



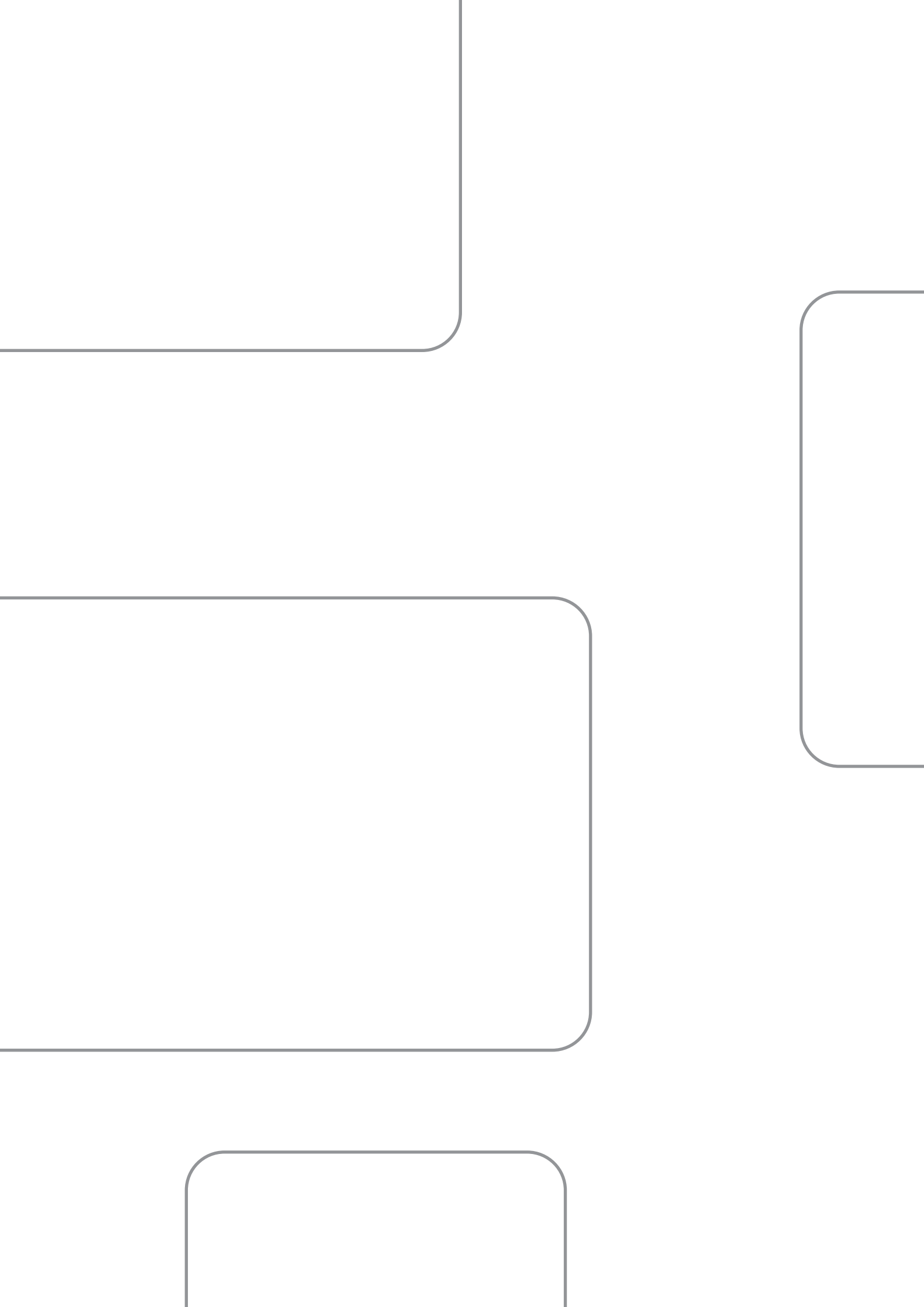
**Report on the way forward to  
supplying adequate and nutritious food  
for all while contributing to poverty  
reduction and rural development**

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A report prepared for the G20 Task Force for the Establishment  
of a Global Alliance against Hunger and Poverty



Food and Agriculture Organization  
of the United Nations





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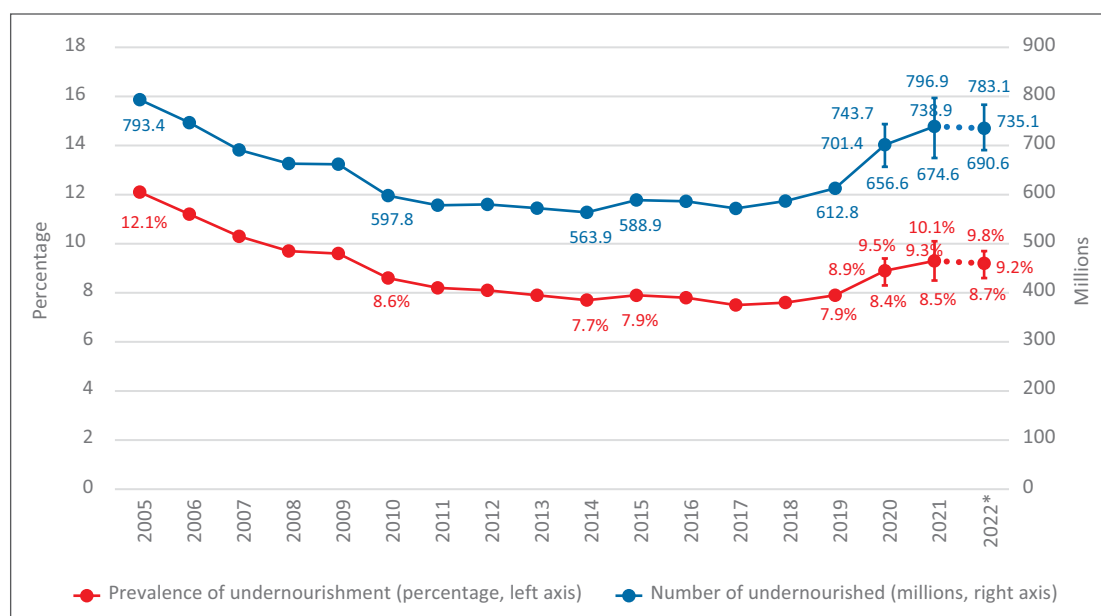
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## 1. INTRODUCTION

After a decade of steady decline, the number of people suffering from chronic hunger in the world has slowly increased for several years in a row (Figure 1), underscoring the immense challenge of ending hunger by 2030.

Already prior to 2020, episodes of elevated trade tensions and tightening financial conditions clouded global economic prospects. Evidence showed that hunger had been on the rise for many of the countries where economic growth slowed down.<sup>1</sup>

**FIGURE 1. Global hunger has been on the rise since 2017**



Note: Projections based on nowcasts for 2022 are illustrated by dotted lines. Bars show lower and upper bounds of the estimated range.  
Source: FAO, IFAD, UNICEF, WFP & WHO. 2023. *The State of Food Security and Nutrition in the World 2023. Urbanization, agrifood systems transformation and healthy diets across the rural-urban continuum*. Rome, FAO. <https://doi.org/10.4060/cc3017en>.

The outbreak of the COVID-19 pandemic in early 2020 contributed to the further deterioration of the global food security situation. As the world was beginning to recover from the COVID-19 pandemic, the impacts of the war in Ukraine rattled already volatile food and energy markets, magnifying the effects of other factors and posing new challenges for global food security.

The extent of the impact of economic events upon people's access to food depends on poverty and inequality levels, but also on access to basic services and assets. Where inequality is greater, economic shocks have a disproportionate effect on food security and nutrition for lower-income populations. Inequality increases the likelihood of experiencing moderate or severe food insecurity.<sup>2</sup> Income and wealth inequalities are also closely associated with undernutrition, while more complex inequality patterns are associated with obesity.



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The risk that the high level in hunger, food insecurity and malnutrition will continue is particularly high today, considering the modest level of global economic growth forecast for 2024 and persisting conflicts, crisis, and climate variability and extremes.<sup>3</sup>

This paper has been assembled by FAO at the request of the G20 Presidency of Brazil, to inform the G20 deliberations on the interconnected issues of hunger and poverty throughout 2024. It presents an overview of hunger across regions; forecasts for the global cereal supply to 2023/24 as well as to 2032; and identifies investment needs in agrifood systems. In doing so, it highlights some key areas for intervention to bring the world closer to Zero Hunger by 2030.

## 2. THE CURRENT STATE OF GLOBAL FOOD SECURITY

FAO, through its flagship publication *The State of Food Security and Nutrition in the World*, regularly monitors global, regional, and national progress towards the targets of ending hunger and food insecurity (Sustainable Development Goal [SDG] Target 2.1) and all forms of malnutrition (SDG Target 2.2) in the context of the 2030 Agenda for Sustainable Development. The last updates on the levels of hunger and food insecurity, included in the 2023 edition of the report, show that our era of policy crisis have brought to level of chronic undernourishment to pre-2010 level. While the world continues to produce enough food, at least in calories, inequalities in access, increased by various shocks, have fuelled hunger.<sup>4</sup>

### 2.1. A deteriorated global landscape

Hunger is defined as a level of food intake insufficient to regularly meet dietary energy requirements for an active and healthy life. FAO measures global hunger through the prevalence of undernourishment (PoU) and estimated that in 2022 between 691 and 783 million people in the world faced hunger (Figure 1). This number has steadily increased since 2017 with an acceleration during the COVID-19 pandemic: 122 million more people faced hunger in 2022 than in 2019.

Poverty and inequality remain important obstacles to food security and magnify the negative effects of the major global drivers of food insecurity and malnutrition, namely conflict, climate variability and extremes, and economic slowdowns and downturns.

Global hunger remained relatively unchanged from 2021 to 2022 but is still far above pre-COVID-19 pandemic levels, affecting around 9.2 percent of the world population in 2022 compared with 7.9 percent in 2019, or the same proportion as in 2009, showing the lack of progress in the last decade.

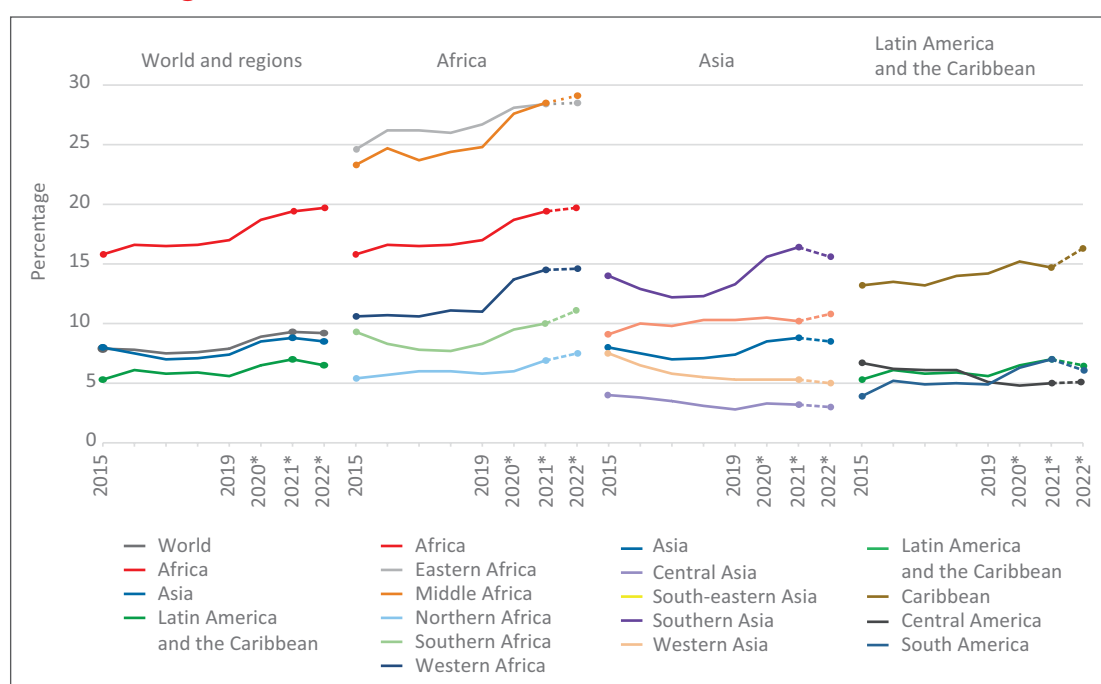
The proportion of the population facing hunger is much larger in Africa compared to other regions of the world—nearly 20 percent compared with 8.5 percent in Asia, 6.5 percent in Latin America and the Caribbean, and 7.0 percent in Oceania. Asia is nevertheless home to the majority of people facing hunger—402 million, representing 55 percent of the total number of undernourished people in 2022. About 38 percent (282 million) of the

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undernourished people in the world lived in Africa and about 6 percent (43 million) in Latin America and the Caribbean.

