



OECD-FAO Agricultural Outlook 2018-2027

DAIRY AND DAIRY PRODUCTS



Chapter 7. Dairy and dairy products

This chapter describes the market situation and highlights the latest set of quantitative medium-term projections for world and national dairy markets for the ten-year period 2018-27. Growth in world milk production is projected to increase by 22% over the projection period, with a large share of the increase coming from Pakistan and India. In 2027, these two countries are expected to jointly account for 32% of global milk production. Most of the additional production in these countries will be consumed domestically as fresh dairy products. Over the projection period, the European Union's share in global exports of dairy commodities is expected to increase from 27% to 29%. As the 2017 butter bubble continues to deflate, nominal and real prices for butter will decrease over the projection period. With the exception of skim milk powder (SMP), dairy prices are expected to decrease in real terms.

Market situation

International dairy prices continued to increase in 2017, driven by declines in milk production in the last quarter of 2016 and first quarter of 2017, and by a strong demand for fat solids. Butter prices showed a spectacular jump in the first half of 2017, but came down by the end of 2017, that on average butter prices were 65% higher than in 2016. During 2017, the prices of whole milk powder (WMP), cheese and skim milk powder (SMP) increased by 28%, 25% and 3%, respectively.

In the short term, butter prices are expected to decline further during 2018 but remain higher than in recent years. The price of cheese is expected to come down, as the supply of fat solids increases relative to its demand and the price of fat solids declines. The prices of milk powders are expected to increase in 2018, although the recovery of the SMP price is likely to be slow given the still relatively high stock levels, especially in the European Union.

World milk production experienced a modest growth rate of 0.5% during 2017, which is much lower than the average growth rate of 2.1% during the last decade. Major exporters such as the European Union, New Zealand, Australia and Argentina witnessed a decrease in production during the first half of 2017 followed by a partial rebound in the second half. In the same period EU milk production declined in some key dairy producing Member States such as France and Germany, due to adverse weather impacts, low milk prices and herd declines. In the United States, stagnant growth in milk cow numbers and in yield per cow curbed supply growth. Despite low feed prices, the US milk margin fell in 2017 following the decline in the farm gate milk price. In Argentina milk production in 2017 recovered slowly from the more than 10% fall in production in 2016. An expected rebound in New Zealand milk production for 2017 has been delayed due to wet and cold spring weather (August-September). In Australia the growth of milk production was hampered by a contraction in the number of dairy farms and herd, due to poor seasonal factors and a low farm gate milk price.

Trade in dairy products is benefiting from stronger GDP growth, though trade growth has slowed down during recent years. The People's Republic of China (hereafter "China"), the largest importer of milk products, increased its 2017 imports of WMP and SMP combined by 6% relative to 2016, but this is still lower than the highs of 2013-2014. In contrast, China's cheese imports increased by 16%, continuing a decade long growth pattern (China is the world's fifth largest cheese importer). Oceania's dairy exports were below their 2016 values, with the exception of New Zealand's cheese exports, which increased for the second year in a row. New Zealand has reduced its production of WMP, but increased its production of cheese in response to growing world demand. Fluid milk exports have been rapidly expanding in recent years and, following a 16% increase in 2016, grew by a further 4% in 2017.

Trade measures affecting dairy trade are India's extended import ban (until 23 June 2018), the Russian import ban (extended till the end of 2018), an import ban by Mexico on all dairy imports from Colombia due to a Foot and Mouth disease outbreak, non-tariff measures (e.g. by Indonesia to US dairy products), and the free trade agreement between the European Union and Canada (CETA), in place since 21 September 2017. In addition, stocking and destocking strategies may have short-term market impacts. During the period 2015-2017, the European Union built up a public intervention stock of SMP of 378 000 tonnes (which is about 6.5% of world SMP production and about 20% of world SMP trade). SMP stocks also increased in the United States and India.

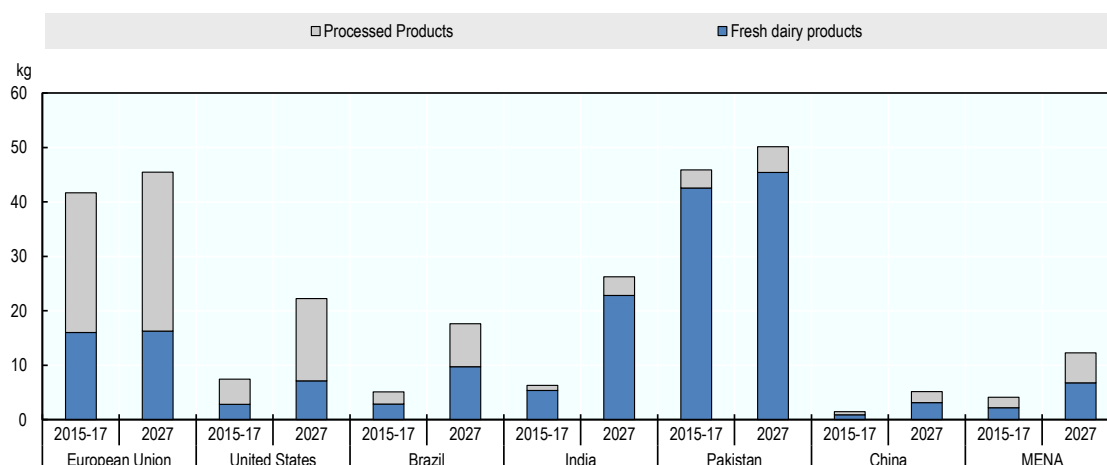
Projection highlights

Although growth in world milk production has been limited in recent years, it is projected to increase by 22% in 2027, compared to the 2015-17 base period. The majority of the increase in milk production (80%) is anticipated to come from developing countries, in particular Pakistan and India, which are expected to jointly account for 32% of total milk production by 2027, compared to 26% in the base period. Milk production in developing countries is projected to expand at a rate of 3.0% p.a., but most of this additional production will be consumed domestically as fresh dairy products¹. The share of production from developed countries is projected to decrease from 48% in 2017 to 43% in 2027. As compared to the previous *Outlook*, dairy product prices are lower, which curbs supply growth, in particular of developed countries. At the world level, production of butter, WMP, SMP and cheese are projected to increase by 2.2% p.a., 1.6% p.a., 1.3% p.a., and 1.3% p.a. respectively.

Dairy demand in developed countries has been shifting for several years towards butter and dairy fat and away from substitutes based on vegetable oil. This trend can be attributed to a more positive health assessment of dairy fat and a change in taste. As incomes and population increase, and diets become more globalised, more dairy products are expected to be consumed in developing countries. In developed countries, per capita consumption is projected to grow from 22.2 kg in 2015-17 to 23.1 kg in 2027 in milk solids, compared to an increase from 10.6 kg to 13.5 kg in developing countries. There are, however, significant regional disparities amongst developing countries, where predominantly fresh dairy products are consumed; this contrast with developed countries, where consumer preferences tend towards processed products (Figure 7.1).

Whereas the butter price is expected to continue its decline after the butter bubble in the first quarter of 2017, after that the price of cheese will increase by about 2.1% p.a. over the projection period. The prices of milk powders are expected to show a stronger increase (SMP 3.4% p.a., WMP 3.4% p.a.), but in the case of the SMP price this percentage should be put in perspective as it starts from a low base in 2017 and is expected to recover only slowly in the short run due to stock levels that hang over the market. Despite the relatively strong growth in milk powder prices in nominal terms, they are not foreseen to return to the highs of 2013-2014 and hence will remain stable in real terms.

Currency depreciations (2027 relative to 2015-17, with respect to the United States dollar) in Argentina (104%), Brazil (14%), and Mexico (13%) will encourage growth in exports from these countries as they become more competitive relative to the United States, but also compared to the European Union and Oceania. On the import side, the currencies of most large importers – in particular China, Philippines and Indonesia – are expected to be stable or even slightly appreciate and are not likely to negatively affect their dairy product import demands. An exception is Egypt, whose currency is projected to depreciate strongly. In Japan, import demand is constrained by an ageing population, while in Canada it is limited by domestic dairy policies. Between the base period and 2027, the European Union's share in global exports of dairy commodities is expected to increase from 24% to 28%. India –the world's largest milk producing country – has a large expanding domestic market, but is not projected to become an important player on the international market.

Figure 7.1. Per capita consumption of processed and fresh dairy products in milk solids

Note: Milk solids are calculated by adding the amount of fat and non-fat solids for each product; Processed products include butter cheese, skim milk powder and whole milk powder.

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

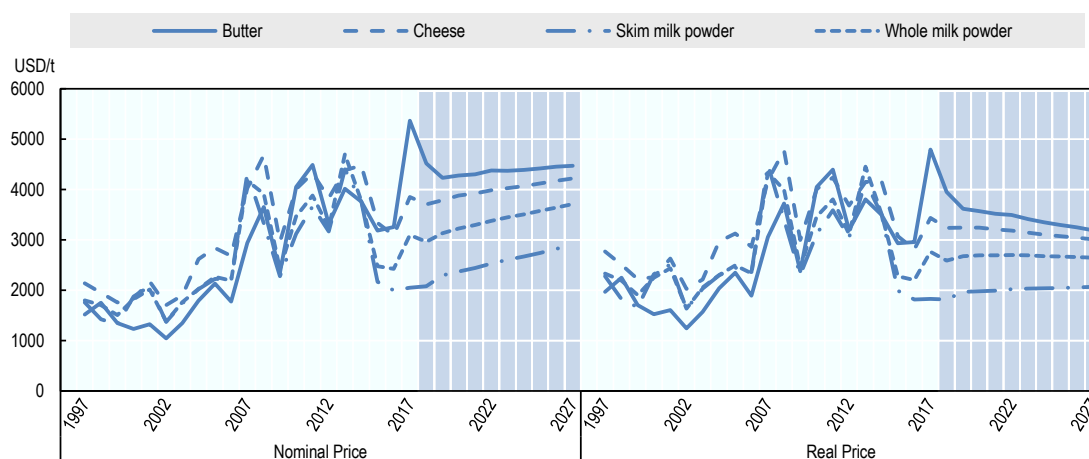
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Prices

International dairy commodity prices surged during the second half of 2016, in particular for fat-based products, following sharp declines from their 2013-2014 highs, which stemmed from a contraction in demand and excess supply. On the demand side, China – the largest importer of WMP and SMP – increased its imports in 2017, while the Russian Federation prolonged its ban for several dairy products on several major exporters (including the European Union and United States). Unfavourable weather conditions limited the increase in the 2017 milk supply for some major exporters, thereby putting upward pressure on prices. Both in 2016 and 2017 world supply growth lagged behind the demand growth.

World prices of dairy products will be supported by strong but slowing demand increases for milk and dairy products, which will be 19% higher in milk-solid basis by 2027 compared to the base period. Over the next decade, the real price of butter will decline relative to its peak value of 2017. In the short term, as the 2017 butter bubble dissipates, butter prices will decline relative to other dairy products, though they are expected remain at a higher level than before due to structural changes in demand for milk fat solids. The price of SMP starts from a low level in the base period and is expected to recover only very slowly during the coming years as stock levels in the European Union (and to a lesser extent in the United States) are high (Figure 7.2). Over the projection period, the SMP price is the only dairy product price that shows an increase in real terms. Nominal prices will increase for all products except butter, but they are not expected to return to previous highs (with cheese being the product coming closest). As compared to the previous *Outlook* dairy product prices are lower, inducing a lower production increase for major exporters.

Figure 7.2. Dairy product prices



Note: Butter FOB export price, butter, 82% butterfat, Oceania, Skim Milk Powder, FOB export price, non-fat dry milk, 1.25% butterfat, Oceania; Whole Milk Powder, FOB export price, 26% butterfat, Oceania; Cheese, FOB export price, cheddar cheese, 39% moisture, Oceania. Real prices are nominal world prices deflated by the US GDP deflator (2010=1).

