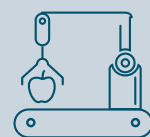


Global Value Chains Sectoral Profiles

Food and Beverages Industry



Overview

The food and beverages industry,¹ also referred to as the agro-industry, represented 8.3 per cent of world merchandise exports in 2022. During the COVID-19 crisis, food supply chains were among the most resilient from the manufacturing sector. They are impacted by the war in Ukraine and its repercussions on energy and food prices, grain shortages and deteriorated access to staple cereals and fertilizers. Global food security as well as sustainability issues are legitimate policy objectives at the heart of WTO activities and negotiations.

- According to Trade in Value Added (TiVA) estimates, the agro-industry generated 29.3 per cent of the value added² in food and beverages gross exports in 2022. The remaining 70.7 per cent coming from other sectors, such as services (37.5 per cent), primary (23.9 per cent) and manufacturing (9.3 per cent).
- Food supply chains are mainly integrated at the regional level. In 2022, 85.0 per cent of the value added in food and beverages exported from North America came from the region. The corresponding percentages were 75.8 per cent for Asia and 61.7 per cent for Europe, reflecting strong supply links between European businesses and international markets.
- In 2022, goods and services industries in China, Germany and the United States were the main value-added contributors to world exports of food and beverages (around 9 per cent each).
- From 2017 to 2022, the foreign value-added content of major food and beverages exporters increased overall more than domestic counterparts. This may be attributed to industrial strategies aiming to improve competitiveness in food supply chains through the import of ingredients, machinery, services or technologies enabling them to streamline production processes, reach new consumer markets, optimize cost-effectiveness or mitigate risks by diversifying international suppliers.
- Although representing a relatively low share in gross exports, China's foreign value-added content in food exports surged by 22.5 per cent on average between 2017 and 2022, mainly driven by national policies to modernize the agro-food industry and make it more competitive.
- In Europe, Germany, Ireland and the Netherlands had high estimates of vertical specialization – the share of foreign content in exports – respectively 31.4, 62.0 and 57.1 per cent. While France and Spain had the highest rates of domestic content in exports, at around 75 per cent in 2022 for both economies. Their domestic agricultural sectors play a core role as commodity suppliers to their agro-industry.
- India increased its domestic value-added content in exports by 17.2 per cent on average between 2017 and 2022, suggesting an upgrade in industrial capacity. Along with a greater integration to global value chains (GVCs) through the rise of its foreign value-added content in food and beverages exports (35.6 per cent).
- Asian economies had the highest rates of forward GVC participation, highlighting their role as regional and global food suppliers. Up to 14.1 per cent of the value added in China's exports in 2022 included inputs sent to foreign businesses, such as food additives (including acidulants, sweeteners or emulsifiers), in which the economy specialized and exported worldwide.
- See the [User Guide](#) for information on the terminology used and guidelines to interpret the graphs and indicators in this report.

1. The food and beverages industry covers the manufacturing, processing, preservation, warehousing and distribution of food products, beverages and tobacco products. It corresponds to Divisions 15 to 16 in the International Standard Industrial Classification of All Economic Activities (ISIC), Revision 3.1, used in the Asian Development Bank (ADB) Multi-Regional Input-Output (MRIO) tables underlying TiVA data for this report.

2. The concept of "value added" refers to the increase in value that is created at each stage of the production of a good or service. It is the difference between the cost of inputs (raw materials, labour) and the selling price of the product. For example, in order to produce a loaf, a bakery purchases ingredients like flour, yeast, salt and water for 1\$ and uses labour and overheads costing 2\$ to bake the bread and then sells it for 4\$, thereby adding 1\$ of value through its production process.

