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Agroindustry's role in achieving zero hunger: What strategic actions can developing countries take?

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Abstract

Developing countries face an urgent need to provide more and better food for their growing populations. These countries currently only process very little of their own agricultural output, resulting in widespread malnutrition among their citizens. A large share of processed food consumed domestically is still being imported, while little value is added to locally produced food, which is often exported in its raw form. Although developing countries are the largest producers of primary food products, it is developed countries that dominate global food exports due to their processing capacity. Agroindustry presents a significant opportunity for developing countries to substitute imports and add value to their agricultural products, thereby improving their food security and generating jobs and income. Value addition in food production is found to be positively linked to reducing undernourishment, with significant potential for future growth. The barriers to value addition in food production across developing countries are explored and policy recommendations to overcome these challenges are presented.

Key Messages

- 1.** Agroindustry is key to advancing zero hunger by increasing food availability, improving access to food, and enhancing food quality and nutrition. Countries with higher value-added food production have lower undernourishment rates.
- 2.** The industrialization of the food sector in developing countries has remained stagnant at around 20 per cent (measured as the ratio between the value of primary foods and MVA in food production). Processed food exports remain limited, while their imports continue to rise.
- 3.** Private sector investment, support through development cooperation, and government incentives in developing countries are essential to boost agroindustry, add value to local produce, and provide higher-quality food.

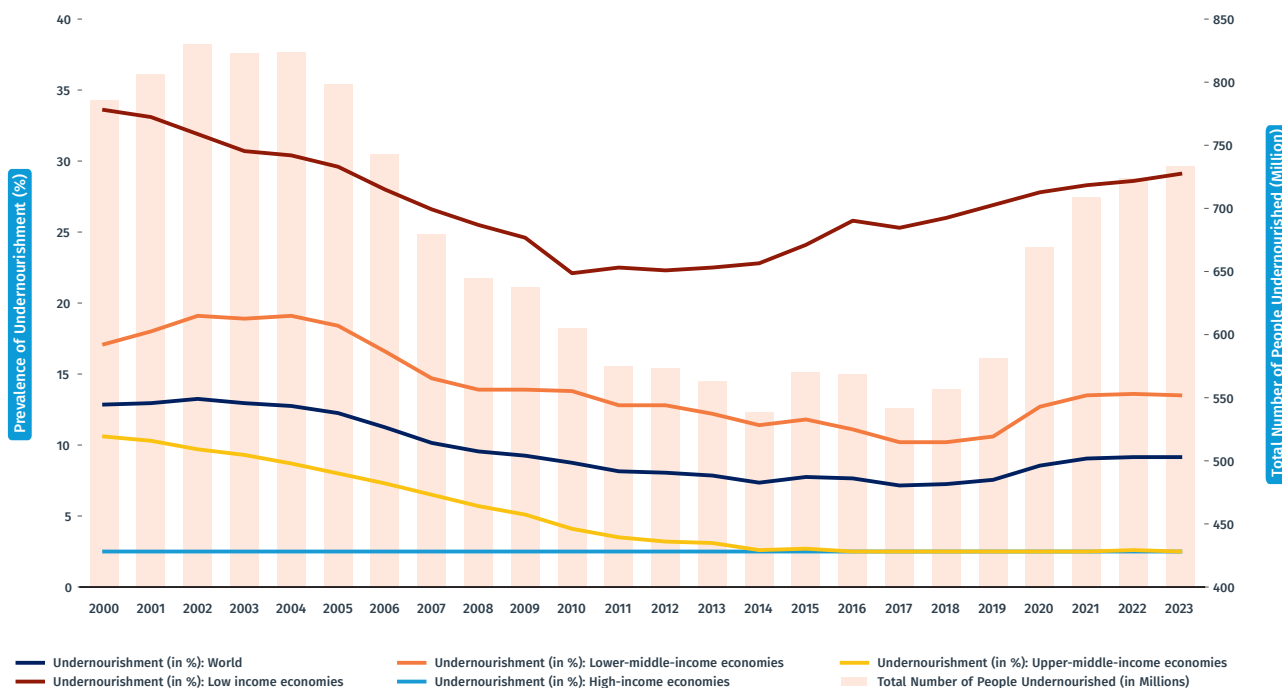
Resurgence of hunger: A growing global challenge

The global share of undernourished people had been steadily declining for decades, but recent years have seen a reversal of this trend (see Figure 1), driven mainly by economic challenges in developing countries, the impacts of the COVID-19 pandemic, and the combined effects of armed conflicts, migration and climate change on food prices, agricultural production and farm inputs¹. By 2023, around 733 million people were undernourished, an increase of approximately 152 million people since 2019, effectively erasing 15 years of progress².

Furthermore, rising food demand, which is associated with growing populations, the adverse effects of climate change on food production, and deepening economic inequalities, have exacerbated the global food crisis^{3,4}. The scarcity of water, arable land and energy in developing countries further strains food production, which will need to increase by 60 per cent by 2050 to meet global food demand⁵.

Many developing countries, particularly in Africa and Small Island Developing States (SIDS), are experiencing escalating food insecurity⁶. This is largely due to insufficient domestic food production, resulting in reliance on imports, while a significant share of the population lacks the income to afford these. In Africa, for instance, the high cost of imported food has contributed to severe food insecurity, with 83 per cent of the population in countries such as Sierra Leone facing food vulnerability⁷. Similarly, SIDS often depend heavily on imported foods, a dependency that undermines local agriculture and intensifies food insecurity⁸. Urbanization, economic growth and shifting population dynamics are transforming the structure of economies and driving demand for more processed and more sustainable food products of higher nutritional value. At the same time, critical segments of the food system are becoming more capital-intensive, vertically integrated and concentrated among fewer players.

