

Regional Outlook: South and Southeast Asia

The regional briefs in the *Outlook* highlight broad trends for the regions defined by the FAO in the implementation of its global workplan. Recognising regional diversity, the intention is not to compare results across regions. Instead, they illustrate some of the latest regional developments, highlighting responses to global challenges and emerging trends, and relating these to the main messages of the *Outlook*. The assessments generally compare the end point of the *Outlook's* projection (2032) to the base period of 2020-22. The large and diverse Asia Pacific region has been disaggregated into two separate parts: Developed and East Asia, and South and Southeast Asia.

Agriculture and food systems globally have faced multiple disruptions in recent years – first in the form of the COVID-19 pandemic, and subsequently the impact of Russia's war against Ukraine. The subsequent rise in food prices has impacted affordability and food security in multiple regions. These briefs do not present a quantitative assessment of the impacts of these disruptions, though they do account for the latest expectations with respect to macro-economic developments as the world emerges from these disruptions. The trends and issues presented are those expected to underpin the *Outlook* in the medium term. They assume that the adverse effects on food, feed and fuel production, consumption and trade will gradually moderate, recognising that several uncertainties remain.

This chapter contains seven sections, with text, tabular and graphic information for each region following a similar template. A background section provides the key regional characteristics and provides the setting from which the projection is described in the subsequent sections for production, consumption, and trade. Each regional brief contains an annex providing common charts and tables outlining the key aspects for the region.

Background

Population and robust income growth support strong demand, putting pressure on resources

The South and Southeast Asia region is home to 34% of the global population, making it the most populous region amongst those covered in this Chapter. Just over half of its 2.7 billion people reside in India. Urbanisation is rising across the region and the share of population residing in urban areas is expected to surpass 46% by 2032, from an average of 41% in 2020-22. On average, income levels amount to USD 3 157 per capita, which is at the lower end of the global spectrum, but it includes a diverse range of countries. Amongst its least developed nations, income levels average USD 1 345 per capita, whereas in Singapore, they are above USD 60 000 per capita.

Growth in per capita income, at 3.8% p.a., is expected to outpace all other regions in the coming decade. It has been robust in the past, rebounding quickly from the COVID-19 related contraction in 2020. By 2022, average per capita income levels exceeded those of 2019 by more than 3%. In several countries endowed with energy or commodity reserves, the rebound benefitted from the higher commodity price cycle. Given historic growth, the share of primary agriculture, fish and forestry is anticipated to continue its longer-term decline from a share of about 13% in the base period, to around 9% by 2032.

With strong economic growth, the average share of food in household expenditures in the region has fallen to below 17%. However, for the least developed countries this share is 30%¹ and consequently the rise in food prices over the past two years impacted considerably on the food security of many in these countries. This is evident in the rise in moderate to severe food insecurity in both Southern and Southeast Asia – both regions that have made rapid progress in reducing hunger in the past.

The region has increased its positive trade surplus with respect to agricultural goods, although resources are increasingly strained. It encompasses some 580 Mha of agricultural land, which amounts to just 0.2 ha/person, compared to the world average of around 0.6 ha/person. With population growth expected at 0.9% p.a., resource pressures will only intensify, which means productivity gains are of paramount importance. At 2% p.a., total factor productivity growth exceeded the global average of 1.4% p.a. in the last decade, which was a key factor that facilitated economic growth.² Given existing pressure on its resource base, sustainability will need to be at the core of future productivity gains.

Rising income and a growing, increasingly urbanised population imply strong demand growth for food products, but the evolution of consumer preferences remains somewhat uncertain, particularly with respect to animal sourced products. Urbanisation typically leads to rising consumption of higher value, more processed and convenience food products. However large parts of the region are either vegetarian (particularly in India), averse to pigmeat consumption, or lactose intolerant, suggesting that diets may evolve differently to many other parts of the world. At the same time, the heterogeneity across the region implies that demand preferences may evolve differently across it and in some countries, the demand for meat products is growing rapidly.