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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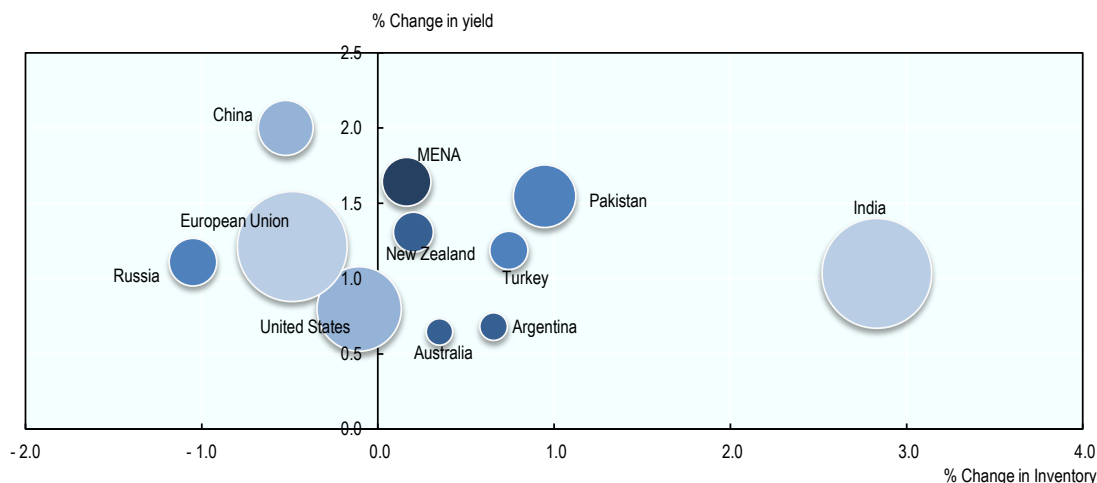
Production

Growth in world milk production is expected to average 1.8% p.a. over the next ten years, compared to 2.1% p.a. during the previous decade. A 22% increase in milk production is projected by 2027 compared to the base period. Developed and developing countries will respectively produce an additional 9% and 33% of milk output by 2027. Dairy product prices are lower in this *Outlook* than in last year's report, with the lower prices curbing production growth, especially in the developed countries. Developed countries' share of milk production will, however, drop from 48% to 43% in 2027. Although dairy herds in developed countries are projected to decrease by 0.2% p.a., milk yield per dairy cow will grow by 1.0% p.a. over the medium term. Production growth in developing countries will be based on an increase in dairy herds of 1.1% p.a. and a yield increase of 1.6% p.a. Despite these projected yield improvements, the absolute increases in productivity will remain small given that many developing countries start from a low base. For most countries, increases in milk production over the medium term will come from yield increases rather than larger herds (Figure 7.3).

The five largest milk producers during base period are the European Union (with a 20%) share in global production, India (20%), the United States (12%), Pakistan (6%), and China (5%). Around 70% of the increase in world milk production will take place in Asia, with India and Pakistan accounting for most of the increase in production. India is poised to have the largest growth in milk production, outpacing the European Union to secure its position as the largest milk producer with a global share of 25% in 2027, followed by Pakistan with an average growth rate of 2.5% p.a. and a global share of 7% in 2027. In both countries, the vast majority of production is consumed domestically as fresh products. The shares of the European Union and the United States in world milk

production are projected to decline from 20% to 18% and 12% to 11%, respectively. However, they will remain major players in export markets for processed dairy products.

Figure 7.3. Annual changes in inventories of dairy herd and yields between 2017 and 2027



Note: The size of the bubbles refer to the total milk production in the base period 2015-17.

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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European Union milk production is projected to grow at 0.7% p.a. in the coming decade, which is slower than the 1.2% p.a. observed during the previous decade. Although the producer price of milk declines, growth is expected in 2018, mainly due to a recovery in production in EU member states that were affected by adverse weather in 2017. The European Union's medium term growth is due to an increase in domestic demand (cheese, butter, cream and other products) as well as an increase in global demand for dairy products. The European Union's milk production growth stems from an increase in milk yields, which grow at 1.2% p.a. over the next decade, while the dairy herd is on a declining trend again (-0.5% p.a.) after earlier increases as a response to the milk quota abolition. The European Union's share in global cheese production decreases from 44% to 43%, its share of butter production from 21% to 19%, SMP production from 34% to 33% and WMP production from 14% to 13%. The growth rates of SMP production, cheese and butter declined relative to 2008-2017 rates, while that of WMP will increase from zero annual growth during the 2008-17 period to 1.7% p.a. for the projection period.

Milk production in the United States is expected to increase by 0.7% p.a. during the next decade through an increase in milk yields (0.8% p.a.). Compared to the past decade, production growth is slower, at 1.5% p.a. for SMP, 1.6% p.a. for WMP, 1.8% p.a. for cheese and 1.7% p.a. for butter.

Although China will increase its production at 1.5% p.a., its share of world production remains at the same level (5%) in 2027. Most of the production will go towards fresh dairy products. China will remain a major importer of dairy products and is projected to increase its imports over the next decade but at a slower pace.

Milk production in Latin American and Caribbean countries will increase by 18% compared to the base period, and their share in world production remain at 9%. Argentina – a major producer – suffered from one of its worst crises in the last 20 years (*El Niño-*

induced adverse weather in 2016 and poor economic conditions in 2017), causing a more than 10% decrease in milk production in 2016, with only a slight recovery in 2017 (+2%) and 2018 (+2%). Over the medium term, production is projected to increase by 1.3% p.a. as the sector recovers. Brazil's 2017 production recovered from drought conditions experienced in 2015-2016, and its milk production is projected to expand by 2.2% p.a. over the projection period.

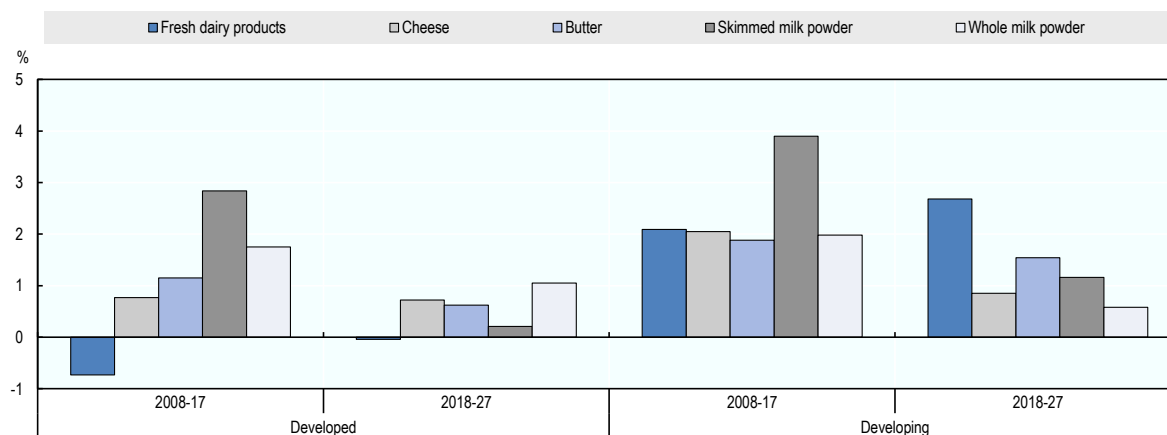
The share of Oceania in world milk production is only 3.8% during the base period and is projected to decline to 3.6% by 2027. Nevertheless, the region is the world's largest dairy exporter. Milk output growth in New Zealand is expected to be lower compared to the previous decade, with growth slowing from 3.3% p.a. during the previous decade to 1.5% p.a. over the projection period. The main constraining factors are land availability and increasing environmental restrictions. During the last decade the milk solids produced per hectare of land steadily increased by 2% p.a., while for the next decade this will decline to 1.8% p.a. New Zealand is both a leading producer and exporter of WMP, and is projected to account for 24% of global production and 55% of global exports in 2027. Over the next decade, most of the growth will come from a further increase in the dairy herd (0.2% p.a.) and yield (1.3% p.a.).

The share of developing countries in world dairy production in the base period varies from 19% (cheese) and 25% (SMP and WMP) to 38% (butter). In all cases their share in the world's 2027 production level increases, indicating that production tends to follow demand, though for SMP and WMP there still remain big gaps between production and consumption levels.

In developed countries, the majority of milk production is transformed into butter, cheese, SMP and WMP. In terms of milk-solid basis, developed countries will increase milk production by 9%, with 37% of that increase going to cheese production, around 23% to SMP, 20% to butter, 10.5% to WMP and 8.5% to fresh dairy products. In developing countries, of the 33% increase in milk production in 2027, 85% will go to the production of fresh dairy products, 7% to butter, 4% to WMP, 3% to cheese and 0.6% to SMP.

Consumption

World consumption of fresh dairy products and processed dairy products is poised to grow by 2.1% p.a. and 1.7% p.a. respectively, over the next decade. The largest share of milk and dairy product consumption is in the form of fresh dairy products, taking up about 50% of the world's total milk production. This share continues to increase to 52% over the next ten years due to rising milk consumption in developing countries. Consumption dynamics differ considerably between developed and developing countries. Developed countries consume primarily processed milk products, with per capita consumption of cheese increasing by 0.7 p.a., butter by 0.7% p.a., WMP by 1.1% p.a., fresh dairy products per capita consumption remaining stable and SMP decreasing by -0.3% p.a. (Figure 7.4). Developing countries consume 68% of fresh dairy products, most of which is consumed in Asia. This share will rise to 73% over the decade. Per capita consumption of dairy products in developing countries is expected to increase by an average of 0.5% p.a. for WMP, 1.1% p.a. for SMP, 0.8% p.a. for cheese, 1.7% p.a. for butter, and 1.9% p.a. for fresh dairy products. Except for butter, these growth rates are considerably slower than those seen in the last decade. This is partly due to higher initial levels of consumption.

Figure 7.4. Annual growth rates of per capita consumption for dairy products

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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While fresh dairy products intake will still make up more than 75% of the per-capita consumption of milk solids in developing countries by 2027, consumption of processed products differs between regions. Butter and cheese will respectively account for 11% and 18% of dairy consumption in North Africa and 12% and 13% in the Middle East. SMP and WMP will account for 35% and 13% respectively of the per capita consumption of milk solids in Southeast Asia. Per capita consumption of cheese and WMP in South America will remain at respectively 16% and 18% of total dairy per capita consumption. While some regions are self-sufficient, e.g. India, in other parts of the world, such as Africa, Asian countries and the Middle-East, consumption is growing faster than production, leading to an expansion in dairy imports.