Figure 1 The number of undernourished people is on the rise again.



Note: The left axis indicates the prevalence of undernourishment worldwide and by country income group as lines in per cent. The grey bars represent the total number of people affected on the right axis. Undernourishment levels below 2.5% (observed in high-income and, since 2014, also in upper middle-income countries) are depicted as <2.5% in the [FAO dataset](#) for statistical purposes and are therefore shown here at 2.5%. FAO defines undernourishment as the “proportion of the population whose habitual food consumption is insufficient to provide the dietary energy levels that are required to maintain a normal active and healthy life”.

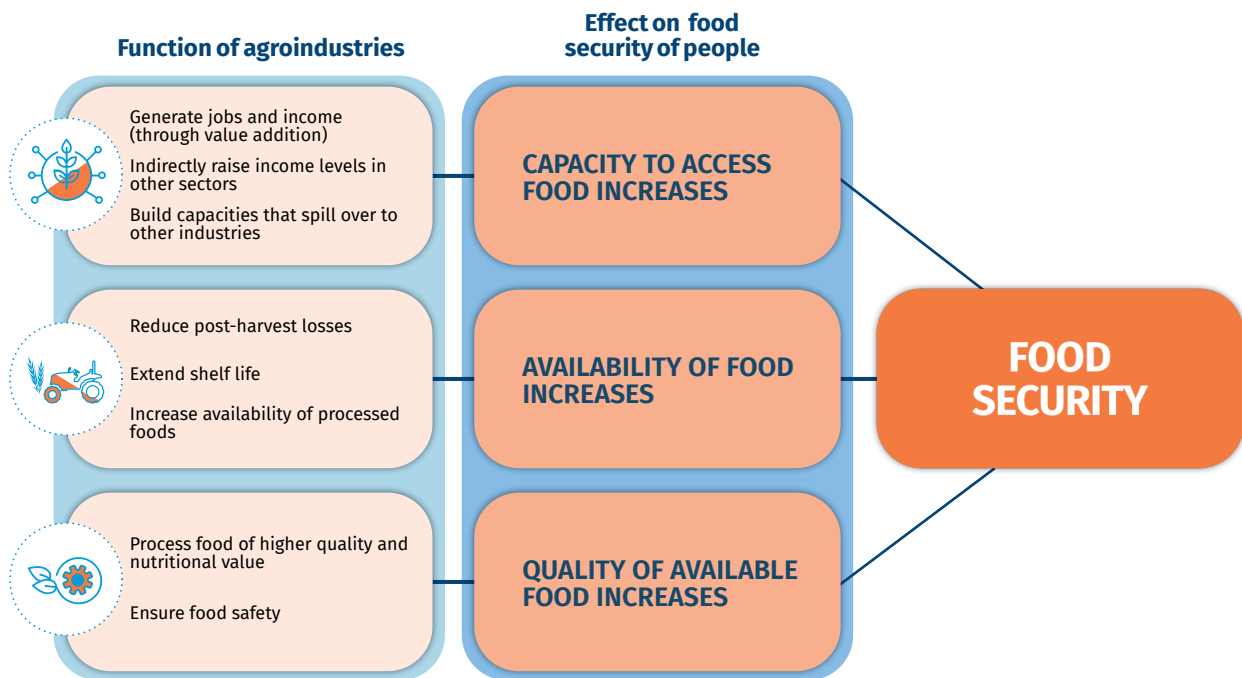
Source: Authors' elaboration based on [FAOSTAT](#)

Agroindustry's impact on food security

The food processing industry has a wide range of positive impacts on both the quantity and quality of food people consume. But is the processing of more and better food the only option for developing countries?

The impact of agroindustrial production on (under)nutrition—and hence on achieving zero hunger—can be measured across three dimensions of food security: 1) food availability; 2) access to food (typically through purchasing power or home production), and 3) food quality (see Figure 2).

Figure 2 Combined impact of agroindustrial production on food security.



Source: Authors.

Increasing people's ability to access food

Agroindustry plays a crucial role in generating income and jobs, thus increasing people's ability to purchase food and, ultimately, to overcome food insecurity. Agroindustrial enterprises, which are often located in rural areas, generally pay higher wages and offer better jobs than agriculture, including for less-skilled, underemployed and underpaid workers and for women^{9, 10, 11}. Moreover, because many food processing activities can be performed on a small scale using affordable processing technologies, local entrepreneurs can establish and expand their own agroindustrial businesses, contributing to entrepreneurial growth and strengthening the local business ecosystem¹².

In addition, by adopting advanced technologies and streamlining business operations, agroindustrial enterprises can reduce food processing costs. These savings often translate into higher per-unit prices paid to farmers, thereby increasing their earnings and improving their own food security. Moreover, the efficiency gains enable

agroindustries to produce food more cost-effectively, making it more affordable for economically disadvantaged segments of society.

Finally, the expansion of agroindustry enhances employment opportunities throughout the entire food value chain, encompassing sectors such as farming, collection, transport, logistics, trading, marketing and business support services. Such growth not only generates jobs but also boosts income levels, ultimately enhancing food security. The positive effects on food security are particularly pronounced when smallholder farmers are integrated into these value chains^{13, 14}. Moreover, the development of agroindustrial capacities often generates spillover effects into other industries; agroindustry frequently serves as a catalyst for economic development, facilitating the reallocation of resources from labour-intensive and less productive activities—such as traditional agriculture or informal services—to more capital- and technology-intensive sectors, including advanced agroindustry¹⁵.

