

Regional brief: Asia and Pacific

The *Outlook's* regional briefs highlight broad trends for the regions defined by the FAO in the implementation of its global workplan. Recognising the diversity across the regions, the intention is not to compare results across regions. Instead, these briefs illustrate some of the latest regional developments, highlighting responses to global challenges and emerging trends within them and relating these to the main messages of the *Outlook* publication. The assessments generally compare the end point of the *Outlook's* projection (2030) to the base period of 2018-20. These briefs acknowledge that the impact of the COVID-19 pandemic, which is still playing out globally, and the response to it differs across the regions. The briefs do not contain a specific quantitative assessment of the pandemic's impact, but they reflect the latest available macro-economic projections and the extent to which the actions imposed to curb the spread of COVID-19 influenced this environment. Consequently, the trends and issues presented in this chapter are those which are expected to underpin the *Outlook* as economies re-emerge from the unexpected shock of the novel corona virus, assuming that its effects on food production, consumption and trade will gradually moderate.

Background

The Asia and Pacific region¹ is by far the largest of all regions covered in this chapter and is exceptionally diverse in terms of economic structure, phase of development, income levels and trade dependence for food products. For instance, on a per capita basis, income levels range from USD 1 157 in the least developed countries of Asia, to USD 61 375 in Australia. At 4.3 billion people, the Asia Pacific region comprises more than half of the world's population, yet constitutes only around 30% of agricultural land globally. Its considerable natural resource base is therefore increasingly strained. Over the coming decade, this will likely intensify, as the population expands at a rate of 0.6% p.a., adding 322 million people by 2030. Urbanisation has advanced rapidly across the region, to the extent that 50% of the population resided in urban settings in 2020. This is expected to rise to 55% by 2030. In the People's Republic of China (hereafter "China"), which represents the largest share of the region's population, the share of the population residing in urban settings is set to reach 70% by 2030. Such urbanisation contributes to dietary change, underpinning rising consumption of higher value, as well as more processed and conveniently packaged food.

At regional level, per capita GDP declined by 3.2% in 2020, but this impact differs greatly within the region. Australia and Japan reflected declines of 5%, but China still realised growth of 1.4%. The recovery from the recession induced by the COVID-19 pandemic is the strongest in Asia and Pacific amongst the various regions, with average per capita incomes anticipated to grow at almost 4% p.a. over the next decade. China is projected to grow at 5% p.a., India and Viet Nam at 5-6% p.a., and Thailand and Indonesia at around 3-4% p.a. The share of primary agriculture and fish value added in the economy has declined to about 7.5% and is expected to reach 6% by 2030. Rapid economic growth has reduced the share of food in household expenditures to around 15%, which is still large enough for changes in incomes or prices to have a notable impact on consumers.² Within the least developed countries in the region, this share is

considerably higher, which makes the food security of many consumers in these countries highly vulnerable to prices spikes and income shocks induced by the COVID-19 pandemic.

The region encompasses a range of important exporters and importers of various agricultural and food products, many of which face major uncertainties in the *Outlook*. Ongoing trade disputes are not fully resolved and weather conditions remain volatile, with Australia in particular facing a prolonged period of drought. The COVID-19 pandemic exposed vulnerabilities in global trade logistics and animal disease remains a risk. African Swine Fever (ASF) in China and parts of Southeast Asia critically impacted pig-meat production in recent years and while herd rebuilding has advanced rapidly, new cases are still being recorded, implying ever present risks to future production prospects.

Production

As the largest producer of agricultural and fish commodities, the region is anticipated to account for 53% of global agriculture and fish output by 2030. The total value of production expands 20% by 2030 relative to the 2018-20 base level. This rate exceeds that of population growth, implying that the value of agricultural production per capita is set to rise over the coming decade, driven by productivity gains, as total agricultural land use declines over the same period.

