Regional outlook: Developed and East 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 (2033) to the base period of 2021-23.

Agrifood systems globally have navigated multiple disruptions in recent years, including the COVID-19 pandemic, the impact of Russia's war against Ukraine, weather related supply fluctuations in several regions, surging energy prices, a cost-of-living crisis and spiralling inflation. The sharp rise in food prices impacted the cost and affordability of healthy diets as well as food security in several regions. Differences in resource endowments, economic structure, development and income levels mean that the magnitude of these impacts are not uniform in all 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 them. 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 concerned.

Background

China's declining population and weaker income growth to slow demand growth in the region

The Developed and East Asia region[1] comprises a diverse range of countries that includes the second and third largest economies in the world, in the People's Republic of China (hereafter "China") and Japan. In per capita terms, income levels range from USD 9 298 in China to USD 64 182 in Australia. The region is the second most populous of those covered in this chapter. It comprises 21% of the global population and most of its 1.6 billion people reside in China. It is the only region where the population is expected to decline over the coming decade, mainly on account of the decline in China and to a lesser extent Japan. Urbanisation has been rapid and estimates suggest that by 2033, 73% of people will reside in urban settings, up from just 55% in 2010. Such urbanisation occurs mainly in China, as an estimated 89% of the population in the rest of the region already resided in urban areas in 2023. China's nutrition patterns are stabilising, but continued urbanisation may still drive demand for more, processed and conveniently packaged food.

In the midst of various global disruptions, income growth in the region has shown remarkable resilience. On average, from 2020 to 2023, the region maintained growth of 3% in per capita GDP, which includes a contraction of less than 0.5% in 2020. While some countries like Japan, Australia, and New Zealand saw declines, China maintained a 2.0% growth. The rebound was such that by 2021 all countries except Japan had exceeded pre-2020 GDP levels in per capita terms. Subsequent global challenges such as Russia's war against Ukraine, increased energy prices and spiraling inflation with associated monetary tightening slowed momentum but growth remained positive and is expected to be sustained in 2024 at 4.7% in China and 3.3% in the Developed and East Asia region as a whole. In the medium term, per capita incomes are expected to rise by an average of 2.8% p.a., significantly slower than in the past. Inflation has slowed, but investment remains lacklustre, particularly in China, as many post-pandemic economies continue to localise and drive domestic manufacturing with reduced focus on foreign sourcing. Medium-term risks to growth include geo-economic fragmentation and further de-risking policies in other major economies – which include reorienting demand for goods towards domestic, as opposed to imported supply, and could slow growth further in China. This combination of weaker economic growth and a declining population suggests that China's role in driving global food demand may diminish compared to the past.

Economic growth has been accompanied by a reduction in the share of food in total household expenditure to 13%, but it ranges in the region from 17% in China to 8% in Australia. While global disruptions influenced food security in the region, domestic protection in several countries muted the shocks to some extent. Consumer food inflation in the region remained at the lower end of the global spectrum and as agricultural commodity prices continue to decline, affordability and associated food security continues to improve.

The share of primary agriculture and fish value-added in the region's total economy has declined to about 4% and is expected to fall further to 3% by 2033. The region's agricultural natural resource base mirrors the diversity of the countries it contains. Abundance in Australia and New Zealand stands in contrast to severe resource constraints in China, Korea, and Japan. Consequently, the region encompasses a range of important exporters and importers of agricultural and food products. China, Japan, and Korea rank amongst the largest net food commodity importers in the world. These countries' trade activities are sufficient to wield considerable influence on global agricultural markets and food value chains. Conversely, New Zealand and Australia are among the top ten global net exporters of food commodities, particularly for livestock and dairy products. Resource differentials and specialisation have fostered extensive and expanding interregional trade. Such opportunities may be accentuated in the short term by challenges in the global shipping industry such as conflicts around the Black Sea and Red Sea, which are affecting shipping through the Suez Canal, as well as water level constraints in the Panama Canal. Apart from Australia and New Zealand, interventionist government policies play a pivotal role in local markets. Given

the size and contribution to global trade of the countries in which they are implemented, changes to these domestic policies have the potential to exert significant influence on global markets.