Progress was made towards reducing hunger in most subregions in Asia and in Latin America, but hunger is still on the rise in Western Asia, the Caribbean and all subregions of Africa (Figure 2).

**FIGURE 2. Progress was made towards reducing hunger in most subregions in Asia and in Latin America, but hunger is still on the rise in Western Asia, the Caribbean, and all Subregions of Africa**



Note: Eastern Asia is not shown because the prevalence of undernourishment has been consistently below 2.5 percent since 2010. \*Values are based on the projected midranges.

Source: FAO, IFAD, UNICEF, WFP & WHO. 2023. *The State of Food Security and Nutrition in the World 2023. Urbanization, agrifood systems transformation and healthy diets across the rural–urban continuum*. Rome, FAO. <https://doi.org/10.4060/cc3017en>.

The PoU for Africa rose from 19.4 percent in 2021 to 19.7 percent in 2022, driven mostly by increases in Northern and Southern Africa. The number of people facing hunger in Africa has increased by 11 million people since 2021 and by more than 57 million people since the outbreak of the pandemic. The PoU for Asia fell from 8.8 percent in 2021 to 8.5 percent in 2022 – a decrease of more than 12 million people, mostly in Southern Asia. However, this is still 58 million above pre-pandemic levels. There were improvements in every subregion except Western Asia, where the PoU increased from 10.2 percent in 2021 to 10.8 percent in 2022. A turnaround also occurred in Latin America and the Caribbean, where the PoU fell from 7.0 percent in 2021 to 6.5 percent in 2022 – a decrease of 2.4 million in the number of people facing hunger, but still 7.2 million more than in 2019. The decrease was driven by South America and masks a notable increase in the Caribbean, from 14.7 percent in 2021 to 16.3 percent in 2022.

Food insecurity goes beyond hunger. A person is food insecure when they lack regular access to sufficient safe and nutritious food for normal growth and development and an active and healthy life. This may be due to unavailability of food and/or a lack of resources to obtain food. The Food Insecurity Experience Scale (FIES) provides estimates of how many people are facing moderate or severe food insecurity. Moderately food insecure people may have access to food to meet their energy requirements, yet are uncertain that it will last, and may be forced to reduce the quality and/or quantity of the food they eat. People facing severe food insecurity, on the other hand, have likely run out of food, experienced hunger and, at the most extreme, gone for days without eating. Estimates of severe food insecurity based on the FIES are complementary to PoU as measures of the extent of hunger.

Following a sharp increase from 2019 to 2020, the global prevalence of moderate or severe food insecurity remained unchanged for the second year in a row, far above pre-COVID-19-pandemic levels. In 2022, an estimated 29.6 percent of the global population—2.4 billion people – were moderately or severely food insecure, meaning they did not have access to adequate food. This is 391 million people more than before the pandemic, and 745 million more compared to 2015 when the 2030 Sustainable Development Agenda was launched.

Moderate and severe food insecurity has been disaggregated by area of residence and gender, to further explore the inequal distribution of food insecurity within populations. Results show that at the global level, food security improves as the degree of urbanization increases. Moderate or severe food insecurity affected 33.3 percent of adults living in rural areas in 2022 compared with 28.8 percent for peri-urban areas and 26.0 percent in urban areas. The prevalence of severe food insecurity was 12.8 percent for rural areas, 11.6 percent among peri-urban residents, and 9.4 percent among urban residents.

The gender gap in food insecurity at the global level widened considerably in 2020 and 2021 in the wake of the COVID-19 pandemic, as women were more affected by job and income losses and bore a larger responsibility for additional, unpaid caregiving duties. Women living in rural areas were even more likely to be food insecure, as job and income losses were much higher for women than for men particularly in agrifood systems. For 2022, the food insecurity gap between men and women appears to have narrowed considerably at the global level, which may partially reflect a return of women to economic activities as pandemic-related restrictions were eased, and a weakening of the disproportionate impacts of the pandemic on women's food insecurity. In 2022, 27.8 percent of adult women were moderately or severely food insecure, compared with 25.4 percent of men, and the proportion of women facing severe food insecurity was 10.6 percent compared with 9.5 percent of men. The difference in the prevalence of moderate or severe food insecurity between men and women was at 1.1 percentage points in 2022.

## **2.2. Poverty and inequality remain major obstacles to global food security**

The relationship between poverty and food security and nutrition is bidirectional, meaning that food security and nutrition are both determinants and dimensions of poverty. However, a disconnection between poverty alleviation and improvements in food security and nutrition has recently become more apparent. Several countries have made significant

progress in reducing poverty, although similar progress in food security and nutrition has not been realized. Furthermore, food insecurity and malnourishment do not affect only the poorest households. Poverty reduction may not necessarily translate into better food security and nutrition due to existing inequalities in the agrifood systems.

Income inequality is a broad concept that refers to how it is unequally distributed within the population, but also impacts people's access to nutrition-relevant services and social and health infrastructure. Income inequality shapes the impact of economic growth in poverty reduction. For instance, if economic growth is associated with rising income inequality, the poorest may not benefit from increased national income.

Low-income populations use large portions of their income to buy food, making them especially vulnerable to economic recessions. In countries with high income inequality, the effects of any economic slowdown or downturn can affect disproportionately these populations. Poverty and inequality are important factors that magnify the negative effects of the major global drivers of food insecurity and malnutrition (conflict, climate variability and extremes, and economic slowdowns and downturns). Middle-income countries with high income inequality affected by one or more of these drivers in the period 2017–2019 have shown higher increases in PoU than countries affected by drivers but with lower income inequality.<sup>5</sup> Lower levels of income are linked to lower access to health, nutrition, and care. For example, in most countries, stunting prevalence among children younger than five years of age is about 2.5 times higher in the lowest wealth quintile compared with the highest wealth quintile.

While inequalities were still high before COVID-19, many years of progress toward eradicating extreme poverty were reversed. The number of people living on less than USD 2.15 (PPP 2017) per day is estimated to have increased by 61 million people to 762 million people in 2020. Even though the figures are projected to have returned to pre-COVID levels in 2023, with 691 million people living in extreme poverty, three years have been lost in the fight against poverty. Worst, poverty in low-income countries is still worse than before the pandemic.<sup>6</sup> Inequalities across and within countries have increased.

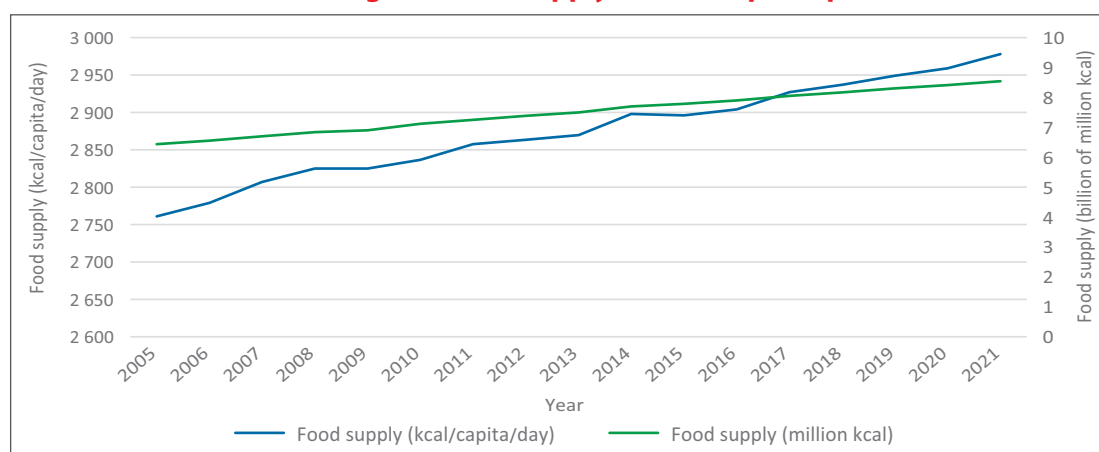
In addition, poverty and inequality are key elements to explain why, even if global food supply is increasing continuously, both in terms of total supply and per capita (Figure 3), the prevalence of undernourishment and moderate and severe food insecurity are still at high levels. This is why achieving all food security dimensions is essential: even if there could be food available for all, the lack of economic access might prevent the reduction of hunger and food insecurity.

Adequate social protection is an effective measure to improve economic access to food and can help counterbalance the effects of economic downturns, shocks, crisis, and conflicts. Social protection systems can protect lives and livelihoods, ensure ongoing access to food, and contribute as part of overall strategies to reduce inequalities. For instance, social protection systems are particularly important to ensure vulnerable subgroups such as women and girls and Indigenous Peoples, among others, have access to sufficient safe and nutritious food.

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Eliminating poverty and reducing inequality remain essential to overcome hunger. While social protection mechanisms are effective tools in this goal, both in periods of shocks and as a powerful tool to support vulnerable populations in the long run, targeted pro poor investments are also needed to close the inequality gap. Investment and growth in the broader economy remain essential to end hunger and poverty.

**FIGURE 3. Evolution of the global food supply: total and per capita**



Source: FAO. 2024. FAOSTAT: Suite of Food Security Indicators. [Accessed on 10 July 2024]. <https://www.fao.org/faostat/en/#data/FS>. Licence: CC-BY-4.0.

Improving infrastructure and linkages throughout the rural-urban spectrum is necessary to unlock the productive potential of small and intermediate cities and towns and their rural catchment areas. Access to decent farm and non-farm employment opportunities are critical to reduce poverty.

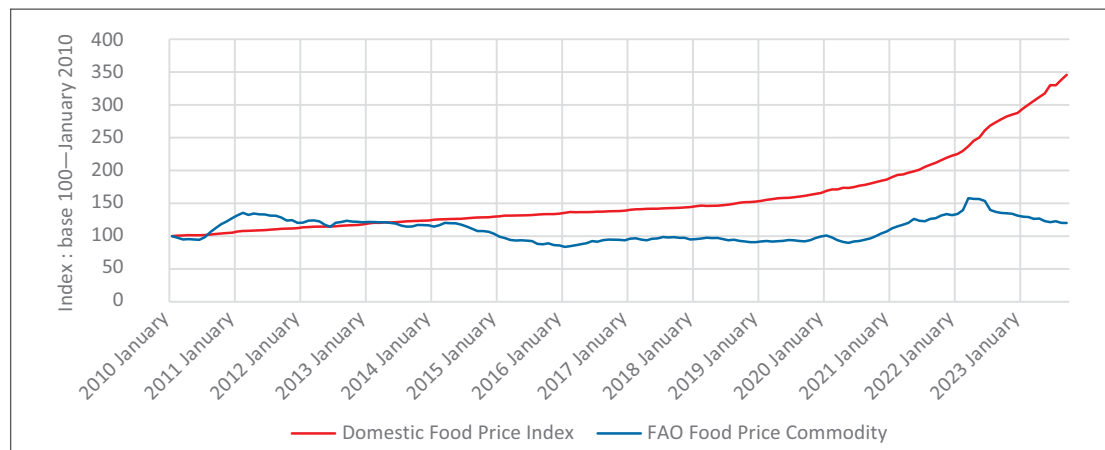
Improved market access and functioning can lead to better outcomes in terms of income and welfare. Access to other services (education, health, financial services, information, and communications technologies) are also needed to close inequality gaps and create opportunities for people to move out of poverty.

### 2.3. Agricultural and food prices

While the income of low-income individuals continues to be significantly affected by the macroeconomic landscape, their ability to afford food hinges on food and agricultural prices. On the global stage, the FAO Food Price Index (Figure 4) has started the year 2024 around its level of mid-2020, largely recovering from the fluctuations linked to the COVID-19 pandemic, the perturbations of logistics along the value chains as well as other climatic, policy (e.g. export restrictions) and political (e.g. war in Ukraine) shocks. Over the past 12 months, the FAO Food Price Index declined 10.4 percent. This decline masks specific commodity behaviour, in particular for rice, a critical commodity for poor consumers in Asia and Africa: as of January 2024, the nominal FAO All Rice Price Index<sup>7</sup> stood at 142.8 points, its highest nominal level since August 2008, and showing an increase

of 13 percent from January 2023. Rice constitutes a critical commodity for global food security and is especially important for poor consumers in Asia and Africa.

