Chapter 3
International Agricultural Trade: Products

Vasilii Erokhin, Gao Tianming, and Anna Ivolga

Abstract In recent years, two main trends have been clearly observed in international agricultural trade: a significant increase in the value of trade turnover and a transformation in the composition of both exports and imports in favor of developing countries. However, the intensity of these trends varies depending on the type of agricultural products and the regions of the world. This chapter details changes in the values and compositions of exports and imports of thirteen categories of food and agricultural products (live animals, meat and meat preparations, dairy products and birds' eggs, fish and crustaceans, cereals and cereal preparations, vegetables and fruits, sugar and honey, coffee and tea, feedstuff for animals, miscellaneous edible products and preparations, beverages and tobacco, oilseeds and oleaginous fruits, and animal and vegetable oils and fats) by eight geographic regions (East Asia and the Pacific, South Asia, Central Asia, Europe, North America, Latin America and the Caribbean, Middle East and North Africa, and Sub-Saharan Africa) and major exporters and importers (197 countries) in 2000–2019.

Keywords Animals · Beverages · Cereals · Coffee · Dairy products · Edible products · Export · Feedstuff · Fish · Fruits · Import · Meat · Oilseeds · Sugar · Vegetables

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3.1 International Agricultural Trade by Products: An Overview

As previously noted in Chap. 2, the value of international trade in food and agricultural products has increased significantly over the past two decades. This chapter details changes in the values and compositions of exports and imports of thirteen categories of food and agricultural products by geographic regions and major exporters and importers. According to the SITC Commodity classification (United Nations Conference on Trade and Development [UNCTAD], 2020), the review includes: (1) live animals, (2) meat and meat preparations, (3) dairy products and birds' eggs, (4) fish, crustaceans, mollusks, and preparations thereof, (5) cereals and cereal preparations, (6) vegetables and fruits, (7) sugar, sugar preparations, and honey, (8) coffee, tea, cocoa, spices, and manufactures thereof, (9) feedstuff for animals, (10) miscellaneous edible products and preparations, (11) beverages and tobacco, (12) oilseeds and oleaginous fruits, and (13) animal and vegetable oils, fats, and waxes.

The growth is observed in all thirteen categories of agricultural commodities, including vegetables and fruits (+$412.5 billion in 2019 compared to 2000, or 3.85 times), cereals and cereal preparations (+$270.5 billion, or 3.66 times), and meat and meat preparations (+$214.8 billion, or 3.28 times) (Fig. 3.1). The value of exports of vegetables and fruits has quadrupled from $69.3 billion in 2000 to $280.1 billion in 2019. The composition of international agricultural trade turnover by product has not experienced radical transformations. The largest category by value is vegetables and fruits ($557.2 billion in 2019). Its share in agricultural trade turnover increased by 1.36% points and reached 17.80% in 2019. The second-largest category of agricultural products is cereals and cereal preparations ($372.1 billion, or 11.39%), but its

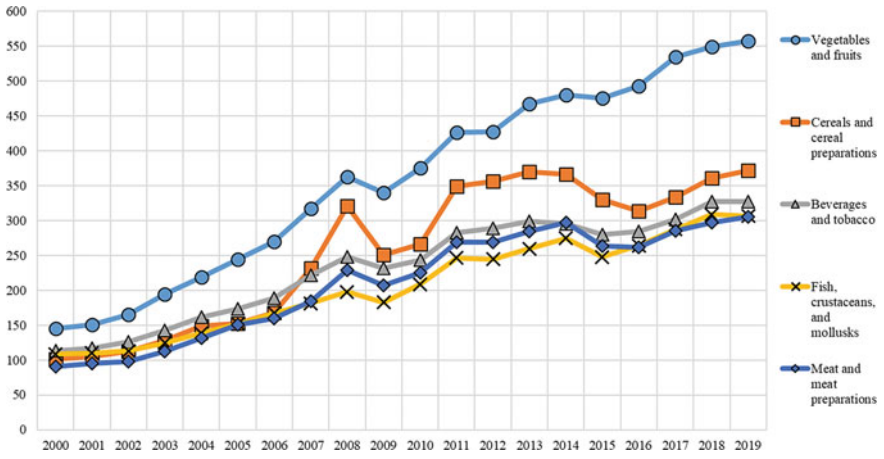

Fig. 3.1 Top five agricultural products by value in international agricultural trade turnover in 2000–2019, $ billion. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