The region is confronted with a myriad of diverse challenges, including water scarcity and vulnerability to climate change. Increasingly severe droughts are occurring more frequently, particularly in Australia, a situation that will persist and intensify due to climate change. In China, Korea and Japan, natural resource constraints drive intensive use of inputs and subsequent sustainability concerns. In the livestock sector, diseases such as African Swine Fever (ASF) and Avian Influenza (AI) pose the greatest threats, with significant impacts in recent years highlighting the need for improved measures to combat these risks and improve the resilience of food systems.

Despite these challenges, agricultural value addition per unit of land used for agricultural purposes continues to rise, with a projected improvement of 0.6% p.a. over the coming decade. In view of the resource constraints faced, continued investments in productivity growth, adaptation to climate and facilitation of the green transition in the region will be critical to achieve such growth sustainably.

Production

Sustainable productivity gains critical

The region is the largest global producer of agriculture and fish commodities, contributing almost 30% of the value of global output in the 2021-23 base period. By 2033, 5.8% growth in the net value of production is expected to result in a modest decline in its share of global production. China plays a pivotal role in the region's output, across crops, livestock and fish products. In the 2021-23 base period, it already accounted for almost 90% of total value and, as **Error! Reference source not found.** 1 shows, it is also the sole driver of growth over the *Outlook* period. While China is expected to add 6.8% to the value of its agricultural and fish production by 2033, production in the rest of the region is expected to contract by 1%, mainly due to reduced output in Japan and Korea which is not fully offset by growth in Australia and New Zealand. Aside from recovery in the livestock sector following African Swine Fever (ASF), growth in the region as a whole has slowed as domestic markets have matured and trade competition strengthened.

Crops comprise around half of the total value of agricultural and fish output, with a further 27% attributed to animal products and 22% to fish production. Growth is expected to be fastest in the fish sector, which is set to expand by almost 13% pushing its share in total output value to 24% by 2033, at the expense of crops, where growth is only projected at 3.4%.

More than 80% of total agricultural land is used for pasture and, in line with historic trends, the almost 7 Mha (less than 1%) decline in total agricultural land use over the coming decade is underpinned by reduced pasture while cropland could expand by 2%. Land use projections suggest that productivity gains will be central to unlocking further growth, but these are expected to slow. The value generated per hectare of cropland is already substantially higher in Developed and East Asia than in any other region. However, the combination of water scarcity and disproportionately high use of synthetic fertiliser has led to mounting environmental and food safety concerns. This results in only modest gains in fertiliser application per hectare by 2033 and slower yield gains relative to the past despite progress in improved seed varieties and production practices. The combination of crop mix and fertiliser use efficiency is expected to yield a 2% improvement in the energy produced per unit of fertiliser applied.

Most crop area is dedicated to cereals, resulting in notable contributions to global production of rice, maize and wheat. The region's strong processing sector also contributes a substantial share of global production of protein meal and vegetable oil but it draws heavily on imported oilseeds. China contributes almost all of the maize, more than 90% of the rice and approximately 80% of the wheat produced in the region. Outside of China, wheat production is primarily from Australia and rice production from Japan. Given that rice production in Japan and wheat production in Australia are also expected to decline by 8% and 4%

respectively, maize will be the major driver of cereal production growth from the Developed and East Asia region.

Livestock production constitutes 27% of the total value of agricultural and fish production and growth of almost 5% is sufficient to sustain this share by 2033. Growth emanates from a combination of intensification and productivity gains, reflecting the contracting pasture land base in Australia, China, New Zealand and Japan. More than half of meat production growth is expected to be in the pig sector, with a further 20% and 18% respectively attributable to poultry and beef.

Livestock production trends in the region mirror those of China, which accounts for more than 80% of livestock production value. Pigs and poultry are the largest subsectors, constituting 60% and 26% respectively of China's meat production. By 2033, China's meat production is expected to expand by 7% and almost two-thirds of this expansion could be pigmeat. Following the devastating impact of the 2018 African Swine Fever (ASF) outbreak, China's pig herd has largely been rebuilt and in 2022, its pig inventory surpassed 2017 levels. In rebuilding, the sector also restructured with many smaller producers replaced by large, commercial production units that prioritise biosecurity and use top class genetics, yielding substantial productivity gains. By 2033, pig production in China is expected to approach 60 Mt, while poultry and beef production could exceed 25 Mt and 8 Mt respectively.