**FIGURE 4. Evolution of international and domestic food prices (nominal)**



Note: For the domestic food price index, the world average is computed by weighing country CPI with the national GDP in PPP.

Sources: FAO. 2024. FAO Food Price Index. In: FAO. [Cited 10 July 2024]. <https://www.fao.org/worldfoodsituation/foodpricesindex>; FAO. 2024. FAOSTAT: Consumer Price Indices. [Accessed on 10 July 2024]. <https://www.fao.org/faostat/en/#data/CP>. License: CC-BY-4.0; World Bank. 2024. World Bank DataBank: World Development Indicators. [Accessed on 10 July 2024]. <https://databank.worldbank.org/source/world-development-indicators>.

While food prices decreased in 2023, they still stand well above the average level of the 2010–2020 decade (Figure 4). This reinforces the notion that we are currently experiencing a period of elevated average prices. Specifically, real food prices on global markets are 17 percent higher than they were in 2015, when the SDG agenda was launched.

At the domestic level, the situation faced by consumers is significantly different with increasing prices for food (excluding alcoholic beverages). Food products, and not just commodities, incorporate other costs along the value chain, including services, and could be distributed through less competitive market structures than those of international markets. In the last 12 months, global domestic food prices as faced by consumers, have increased by 24 percent on average, contrasting the 10.4 percent decrease on international food commodity prices. Since the COVID-19 pandemic, global food price inflation has exceeded 10 percent annually, reaching 20 percent in 2021, and skyrocketing in 2022 at 31 percent. During the previous decade, the annual rate remained below 5 percent on average. This situation is driving a major increase in the cost of living, especially for the poor that spent a higher share of income on food products.

Lower prices on world markets, when contributing to ease pressure on domestic food prices, are not a sufficient condition to deliver affordable food for the population. Reverting the recent hunger dynamics requires additional actions. However, monitoring the situation on global markets is essential since recent experiences have confirmed that price shock on world markets, in particular following large supply shocks, are transmitted to consumers more quickly.

## 2.4. Prospects for 2024: global supply of staple crops in 2023/24

Global cereal production continues to grow at a steady but slow rate, projected at 1 percent for this year, slightly exceeding the global population growth. In 2022/23, global cereal uses per capita amounted to 148.5 kg per person, an adequate level to meet calorie needs from staple crops (Table 1). While the availability of staple crops is sufficient to meet food requirements globally, production of other food items associated with a higher diet quality is not sufficient to meet global needs. Particularly, the availability of pulses, nuts and seeds, and fruits and vegetables were below the daily requirements in all regions of the world (Box 1).<sup>8</sup>

FAO's forecast for world cereal production in 2023 has been raised by 2.7 million tonnes in December 2023, reflecting improved prospects for wheat and, to a lesser extent, coarse grains. Pegged at 2 822 million tonnes, the global cereal output is expected up 0.9 percent (26.1 million tonnes) year-on-year and 9.4 million tonnes above the previous record high reached in 2021 (Figure 5).

**TABLE 1. Cereal statistics**

Region/Country	Total Utilization			Stocks ending in			Per caput food use		
	19/20-21/22 average	2022/23	2023/24	2020-2022 average	2023	2024	19/20-21/22 average	2022/23	2023/24
		<i>estim.</i>	<i>f'cast</i>		<i>estim.</i>	<i>f'cast</i>		<i>estim.</i>	<i>f'cast</i>
	(..... million tonnes.....)						(..... Kg/year.....)		
<b>ASIA</b>	<b>1 394.9</b>	<b>1 427.8</b>	<b>1 442.4</b>	<b>576.1</b>	<b>584.4</b>	<b>584.8</b>	<b>156.5</b>	<b>157.3</b>	<b>157.6</b>
Bangladesh	52.0	53.0	53.3	8.6	8.2	8.0	218.3	220.2	220.2
China	607.0	619.2	629.1	391.6	399.7	401.0	155.6	156.2	156.3
India	252.3	267.3	270.4	66.9	64.2	70.4	145.7	147.5	148.3
Indonesia	69.9	69.1	69.1	8.5	6.7	7.6	173.7	171.5	172.8
Iran (Islamic Republic of)	35.6	35.5	36.1	11.1	12.1	11.9	202.6	202.8	203.1
Iraq	10.2	10.6	11.0	2.7	2.0	1.7	185.9	191.7	191.6
Japan	31.5	30.9	31.5	7.0	6.9	6.8	92.0	91.4	89.9
Kazakhstan	10.0	10.0	10.1	4.3	6.0	3.1	156.2	155.8	156.1
Myanmar	15.4	14.8	14.7	4.0	3.8	3.5	204.1	205.7	205.8
Pakistan	40.1	43.1	43.8	4.1	4.9	5.1	135.9	135.8	135.9
Philippines	30.8	32.7	32.8	4.6	3.8	3.5	164.9	167.8	169.2
Republic of Korea	20.1	21.0	20.9	4.6	4.7	4.7	121.7	121.5	120.9
Saudi Arabia	15.3	14.0	13.7	4.7	5.9	6.1	131.0	132.0	131.9
Thailand	23.3	23.5	23.4	10.5	12.3	11.2	118.4	119.8	119.8
Türkiye	42.9	46.1	45.3	9.9	12.7	10.1	242.0	243.5	244.0
Viet Nam	41.7	40.2	39.7	5.5	6.0	5.8	171.9	166.6	164.2
<b>AFRICA</b>	<b>287.4</b>	<b>288.6</b>	<b>290.9</b>	<b>59.6</b>	<b>55.8</b>	<b>54.9</b>	<b>149.9</b>	<b>148.7</b>	<b>147.9</b>
Algeria	17.6	16.6	16.8	6.0	5.3	5.6	228.9	229.2	229.1



Region/Country	Total Utilization			Stocks ending in			Per caput food use		
	19/20-21/22 average	2022/23	2023/24	2020-2022 average	2023	2024	19/20-21/22 average	2022/23	2023/24
		<i>estim.</i>	<i>f'cast</i>		<i>estim.</i>	<i>f'cast</i>		<i>estim.</i>	<i>f'cast</i>
	(..... million tonnes .....) )						(..... Kg/year .....) )		
Egypt	43.3	41.8	41.8	4.8	3.1	3.2	258.7	255.6	254.8
Ethiopia	29.3	30.0	30.1	7.2	6.6	6.0	189.1	190.2	191.1
Morocco	15.3	13.2	12.8	5.0	4.0	4.9	240.9	240.9	241.3
Nigeria	34.4	34.9	34.4	1.8	1.1	1.2	129.4	127.7	122.1
South Africa	17.3	17.4	18.9	3.8	4.9	4.7	163.5	162.4	162.6
Sudan	9.4	9.9	9.6	3.5	3.3	2.9	174.6	172.6	173.1
<b>CENTRAL AMERICA AND THE CARIBBEAN</b>	<b>78.2</b>	<b>79.1</b>	<b>79.3</b>	<b>9.8</b>	<b>9.4</b>	<b>8.6</b>	<b>161.7</b>	<b>160.4</b>	<b>160.3</b>
Mexico	58.7	60.2	59.6	7.4	7.1	6.7	198.9	199.7	199.0
<b>SOUTH AMERICA</b>	<b>170.0</b>	<b>177.0</b>	<b>182.3</b>	<b>35.7</b>	<b>27.2</b>	<b>25.2</b>	<b>113.4</b>	<b>113.4</b>	<b>113.0</b>
Argentina	32.2	32.8	30.5	10.6	10.0	6.4	121.7	121.4	120.8
Brazil	90.9	97.1	104.3	16.1	9.0	12.6	110.2	108.9	107.8
Chile	7.0	6.5	6.5	0.6	0.6	0.4	144.4	142.1	141.9
Colombia	11.8	12.4	12.5	1.3	1.4	1.2	100.3	101.3	101.6
Peru	10.5	10.3	10.5	1.0	0.9	0.5	147.4	147.7	147.5
Venezuela (Bolivarian Republic of)	4.4	4.7	4.5	0.6	0.7	0.7	96.7	105.8	108.6
<b>NORTHERN AMERICA</b>	<b>390.7</b>	<b>385.9</b>	<b>391.7</b>	<b>74.6</b>	<b>61.3</b>	<b>83.1</b>	<b>109.1</b>	<b>109.6</b>	<b>110.2</b>
Canada	34.5	33.3	32.2	8.9	7.5	7.1	96.0	96.6	97.1
United States of America	356.2	352.6	359.5	65.7	53.8	76.0	110.6	111.1	111.7
<b>EUROPE</b>	<b>416.3</b>	<b>404.7</b>	<b>405.1</b>	<b>82.0</b>	<b>112.8</b>	<b>119.1</b>	<b>131.8</b>	<b>132.4</b>	<b>132.6</b>
European Union	279.2	264.5	264.6	40.1	44.7	39.5	135.6	138.0	138.2
Russian Federation	77.2	75.1	75.9	16.4	38.0	39.8	125.8	126.8	126.5
Ukraine	20.1	18.1	17.6	11.6	11.5	18.0	143.5	146.0	148.0
<b>OCEANIA</b>	<b>19.6</b>	<b>18.8</b>	<b>18.5</b>	<b>5.8</b>	<b>7.5</b>	<b>5.6</b>	<b>94.3</b>	<b>94.1</b>	<b>93.8</b>
Australia	16.7	15.8	15.5	5.1	6.8	5.0	103.8	104.1	103.6
<b>WORLD</b>	<b>2 757.2</b>	<b>2 781.8</b>	<b>2 810.4</b>	<b>843.5</b>	<b>858.4</b>	<b>881.1</b>	<b>148.1</b>	<b>148.5</b>	<b>148.6</b>
LIFDC	183.0	187.2	189.2	47.9	45.9	44.1	142.2	141.2	141.5
LDC	224.1	228.8	230.2	49.6	47.3	44.3	155.4	154.7	154.6

Source: FAO. 2023. Food Outlook—Biannual report on global food markets. Rome. <https://doi.org/10.4060/cc8589en>.

The forecast for global wheat production in 2023 was lifted by approximately 2 million tonnes to 787 million tonnes, but it is still seen down 2.1 percent (17.1 million tonnes) from the 2022 level. Global coarse grain production is pegged at 1 511 million tonnes in 2023, placing it 3.6 percent above the outturn in 2022. FAO's forecast of global rice production in 2023/24 has been raised by 0.9 million tonnes since November 2023, as adjustments raised the global rice production forecast to 524.9 million tonnes (milled basis), up 0.8 percent from the 2022/23 level. Looking ahead to the next season, planting of the 2024 winter wheat



crop is ongoing in the northern hemisphere countries and, reflecting lower crop prices, area growth could be limited this year. Sowing of the 2024 coarse grain crops is ongoing in the southern hemisphere countries.

### BOX 1. Accessing healthy diets remains a challenge

It is imperative to look beyond hunger and ensure consistent access to sufficient and nutritious foods that constitute a healthy diet. The exact make-up of a healthy diet varies depending on personal needs, cultural context, local availability, climatic and ecological conditions, customs and preferences.

According to WHO, healthy diets include less than 30 percent of total energy intake from fats, with a shift in fat consumption away from saturated fats to unsaturated fats and the elimination of industrial trans fats; less than 10 percent of total energy intake from free sugars (preferably less than 5 percent); at least 400 g of fruits and vegetables per day; and not more than 5 g per day of iodized salt.