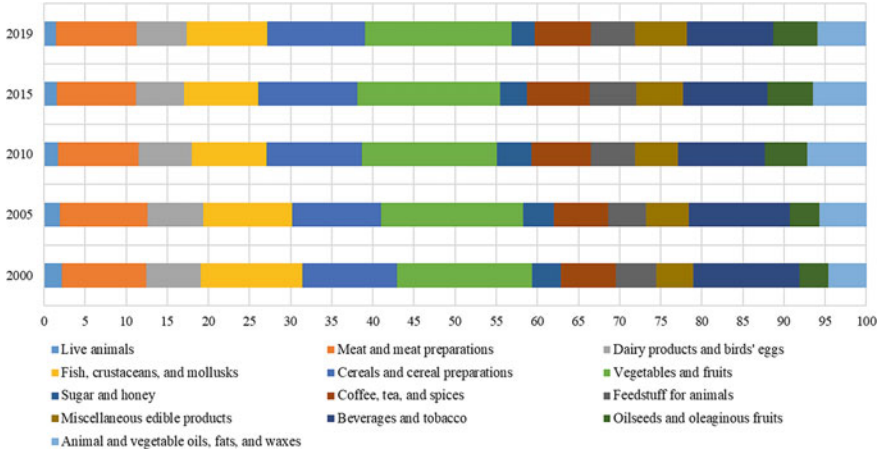

Fig. 3.2 Composition of international agricultural trade turnover by product in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

portion in international agricultural trade has not changed significantly in 2000–2019 (Fig. 3.2).

The most significant reduction in the portions in international agricultural trade has been observed in the categories of fish, crustaceans, mollusks, and preparations thereof (−2.56% points, a decline from 12.34% in 2000 to 9.79% in 2019) and beverages and tobacco (−2.42% points, a decline from 12.89% to 10.47%, respectively). The contributions of such categories as live animals, meat and meat preparations, dairy products and birds' eggs, and sugar and honey to the total value of agricultural trade have also declined slightly, while the portions of oilseeds and oleaginous fruits, miscellaneous edible products, and animal and vegetable oils, fats, and waxes have increased by 1.86, 1.84, and 1.2 points, respectively.

3.2 Major Products in International Agricultural Trade

Next, we provide more insight into the dynamics of trade for each of the thirteen categories of agricultural products in terms of geographic regions and leading exporters and importers. The study is carried out across the geographic regions of East Asia and the Pacific (hereinafter referred to as EAP) (35 economies), South Asia, or SA (8 economies), Central Asia, or CA (5 economies), Europe, or EU (44 economies), North America, or NA (4 economies), Latin America and the Caribbean, or LAC (34 economies), Middle East and North Africa, or MENA (20 economies), and Sub-Saharan Africa, or SSA (47 economies) (World Bank, 2020).

3.2.1 *Live Animals*

The "Live animals" category is the smallest of the thirteen considered in this review in terms of the value of trade turnover, which amounted to $47.2 billion in 2019, or only 1.51% of the total value of the international agricultural trade turnover. At the same time, trade in live animals has grown almost 2.5 times over the past two decades. The main exporter of live animals to the world market is Europe, whose portion in global exports reached 58.19% in 2019 (Fig. 3.3).

The value of live animals exports from Europe amounted to $13.7 billion in 2019, an increase of 2.7 times compared to 2000. However, such significant growth was achieved mainly in 2000–2010. In recent years, it has been slowing down (only + 19.23% in 2019 compared to 2010). North America, the world's second-largest exporter after Europe, is losing its position in the global market. In 2019, the value of live animals exports from four countries of North America amounted to $3.38 billion, which was only 38% higher than in 2000. Against the background of such a slowdown in exports from developed countries, developing regions of the world are increasing their production and supplies. In terms of dynamics, the highest export growth rates are observed in Latin America (6.59 times, an increase from $123.2 million in 2000 to $811.3 million in 2019), Africa (3.13 times, an increase from $342.6 million to $1.1 billion), and Asia (2.83 times, an increase from $1.1 billion to $3.2 billion). Despite such growth, individual developing countries (except Mexico and occasionally Brazil) have not yet managed to take stable leading positions in the export of live animals. Rahim et al. (2020) and Girmay and Yeserah (2019) assumed that developing countries could lag behind due to various complex issues related to poorer supply chain management, lower safety of maintenance of live animals, lower supply