The region has a fairly small positive trade balance but within it are several important importers and exporters of a range of agricultural and food products. It typically exports almost a quarter of agriculture and fish production. Exports are dominated by plant-based products, particularly rice and vegetable oil, where the region has an 81% and 61% share in global exports respectively. The Southeast Asia region is considered a major player in many global value chains, such as fisheries, cassava, or those involving vegetable oils and their further processed products.³

The main challenges facing the region relate to its ability to sustainably increase productivity and innovation, particularly in the face of resource limitations, climate change risks and its growing population. Despite historic progress, the region still accounts for about one-third of the world's undernourished population. To continue improving food security, it will need to sustain income growth in a less supportive global environment, amid high inflation and ongoing affordability challenges. Thus, key policy considerations include the nature and extent of market intervention schemes and how they affect global market interactions.

Production

Sustainable productivity gains are paramount to offset resource constraints

The South and Southeast Asian region is the largest contributor to the total value of global output from agriculture and fisheries. Crop production accounts for the biggest share, at 52%, but livestock production is growing faster. By 2032, agricultural output from the region is expected to expand by 20%, among the fastest of all regions and over the projection period, it will account for the biggest share of global output

growth. The rate of agricultural production growth is almost double that of its population, suggesting that the value of agricultural output is also set to rise in per capita terms.

Crop production is expected to expand by 16%, resulting in a slight reduction in its share of total agriculture and fisheries output by 2032. This growth is achieved despite a mere 3.5% increase in land used for crop production over the ten-year period. In fact, growth in value generated per hectare of cropland accelerates over the projection period, to 1.2% p.a., reflecting a combination of intensification, crop mix changes and enhanced productivity. Increased fertiliser use will contribute to achieving yield gains, as application per hectare is expected to increase 8% by 2032. The response rates are such that the number of calories produced per unit fertiliser applied is also foreseen to rise.

The region is a major contributor to global output for a variety of food products, including rice, wheat, vegetable oil, pulses, and sugar. Apart from vegetable oil, where it remains stable, the regions share in global production is expected to rise for all these products.

Cereal production in the region is concentrated in India, Indonesia, Pakistan and LDC's such as Bangladesh, Cambodia, and Myanmar. India alone accounts for around 70% and 40% of the region's wheat and rice production respectively. Growth in cereal production is also concentrated in India, which accounts for three quarters of additional wheat and 46% of additional rice production over the coming decade. Growth in rice production is exclusively yield based, with a 15% increase in India and a 14% increase in Least Developed Asia by 2032, on an almost unchanged area.

Sugar production is dominated by India and Thailand, which account for almost 60% and 17% of regional production respectively. Of the projected growth of 17% in regional sugar production, just over half is expected to come from Thailand, where varietal improvements and improved extraction rates are expected to drive growth, with a mere 3% expansion in area.

The region accounts for 44% of vegetable oil produced globally, owing primarily to palm oil output in Malaysia and Indonesia. This sector has faced numerous disruptions in recent years, including adverse weather conditions, severe labour shortages due to restrictions in mobility of foreign workers through the pandemic and a temporary ban on exports from Indonesia to safeguard domestic supply. These are additional to pre-existing structural constraints, such as aging oil palm plantations and increasing focus on sustainability concerns. Limited expansion of the mature oil palm area underpins a significant slowdown in palm oil production growth in the coming decade, particularly in Indonesia. Most of the additional production is expected to come from yield gains, due to increased mechanisation and renewal of old plantations.

Livestock products currently account for 28% of the value of agriculture and fish output and growth of 2.6% p.a. will lead to an expansion of this share to 31% by 2032. India and Pakistan are the biggest contributors to this growth, which emanates mainly from dairy products. Milk production growth of 33% stems from a 23% expansion in cow numbers and an 8% improvement in milk yield per cow. Half of the expansion in the region's cow inventory is attributed to India.