Crop production, which represents roughly 60% of total agricultural production value, is projected to grow by 22%, while that for livestock will increase by 19% over the ten-year period. In the pork sector, this recovery is from a small base due to the impact of ASF, which reduced regional production by 18% in 2019 and a further 4% in 2020. In China and Viet Nam, the ASF outbreak was so severe that it wiped out about 23% and 13% respectively of pig inventories in these countries. Both countries have made significant progress in rebuilding herds, with Viet Nam reflecting an increase of 12% in inventory in 2020 and China expecting a 10% increase in inventory in 2021. The shortages of pork resulted in higher livestock product prices in the region, inducing investments to expand production in other meat types that will support further growth over the next ten years. Poultry meat production, with its shorter production cycle, grew by 8% in 2019. Together with growth in bovine meat, sheep meat and milk production, this resulted in only a modest contraction in total livestock production, despite the sharp decline in pork output. The value of fish production is projected to increase by 15% over the projection period, due to the continued expansion in aquaculture. These rates of growth are considerably less than a decade ago when regional agricultural and fish output growth often averaged 3-4% p.a. Growth has slowed as domestic markets have matured, policies have changed, markets have opened, and trade competition has strengthened.

The region is a major contributor to global grain output, notably in rice with a 90% production share. Its contribution to global output of wheat and maize is less, at 40% and 30% respectively, but still significant. The region's share in global maize production is expected to grow marginally over the outlook, while its role in other cereals remains similar to the base period. Almost 60% of the region's rice production occurs in China and India. While China's rice production is expected to increase by only 4% by 2030, India is expected to add 17% to its current production volumes, growing its share in regional production to 27%. Similarly, the same two countries account for more than 75% of the region's wheat production. Growth will however be driven by India and Australia, who account for 58% and 19% of additional wheat production in the Asia Pacific region by 2030 relative to the base period. In the case of Australia, this reflects an assumed recovery in yields following multiple years of drought impact which resulted in below average production levels.

The Asia Pacific region accounts for 58% of global vegetable oil production, much of which is obtained from palm oil output in Malaysia and Indonesia. The spread of COVID-19 and the associated restrictions on movement of people brought challenges to this sector, which relies strongly on foreign labour, exacerbating structural constraints that already reduced supply in 2019. The slowdown in the expansion

of mature oil palm area implies that production growth in both Indonesia and Malaysia will remain slower in the coming decade.

Due to land scarcity within countries across the region, crop production growth will result from productivity enhancements and intensification. Irrigation expansion and improved seed varieties account for much of production gains, but there are mounting environmental and food safety concerns, associated with water scarcity and the heavy use of chemical inputs. Multiple harvests and double cropping will contain expansion in crop land use to an additional 1 Mha, compared to 15 Mha increase in area harvested, which will be allocated mostly to maize, wheat, oilseeds and pulses.

Livestock production over the outlook period will also come largely from productivity gains associated with increased feed intensity and breeding improvements. Animal numbers will grow at a slower rate than total meat production, despite the initial recovery in pig inventory following the ASF induced herd reductions in the base period. Feed use will grow at a marginally slower rate to meat production, with increased feed use intensity in some countries offset by gains in feed use efficiency in others. Meat production growth is expected to accelerate over the *Outlook*, with significant contributions from poultry and pork, where a heightened focus on biosecurity results in a larger share of pork production coming from large, modern production units. The share of pork in total livestock production recovers only marginally from the base period and does not reach pre-ASF levels by 2030.

Nearly 70% of global fish output is produced by the Asia and Pacific region, most coming from a combination of capture fisheries and aquaculture production in China. The efficiency and sustainability changes set out in China's 14th Five Year Plan are expected to constrain growth, but the Asia Pacific region will nonetheless account for 80% of global production growth in the sector.

Total GHG emissions by the region are projected to increase by 2.7% by 2030. Emissions from animal sources are projected to increase by 5.6%, whereas those from crops decline by 0.8%.