Despite its much smaller share in total meat production from the Developed and East Asian region, Australia's resource base is more conducive to cattle which account for almost half of its total meat production. In turn, Australia contributes 20% of the bovine meat produced in the region. Growth of 15% by 2033 implies that it will account for 27% of the expansion in regional bovine production.

The Developed and East Asian region contributes almost 40% of global fish production and more than 90% is sourced from China. With China at the forefront, the region's growth in fish production is mainly driven by aquaculture, which is projected to make up 83% of China's total fish production by 2033. However, growth is expected to slow as the regulatory focus shifts increasingly towards sustainability.

Total agricultural greenhouse gas (GHG) emissions in the region are projected to increase by 2.3% by 2033. This comes predominantly from crops where emissions could rise by 5.3%, compared to a decline of less than 0.1% from animal production. Despite these increases, the decline in GHG emissions per unit value produced in agriculture and fisheries is anticipated to persist, albeit at a slower pace. This year's *Outlook* features a scenario that simulates the impact of halving food losses along supply chains and food waste at the retail and consumer levels by 2030 (SDG 12.3). For the region, the scenario projects that total agricultural emissions in the region could be reduced by 5.3% relative to the baseline, while calorie intake improves. This implies that by 2030, agricultural GHG emissions could reduce by 3.9% from the average level in the 2021-23 base period.

Consumption

Greater nutritional stability in China driving regional demand preferences

The East Asian region has significantly enhanced food security and experienced a smaller impact from recent disruptions compared to other regions. While the COVID-19 pandemic did affect consumer behavior and agricultural supply chains, China's robust GDP performance and income support measures in developed countries helped alleviate major food security concerns. Moderate to severe food insecurity increased slightly in 2020 but recovered promptly and has since stabilised well below pre-pandemic levels despite slower income growth. Similarly, total calorie availability increased consistently and by 2033 is expected to reach 3 300 kcal/person/day. This is the third highest amongst all regions covered in this chapter, trailing only North America and Europe, which reflects generally high per capita income levels in most countries. However, when accounting for estimated household waste, total calorie intake is anticipated to be below 2 850 kcal/person/day. Combined food waste and losses in the region are

estimated to be 9% below the global average. Such waste is most prevalent in vegetal products, particularly cereals which account for more than half, and perishables such as fresh fruit and vegetables which are widely consumed in the region (Figure 2). In the *Outlook* scenario where food waste and losses can be halved by 2030, as envisioned in SDG targets, calorie intake in the region could be increased by 2.6% relative to the baseline and the number of undernourished people in the region could decline by 14%, while at the same time, reducing GHG emissions. This implies that by 2030, calorie intake could increase by 6.2% relative to the average level in the 2021-23 base period.

As the only region with a projected decline in population by 2033, Developed and East Asia also exhibits some distinctive age distribution trends that may influence demand prospects. In Japan and Korea, age dependency ratios are already high and set to increase further (UN DESA, 2024[1]). It is generally assumed that aging populations will dampen overall food consumption growth rates. In China, rising age dependency is combined with rapid urbanisation, which is expected to drive growing consumption of convenience foods as well as sugars and fats, albeit much slower than in the past. Sugar consumption is expected to grow fastest among the various food groups. Vegetable oil consumption growth is slower, absolute levels are already high. By 2033, it is expected to exceed 26 kg per capita, exceeding the global average by 65%.

Given generally high income, high levels of development, and maturity in most countries of the region, shifts in dietary composition are limited. Even in China, where such shifts have been rapid in the past, weaker income growth is expected to slow the rate of change substantially. By 2033, per capita consumption of sugar products is expected to rise by 17%, whereas fish, dairy and meat consumption are set to expand by 13%, 12% and 7% respectively. By contrast, staple consumption growth is expected at less than 0.5%.

