

## SUGAR

### Market situation

After five consecutive seasons of a global production surplus in the international sugar market, the 2015 marketing year marked the start of a production deficit period. Preliminary data suggest that a production deficit will also prevail in the 2016/17 season, as the anticipated production increases are considered insufficient to cover world sugar demand. This global supply shortage can be partially attributed to production setbacks in some key exporting countries, namely Brazil and Thailand, but also to shortfalls in India, the world's second largest sugar producer. It is not expected, however, that the global sugar stock-to-use ratio will return to the low levels observed in 2009 and 2010, despite stock releases on the domestic market undertaken by China.

In contrast to other basic agricultural commodities, current international sugar prices are relatively high. They started to rise sharply in mid-2015 due to tighter market conditions, ending four seasons of relatively weak world prices. High fructose corn syrup, the main competitive alternative representing 10% of the market for sweeteners, also experienced a price increase in 2016 with a realignment of supply-to-demand in the United States, the main exporting country. These elevated international sugar quotations augur well for production prospects in the coming years.

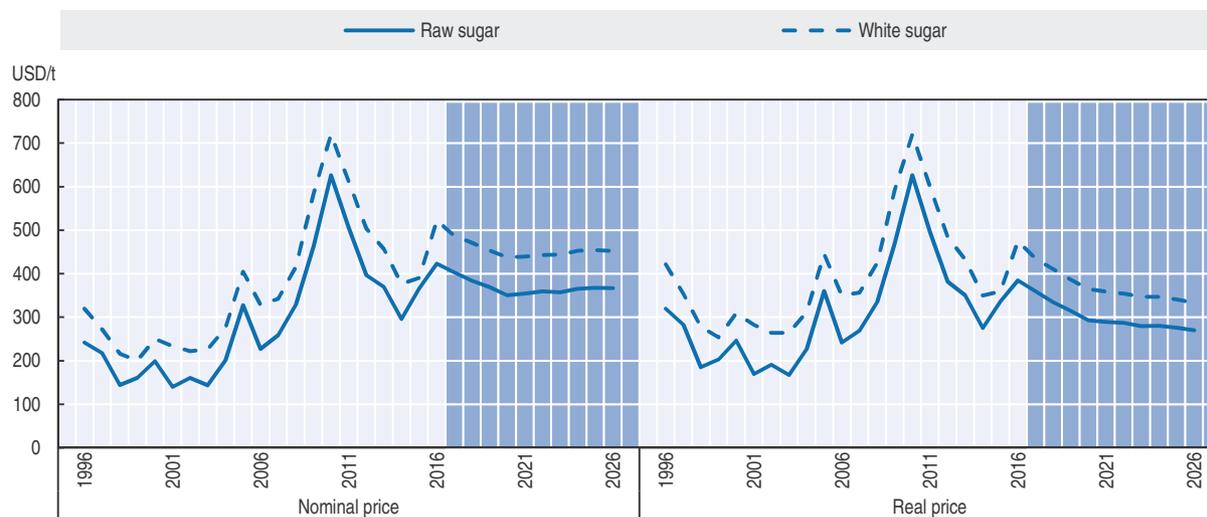
### Projection highlights

The start of this outlook period is marked by relatively high sugar market prices, which conditions the market balance for the coming years. Assuming normal weather conditions and low input prices, increased crushing is expected throughout the projection period, thus increasing sugar availability. Sugar prices are expected to come down for some years before increasing slightly in nominal terms, but to decline further in real terms. Slowing population growth and changes in consumer attitudes will most likely moderate future sugar demand growth. The market will continue to be influenced by production shocks, macroeconomic factors, and domestic policies which shape the performance of the sugar sub-sector. Efforts to liberalise this market have taken place in key producing regions, including the European Union (abolition of sugar quota by 2017) and India, and Thailand is expected to reform its sugar programme in reaction to a complaint lodged by Brazil at the WTO.

Sugar crop production is projected to expand in many parts of the world, driven by remunerative returns in comparison to other crops. Sugarcane, cultivated largely in developing countries (Africa, Asia and South America), will continue to be the main crop used to produce sugar. The share of sugar from sugar beet is expected to decline slightly from 14% during the base period to 12.9% in 2026. Brazil is the world's largest sugar producer and exporter, and its sector is expected to recover from the severe financial problems of the last several years. As a sign of recovery, investments for the renewal of sugarcane plantations have strengthened and are anticipated to expand. In addition, on the basis of lower international oil prices, sugar is set to be relatively more profitable in comparison to ethanol at the start of the outlook period but a higher growth is expected in ethanol production throughout the outlook period.

