OECD–FAO Agricultural Outlook 2023–2032

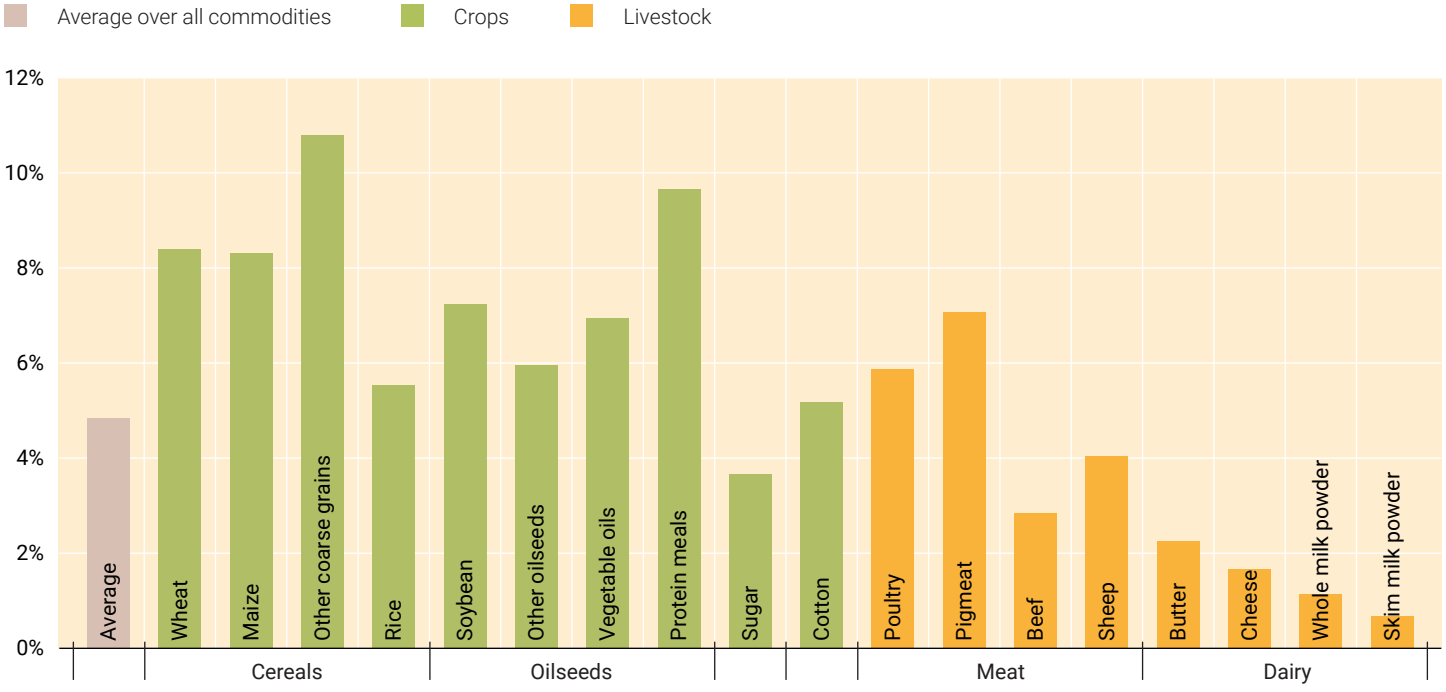
Executive summary

The *OECD-FAO Agricultural Outlook 2023–2032* provides an assessment of the ten-year prospects for agricultural commodity and fish markets at national, regional, and global levels in a context of continued economic risks, uncertainty and high energy prices. The report is a collaborative effort between the OECD and FAO, prepared with inputs from Member countries and international commodity organisations.

Increases in fertilser costs directly affect crop prices.