Poultry accounts for just over half of total meat production and for nearly 60% of additional meat production by 2032. Growth in this sector is largely a result of increased feed intensity and breeding improvements. Pigmeat production in the region is limited and concentrated mainly in Viet Nam and Thailand. Following sharp reductions in 2019 and 2020 because of African Swine Fever (ASF), pigmeat production in Viet Nam has rebounded strongly and by 2022, exceeded 2018 levels. In the medium term, it is expected to expand by an annual average of 1.8%, to exceed 4.7 Mt by 2032. Bovine meat production is expected to rise by 1.6% p.a., with India and Pakistan contributing more than 60% of total production.

Fish production is an important contributor to agricultural output in the region at 20% of total value. However, growth of 15% by 2032 is the slowest amongst the three subsectors, reducing its contribution over time. Whilst growth in captured fisheries is limited, reflecting resource limitations, growth of 2.3% p.a.

in aquaculture implies that it will surpass captured fisheries by 2025, accounting for 54% of production by 2032.

Total direct GHG emissions from agriculture are set to rise by 11% by 2032 relative to 2020-22, driven predominantly by the livestock sector. While crop related emissions will rise by 4%, livestock related emissions, which reflect ruminant herd expansion, will increase at a rate marginally slower than the past decade at 1.2% p.a. By 2032, 29% of agriculture related GHG emissions globally will be attributable to the region.

Consumption

Strong demand growth but with distinct regional preferences

After years of progress in reducing food insecurity and undernourishment, these trends in the South and Southeast Asian region have reversed, reflecting reduced income due to the pandemic in 2020, as well as subsequent rising food prices. These factors combined to impact significantly on food affordability and, particularly in East Asia, the prevalence of undernourishment rose above 15% for the first time in a decade. In both Southern and Southeast Asia, the prevalence of undernourishment rose further in 2021, despite the strong rebound in economic growth. Notwithstanding expectations of further income growth, the persistence of high food prices continues to constrain large scale improvements in food security in the short term and, having increased by less than 0.5% in 2022, improvements in calorie availability is again expected to be small in 2023. In the medium term, as food prices start to normalise, the combination of accelerated income growth, modest declines in population growth rates and consistent, albeit slow urbanisation, will support the continued evolution of dietary patterns, driving demand for calorie and nutrient dense foods (Law, Fraser and Piracha, 2020^[2]; Kelly, 2016^[3]; Reardon et al., 2014^[4]). The type of products consumed are, however, also dictated by the region's somewhat unique preferences, with a significant share of the population being vegetarian. By 2032, average calorie availability for consumption is projected to increase by 265 kcal/person/day to approach 2900 kcal, just 5% below the world average, predominantly derived from growth in consumption of wheat, pulses, rice, dairy products, and vegetable oils.

Cereals still account for more than half of the calories available for consumption in the region. By 2032, the share of cereals in total calories consumed is expected to decline to 51%. Rice still accounts for the biggest share of total cereal consumption, but wheat consumption is also rising. At regional level, per capita consumption of rice and wheat products are expected to rise by 0.4% and 0.7% p.a. towards 2032, but trends diverge across countries. In India, rice and wheat consumption are expected to rise at a similar rate. Conversely, in Indonesia and Vietnam, rice consumption per capita is expected to decline, replaced by a concomitant rise in wheat products.

Average protein intake remains well below the global level, but with gains of 9g/person/day by 2032, the deficit is expected to be close to 14%. This is underpinned by growing consumption of dairy and meat products. Dairy product consumption is already well above the world level and growth of 20% in per capita terms by 2032 will see it rise to almost 25% above the average level of consumption globally. The bulk of growth is attributed to fresh dairy products, which are expected to grow considerably in both India and Pakistan. Meat consumption is also expected to grow, but from a low base to reach just 12 kg per capita by 2032, but this regional average masks significant differences within it. In India, meat consumption is very limited and only expected to reach 3.3 kg per capita per year, whereas in Viet Nam, it is expected to rise by 7 kg per capita, to reach 52 kg by 2032. At the regional level, more than half of the growth in meat consumption is attributed to poultry, but in Viet Nam, it's mainly driven by pigmeat.