Protein availability is also set to increase, with the greatest gain in China where it is already higher than any other country in the region and almost 40% above the global average level. Almost 42% of this 10g/person/year gain by 2033 is attributed to vegetal sources, with a further 31% to meat and 17% to fish. Smaller gains are also evident in Korea (2.8g/person/year) and Australia (2.9g/person/year), whereas a decline is expected in Japan and relative stability in New Zealand.

Led by China, the region accounts for more than a quarter of global animal feed use. By 2033, feed use is expected to rise by 10%, reflecting a combination of meat production growth, particularly in China, increased intensity of feeding operations as production systems modernise and improved feed use efficiency in intensive pork and poultry operations. Large scale, fully commercial production systems that are increasingly prevalent in China use feed more intensively than smaller, more traditional producers, but the combination of controlled environment and improved genetics also yields much improved feed conversion. Despite these gains, the effects of rising feed use intensity still result in feed use outpacing meat production growth in China over the *Outlook* period but this gap is expected to narrow substantially compared to the past decade.

Maize and protein meal remain the core ingredients in most pre-mixed feed rations and account for almost 70% of total feed raw material use between them. Their use in animal feed across the region is expected to grow by 12% and 14% respectively over the coming decade.

The region accounts for roughly 10% of global ethanol use and 80% of this is attributed to China. With limited incentive to increase ethanol production while feed demand is rising and stocks reduced, China's blend rate is expected to rise to 2.5% by 2033, from only 1.6% in the base period, despite its ambitious 10% target. This is sufficient to support growth of 10% in ethanol use by 2033 from the 2021-23 base period which sustains China's share in global use at 7.4%.

Trade

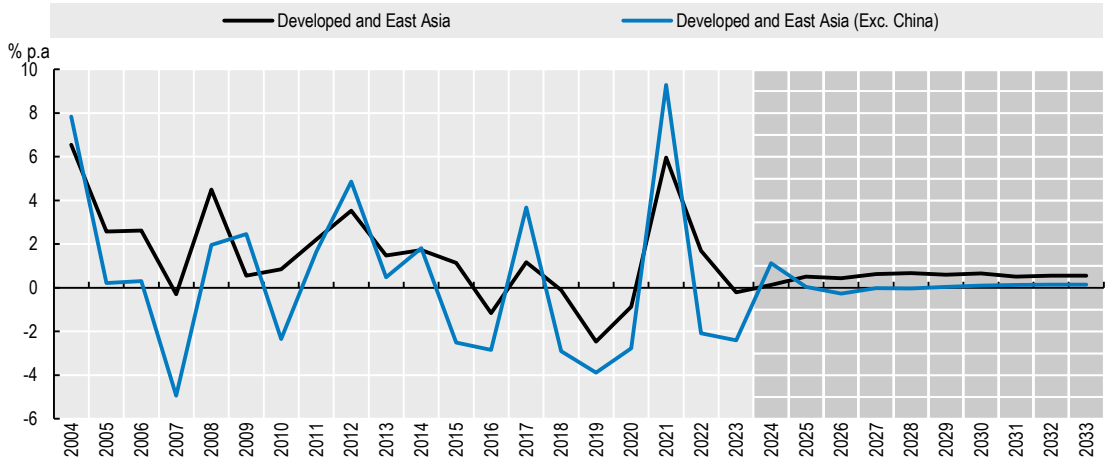
Diverse group of net importers and exporters

The Developed and East Asia region is the second largest net importing region amongst those covered in this chapter and by 2033 it is expected to be the largest. While the deficit continues to widen, it does so at a substantially slower rate than in the past. Its net deficit position is reflective of its major importers in East Asia, led by China, which masks net exports from the Oceanic region. The major products imported into East Asia include soybeans, maize, wheat, barley, sorghum, meats and vegetable oil. Conversely, the Oceanic region is a net exporter of wheat, barley, canola, dairy products, meat and sugar.