The surge in agricultural input prices experienced over the last two years has raised concerns about global food security. This year's *Outlook* demonstrates that rising fertiliser costs can lead to higher food prices. The OECD-FAO Aglink-Cosimo modelling of production yields allows at present to separate the costs of the main mineral fertilisers used from those of other production inputs. Based on this new feature, a scenario analysis estimates that for each 1 percent increase in fertiliser prices, agricultural commodity prices would increase by 0.2 percent. The increase would be more significant for crops that use fertilisers as direct inputs than for livestock products that use them indirectly, with the exception of poultry and pig meat production which relies heavily on compound feed. Although this scenario focuses on the link between fertilisers and agricultural commodities, fluctuations in energy, seeds, labour or machinery prices would also affect food prices.

Figure 1. Change in agricultural commodity prices due to 25 percent increase in fertiliser prices



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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Analytical methods used to measure food loss and waste included in Outlook.

This year's *Outlook* provides improved estimates for food consumption by incorporating analytical methods to calculate food loss and waste. They contribute to the measurement efforts needed to devise evidence-based policies in support of the SDG 12.3 target to halve per capita food waste at the retail and consumer levels, and to reduce food losses within production and supply chains by 2030.

Macro projections confirm previously anticipated agricultural market trends.

Baseline projections in this *Outlook* for the coming decade take into account the IMF World Economic *Outlook* October 2022 downgrade in expected average economic growth for the coming decade, from 2.7 percent to 2.6 percent, as well as the decrease in the People's Republic of China (hereafter "China") population as of 2022. Similar to last year's assumptions, the current baseline projections assume that energy prices will decrease in 2023 before resuming a slow increase to 2032. The projections incorporate short-term assessments of the impact of the Russian Federation's (hereafter "Russia") war against Ukraine (hereinafter referred to as "war"), but no evaluation of medium term developments in the region can be provided at this time. Against this backdrop, the global projections of medium-term trends for supply, demand, trade and prices for main agricultural commodities and fish only marginally deviate from last year's projections.

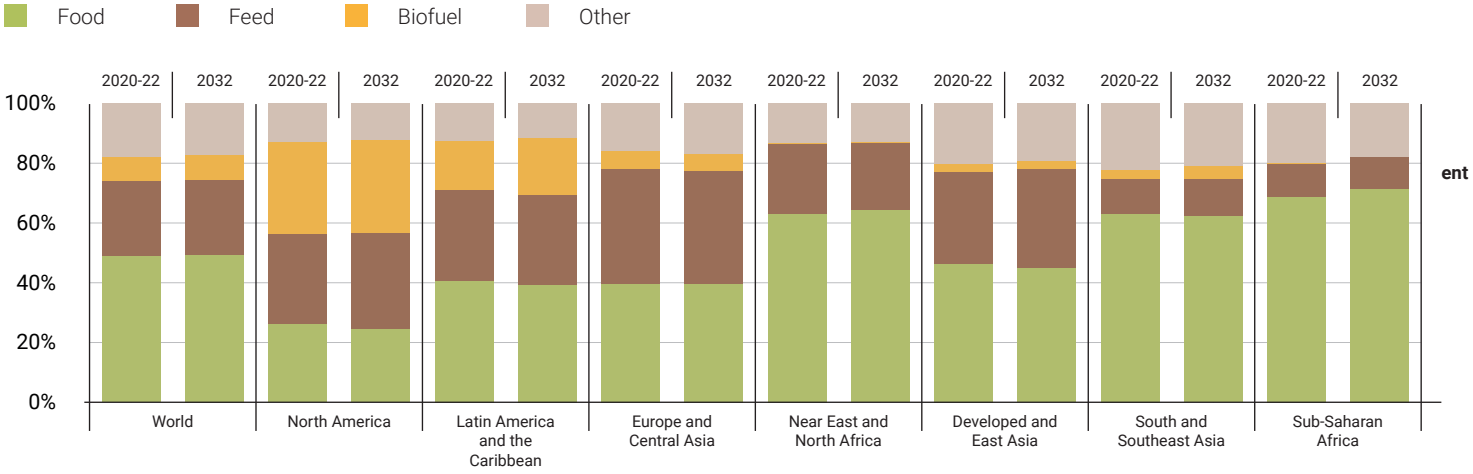
Continued uncertainties to grains and fertiliser accessibility.

