	18 715	22 959	1.92	1.72	11.7	14.0	1.38	1.51
India	3 081	4 343	5.66	2.89	2.0	2.6	4.36	1.90
Indonesia	2 074	2 575	5.08	2.07	7.0	7.8	3.78	1.16
Iran	2 089	2 523	2.21	1.75	22.9	25.3	0.97	1.00
Japan	2 368	2 436	2.40	-0.22	16.3	17.4	2.49	0.13
Kazakhstan	304	417	5.82	2.71	14.9	18.5	4.25	1.83
Korea	996	1 148	5.39	1.39	17.3	19.3	4.96	1.11
Malaysia	1 650	1 962	4.66	1.61	46.6	48.3	2.86	0.38
Pakistan	1 003	1 307	6.26	2.60	4.6	4.9	4.08	0.87
Philippines	1 459	1 986	6.52	2.80	12.4	14.5	4.81	1.37
Saudi Arabia	1 495	1 838	3.68	2.10	40.8	42.3	0.91	0.65
Thailand	1 113	1 319	8.74	1.37	14.2	16.7	8.29	1.28
Turkey	1 595	1 913	4.50	1.65	17.7	19.4	2.90	1.02
Viet Nam	1 449	2 022	6.01	3.48	13.5	17.1	4.86	2.59
OCEANIA	1 501	1 808	4.34	1.76	33.6	35.2	2.72	0.50
Australia	1 201	1 436	4.27	1.76	43.8	46.1	2.73	0.63
New Zealand	192	220	4.12	0.99	36.2	38.0	3.01	0.18
DEVELOPED COUNTRIES	46 971	51 462	2.38	0.60	29.4	31.1	1.96	0.31
DEVELOPING COUNTRIES	71 047	87 458	3.40	1.80	10.3	11.2	2.00	0.67
LEAST DEVELOPED COUNTRIES (LDC)	3 470	4 663	5.84	2.72	3.8	4.0	3.37	0.45
OECD²	44 688	49 424	2.22	0.71	29.8	31.4	1.65	0.31
BRICS	38 127	45 603	3.17	1.37	10.7	12.0	2.31	0.80

Note: Calendar year; except year ending 30 September for New Zealand.

Average 2015-17est: Data for 2017 are estimated.

1. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
2. Excludes Iceland but includes all EU28 member countries.
3. Least-squares growth rate (see glossary).
4. Per capita consumption expressed in retail weight. Carcass weight to retail weight conversion factors of 0.7 for beef and veal, 0.78 for pigmeat and 0.88 for both sheep meat and poultry meat.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database). doi: dx.doi.org/10.1787/agr-outl-data-en

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Table A.29.1. Sheep meat projections: Production and trade