As livestock and dairy production grow, the combination of herd expansion, rising feed use intensity and efficiency gains will support growth of 21% in feed use by 2032. This expansion is slower than that of meat

and dairy production, reflecting the impact of improved feed conversion ratios across the region. In Viet Nam, growth in feed use is much faster, at 34%, due to increasing feed use intensity in its pigmeat sector. Maize and protein meal constitute the bulk of animal feed in the region. The use of maize and protein meal in animal feed is expected to expand by 27% and 23% respectively by 2032, implying that the share of maize in total feed use will continue to rise.

The region is foreseen to increase its share of global ethanol use to 12% by 2032, from less than 8% in 2020-22. This represents a significant gain in its global market share, which rests largely on increasing mandates, particularly in India, which now aims to achieve its ambitious E20 blending target by 2025. However, given limitations in feedstock supply, it is assumed to only reach this level by 2032. In Thailand, which has also developed blending targets as part of its Alternative Energy Development Plan, blending rates are expected to reach 14% by 2032. Ethanol production will add to the demand for agricultural products in these countries, particularly sugarcane, which is a major feedstock.

The region currently contributes a larger share of 22% in global biodiesel use, and this is expected to grow to 24% by 2032, mainly due to increases in Indonesia where implementation of a 30% biodiesel blend aims to reduce dependency on imported fossil fuels. Combined with support measures under its biodiesel programme, this is expected to direct domestic palm oil supplies to the biodiesel market, underpinning growth of 33% in its biodiesel use by 2032. The additional stability that the biodiesel sector provides to palm oil prices could help to encourage investment into the sector, resulting in increased renewal of oil palm plantations.

Trade

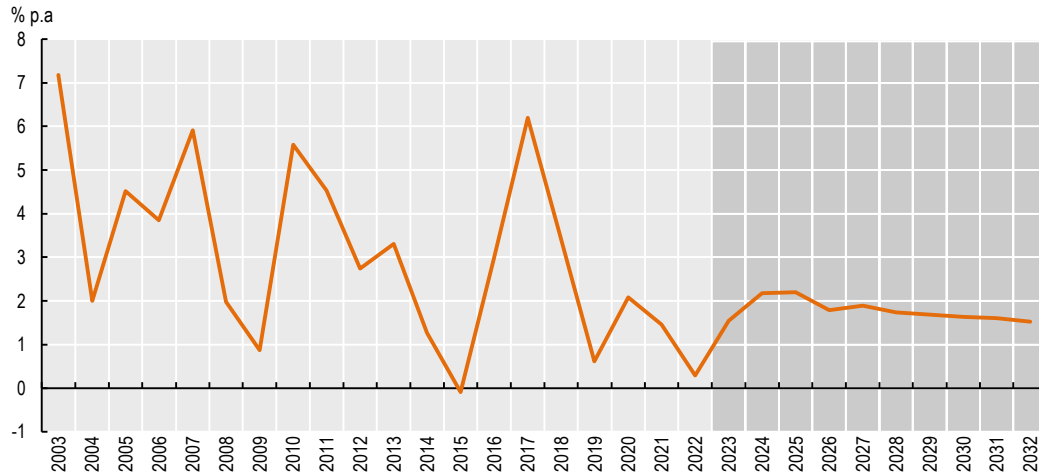
Export surplus sustained by India

The South and Southeast Asia region is a small net exporter of agricultural commodities, but this surplus is expected to decline and become a small deficit by 2032. The region's aggregate position masks significant differences within it. India is by far the biggest net exporter, and historically drove increasing surpluses, but over the outlook is also the primary driver of the decline in exports. Southeast Asia is also a net exporter, but its surplus is small and remains fairly consistent by 2032. By contrast, net imports from the LDC's and other developing countries of the region continue to rise. With the reduction in India's surplus, the region reaches a net importing position by 2029.