**TABLE 2. Availability of food groups to meet a healthy diet basket by region (share of per capita daily requirements, 2020)**

	Africa	Asia	Latin America	Northern America	Europe	World
Staple foods	188	108	68	44	73	111
Animal source foods (including fish, except oils)	-33	40	143	331	258	71
Pulses, nuts and seeds	-38	-37	-42	-43	-67	-41
Vegetables	-55	25	-63	-20	-27	-4
Fruits	-40	-31	-2	-13	-24	-29
Fats and oils	-21	-3	67	100	82	12

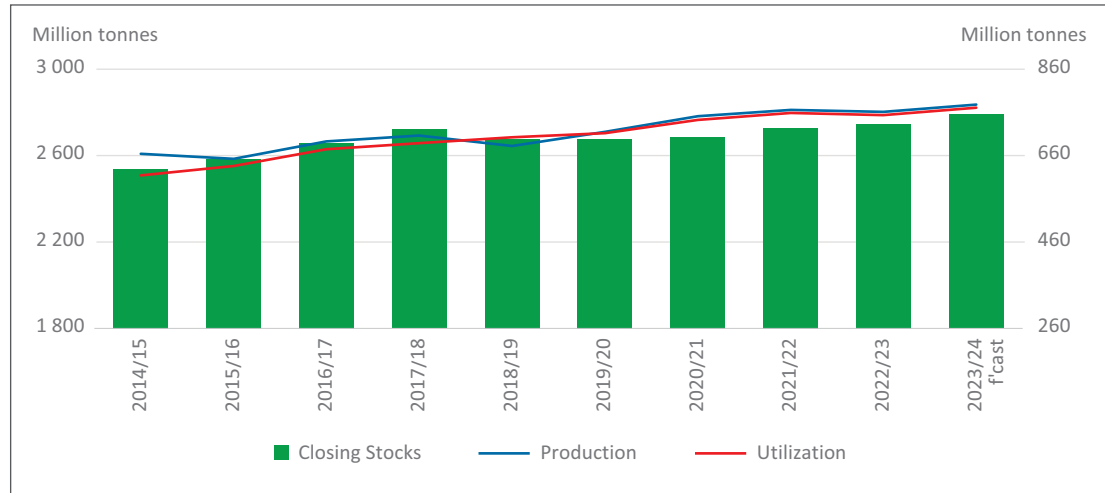
Note: Yellow highlights indicate where amounts of food available are insufficient to meet a Healthy Diet Basket (HDB). Food availability is based on FAO Food Balance Sheets data, and healthy diet requirements by food group are those of the Healthy Diet Basket used in the cost and affordability of a healthy diet in FAO, IFAD, UNICEF, WFP and WHO. 2023. *The State of Food Security and Nutrition in the World 2023. Urbanization, agrifood systems transformation and healthy diets across the rural–urban continuum*. Rome, FAO. <https://doi.org/10.4060/cc3017en>.

Source: Dolislager, M.J., Holleman, C., Liverpool-Tasie, L.S.O. & Reardon, T. 2023. *Analysis of food demand and supply across the rural–urban continuum for selected countries in Africa – Background paper for The State of Food Security and Nutrition in the World 2023*. FAO Agricultural Development Economics Working Paper, No. 23-09. Rome, FAO. <https://doi.org/10.4060/cc9119en>.

Since 2020, FAO has been monitoring the cost and affordability of a healthy diet (CoAHD). This indicator is based on recommendations from national food based dietary guidelines that allow estimating the lowest possible cost of a hypothetical healthy diet in each country and its affordability (therefore, a slightly different definition of a healthy diet than the WHO definition). This diet is intended to meet all nutrient intake requirements and to help prevent malnutrition in all its forms, including diet-related non communicable diseases. At present, global production of most of the food items are not sufficient to meet the healthy diet basket used to measure CoAHD (Table 2).

Last estimates show that about 3.14 billion people in the world – or 42 percent – were unable to afford a healthy diet in 2021. The cost of a healthy diet increased by more than 5 percent between 2020 and 2021 in Africa, Asia, Latin America and the Caribbean, and Oceania, but only marginally in Northern America and Europe (0.6 percent). Measures are needed to address these constraints.

Source: FAO, IFAD, UNICEF, WFP & WHO. 2023. *The State of Food Security and Nutrition in the World 2023. Urbanization, agrifood systems transformation and healthy diets across the rural–urban continuum*. Rome, FAO. <https://doi.org/10.4060/cc3017en>.

**FIGURE 5. Cereal production, utilization, and stocks, 2023/24 forecast**

Source: FAO. 2023. FAO Food Price Index (FFPI). <https://www.fao.org/worldfoodsituation/foodpricesindex/en/>.

World cereal total utilization in 2023/24 is forecast at 2 813 million tonnes, 1.1 percent higher than in 2022/23. Wheat utilization in 2023/24 is expected to reach 791.4 million tonnes, surpassing the estimated 2022/23 level by 1.8 percent, supported by expectations of a strong growth in feed use as well as higher food consumption and other uses. The forecast for total utilization of coarse grains in 2023/24 is pegged at 1 500 million tonnes, up 1.2 percent from the previous season, driven mainly by increased maize utilization (especially for feed and industrial uses). World rice utilization is forecast to total 521.6 million tonnes (milled basis) in 2023/24, 0.7 million tonnes below the 2022/23 estimate, as foreseen cuts in the use of rice for animal feed are predicted to offset a population-led increase in food intake.

The forecast for world cereal stocks by the close of seasons in 2024 has been raised by 5.3 million tonnes since the previous month to 886.5 million tonnes, up 2.7 percent above the opening level and marking a new record high. Based on the latest forecast, the global cereal stock-to-use ratio would be 30.8 percent in 2023/24, nearly unchanged from 30.7 percent in 2022/23 and indicating a comfortable supply level.

World trade in cereals in 2023/24 is forecast at 468.4 million tonnes, 1.8 percent lower than the 2022/23 level. The forecast for world wheat trade in 2023/24 (July/June) is pegged at 194.1 million tonnes.

While global cereal production is sufficient to meet global needs, there are significant discrepancies between countries. International trade facilitates the movement of agricultural products from surplus to deficit regions playing an important price-stabilization role. Trade facilitates long-term adaptation through the movement of agricultural products in response to weather-related production shocks. International trade also improves resource allocation and contributes to economic efficiency. Well-functioning markets are key for development and economic growth, as markets can be harnessed to foster sustainable economic, social, and environmental outcomes. Adequate market functioning also remains crucial to supply farming inputs to farmers. Disruptions in input markets are bound to affect poor farmers the most, since their ability to cope with shocks is often low (Box 2).

## BOX 2. Impact of fertilizer price increase on Africa in 2022–2023

Fertilizer prices reached record highs in the spring of 2022, following rebounding demand after the COVID-19 crisis and the outbreak of the war in Ukraine. The tensions observed since 2022 in fertilizer exporting countries as well as trade restrictions imposed by major exporters generated uncertainty over nutrient availability and affordability. This in turn caused concern over the impact upon production levels and the consequences for food security, particularly for smallholder farmers in Africa.

Recent trade numbers show that imports in many countries in sub-Saharan Africa did decline in 2022 and 2023, and fertilizer availability was constrained for many smallholder farmers in this region. Preliminary data from the International Fertilizer Association (IFA) is encouraging as it indicates that this decline was not as critical as initially feared for sub-Saharan Africa. Government procurement and interventions by the international community helped relieve short-term availability issues while global trade flows adjusted. As of December 2023, *availability* constraints had been overcome across most of sub-Saharan Africa, with the exception of some landlocked countries (such as Malawi and Zimbabwe, for instance). At the same time, concerns remain over fertilizer *affordability* in many African countries. Governments enhanced subsidies schemes to facilitate smallholder farmers' access to agricultural inputs, but the fiscal sustainability of these measures poses a challenge as prices dropped over the course of 2023 but remain above their pre-COVID-19 levels. Additionally, many lower-income countries continue to suffer from significant currency devaluation against the US Dollar, preventing the global price decline to transfer to domestic markets.

Research is currently focused on understanding the actual impact of the 2022 crisis on fertilizer uses, and subsequent food production, on a per country scale. While waiting for conclusions of this research, we can anticipate that the 2022 crisis exacerbated many pre-existing issues on fertilizer supply chains in the low- and middle-income countries. These include low liquidity and high interest rates, complex logistical routes, high levels of market concentration, and the lack of market transparency. These challenges are often cited as factors supporting high prices, calling for improved market transparency and regulation.

Source: Authors own elaboration.

## 2.5. Production of nutritious food is insufficient and better incentives are needed

Beyond cereals, global supply of food items that contribute to healthy diets do not meet global needs (Box 1).<sup>9</sup>

Production levels of nutrient-dense food depend on agroclimatic conditions, access to inputs but also the proper incentives for farmers.

Worldwide support to the food and agricultural sector accounted for almost USD 630 billion a year on average during the period 2013–2018. Two-thirds of this support originate from trade and market interventions that support or incentivize producer prices (USD 202 billion) and from fiscal subsidies to farmers (USD 245 billion). The rest consists of expenditure for the provision of general services such as agricultural R&D or infrastructure (USD 111 billion) and subsidies to consumers (72 billion). Considering a food groups perspective, countries with higher levels of incomes supported all food groups, and particularly staple foods (including cereals and tubers), followed by dairy and other protein-rich foods (i.e. meat of various types, eggs, and pulses). Lower-middle-income countries tend to support food staple production and protein rich foods, while low-income countries penalized production of all food groups, including fruits and vegetables, dairy and protein-rich foods.

Looking at single food products, rice, sugar, and meats of different types are among the most supported commodities worldwide. This trend of policy support is not always aligned with healthy diets considerations. Current policies seem to target cereals the most and, since farmers are prompted to produce crops that face lower competition and fetch higher prices, they may therefore generate disincentives towards producing fruits and vegetables or protein-rich foods. Therefore, the current support to food and agriculture does not provide enough incentives for people to consume nutritious foods. Although the consumption of healthy diets depends on several factors (i.e., preferences, convenience and time for cooking, cultural habits, etc.), high prices are an important barrier to affordability of healthy diets.

Analysing different ways to reallocate food and agricultural support towards the production of nutritious foods is important to increase the availability and reduce the cost of nutritious foods, and therefore increasing people's affordability and access to healthy diets.<sup>10</sup> Furthermore, governments may find that repurposing some of their support to food and agriculture can be a means to improve agrifood systems efficiency, with fairness and inclusiveness for all agrifood systems actors that want to benefit from such reconfigured policies. Repurposing can also provide strong incentives to reduce GHG emissions, adapt to climate change and manage natural resources sustainably under planetary boundaries.<sup>11</sup> Reducing food losses and waste can also contribute towards food security. FAO's latest estimates indicate that thirteen percent of the food produced globally is lost during the post-harvest production stage before reaching the retail stage of the food system.

### **3. GLOBAL FOOD DEMAND AND SUPPLY TO 2032**

This section provides an overview of the latest projections for the supply and demand of commodities as presented the *OECD-FAO Agricultural Outlook 2023–2032*.<sup>12</sup>

#### **3.1. Trends in global food demand**

World population is expected to grow from 7.9 billion in 2022 to 8.6 billion people in 2032. This corresponds to an average annual growth rate of 0.8 percent. Population growth is concentrated in low-income countries, particularly sub-Saharan Africa which is expected to have the fastest annual growth at 2.4 percent over the coming decade. Compared to previous decade, the population in Asia is expected to grow at a slower rate. The regional average hides strong disparities at the country level: the population of China declined for the first time in 2022 and is expected to decline further over the projection period to 1.41 billion inhabitants in 2032. The population of India will continue to grow, reaching 1.52 billion people in 2032.

Globally, economic growth will be mainly driven by per capita income growth. This is especially the case in OECD countries and China. By contrast, high population growth in sub-Saharan Africa means that the relatively high rate of economic growth in the region (3.6 percent per annum, henceforth p.a.) corresponds to only a modest growth in per capita

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terms (at around 1.1 percent p.a.). The same applies to a lesser extent to the Near East and North Africa region. The modest economic growth in Europe at 1.5 percent p.a., where the population is expected to decrease over the next ten years, translates into a per capita income growth rate of 1.7 percent p.a. over the coming decade.

Over the decade to 2032, the evolving energy and nutrition requirements of a growing and increasingly affluent global population are expected to be the key drivers of demand for agricultural commodities. Diverging population dynamics in different countries and regions, income-driven divergences in consumer preferences, and rapid urbanization in many emerging economies will mean that consumption trends will also vary by country and region.<sup>13</sup> Policy developments and social factors, alongside risks and uncertainties, are similarly likely to affect consumption to differing extents and outcomes at the local level, most importantly as income growth and distribution will continue to remain uneven across and within regions and countries. In low-income countries where the share of food in household expenditures is high, income and food price shocks will have disproportionately larger consequences for consumption than in high-income countries. Preferences shaped by local culture and tradition will continue to lead to differences in demand for agricultural commodities among different regions and income classifications. Health and sustainability concerns are expected to increasingly shape the demand for food in affluent and emerging regions.