Increasing food availability

Agroindustry plays a key role in improving food availability by transforming food commodities into processed products that can be transported, conveniently stored and consumed. In sub-Saharan Africa, post-harvest losses account for about one-third of total food production¹⁶. Decentralized collection and semi-processing of food commodities could reduce such losses. Moreover, the shelf-life of food can be extended through agroindustrial processing techniques such as drying, milling, fermenting, preserving, canning, packaging and other forms of processing, and effectively minimize the risk of spoilage¹⁷. Agroindustry also facilitates long-term storage, ensuring reliable food supply during periods of

shortages. By making it possible for crops to also be sold out of season, food processing helps keep prices stable, preventing seasonal price spikes¹⁰.

Agroindustry is also crucial in meeting the food needs of the growing urban populations in developing countries. The shift from food preparation using ingredients from one's own farm or garden, or from traditional open markets to processed foods sold in supermarkets and convenience stores saves time, which enables individuals, especially women, to participate more in paid work outside the home¹⁸.

Increasing the quality of food

In many countries, access to safe food with adequate nutritional value for a healthy and balanced diet is limited. A balanced diet is not even guaranteed among farmers who consume the food they produce through subsistence farming, because it loses quality and nutritional value over time. Maintaining food quality and nutritional value is just as challenging in urban and peri-urban areas, where 1.7 billion people currently experience food insecurity¹⁹.

Unsafe food poses a serious threat to human health and well-being. Illness, disability and premature deaths caused by unsafe food have led to significant productivity losses; the World Health Organization (WHO) estimated these losses in 2016 at USD 95 billion²⁰ for low- and middle-income countries. Populations in these countries are often the hardest hit, with countries in South and Southeast Asia and sub-Saharan Africa accounting for 53 per cent of all foodborne illnesses and 75 per cent of related deaths.

Agroindustry enhances food quality and safety through various processing and preservation techniques. Research and development (R&D) in the industry ensures not only efficiency in the

production of high-quality food, but also contributes to the discovery of new food sources and ingredients, ultimately resulting in higher-quality processed food formulas. Agroindustry also has the potential of increasing the variety of foods available to consumers, contributing to healthier diets. Finally, it can improve the nutritional value of processed foods by fortifying them with micronutrients, proteins, minerals and other beneficial components that may be lacking. This is crucial in the wake of rising consumption of cheap (ultra-) processed foods, which are often high in sugar, salt, saturated fats and preservatives, and are linked to obesity, diabetes, cardiovascular diseases and cancer²¹.

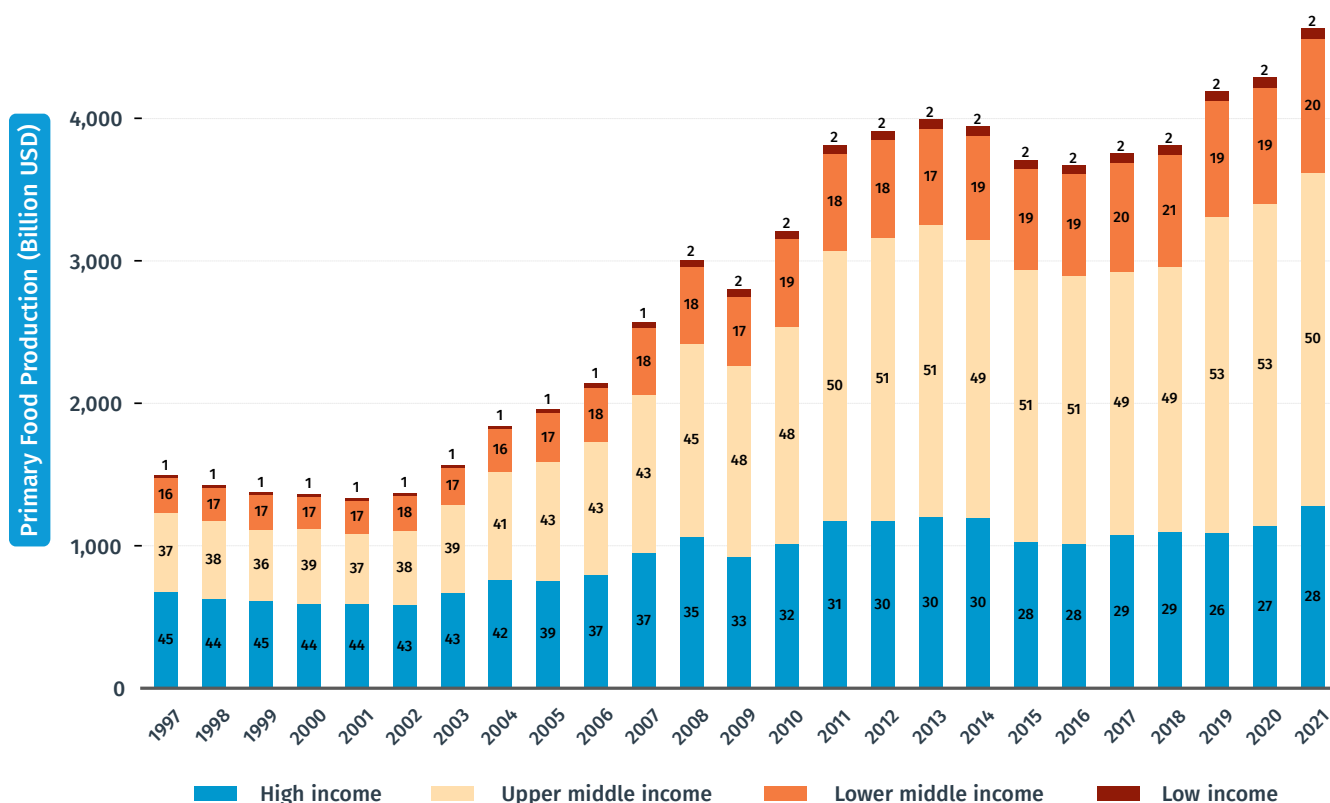
Enhancing the quality and safety of food enables developing countries to participate in the processing and trade of food products in global value chains (GVCs) and to expand their exports. In recent years, with more perishable goods crossing borders, the emphasis on food safety has increased. The COVID-19 pandemic further highlighted the link between health, environmental sustainability and development, making food safety a priority at both the national and international levels.