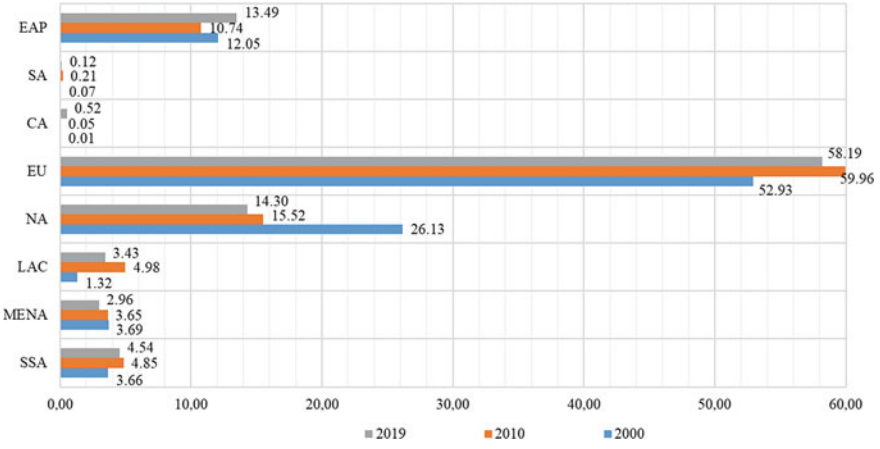

Fig. 3.3 Exports of live animals by geographic region, portions in international exports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Table 3.1 Top ten exporters of live animals in 2000–2019, $ million

2000			2010			2019		
Place	Country	Exports, $ million	Place	Country	Exports, $ million	Place	Country	Exports, $ million
1	France	1419.66	1	Netherlands	2804.09	1	Netherlands	2552.15
2	Canada	1172.11	2	France	2286.58	2	France	2390.86
3	USA	865.37	3	Canada	1626.40	3	Australia	1573.95
4	Netherlands	639.71	4	Germany	1443.24	4	Denmark	1550.92
5	Germany	516.09	5	Australia	1052.35	5	Germany	1542.42
6	UK	507.46	6	Denmark	863.91	6	Canada	1491.83
7	Australia	461.87	7	USA	814.89	7	USA	1053.28
8	Mexico	407.40	8	Brazil	697.28	8	Mexico	831.73
9	Belgium	395.01	9	UK	584.14	9	Spain	796.14
10	China	384.81	10	Mexico	542.41	10	Belgium	753.75

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

of quality animals, seasonality, and higher health hazards. Developed economies of Europe continue to be the largest suppliers, Australia is increasing its exports, while the USA and Canada have lost several positions in the rating (Table 3.1).

Being the largest exporter of live animals, Europe is also the leading importer of this category of agricultural commodities. Although the share of European countries in global purchases of live animals has decreased significantly since 2010, they still account for about half of the world's imports, or $11.6 billion. Vlad et al. (2015) explained variation in the value of imports of live animals in Europe by seasonal factors, while Shanafelt and Perrings (2018) and Perrings et al. (2010) underscored the impacts of the increased spread of zoonotic and epizootic diseases on the international trade. North America, Middle East and North Africa, and East Asia and the Pacific all have increased their shares in imports compared to 2010 (Fig. 3.4).

Among individual countries, the USA has been the largest importer of live animals over the past two decades, accounting for 12.95% of global imports in 2019. This is significantly lower than in 2000 (20.14%) and 2010 (13.94%), as many countries have substantially increased their imports, including Germany (almost 6 times from 3.65% of world imports of live animals in 2000 to 8.66% in 2019), the Netherlands (3.6 times from 3.98% to 5.82%, respectively), and Saudi Arabia (2.87 times from 2.59% to 3.02%, respectively) (Table 3.2).