Calendar year

	PRODUCTION (kt cwe) ³		Growth (%) ⁴		IMPORTS (kt cwe) ⁵		Growth (%) ⁴		EXPORTS (kt cwe) ⁵		Growth (%) ⁴	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	14 417	17 430	1.31	1.79	968	1 052	1.70	0.78	1 058	1 193	1.44	1.32
NORTH AMERICA	94	99	-0.95	0.63	119	115	2.34	-0.28	13	13	9.26	0.04
Canada	17	16	1.15	0.36	21	18	-0.65	-1.34	0	0	-6.88	0.36
United States	77	83	-1.36	0.69	98	97	3.11	-0.06	13	13	9.71	0.04
LATIN AMERICA	387	424	-0.14	0.80	26	21	-5.76	-1.95	16	19	-8.36	0.84
Argentina	62	68	1.47	0.78	0	0	0.26	0.00	2	2	-17.20	0.25
Brazil	118	128	1.11	0.63	6	5	-0.01	-0.31	0	0	..	..
Chile	15	14	-1.20	-1.36	0	0	..	..	5	4	-0.94	-4.36
Colombia	10	10	-1.60	0.04	0	0	..	..	0	0	..	..
Mexico	60	68	1.75	1.28	11	9	-9.32	-2.00	0	0	..	2.37
Paraguay	4	5	1.85	1.63	0	0	..	..	0	0	..	..
EUROPE	1 301	1 406	0.16	0.40	207	221	-4.44	0.62	31	31	14.22	-1.40
European Union	938	993	-0.85	0.23	195	212	-4.19	0.76	24	26	20.23	-0.48
Russia	215	251	2.60	0.86	4	1	-13.59	-10.95	0	..	..	..
Ukraine	15	19	-3.30	2.59	0	0	..	..	0	0	..	..
AFRICA	2 966	3 737	0.69	2.38	32	36	-4.62	1.55	32	35	3.31	1.70
Egypt	129	143	-1.19	1.00	1	0	-17.69	-0.04	0	0	..	..
Ethiopia	162	223	1.13	3.29	0	0	..	..	17	21	10.30	3.99
Nigeria	383	475	-0.44	2.43	0	0	..	..	0	0	..	..
South Africa	200	234	2.17	1.46	9	9	-6.29	0.49	1	1	17.86	-0.07
ASIA	8 478	10 367	2.03	1.88	556	629	6.83	1.10	38	16	-4.92	-7.97
China ¹	4 542	5 601	2.43	1.90	226	238	21.86	-0.11	2	4	-20.27	0.12
India	738	827	-0.95	1.24	0	0	..	..	22	6	-1.11	-12.34
Indonesia	106	135	-1.58	2.52	3	14	17.70	17.62	0	0	..	..
Iran	310	351	0.77	1.18	3	7	11.90	3.97	0	0	..	..
Japan	0	0	..	..	20	17	-8.53	-2.28	..	..	..	..
Kazakhstan	162	187	2.49	1.40	0	0	..	..	0	0	-12.61	-6.83
Korea	1	1	-4.24	0.00	12	11	15.81	0.94	0	0	..	..
Malaysia	1	1	1.01	1.15	34	44	8.88	2.30	0	0	1.53	..
Pakistan	477	596	1.64	2.23	0	0	..	..	8	1	-2.68	-23.61
Philippines	57	68	0.60	1.76	1	3	5.72	15.01	0	0	..	..
Saudi Arabia	0	0	..	..	51	52	-0.79	1.03	2	1	-4.48	-1.02
Thailand	2	2	2.61	1.08	2	2	10.95	2.38	0	0	..	..
Turkey	380	471	3.70	2.07	1	1	6.57	-6.11	0	0	..	..
Viet Nam	8	8	-1.20	0.28	1	5	-17.50	15.33	0	0	..	..
OCEANIA	1 191	1 396	0.14	1.48	28	29	-5.46	0.95	927	1 079	1.71	1.66
Australia	735	889	1.64	1.72	..	..	..	..	463	608	4.43	2.45
New Zealand	455	506	-1.96	1.07	5	4	-3.45	0.00	464	471	-0.58	0.72
DEVELOPED COUNTRIES	3 502	4 045	0.95	1.23	362	373	-2.93	0.28	974	1 124	2.07	1.53
DEVELOPING COUNTRIES	10 915	13 385	1.44	1.96	606	679	5.42	1.06	84	69	-3.83	-1.67
LEAST DEVELOPED COUNTRIES (LDC)	1 320	1 719	1.93	2.66	4	6	-2.92	2.56	0	0	..	..
OECD²	2 721	3 086	0.21	1.08	372	382	-2.48	0.28	969	1 121	2.02	1.55
BRICS	5 813	7 042	1.92	1.75	244	253	15.62	-0.18	25	11	-4.59	-8.21

.. Not available

Note: Calendar year; except year ending 30 September for New Zealand.

Average 2015-17est: Data for 2017 are estimated.

1. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
2. Excludes Iceland but includes all EU28 member countries.
3. Gross indigenous production.
4. Least-squares growth rate (see glossary).
5. Excludes trade of live animals.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database). doi: dx.doi.org/10.1787/agr-outl-data-en

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Table A.29.2. Sheep meat projections: Consumption, food