Total net exports from the region are expected to contract by 6.7% over the next ten years. Export products comprise mainly rice, roots and tubers, sugar, vegetable oil, and meat. Vegetable oil exports mainly accrue to Indonesia and Malaysia, the biggest palm oil exporters in the world. Growth in vegetable oil exports is limited, at just 0.3% p.a., resulting in a slight reduction in the region's share of global exports. Conversely, rapid export growth for rice and sugar implies that the region will increase its global market share to 86% and 28% respectively. Almost a third of the growth in rice exports are expected to come from Thailand, whose exports could rise by an average of 1.9% p.a., with further significant contributions also coming from Viet Nam and LDC's such as Myanmar and Cambodia. While the region is responsible for almost a quarter of global fish exports, this share is expected to decline, due to limited growth in fish exports amid rising domestic consumption. A significant share of fish trade will occur within the region.

The region is increasingly dependent on imports for several commodities, including wheat, maize, soybeans, protein meal. Import dependence for these commodities is expected to rise over the next ten years. While the region is expected to account for a growing share of global meat and dairy product imports, these comprise a small share of total consumption and self-sufficiency rates remain fairly stable by 2032. In several individual countries, the role of imports are more pronounced.

Figure 1. Slowing growth of agriculture and fish output in South and Southeast Asia 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 (2023). FAOSTAT Value of Agricultural Production Database, <http://www.fao.org/faostat/en/#data/QV>; OECD/FAO (2023) "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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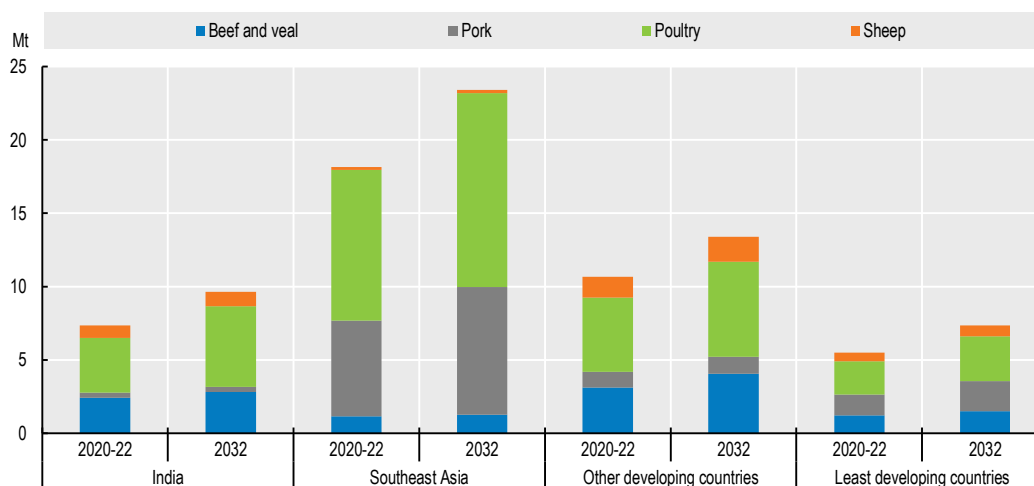
Figure 2. Change in area harvested and land use in South and Southeast Asia