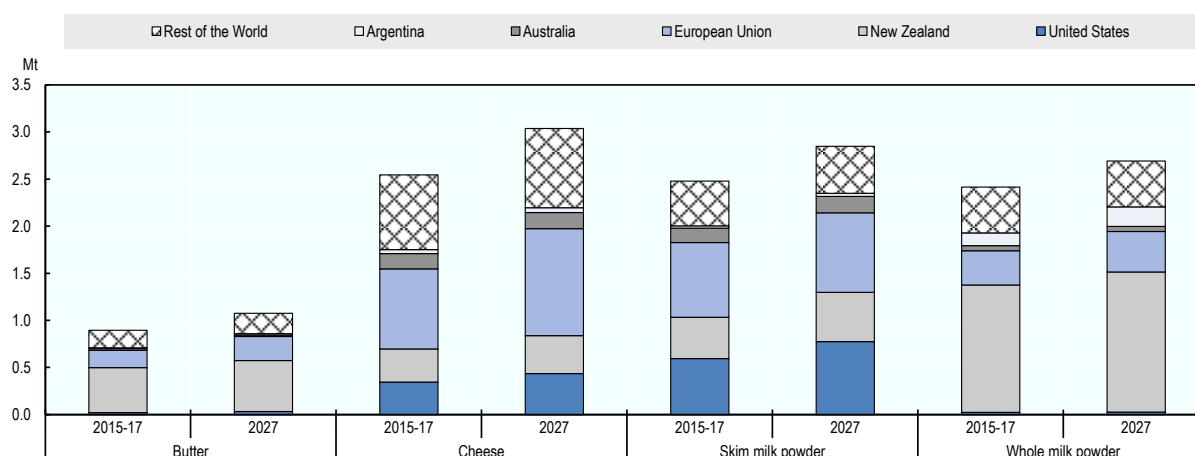
In developed countries, increasing per capita consumption of processed dairy products – cheese and WMP – is also expected, although at lower growth rates than in the last decade. The high butter to vegetable oil price ratio is assumed to limit demand growth for butter and milk fat. Nevertheless, consumers in developed countries will consume an additional 0.3 kg of butter in 2027 due to preferences shifting in favour of butter over other oils and fats. Recent studies that have shed a more positive light on the health implications of dairy fat consumption, as well as consumers’ preference for taste and less processed food, have encouraged its use in bakery products and recipes. Per capita consumption of fresh dairy products decreases slightly over the outlook period. Most of the increase in consumption of SMP is used in the manufacturing sector, notably in confectionary, infant formula, and bakery products.

Trade

Around 81% of world exports of dairy products come from developed countries; this rate is projected to increase to 82% by 2027. Over the next decade, developed countries are projected to increase exports by 22%, implying an annual growth rate of 1.8% p.a. This is lower than the past decade as the projected growth in consumption of dairy products in developing countries slows down from 3.4% to 2.9% p.a. Growth rates in exports differ

among dairy products: 1.8% p.a. for butter; 2.4% p.a. for cheese; 1.7% p.a. for SMP; and 1.3% p.a. for WMP. The four major exporters of dairy products in the base period are New Zealand with a share of 32%, the European Union (24%), the United States (12%) and Australia (6%). Except for Oceania (New Zealand, Australia), which sees its export share decreasing from 38% in the base year period to around 33% in 2027, export shares increase slightly for the United States, the European Union and Argentina. The four developed countries will jointly account for around 69% of world cheese, 80% of world WMP, 79% of world butter, and 81% of world SMP exports in 2027 (Figure 7.5). In the case of WMP, Argentina is also one of the main exporters accounting for 8% of world exports in 2027. While demand for fresh dairy products is much greater than for processed products, higher costs for transport and storage of fresh products generally limit such trade.

Figure 7.5. Exports of dairy products by region



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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New Zealand remains the primary source for butter and WMP on the international market, with market shares of around 53% and 55%, respectively, by 2027. Its market share for WMP remains the same, while that of its butter exports increases to 56% in 2027. Given that China, a major importer of WMP, has drastically decreased purchases, it is projected that New Zealand will have a lower production growth rate of 1.3% over the next decade compared to 9.3% over the last decade. It is also projected that it will diversify and slightly increase its production of cheese over the outlook period.

The European Union will remain the main cheese exporter, accounting for 37% of world exports in 2027, followed by the United States and New Zealand at around 14% and 13% respectively. Over the next decade, export growth for these three countries will average 2% p.a. The European Union's share in the world cheese production is projected to be around 43% in 2027 and is sustained by increased exports to Canada via the CETA agreement, and the assumed end of the ban imposed by the Russian Federation in 2018. China and Egypt are expected to more than double their imports of cheese by 2027. Only about 10% of world cheese production is traded internationally, of which 60% is projected to be imported by developed countries in 2027. The European Union is also an exporter of fresh dairy products, which after a spectacular growth in the past (18.9% p.a.

in the period 2008-2017) will stabilise in the projection period with net trade averaging around 1.3 Mt.

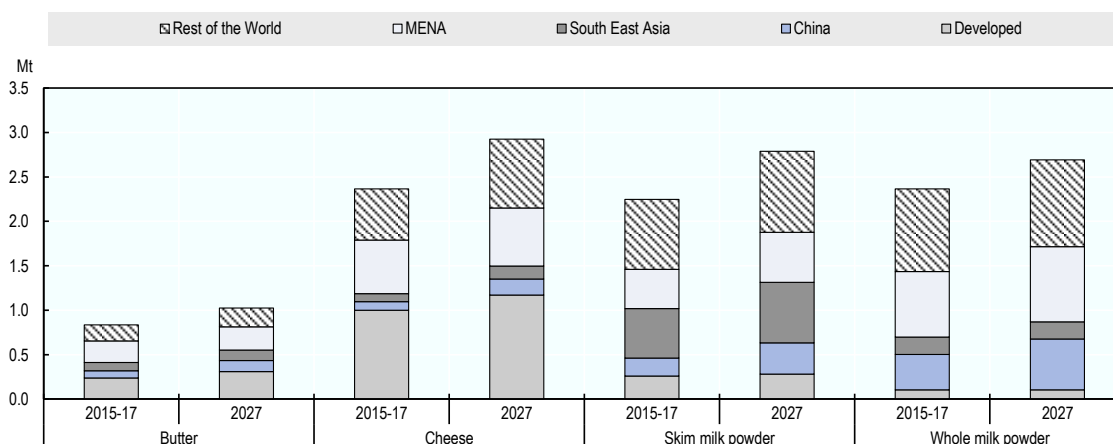
The share of world WMP production that is exported in 2027 is projected to decrease from 46% to 42%, while the share of the other dairy products will remain unchanged. In the case of WMP, it is expected that New Zealand's share of world trade will remain stable at 55% in 2027. The European Union is another main exporter of SMP, and will account for 16% of world exports in 2027. The European Union will slightly increase its share in world SMP exports by 1 percentage point by 2027. Developed countries export 90% and 76% of SMP and WMP, and developing countries import around 45% of the world SMP and WMP production in 2027.

In contrast to dairy exports, imports are spread more widely across countries and the dominant destinations for all dairy products (product weight basis) will be developing countries, with MENA accounting for 24% of world imports in 2027, South East Asia for 12% and China for 13%, whereas the share of developed countries will be 20%. Developed countries import considerable levels of cheese and butter at around 42% and 11% of world imports in 2015-17, respectively; these percentages will remain at similar levels in 2027. The Russian Federation, Japan, China, the United States, and Mexico are projected to be the top five cheese importers in 2027. It is expected that cheese imports in developing countries will grow at a faster rate (2.4% p.a.) than in developed countries (1.0% p.a.). The main importers of butter are the Russian Federation, Egypt, China and Saudi Arabia, a reflection of increases in domestic consumption (Figure 7.6).

Developing countries imported 96% of global shipments of WMP in 2015-17 and this share is expected to remain constant over the medium term. Asia is projected to increase its share of imports from 57% to 59% by 2027. China is the main importer and will import 21% of world trade by 2027. China's imports of cheese and butter should expand annually by 4.8% and 2.4%, respectively; by 2027, its share of world imports will be 12% for butter and 6% for cheese. Most of its dairy imports have been from Oceania, although in recent years, the European Union has increased its exports of butter and SMP to China.

Developing countries account for 88% of total SMP imports. The SMP market was less affected by decreases in China's imports, as there are a large number of importers on the market. China continues to be the world's major importer, with 4.9% p.a. growth in SMP imports over the projection period. China's share in world imports will increase from 9% in the base period to 13% in 2027. China is also a major importer of fresh dairy products: net imports in the base period are about 580 kt, which are expected to increase over the projection period by 44%. Growth in other major importing countries – Egypt, Mexico, Algeria, Indonesia, Malaysia, the Philippines and Viet Nam – are projected to decrease over the outlook period compared to the last decade, due to higher base levels but also to limited growth in demand given the preference for fresh dairy products.

The Middle East and North Africa will remain key destinations, accounting for 35% of world butter imports and 19% of world cheese imports by 2027. The European Union has traditionally been an important trade partner for dairy products and has recently expanded its exports, especially of butter and cheese. Egypt is confirming its position as a major importer of butter, as is Saudi Arabia, which also is a large importer of cheese (see Chapter 2 of the *Outlook* for more details).

Figure 7.6. Imports of dairy products by region

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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Main issues and uncertainties

The relatively high prices for milk fat may induce substitution of milk fat by vegetable fats (e.g. fat-filled powders) for certain uses and destinations, which may not fully reverse when the butter price comes down from its current. This adds to the uncertainty about the long-term relative valuation of fat and non-fat milk solids.

China’s role as a major importer of dairy products is a key uncertainty. Small variations in domestic production and consumption can have a significant impact on the world market, as shown in 2011-2015 period when the country’s imports of WMP expanded and then decreased rapidly.

High growth in milk production, and growing demand in India is a major feature of the outlook, and such high growth in either one may appear not to be sustainable in the medium term. While India does not currently participate in international dairy markets, if this were to change, it could have major impacts given the size of its market.

Specialisation and restructuring of milk production in the European Union has been given impetus by the removal of milk quotas in April of 2015.

In several countries – Netherlands, Germany, Denmark, France and Italy – concerns about environmental issues may limit milk production increases.

Dairy demand and export opportunities could also be affected by the outcome of free trade agreements (FTA) and regional trade agreements (RTA) currently under discussion. The Russian Federation’s embargo on several dairy products from major exporting countries is expected to end in 2018 and imports will increase slightly but will likely not return to the pre-ban levels.

World production may be constrained because of unforeseen weather events. Climate change increases the chances of drought, floods and disease threats which can affect the dairy sector in several ways (price volatility, milk yield, cow inventory adjustments).

Environmental legislation can have a strong impact on the future development of dairy production. Greenhouse-gas emissions from dairy activities make up a high share of total

emissions in some countries. Any changes in related policies could affect dairy production. Water access and manure management are additional areas where policy changes could have an impact.

Changes in domestic policies remain an uncertainty. In Canada, the SMP export projections beyond 2021 are uncertain as changes are going on in the dairy industry in reaction to the World Trade Organization Nairobi Decision. In the European Union, the release of its considerable SMP intervention stocks may limit the rise in SMP prices.

Notes

¹ Fresh Dairy Products contain all dairy products and milk which are not included in the processed products (butter, cheese skim milk powder, whole milk powder and for some cases casein and whey). The quantities are in cow milk equivalent.