Nevertheless, the war is continuing to add uncertainties to food, energy and input prices. At the onset of the war, reduced availability of grains and fertilisers were a major concern for global markets. A year later, supply issues have improved thanks to the enforcement and subsequent extensions of the Black Sea Grain Initiative.

Demand growth for feed and food originates mainly in low- and middle-income countries.

In this context, global food consumption in calories – the main use of agricultural commodities – is projected to increase by 1.3 percent per year over the next decade, a slower pace than the previous decade due to the foreseen slowdown in population and per capita income growth. The second most important use of agricultural commodities is as feed for livestock and increasingly aquaculture. The *Outlook* highlights the rapid expansion and intensification that is expected in the production of livestock in low- and middle-income countries, resulting in a fast-growing demand for feed over the next decade. In contrast, in high-income countries and some upper-middle income countries, including China, lower growth in livestock production and improved feeding efficiency should result in slower growth in feed demand compared to the last decade.

Figure 2. Use of agricultural commodities by type and region



Note: The shares are calculated from the data in calories equivalent.

Source: FAO (2023). FAOSTAT Food Balances Database, http://www.fao.org/faostat/en/#data/FBS; OECD/FAO (2023), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), http://dx.doi.org/10.1787/agr-outl-data-en.

Biofuel share in total crop use slightly declining.

Demand for first generation biofuel feedstocks is expected to grow slowly over the next ten years. Most additional biofuel use of agricultural crops is expected to occur in India and Indonesia, driven by increasing transport fuel use and higher biofuel blending requirements. In other key markets, e.g. European Union, the demand for first generation biofuel feedstocks is expected to decrease due to a decline in transport fuel use and a shift to other feedstocks. Overall, the biofuel share of global sugarcane and vegetable oil use is projected to increase, while the biofuel share of maize is expected to decline.

Most agricultural production growth expected to occur in low- and middle-income countries.

The situation with respect to investments in technology, infrastructure and training remains fundamentally unchanged from last year's projections; as such, growth in total global agricultural production should remain at 1.1 percent per year. Most of this growth will occur in middle- and low-income countries. The *Outlook* assumes wider access to inputs, although if increases in energy and agricultural input prices (e.g. fertilisers) are to resume, this would raise production costs that could lead to food price inflation and greater food insecurity.

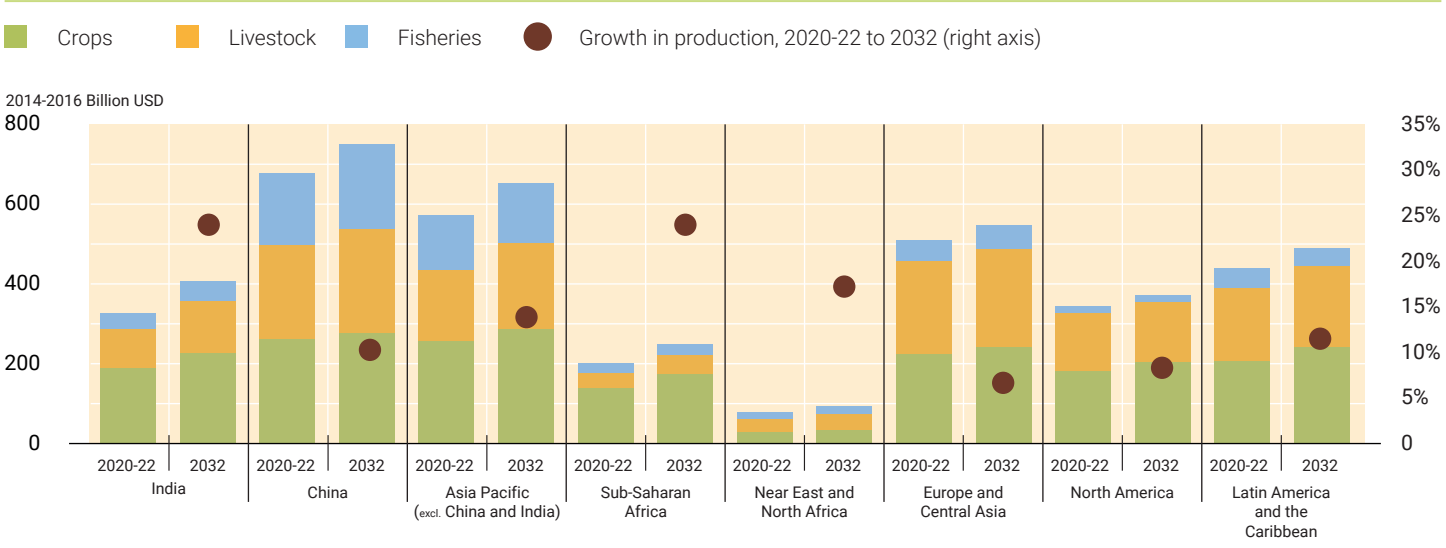
Global crop production trends determined by increased productivity.