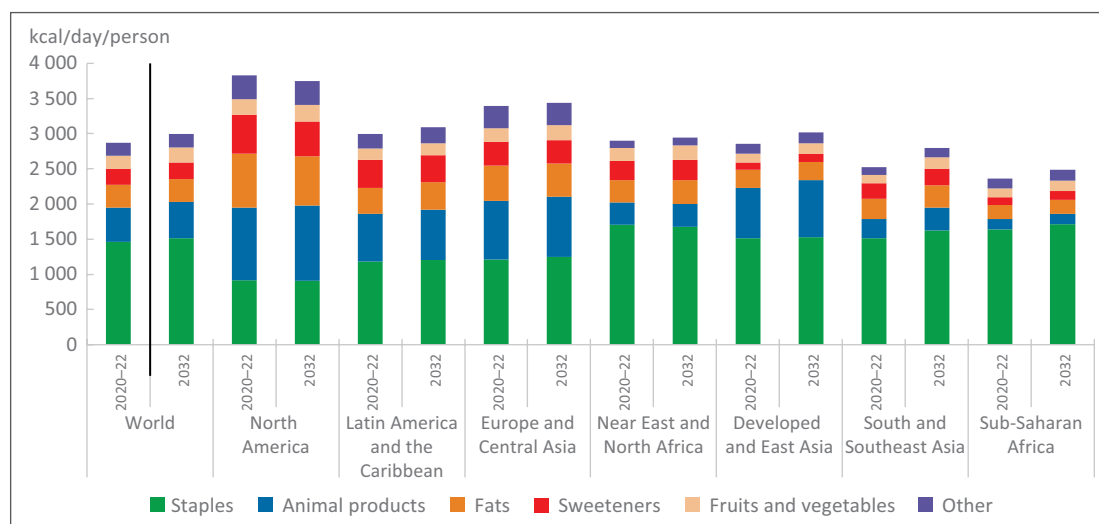
Food remains the primary use for basic agricultural crop commodities, currently accounting for 49 percent of quantities consumed at the global level. Population growth will continue to be the main factor shaping food demand at the global level, driven predominantly by increasing consumption requirements of rising populations in sub-Saharan Africa, India and the Near East and North Africa region. Due to the increase of the global population as well as gains in per capita income in all regions, total consumption of the food commodities is expected to rise by 15 percent. Overall, Asia will continue to play the most significant role in shaping global demand for food over the period.

Global consumption of staples, the most significant source of calories, is expected to increase by 4 percent from the base period and account for just over half of total global food consumption in 2032, as measured in terms of daily per capita calorie availability. The largest expansion in staples consumption is expected in regions with the highest expected population growth. As such, the global consumption of staples will increase most importantly in Asia (lead by India), sub-Saharan Africa, and the Near East and North Africa region. In many countries direct human per capita food consumption of most cereals is approaching saturation levels, thus constraining gains in overall demand. Particularly in North America and Western Europe, per capita food use of cereals is expected to be stagnant, or even declining, due to low population growth and consumer preferences moving away from staple commodities (Figure 6).

In line with this, in high-income countries, per capita consumption of most food commodities is expected to level off due to saturation. Per capita consumption of sweeteners and fats is projected to decline over the coming decade due to growing health concerns and policy measures that discourage their excessive consumption.

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**FIGURE 6. Contribution of food groups to total daily per capita calorie food consumption availability by region**



Note: Estimates are based on historical time series from the FAOSTAT Food Balance Sheets database which are extended with the Outlook database. Products not covered in the Outlook are extended by trends. Staples include cereals, roots and tubers and pulses. Animal products include meat, dairy products (excluding butter), eggs and fish. Fats include butter and vegetable oil. Sweeteners include sugar and HFCS. The category others include other crop and animal products.

Sources: FAO. 2023. FAOSTAT: Food Balances Database. Accessed on 10 July 2024]. <http://www.fao.org/faostat/en/#data/FBS>. Licence: CC-BY-4.0; OECD & FAO. 2023. OECD-FAO Agricultural Outlook 2023–2032. Paris. <https://doi.org/10.1787/08801ab7-en>.

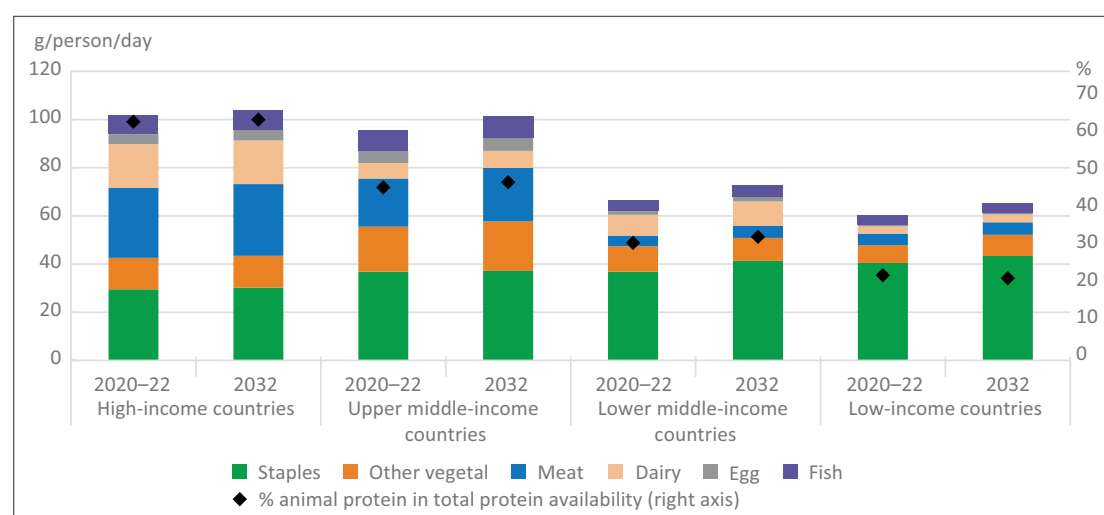
In middle-income countries, the evolution towards the dietary patterns of high-income countries away from staples is expected to continue, with the consumption of animal products projected to increase at fast pace. Low-income countries, meanwhile, will continue to obtain most of their calories from staples. Due to income constraints, low growth in the consumption of animal products and other higher-value foods (e.g. fruits and vegetables) is expected in low-income countries.

The share of disposable household income spent on food commodities is expected to continue to fall in all regions, with the largest declines foreseen in the emerging economies in Asia. Average expenditures on food commodities are projected to fall to 10 percent of total household expenditures in Developed and East Asia by 2032, from 14 percent in the base period 2020–2022, and from 17 percent in the base period to 12 percent in 2032 in South and Southeast Asia. In sub-Saharan Africa, a similar development is expected but the region remains with the highest share of food in household expenditure at 18 percent in 2032. Particularly in the least developed countries of the region, the share of food in household expenditures is set to remain high, reflecting a vulnerability of households to income and food price shocks in the most food insecure countries.

Animal proteins are expected to make further advances in their contribution to total daily per capita availability due to rising per capita incomes globally. Growth in animal protein consumption will be particularly pronounced in Asia and the Latin America and Caribbean region, where daily per capita meat and fish availability is expected to rise by 11–13 percent and 6–4 percent, respectively.

Protein from animal sources will continue to account for the bulk of protein consumption in the high-income regions of North America, Europe, and Central Asia (Figure 7) while staple crops will remain their main source for low-income countries and Africa in particular. About two-thirds of meat is expected to be consumed by one-third of the world's population in 2032, which is only a slight improvement from the base period. The high per capita use in high-income countries is the main reason for this. In some countries such as Indonesia, despite per capita consumption being comparatively low, total meat consumption will be substantial given their large population sizes.

**FIGURE 7. Contribution of protein sources to total daily per capita food consumption**



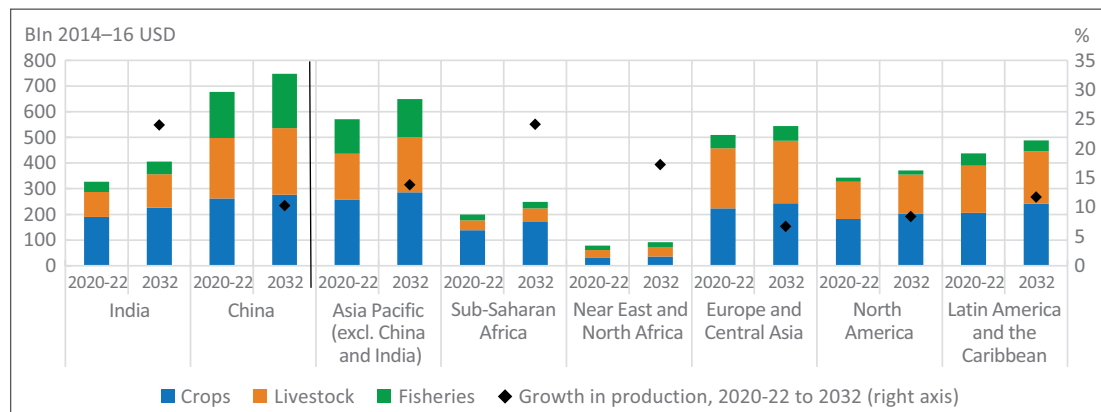
Note: Staples include cereals, pulses, and roots and tubers.

Source: OECD & FAO. 2023. OECD-FAO Agricultural Outlook 2023–2032. Paris. <https://doi.org/10.1787/08801ab7-en>.

### 3.2. Trends in global agricultural production

Over the coming decade, the global production (measured in constant prices) of crops, livestock and fish commodities is expected to increase by 1.1 percent p.a., a slower rate than in previous decades. The reduced growth incentives are driven by a weakening of expected gross returns for producers from both sales and due to costs developments. The proceeds of production sales are not expected to follow a sustained growth because of projected flat or slightly declining trends of world prices in real terms and slower population growth. Input costs are expected to increase, notably because of the nexus between energy and fertilizer prices and tightening of environmental regulations.

Most of this growth will occur in middle- and low-income countries (Figure 8). This is conditional on wider access to inputs, although if increases in energy and agricultural input prices (e.g. fertilizers) are to resume, this would raise production costs that could lead to food price inflation and greater food insecurity.

**FIGURE 8. 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.

Sources: FAO. 2023. FAOSTAT: Value of Agricultural Production. [Accessed on 10 July 2024]. <http://www.fao.org/faostat/en/#data/QV>. Licence: CC-BY-4.0; OECD & FAO. 2023. OECD-FAO Agricultural Outlook 2023–2032. Paris. <https://doi.org/10.1787/08801ab7-en>.

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 forecast period.

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. Pigmeat 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.

Middle- and low-income countries, including China, India, and other Asian countries, will continue to drive growth. By 2032, the whole Asian region is expected to account for more than half of global crop production, almost half of livestock production, and almost three-quarters of fish production. Production growth will be driven almost entirely by productivity in this resource-constrained region.

Production in sub-Saharan Africa and Near East and North Africa is expected to grow significantly, although from a low base. In these regions, the bulk of agricultural output comes from crops production, but higher value livestock production is expected to grow faster over the coming decade in response to a rapid population increase and urbanization. In sub-Saharan Africa, growth in crop production will be underpinned by a combination of area expansion, changing crop mix, and productivity gains; dairy will drive much of the growth of livestock production.

In Near East and North Africa, growth in crop production will be derived mainly from productivity gains as the region is faced with severe constraints in the availability of arable land and water. Poultry will drive most of the increase in livestock production.



Europe and Central Asia is expected to be the region with the slowest production growth, mostly driven by Central Asia and Eastern Europe. Growth will mainly be derived from productivity gains as the long-term decline in agricultural land-use is expected to persist, but tighter regulations related to environmental sustainability and animal welfare will place downward pressure on yield improvements.