In general, despite the permanent leadership of the USA, the composition of the leading importers of live animals is quite dynamic. At the end of two decades, we see that some countries in Western Europe have not increased or have even reduced their purchases (Spain, UK, France), while the fast-growing economies of Eastern Europe (Poland) and Southern Europe (Turkey) have taken the lead. Yego and Siahi (2018) suggested that in Sub-Saharan Africa, trade in live animals could be boosted

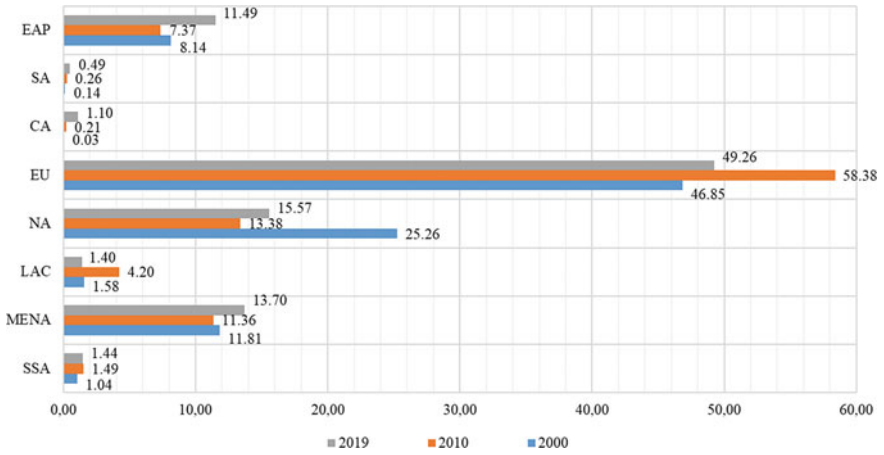

Fig. 3.4 Imports of live animals by geographic region, portions in international imports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Table 3.2 Top ten importers of live animals in 2000–2019, $ million

2000			2010			2019		
Place	Country	Imports, $ million	Place	Country	Imports, $ million	Place	Country	Imports, $ million
1	USA	1930.23	1	USA	2384.38	1	USA	3047.60
2	Italy	1417.98	2	Germany	1986.76	2	Germany	2037.25
3	UK	525.78	3	Italy	1896.70	3	Italy	1734.39
4	Netherlands	380.97	4	Netherlands	1010.16	4	Netherlands	1370.73
5	Spain	367.46	5	Venezuela	965.45	5	Poland	821.08
6	France	355.36	6	Belgium	728.30	6	Saudi Arabia	711.51
7	Germany	349.98	7	UK	700.16	7	Turkey	700.57
8	UAE	263.99	8	Spain	655.90	8	UK	680.21
9	Canada	260.08	9	Saudi Arabia	594.00	9	Spain	593.38
10	Saudi Arabia	248.29	10	Indonesia	373.13	10	Belgium	570.31

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

as one of the consequences of progression trade integration in the region and the establishment of the Common Market for Eastern and Southern Africa, but since 2010, African countries have not increased their share in the global trade turnover.

3.2.2 *Meat and Meat Preparations*

The "Meat and meat preparations" category is the fifth-largest in the world agricultural trade turnover with a share of 9.76% in 2019 (a decrease by 0.53% points compared to 2000 and by 0.08% points compared to 2010). According to Pandian et al. (2015), major drivers of global trade in meat are the increase in consumer demand due to rising living standards across the developing world, primarily, in China and India, internationalization of tastes and habits, developments in science and technology, and improvements in transportation, supply chains, and logistics. The value of exports exceeded $159.2 billion in 2019, an increase of 3.56 times compared to 2000. The largest exporter of meat products and preparations is the geographic region of Europe, but its share in the total exports has been decreasing steadily since the early 2000s (Fig. 3.5).

The countries of Latin America and the Caribbean have made a significant breakthrough in terms of the value of meat exports in recent years. In 2019, the value of meat exports from Latin America amounted to $25.8 billion, more than seven times higher than in 2000. Brazil is the largest exporter of meat and meat preparations among the countries of Latin America and one of the largest in the world (10.25% of global export of meat in 2019 compared to 4.31% in 2000) (Table 3.3). Argentina is the second-largest exporter of meat in the geographic region of Latin America. The country has increased the value of its exports almost fivefold from $791.3 million in 2000 to over $3.8 billion in 2019.