In Asia, robust growth in sugar demand will continue to support expansion of the sugar sector over the outlook period. Efforts to deregulate the sector are not likely to lead to a complete removal of domestic support policies and associated border measures, but will have an impact on the market. Expansion is also foreseen in Africa as the number of operational factories increases (notably in Ethiopia). Globally, the production of sugar crops and sugar should increase by respectively 17% and 24% over the next ten years, and the growth in the share of sugarcane production devoted to producing ethanol should be slightly reduced from about +0.6% p.a. during the last decade to 0.4% this decade.

Figure 3.3. **World nominal and real sugar prices**



Note: Raw sugar world price, Intercontinental Exchange contract No.11 nearby futures price; Refined sugar price, Euronext Liffe, Futures Contract No. 407, London. Real sugar prices are nominal world prices deflated by the US GDP deflator (2010=1).

Source: OECD/FAO (2017), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.  
1 <http://dx.doi.org/10.1787/888933522054>

Per capita global demand growth for sweeteners is not foreseen to change much over the outlook period compared to the last decade (0.7% p.a. versus 0.6%). Slower population growth will put a brake on demand growth, as will changing attitudes towards sweetened products, which are increasingly linked to obesity and other associated health issues. Some companies have recently taken measures to reduce sugar content in their products. Although no growth is foreseen in sugar consumption in developed countries over the next decade, the reverse is true for developing countries due to population growth and increasing urbanisation, where a higher share of the consumers' budgets is allocated to beverages and food. Globally, the consumption of sweeteners is foreseen to increase by 20.3% over the next ten years.

Sugar will continue to be highly traded, with about 33% of total production expected to be exported over the outlook period. Exports are projected to remain concentrated, with 48% originating from Brazil where sugar cane production is shared between supply of sugar of which 72% are exported and ethanol for domestic use. Sugar exports are likely to expand in countries that have modernised or reformed their sugar sectors (notably Australia, European Union and Thailand). Imports will remain diversified, mostly driven by demand from Africa and Asia.

Following four seasons of steady decline, international sugar prices are at a relatively high level since 2015, although about 28% below the previous peak recorded in 2010. Nominal prices are projected to decline over the next few years and then remain at a relatively high plateau when compared to the long-term average, prior to the 2009 price hike. Prices are projected to reach USD 367/t in 2026, with a premium for white sugar estimated at USD 86/t. In real terms, sugar quotations are expected to decline consistently and average lower than the previous ten years.

The outlook for sugar production is dependent on a number of factors, such as weather events, macroeconomic conditions and national policies. Any changes to these factors will condition the results of the projections and alter the outcome of the sugar balance and prices. For example, any changes to the value of the Brazilian currency (real) against the United States dollar, or changes in the assumed level of world crude oil prices will alter the producer sugar margin and affect the sugar trade. The projections could also be affected by market movements of other competing crops, the feed sector, biofuels, or price fluctuations of other caloric sweeteners.

**The expanded sugar chapter is available at**  
[http://dx.doi.org/10.1787/agr\\_outlook-2017-9-en](http://dx.doi.org/10.1787/agr_outlook-2017-9-en)

## SUGAR

### Prices

At the onset of the outlook period, international sugar prices are at a relatively high level sustained by tight market conditions. They are then projected to decline for several years before strengthening moderately towards the end of the outlook. By 2026, sugar prices are foreseen to be higher than the average of the last two decades in nominal terms, but lower when expressed in real terms. The nominal world raw sugar price is projected at USD 367/t (USD 16.7 cts/lb) and at USD 453/t (USD 20.5 cts/lb) for white sugar in 2026. The white sugar premium, although increasing in the current season due to rising import demand by Myanmar and Sudan, is expected to undergo a squeeze in 2017 as the abolition of the European Union sugar quota allows for further exports of white sugar on the world market. The resulting downward pressure on white sugar prices will encourage producers to switch to exporting more raw sugar as opposed to white sugar, which in turn will stabilise the premium towards the end of the period (USD 86/t).

Yearly sugar price variations are expected to diminish over the projection period, thanks to the phasing out of trade-distorting sugar support policies in several key sugar markets. On the supply side, the European Union will eliminate its sugar quota system in October 2017, while Thailand is expected to abolish its production quota and price support mechanisms by the end of 2017. India had already introduced policies to its sugar market in 2013 to counteract recurring production cycles. Reforms on the demand side are also expected to take place, with cuts to sugar consumption subsidy programmes in response to budgetary pressures (e.g. Malaysia, Egypt, and Morocco). In addition, demand for sugar is expected to be influenced by the introduction of a sugar tax on sugar-sweetened beverages in several markets (e.g. South Africa, Mexico, and Thailand).