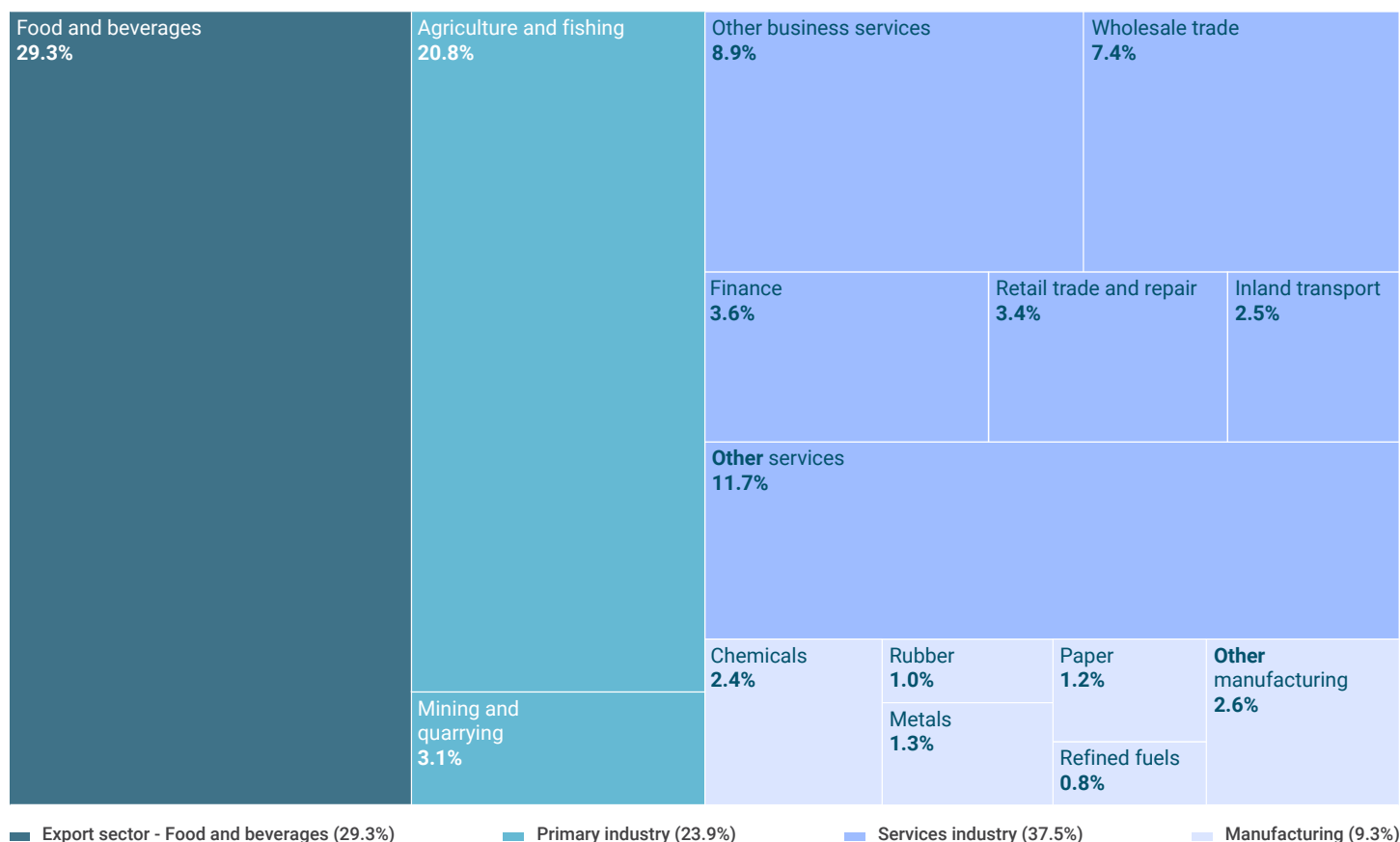
Sectoral linkages

- In 2022, the agro-industry itself accounted for only 29.3 per cent of the value added in global food and beverages exports. More than two-thirds of the value added came from inputs supplied by other sectors upstream in the production chain (see Figure 1).
- Services are present all along the food production chain, with some specificity concerning fresh and perishable products and the cold chain requiring specific processes, shipments and delivery services. In 2022, the value-added contribution of services (37.5 per cent) was higher than that of the agro-industry. Distribution services, including wholesale and retail trade as well as transport services, provided more than 15 per cent of the value added in food exports, while the share of other business services³ was 8.9 per cent. Utility services, covering energy goods (e.g. water, gas, power), infrastructure used for production and transport services (air, inland, water), were estimated at 5.4 per cent of world food exports.
- Agriculture is a very substantial source of intermediate inputs for the food and beverages industry. Raw and semi-processed ingredients and farming products from the agriculture and fishing sector represented one fifth of the value added contained in food and beverages exports in 2022.
- Other manufacturing industries (excluding food and beverages) accounted for 9.3 per cent of the total value added in global food exports, with diverse contributions. The chemical sector, which entails the production of fertilizers (e.g. phosphates, nitrogen, potassium), herbicides and pesticides (referred to as agrochemicals) and substances used as ingredients and for food preservation (e.g. additives, nutrients) accounted for 2.4 per cent of the total value added in world exports. The contribution of both paper and metal industries, used for packaging, reached similar levels (2.5 per cent).

Figure 1

Sectoral origin of the value added in world exports of food and beverages, 2022

(Share of total gross exports of food and beverages, in per cent)



Note: See [User Guide](#) for the list of industries available in the Asian Development Bank (ADB) Multi-Regional Input-Output (MRIO) tables.

Source: WTO calculations based on ADB data (June 2023 version).

3. Other business services include research and development activities as well as legal, management, consulting, technical and engineering services.