The net value of imports into the region is expected to rise 11% by 2033 relative to the 2021-23 base period. Approximately 85% of the additional imports accrue to China, with the major products being maize and soybeans for use in its growing animal feed industry. As meat production in China continues to expand and intensify, maize and soybean imports are expected to rise by 1.4% and 0.8% p.a. respectively over the *Outlook* period. These will likely be sourced primarily from Brazil and the United States and imply that by 2033, China will account for 61% and 13% of global soybean and maize imports respectively. At least in the short term, exports of US soybeans to China may be affected by the reductions in traffic through the Panama Canal, due to low water levels amid ongoing drought. Expanded meat production also results in weaker demand for imports, which are set to decline by 17% over the ten-year period to 2033. These trends reflect a combination of China's resource base, and indications of a drive to increase self-sufficiency in meat products, but also its recovery post-ASF, which accelerated intensification in its pork industry and initiated investment in additional poultry production. Consequently, pork and poultry account for the biggest share of declining meat imports, with bovine imports still expected to rise by 1.3% p.a. over the coming decade. A substantial share of this demand will likely be met by expanding exports from Australia, which is favorably located and already one of the top five suppliers of bovine meat into China.

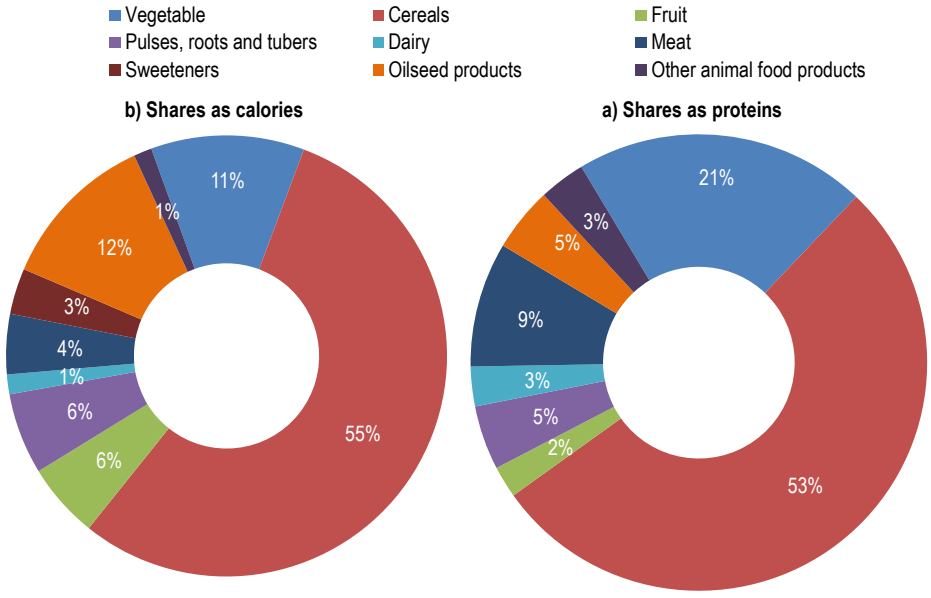
Net exports from the region are expected to rise by 13% over the *Outlook* period, with two thirds attributed to China and almost a third to the combination of Australia and New Zealand. China's export growth is mainly driven by fish, whereas growth from Australia and New Zealand is derived from meat, sugar, pulses and dairy. While the Oceanic region is a notable global exporter of several other products, many of these are expected to contract over the coming decade. Australia's wheat exports are expected to decline by 9%, due to declining production, but it will still retain a 10% share in global exports and its importance as a supplier should not be understated amid Russia's war against Ukraine. New Zealand accounts for 30% of global sheep meat exports and 23% of global dairy exports, despite its small land area. With pastureland increasingly constrained and set to decline further over the *Outlook* period, dairy exports are expected to expand by a modest 6%, while sheep meat exports could contract marginally. Subsequently, New Zealand's share in global exports is expected to decline for both products.

Figure 1. China a major driver of growth in agriculture and fish output in the Developed and East 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 (2024). FAOSTAT Value of Agricultural Production Database, http://www.fao.org/faostat/en/#data/QV; OECD/FAO (2024) "OECD-FAO Agricultural *Outlook*", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-outl-data-en.

Figure 2. Distribution of food waste and losses in Developed and East Asia in terms of calories and proteins, 2021-2023



Note: Other animal food products include egg and fish.
Source: OECD/FAO (2024), "OECD-FAO Agricultural *Outlook*", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-outl-data-en.