ANNEX A

Table A.5. World dairy projections: Butter and cheese

Calendar year

		Average 2015-17est	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
BUTTER												
World												
Production	kt pw	11 081	11 612	11 844	12 061	12 319	12 586	12 869	13 156	13 449	13 748	14 060
Consumption	kt pw	11 005	11 555	11 770	12 011	12 269	12 536	12 818	13 105	13 398	13 697	14 008
Stock changes	kt pw	-5	5	22	-2	-3	-2	-2	-2	-1	-1	-1
Price ¹	USD/t	3 933	4 514	4 228	4 274	4 300	4 373	4 370	4 386	4 413	4 450	4 469
Developed countries												
Production	kt pw	4 737	4 817	4 856	4 903	4 959	5 007	5 065	5 125	5 182	5 234	5 294
Consumption	kt pw	4 143	4 235	4 249	4 307	4 354	4 397	4 442	4 489	4 534	4 578	4 625
Developing countries												
Production	kt pw	6 343	6 794	6 988	7 157	7 360	7 579	7 804	8 031	8 267	8 514	8 766
Consumption	kt pw	6 861	7 320	7 521	7 704	7 916	8 139	8 376	8 615	8 864	9 119	9 384
OECD²												
Production	kt pw	4 562	4 642	4 684	4 734	4 795	4 846	4 908	4 973	5 033	5 090	5 153
Consumption	kt pw	3 976	4 060	4 073	4 131	4 178	4 222	4 267	4 315	4 360	4 404	4 451
Stock changes	kt pw	0	11	28	2	1	0	0	0	0	0	0
CHEESE												
World												
Production	kt pw	22 809	23 713	24 025	24 324	24 653	24 975	25 298	25 602	25 909	26 213	26 507
Consumption	kt pw	22 705	23 654	23 897	24 181	24 518	24 840	25 163	25 468	25 778	26 082	26 376
Stock changes	kt pw	38	-52	16	32	23	24	22	22	19	19	20
Price ³	USD/t	3 425	3 699	3 787	3 878	3 920	3 985	4 024	4 064	4 115	4 168	4 218
Developed countries												
Production	kt pw	18 174	18 909	19 143	19 351	19 606	19 851	20 095	20 325	20 558	20 786	21 005
Consumption	kt pw	17 192	17 962	18 085	18 255	18 469	18 670	18 874	19 059	19 249	19 437	19 611
Developing countries												
Production	kt pw	4 635	4 805	4 882	4 974	5 047	5 124	5 203	5 277	5 351	5 427	5 502
Consumption	kt pw	5 513	5 691	5 812	5 926	6 049	6 169	6 290	6 408	6 529	6 645	6 764
OECD²												
Production	kt pw	17 622	18 336	18 555	18 747	18 997	19 231	19 469	19 693	19 922	20 147	20 365
Consumption	kt pw	16 811	17 543	17 661	17 827	18 037	18 234	18 434	18 616	18 802	18 987	19 153
Stock changes	kt pw	38	-52	16	32	23	24	22	22	19	19	20

Note: Calendar year; except year ending 30 June for Australia and 31 May for New Zealand in aggregates.

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

1. FOB export price, butter, 82% butterfat, Oceania.
2. Excludes Iceland but includes all EU28 member countries.
3. FOB export price, cheddar cheese, 39% moisture, Oceania.

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.6. World dairy projections: Powders and casein

Calendar year

		Average 2015-17est	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SKIM MILK POWDER												
World												
Production	kt pw	4 505	4 595	4 665	4 707	4 764	4 846	4 910	4 974	5 037	5 098	5 163
Consumption	kt pw	4 348	4 570	4 683	4 726	4 749	4 809	4 850	4 913	4 973	5 033	5 096
Stock changes	kt pw	96	-36	-79	-80	-45	-23	0	0	3	5	7
Price ¹	USD/t	2 069	2 077	2 296	2 369	2 438	2 530	2 603	2 668	2 738	2 817	2 895
Developed countries												
Production	kt pw	3 924	3 998	4 048	4 076	4 119	4 185	4 234	4 285	4 336	4 381	4 432
Consumption	kt pw	2 018	2 131	2 188	2 175	2 141	2 148	2 134	2 142	2 145	2 150	2 158
Developing countries												
Production	kt pw	581	597	618	631	644	662	675	689	701	718	731
Consumption	kt pw	2 331	2 439	2 495	2 552	2 608	2 661	2 716	2 771	2 828	2 883	2 938
OECD²												
Production	kt pw	3 688	3 767	3 795	3 824	3 868	3 931	3 981	4 034	4 086	4 132	4 184
Consumption	kt pw	2 039	2 101	2 161	2 161	2 127	2 134	2 120	2 128	2 131	2 136	2 143
Stock changes	kt pw	96	-36	-79	-80	-45	-23	0	0	3	5	7
WHOLE MILK POWDER												
World												
Production	kt pw	5 317	5 524	5 635	5 729	5 829	5 927	6 024	6 116	6 207	6 277	6 346
Consumption	kt pw	5 227	5 518	5 635	5 729	5 829	5 928	6 024	6 117	6 208	6 277	6 347
Stock changes	kt pw	-7	6	0	0	0	0	-1	-1	-1	-1	-1
Price ³	USD/t	2 664	2 961	3 128	3 220	3 290	3 378	3 445	3 502	3 575	3 640	3 710
Developed countries												
Production	kt pw	2 344	2 331	2 363	2 392	2 428	2 460	2 498	2 537	2 574	2 609	2 640
Consumption	kt pw	598	618	635	643	651	660	669	677	685	693	701
Developing countries												
Production	kt pw	2 973	3 193	3 271	3 337	3 401	3 468	3 526	3 579	3 632	3 668	3 706
Consumption	kt pw	4 629	4 899	4 999	5 086	5 178	5 267	5 356	5 439	5 522	5 584	5 645
OECD²												
Production	kt pw	2 523	2 514	2 543	2 572	2 608	2 638	2 676	2 715	2 751	2 786	2 816
Consumption	kt pw	793	801	820	830	840	852	863	874	885	895	906
Stock changes	kt pw	-7	6	0	0	0	0	-1	-1	-1	-1	-1
WHEY POWDER												
Wholesale price, United States ⁴	USD/t	883	1 081	1 158	1 220	1 178	1 187	1 216	1 244	1 278	1 328	1 359
CASEIN												
Price ⁵	USD/t	6 329	6 546	7 313	7 490	7 650	7 832	8 017	8 170	8 364	8 557	8 754

Note: Calendar year; except year ending 30 June for Australia and 31 May for New Zealand in aggregates.

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

1. FOB export price, non-fat dry milk, 1.25% butterfat, Oceania.
2. Excludes Iceland but includes all EU28 member countries.
3. FOB export price, WMP 26% butterfat, Oceania.
4. FOB export price, sweet whey non-hygroscopic, Western Europe.
5. Export price, New Zealand.

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.31.1. Butter projections: Production and trade

Calendar year

	PRODUCTION (kt)		Growth (%) ³		IMPORTS (kt)		Growth (%) ³		EXPORTS (kt)		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	11 081	14 060	2.46	2.16	834	1 024	1.97	1.93	915	1 076	0.38	1.83
NORTH AMERICA	931	1 107	1.80	1.63	43	26	11.78	-5.74	18	34	-10.25	5.75
Canada	93	118	1.33	1.00	18	7	15.01	0.00	0	0	-6.82	-15.99
United States	838	990	1.86	1.71	26	18	10.11	-7.32	18	34	-10.27	5.95
LATIN AMERICA	457	537	3.61	1.64	58	59	0.32	0.08	44	52	2.55	3.07
Argentina	38	54	-4.34	4.72	0	0	..	..	7	16	-8.63	8.14
Brazil	100	110	3.08	0.91	3	3	1.77	-0.58	2	1	-7.71	-0.25
Chile	23	30	3.42	2.25	5	6	36.86	-0.95	4	4	11.61	0.96
Colombia	21	27	0.42	2.23	0	0	..	..	0	0	..	..
Mexico	202	230	8.07	1.25	30	35	-1.24	1.48	12	12	..	..
Paraguay	0	0	..	..	0	0	4.83	0.00	0	0	2.89	0.04
EUROPE	2 960	3 289	1.26	1.04	119	180	-2.88	3.14	296	388	1.52	3.09
European Union	2 343	2 632	1.47	1.17	4	13	-28.18	0.98	187	254	0.54	3.85
Russia	314	326	-0.69	0.24	108	160	3.37	3.55	3	2	-4.81	0.00
Ukraine	104	125	4.26	1.54	1	1	-20.23	0.53	14	28	31.95	4.72
AFRICA	312	322	1.42	0.16	124	162	-1.32	3.35	8	7	-1.35	-1.29
Egypt	123	130	0.10	0.46	55	67	1.23	2.53	1	1	-19.08	-0.44
Ethiopia	18	21	12.78	1.93	0	0	..	..	0	0	..	..
Nigeria	13	15	2.02	1.27	6	9	-12.81	4.84	0	0	..	..
South Africa	12	16	0.23	3.30	5	5	7.53	-1.24	4	3	15.29	1.25
ASIA	5 700	8 027	3.20	3.03	451	535	4.33	1.77	37	40	-0.80	0.66
China ¹	98	124	-1.20	1.50	82	124	21.89	2.44	1	1	-13.04	1.00
India	4 170	5 866	3.82	3.05	4	3	-3.28	-3.85	8	12	-4.48	4.32
Indonesia	0	0	..	..	24	30	11.25	1.45	0	0	..	..
Iran	212	236	0.99	1.02	46	54	-1.75	2.50	1	1	0.34	-0.24
Japan	63	60	-2.52	-0.36	13	10	18.18	-2.34	0	0	..	..
Kazakhstan	13	14	-2.17	0.57	6	8	-1.41	0.72	0	0	..	..
Korea	3	6	0.52	8.33	8	13	7.78	2.84	0	0	..	..
Malaysia	0	0	..	..	20	21	7.27	0.33	8	9	14.49	-0.33
Pakistan	730	1 289	2.12	4.94	0	0	..	..	0	0	0.84	-1.44
Philippines	0	0	..	..	27	40	5.57	2.40	0	0	..	..
Saudi Arabia	5	4	-1.07	0.62	51	52	11.73	1.24	4	3	6.88	-1.23
Thailand	0	0	..	..	13	13	4.19	-0.37	1	1	18.13	0.37
Turkey	209	242	4.92	1.22	14	3	3.63	-10.05	0	0	3.52	0.90
Viet Nam	0	0	..	..	8	12	-1.62	4.69	0	0	..	..
OCEANIA	720	777	2.59	0.74	38	61	6.51	3.49	513	555	0.77	0.87
Australia	109	108	-2.94	-1.90	31	52	8.88	3.89	25	15	-13.06	-10.47
New Zealand	609	667	3.92	1.24	2	2	10.40	0.00	488	540	2.15	1.42
DEVELOPED COUNTRIES	4 737	5 294	1.46	1.07	237	310	0.67	1.98	831	981	0.43	1.84
DEVELOPING COUNTRIES	6 343	8 766	3.26	2.88	597	714	2.73	1.91	84	95	0.09	1.75
LEAST DEVELOPED COUNTRIES (LDC)	184	177	2.17	-0.62	15	31	9.42	11.78	2	2	8.48	-4.56
OECD²	4 562	5 153	2.01	1.19	152	162	0.99	-0.10	738	864	0.20	1.83
BRICS	4 695	6 443	3.30	2.82	202	295	6.34	2.83	17	19	-3.73	2.71

.. Not available

Note: Calendar year; except year ending 30 June for Australia and 31 May 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.31.2. Butter projections: Consumption, food