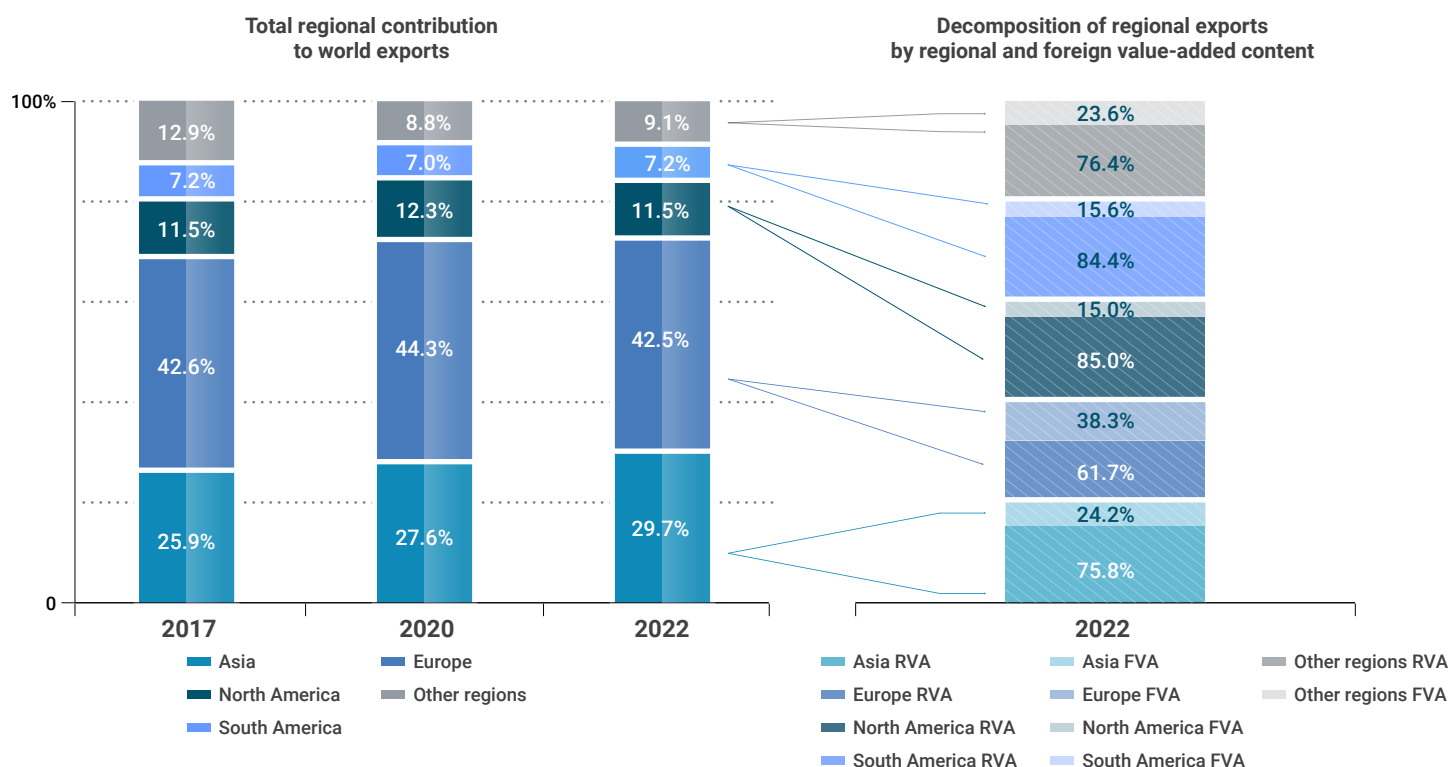
Regional patterns

- The value-added decomposition of exports into regional and extra-regional contents⁴ shows that agro-food networks generate a majority of their value added regionally. Geographical proximity fosters the creation of production and trade linkages, from raw commodities production to processing and distribution stages.
- Europe has been the main value-added contributor to world exports of food and beverages, reaching 42.5 per cent in 2022 (see Figure 2), which may be related to the presence of transnational food and beverages corporations and extensive networks of subsidiaries. Asia has progressively increased its value-added share in world exports, which reached 29.7 per cent of world exports in 2022. The shares of North and South America remained stable at 11.5 per cent and 7.2 per cent, respectively.
- Multilateral and free trade agreements foster the regional integration of the agro-food sector through duty-free trade and easier market access to food ingredients. They also enable economies to source and diversify the supply of inputs from other regions to address food security matters.
- In 2022, North and South America had the highest rates of regional content in food and beverages exports, estimated at around 85 per cent. This could be attributed to the United States–Mexico–Canada Agreement, which superseded the North American Free Trade Agreement (NAFTA) and strengthened the integration of the agro-food sector among the three parties. In Asia, three-quarters of the value added in exports originated from the region, while the regional contribution in Europe was estimated to be 61.7 per cent of exports in 2022, the lowest of all regions, reflecting stronger supply links between European agro-industries and global markets.

Figure 2

Regional value added in world exports of food and beverages, 2017-2022

(Share in world and regional exports of food and beverages, in per cent)



Note: "RVA" stands for estimates of the regional value-added content in exports, from all economies belonging to the region, while "FVA" refers to the foreign value-added content supplied from outside the region.