Calendar year

	CONSUMPTION (kt cwe)		Growth (%) ³		FOOD (kg rwe/cap) ⁴		Growth (%) ³	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	14 436	17 410	1.47	1.78	1.7	1.8	0.28	0.79
NORTH AMERICA	193	195	0.37	0.14	0.5	0.4	-0.39	-0.57
Canada	37	34	-0.33	-0.58	0.9	0.8	-1.35	-1.39
United States	156	160	0.55	0.31	0.4	0.4	-0.19	-0.39
LATIN AMERICA	403	433	-0.07	0.63	0.6	0.5	-1.19	-0.22
Argentina	60	66	2.92	0.80	1.2	1.2	1.87	-0.06
Brazil	125	134	0.97	0.60	0.5	0.5	0.06	0.00
Chile	10	10	-1.11	-0.05	0.5	0.5	-1.99	-0.72
Colombia	10	10	-1.77	0.05	0.2	0.2	-2.73	-0.59
Mexico	75	83	-0.62	0.79	0.5	0.5	-2.01	-0.27
Paraguay	4	5	1.84	1.63	0.5	0.6	0.50	0.50
EUROPE	1 428	1 562	-1.18	0.63	1.7	1.9	-1.28	0.64
European Union	1 061	1 148	-2.30	0.58	1.8	2.0	-2.46	0.52
Russia	219	250	2.18	0.67	1.3	1.5	2.09	0.83
Ukraine	15	19	-3.34	2.61	0.3	0.4	-2.86	3.15
AFRICA	2 898	3 698	0.56	2.48	2.1	2.0	-2.00	0.09
Egypt	129	143	-1.36	1.00	1.2	1.1	-3.42	-0.60
Ethiopia	145	201	0.46	3.22	1.2	1.3	-2.11	0.93
Nigeria	387	479	-0.42	2.39	1.8	1.7	-3.03	-0.15
South Africa	223	255	2.44	1.35	3.5	3.6	1.07	0.33
ASIA	9 225	11 231	2.48	1.84	1.8	2.0	1.42	1.09
China ¹	4 767	5 835	2.99	1.81	3.0	3.6	2.44	1.61
India	706	811	-0.87	1.45	0.5	0.5	-2.09	0.48
Indonesia	109	149	-1.21	3.35	0.4	0.5	-2.43	2.42
Iran	298	349	1.63	1.50	3.3	3.5	0.40	0.75
Japan	20	17	-8.53	-2.28	0.1	0.1	-8.44	-1.94
Kazakhstan	162	187	2.48	1.40	7.9	8.3	0.97	0.53
Korea	13	12	12.23	0.86	0.2	0.2	11.78	0.58
Malaysia	36	46	8.38	2.19	1.0	1.1	6.51	0.96
Pakistan	469	596	1.74	2.34	2.1	2.2	-0.34	0.62
Philippines	58	71	0.68	2.04	0.5	0.5	-0.94	0.62
Saudi Arabia	188	201	3.98	0.65	5.1	4.6	1.20	-0.79
Thailand	3	4	5.84	1.72	0.0	0.1	..	..
Turkey	381	472	3.53	2.06	4.2	4.8	1.95	1.43
Viet Nam	9	13	-5.43	3.72	0.1	0.1	..	2.78
OCEANIA	289	291	-2.06	0.42	6.5	5.7	-3.58	-0.82
Australia	235	246	-0.94	0.42	8.6	7.9	-2.41	-0.71
New Zealand	31	20	-4.34	-0.26	5.8	3.4	-5.36	-1.06
DEVELOPED COUNTRIES	2 846	3 210	0.23	1.06	1.8	1.9	-0.18	0.77
DEVELOPING COUNTRIES	11 590	14 200	1.79	1.94	1.7	1.8	0.41	0.81
LEAST DEVELOPED COUNTRIES (LDC)	1 274	1 701	1.87	2.85	1.4	1.5	-0.50	0.58
OECD²	2 075	2 263	-0.93	0.78	1.4	1.4	-1.49	0.39
BRICS	6 039	7 284	2.38	1.69	1.7	1.9	1.52	1.13

.. Not available

Note: Calendar year; except year ending 30 September for New Zealand.

Average 2015-17est: Data for 2017 are estimated.

1. Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
2. Excludes Iceland but includes all EU28 member countries.
3. Least-squares growth rate (see glossary).
4. Per capita consumption expressed in retail weight. Carcass weight to retail weight conversion factors of 0.7 for beef and veal, 0.78 for pigmeat and 0.88 for both sheep meat and poultry meat.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database). doi: dx.doi.org/10.1787/agr-outl-data-en

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Table A.30. Main policy assumptions for meat markets