Calendar year

	CONSUMPTION (kt)		Growth (%) ³		FOOD (kg/cap)		Growth (%) ³	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	11 005	14 008	2.60	2.18	1.5	1.7	1.40	1.20
NORTH AMERICA	941	1 100	2.46	1.38	2.6	2.8	1.68	0.66
Canada	104	126	2.08	1.89	2.9	3.2	1.04	1.06
United States	837	974	2.51	1.31	2.6	2.8	1.76	0.61
LATIN AMERICA	477	545	3.68	1.19	0.7	0.8	2.51	0.34
Argentina	36	38	2.16	1.25	0.8	0.8	1.12	0.39
Brazil	101	112	3.23	0.87	0.5	0.5	2.30	0.27
Chile	24	32	5.39	1.77	1.4	1.6	4.45	1.09
Colombia	21	27	0.53	2.23	0.4	0.5	-0.45	1.57
Mexico	220	253	5.69	1.32	1.7	1.8	4.21	0.26
Paraguay	0	0	..	..	0.0	0.0	..	..
EUROPE	2 797	3 081	1.13	0.94	3.8	4.2	1.02	0.96
European Union	2 173	2 391	1.44	0.96	4.3	4.7	1.28	0.90
Russia	419	484	-0.02	1.22	2.9	3.4	-0.10	1.38
Ukraine	92	98	1.63	0.79	2.1	2.3	2.13	1.33
AFRICA	428	477	0.63	1.16	0.3	0.3	-1.93	-1.20
Egypt	177	195	0.77	1.13	1.9	1.7	-1.34	-0.47
Ethiopia	18	21	12.73	1.93	0.2	0.2	-2.60	-0.33
Nigeria	19	23	-6.08	2.47	0.1	0.1	-8.54	-0.07
South Africa	14	18	-0.34	2.22	0.2	0.3	-1.67	1.18
ASIA	6 113	8 522	3.32	2.96	1.4	1.8	2.25	2.21
China ¹	179	247	5.35	1.97	0.1	0.2	4.79	1.76
India	4 167	5 857	3.81	3.04	3.1	4.0	2.54	2.05
Indonesia	24	30	12.17	1.47	0.1	0.1	10.78	0.56
Iran	256	290	0.48	1.29	3.2	3.3	-0.73	0.54
Japan	75	69	-1.22	-0.66	0.6	0.6	-1.13	-0.32
Kazakhstan	19	22	-1.89	0.62	1.1	1.1	-3.34	-0.25
Korea	11	18	4.12	4.77	0.2	0.3	3.70	4.49
Malaysia	12	12	4.32	0.83	0.4	0.3	2.52	-0.39
Pakistan	730	1 288	2.12	4.94	3.8	5.5	0.03	3.18
Philippines	27	40	5.52	2.41	0.3	0.3	3.83	0.99
Saudi Arabia	52	53	9.82	1.37	1.6	1.4	6.88	-0.08
Thailand	12	12	3.57	-0.43	0.2	0.2	3.14	-0.51
Turkey	223	244	4.89	0.99	2.8	2.8	3.29	0.37
Viet Nam	8	12	-1.60	4.71	0.1	0.1	-2.68	3.81
OCEANIA	249	283	6.73	1.02	6.3	6.3	5.07	-0.23
Australia	118	145	5.81	1.53	4.9	5.3	4.25	0.40
New Zealand	123	129	9.84	0.49	26.5	25.3	8.67	-0.32
DEVELOPED COUNTRIES	4 143	4 625	1.57	1.02	2.9	3.2	1.15	0.73
DEVELOPING COUNTRIES	6 861	9 384	3.28	2.81	1.1	1.4	1.88	1.66
LEAST DEVELOPED COUNTRIES (LDC)	197	206	2.52	0.50	0.2	0.2	0.13	-1.72
OECD²	3 976	4 451	2.30	1.07	3.0	3.2	1.72	0.67
BRICS	4 880	6 719	3.43	2.82	1.6	2.0	2.56	2.24

.. Not available

Note: Calendar year; except year ending 30 June for Australia and 31 May 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.32.1. Cheese projections: Production and trade

Calendar year

	PRODUCTION (kt)		Growth (%) ³		IMPORTS (kt)		Growth (%) ³		EXPORTS (kt)		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	22 809	26 507	1.58	1.25	2 364	2 924	3.93	1.85	2 430	3 036	2.58	1.78
NORTH AMERICA	5 716	6 806	2.06	1.73	190	180	0.53	-2.05	329	434	14.70	5.59
Canada	450	530	2.58	1.38	24	31	1.36	1.38	13	0	4.38	-46.73
United States	5 266	6 275	2.01	1.76	166	148	0.38	-2.66	316	434	15.38	6.09
LATIN AMERICA	2 405	2 842	2.58	1.65	330	430	6.83	2.23	144	140	1.16	-0.53
Argentina	547	635	1.03	1.86	1	1	-15.19	0.00	45	52	0.72	1.74
Brazil	753	933	2.71	2.03	34	45	15.82	1.93	3	6	-8.59	5.48
Chile	94	125	5.15	2.52	35	46	23.26	0.65	6	6	-7.92	-0.61
Colombia	59	74	0.30	2.08	3	1	29.86	-8.74	0	0	..	..
Mexico	371	414	5.42	0.79	125	164	7.83	2.59	1	3	16.35	12.35
Paraguay	0	0	..	..	3	4	17.46	1.01	0	0	..	..
EUROPE	11 372	12 968	1.33	0.95	384	521	-3.03	2.40	1 097	1 523	3.57	2.31
European Union	10 057	11 471	1.26	0.93	61	59	-4.40	1.20	789	1 137	4.77	2.30
Russia	624	710	4.59	0.97	214	340	-4.76	3.25	14	10	-1.18	0.00
Ukraine	129	133	-8.47	0.25	7	20	-5.56	10.18	9	3	-26.65	-9.24
AFRICA	984	1 137	0.37	0.87	167	211	3.26	4.37	98	85	-5.95	-3.87
Egypt	642	728	0.27	0.73	32	35	3.72	4.72	66	59	-8.27	-4.51
Ethiopia	6	9	0.22	4.26	0	0	0.78	..	0	0	..	..
Nigeria	11	15	2.68	3.44	1	1	-22.23	5.62	0	0	..	..
South Africa	44	37	0.02	-2.19	13	22	13.45	6.39	9	6	27.69	-6.01
ASIA	1 614	1 936	1.26	1.54	1 172	1 438	7.43	1.92	263	280	-2.11	0.09
China ¹	252	317	-1.28	1.43	95	179	27.20	4.80	0	0	..	..
India	3	4	3.47	1.12	2	2	12.00	-0.51	5	7	11.11	0.51
Indonesia	0	0	..	..	23	34	8.39	2.95	2	2	15.60	-2.86
Iran	296	331	1.01	1.10	0	0	..	..	49	42	24.82	-2.66
Japan	47	49	0.86	0.30	247	254	3.72	0.30	0	0	..	..
Kazakhstan	26	31	5.34	0.18	20	22	-1.87	3.78	0	0	..	..
Korea	27	28	1.22	-0.27	114	163	11.42	3.61	0	0	..	..
Malaysia	0	0	..	..	22	30	11.51	2.73	0	0	..	..
Pakistan	0	0	..	..	4	5	15.98	4.61	0	0	..	..
Philippines	2	3	0.00	3.06	29	52	9.26	4.65	0	0	-22.61	..
Saudi Arabia	198	233	3.50	1.36	169	194	9.92	1.19	129	116	-6.89	-1.18
Thailand	5	2	0.00	-8.48	14	22	15.06	3.33	0	0	15.45	-3.22
Turkey	201	274	3.74	2.97	11	6	12.09	-4.52	46	81	10.44	4.74
Viet Nam	0	0	..	..	4	6	-1.07	4.56	0	0	..	..
OCEANIA	717	819	0.93	0.83	121	145	6.32	0.93	500	574	1.27	0.69
Australia	348	372	0.11	0.45	107	129	6.67	0.91	168	171	0.65	-0.33
New Zealand	369	447	1.78	1.16	8	9	5.36	0.00	332	403	1.66	1.16
DEVELOPED COUNTRIES	18 174	21 005	1.54	1.19	999	1 172	0.38	1.03	1 944	2 546	4.28	2.36
DEVELOPING COUNTRIES	4 635	5 502	1.74	1.51	1 365	1 752	7.48	2.44	486	490	-2.50	-0.81
LEAST DEVELOPED COUNTRIES (LDC)	186	241	2.55	2.01	27	57	9.97	14.95	0	0	..	..
OECD²	17 622	20 365	1.61	1.19	975	1 107	4.34	0.84	1 749	2 300	4.79	2.34
BRICS	1 676	2 001	2.57	1.45	359	588	0.35	3.69	31	28	3.48	-0.65

.. Not available

Note: Calendar year; except year ending 30 June for Australia and 31 May 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.32.2. Cheese projections: Consumption, food

Calendar year

	CONSUMPTION (kt)		Growth (%) ³		FOOD (kg/cap)		Growth (%) ³	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	22 705	26 376	1.70	1.24	3.0	3.2	0.51	0.27
NORTH AMERICA	5 526	6 532	1.49	1.33	15.4	16.8	0.72	0.62
Canada	451	560	2.04	1.62	12.4	14.1	1.00	0.79
United States	5 075	5 971	1.45	1.31	15.8	17.2	0.70	0.60
LATIN AMERICA	2 591	3 132	3.14	1.84	4.1	4.5	1.98	0.98
Argentina	502	583	0.99	1.86	11.5	12.1	-0.04	1.00
Brazil	784	972	3.08	2.01	3.8	4.4	2.16	1.40
Chile	123	164	9.95	2.10	6.9	8.5	8.98	1.42
Colombia	61	75	1.33	1.87	1.3	1.4	0.33	1.22
Mexico	494	575	5.98	1.24	3.9	4.0	4.49	0.17
Paraguay	3	4	21.37	1.12	0.4	0.5	16.50	0.00
EUROPE	10 675	11 965	0.95	0.84	14.4	16.1	0.84	0.86
European Union	9 344	10 393	0.98	0.80	18.4	20.3	0.81	0.74
Russia	825	1 039	1.40	1.67	5.7	7.3	1.31	1.84
Ukraine	128	151	-4.19	1.50	2.9	3.6	-3.72	2.03
AFRICA	1 054	1 262	1.65	1.81	0.9	0.8	-0.93	-0.57
Egypt	607	705	2.03	1.51	6.4	6.1	-0.10	-0.10
Ethiopia	6	10	0.23	4.35	0.1	0.1	-2.33	2.05
Nigeria	11	16	-6.09	3.53	0.1	0.1	-8.56	0.97
South Africa	47	53	-0.04	1.17	0.8	0.8	-1.37	0.15
ASIA	2 522	3 094	4.27	1.86	0.6	0.6	3.19	1.11
China ¹	347	496	2.44	2.55	0.2	0.3	1.89	2.34
India	0	0	..	..	0.0	0.0	..	..
Indonesia	21	32	7.74	3.48	0.1	0.1	6.41	2.55
Iran	247	289	-0.94	1.80	3.1	3.3	-2.14	1.05
Japan	294	303	3.22	0.30	2.3	2.5	3.31	0.65
Kazakhstan	46	53	1.96	1.50	2.6	2.6	0.45	0.62
Korea	140	191	8.70	2.95	2.8	3.6	8.26	2.67
Malaysia	21	30	11.46	2.82	0.7	0.8	9.54	1.58
Pakistan	4	5	16.01	4.61	0.0	0.0	..	..
Philippines	31	55	10.63	4.58	0.3	0.5	8.85	3.13
Saudi Arabia	238	310	30.78	2.39	7.4	8.1	27.28	0.93
Thailand	18	24	9.27	1.76	0.3	0.3	8.82	1.68
Turkey	166	198	2.69	2.00	2.1	2.3	1.12	1.38
Viet Nam	4	6	-1.06	4.56	0.0	0.1	..	..
OCEANIA	337	391	1.95	1.07	8.6	8.6	0.37	-0.18
Australia	285	330	1.73	1.06	11.8	12.0	0.22	-0.07
New Zealand	45	53	3.41	1.00	9.7	10.4	2.31	0.19
DEVELOPED COUNTRIES	17 192	19 611	1.19	1.01	12.2	13.5	0.77	0.73
DEVELOPING COUNTRIES	5 513	6 764	3.45	1.94	0.9	1.0	2.05	0.80
LEAST DEVELOPED COUNTRIES (LDC)	213	299	3.29	3.56	0.3	0.3	0.88	1.27
OECD²	16 811	19 153	1.46	1.02	12.7	13.8	0.89	0.62
BRICS	2 004	2 560	2.12	1.95	0.6	0.8	1.26	1.39

.. Not available

Note: Calendar year; except year ending 30 June for Australia and 31 May 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.33.1. Skim milk powder projections: Production and trade