Source: WTO calculations based on ADB data (June 2023 version).

4. Asia includes: Australia; Bangladesh; Bhutan; Brunei Darussalam; Cambodia; China; Fiji; Hong Kong, China; India; Indonesia; Japan; Republic of Korea; Lao People's Democratic Republic; Malaysia; Maldives; Mongolia; Nepal; New Zealand; Pakistan; Philippines; Singapore; Sri Lanka; Chinese Taipei; Thailand; and Viet Nam. Europe includes the 27 members of the European Union, Norway, Switzerland, Türkiye and the United Kingdom. North America includes Canada, Mexico and the United States. South America includes Argentina, Brazil, Colombia and Ecuador. Other regions comprises all economies not included in above regional definitions.

Major contributors to value-added trade

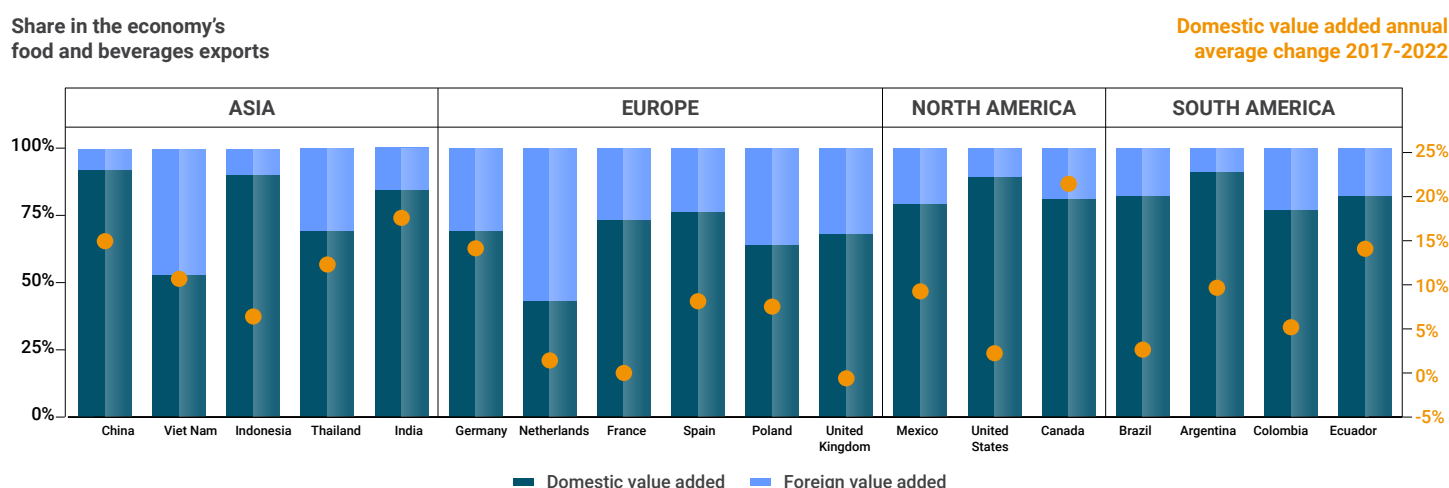
The domestic value-added content of exports informs on the ability of industries (local ones or foreign firms operating within the national territory) to create inputs used in the production of goods and services that are exported.

- From 2017 to 2022, the average growth of the domestic value-added content in food and beverages exports was relatively higher in Asia than in other regions (see Figure 3). This was the case for India between 2017 and 2022, when its domestic share in exports rose by an average of 17.2 per cent. This reflects an upgrade in industrial capacity along with a stronger integration into food GVCs as suggested by the high growth of its foreign value-added content, at a 35.6 per cent yearly average (see Figure 5).
- In general, the domestic value-added content in exports reflects the impact of trade on GDP and employment and informs on the presence of appropriate infrastructures and firms. Meanwhile, the foreign value-added counterpart can be key in enhancing the economy's competitiveness through the import of inputs and taking advantage of comparative advantages from supply chain partners.
- In 2022, China, the top food exporter in Asia, included 91.6 per cent of domestic value added in its food and beverages exports. Estimates for India and Indonesia were in the same range (84.2 per cent and 89.7 per cent). However, the estimate was lower for Viet Nam (52.6 per cent), highlighting a more downstream position in food supply chains. Viet Nam massively imports animal feed stuffs (e.g., soybean oil cakes) from Argentina and the 2022 surge of food prices impacted on the level of foreign value added in food exports.
- In Europe, France and Spain had the highest rates of domestic value added in their exports, around 75 per cent
- in 2022, outlining the role of their agricultural sector as a key commodity supplier to their national industry. Similarly, nearly two thirds of Poland exports were of national origin. The Polish agroindustry, led by grains, potatoes, vegetables and livestock, has upgraded by implementing new technologies via funds from the European Union (EU) to support the transformation of food production.
- Germany increased its domestic content in food exports by 13.8% between 2017 and 2022, bringing its domestic share to almost 70 per cent of its total gross exports in 2022. The German food and beverages industry is characterized by a strong small and medium-size enterprise sector with meat and dairy as the main production segments and high value-added contribution from food services.
- The US agro-industry is by far the main value-added contributor in North America. In 2022, the value added generated by the domestic sector covered more than half the region's exports. Canada and Mexico also had high levels of domestic value added in their food exports, at close to 80 per cent.
- In South America, Argentina and Brazil registered high rates of domestic content in their exports, 91 and 82 per cent in 2022 respectively, suggesting that their agro-industries mainly process nationally produced agricultural inputs. However, the foreign value-added counterpart grew at a high pace for Brazil in 2017-2022 (14.4 versus 2.5 per cent for the domestic part, see Figure 5), leading to a progressive change in the value-added structure of its exports.