Source: OECD/FAO (2023), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

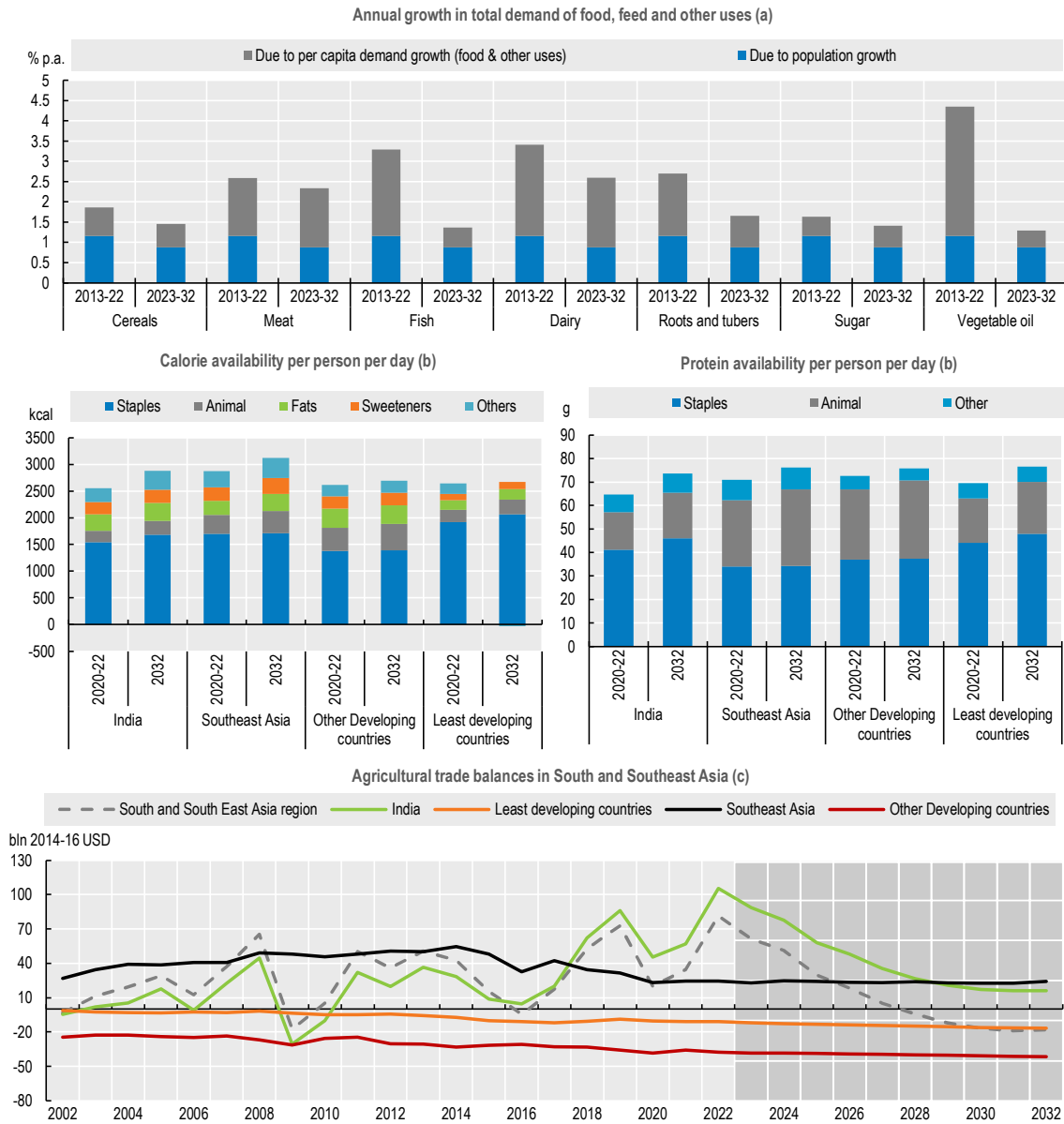
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Figure 3. Livestock production in South and Southeast Asia



Source: OECD/FAO (2023), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

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



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 (2023). FAOSTAT Value of Agricultural Production Database, <http://www.fao.org/faostat/en/#data/QV>; OECD/FAO (2023) "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