Trends in food production and their effects on undernourishment

Food production in developing countries has increased in recent decades (Figure 3). While the value of total primary agricultural production was equally distributed among developed and developing countries in the early 2000s, developing countries have since multiplied their output and now account for a much larger share. However, not all developing countries have been part of this positive development. Although primary food production has grown across all country

groups over the past 20 years, only upper middle-income countries have markedly expanded their share of global food production, even surpassing that of high-income countries. In contrast, food production in low- and lower middle-income countries has developed in line with overall growth, resulting in a stagnant share of total food production in recent decades.

Figure 3 Total primary food production has increased in all country groups in the last two decades, with the share of higher middle-income countries increasing significantly.



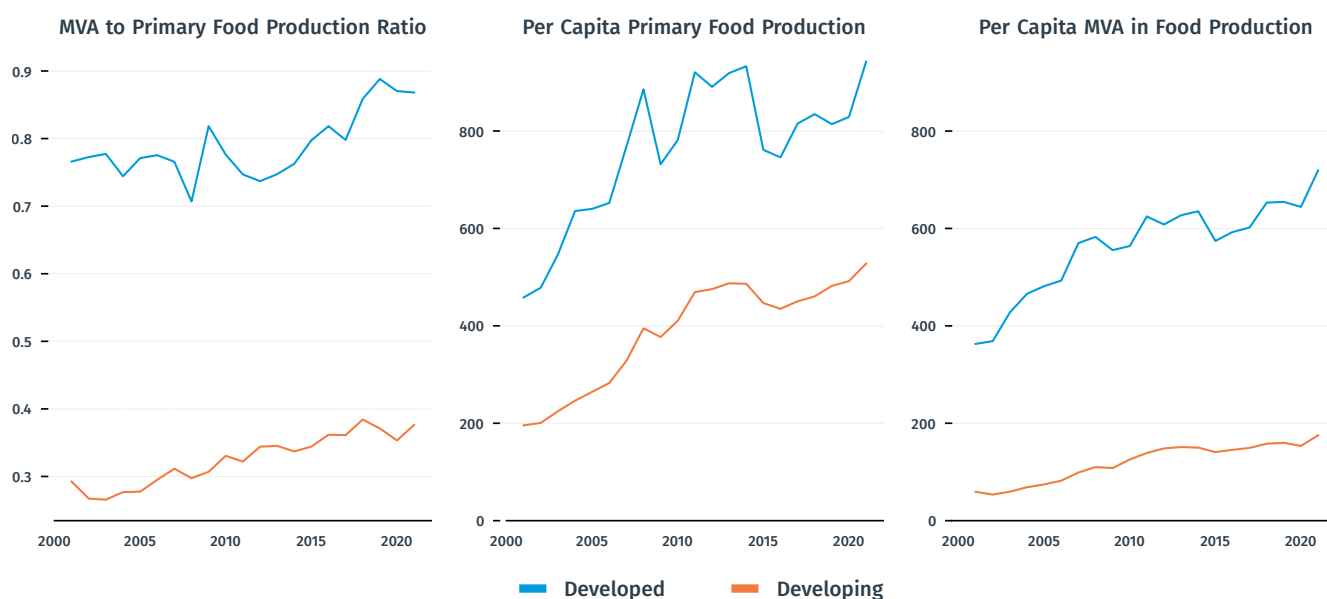
Note: The figure depicts the trend in the value of primary food production shown in billions of USD, using stacked bars. Each bar segment represents the percentage share of total primary food production contributed by each country income group. The value in each segment represents this rounded percentage share. The classification of income groups follows the World Bank's definitions, based on per capita gross national income (GNI) thresholds. The figure presents data from all countries with available data for each year between 1997 and 2021, covering a total of 132 countries.

Source: Authors' calculation based on FAOSTAT

However, the value of primary food production is only one element of the total value created by the end-to-end food chain²². When analysing the ratio of the primary food production's value to that of manufacturing value added (MVA) in food production—used here as an indicator for the food industry's level of industrialization—we find a significant disparity between developed and developing countries (Figure 4). The value of food processing in developed countries is nearly equivalent to that of primary food production, indicating a high degree of industrialization. The value

of food processing in some developed countries even surpasses that of primary production due to the extensive scale of downstream processing and value-addition activities. For instance, in Norway, food processing contributes around 50 per cent more to GDP than primary food production. In contrast, in developing countries, the processed food to primary food production ratio is approximately 0.3 per cent, reflecting low levels of industrialization in the food sector and the associated limited capacities of food processing.