Figure 3

Domestic and foreign value-added content in exports of food and beverages, major exporters, 2022

(Share in the economy's exports of food and beverages, in per cent and annual average percentage change 2017-2022)



Source: WTO calculations based on ADB data (June 2023 version).

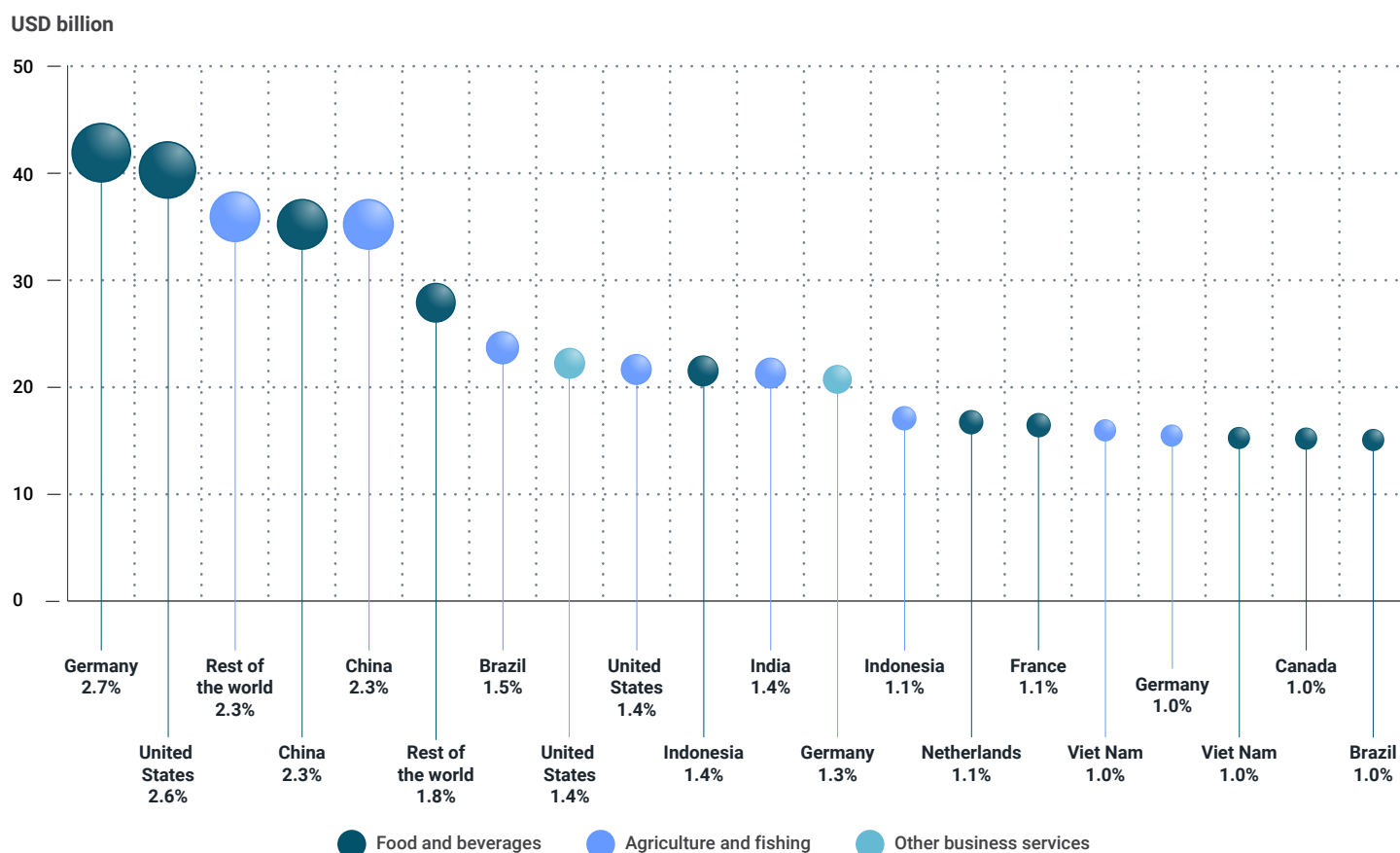
Key players in food and beverages global value chains