### Production

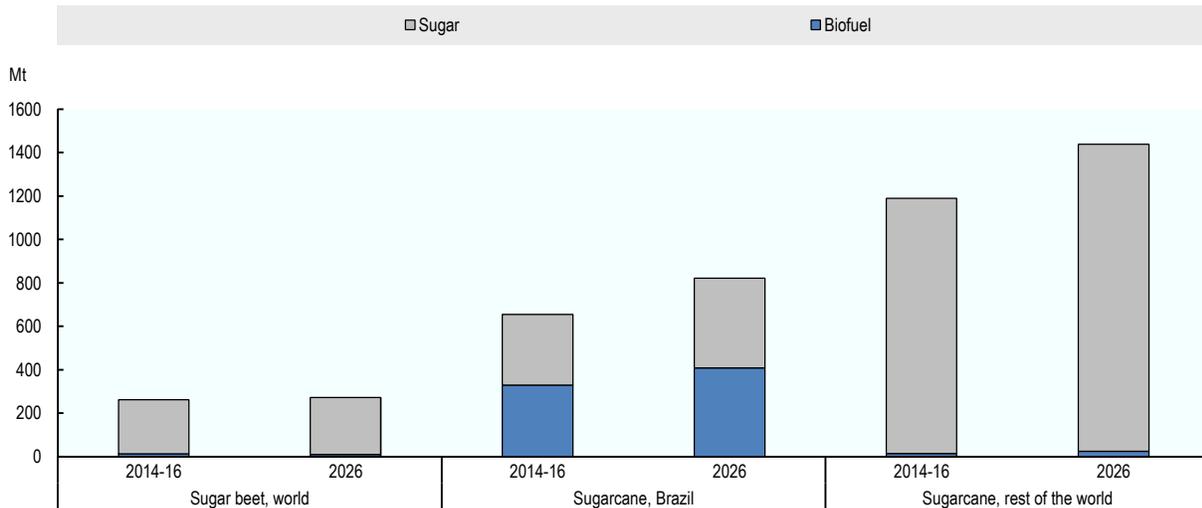
Over the outlook period, sugar markets will react primarily to market conditions. Assuming normal weather conditions, good supply prospects are foreseen for the sector, with improvements in area harvested – notably for sugarcane –, yields, and modernisation either in progress or upcoming in many producing countries. Brazil, the largest sugar producer and supplier, has benefited from high prices since the 2015 season, helped by depreciation of the Real. The sector is expected to recover over the Outlook period, as the country recovers from the recent financial crisis, and the sector itself emerges from a longstanding debt crisis. The Outlook is also expected to be positive for some countries that have invested in processing facilities or in plantings (Australia). These output increases are offset by zero growth in Europe after a couple of years or in the Russian Federation. Global stocks are expected to remain low for another season before rebuilding begins, but the stock-to-use ratio should stay rather stable at around 40%.

World sugar production is projected to grow by 1.7% p.a. to reach 210 Mt by 2026, up nearly 41 Mt, 24% above the average for the base period (2014-2016). Higher increases are expected to occur in developing countries with 79% of global sugar production in 2026 compared to 76% during the base period. In the developing world, the leading regions are Asia and Latin America and the Caribbean, which are expected to account for 38% and 35% of global sugar production in 2026 respectively, up from 37% and 34% during the base period. Growth in Asian sugar production is expected to increase by 2.6% p.a. over the next ten years, compared to 2.0% p.a. in the previous decade; whereas growth in Latin America should increase by 1.6% p.a. compared to 2% p.a. in the previous decade. This expansion should be driven mainly by higher output growth in India, Thailand, Pakistan and Latin America. In Africa, sugar output is projected to increase by 2.7% p.a. with some production expansion in Sub-Saharan countries supported by investments at the farm and mill levels. Production in developed countries is expected to grow at a much slower pace than in developing countries (respectively 0.06% p.a. and 2.14% p.a.). The main increases in volume are foreseen in the European Union where production should expand the first years after the expiry of the sugar quota. But only competitive countries would be able to stay in place, and, compared to the base period, production in 2026 would increase by +1.4 Mt or 8.6%. It would be followed by the United States (+0.8 Mt) and Australia (+0.7 Mt) (Figure 3.3.2).

It is projected that sugarcane will account for about 86% of sugar output over the next decade, although some expansion of sugar beet production is anticipated in Egypt, the People's Republic of China (hereafter "China"), Ukraine, Eastern Europe, and Turkey. For sugarcane, most increases are projected to come from higher yields and area expansion, while higher yields in the case of sugar beet should account for the increase in output with total area

harvested projected to decline by 3% over the projection period. Compared to the base period, sugarcane production allocated to ethanol will increase by 9 Mt but sugar beet production for ethanol would be reduced by 3.5 Mt.