Table 1. Regional Indicators: South and Southeast Asia

	Average			%	Growth ²	
	2010-12	2020-22 (base)	2032		Base to 2032	2013-22
Macro assumptions						
Population ('000)	2 383 748	2 684 329	2 966 152	10.50	1.16	0.88
Per capita GDP ¹ (kUSD)	2.38	3.16	4.75	50.43	2.68	3.76
Production (bln 2014-16 USD)						
Net value of agricultural and fisheries ³	629.4	797.7	957.7	20.06	2.35	1.79
Net value of crop production ³	359.1	416.5	485.1	16.47	1.50	1.50
Net value of livestock production ³	154.9	223.8	292.1	30.51	3.68	2.58
Net value of fish production ³	115.4	157.3	180.5	14.70	2.89	1.36
Quantity produced (kt)						
Cereals	504 777	584 230	681 730	16.69	1.51	1.53
Pulses	26 682	30 403	43 320	42.49	1.59	2.73
Roots and tubers	38 474	52 751	64 465	22.21	2.91	1.93
Oilseeds ⁴	16 030	20 723	23 666	14.20	4.40	0.96
Meat	31 371	41 689	53 783	29.01	2.57	2.44
Dairy ⁵	29 084	43 441	57 657	32.73	3.44	2.58
Fish	40 966	55 368	63 491	14.67	2.77	1.36
Sugar	47 908	58 418	68 157	16.67	2.06	0.83
Vegetable oil	69 621	96 029	107 361	11.80	3.11	0.83
Biofuel production (mln L)						
Biodiesel	2992.03	13573.36	17767.39	30.90	13.43	1.84
Ethanol	4 122	9 241	18 040	95.22	8.08	3.41
Land use (kha)						
Total agricultural land use	557 782	576 986	587 154	1.76	0.39	0.15
Total land use for crop production ⁶	324 090	348 184	360 525	3.54	0.73	0.29
Total pasture land use ⁷	233 692	228 802	226 629	-0.95	-0.12	-0.06
GHG Emissions (Mt CO ₂ -eq)						
Total	1 564	1 705	1 890	10.85	1.07	0.90
Crop	661	689	713	3.59	0.55	0.49
Animal	891	1 002	1 163	16.07	1.42	1.16
Demand and food security						
Daily per capita caloric food consumption ⁸ (kcal)	2 419	2 541	2 788	9.73	0.49	0.98
Daily per capita protein food consumption ⁸ (g)	60.0	64.7	72.8	12.52	0.7	1.2
Per capita food consumption (kg/year)						
Staples ⁹	171.7	172.7	183.4	6.16	0.03	0.58
Meat	8.8	9.8	11.3	15.76	0.81	1.35
Dairy ⁵	13.1	16.5	19.9	20.32	1.86	1.69
Fish	14.4	17.1	18.4	7.56	1.54	0.65
Sugar	19.8	21.2	22.7	7.12	0.51	0.51
Vegetable oil	8.3	9.6	10.6	11.05	0.65	0.93
Trade (bln 2014-16 USD)						
Net trade ³	30	45	-18	-139.97
Value of exports ³	179	246	230	-6.70	4.00	-2.16
Value of imports ³	148	201	248	23.36	3.40	1.73
Self-sufficiency ratio ¹⁰						
Cereals	97.2	92.6	92.4	-0.19	-0.45	0.11
Meat	94.6	96.6	97.2	0.70	-0.03	0.10
Sugar	98.9	99.9	99.0	-0.87	0.63	-0.26
Vegetable oil	146.3	126.8	119.9	-5.43	-1.23	-0.46

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. 4. Oilseed 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/protein represent food consumption per capita per day, not intake. 9. Staples represent cereals, oilseeds, pulses, roots and tubers. 10. Self-sufficiency ratio calculated as $\text{Production} / (\text{Production} + \text{Imports} - \text{Exports}) * 100$.

Sources: FAO (2023). FAOSTAT Food Balance Sheets and trade indices databases, <http://www.fao.org/faostat/en/#data> ; OECD/FAO (2023), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

Notes

¹ 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*.

² Fuglie, K. (2015), "Accounting for growth in global agriculture", *Bio-based and Applied Economics*, Vol. 4 (3): 221-254 (updated to 2019, USDA).

³ See "Southeast Asia, Prospects and Challenges" in the *OECD-FAO Agricultural Outlook 2017-2026*.