- In 2022, goods and services industries in China, Germany and the United States were the main value-added contributors to world exports of food and beverages (around 9 per cent each). Their value added came essentially from their agro-food industries (estimated at 7.6 per cent of global food exports) and agricultural industries (4.7 per cent) as well as business services (3.2 per cent), including IT, technical, engineering, advertising and packaging activities used all along the supply chain.
- Figure 4 highlights the close connection between the agro-industry (purple circles) and the agricultural/farming sector (red circles) as a core input supplier. Developing economies from the rest of the world delivered raw agricultural commodities to food GVCs (2.3 per cent of world total value-added exports in 2022) and also processed food (1.8 per cent).
- When combined, the agriculture and food industries from India, Indonesia and Viet Nam, either from foreign direct investment or nationally owned, accounted for around 6 per cent of the value added in world exports in 2022. Indonesia has initiated food processing strategies for more sustainability and to increase the value added in its exports. The economy mainly participates in GVCs through the delivery of agricultural products such as palm oil, for 1.1 per cent of world exports in 2022.
- Brazil's agricultural products represented 1.5 per cent of the value in world exports. While European food and beverages transnational companies, notably from France and the Netherlands, contributed to 2.2 per cent.

Figure 4

Top 20 value-added contributors to world exports of food and beverages, 2022

(USD billion and share in world exports of food and beverages, in per cent)



Notes: Rest of the world includes all economies not shown individually in the ADB-MRIO Tables.

The size of the circles reflects the value added magnitude of economy-industry pairs in world trade.

Source: WTO calculations based on ADB data (June 2023 version).