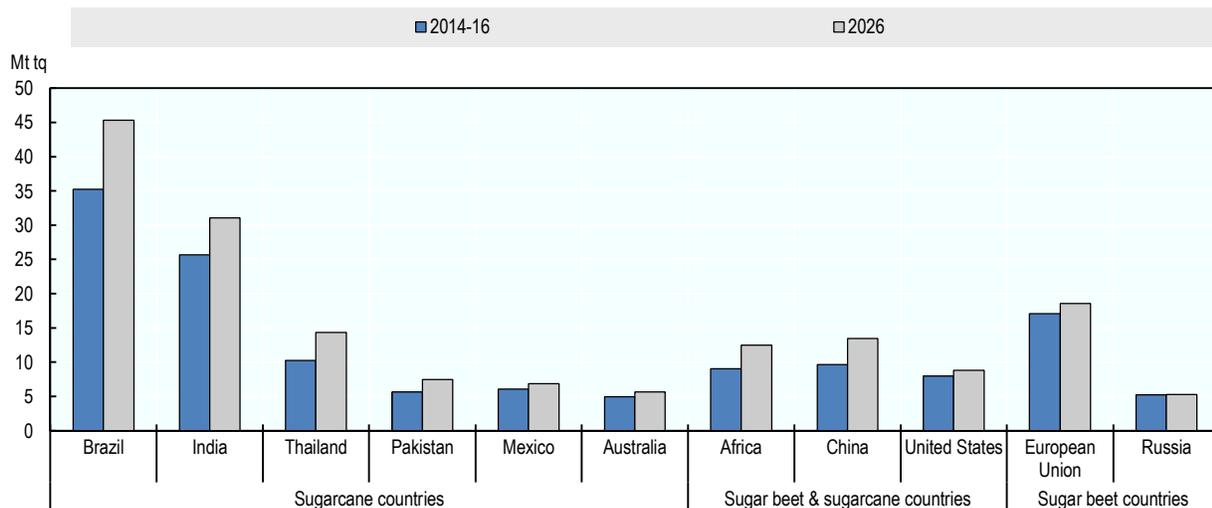
Figure 3.3.1. World sugar crops



Source: OECD/FAO (2017), “OECD-FAO Agricultural Outlook”, *OECD Agriculture statistics* (database), <http://dx.doi.org/10.1787/agr-data-en>.

StatLink <http://dx.doi.org/10.1787/888933522377>

Figure 3.3.2. Sugar production classified by crop



Source: OECD/FAO (2017), “OECD-FAO Agricultural Outlook”, *OECD Agriculture statistics* (database), <http://dx.doi.org/10.1787/agr-data-en>.

StatLink <http://dx.doi.org/10.1787/888933522396>

Brazil’s dominance of the world’s sugar market will be maintained over the outlook period. Its sugar sub-sector is beginning to recover from several setbacks in recent years, including unfavourable weather conditions and a severe economic recession. The sugar mills also faced higher overseas debt –denominated in US dollars – due to the growing mechanisation of the sector, wage increases, and limited access to credit. Several mills were forced to exit the market. The recent surge in prices as well as favourable exchange rate have allowed the sugar sub-sector to reduce its debt. Although the financial situation remains fragile, new investments and some renewal of cane plantations is occurring. The sector is also expected to benefit from higher profit margins compared to ethanol in the

short term. Assuming there are no weather shocks, it is foreseen that production will return to previous high levels and reach 45.3 Mt at the end of the projection period.

India, Thailand and China are the top three sugar producers in Asia. India is the leading producer of the region and its sugarcane production is expected to expand, driven by sustained domestic demand and an expanding ethanol sub-sector. Recent sugar policy reforms in India have allowed for greater stability in terms of prices paid to farmers (i.e. sugar mills are requested to pay the sugarcane “state advice price” to them) and have done away with marketing constraints on sugar mills. The latest supporting policy for ethanol from molasses also provides renewed incentives to expand sugarcane production and processing capacities. Indian sugar production is expected to reach 31.1 Mt in 2026, about 21% above the level of the base period (2014-16).

Thailand has produced large sugarcane crops following the surge in production in 2010 and since 2014 has been the second largest producer of the region, although it suffered from drought that affected yields in 2015 and 2016. Assuming normal weather conditions, Thailand should maintain its market position, despite a slower pace of production growth in the medium term compared to the previous ten years. Indeed, as sugarcane expansion reaches areas less suitable for production, yields becomes more volatile and labour costs rise with small-scale farming limiting the potential for mechanisation. The increasing use of gasohol, in particular high blends, is also an important driver of sugar cane and molasses production. Over the next 10 years, sugar production is expected to increase by 3% p.a. versus 4.7% p.a. the previous decade, although the impact of the recent decision to remove Thailand’s sugar production quotas by the end of 2017 remains uncertain at this stage. In China, unlike India and Thailand, the sector suffers from high labour costs, small farm sizes, and low productivity and it is often more profitable for farmers to switch between different crops depending on their profitability; sugar production is expected to increase slightly over the outlook period, to 13.4 Mt in 2026, mainly through increases in sugarcane yields. It will rely on imports to fill the deficit.