Consumption

The Asian region has made immense progress in reducing the prevalence of undernourishment in its developing and least developed nations. In 2020, however, this regressed, largely due to the impact of the COVID-19 pandemic on income and food affordability. The prevalence of undernourishment as well as food insecurity in the region increased in 2020 and could remain under pressure in the short term. As the recovery from the COVID-19 pandemic gathers momentum, medium term income growth in the region is positive. Combined with the slowdown in population expansion and continued urbanisation, this supports the continued evolution of dietary patterns, resulting in rising demand for calorie and nutrient dense foods (Law, Fraser and Piracha, 2020^[1]) (Kelly, 2016^[2]) (Reardon et al., 2014^[3]). By 2030, average calorie availability in the region is projected to increase by almost 200 kcal/person/day to average just over 3 000 kcal, mainly due to increases in the consumption of vegetable oils, sugar and animal products, particularly dairy products. Average protein intake will rise by 10 g/person/day to 109 g/person/day, thanks to increased consumption of dairy and meat products.

Populations in many parts of the region are aging, with dependency ratios³ in Japan and Korea set to increase to 53.2% and 38.2% by 2030, respectively. The ratio in China will increase to 27.3%, which is higher than the world average (18.3%) in 2030 (United Nations, 2019). It is generally assumed that the aging population trend will have a negative impact on growth rates of overall food consumption in these countries. Within the broader region, urbanised lifestyles will lead to growth in consumption of sugars and fats that will outpace that of most other food groups. Consumption of vegetable oil will exceed the global average by 2030, reaching 21 kg/capita per year. Paired with stronger population growth in several countries, such as India, this implies that the region will account for 71% of global vegetable oil consumption growth over the next ten years. The share of calories obtained from animal products, sugars and fats will increase across most of the region by 2030, at the expense of basic food staples.

Rice consumption per capita, which is so important in many countries of the region, often accounting for as much as 50% or more of calorie availability, is projected to stagnate at regional level, with higher per capita consumption in India offset by a decline in countries such as Indonesia. By contrast, wheat consumption is set to increase by 2.1 kg per capita at regional level, with substantial gains in Korea, Viet Nam, Indonesia, Thailand, and many other LDC's in the region.

Meat consumption will rise by 2.6 kg/capita to an average annual consumption of 29 kg/capita, but there is divergence within the region. In countries such as Korea, Viet Nam and China, demand is rising by 5-10 kg, whereas in India, per capita consumption growth will remain less than half a kilogram. The Asia Pacific region is a major consumer of fish, with the highest per capita intake of all regions. Consumption is expected to grow by a further 1.7 kg/capita to an average consumption of 25 kg/capita per year, mainly driven by China, India, and Indonesia. Dairy product consumption will also expand by 24%, largely driven by consumption in India, Pakistan, Iran, and China, as well as rapid growth in Viet Nam, albeit from a much smaller base.

With increasing livestock and dairy production, intensification through higher use of feed grains, and efficiency gains over time, feed use is projected to increase 20% by 2030. Feed use of maize and protein meals are projected to increase 17% and 21% respectively. Such growth in feed is also associated with increased commercialisation of farms, and less backyard production which may use non-grain inputs as feed.

Given increasing mandates, mainly in India, the Asia and Pacific region is projected to increase its share in global ethanol use to 19% by 2030, from 16% in the base period. Similarly, the region's share in global biodiesel use is expected to grow from 23% in the base period, to more than 30% by 2030, underpinned by gains in Indonesia.

This *Outlook* assumes that China does not fully implement the ambitious nationwide E10 mandate by 2030. Based on decreasing maize stocks, its increasing demand for animal feed and industrial uses that cannot be met entirely by domestic production, a 2% blend of gasoline-type fuels is projected. By contrast, the government of Indonesia is assumed to continue implementing the B30 programme nationwide as planned, but reaching the intended target to increase biofuel demand will largely depend on the relationship between domestic and international palm oil prices, as well as palm oil exports. Rising production costs could put the target into jeopardy. By 2030, biodiesel demand would reach about 9.5 bln L.

In Indonesia, the blending mandate is expected to direct domestic palm oil supplies to the biodiesel market. Together with strong short-term price support for vegetable oil on the back of current supply constraints, this could help catalyse investment in the sector. However, land availability remains a constraint and a key contributing factor to the replanting delays in oil palm in recent years. This also underpins slower growth in the Asia Pacific region's vegetable oil production over the outlook period, with production set to expand 18% by 2030, compared to 47% over the last ten years.