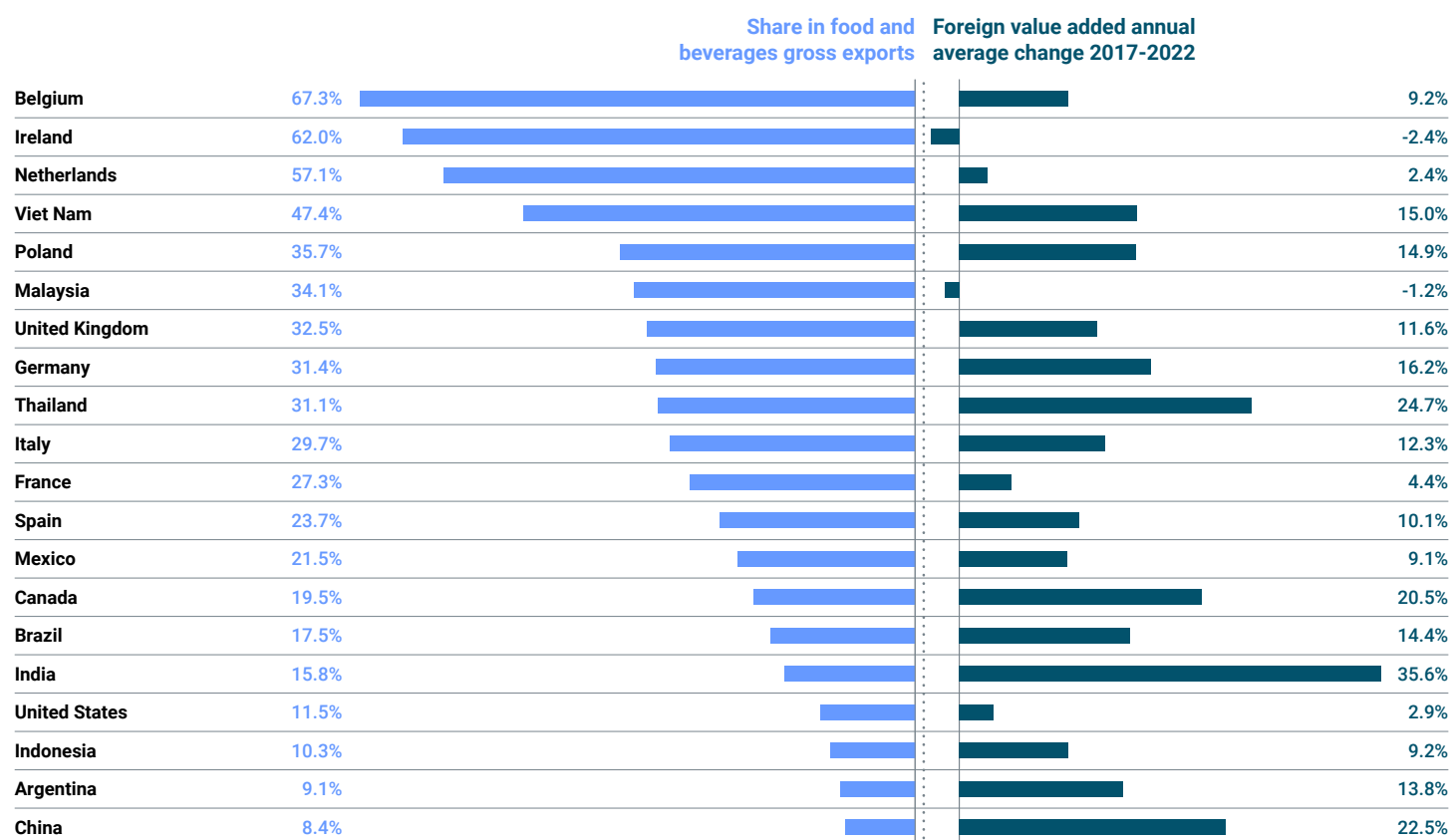
Backward GVC participation

Economies and industries aim to improve their competitiveness in supply chains through the import of ingredients, machinery, services, technologies and other intermediates from GVC partners to produce their exports. The share of foreign value-added content in exports is also referred to as backward GVC participation or vertical specialization.

- In recent years, the foreign value-added content in food and beverages exports has increased more than its domestic counterpart for most top exporting economies. This may be attributed to agro-industry strategies aiming to enhance competitiveness in food supply chains through the import of ingredients, machinery, services or technologies enabling to streamline production processes, reach new consumer markets, improve cost-effectiveness or mitigate risks by diversifying international suppliers.
- In 2022, China and the United States, top exporters of processed food and beverages, had relatively low levels of imported content in their exports, at 8.4 per cent and 11.5 per cent, respectively (see Figure 5). However, the foreign value added in China's exports surged by 22.5 per cent on average between 2017 and 2022, potentially related to policy goals aimed at modernizing the national agro-food sector and making it more competitive. Soybeans, wheat, corn and rice were among the main products imported by the Chinese agro-industry.
- Germany, another top exporter, sourced 31.4 per cent of the content in its food and beverages exports from foreign partners. For instance, Germany is a key market for China's animal feed, which is used in domestic cattle breeding and subsequently in the production of processed meat products.
- Other European economies have established strong backward linkages with regional and global food suppliers. More than two-thirds of the value added in Belgium exports were imported. High estimates of vertical specialization were also found for Ireland (62 per cent) and the Netherlands (57.1 per cent). Agro-food inputs for European economies are mostly sourced from regional supply networks as well as South America and South-East Asia.
- In South-East Asia, Malaysia and Viet Nam import large proportions of ingredients, such as agricultural products or additives, for their production and exports, up to 34.1 per cent and 47.4 per cent of their value-added exports, respectively. The food and beverages is an expanding sector in Viet Nam, with an average growth of 15 per cent of imported inputs from 2017 to 2022.
- In India, the food sector contributes significantly to national GDP and employment and plays a key role in tackling national challenges relating to food security, sustainability and the country's expanding population and urbanization. The remarkable rise in vertical specialization from 2017 to 2022 – an average of 35.6 per cent annually – may be linked to national initiatives and policies to reduce structural limitations and improve the efficiency of food supply chains. Edible oils (palm, soybean, sunflower) and seeds are among the principal food ingredients that India imports.
- Leading producers of primary commodities, such as Brazil and Indonesia, are significant providers of agricultural inputs and have comparatively low levels of foreign value-added content in their food exports (17.5 per cent and 10.3 per cent, respectively).
- In North America, Canada and Mexico exhibited higher rates of vertical specialization than did the United States (around 20 per cent versus 11.5 per cent). Large portions of the inputs used by their food processing businesses originate from the US agro-food sector.

Figure 5**Selected exporters' foreign value-added content, 2022**

(Share in the economy's exports of food and beverages, in per cent, and annual average percentage change 2017-2022)



Source: WTO calculations based on ADB data (June 2023 version).