Sugar production in Africa is projected to increase by 2.7% p.a. to 2026 as the production capacity at both farm and processing levels continues to expand, primarily in Sub-Saharan countries. Growth in output will be driven by strong domestic demand for sugar as well as trade opportunities, such as those offered under the Economic Partnership Agreements (EPAs) and the Everything But Arms (EBA) initiatives of the European Union. However, the removal of the sugar quota by the European Union and the reconciliation of European Union and EBA export prices are expected to have negative implications on exports from high-cost, non-LDCs, African, Caribbean and Pacific (ACP) producing countries that previously benefitted from the higher European Union price. Sugar output in South Africa was severely affected by dry weather, but the country considers the sugar sub-sector essential to rural development and production should expand over the next ten years at a moderate rate (less than 1% p.a.).

In developed countries, more moderate developments are expected compared to the developing world. Significant increases will occur in Australia, Europe and the United States, the latter being sustained by policy (see below). Australia is an export-oriented country which will benefit from recent efforts by milling groups to increase cane plantings and sugar yields, and an assumed low Australian dollar compared to the USD. Sugar production is foreseen to increase by 1.0% p.a. to reach 5.7 Mt by 2026.

The European Union is the leading producer of sugar among the developed countries. After 1 October 2017, sugar and isoglucose (or HFCS) quotas and the minimum beet price will be abolished; mills will be able to process sugar beet for different products without a price differential, both for food and non-food use. The market will be guided by market fundamentals, with the result that domestic prices will be more in line with world prices, even though high import tariffs limit sugar imports. During the base period, the differential between the world and the European Union prices is lower than previously as the market has started to adjust. Over the projection period, competition will occur between sugar beet and other crops; sugar processors will try to reduce their costs and should benefit from relatively high sugar prices compared to other basic arable products. Once sugar quotas have been abolished, the sugar beet area is expected to expand in 2017 and then decrease in the following years. However, higher yields, a longer production campaign, and the use of existing capacity will help producers remain competitive. Increases in sugar production are foreseen in the first years of the outlook period; however, inefficient producers will be forced to leave the market and production is projected to decline to 18.5 Mt in 2026. The use of sugar beet for ethanol is expected to decrease with the end of out of quota industrial use. Isoglucose production is projected to take off with the abolition of the sugar quota and opening of new production facilities, for example in Hungary. Sugar will have to compete with isoglucose, especially in the agricultural European Union regions having grain surpluses and sugar deficit.

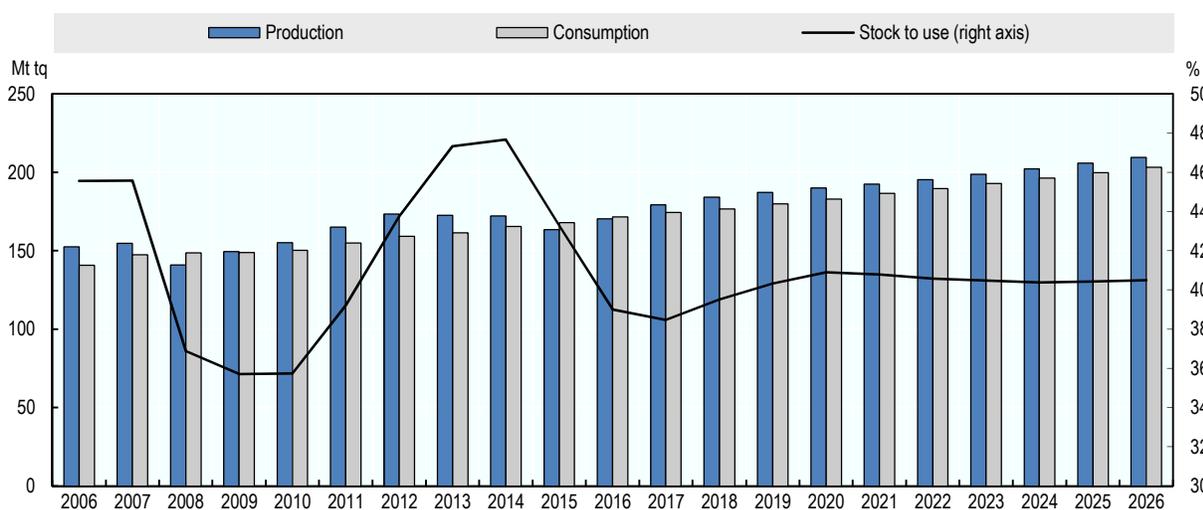
Sugar production in the United States, the second largest producer among the developed countries, is expected to increase by 0.23% p.a., reaching 8.0 Mt in 2026. The sugar sector remains heavily influenced by government policy, which is based on domestic support via the Sugar Loan Program, Sugar Marketing Allotments, and the Feedstock Flexibility Program, as well as trade barriers through TRQs and regional agreements. Domestic prices are expected to remain at 38% above global market prices. Mexican sugar production is foreseen to increase