The contribution of Asian countries to the total meat exports is also growing, but none of them has so far reached the top-ten level. According to the classification used in this study, the geographic region of East Asia and the Pacific (16.52% in total

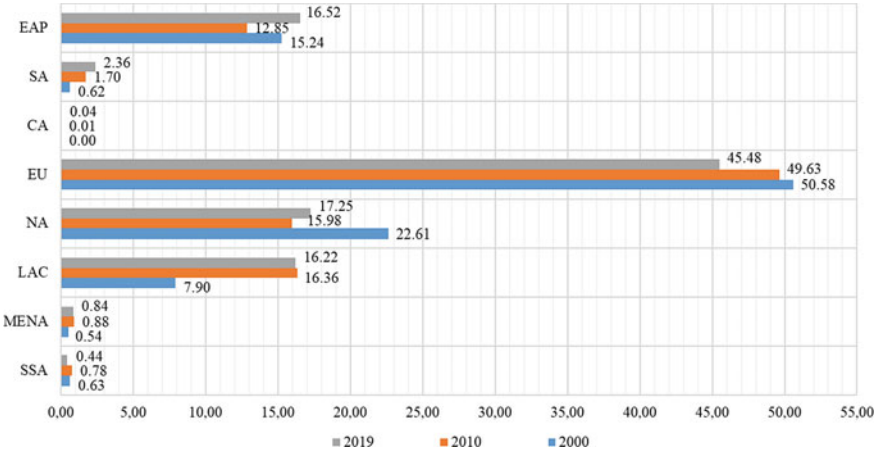

Fig. 3.5 Exports of meat and meat preparations by geographic region, portions in international exports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Table 3.3 Top ten exporters of meat and meat preparations in 2000–2019, $ million

2000			2010			2019		
Place	Country	Exports, $ million	Place	Country	Exports, $ million	Place	Country	Exports, $ million
1	USA	7248.03	1	Brazil	13,322.61	1	USA	19,317.59
2	Netherlands	4541.14	2	USA	13,232.85	2	Brazil	16,325.31
3	France	3342.80	3	Germany	10,396.18	3	Australia	12,928.00
4	Denmark	3327.91	4	Netherlands	10,005.37	4	Netherlands	12,249.65
5	Australia	2912.93	5	Australia	6171.49	5	Germany	11,250.85
6	Canada	2615.50	6	Denmark	5041.50	6	Spain	8581.59
7	Belgium	2279.65	7	France	4819.36	7	Poland	7122.24
8	Germany	2097.23	8	Belgium	4575.95	8	Canada	5996.76
9	Brazil	1926.75	9	Canada	4419.63	9	New Zealand	5455.10
10	New Zealand	1663.38	10	Spain	4122.11	10	Denmark	4459.75

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

meat exports) includes Australia and New Zealand, the world's third and ninth-largest exporters in 2019. Among the countries of East Asia, Thailand and China were the largest exporters in 2019 with $3.8 billion (2.41% of global exports) and $3.1 billion (1.93% of global exports), respectively. South Asia's meat exports is dominated by India with $3.45 billion in 2019 (91.74% of South Asia's exports and 2.17% of global exports). Pandian et al. (2015) attributed the expansion of meat exports in India to the substantial increase in domestic production of meat and products, institutional interventions in meat processing, and policy initiatives to bring down tariffs.

Due to the significant exports from India, the geographic region of South Asia is a prominent net exporter of meat (the trade surplus exceeds $3.5 billion, or 90.89% of the turnover). The rest of Asian countries are net importers of meat and meat preparations. The share of East Asia and the Pacific in total meat imports has significantly increased over the decade (Fig. 3.6). According to Galloway et al. (2007), an increase in meat consumption and trade is influenced by favorable income growth, which has been particularly rapid across East Asia in recent decades. Compared to 2010, the value of meat purchases by the countries of East Asia increased by 3.42 times and exceeded $39.3 billion.