Trade

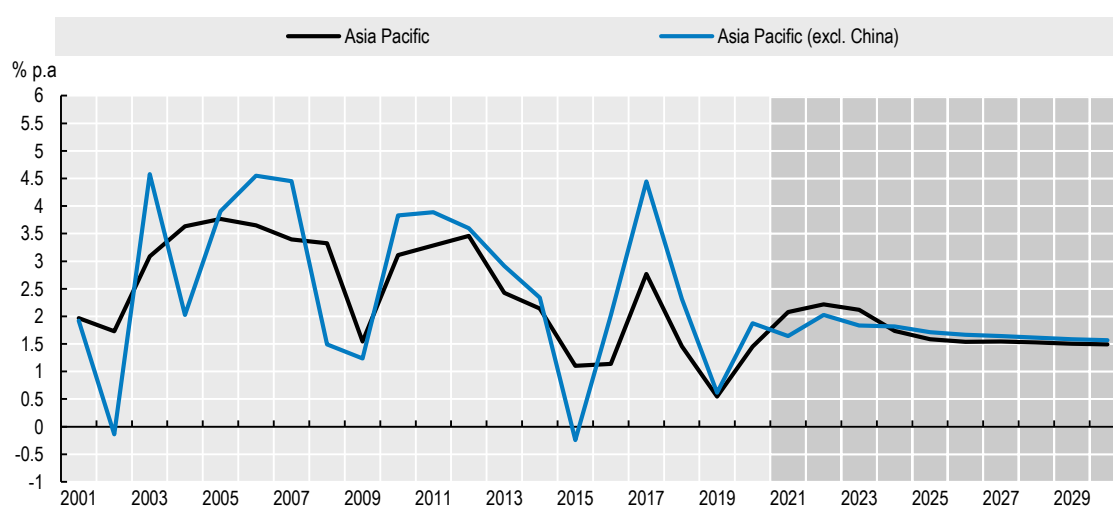
In terms of primary agricultural commodities, the Asia Pacific region is the largest net importer, accounting for over 30% of global imports. Net imports are trending higher over the medium term as demand outpaces supply. China represents one of the largest importers in the region, with soybeans a major contributor to its total import bill. Having declined in 2018 and 2019, due to a combination of trade actions and reduced demand from its diminished pig herd, Chinese soybean imports recovered to record levels in 2020. This was driven by the rapid expansion of its poultry sector, as well as the recovery of its pig breeding herd, and comes despite the logistical challenges and constraints associated with the ongoing COVID-19 pandemic, from which China was amongst the fastest countries to recover. With demand factors remaining firm and the trade environment less restrictive, soybean imports are set to rise by a further 17% by 2030 relative to the base period, to account for just over 60% of global soybean trade. Maize imports, which are

smaller but still significant, also increased sharply in 2020, but are set to decline towards 2030, on the back of stronger domestic production growth.

Net imports of livestock products into the Asia Pacific region are set to increase further over the next ten years, despite reduced import demand from China. Chinese imports peaked during the base period as a result of ASF-related supply constraints and the projected decline in pork imports will only be partly offset by rising beef and sheep meat imports over the coming decade. While total meat imports are set to decline in China and Viet Nam, they are expected to rise in the Philippines, Malaysia, and Korea. This is partly offset by growing exports of bovine meat from Australia and poultry from Thailand. In the case of dairy products, net imports into the region expand, owing to rising import demand from South East Asia.

The Asia Pacific is also a major exporting region contributing 26% of global exports. The largest primary export commodity is rice, which is projected to rise to 54 Mt, led mainly by India, Viet Nam, Myanmar and Thailand. Net exports of vegetable oil from the region is however projected to contract 28% by 2030, as growth in imports exceeds that of exports. Being the main fish producer, the region is a net exporter of fish and fish products. Despite a slowdown in export growth, it will still constitute 47% of global export volumes by 2030. A significant share of this trade occurs within the region, as it also contributes 36% of global imports by 2030.