by 1% p.a. Although Mexico is a deficit sugar country, it will continue to export more than a quarter of its production to the more profitable US sugar market. Since November 2015, however, the US has limited such imports to a defined Export Limit based primarily on a calculation of US needs (countervailing duty (CVD) and anti-dumping (AD) suspension agreement) in order to support US prices. No expansion of HFCS production in the United States is foreseen as mills have restructured their production in response to lower sales of carbonated soft drinks and a consumer preference for sugar; a higher share will fill the deficit on the Mexican sweetener market.

The Russian Federation, which has looked to attain sugar self-sufficiency, continues to have its sugar industry protected by high import barriers. The majority of successful beet growers are now vertically integrated and less eager to switch to other crops. Over the next ten years, sugar production should average around 5.2 Mt. Sugar production in Ukraine is expected to recover somewhat, driven by a projected improved economic environment and a decrease in input costs.

Global stocks are projected to continue their decline in 2017, but to be rebuilt over the next ten years. The global stocks-to-use ratio should on average be lower than the previous decade, at 40.2% compared to 41.4%.

**Figure 3.3.3. Production, consumption and stock-to-use ratio of sugar**



Source: OECD/FAO (2017), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-data-en>.

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### Consumption

Global consumption of sugar is projected to grow at 1.75% p.a., slightly lower than in the previous decade, to reach 203 Mt in 2026. It will be influenced by the slight slowdown in population growth and sluggish global economic growth. Demographic changes, income and urban population growth have led to increasing consumption of processed products, sugar-rich confectionery and soft drinks at the expense of the direct use of sugar. Over the outlook period, the average world level of per capita consumption is expected to increase from 22.9 kg/cap during the base period to 24.8 kg/cap. Growing concerns related to the health effects of excess sugar consumption have led some countries to apply taxes on sugary drinks in order to lower consumption.

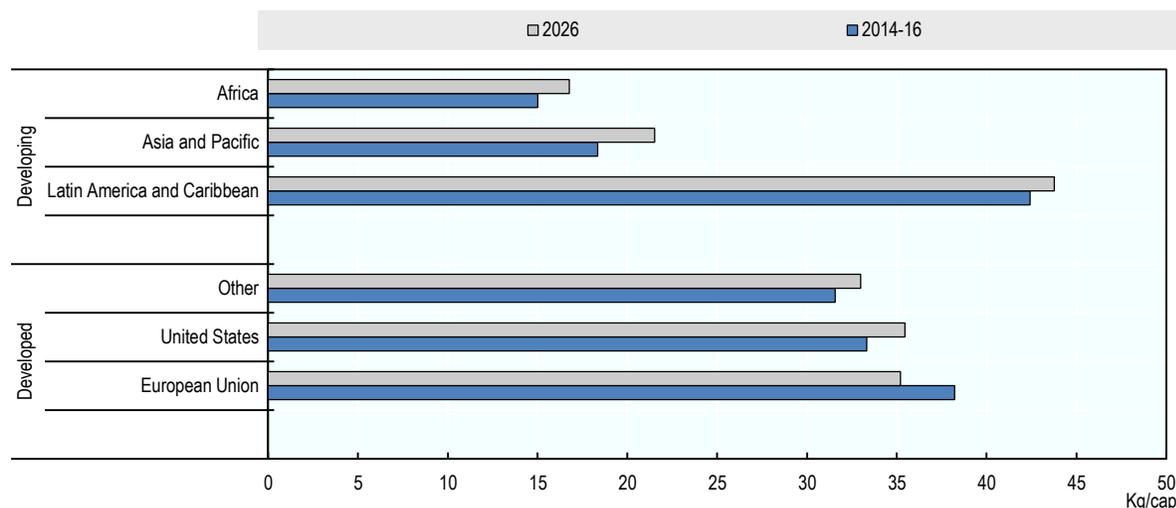
Demand in developing countries will continue to grow rapidly, driven by rising incomes, urbanisation and growing populations, although with considerable variation between countries (Figure 3.3.4). Per capita sugar consumption in urban African and Asian countries is historically low and growth prospects are high compared to other regions.