Forward GVC participation

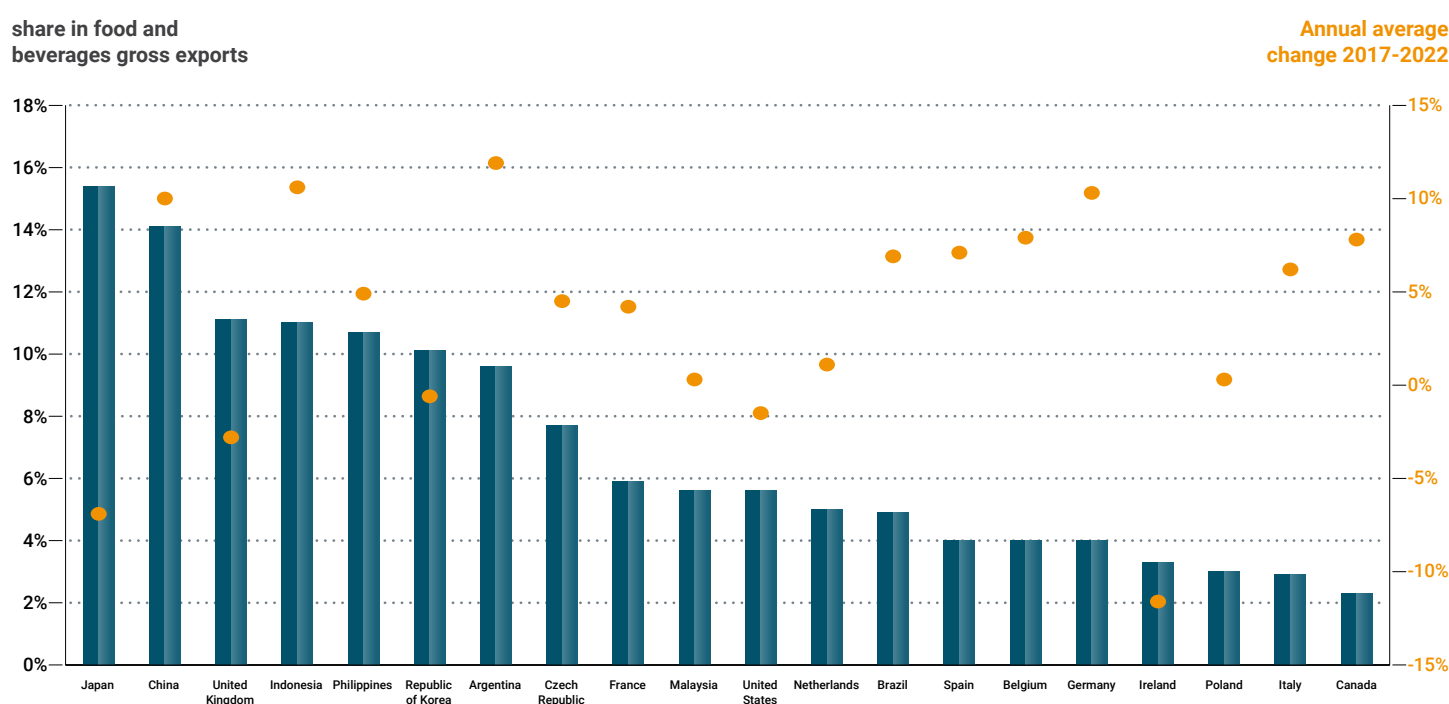
National companies send inputs to industrial partners for further processing and export to third economies in supply chains or for final consumption. This is referred to as forward GVC participation.

- The food and beverages industry saw some of the highest rates of forward GVC participation in 2022 in a number of Asian economies. Given the high percentages of backward GVC engagement in the area, this illustrates how strongly Asian companies are integrated into regional and global food supply chains.
- China's agro-industry provided inputs to foreign industries up to 14.1 per cent of the value-added contained in its food exports in 2022 (see Figure 6). This includes, among others, food additives such as acidulants, sweeteners and emulsifiers, in which the Chinese agro-industry is a global exporter. Although not a major food exporter, Japan participated in GVCs at a significant rate of 15.4 per cent in 2022, primarily by exporting flour products, fish and sesame oils.
- With notable forward GVC participation rates of 11 per cent, 5.6 per cent and 10.7 per cent, respectively, South-East Asian economies such as Indonesia, Malaysia and the Philippines demonstrated their role as providers of semi-processed food for downstream stages in regional and global food value chains.
- The United Kingdom supplies intermediate food items, up to 11.1 per cent of its value-added exports, to industries abroad, particularly those in France, Germany, Ireland, the Netherlands and the United States. Irish and British industries are closely linked for essential ingredients such as cereals, flour and lamb.
- Several EU economies, such as Belgium, France, the Netherlands and Spain showed significant rates of forward GVC participation rates, ranging between 4 and 6 per cent in 2022, owing to the strong integration of food industries in the economic union.
- The figures for Argentina (9.6 per cent) and Brazil (4.9 per cent) illustrate their status as leading suppliers of semi-processed food products that are shipped worldwide, mostly consisting of soybeans, sugar, animal proteins, livestock and dairy products. The rise of Argentina's forward GVC participation was amongst the highest ones in 2022, estimated at 11.9 per cent.

Figure 6

Selected exporters' food and beverages inputs sent to GVCs, 2022

(Share in the economy's exports of food and beverages, in per cent, and annual average percentage change 2017-2022)



Note: Figure 6 refers to the value-added in domestic inputs sent to various industries in a partner economy for further processing and export to third economies in supply chains or for final consumption. See [User Guide](#) for more details.

Source: WTO calculations based on ADB data (June 2023 version).