Global crop production growth will mainly be driven by increased productivity rather than increased land use. Therefore, investments in raising yields and improved farm management are essential. Assuming continued progress in plant breeding and a transition to more intensive production systems, yield improvements are projected to account for 79 percent of global crop production growth, cropland expansion for 15 percent, and higher cropping intensity for 6 percent over the *Outlook* period. Yields for crops such as oil palm and rapeseed have not increased however in major producing countries over the last ten years; more investments are needed to improve the productivity of these crops.

Feed efficiency and herd management improvements increase livestock and fish production.

Similar to trends in crop production, a large share of the projected 1.3 percent annual growth in livestock and fish production will result from improvements in per animal productivity resulting from more efficient herd management and higher feed intensity. Poultry is projected to account for about half of the global growth in meat production due to sustained profitability and favourable meat-to-feed price ratios. Pig meat production is still recovering from the outbreak of African Swine Fever (ASF) in East Asia and is projected to resume a pre-crisis growth path in a few years. Global milk production is projected to grow strongly in the coming decade, with half of this growth occurring in India and Pakistan. Despite its limited growth prospects, aquaculture overtook the global production volume of capture fisheries in 2022.

Figure 3. Trends in global agricultural production



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

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.

Faster declining carbon intensity of agricultural production, but global efforts needed to reduce agricultural greenhouse gas emissions.

The *Outlook* highlights the significance of global agricultural greenhouse gas (GHG) emissions, which are projected to increase by 7.6 percent in the next decade. At the global level, growth in GHG emissions will be lower than in the previous decade, and lower than the projected 12.8 percent growth in agricultural output, indicating a faster decline in the carbon intensity of agricultural production. Nevertheless, pioneering efforts need to be widely adopted to ensure that agriculture contributes effectively to climate change mitigation, as set out in the Paris Agreement, especially for livestock which is estimated to account for 80 percent of the increase in agricultural GHG emissions. At the same time, agricultural production systems face the challenge to adapt to a changing climate, including more frequent and intense extreme weather events. Mitigation and adaption solutions include large-scale and inclusive adoption of climate-smart and carbon-neutral production processes and technologies.

Agricultural trade resilient despite COVID-19 and conflict disruptions.

Trade in primary agricultural commodities and processed products is projected to grow in line with production over the next decade. The COVID-19 pandemic led to worldwide disruptions in commerce, but trade in the agricultural commodities has proven to be resilient. Russia's war against Ukraine has been impacting agricultural commodity trade, especially Ukrainian exports, and prices, but the Black Sea Grain Initiative, agreed in July 2022 and the European Union – Ukraine Solidarity Lanes helped to reestablish trade to support global food security. The baseline projections underscore the critical importance of a well-functioning, transparent, and rules-based multilateral trading system. Export bans only aggravate the adverse effect of price uncertainties and increase prices. This results not only in a negative impact on global food security (and livelihoods) in the short term, but also undermines supply capacity over the long term.

The medium-term projections in the *Outlook* are based on the assumption that current policies will remain in place and that consumer preferences and production technology will evolve on-trend. These assumptions are subject to uncertainties, with respect to environmental, social, geopolitical and economic developments, e. g. a prolonged period of high inflation or a global recession would alter the projections. The scenario analysis presented in this report provides indications as to the magnitude of such impacts.

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