Figure 4 The industrialization of developing countries' food industry remains limited; they continue to produce less primary and processed food products per capita than developed countries. The value of primary food production exceeds that of the food industry in both country groups.



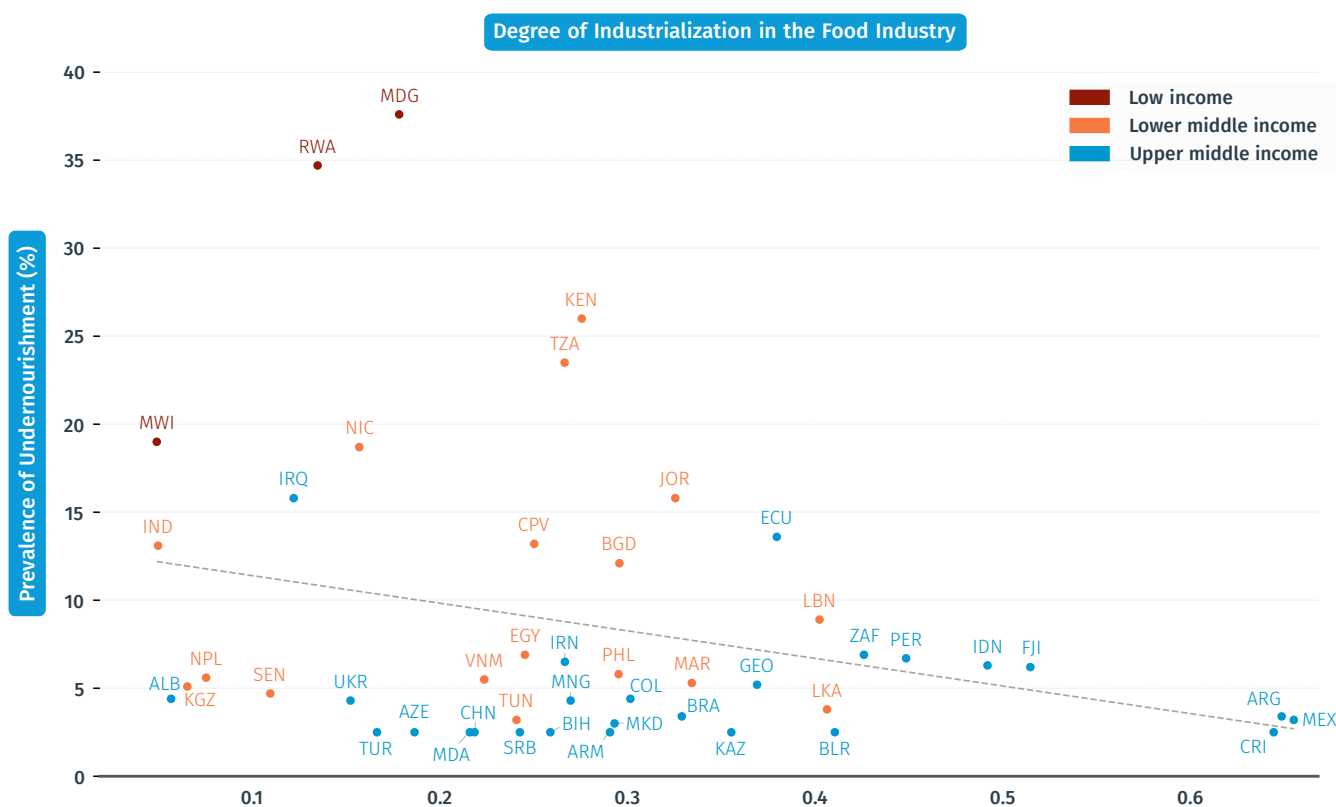
Note: The first figure depicts the trend in the ratio of MVA in food production to that of primary production for developing and developed countries (used here as the indicator for the food industry's level of industrialization). The second and third figures show the development of per capita values of primary food production and MVA in food production for these country groups. The figure includes data from 65 countries with available data for primary food production (FAOSTAT) and MVA in food and beverages (INDSTAT) for each year between 2001 and 2021, with two outliers excluded. The MVA to primary food production ratio as well as the per capita primary food production and the per capita MVA in food production are averages across all included countries, with each country contributing equal weight. Developing countries include low-income countries (LICs), lower- and upper middle-income countries (LMICs, UMICs); developed countries include high-income countries (HICs) as defined by the World Bank.

Source: Authors' calculation based on FAOSTAT and INDSTAT Revision 3²³

Figure 5 highlights the relationship between the level of the food industry's industrialization and undernourishment. It shows that developing countries with a more industrialized food industry tend to have lower rates of undernourishment among their populations.

When we look at the level of industrialization of countries' food industry over time, we observe a similar trend in emerging economies, where the prevalence of hunger has decreased recently (Figure 6). While the food industry's level of industrialization in emerging countries has increased over the past two decades, the prevalence of undernourishment has declined.