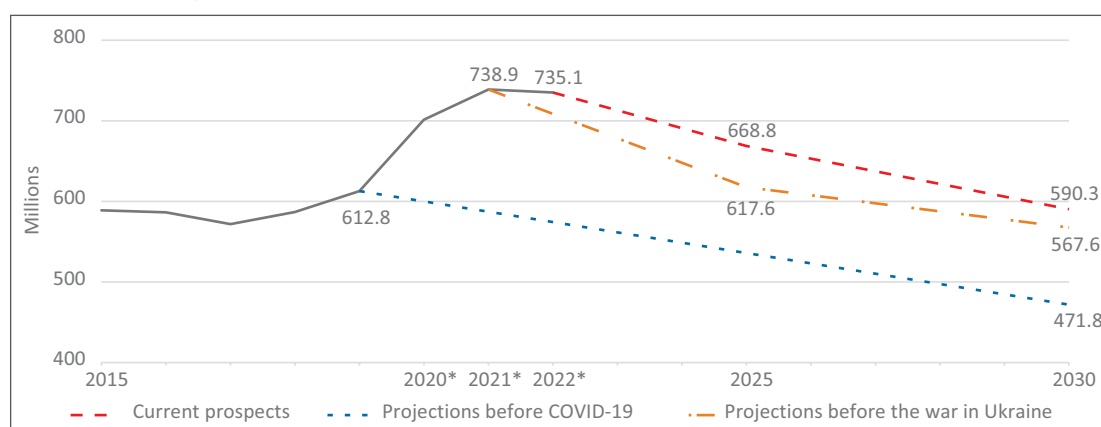
Production growth in North America is expected to be limited. Crop production is expected to grow faster than livestock production, reversing the trend of the past decade. Production growth will be driven by productivity gains.

In Latin America and the Caribbean, production growth is projected to slow down compared to the last decade. Growth is expected to come predominantly from crop production. The region's land abundance contributes to strong crop production growth, which is derived from a combination of expansion and intensification, but yield gains are expected to play a bigger role because of an expected rapid increase in fertilizer application. Despite slower growth in livestock production, the region will continue to be a large contributor to global production.

#### 4. INCREASED INVESTMENT IS NEEDED TO ACHIEVE ZERO HUNGER

While achieving zero-hunger is a core component of the Sustainable Development Goals agenda, as stated in SDG2, the global community is farther away in 2024 from this goal than in 2023. Projections (Figure 9) shows that 590 million people are expected to be in chronic hunger by 2030. Accelerated and new efforts are needed. Recent climate and economic shocks, combined with conflicts, have led to a deterioration of the projections since 2019, indicating the needs of accelerated actions if the world wish to achieve the 2030 targets.

**FIGURE 9. Projections in the number of undernourished people**



Note: Projected values. \*The 2020, 2021 and 2022 values are based on the middle of the projected ranges.

Source: FAO, IFAD, UNICEF, WFP & WHO. 2023. *The State of Food Security and Nutrition in the World 2023. Urbanization, agrifood systems transformation and healthy diets across the rural-urban continuum*. Rome, FAO. <https://doi.org/10.4060/cc3017en>.

To meet both the Zero Hunger and the Paris Agreement targets simultaneously, coordinated actions across countries and within countries will be needed, as discussed in the FAO's global

roadmap on *Achieving SDG 2 without breaching the 1.5 °C threshold*.<sup>14</sup> To achieve this joint agenda, a necessary condition is an accelerated increase global agricultural productivity, in a sustainable and inclusive way. The increase should benefit low- and middle-income countries, and smallholders in particular, to reduce inequalities and existing productivity gaps, delivering on a *just transition* agenda for agrifood systems.

As estimated by FAO and the OECD,<sup>15</sup> average global agricultural productivity would need to increase by 28 percent over the next decade, or about 2.5 percent a year to feed the world sustainably. This is more than triple the increase recorded in the last decade. For crops, the necessary 24 percent increase in average global yields—which acts as a proxy for crop productivity—is close to double the increase achieved over the past decade (13 percent). Global animal productivity would have to increase by 31 percent, on average, vastly exceeding the growth recorded during the last decade. A large share of productivity growth in livestock and fish production will result from improvements in per animal productivity resulting from more efficient herd management and higher feed intensity. Over the next 25 years, FAO's roadmap<sup>16</sup> estimate that the increase could be smoother, with an effective annual growth rate of 1.5 percent in total factor productivity for crops and 1.7 percent for livestock over the whole period, but they will need to be strongly biased in favour of low-income countries, that should see productivity gains twice the world average. Achieving these trends in the context of climate change need unprecedented mobilization of financial, economic, and technological means. In addition, green innovations and their adoption by all producers will be required to achieve accelerated efficiency gains on the use of natural resources.

Comprehensive action to boost agricultural investment and innovation and to enable the transfer of knowledge, technology, and skills are urgently required to put the agricultural sector on the necessary trajectory for sustainable productivity growth and the transformation towards sustainable food systems. Additional investments in R&D will be crucial in this regard. Additional efforts to reduce food loss and waste and limit excess calorie and protein intakes, particularly from animal sources, are also necessary.

Investing in agriculture is essential to reduce hunger, bring people out of poverty and promote sustainable agricultural production. Those parts of the world where agricultural capital per worker and public investments in agriculture have stagnated remain those with the highest levels of poverty and hunger today. Since demand growth over the coming decades will need to be met by productivity increases, eradicating hunger sustainably will require a significant increase in agricultural investments, but also an improvement in their effectiveness. It will require improving the quality of investment so that it benefits those that need it most. Yet, investments increase has not kept pace with growing needs and new sources of financing will have to be mobilized.

#### **4.1. The cost of ending hunger**

Following the definition of the SDG agenda, there have been several studies providing estimates of the cost of ending hunger and malnutrition.<sup>17</sup> Recently, Ceres2030 (2020)<sup>18</sup> and ZEF and FAO (2020)<sup>19</sup> estimate on the costs for reducing hunger and improving nutrition through a multi-sectoral approach to agrifood systems analysis. Both studies present

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complementary approaches, combining extensive evidence review processes, economic modelling, and marginal cost curve for interventions. They identify the intervention options and investment needs to reduce undernourishment and child malnutrition. Their joint conclusions,<sup>20</sup> based at the time on preliminary estimates on the impact of COVID-19 on hunger into consideration, show that the global goal of ending hunger by 2030 may require an additional investment of about USD 33 to 50 billion, compared to business-as-usual level of spendings, of which USD 14 billion will need to be provided by international donors.

Importantly, interventions need to take place along the value chain: from the farm level, with better inputs and practices, beyond the farm through improved infrastructure, storage capacities and support to agri-SMEs, and larger scale policies, especially via social protection and education programs, targeting excluded populations.

These include agricultural research and development (R&D) as well as R&D efficiency enhancement, agricultural extension services, agricultural information services, small-scale irrigation expansion in Africa, female literacy improvements, and scaling up existing social protection. On the long run, investments in R&D are the least costly and hold large potential for reducing hunger.<sup>21, 22</sup>

In both studies, increasing knowledge through agricultural R&D and extension services plays an important role. R&D remains a key driver of productivity growth. R&D is also indispensable in the transition to a more sustainable pathway. Yet, the resources that are targeting R&D and knowledge transfer programs are volatile. Between 1981 and 2014 volatility of public R&D in developing countries continued to be high, whereas for the OECD countries it increased in 2000s compared to the end of the twentieth century.<sup>23</sup> Overall, volatile R&D expenditures have negative consequences on innovation, and volatility in public R&D in environmental technologies have an adverse impact on innovation.<sup>24</sup>

Governments will continue to occupy a central role in the development and adoption of new technologies. Despite the spike of the private interest in agricultural research, these investments are not primarily focused on environmental sustainability. From early 2000s the private agricultural R&D surpassed public expenditure in high-income countries. Globally, private sector agricultural R&D expenditures increased from USD 5.1 billion in 1990 to USD 15.6 billion in 2014.<sup>25</sup> From 2010s resources dedicated to crop and livestock production, nutrition, food safety and overall social benefits of the land based sectors have decreased as opposed to a growth in R&D in crop genetics, farm machinery, agricultural chemicals and food processing.<sup>26, 27</sup>

The annual cost of ending hunger by 2030, between USD 33 billion to USD 50 billion remains limited compared to the scale of efforts needed to achieve the transformation of our global agrifood systems. Transforming agrifood and land use systems to make them more sustainable will cost USD 300 -USD 350 billion<sup>28</sup> of incremental investment each year, while guaranteeing healthy diets for all by 2030 will push this number to USD 1.1 trillion.<sup>29</sup> This is so because it entails a rethink of the financial ecosystem, to leverage, align and optimize resources for accelerating green, resilient, and inclusive growth at scale in all countries.

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## 4.2. Mobilizing traditional financial resources

Importantly, defining what constitutes food security and nutrition remain challenging: it clearly exceeds the domain of agriculture, and at the same time all investments in agriculture could not benefit to food security and nutrition outcomes. However, given that a large number of economically poor active population in most low-income countries are engaged in agriculture, agricultural growth and investment in agriculture are directly linked to food and nutrition security. Private agents, especially farmers, are by far the largest source of investment in rural areas.<sup>30, 31</sup>

Available data, however, focus on public expenditure rather than private investment because of the challenges related to obtaining data from the large number of small, medium, and large-scale actors involved in agriculture. Public sources include support from national government expenditure and support policies, state-owned banks, donor governments (official development aid), international financial institutions, development finance institutions and other multilaterals.

**TABLE 3. International financial institutions' commitments to the agrifood sector, 2022**

International financial institutions	Commitments (USD million)
World Bank (International Development Association—IDA)	4 008.00
Asian Development Bank (ADB)	2 218.00
International Fund for Agricultural Development (IFAD)	882.30
African Development Bank (AfDB)	648.39
World Bank (International Bank for Reconstruction and Development—IBRD)	3 611.00
European Investment Bank (EIB)	621.92
Islamic Development Bank (IsDB)	2 782.00
Inter-American Development Bank (IDB)	397.00
Asian Infrastructure Bank	82.00
<b>Total</b>	<b>15 250.61</b>

*Note: Full notes and detailed sources available upon request. The value for ADB refers to the "Agriculture, Natural Resources, and Rural Development (ANR)" sector. Commitments for IFAD in the table give the total amount of "Loans and DSF grant approvals" for 2022. However, please note that for 2022–2024 (12<sup>th</sup> replenishing round), IFAD has a loan and grant program of about USD 3.5 billion. In a three-year period, this corresponds to an average of 3.5/3 = 1.17 billion USD. AfDB commitment value is only for the agriculture sector. More specifically, AfDB's operations approvals in 2022 were equal to 3,719 (UA million) while Agriculture represented 13 percent of the bank group portfolio. Hence, Agriculture commitment is equivalent to 0.13\*3,719 = 483.47 (UA million). Using 1.34111 as the conversion factor to USD (AfDB official exchange rate for December 2022), we have: 483.47 \* 1.34111 = 648.39 (USD million). For EIB, 591.18 (EUR million) were allocated to Agriculture, fisheries, and forest in 2022. Using as exchange rate "EUR 1 = USD 1.052 USD" (see IRS yearly average currency exchange rate for 2022), we have: 591.18 \* 1.052 = 621.92 (USD million). Commitments for IsDB refer to only the agriculture sector. More specifically, net approvals in 2022 were equal to USD 10.5 billion. Agriculture represents 26.5 percent of these net approvals. Hence, 0.265\*10.5 billion = 2,782 (USD million). For IADB, commitments are related to the Agriculture and Rural Development sector. They correspond to 5 projects approvals. As of December 31, 2022, only one AIIB project was allocated to the Rural Infrastructure and Agricultural Development sector. This is the "Rural Infrastructure Development Project" (previously titled: "Prosperous Villages Project"), a project related to Community Infrastructure in Rural Uzbekistan. AIIB allocated USD 82 million for this project. Exchange rates used for AfDB exchange rate: <https://www.afdb.org/en/documents/december-2022-exchange-rates>; and for EIB exchange rate: USD 1 = EUR 0.951 or EUR 1 = 1/0.951 = 1.052 (<https://www.irs.gov/individuals/international-taxpayers/yearly-average-currency-exchange-rates>).*

Source: Compiled by FAO from multiple sources.

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International financial institutions (IFIs) are key providers of finance to agrifood systems in low- and middle-income countries, with key institutions estimated to have committed over 15 billion to the agrifood sector in 2022 (Table 3).