The expansion of sugar use will occur primarily in the sugar deficit regions of Asia and Pacific, and Africa (63% and 22% respectively), whereas little growth is foreseen in Latin America where consumption is already high. In Asia, it is expected that India, followed by China and Indonesia, will experience the largest increase in sugar consumption. Sugar consumption in Indonesia is expected to increase faster than the world average, driven by rising per capita income and expansion in the processing and manufacturing food sectors. In terms of per capita

consumption, growth is expected to be highest in Bangladesh, Indonesia and China. In Africa, the highest increases in consumption are projected to be in Egypt and several Sub-Saharan countries, both in level and per capita.

In contrast, many developed countries are projected to show a decline in their level of sugar intake per habitant, consistent with their status as mature or saturated sugar markets. The decline will be strongest in the European Union where sugar markets will also face increased competition from isoglucose after the abolition of sugar quotas in 2017. The reverse will occur, however, in the United States where the share of sugar in sweetener consumption is expected to increase. Rapid expansion of demand is foreseen for the Russian Federation and the Ukraine, where sugar will continue to be considered as a staple product as long as slow economic growth persists.

**Figure 3.3.4. Per capita sugar demand in major countries and regions**



Source: OECD/FAO (2017), “OECD-FAO Agricultural Outlook”, *OECD Agriculture statistics* (database), <http://dx.doi.org/10.1787/agr-data-en>.

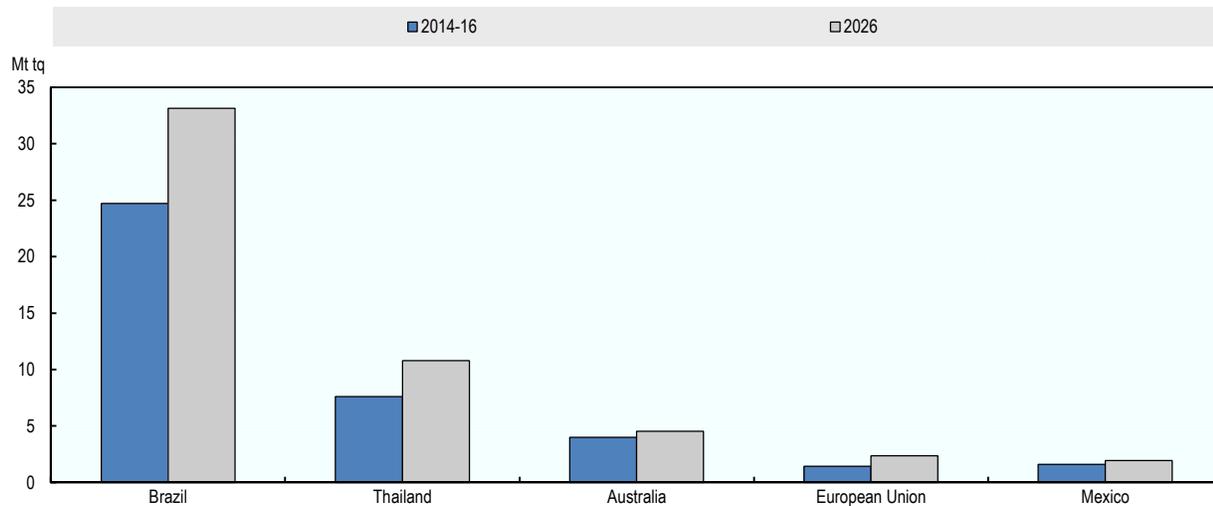
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Due to its competitiveness as an input into sugary soft drinks, HFCS consumption is projected to grow by 14% or 1.8 Mt to 2026. The European Union will be the main driver of this increase with the expected surge in isoglucose availability after the abolition of the HFCS quota. Consumption growth is also expected in China and Mexico. Demand in the United States, the leading producer, is expected to continue to decline from 34% of sweetener consumption during the base period to 30% in 2026 with the contraction of the market for carbonated soft drinks and the desire of some consumers to avoid this sweetener.

## Trade

Over the coming decade, sugar exports (Figure 3.3.5) are expected to remain highly concentrated. It is expected that Brazil will maintain its position as the leading exporter, and its exports are expected to increase throughout the outlook period. In 2026, it is foreseen that Brazil’s exports will be 8.4 Mt higher and account for 48% of world trade. In Thailand, the world’s second largest exporter, shipments are expected to increase by 3.2 Mt (42% higher than in the base period), driven by a steady growth in production and export availability. Similarly, in Australia, with rising investment in irrigation, expansion of the sugarcane area and milling capacities, higher production is expected to boost export sales over the medium term.

Figure 3.3.5. Sugar exports for major countries and regions



Source: OECD/FAO (2017), “OECD-FAO Agricultural Outlook”, *OECD Agriculture statistics* (database), <http://dx.doi.org/10.1787/agr-data-en>.