Calendar year

	PRODUCTION (kt)		Growth (%) ³		IMPORTS (kt)		Growth (%) ³		EXPORTS (kt)		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	4 505	5 163	3.87	1.31	2 248	2 787	7.08	1.61	2 308	2 848	8.25	1.57
NORTH AMERICA	1 153	1 355	3.36	1.26	2	2	-5.41	-2.35	610	814	8.99	2.23
Canada	102	115	2.83	-1.06	1	1	-9.72	-7.03	28	39	15.59	-2.40
United States	1 051	1 239	3.41	1.51	1	1	14.19	2.24	582	775	8.72	2.54
LATIN AMERICA	298	371	4.20	2.09	398	432	6.49	0.05	88	145	13.58	0.92
Argentina	38	47	3.40	2.80	0	0	..	..	25	33	7.72	3.16
Brazil	155	184	2.87	1.61	21	21	17.18	0.56	0	0	..	..
Chile	28	40	11.99	2.77	11	9	10.36	-2.17	1	1	-4.72	1.39
Colombia	4	6	-5.60	4.62	10	12	47.08	0.42	0	0	..	..
Mexico	43	57	9.76	2.44	288	318	6.31	0.17	40	87	99.69	0.00
Paraguay	0	0	..	..	0	0	..	..	0	0	..	..
EUROPE	1 858	2 065	5.69	1.19	170	188	25.31	-0.52	846	1 034	13.81	1.50
European Union	1 530	1 687	6.79	1.19	3	2	-4.53	-1.02	686	844	18.13	1.52
Russia	70	65	-0.46	-1.97	135	156	35.78	-0.53	1	1	12.68	-3.61
Ukraine	112	132	0.02	1.36	0	0	-22.38	0.17	34	29	2.42	-2.16
AFRICA	19	27	0.11	3.65	361	463	4.60	2.53	11	12	4.97	1.10
Egypt	0	0	..	..	77	109	10.40	3.72	0	0	..	..
Ethiopia	0	0	..	..	0	0	-12.13	..	0	0	..	..
Nigeria	0	0	..	..	48	65	6.91	2.55	0	0	..	..
South Africa	15	22	0.16	4.00	7	6	9.84	-2.67	6	9	11.04	2.74
ASIA	417	487	0.69	1.54	1 304	1 689	6.75	2.08	146	146	8.23	-0.65
China ¹	40	35	-4.32	-0.40	200	351	16.70	4.85	1	0	-1.97	0.00
India	222	286	5.67	2.28	0	0	-31.65	-0.50	15	8	-1.44	-3.15
Indonesia	0	0	..	..	156	205	6.75	2.19	1	1	3.16	-2.14
Iran	0	0	..	..	16	30	7.95	0.00	16	30	23.89	0.00
Japan	125	116	-3.52	-0.65	38	35	3.28	-0.54	0	0	..	..
Kazakhstan	3	2	-0.86	-1.79	16	23	8.70	1.59	0	0	..	..
Korea	12	25	-1.45	8.94	21	19	14.11	-0.92	0	0	..	..
Malaysia	0	0	..	..	139	145	7.38	0.94	36	30	26.77	-0.93
Pakistan	0	0	..	..	44	63	22.06	3.37	1	1	0.12	-3.26
Philippines	0	0	..	..	149	202	5.66	1.49	0	0	..	..
Saudi Arabia	0	0	..	..	59	66	2.36	1.48	11	9	12.98	-1.45
Thailand	0	0	..	..	68	61	1.88	-0.43	6	9	20.55	0.43
Turkey	0	0	..	..	34	39	16.28	0.00	34	39	91.78	0.00
Viet Nam	0	0	..	..	45	68	1.77	4.14	0	0	..	..
OCEANIA	760	858	2.67	1.18	14	14	9.71	0.25	608	697	2.47	1.59
Australia	234	248	1.49	1.05	8	8	8.85	0.00	163	176	1.51	2.62
New Zealand	526	610	3.27	1.23	4	4	12.30	0.00	445	521	2.89	1.27
DEVELOPED COUNTRIES	3 924	4 432	3.91	1.17	260	281	14.66	-0.38	2 071	2 555	8.05	1.75
DEVELOPING COUNTRIES	581	731	3.63	2.22	1 987	2 506	6.35	1.85	237	292	9.97	0.08
LEAST DEVELOPED COUNTRIES (LDC)	0	0	..	..	102	144	10.40	2.74	3	2	4.62	-2.25
OECD²	3 688	4 184	4.17	1.22	439	463	7.47	-0.07	1 992	2 497	8.86	1.67
BRICS	502	593	2.58	1.40	364	533	19.56	2.70	23	18	1.14	-0.67

.. Not available

Note: Calendar year; except year ending 30 June for Australia and 31 May 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.33.2. Skim milk powder projections: Consumption, food

Calendar year

	CONSUMPTION (kt)		Growth (%) ³		FOOD (kg/cap)		Growth (%) ³	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	4 348	5 096	3.45	1.13	0.6	0.6	3.14	0.37
NORTH AMERICA	534	543	-0.82	0.01	1.4	1.3	-0.56	-0.64
Canada	64	77	-1.62	0.03	0.6	0.6	-9.16	0.54
United States	470	466	-0.71	0.00	1.5	1.3	0.08	-0.69
LATIN AMERICA	608	658	4.68	0.95	0.9	0.8	3.55	-0.02
Argentina	13	14	2.82	1.97	0.3	0.3	1.77	1.11
Brazil	176	205	3.82	1.50	0.6	0.6	2.74	0.64
Chile	38	48	13.60	1.61	2.1	2.5	12.60	0.94
Colombia	14	18	23.00	1.66	0.3	0.3	9.68	1.01
Mexico	291	288	4.79	0.64	2.3	2.0	3.31	-0.42
Paraguay	0	0	-13.44	1.12	0.0	0.0	..	..
EUROPE	1 096	1 219	3.06	-0.04	1.3	1.5	5.83	0.67
European Union	761	845	1.63	-0.14	1.3	1.5	5.29	0.83
Russia	204	220	11.77	-0.97	1.4	1.5	11.68	-0.81
Ukraine	78	103	-0.91	2.65	1.8	2.5	-0.42	3.19
AFRICA	369	478	4.34	2.63	0.3	0.3	1.68	0.23
Egypt	77	109	10.58	3.72	0.8	0.9	8.27	2.08
Ethiopia	0	0	-12.02	2.26	0.0	0.0	..	..
Nigeria	48	65	7.19	2.55	0.3	0.3	4.38	0.01
South Africa	17	20	0.38	1.98	0.3	0.3	-0.96	0.95
ASIA	1 572	2 023	4.70	2.10	0.3	0.4	3.69	1.40
China ¹	240	386	10.30	4.25	0.2	0.3	8.09	4.04
India	207	278	5.39	2.49	0.2	0.2	4.65	1.50
Indonesia	155	204	6.79	2.21	0.6	0.7	5.47	1.30
Iran	0	0	..	..	0.0	0.0	..	..
Japan	162	152	-1.99	-0.58	1.1	1.0	-2.46	-0.13
Kazakhstan	19	25	7.67	1.22	1.0	1.3	6.07	0.34
Korea	32	37	3.52	-0.28	0.6	0.7	3.11	-0.55
Malaysia	103	115	4.05	1.49	3.3	3.2	2.26	0.26
Pakistan	44	62	22.85	3.46	0.2	0.3	10.73	1.72
Philippines	149	202	5.68	1.49	1.4	1.7	3.98	0.08
Saudi Arabia	48	57	8.02	2.00	1.5	1.5	5.13	0.55
Thailand	62	52	0.69	-0.57	0.9	0.7	0.27	-0.65
Turkey	0	0	..	..	0.0	0.0	..	..
Viet Nam	44	68	1.86	4.17	0.5	0.7	0.75	3.27
OCEANIA	169	174	6.01	-0.37	4.3	3.9	4.36	-1.60
Australia	83	79	5.89	-1.77	3.4	2.9	4.33	-2.87
New Zealand	85	93	6.37	0.99	18.2	18.2	5.24	0.18
DEVELOPED COUNTRIES	2 018	2 158	1.63	-0.05	1.3	1.4	2.84	0.08
DEVELOPING COUNTRIES	2 331	2 938	5.30	2.08	0.4	0.4	3.90	0.95
LEAST DEVELOPED COUNTRIES (LDC)	99	141	10.61	2.85	0.1	0.1	2.49	0.58
OECD²	2 039	2 143	1.47	0.01	1.4	1.4	2.48	0.04
BRICS	844	1 109	7.59	2.05	0.3	0.3	6.94	1.48

.. Not available

Note: Calendar year; except year ending 30 June for Australia and 31 May 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.34.1. Whole milk powder projections: Production and trade

Calendar year

	PRODUCTION (kt)		Growth (%) ³		IMPORTS (kt)		Growth (%) ³		EXPORTS (kt)		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	5 317	6 346	3.46	1.57	2 365	2 691	2.65	1.27	2 461	2 691	3.20	1.27
NORTH AMERICA	55	56	5.90	1.19	17	21	1.17	0.00	20	28	5.51	2.87
Canada	9	8	-3.69	-1.03	2	2	-11.77	0.00	1	1	4.13	0.00
United States	47	48	8.93	1.62	14	19	6.01	0.00	20	27	5.57	2.95
LATIN AMERICA	1 415	1 983	2.30	2.60	336	264	-2.28	-2.22	310	389	2.50	2.51
Argentina	211	320	-0.09	3.23	1	1	-3.06	0.00	128	208	0.00	4.46
Brazil	563	811	1.24	3.24	99	52	11.27	-6.77	24	41	5.68	9.61
Chile	70	60	-2.87	-1.57	8	22	32.97	9.84	6	2	-9.39	-8.96
Colombia	41	70	0.24	4.55	22	12	63.24	-6.12	3	3	4.76	5.91
Mexico	218	254	0.80	1.23	38	10	7.92	-10.79	12	3	10.27	-13.88
Paraguay	0	0	..	..	1	1	7.09	0.00	1	1	-7.31	0.01
EUROPE	821	981	-0.86	1.83	51	43	23.63	-2.81	417	471	-2.73	1.81
European Union	722	854	-0.04	1.73	4	4	15.68	0.00	381	429	-2.65	1.64
Russia	27	47	-11.69	2.05	45	37	31.51	-3.22	1	0	5.83	..
Ukraine	7	4	-10.50	-2.04	0	0	-23.97	11.71	2	1	-16.86	-10.48
AFRICA	25	24	-0.24	-1.42	574	756	1.31	2.49	20	15	7.23	-3.08
Egypt	0	0	..	..	45	67	10.05	3.89	5	4	21.14	-3.74
Ethiopia	0	0	..	..	1	1	-5.50	2.26	0	0	..	..
Nigeria	0	0	..	..	89	120	-3.52	3.49	1	1	21.82	-3.37
South Africa	15	15	-0.44	0.22	4	5	9.00	3.09	6	4	6.48	-3.00
ASIA	1 573	1 746	4.38	0.74	1 357	1 576	4.68	1.61	281	248	-2.53	-0.57
China ¹	1 464	1 609	4.53	0.63	398	570	18.18	2.62	3	2	-20.46	0.01
India	5	7	2.82	3.90	0	0	..	..	1	3	-10.69	5.50
Indonesia	75	92	4.58	2.20	48	61	-3.35	1.68	2	1	-30.04	-0.77
Iran	1	1	0.29	1.10	3	2	-8.34	0.01	2	2	3.14	0.05
Japan	11	13	-3.43	2.60	0	0	-6.37	0.00	0	0	..	..
Kazakhstan	15	17	0.56	1.03	3	4	-2.28	3.65	0	0	..	..
Korea	2	5	-2.34	6.56	3	4	11.68	-1.15	0	0	..	..
Malaysia	0	0	..	..	39	38	1.01	0.07	25	24	0.77	-0.07
Pakistan	0	0	..	..	4	5	-6.20	2.00	1	1	-8.33	-1.96
Philippines	0	0	..	..	36	28	-5.05	1.65	18	4	-15.75	-1.62
Saudi Arabia	0	0	..	..	121	127	4.59	1.56	21	20	-1.67	-1.54
Thailand	0	0	..	..	47	49	8.38	-0.09	2	2	-11.09	0.09
Turkey	0	0	..	..	0	0	-26.93	0.00	0	0	..	..
Viet Nam	0	0	..	..	25	19	-5.91	0.74	9	9	27.78	-0.74
OCEANIA	1 427	1 556	7.21	1.19	29	31	7.10	-0.26	1 414	1 541	7.77	1.17
Australia	57	53	-11.62	-0.48	18	19	9.28	-0.64	57	53	-8.23	-0.92
New Zealand	1 370	1 503	9.26	1.25	4	5	25.01	0.00	1 356	1 487	9.23	1.25
DEVELOPED COUNTRIES	2 344	2 640	3.53	1.42	103	105	10.22	-1.06	1 857	2 043	4.47	1.32
DEVELOPING COUNTRIES	2 973	3 706	3.40	1.67	2 261	2 586	2.39	1.38	605	648	0.00	1.11
LEAST DEVELOPED COUNTRIES (LDC)	2	3	0.19	1.13	168	217	2.00	3.15	7	5	6.36	-2.69
OECD²	2 523	2 816	3.54	1.30	97	91	6.17	-0.74	1 834	2 003	4.61	1.21
BRICS	2 073	2 490	3.10	1.44	546	664	17.14	1.09	35	49	-3.40	6.14