The world's largest importer of meat and meat products is Japan, but its share in total international imports of meat dropped from almost twofold from 18.61% in 2000 to 9.68% in 2019. China is rapidly becoming one of the world's biggest consumers of meat (9.11% of global imports in 2019, compared to 2.23% in 2000 and 1.42% in 2000) (Table 3.4). The link between improving living standards and increased consumption of meat was discussed in Chap. 2. The growth rate of China's import of meat confirms the findings on the gradual shift of consumption framework

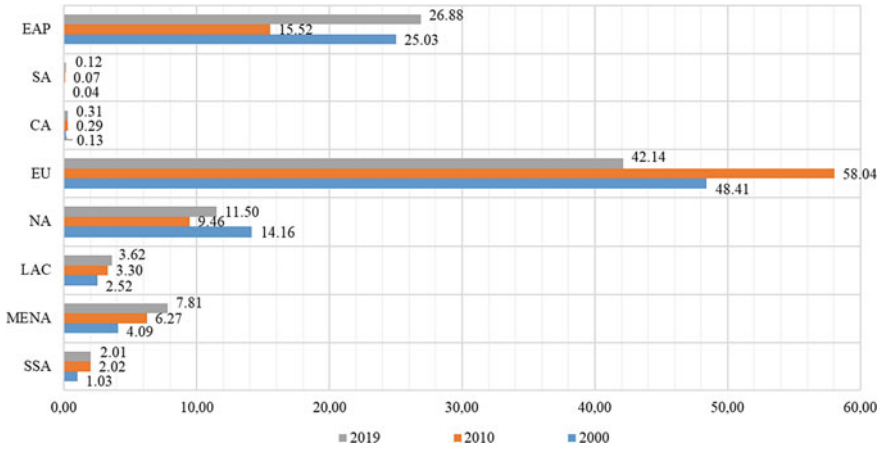

Fig. 3.6 Imports of meat and meat preparations by geographic region, portions in international imports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Table 3.4 Top ten importers of meat and meat preparations in 2000–2019, $ million

2000			2010			2019		
Place	Country	Imports, $ million	Place	Country	Imports, $ million	Place	Country	Imports, $ million
1	Japan	8551.63	1	Japan	11,048.03	1	Japan	14,149.15
2	UK	3850.03	2	UK	8370.36	2	China	13,327.66
3	USA	3840.80	3	Germany	7974.61	3	USA	9849.76
4	Germany	3589.27	4	Russia	6559.54	4	Germany	8574.91
5	Italy	3080.15	5	Italy	6071.40	5	UK	8480.43
6	France	2827.58	6	France	5865.03	6	France	5956.69
7	Mexico	1660.46	7	USA	5218.02	7	Netherlands	5865.10
8	Russia	1531.72	8	Netherlands	5007.30	8	South Korea	5499.32
9	Netherlands	1385.67	9	Mexico	3365.18	9	Italy	5429.62
10	South Korea	1163.27	10	China	2276.46	10	Mexico	4242.98

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

in China in favor of more nutrient food products made previously by Zhou (2010), Zhou et al. (2014), Gao et al. (2018), and Chang et al. (2018).

Apart from the decline in Japan's share and the rapid increase in China's purchases, the composition of the global market of meat by country has not changed significantly. The countries of Europe and North America are overwhelmingly net exporters

(USA, Germany, Netherlands). Except for some countries in Latin America (Brazil, Argentina, Uruguay, Paraguay) and Asia (India, Thailand), most of developing economies are net importers of meat and meat products.

3.2.3 Dairy Products and Birds' Eggs

Among thirteen categories of agricultural commodities under consideration in this review, dairy products and birds' eggs occupy eighth place in terms of the value of trade turnover ($191 billion in 2019, or 6.10% of international agricultural trade). Compared to 2000, this share has decreased slightly. Exports of dairy products and birds' eggs have more than tripled over the past two decades, reaching $96.3 billion in 2019, 68.2% of which was contributed by European countries. It should be noted that the primacy of Europe in the exports of dairy products and birds' eggs has been gradually decreasing amid the growth of exports from the regions of East Asia (+$10.9 billion in 2000–2019, or +1.27% points in the composition of total exports), North America (+$4.7 billion, or +2.21% points), and the Middle East and North Africa (+$4.5 billion, or +3.20% points) (Fig. 3.7). This observation well agrees with Chatellier (2016) and Song and Sumner (2005) who found that in recent decades, international trade in milk and dairy products has been favored by growing demand from Asian countries, where dairy consumption per capita remains lower compared to developed countries of Europe and North America.