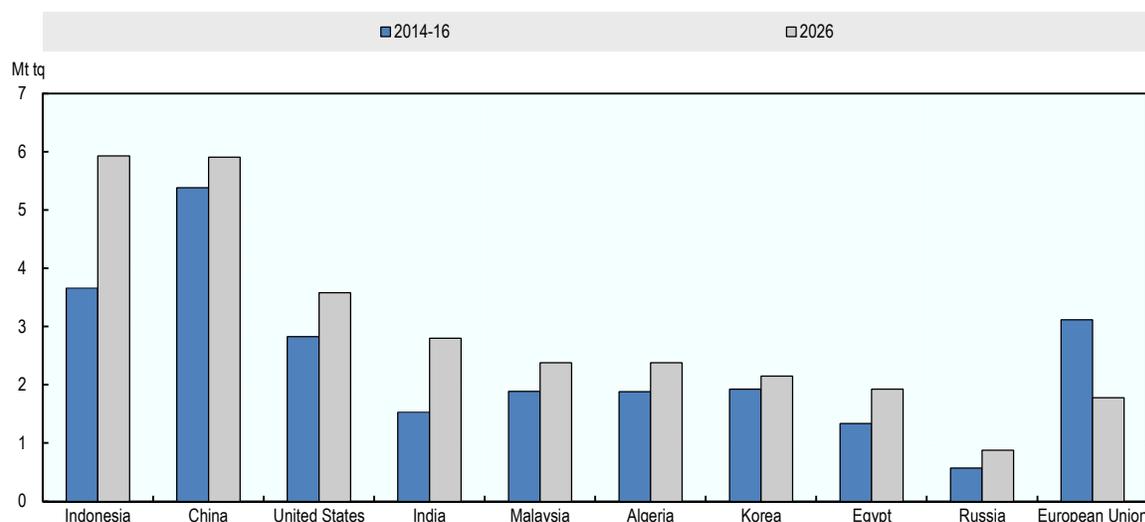
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In the European Union, the increase in sugar and HFCS production following the abolition of sugar and isoglucose quotas should result in an increase of white sugar exports (+64% in 2026 compared to the base period), even with a quality premium price. These exports would be directed towards the MENA and Far East sugar deficit countries, but competition will occur with traditional sugarcane refineries from the MENA region. European Union sugar imports would decrease (-43% after ten years). The European Union HFCS trade will not change much as the production increase that will occur after 2017 will satisfy internal demand. Consequently, the European Union is expected to lose its position as one of the world largest sugar importer with imports projected to be 1.3 Mt lower in 2026 compared with the base period.

World sugar imports are more dispersed than exports as more countries begin importing. According to the outlook projections, Asia and Pacific, and Africa will see the strongest growth in sugar import demand (Figure 3.3.6). During the base period 2014-2016, China and Indonesia are the leading importers followed by the European Union, but over the projection period, Indonesia and China are expected to become the leading sugar importers, followed by the United States (respectively 5.9 Mt, 5.9 Mt and 3.6 Mt).

The United States, traditionally a sugar deficit region, will continue to be influenced by its domestic policies which tend to determine the amount of domestic production and the level of imports. During the outlook period, corn and sugar prices should stay stable in relation to world prices implying that sugar supplies are expected to remain relatively tight. This will result in a continuation of imports established under TRQ duty-free imports through WTO and FTAs agreements, and imports from Mexico under NAFTA. These latter imports will be limited by the target quantity required to meet US needs as defined in the countervailing duty investigations on sugar from Mexico, dated 19 December 2014.

Figure 3.3.6. Sugar imports for major countries and regions



Source: OECD/FAO (2017), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database), <http://dx.doi.org/10.1787/agr-data-en>.

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### Main issues and uncertainties

The projections in this *Outlook* assume normal weather and make specific assumptions with respect to the macroeconomic environment and crude oil prices. Notwithstanding high stock levels, shocks to any of these variables would create some volatility. This could in turn change incentives to produce sugar crops, and related co-products.

Several producing and consuming sugar countries have introduced, or are in the process of introducing, legislation to eliminate or limit support to their domestic sugar sub-sector. The elimination of sugar quotas in the European Union and Thailand will reduce trade distortions in international sugar markets. Despite these reforms, many countries maintain high import tariffs to protect local sugar production, with the result that changes in international sugar prices are not fully transferred to domestic sugar producers and consumers. This also contributes to higher international market volatility.

Macroeconomic and structural factor are significant source of uncertainty in Brazil, given ongoing financial consolidation and a recovery in investment. The evolution of biofuel policies in Brazil could also affect the demand for sugar and export prospects.

Growing evidence of the detrimental effect of excessive sugar consumption on human health may lead to lower demand in future. That trend could also be reinforced by government policies and pro-active actions taken by the food industry, such as product reformulation.