.. Not available

Note: Calendar year; except year ending 30 June for Australia and 31 May 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

ANNEX A

Table A.34.2. Whole milk powder projections: Consumption, food

Calendar year

	CONSUMPTION (kt)		Growth (%) ³		FOOD (kg/cap)		Growth (%) ³	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	5 227	6 347	3.21	1.57	0.7	0.8	-0.05	0.60
NORTH AMERICA	53	50	3.73	0.57	0.1	0.1	0.83	-0.14
Canada	10	10	-7.06	-0.85	0.3	0.3	-8.01	-1.66
United States	42	40	9.58	0.97	0.1	0.1	-12.55	0.26
LATIN AMERICA	1 442	1 857	0.98	1.78	2.3	2.6	-0.15	0.92
Argentina	84	113	0.15	1.23	1.9	2.3	-0.88	0.38
Brazil	638	822	2.66	2.01	3.1	3.7	1.73	1.40
Chile	72	80	-0.72	0.83	4.0	4.2	-1.60	0.16
Colombia	60	79	6.33	1.97	1.2	1.5	5.29	1.32
Mexico	244	261	1.32	0.77	1.9	1.8	-0.10	-0.29
Paraguay	0	0	..	..	0.0	0.0	..	..
EUROPE	455	553	2.62	1.40	0.6	0.7	2.51	1.42
European Union	345	429	3.67	1.80	0.7	0.8	3.50	1.75
Russia	71	84	0.32	-0.38	0.5	0.6	0.23	-0.21
Ukraine	4	3	-2.48	2.59	0.1	0.1	-3.71	..
AFRICA	579	766	1.07	2.49	0.5	0.5	-1.50	0.09
Egypt	40	63	9.53	4.70	0.4	0.5	7.24	3.04
Ethiopia	1	1	-5.53	2.26	0.0	0.0	..	..
Nigeria	87	119	-3.67	3.57	0.5	0.5	-6.20	1.00
South Africa	13	17	-1.35	2.01	0.2	0.3	-2.66	0.98
ASIA	2 650	3 075	5.59	1.30	0.6	0.6	4.49	0.56
China ¹	1 859	2 177	6.64	1.11	1.3	1.5	6.08	0.91
India	4	5	35.99	3.00	0.0	0.0	..	..
Indonesia	121	152	4.23	1.99	0.5	0.5	2.95	1.08
Iran	1	1	-17.24	0.74	0.0	0.0	..	..
Japan	11	13	-3.33	2.58	0.1	0.1	-3.24	2.94
Kazakhstan	18	21	-0.32	1.44	1.0	1.1	-1.80	0.56
Korea	5	9	1.96	4.03	0.1	0.2	1.29	3.75
Malaysia	15	13	3.05	0.34	0.5	0.4	1.28	-0.87
Pakistan	3	4	-5.81	2.92	0.0	0.0	..	..
Philippines	19	24	23.75	2.40	0.2	0.2	3.80	0.97
Saudi Arabia	100	108	7.12	2.25	3.1	2.8	4.25	0.79
Thailand	45	47	11.09	-0.10	0.7	0.7	10.63	-0.18
Turkey	0	0	..	..	0.0	0.0	..	..
Viet Nam	15	9	-12.15	2.44	0.2	0.1	-8.78	..
OCEANIA	48	45	-1.18	0.86	1.2	1.0	-10.56	-0.39
Australia	25	19	-6.14	0.72	1.0	0.7	-7.53	-0.41
New Zealand	17	20	14.79	1.04	3.6	3.9	5.32	0.23
DEVELOPED COUNTRIES	598	701	1.94	1.34	0.4	0.5	-0.53	1.05
DEVELOPING COUNTRIES	4 629	5 645	3.39	1.60	0.8	0.8	1.98	0.47
LEAST DEVELOPED COUNTRIES (LDC)	164	216	1.82	3.29	0.2	0.2	-0.56	1.01
OECD²	793	906	1.75	1.33	0.6	0.7	-1.38	0.93
BRICS	2 584	3 104	5.31	1.31	0.8	0.9	4.42	0.74

.. Not available

Note: Calendar year; except year ending 30 June for Australia and 31 May 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.35. Fresh dairy products projections: Production and food consumption

Calendar year

	PRODUCTION (kt)		Growth (%) ³		FOOD CONSUMPTION (kg/cap)		Growth (%) ³	
	Average 2015-17est	2027	2008-17	2018-27	Average 2015-17est	2027	2008-17	2018-27
WORLD	415 523	520 846	2.09	2.19	55.4	62.3	0.89	1.22
NORTH AMERICA	26 625	25 289	-1.31	-0.38	74.3	65.2	-2.07	-1.09
Canada	2 909	3 099	-0.94	0.78	80.2	77.9	-1.95	-0.04
United States	23 716	22 190	-1.36	-0.53	73.6	63.8	-2.08	-1.22
LATIN AMERICA	33 864	39 736	0.20	1.63	52.7	56.2	-0.92	0.78
Argentina	1 601	1 657	-0.76	0.50	29.7	27.8	-2.02	-0.40
Brazil	14 856	18 821	2.67	2.27	71.6	84.6	1.75	1.65
Chile	487	652	-11.66	2.80	27.2	33.7	-12.45	2.12
Colombia	5 914	6 824	0.75	1.22	121.6	130.2	-0.24	0.57
Mexico	3 520	3 344	-1.99	-0.52	27.6	23.3	-3.37	-1.57
Paraguay	533	737	1.91	2.96	79.2	96.7	0.57	1.82
EUROPE	79 324	77 311	-0.67	-0.15	104.1	100.5	-0.93	-0.13
European Union	46 493	45 900	-0.09	-0.20	89.2	86.2	-0.50	-0.25
Russia	16 007	15 189	-1.63	-0.58	111.2	107.1	-1.71	-0.42
Ukraine	7 406	8 413	-1.47	1.51	166.6	200.5	-0.98	2.05
AFRICA	35 484	45 412	0.97	3.03	29.0	28.5	-1.60	0.62
Egypt	1 373	2 290	-1.61	5.08	14.4	20.0	-3.67	3.41
Ethiopia	3 215	5 184	-0.62	5.05	31.4	39.4	-3.16	2.73
Nigeria	250	319	4.27	2.44	1.3	1.3	1.53	-0.09
South Africa	2 628	2 991	0.53	1.21	46.9	47.6	-0.80	0.18
ASIA	237 125	329 571	4.20	3.04	53.3	68.0	3.16	2.29
China ¹	28 367	35 958	-1.12	1.82	20.6	25.4	-1.35	1.60
India	108 248	171 620	5.18	4.29	81.7	116.2	3.89	3.29
Indonesia	767	903	-1.59	1.57	2.9	3.1	-2.81	0.66
Iran	494	626	-14.72	1.71	6.2	7.1	-15.76	0.96
Japan	4 242	4 361	-1.06	0.30	33.2	35.4	-0.97	0.65
Kazakhstan	4 605	5 827	-0.44	2.30	256.1	292.9	-1.91	1.42
Korea	1 351	1 350	-0.15	-0.24	26.6	25.7	-0.55	-0.52
Malaysia	86	111	2.81	2.45	2.8	3.1	1.04	1.21
Pakistan	44 345	54 196	7.61	1.93	229.5	231.7	5.40	0.21
Philippines	8	11	-0.72	1.53	0.1	0.1	-2.32	0.12
Saudi Arabia	1 078	1 490	8.31	2.99	33.4	39.0	5.41	1.52
Thailand	1 050	1 219	3.75	1.10	15.2	17.5	3.32	1.02
Turkey	14 314	17 691	6.99	2.05	180.0	203.4	5.35	1.42
Viet Nam	620	917	10.28	3.59	6.6	8.8	9.08	2.69
OCEANIA	3 100	3 527	1.61	0.95	72.1	70.9	-0.46	-0.29
Australia	2 570	2 923	1.35	1.00	106.5	106.6	-0.16	-0.13
New Zealand	507	579	3.33	0.68	50.7	50.0	-1.75	-0.26
DEVELOPED COUNTRIES	136 345	138 997	-0.22	0.24	95.2	93.4	-0.73	-0.03
DEVELOPING COUNTRIES	279 178	381 849	3.40	3.01	46.2	55.6	2.03	1.86
LEAST DEVELOPED COUNTRIES (LDC)	19 535	23 044	3.67	2.69	24.6	22.6	1.25	0.42
OECD²	102 201	104 205	0.21	0.17	75.6	73.2	-0.47	-0.21
BRICS	170 106	244 579	2.87	3.33	54.4	73.3	2.05	2.75

Note: Calendar year; except year ending 30 June for Australia and 31 May 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.36. Milk projections: Production, inventories, yield