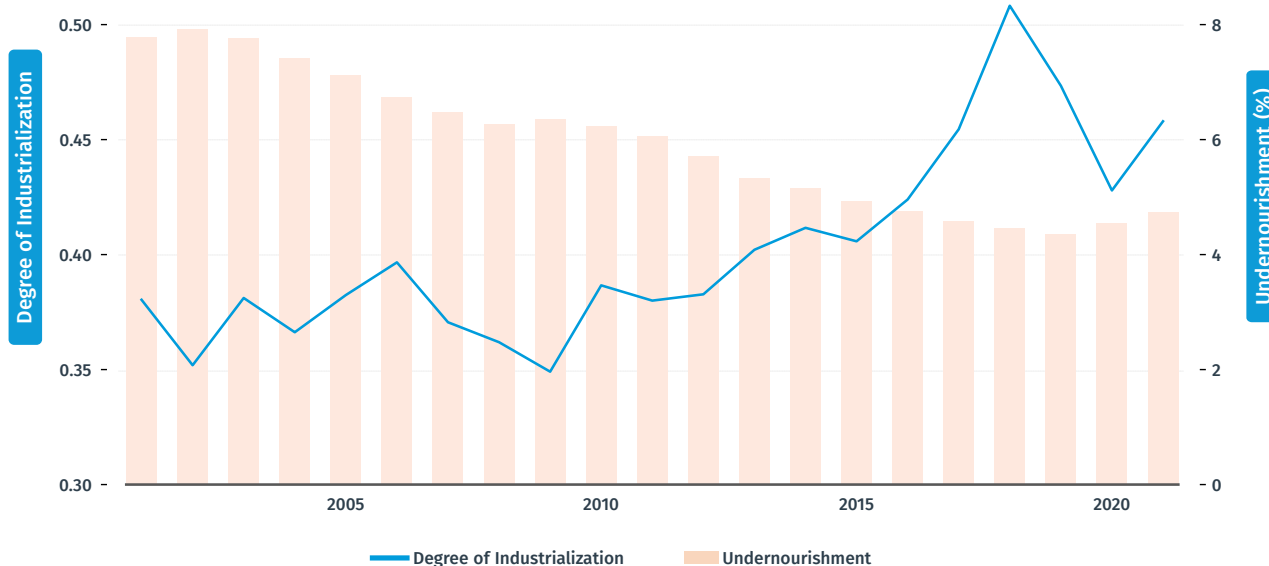
Figure 5 In 2020, developing countries with a more industrialized food industry experienced lower levels of undernourishment.



Note: The figure depicts the relationship between the level of industrialization in food production (defined here as the ratio of MVA in food production to primary food production) and the prevalence of undernourishment by country. The figure includes 46 countries selected based on their presence in both FAO and UNIDO databases (excluding high-income countries and four outliers). Undernourishment below 2.5 per cent is displayed as 2.5 per cent. The trendline minimizes the overall vertical distance between all data points (OLS), and the different colours represent the different income groups among developing countries (as defined by the World Bank).

Source: Authors' calculation based on FAOSTAT and INDSTAT Revision 3²³

Figure 6 A rise in the food industry's level of industrialization in emerging countries correlates with reduced undernourishment.



Note: The figure depicts the level of industrialization in food production (defined here as the ratio of MVA in food production to primary food production) as a line on the left axis, and the prevalence of undernourishment per country (defined by FAO as the “estimate of the proportion of the population whose habitual food consumption is insufficient to provide the dietary energy levels that are required to maintain a normal active and healthy life”) as bars on the right axis. Emerging economies are represented by the 20 countries in the IMF’s emerging market group (IMF 2021). Both the manufacturing intensity values and undernourishment percentages are averages across all included countries, with each country contributing equal weight.

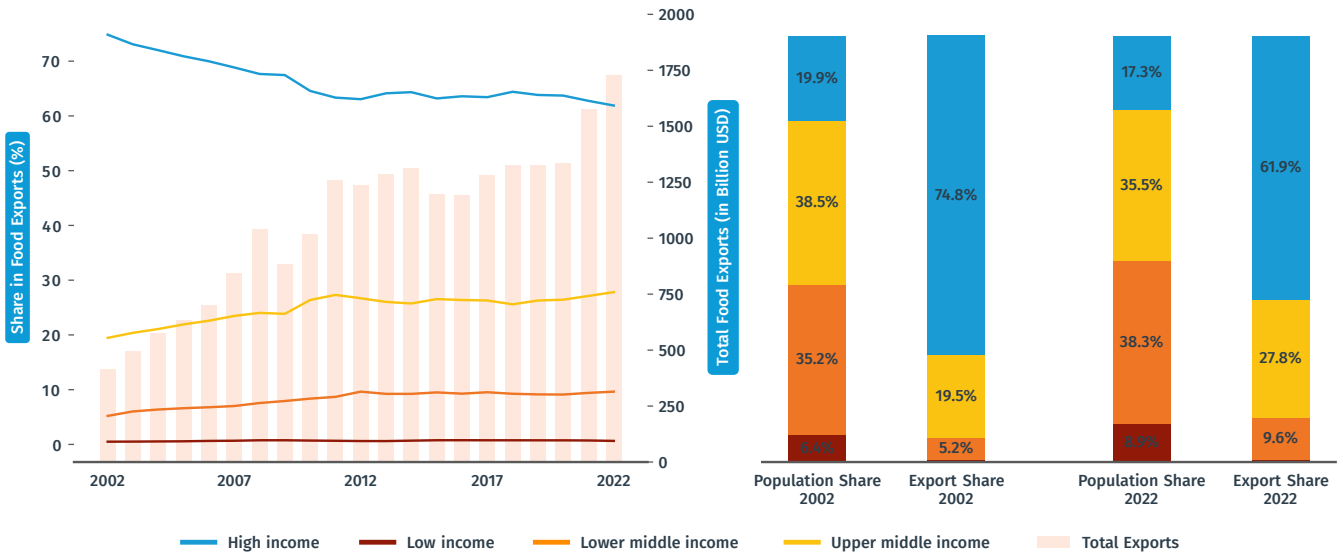
Source: Authors’ calculation based on FAOSTAT and INDSTAT²³