However, such transformations in the composition of exports by geographic region have not caused radical changes in the group of leading exporters. Over two decades, the ranking has been dominated by European countries even though in 2000–2010, the

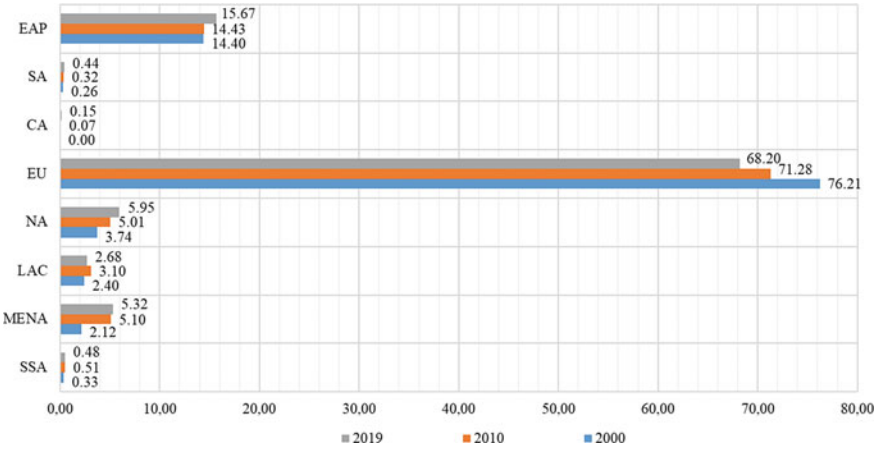

Fig. 3.7 Exports of dairy products and birds' eggs by geographic region, portions in international exports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

bulk of milk produced in Europe was consumed within the EU (Benedek et al., 2017). The portions of the Netherlands, Germany, and France in world exports of dairy products and birds' eggs were 12.48%, 11.16%, and 7.90% in 2019, respectively. Along with Belgium, Denmark, Italy, and Ireland, these three European countries have been consistently making up the group of top exporters. Only two non-European countries among the top ten exporters are New Zealand (10.94% of global exports in 2019) and the USA (5.38%, respectively). The contribution of the former to the composition of global exports increased by 3.93% points in 2000–2019, while that of the latter grew by 2.65% points (Table 3.5). In New Zealand, less than 4% of its milk is consumed within the country (Shadbolt & Apparao, 2016). Therefore, the dairy sector in New Zealand is much more oriented on exports compared to those in the USA and many other milk-producing countries where domestic markets are larger and more receptive.

As Shree et al. (2017) demonstrated, due to the rapid development of globalization and the emergence of international trade in recent decades, there has been a paradigm shift in the global dairy market from being supply-driven to demand-driven. Most of the leading exporters are at the same time the largest importers of dairy products and birds' eggs. In 2019, the value of imports by European countries exceeded $50.9 billion, which is almost three times more than in 2000. The consumption of dairy products and birds' eggs by the countries of East Asia and the Pacific has been growing fivefold to $17.4 billion in 2019 from $3.3 billion in 2000. A substantial increase in imports of milk and dairy products by developing countries of Asia on the wave of economic growth in the region correlates with the finding of Haq and Ishaq (2008) who suggested income-related variables to exert the strongest influence

Table 3.5 Top ten exporters of dairy products and birds' eggs in 2000–2019, $ million

2000			2010			2019		
Place	Country	Exports, $ million	Place	Country	Exports, $ million	Place	Country	Exports, $ million
1	Germany	4195.43	1	Netherlands	9995.31	1	Netherlands	12,009.02
2	France	3860.78	2	Germany	9633.04	2	Germany	10,742.44
3	Netherlands	3827.75	3	France	7497.54	3	New Zealand	10,527.94
4	New Zealand	2003.06	4	New Zealand	7280.77	4	France	7602.73
5	Belgium	1994.59	5	Belgium	3857.60	5	USA	5182.08
6	Australia	1574.40	6	USA	3298.09	6	Belgium	4534.95
7	Denmark	1328.53	7	Italy	2970.42	7	Italy	4317.51
8	Ireland	1048.58	8	Denmark	2466.32	8	Ireland	3399.97
9	Italy	1017.29	9	Australia	1987.27	9	Poland	2944.12
10	UK	999.04	10	Ireland	1898.55	10	Denmark	2719.78