Calendar year

	PRODUCTION (kt)		Growth (%) ³		INVENTORIES ('000 hd)		Growth (%) ³		YIELD (t/head)		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	817 718	993 610	2.08	1.84	710 256	806 131	1.66	0.95	1.15	1.23	0.42	0.88
NORTH AMERICA	105 814	116 027	1.56	0.74	10 293	10 241	0.15	-0.11	10.28	11.33	1.40	0.85
Canada	9 577	11 241	1.94	1.16	947	944	-0.24	-0.16	10.11	11.91	2.19	1.32
United States	96 237	104 786	1.52	0.69	9 345	9 297	0.20	-0.11	10.30	11.27	1.33	0.80
LATIN AMERICA	75 066	88 822	0.39	1.67	50 790	52 252	1.38	0.24	1.48	1.70	-0.98	1.43
Argentina	10 308	11 396	0.09	1.34	2 306	2 408	-0.28	0.66	4.46	4.73	0.36	0.68
Brazil	28 771	35 884	0.10	2.18	25 141	25 572	1.76	0.21	1.17	1.40	-1.39	1.97
Chile	2 038	2 486	-2.95	1.72	1 262	1 272	-1.39	-0.04	1.61	1.95	-1.58	1.76
Colombia	7 000	8 323	0.67	1.49	6 662	7 145	4.66	0.20	1.05	1.16	-3.81	1.29
Mexico	12 080	13 105	1.42	0.71	2 482	2 630	0.75	0.51	4.87	4.98	0.66	0.20
Paraguay	533	737	1.92	2.96	239	294	2.59	1.42	2.23	2.51	-0.65	1.52
EUROPE	223 040	237 143	0.70	0.58	42 626	39 722	-0.71	-0.62	5.23	5.97	1.42	1.20
European Union	163 256	176 719	1.22	0.66	23 213	21 928	-0.40	-0.49	6.93	7.99	1.77	1.21
Russia	30 687	30 645	-0.74	0.05	8 305	7 388	-1.20	-1.05	3.70	4.15	0.47	1.11
Ukraine	10 443	11 884	-1.33	1.42	3 159	3 232	-2.88	0.42	3.31	3.68	1.59	0.99
AFRICA	45 772	56 177	0.95	2.47	236 765	273 361	2.00	1.01	0.19	0.21	-1.03	1.45
Egypt	5 623	6 710	-0.46	1.89	6 816	7 152	0.96	0.42	0.82	0.94	-1.41	1.46
Ethiopia	3 603	5 662	-0.11	4.77	16 078	23 075	3.72	3.23	0.22	0.25	-3.69	1.49
Nigeria	576	724	2.99	2.06	2 526	2 910	4.36	0.61	0.23	0.25	-1.32	1.44
South Africa	3 253	3 669	0.43	1.09	942	897	-0.66	-0.50	3.46	4.09	1.11	1.60
ASIA	336 890	460 005	3.89	2.88	363 177	423 735	1.85	1.21	0.93	1.09	2.00	1.65
China ¹	40 767	49 654	0.09	1.49	15 200	14 836	2.70	-0.52	2.42	3.02	-2.89	2.00
India	162 595	244 484	4.79	3.90	128 371	172 606	1.25	2.83	1.27	1.42	3.49	1.04
Indonesia	1 227	1 576	0.43	1.81	14 460	16 319	3.59	0.46	0.08	0.10	-3.05	1.34
Iran	6 457	7 273	-1.23	1.10	20 294	21 780	-0.97	0.61	0.32	0.33	-0.27	0.49
Japan	7 335	7 508	-1.01	0.31	855	841	-1.73	-0.04	8.57	8.93	0.74	0.35
Kazakhstan	5 140	6 415	-0.37	2.13	4 081	4 463	5.23	0.58	1.26	1.44	-5.32	1.54
Korea	2 121	2 264	0.31	0.80	252	256	0.35	0.11	8.41	8.85	-0.05	0.68
Malaysia	86	118	2.81	2.45	174	210	2.43	0.96	0.50	0.56	0.37	1.48
Pakistan	52 900	70 436	6.53	2.51	35 300	41 009	3.73	0.95	1.50	1.72	2.70	1.55
Philippines	21	28	5.36	2.44	5	6	-0.90	0.52	3.86	4.83	6.32	1.91
Saudi Arabia	2 413	3 013	5.11	2.11	5 369	6 083	3.99	1.11	0.45	0.50	1.08	0.99
Thailand	1 080	1 231	3.63	0.94	222	205	-2.06	-0.80	4.86	6.02	5.81	1.76
Turkey	19 727	24 126	6.31	1.94	26 094	28 862	6.99	0.74	0.76	0.84	-0.64	1.19
Viet Nam	620	895	10.28	3.59	269	335	9.45	1.95	2.31	2.67	0.76	1.61
OCEANIA	31 136	35 437	2.17	1.36	6 604	6 820	0.89	0.22	4.71	5.20	1.27	1.13
Australia	9 519	10 402	-0.02	1.00	1 544	1 686	-0.72	0.35	6.17	6.17	0.70	0.65
New Zealand	21 546	24 967	3.28	1.51	5 003	5 087	1.44	0.20	4.31	4.91	1.81	1.31
DEVELOPED COUNTRIES	393 931	428 494	1.13	0.76	80 802	79 949	0.32	-0.23	4.88	5.36	0.81	0.99
DEVELOPING COUNTRIES	423 787	565 116	3.04	2.75	629 454	726 182	1.84	1.09	0.67	0.78	1.17	1.64
LEAST DEVELOPED COUNTRIES (LDC)	23 882	27 799	3.43	2.20	175 284	204 842	4.52	0.89	0.14	0.14	-1.04	1.30
OECD²	350 734	384 900	1.55	0.81	72 224	73 924	2.03	0.14	4.86	5.21	-0.47	0.67
BRICS	266 073	364 336	2.64	2.96	177 959	221 298	1.30	2.08	1.50	1.65	1.32	0.87

Note: Calendar year; except year ending 30 June for Australia and 31 May for New Zealand.

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

- Refers to mainland only. The economies of Chinese Taipei, Hong Kong (China) and Macau (China) are included in the Asia aggregate.
- Excludes Iceland but includes all EU28 member countries.
- 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.37. Whey powder and casein projections

Calendar year

		Average 2015-17est	2027	Growth (%) ²	
				2008-17	2018-27
AUSTRALIA					
Net trade, whey	kt pw	86.5	84.8	0.67	-0.31
Exports, casein	kt pw	0.4	1.7	-34.52	9.38
CANADA					
Net trade, whey	kt pw	31.4	35.8	11.28	0.53
EUROPEAN UNION					
Whey powder					
Production	kt pw	1 858.8	2 079.2	1.57	0.92
Consumption	kt pw	1 311.3	1 403.2	0.32	0.50
Net trade	kt pw	547.5	676.0	5.28	1.85
Casein					
Production	kt pw	154.4	149.2	1.65	1.42
Consumption	kt pw	76.8	70.6	-4.95	-0.07
Net trade	kt pw	77.6	78.6	15.64	3.05
JAPAN					
Net trade, whey	kt pw	-57.8	-66.8	..	..
Casein imports	kt pw	13.3	13.5	-1.65	-0.05
NEW ZEALAND					
Net trade, whey	kt pw	-5.4	0.0	..	..
Exports, casein	kt pw	209.0	277.8	3.67	1.03
UNITED STATES					
Whey					
Production	kt pw	491.4	549.3	0.22	1.47
Consumption	kt pw	257.9	274.2	-2.02	0.80
Exports	kt pw	233.5	275.1	3.33	2.19
Imports, casein	kt pw	131.0	157.3	4.09	1.49
ARGENTINA					
Net trade, whey	kt pw	64.4	90.2	3.40	2.45
BRAZIL					
Net trade, whey	kt pw	-24.9	-35.0	..	..
CHINA¹					
Net trade, whey	kt pw	-417.1	-479.7	..	..
RUSSIA					
Net trade, whey	kt pw	-59.3	-64.4	..	..

.. Not available

Note: Calendar year; except year ending 30 June for Australia and 31 May 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. 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.38. Main policy assumptions for dairy markets

Calendar year

		Average 2015-17 est	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
CANADA												
Milk target price ¹	CADc/litre	79.8	82.3	84.1	85.9	87.6	89.1	90.6	92.1	93.6	95.2	96.7
Butter support price	CAD/t	7 674.4	8 064.6	8 237.3	8 417.5	8 578.3	8 726.6	8 872.1	9 017.8	9 166.7	9 320.2	9 474.6
Cheese tariff-quota	kt pw	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6
In-quota tariff	%	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6
Out-of-quota tariff	%	245.6	245.6	245.6	245.6	245.6	245.6	245.6	245.6	245.6	245.6	245.6
EUROPEAN UNION²												
Voluntary coupled support												
Milk and milk products ³	mln EUR	835	853	861	846	846	846	846	846	846	846	846
Milk quota	kt pw	0	0	0	0	0	0	0	0	0	0	0
Butter reference price ⁴	EUR/t	2 217.5	2 217.5	2 217.5	2 217.5	2 217.5	2 217.5	2 217.5	2 217.5	2 217.5	2 217.5	2 217.5
SMP reference price	EUR/t	1 698.0	1 698.0	1 698.0	1 698.0	1 698.0	1 698.0	1 698.0	1 698.0	1 698.0	1 698.0	1 698.0
Butter tariff-quotas	kt pw	89.2	89.9	90.2	90.3	90.3	90.4	90.4	90.5	90.5	90.6	90.6
Cheese tariff-quotas	kt pw	118.2	118.9	119.2	119.5	119.9	120.2	120.5	120.8	121.2	121.5	121.8
JAPAN												
Direct payments ⁵	JPY/kg	12.1	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7
Cheese tariff ⁶	%	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2
Tariff-quotas												
Butter	kt pw	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
In-quota tariff	%	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0
Out-of-quota tariff	%	733.0	733.0	733.0	733.0	733.0	733.0	733.0	733.0	733.0	733.0	733.0
SMP	kt pw	93.1	93.1	93.1	93.1	93.1	93.1	93.1	93.1	93.1	93.1	93.1
In-quota tariff	%	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Out-of-quota tariff	%	210.0	210.0	210.0	210.0	210.0	210.0	210.0	210.0	210.0	210.0	210.0
WMP	kt pw	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
In-quota tariff	%	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0
Out-of-quota tariff	%	316.2	316.2	316.2	316.2	316.2	316.2	316.2	316.2	316.2	316.2	316.2
KOREA												
Tariff-quotas												
Butter	kt pw	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
In-quota tariff	%	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Out-of-quota tariff	%	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0	89.0
SMP	kt pw	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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	%	176.0	176.0	176.0	176.0	176.0	176.0	176.0	176.0	176.0	176.0	176.0
WMP	kt pw	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
In-quota tariff	%	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Out-of-quota tariff	%	176.0	176.0	176.0	176.0	176.0	176.0	176.0	176.0	176.0	176.0	176.0
MEXICO												
Butter tariff	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tariff-quotas												
Cheese	kt pw	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4
In-quota tariff	%	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Out-of-quota tariff	%	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
SMP	kt pw	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
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	%	51.7	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Licons social program	mln MXN	1 190.5	1 202.5	1 202.5	1 202.5	1 202.5	1 202.5	1 202.5	1 202.5	1 202.5	1 202.5	1 202.5
RUSSIA												
Butter tariff	%	16.1	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Cheese tariff	%	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
UNITED STATES⁷												
Butter tariff-quota	kt pw	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
In-quota tariff	%	3.3	2.7	2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.8	2.8
Out-of-quota tariff	%	41.5	33.9	36.5	36.2	36.1	35.9	35.7	35.5	35.4	35.2	35.0
Cheese tariff-quota	kt pw	110.0	110.0	110.0	110.0	110.0	110.0	110.0	110.0	110.0	110.0	110.0
In-quota tariff	%	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1
Out-of-quota tariff	%	44.2	40.7	39.6	39.1	38.6	38.1	37.6	37.2	36.7	36.2	35.7
INDIA												
Butter tariff	%	36.7	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Cheese tariff	%	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Skim milk powder tariff	%	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
Whole milk powder tariff	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOUTH AFRICA												
Butter tariff	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cheese tariff	%	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9	23.9
Skim milk powder tariff	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Whole milk powder tariff	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ANNEX A

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

The sources for tariffs and Tariff Rate Quotas are the national questionnaire reply, UNCTAD and WTO.

1. For manufacturing milk.
2. 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%). The EU's milk quota system has been abolished since April 2015.
3. Implemented in 19 Member States. The maximum quantity limit is 11.695 million dairy cow heads.
4. Buying-in when market prices go below the reference price for SMP and 90% of the reference price for butter is operable automatically for a maximum quantity of 109 000 tonnes for SMP and 50 000 tonnes for butter (before 2014, this ceiling was set at 30 000 tonnes). Above that ceiling intervention can take place only via tender. For 2018 due to a temporary measure the SMP buying in quantity at fixed prices of is set to 0. Buying in via a tendering procedure may still be possible.
5. In April 2017, in addition to skim milk powder, butter and cheese, milk used for fresh cream, concentrated skim milk and concentrated whole milk production became covered by the direct payments.
6. Excludes processed cheese.
7. A milk margin (all-milk price minus the average feed margin) protection program applies, which has been updated February 2018, and provides a dairy safety net to farmers. Farmers have to decide on enrolment and coverage levels.

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.

The projections and past trends presented in the statistical annex can be viewed in more detail at <http://dx.doi.org/10.1787/agr-outl-data-en>.

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