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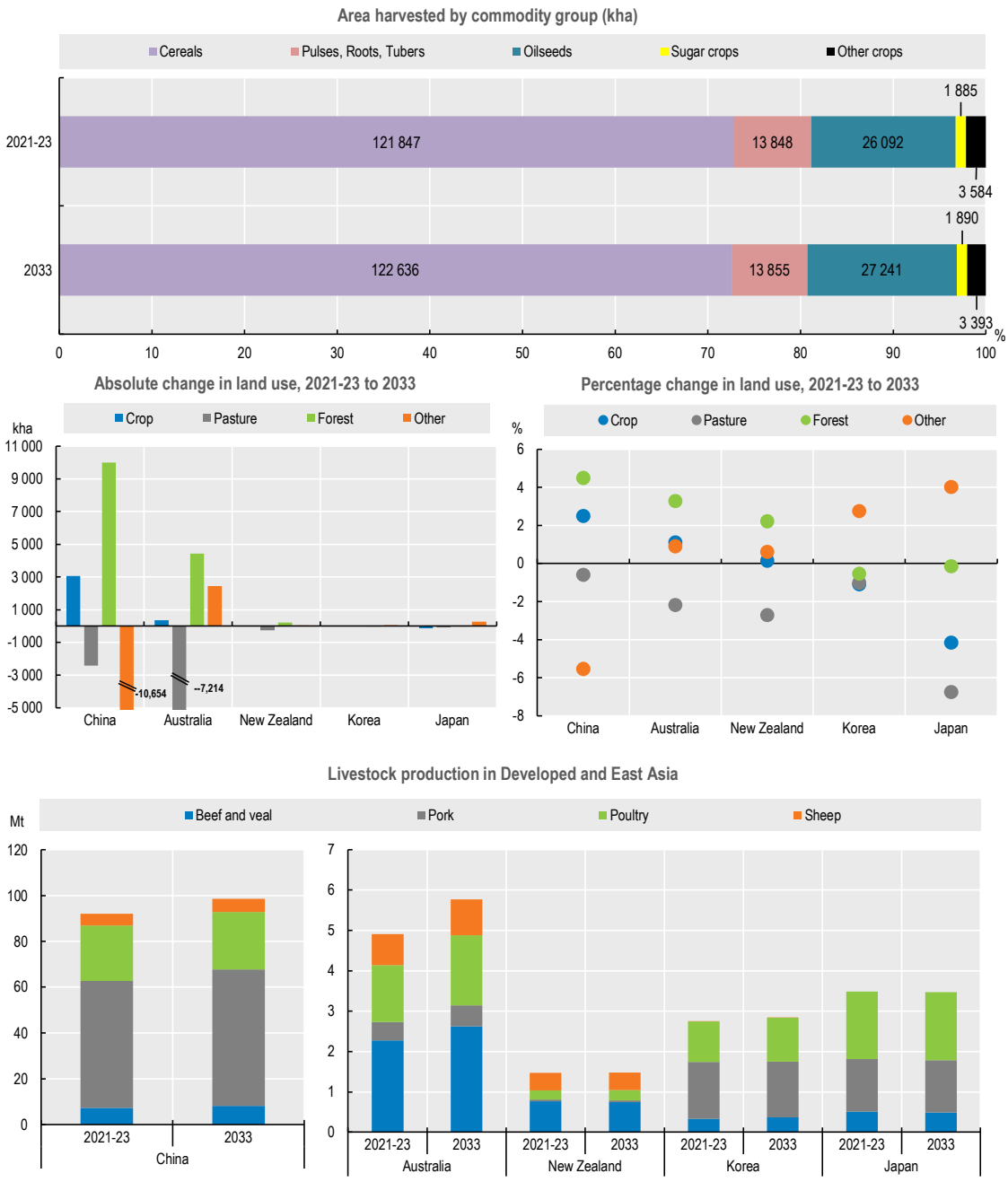
Figure 3. Land use change and livestock production in Developed and East Asia



Source: OECD/FAO (2024), "OECD-FAO Agricultural *Outlook*", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-outl-data-en.