		Average 2015-17est	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
ARGENTINA												
Beef export tax	%	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CANADA												
Beef tariff-quota	kt pw	129.2	129.2	129.2	129.2	129.2	129.2	129.2	129.2	129.2	129.2	129.2
In-quota tariff	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Out-of-quota tariff	%	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5	26.5
Poultry meat tariff-quota	kt pw	89.6	95.7	96.9	98.1	99.3	100.5	101.6	102.8	104.0	105.2	106.4
In-quota tariff	%	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Out-of-quota tariff	%	196.6	196.6	196.6	196.6	196.6	196.6	196.6	196.6	196.6	196.6	196.6
EUROPEAN UNION¹												
Voluntary coupled support												
Beef and veal ²	mln EUR	1 698	1 694	1 693	1 693	1 693	1 693	1 693	1 693	1 693	1 693	1 693
Sheep and goat meat ³	mln EUR	481	487	491	496	496	496	496	496	496	496	496
Beef basic price ⁴	EUR/kg dwt	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Beef buy-in price ^{4,5}	EUR/kg dwt	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Beef tariff-quota	kt cwe	332.7	350.6	359.8	369.0	378.3	387.5	389.0	390.6	392.2	392.7	393.2
Pig tariff-quota	kt cwe	167.5	190.1	203.5	216.9	230.3	245.7	246.6	247.5	248.4	249.3	250.2
Poultry tariff-quota	kt rtc	1 008.7	1 014.7	1 017.9	1 021.1	1 024.3	1 026.3	1 028.4	1 030.5	1 032.5	1 034.6	1 036.7
Sheep meat tariff-quota	kt cwe	294.7	295.6	296.1	296.3	296.5	296.7	296.9	297.1	297.1	297.5	297.7
JAPAN⁶												
Beef stabilisation prices												
Upper price	JPY/kg dwt	1 165.0	1 215.0	1 215.0	1 215.0	1 215.0	1 215.0	1 215.0	1 215.0	1 215.0	1 215.0	1 215.0
Lower price	JPY/kg dwt	885.0	900.0	900.0	900.0	900.0	900.0	900.0	900.0	900.0	900.0	900.0
Beef tariff	%	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5
Pigmeat stabilisation prices												
Upper price	JPY/kg dwt	595.0	595.0	595.0	595.0	595.0	595.0	595.0	595.0	595.0	595.0	595.0
Lower price	JPY/kg dwt	441.7	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0
Pig meat import system												
Tariff	%	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Standard import price	JPY/kg dwt	409.9	409.9	409.9	409.9	409.9	409.9	409.9	409.9	409.9	409.9	409.9
Poultry meat tariff	%	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
KOREA												
Beef tariff	%	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Pigmeat tariff	%	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
Poultry meat tariff	%	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0
MEXICO⁷												
Beef and veal tariff-quota	kt pw	220.0	220.0	220.0	..	..	..	..	..	..	..	..
In-quota tariff	%	0.0	0.0	0.0	..	..	..	..	..	..	..	..
Out-of-quota tariff ⁸	%	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Poultry meat tariff-quota	kt pw	300.0	300.0	300.0	..	..	..	..	..	..	..	..
In-quota tariff	%	0.0	0.0	0.0	..	..	..	..	..	..	..	..
Out-of-quota tariff	%	100.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0	75.0
RUSSIA												
Beef tariff-quota	kt pw	570.0	570.0	570.0	570.0	570.0	570.0	570.0	570.0	570.0	570.0	570.0
In-quota tariff	%	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Out-of-quota tariff	%	51.7	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
Pigmeat tariff-quota ⁹	kt pw	430.0	430.0	430.0	..	..	..	..	..	..	..	..
In-quota tariff	%	0.0	0.0	0.0	..	..	..	..	..	..	..	..
Out-of-quota tariff	%	65.0	65.0	65.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Poultry tariff-quota	kt pw	360.7	354.0	354.0	354.0	354.0	354.0	354.0	354.0	354.0	354.0	354.0
In-quota tariff	%	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Out-of-quota tariff	%	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
UNITED STATES												
Beef tariff-quota	kt pw	696.6	696.6	696.6	696.6	696.6	696.6	696.6	696.6	696.6	696.6	696.6
In-quota tariff	%	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Out-of-quota tariff	%	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4	26.4

ANNEX A

Table A.30. Main policy assumptions for meat markets (cont.)

		Average 2015-17est	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
CHINA												
Beef tariff	%	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Pigmeat tariff	%	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Sheep meat tariff	%	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Poultry meat tariff	%	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
INDIA												
Beef tariff	%	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5
Pigmeat tariff	%	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Sheep meat tariff	%	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Poultry meat tariff	%	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
SOUTH AFRICA												
Sheep meat tariff-quota	kt pw	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
In-quota tariff	%	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Out-of-quota tariff	%	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0

.. Not available

Note: Average 2015-17est: Data for 2017 are estimated.

1. Since 2015 the Basic payment scheme (BPS) holds, which shall account for 68% maximum of the national direct payment envelopes. On top of this, compulsory policy instruments have been introduced: the Green Payment (30%) and young farmer scheme (2%).
2. Implemented in 24 Member States.
3. Implemented in 22 Member States.
4. Price for R3 grade male cattle.
5. Safety-net trigger.
6. Year beginning 1 April.
7. Intended for countries which whom Mexico has no free trade agreements.
8. 25% for frozen beef.
9. Eliminated in 2020 and replaced by import tariff.

Source: OECD/FAO (2018), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database). doi: dx.doi.org/10.1787/agr-outl-data-en

OECD-FAO Agricultural Outlook 2018-2027

The fourteenth joint edition of the OECD-FAO Agricultural Outlook provides market projections for major agricultural commodities, biofuels and fish, as well as a special feature on the prospects and challenges of agriculture and fisheries in the Middle East and North Africa.

World agricultural markets have changed markedly since the food price spikes of 2007-8, as production has grown strongly while demand growth has started to weaken. In the coming decade, real agricultural prices are expected to remain low as a result of reduced growth in global food and feed demand. Net exports will tend to increase from land abundant countries and regions, notably in the Americas. Countries with limited natural resources, slow production expansion and high population growth will see rising net imports. Increasing import dependence is projected in particular for the Middle East and North Africa, where a scarcity of arable land and water constrains agricultural production.

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