Official development assistance (ODA) plays a crucial role in funding agriculture and food security initiatives in many developing countries. However, the lack of a unified definition for food security and nutrition, coupled with the intricate nature of interventions, results in varying estimates of how much ODA is allocated to these critical areas. Some interventions target the underlying drivers of food insecurity, such as rural infrastructure and conflict resolution, while others focus on immediate fixes like food procurement and distribution. This diversity of approaches contributes to the disparity in spending estimates. Using data from the OECD dedicated Development Assistance Committee database, analysis<sup>32</sup> find that using the European Commission's holistic definition, the average annual ODA grants for agriculture and food security during 2019–2021 amounted to USD 63.8 billion. In contrast, the G7 definition, which adopts a narrower scope, yields an estimated yearly average spending of USD 6.9 billion for the same period. The choice of definition also impacts the analysis of trends. For example, between the 2009–2011 and the 2019–2021 periods, based on the Ceres2030 definition, ODA declined by 10.0 percent; based on the agriculture, forestry and fishery (AFF) definition, it remained stagnant; and based on the ODI definition, it increased by 19.1 percent.<sup>33</sup> Nevertheless, certain yearly trends persist across all definitions. Notably, there is a substantial surge observed between 2007 and 2008, ranging between 13 and 34 percent. It was an immediate response to the 2007–2008 global food price crisis. Following this peak, there was a period of stability until a decline in 2012, followed by a subsequent rise the following year. The year 2015 stands out due to a significant decrease, followed once again by an increase in the subsequent year. Since then, total disbursements have largely stagnated. This illustrates the lack of continuous efforts aimed to tackle the increasing numbers of challenges and undernourished people in the last decade.

In recent years, a significant structural shift has taken place in development assistance. There has been a growing emphasis on short-term humanitarian interventions. Even prior to the robust humanitarian response witnessed in 2022, approximately 75 percent of the increase in ODA allocated to food security and nutrition between the early and late 2010s was of a humanitarian nature and focused on immediate needs. However, this trend is not sustainable. A more robust commitment to addressing the underlying causes of food insecurity and malnutrition, along with enhancing the resilience of agrifood systems, is essential.<sup>34</sup>

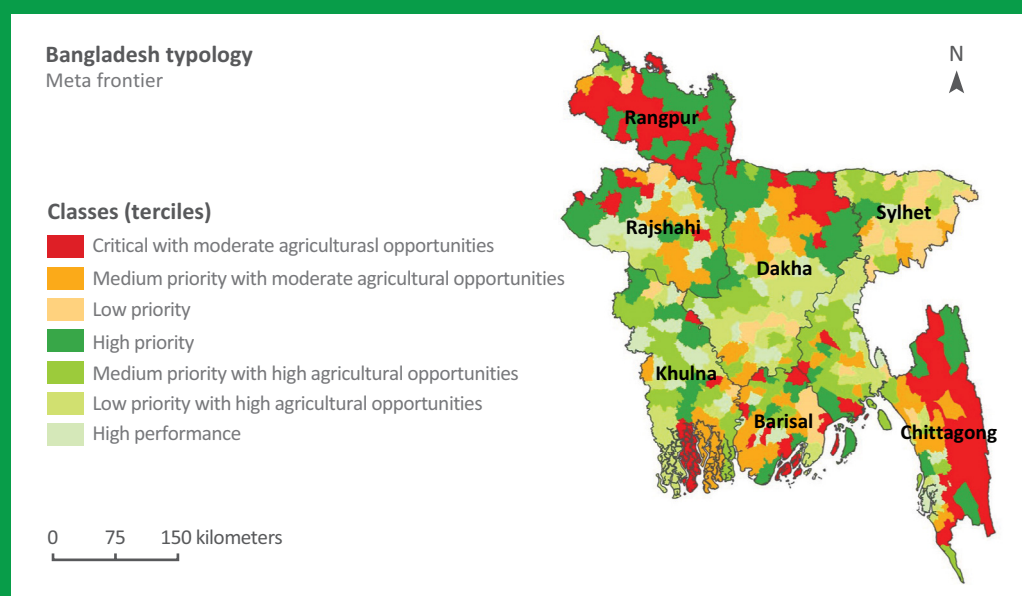
Closing the investment gap in agriculture would require combined efforts from public and private agents through both traditional (increased ODA, financial support to multilateral institutions) and innovative financing mechanisms. FAO has increased its efforts to support enhanced investments through the Hand in Hand initiative, which facilitates the identification of investment opportunities in agrifood systems of developing countries (Box 3).

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### BOX 3. FAO Hand-in-Hand Initiative in Bangladesh

Launched by FAO in late 2019, the Hand-in-Hand (HiH) initiative employs territorial analysis to identify opportunities for investment in nearly 70 member countries and developing regions. It offers countries and their development and investment partners programmatic support and a neutral platform for dialogue through forums for agrifood systems investments which promote partnerships including with the private sector and aim at mobilizing resources for viable, inclusive, and sustainable projects. HiH utilizes georeferenced biophysical and socio-economic data to identify the potential for interventions in agrifood systems in high poverty—high potential areas. Economic and financial analysis confirms the viability of investments in terms of returns which are attracting private investments. Poverty reduction and carbon emission assessments, support prioritizing socially inclusive and environmentally sustainable interventions. FAO as the lead agency for the High Impact Initiative on Food Systems Transformation has identified HiH as the key means of implementation for further encouraging scalable and targeted investments in agrifood systems. The initiative is implemented in close collaboration with the United Nations Rome-based Agencies, the World Bank and United Nations Industrial Development Organization (UNIDO). HiH offers innovative ways of strengthening, expanding, and sustaining ambitious national programs for agrifood systems transformation to achieve Sustainable Development Goals 1 (poverty reduction), 2 (hunger eradication) and 10 (reducing inequalities). HiH supports 13 countries in Asia and the Pacific region with investments that have mobilized strong private sector interest contributing to the sustainable and inclusive transformation of many targeted areas and agrifood systems. Bangladesh, having joined the HiH Initiative in 2020, stands out as one of the most advanced members, showcasing strong commitments including private sector engagement. The government, with HiH support, mobilized \$543 million from a joint World Bank-IFAD Program on Agricultural and Rural Transformation. A Bangladesh Agriculture Investment Forum, facilitated by FAO in 2023, aimed to boost targeted investments and financial access for food producers and agri-processing companies. Bangladesh presents multiple other investment options in tomato, pineapple, jackfruit, mango, onion, and potato, along with climate-smart rice production.

**FIGURE 10. Territorial analysis indicating agrifood systems potential in high poverty areas in Bangladesh**



*Note: The boundaries and names shown, and the designations used on this map do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers and boundaries.*

Source: FAO, OCHA.

Source: FAO, 2023.

### 4.3. Innovative financing mechanisms

While studies indicate that innovative financing could play a major role in boosting agriculture and achieving food security, existing examples of them are rather small-scale.<sup>35</sup> However, one study shows that there are business opportunities related to the transformation of agrifood systems, that could generate USD 4.5 trillion a year by 2030.<sup>36</sup> These opportunities can be leveraged through many kinds of financing mechanisms. This section provides evidence of some innovative mechanisms that contributed positively to finance initiatives towards agrifood systems transformation and achieving food security and nutrition.

#### Voluntary carbon markets

Voluntary carbon markets (VCMs), where carbon credits that represent verified emission reductions or removals are priced and exchanged, present a small but growing source of finance for sustainability transitions. The voluntary carbon market grew considerably over the last few years. The value was estimated at approximately USD 2 billion in 2021<sup>37</sup> with expectations of further growth to between USD 5 billion to USD 50 billion by 2030.<sup>38</sup> The major driver of demand was corporates looking for offsets to meet their new net zero commitments. In 2022 volumes traded dropped by more than 50 percent from the 2021 peak, but prices were significantly higher, leaving the overall value largely unchanged.<sup>39</sup> The drop in volume reflected a cooling in corporate demand linked to concerns about integrity of certain carbon credits, as well as regulatory<sup>40</sup> and guidance framework<sup>41</sup> under development to ensure greater integrity which will affect both demand and supply of credits. As governments are agreeing the rules for global market-based cooperation under Article 6 of the United Nations Framework Convention on Climate Change (UNFCCC), there is increasing consideration of the interaction between voluntary markets Article 6 implementation, but uncertainties remain.

Agriculture and food systems have historically played a small role in VCMs, representing only 1 percent of credits, and 5 percent of projects.<sup>42</sup> In terms of credits issued about two thirds have been from manure methane digesters, followed (by some distance) by sustainable grassland management and agroforestry. Credits originate from more than 40 countries, mostly middle-income countries, in particular China for methane digesters, with few projects in low-income countries.<sup>43</sup> While the starting point is low, there are signals of strong growth. On the supply side, two-thirds of registered agrifood projects are in the pipeline hence supply of credits will soon significantly exceed past credits.<sup>44</sup> Innovation in monitoring methods is expected to expand potential credit supply from agriculture and reduce monitoring and hence transaction costs. On the demand side corporate buyers increasingly look for carbon credits with SDG co-benefits, such as biodiversity or poverty reduction, which agriculture credits are well positioned to achieve, and there is a growing preference for credits from carbon removal activities. Removal credits and credits with co-benefits have been able to command premium prices, especially in the largely dominant over-the-counter trade.<sup>45</sup>

The potential of VCMs to provide growing finance for agricultural transitions, especially small producers, faces some specific challenges, not least the need to aggregate emissions from many smaller sources/farms, possibly from different activities and hence more complex and

costly measurement, the need to ensure permanence for removals, prove additionality in complex agricultural settings, and demonstrate adherence to evolving integrity criteria. In view of this complexity, VCMs—and also carbon finance through Article 6 implementation—should not be considered a “silver bullet”, but they can be a relevant additional and complementary source of finance to support the transition towards sustainable agrifood systems.

### Blended finance

Blended finance involves the strategic use of public or philanthropic capital to attract private sector investment for sustainable development in developing countries. It combines concessional funding with commercial investments to address challenges such as prohibitive transaction costs and reduce perceived and real risks associated with investing in agrifood systems. It combines private and public funds, grants, and loans to enhance the financial viability and sustainability of projects. Blended finance (see examples in Box 4) is increasingly emerging as an innovative solution to de-risk private investments and reduce transaction costs, mobilizing additional capital for agrifood sector development, and helping achieve the SDGs.

#### BOX 4. Examples of blended finance

Agribusiness Capital Fund (ABC), Africa Agriculture and Trade Investment Fund (AATIF), Agriculture Financing Initiative (“AgriFi”) Facility and the Huruma Fund are examples of agri-blending funds supported by the European Commission. Their average sizes range from USD 0.5 million to USD 20 million. These funds provide short-term working capital financing, long-term loans, quasi-equity and equity to agri SMEs, cooperatives, agribusiness companies, micro-finance institutions, local banks and agritech companies operating in developing countries with a link to smallholder farmers.

The Madrid-based Huruma Fund employs a blended finance model to support smallholder farmers in Latin America, the Caribbean, sub-Saharan Africa, and Asia. With EUR 10 million in concessional first-loss equity from the European Commission and a EUR 20 million long-term loan from the Spanish Agency for International Development Cooperation (AECID), the fund attracted EUR 90 million from commercial investors, including Caixa Private Bank and Allianz Group. This structure mitigates risk, reduces capital costs, and enhances returns for private investors. The fund is complemented by a technical assistance facility, focusing on borrower support, training, and addressing sectoral challenges to improve the business environment. Overall, Huruma aims to empower 100,000 smallholder farmers to increase income and escape poverty.

Sources: IFAD. 2024. Agri-Business Capital (ABC) Fund. In: IFAD. [Cited 10 July 2024]. <https://www.ifad.org/en/abcfund>; AATIF (Africa Agriculture and Trade Investment Fund). 2024. Objective of the Fund. In: AATIF. [Cited 10 July 2024]. <https://www.aatif.lu/objective-of-the-fund.html>; Huruma Fund. 2024. Huruma Fund. [Cited 10 July 2024]. <https://fondohuruma.com/en/presentation>.

### National Development Banks (NDBs)

Following decades of decline due to a mixed record and tarnished image, National Development Banks are now recognized as a relatively untapped source of financing for SDGs, low carbon development, and agrifood systems vitalization. NDBs are generally government or quasi-government entities that provide financing in support of socio-economic development,



including poverty reduction. To strengthen their capabilities and address key risks, NDBs require clear mandates and strategies, backed by technical advice and training in sectoral knowledge and operational know-how to ensure the development of a pipeline of robust AFS projects. They need good governance and transparent decision-making processes for financial rigor and sustainability. Finally, safeguards including appropriate policy guardrails are necessary to curb political interference (Box 5).