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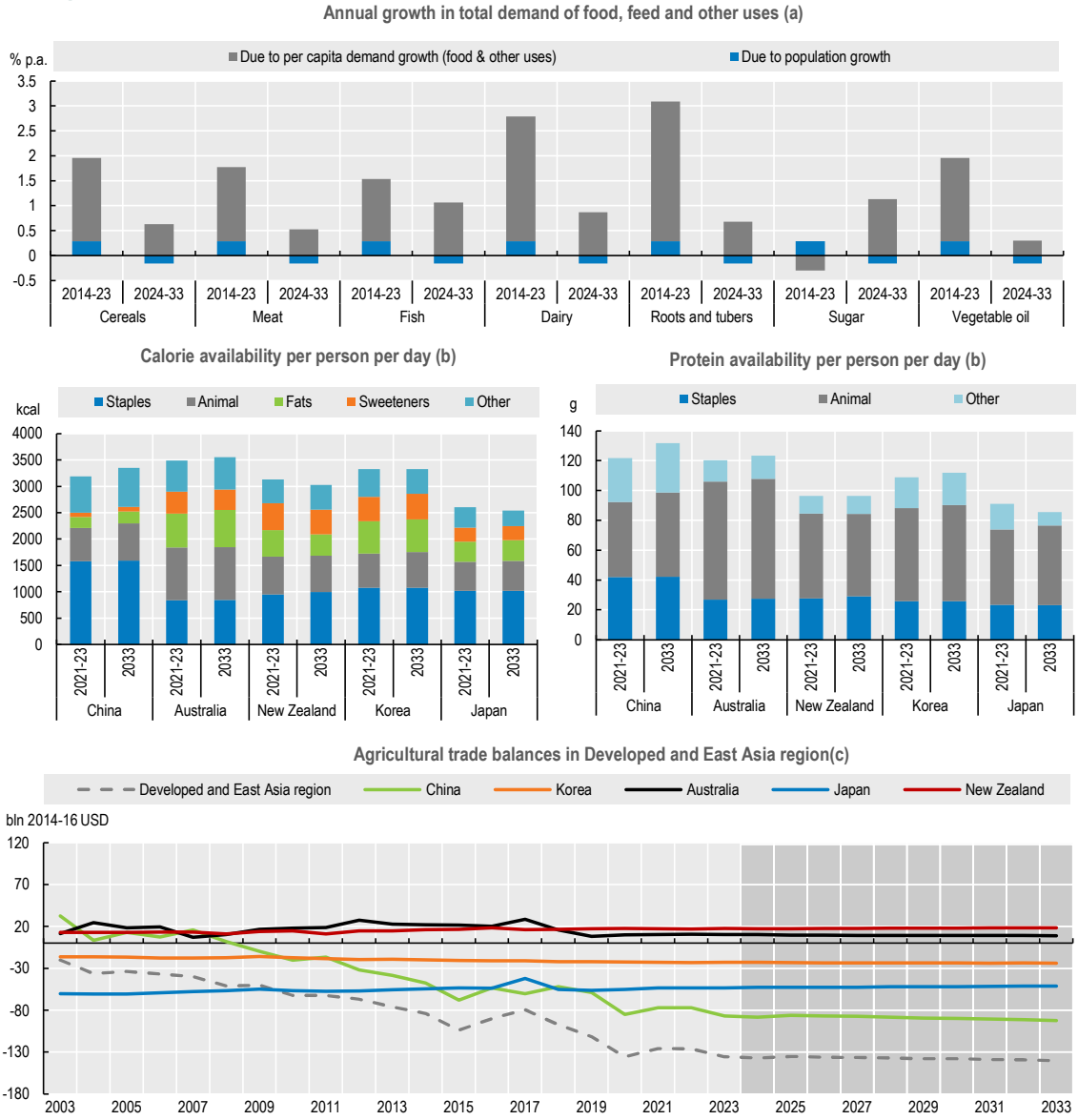
Figure 4. Demand for key commodities, food availability and agricultural trade balances in Developed and East Asia



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 and tubers. c) Include processed products, fisheries (not covered in the FAOSTAT trade index) based on outlook data.
Source: FAO (2024). FAOSTAT Value of Agricultural Production Database, http://www.fao.org/faostat/en/#data/QV; OECD/FAO (2024) "OECD-FAO Agricultural *Outlook*", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-outl-data-en.