Trends in food trade and their effects on undernourishment

Trade in food products, which has the potential of increasing food availability in developing countries (many of which are food insecure), has expanded in recent decades, more than doubling between 1995 and 2022, amounting to USD 1.75 trillion²⁴. This growth has been driven by factors such as technological advancements and lower trade barriers²⁵. However, global food trade has lost momentum since the financial crisis in 2008 and has struggled to recover from the effects of the COVID-19 pandemic, geopolitical tensions, armed conflicts, the regionalization of food sourcing and the rising trend of re-shoring and close-shoring. The vulnerable position of developing countries in global food trade is especially apparent. Developed countries continue to dominate global food exports, accounting for a

disproportionately large share despite not being the largest producers of primary agricultural products and the fact that the food industry does not play an important role in their economies. In 2022, developed countries made up only 15.7 per cent of the global population but contributed nearly 60 per cent to global food exports (Figure 7). Five economies, namely Brazil, Canada, China, the European Union (EU) and the United States, capture the lion’s share of the global agricultural commodity exports market. When looking at the trend over the past 20 years, developing countries have made little progress in expanding their share of food exports; only a few upper middle-income countries have succeeded in increasing their participation.

Figure 7 Developed countries continue to dominate global food exports, while the share of developing countries remains stagnant despite their significantly larger populations.



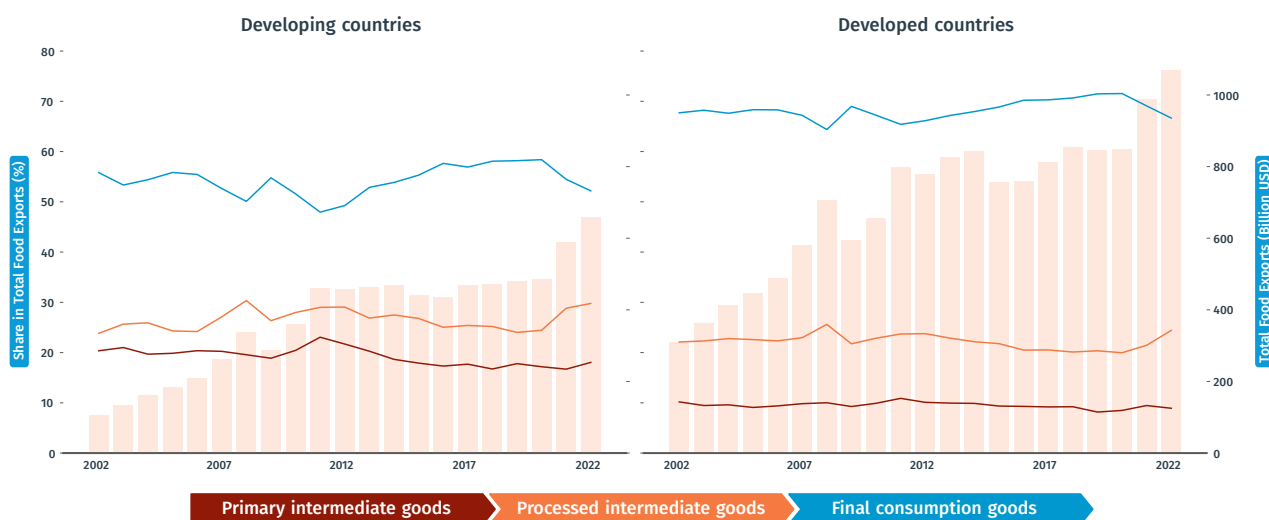
Note: The CEPII BACI dataset consists of annual bilateral trade flows at the product level, with products identified using the Harmonized System (HS), a standardized classification for traded goods. These product classifications were mapped to the Broad Economic Categories (BEC) (here Revision 5 from 2016). Here, we only focus on goods within the BEC category of agriculture, forestry, fishing, food, beverages and tobacco, which were further filtered using the HS classification by removing all products unrelated to food and beverages. The left figure shows the share of each income group in primary food exports as lines (left y-axis) and total food export value per year as bars (right y-axis). The right figure compares the population of each income group to their share of total food exports for the years 2002 and 2022. Income group classifications follow the World Bank's definitions.

Source: Authors' calculation based on [CEPII BACI](#)

When we look at type of agricultural products being traded, we find that the **share of processed foods in developing countries' global food exports** (in the categories primary goods for intermediate consumption, and processed goods for intermediate and for final consumption), we find that this category **has grown significantly in recent years** (Figure 8). However, this growth—as is the case in food production—has largely been

driven by a few upper middle-income countries, while the share of low-income countries has remained stagnant at a low level¹⁰. Although developing countries are major producers of primary food products, they only account for a small share of global food exports due to their limited participation in the production of processed food.

Figure 8 Developed countries continue to dominate food exports, including of processed food, while the share of developing countries' processed food exports for intermediate and final consumption remains stagnant.



Note: The BEC-5 categorizes value-added goods, starting with primary intermediates in the processing dimension, followed by increasing end-product specificity in the processed intermediate dimension (generic to specific processed intermediates), and concluding with final consumption goods (UNSD, 2016). The higher a country's exports in the latter three categories, the more industrialized its food industry. The figure shows the development of the shares of BEC-5 categories in food exports for both developing and developed countries represented by lines and the total export value of primary food products as bars over the past 20 years. Developing countries include LICs and MICs, and developed countries include HICs as defined by the World Bank. The findings from Figure 8 align with calculations based on UNCTAD's [new dataset](#) on trade in processed foods, where we find that the share of developing countries' raw food exports have increased from 25 per cent to 35 per cent over the past two decades, while the share of exports in all other more processed categories has slightly declined.