### **BOX 5. Unlocking National Development Banks' Potential for Agrifood Systems Transformation**

NDBs may focus on strategic industries/sectors such as the Agriculture Development Bank of China (ADBC) or the Land and Development Bank of South Africa (LADBSA), which invest in agricultural development). They may also have a broader scope, such as the Brazilian Development Bank (BNDES), the largest in Latin America and the Caribbean (LAC) which serves as a key vehicle for long-term financing across strategic sectors in Brazil. NDBs' vary in terms of portfolio size, client base and national or sub-national in geographic scope. They can be tier-1, i.e., engaging directly with final clients or tier-2 institutions channelling funding via other intermediate financial institutions, e.g., commercial banks, credit unions, or hybrid. Altogether they are an important force with trillions of US Dollars equivalent in assets and portfolios, providing financial coverage via a vast network of branches across urban, rural and unbanked regions. They may provide loans, grants, guarantees, training, technology-transfer and technical assistance to public entities and private enterprises (farms to firms) to stimulate economic activity, job creation, and investments.

Several "new generation" NDBs seek to combine "purpose with profitability", by: (i) implementing public policy and encouraging economic development; (ii) addressing market failures and financial exclusions via first- and last-mile financing and guarantees; (iii) promoting innovations (Mexico's Trust Funds for Rural Development (FIRA), has pioneered issuance of climate/green bonds) and entrepreneurship (Colombia's Fund for the Financing of the Agricultural Sector (FINAGRO), supports technical assistance to small and medium and large producers and organizations); (iv) financing public goods (e.g., via climate smart projects); and (v) playing countercyclical roles, supporting vital sectors and stabilizing the economy during downturns and challenging times (e.g. NDB financing in LAC grew by approximately 40 percent during the COVID-19 pandemic, while private sector financing dropped. NDBs support to LAC was also higher than the total financing from regional and international development agencies, such as IDB and CAF in 2020).

There are 3 key business opportunities, where NDBs have the potential to provide effective, punctual and value-adding services: (i) More: NDBs are well-positioned to catalyse and unlock additional public (national, bilateral, or multi-lateral) or private (domestic and foreign impact investors, commercial banks, capital markets) resources; (ii) Better: NDBs can facilitate quality (green, socially responsible and inclusive) capital mobilization via reorientation of own portfolios, or repurposing of public/private funds they channel; and (iii) De-risked: NDBs can utilize their local presence, knowledge and ability to leverage appropriate instruments, such as guarantees to help de-risk capital, reducing the financial impacts and costs to investors.

*Source: FAO. (forthcoming). Public Development Banks: A Roadmap for Unlocking Investments for Agri-food Systems Transformation. Investment Center Approach Paper. Rome.*

## **5. CONCLUSIONS AND RECOMMENDATIONS**

Global hunger levels remain above those of the pre-COVID-19 pandemic, and the world continues to be off track to meet the Zero Hunger target by 2030. In many countries, a persisting adverse economic context remains an obstacle to ending hunger. Conflicts, crises, and climate variability and extremes pose additional challenges, while poverty and inequality represent major obstacles to global food security. At the same

time, it is imperative to meet the evolving energy and nutrition requirements of a growing and increasingly affluent global population sustainably. This will require increased and sustained collective efforts and a more active engagement and leadership from the public sector. Governments will continue to play a key role in setting their national research and development agendas, shaping incentives to local farmers, and interceding in support of the poorest and most vulnerable in times of crisis.

The Group of 20 (G20) can facilitate targeted and coherent actions to foster global food security. The G20 demonstrated leadership and decisive action in times of crisis and made many contributions to bring the world closer to Zero Hunger. These include its invaluable contribution to enhancing agricultural commodity market functioning, to agricultural innovation in the tropics, to research and knowledge sharing, to tackling food loss and waste, and to agricultural risk management.<sup>46</sup> The Group can continue to use its important convening power to achieve Zero Hunger.

#### RECOMMENDATIONS

1. **Strengthen Social Protection:** Promote immediate access to food and nutrition-related services through scaled-up social protection programmes, including cash and/or in-kind transfers to immediately relieve hunger and to increase human productive potential, particularly for the most vulnerable populations.
2. **Invest in the broader economy of neglected areas:** Create opportunities for the poor and hungry to increase their incomes and improve their livelihoods through productivity-enhancing investments, e.g. in better infrastructure, market access, education, health, and access to information and communications technologies.
3. **Improve market transparency and functioning:** Take concrete steps to improve transparency, functioning and resilience of global food and agricultural markets, by reducing distortions, improving competition, and refraining from the use of export restrictions. Provide the Agricultural Market Information System (AMIS) with adequate support to continue to monitor global food supplies of wheat, maize, rice, and soybeans, and consolidate its work on fertilizer markets and vegetable oils. Work to enhance transparency of trade policies and measures affecting markets and revitalize WTO's negotiations on agriculture.
4. **Review and repurpose agricultural support:** Repurposing some of the support to food and agriculture can be a means to improve agrifood systems efficiency, achieve food security and nutrition and make healthy diets affordable for all. Repurposing should also provide strong incentives to reduce GHG emissions, adapt to climate change and manage natural resources sustainably under planetary boundaries.
5. **Invest in Agricultural Knowledge, with accelerated efforts on Research and Development (R&D), Extension Services and ICT in agriculture:** Public expenditure in R&D remains indispensable to secure long term sustainable productivity increases. More efforts need to be made to secure adequate long-term investments in agricultural R&D by the public sector, targeting these investments to contemporary sustainability challenges faced by agrifood systems and strengthen the capacity of farmers, in particular smallholders, to access and adopt existing and new knowledge through extension services, and relying on cost-effective digital solutions.
6. **Step up support to both public and private efforts for more and better investments in agrifood systems:** Commit to increase investment in agriculture and to provide the enabling environment for increasing investment in sustainable approaches to productivity growth, with particular attention to smallholder farmers. Support and encourage the efforts by International Organizations and Financial Institutions to mobilize additional resources to meet the needs of agrifood systems.

## NOTES

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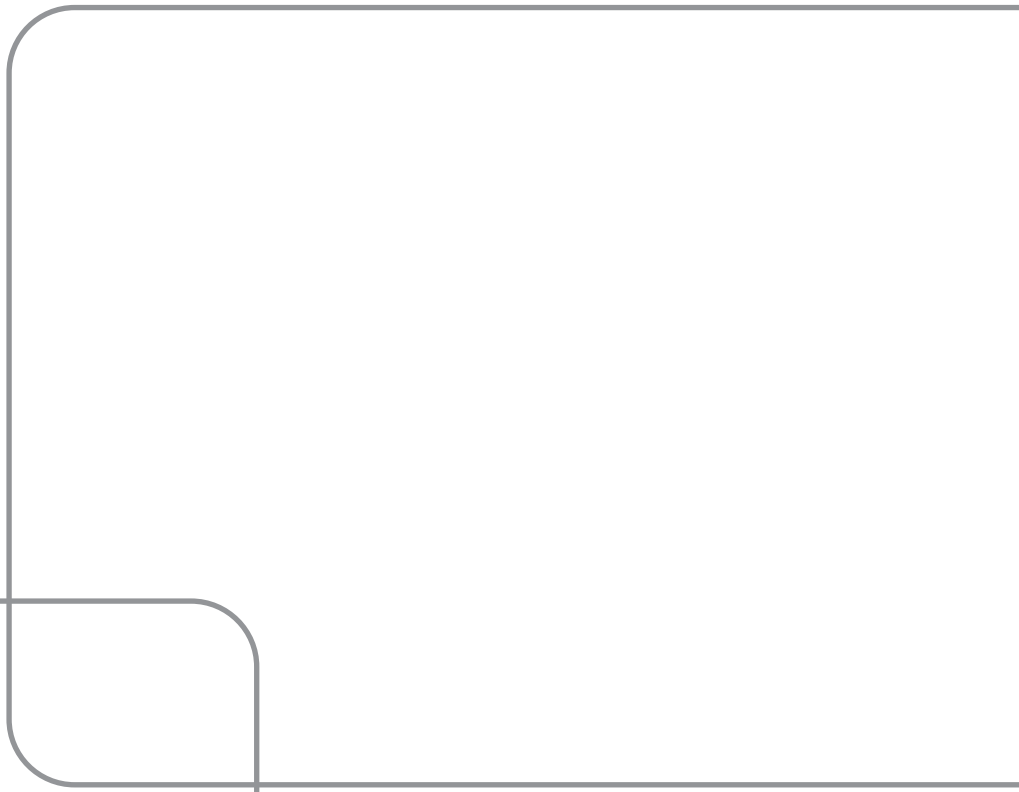
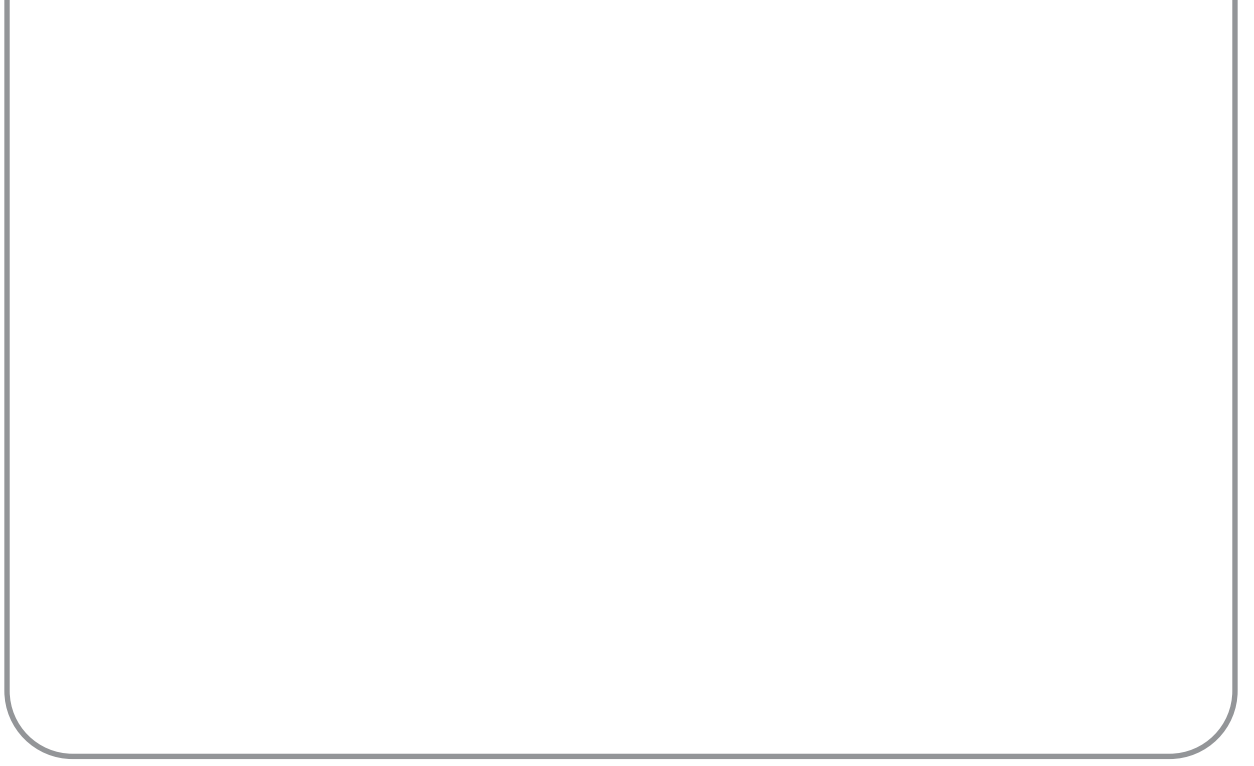
9. Food safety and nutrition are often addressed separately. Unsafe food can cause illnesses and has significant implications on socio-economic indicators. Food safety is essential in advancing health, livelihoods, trade, economic growth, and overall prosperity. Nutritious foods that contribute to healthy diets, such as fresh fruits and vegetables, nuts, legumes, and animal-sourced foods are susceptible to food safety hazards. Improved food safety can contribute to improved nutritional status and to the reduction and prevention of many of non-communicable diseases.

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