StatLink 2 https://stat.link/hl0ro3

Table 1. Regional Indicators: Developed and East Asia

	Average			%	Growth[2]	
	2011-13	2021-23 (base)	2033	Base to 2033	2014-23	2024-33
Macro assumptions						
Population ('000)	1 571 213	1 632 941	1 608 552	-1.49	0.29	-0.16
Per capita GDP[1] (kUSD)	10.03	14.02	19.20	36.98	3.22	2.77
Production (USD bln 2014-16)						
Net value of agricultural and fisheries[3]	818.3	889.6	941.1	5.79	0.47	0.58
Net value of crop production[3]	415.1	446.9	461.9	3.37	0.59	0.42
Net value of livestock production[3]	232.3	242.9	254.3	4.69	-0.05	0.31
Net value of fish production[3]	170.8	199.8	224.8	12.53	0.82	1.23
Quantity produced (kt)						
Cereals	554 321	637 787	668 797	4.86	0.91	0.56
Pulses	7 384	9 156	10 194	11.34	3.08	0.75
Roots and tubers	40 843	54 000	57 548	6.57	3.24	0.26
Oilseeds[4]	44 402	63 507	69 553	9.52	4.77	0.64
Meat	92 111	104 731	112 102	7.04	0.85	0.44
Dairy[5]	9 195	10 551	11 482	8.83	1.36	0.62
Fish	60 758	71 734	80 778	12.61	0.97	1.23
Sugar	17 622	14 318	15 597	8.93	-0.99	0.97
Vegetable oil	22 832	31 570	35 903	13.73	2.18	0.79
Biofuel production (mln L)						
Biodiesel	1 462	3 268	3 452	5.63	9.90	-1.03
Ethanol	9 198	10 756	11 937	10.99	0.68	0.98
Land use (kha)						
Total agricultural land use	931 796	906 817	900 103	-0.74	0.01	-0.07
Total land use for crop production[6]	159 845	160 118	163 380	2.04	0.03	0.18
Total pasture land use[7]	771 952	746 698	736 723	-1.34	0.00	-0.12
GHG emissions (Mt CO2-eq)						
Total	961	834	853	2.31	-1.55	0.26
Crop	458	355	374	5.28	-2.77	0.50
Animal	487	464	464	-0.05	-0.53	0.06
Demand and food security						
Daily per capita caloric food consumption[8] (kcal)	2 909	3 151	3 296	4.59	0.79	0.28
Daily per capita protein food consumption[8] (g)	105.0	118.8	127.5	7.35	1.38	0.46
Per capita food consumption (kg/year)						
Staples[9]	156.2	162.0	162.9	0.52	0.58	0.01
Meat	40.6	45.8	49.0	7.04	1.73	0.54
Dairy[5]	4.4	5.2	5.6	8.99	2.85	0.83
Fish	37.0	43.2	48.2	11.48	1.37	1.20
Sugar	11.5	11.5	12.9	12.32	-0.06	1.14
Vegetable oil	20.5	24.3	26.1	7.24	1.35	0.32
Trade (bln USD 2014-16)						
Net trade[3]	- 68	- 129	- 140	8.61	..	..
Value of exports[3]	112	122	138	12.84	0.16	1.33
Value of imports[3]	180	251	278	10.66	2.71	0.82
Self-sufficiency ratio (calorie basis)[10]	86	82	81	-0.77	-0.36	0.03

Notes: 1 Constant 2010 USD. 2. Least square growth rates (see glossary). 3. Follows FAOSTAT methodology, based on commodities in the Aglink-Cosimo model. 4. Oilseeds represent soybeans and other oilseeds. 5.Milk solid equivalent units. 6. Area accounts for multiple harvests of arable crops. 7. Land for grazing. 8. Food availability, not intake. 9. Cereals, oilseeds, pulses, roots and tubers. 10. Production / (Production + Imports - Exports)*100.

Sources: FAO (2024). FAOSTAT Food Balance Sheets and trade indices databases, http://www.fao.org/faostat/en/#data; OECD/FAO (2024), "OECD-FAO Agricultural *Outlook*", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-outl-data-en.

Notes

[1] Australia, China, Japan, Korea, New Zealand.