Figure 1. Slowing growth of agriculture and fish output in Asia Pacific region



Note: Estimates are based on historical time series from the FAOSTAT Value of Agricultural Production domain which are extended with the *Outlook* database. Remaining products are trend-extended. The Net Value of Production uses own estimates for internal seed and feed use. Values are measured in constant 2014-2016 USD.

Source: FAO (2021). FAOSTAT Value of Agricultural Production Database, <http://www.fao.org/faostat/en/#data/QV>; OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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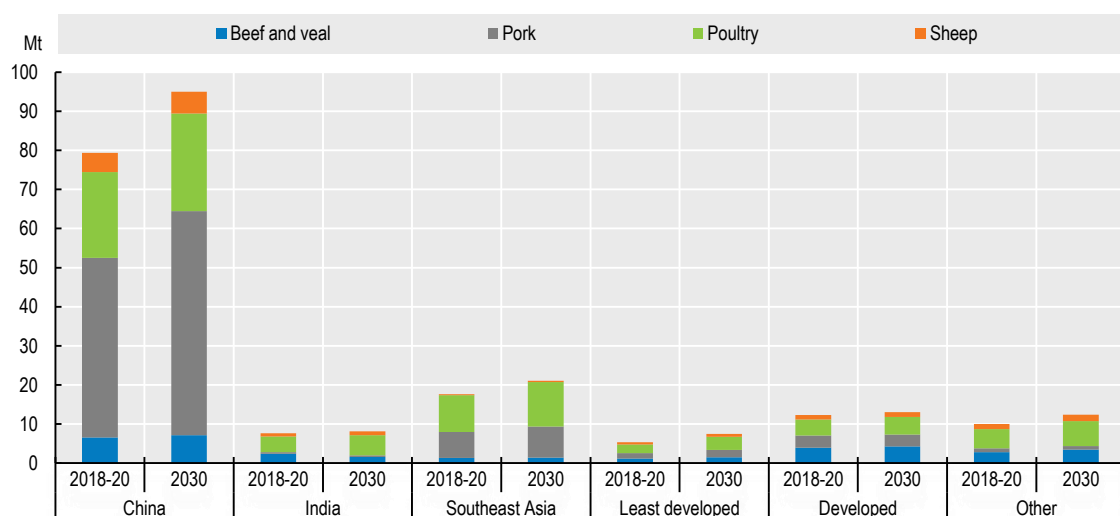
Figure 2. Change in area harvested and land use in Asia Pacific



Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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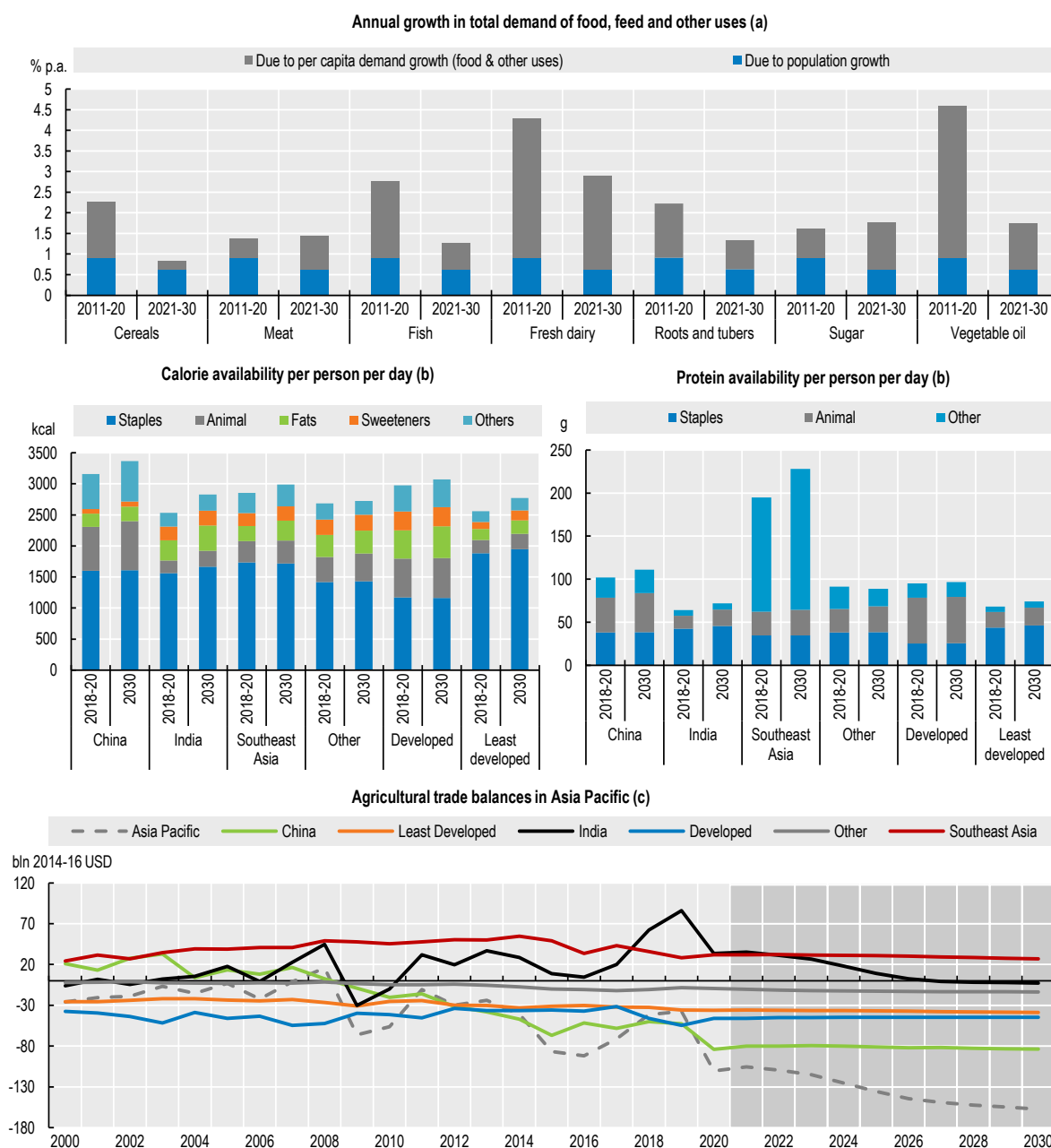
Figure 3. Livestock production in Asia Pacific



Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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Figure 4. Demand for key commodities, food availability and agricultural trade balances in Asia Pacific



Notes: Estimates are based on historical time series from the FAOSTAT Food Balance Sheets and trade indices databases and include products not covered by the *Outlook*. a) Population growth is calculated by assuming per capita demand constant at the level of the year preceding the decade. b) Fats: butter and oils; Animal: egg, fish, meat and dairy except for butter; Staples: cereals, oilseeds, pulses and roots. c) Include processed products, fisheries (not covered in the FAOSTAT trade index) based on outlook data.

Source: FAO (2021). FAOSTAT Food Balance Sheets and trade indices databases, <http://www.fao.org/faostat/en/#data>; OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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Table 1. Regional Indicators: Asia and Pacific