Source: Authors' calculation based on [CEPII BACI](#) and BEC-5 categories

Why has agroindustry not made significant advancements in developing countries?

Why have developing countries not fully capitalized on their potential to produce more food, add value to their food commodities and increase food exports? The problem is complex and multidimensional:

- Market dominance by large corporations:** Food processing is still dominated by a small number of multinational food companies located in developed countries, which exercise significant market sway in developing countries. These industry giants possess disproportionate power over their supplier networks, often crowding out smaller local businesses in developing countries.
- Barriers to trade and protectionist policies:** Many nations implement tariffs, i.e. import quotas that create obstacles for food exporters from developing countries. While these measures are often justified on grounds of food security or consumer welfare, they can disproportionately affect developing nations. For instance, stringent food safety and quality standards imposed by developed countries may be challenging for food processors in developing regions to meet, thereby limiting access to lucrative markets. Additionally, export restrictions by some countries to secure domestic food reserves may exacerbate global food scarcity and elevate prices, further disadvantaging exporters in developing economies.
- Underdeveloped local food processing capacity:** The local food processing industry in many developing countries remains underdeveloped due to a lack of skills, inadequate equipment and insufficient investment in facilities and technology, preventing them from competing in international markets and against imported goods in their local markets.
- Limited purchasing power of domestic demand:** In many developing countries, large segments of the population lack sufficient purchasing power, forcing consumers to rely on informal food vendors and home-based processing. This limited effective demand poses challenges for the formal agroindustry, making it difficult to establish and expand without first establishing a robust domestic market before pursuing export opportunities.
- Challenges in the sourcing of quality supplies:** Many developing countries' agricultural sector is dominated by resource-poor, small-scale farmers who struggle to provide supplies at sufficient quality and scale. This limitation adds substantial costs to agroindustrial businesses, rendering them less competitive.
- Weak business environment and infrastructure:** The business environment in many developing countries, including the legal framework, infrastructure and access to business support services, is often underdeveloped. This creates an unfavourable business climate for local and foreign investment as well as for the creation of joint ventures and business partnerships that could accelerate local food processing.

While these factors are gradually losing relevance in countries with larger markets as well as in middle-income countries, where a growing middle class is sustaining a strong demand base, they continue to hamper the food industry's growth in smaller, low-income countries.

Policy recommendations

Given these challenges, it is unlikely that the agroindustry in developing countries will be able to advance rapidly enough to end hunger and produce safe, high-quality, nutritious food for all.

To meet the growing food demand driven by population growth and changing consumer preferences, innovative solutions in food processing are needed. They must be aligned with the goals of protecting natural resources and providing decent jobs for workers and entrepreneurs. Improving efficiency in sourcing and ensuring food availability are crucial, as are the introduction of incentives to increase local food production. Innovation in the design of food products that meet the demand of a growing population with lower incomes in developing countries is also key. Some policy recommendations on how countries and industries can establish the necessary facilities to meet these demands are presented below:

- Establish effective policies to create an enabling business environment and address the institutional, technological, financial and managerial challenges faced by public and private sector business development services, essential for boosting agroindustry in developing countries.
- Facilitate fairer access for developing countries' agroindustry to local urban, regional and global food markets. This can be achieved through trade capacity development, export promotion and technological upgrading to help them integrate into global food supply chains²⁶.
- Support the development of production capacities in developing countries, including in terms of facilities and technical equipment for sustainable food processing and the development of skills among workers, managers and entrepreneurs.
- Strengthen developing countries' food industry through targeted enterprise development programmes, business plan development, technology upgrading initiatives, skills development and vocational training, and provide support to help businesses develop bankable business plans and to access financing.
- Promote joint ventures between international food companies and local agribusinesses in developing countries, ensuring compliance with sustainable investment standards.
- Support the establishment of quality compliance infrastructure to enhance the capacity of agroindustrial businesses to meet international quality and standards, while promoting adherence to social and environmental sustainability criteria.
- Establish robust legal frameworks and offer financial guarantees to enhance agroindustry's access to financing, while fostering investment attraction through partnerships between commercial banks, development banks, and regional and international financial institutions.
- Encourage the transformation of informal agricultural and food processing facilities into formal agribusinesses by providing incentives and support for business development, e.g. through one-stop shops, cluster development and professionalization programmes.
- Foster the development of sustainable supplier networks to enable local agroindustrial businesses to reliably source primary food products in sufficient quantity while meeting quality and sustainability standards, which facilitates access to supermarkets and international buyers.

- Promote the establishment of sustainable agroindustrial parks and decentralized, interconnected agroindustrial production networks, while supporting planning, management and infrastructure through public private partnerships.
- Mitigate the side effects of the increasing consumption of cheap, ultra-processed foods by introducing taxes (e.g. on sugar), policies to incentivize the production of healthier food options, regulations on clear labelling of unhealthy foods, and organizing consumer awareness campaigns.
- Actively engage and participate in global platforms that facilitate the exchange of policy measures and best practices to promote the food industry's growth in developing countries and to allow their agribusinesses to learn and engage in knowledge exchange on processes and technology and partner matching.

To achieve these goals, governments in developing countries, industry from both developing and developed countries, the international development community and financial institutions must work together to effectively implement these recommendations.

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