	Average			%	Growth ²	
	2008-10	2018-20 (base)	2030	Base to 2030	2011-20	2021-30
Macro assumptions						
Population ('000)	3 885 796	4 268 075	4 590 121	7.55	0.91	0.63
Per capita GDP ¹ (kUSD)	4.80	6.70	9.55	42.64	3.15	3.61
Production (bln USD)						
Net value of agricultural and fisheries ³	1737.0	2141.6	2572.3	20.11	1.75	1.66
Net value of crop production ³	1032.0	1295.6	1578.5	21.83	1.83	1.68
Net value of livestock production ³	438.2	502.7	600.0	19.36	1.10	1.78
Net value of fish production ³	266.8	343.3	393.8	14.72	2.43	1.38
Quantity produced (kt)						
Cereals	963 946	1157 083	1 300 538	12.40	1.17	0.97
Pulses	29 523	40 109	50 312	25.44	2.55	2.03
Roots and tubers	73 723	94 781	110 444	16.53	2.26	1.36
Oilseeds ⁴	42 159	47 844	54 322	13.54	1.07	0.84
Meat	114 569	132 284	156 981	18.67	0.80	1.64
Dairy ⁵	35 751	50 620	66 878	32.12	3.54	2.69
Fish	95 195	122 718	140 710	14.66	2.46	1.37
Sugar	54 287	70 073	83 348	18.94	0.71	1.51
Vegetable oil	83 118	122 492	145 105	18.46	3.72	1.31
Biofuels production (mln L)						
Biodiesel	2395.00	13201.60	16868.41	27.78	12.79	1.43
Ethanol	11 172	17 600	23 113	31.32	3.70	2.02
Land use (kha)						
Total agricultural land use	1 495 093	1469 641	1 459 978	-0.66	-0.29	-0.07
Total land use for crop production ⁶	525 121	533 056	534 051	0.19	-0.07	0.19
Total pasture land use ⁷	969 972	936 584	925 927	-1.14	-0.42	-0.21
GHG Emissions (Mt CO2-eq)						
Total	2 202	2 296	2 358	2.69	-0.04	0.46
Crop	994	1 051	1 043	-0.76	-0.46	0.06
Animal	1 176	1 212	1 280	5.61	0.35	0.80
Demand and food security						
Daily per capita caloric availability ⁸ (kcal)	2 669	2 824	3 020	6.93	0.45	0.63
Daily per capita protein availability ⁸ (g)	87.3	98.7	108.8	10.3	1.1	1.0
Per capita food availability (kg)						
Staples ⁹	170.5	174.5	179.0	2.59	0.32	0.10
Meat	24.7	26.6	29.2	9.69	0.25	0.65
Dairy ⁵	9.2	11.9	14.7	23.59	2.69	2.05
Fish	19.3	22.8	24.6	7.50	1.46	0.73
Sugar	16.2	17.7	19.9	12.50	0.49	1.14
Vegetable oil	14.2	18.1	20.6	13.95	2.76	1.33
Trade (bln USD)						
Net trade ³	- 36	- 63	- 157	149.02
Net value of exports ³	259.7	362	365	0.76	2.58	0.25
Net value of imports ³	295.3	425	522	22.77	4.19	1.49
Self-sufficiency ratio¹⁰						
Cereals	95.7	92.3	93	0.5	-0.62	0.11
Meat	97.6	94.1	95	0.8	-0.57	0.18
Sugar	90.6	92.2	90	-2.0	-0.14	-0.32
Vegetable oil	114.5	109.3	105	-3.5	-0.49	-0.37

Notes: 1 Per capita GDP in constant 2010 US dollars. 2. Least square growth rates (see glossary). 3. Net value of agricultural and fisheries data follows FAOSTAT methodology, based on the set of commodities represented in the Aglink-Cosimo model valued at average international reference prices for 2014-16. Projections for not included crops have been made on the basis of longer term trends. 4. Oilseeds represents soybeans and other oilseeds. 5. Dairy includes butter, cheese, milk powders and fresh dairy products, expressed in milk solid equivalent units. 6. Crop Land use area accounts for multiple harvests of arable crops. 7. Pasture land use represents land available for grazing by ruminant animals. 8. Daily per capita calories represent availability, not intake. 9. Staples represents cereals, oilseeds, pulses, roots and tubers. 10. Self-sufficiency ratio calculated as Production / (Production + Imports - Exports) * 100.

Source: OECD/FAO (2021), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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Notes

¹ Southeast Asia: Indonesia, Malaysia, Philippines, Thailand and Viet Nam. Other: Pakistan, Oceania and Other Developing Asia. Least Developed: Asia Least Developed. Developed: Australia, Japan, New Zealand, Korea. For mentioned regions, see Summary table for regional grouping of countries.

² Source OECD-FAO interpolated for 2017-19 from the database of the Global Trade Analysis Project (GTAP) 2011, using food expenditure and GDP data used in this *Outlook*.

³ The old age dependency ratio is calculated that the over 65 population divided by 15-64 population.