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

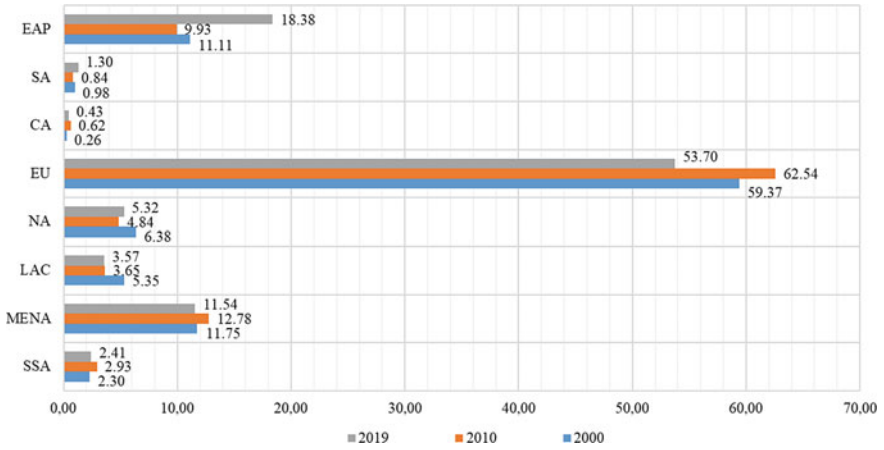

Fig. 3.8 Imports of dairy products and birds' eggs by geographic region, portions in international imports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

on the value of global dairy trade. The shares of other geographic regions in the structure of world imports of dairy products and birds' eggs have barely changed in recent years (Fig. 3.8).

Among individual countries, the main importer of dairy products and birds' eggs is Germany. Its share of global imports has hardly changed during the period under review, declining slightly from 9.56% in 2000 to 9.39% in 2019. Unlike Germany, China has been moving up in the ranking since the early 2000s. In 2000, the value of China's imports amounted to $216.5 million (0.73% of world imports). It had grown almost fivefold to $1.1 billion by 2010 (1.67% of world imports) and then another six times to $6.7 billion by 2019 (7.10% of world imports) (Table 3.6). The shares of other leading importers in the composition of global imports of dairy products and birds' eggs have changed insignificantly.

3.2.4 Fish, Crustaceans, and Mollusks

Fish, crustaceans, mollusks, and preparations thereof are the fourth-biggest category of products in international agricultural trade. Its share in agricultural trade turnover decreased from 12.33% ($108.6 billion) in 2000 to 9.78% ($306.3 billion) in 2019. The value of world exports of fish and other products in this category tripled during 2000–2019 and reached $157.4 billion in 2019. In contrast to the above discussed global markets of live animals, meat and meat preparations, and dairy products, there is no clear primacy of European countries in fish exports. According to Nielsen (2009), the effects of liberalization on fish trade in a particular country or region depend on the status of this country (region) as an importer or exporter, the state of

Table 3.6 Top ten importers of dairy products and birds' eggs in 2000–2019, $ million

2000			2010			2019		
Place	Country	Imports, $ million	Place	Country	Imports, $ million	Place	Country	Imports, $ million
1	Germany	2830.66	1	Germany	7480.44	1	Germany	8907.69
2	Italy	2489.97	2	Italy	4741.10	2	China	6733.03
3	France	2066.21	3	UK	4005.26	3	Netherlands	5146.07
4	Belgium	1956.48	4	France	3718.16	4	France	4639.67
5	UK	1947.11	5	Russia	3677.92	5	Italy	4324.19
6	Netherlands	1895.22	6	Netherlands	3605.25	6	UK	4258.94
7	USA	984.17	7	Belgium	3422.72	7	Belgium	4206.99
8	Spain	970.52	8	Spain	2404.96	8	Russia	2993.83
9	Japan	871.00	9	China	1995.57	9	USA	2420.87
10	Iraq	754.09	10	Iraq	1717.95	10	Spain	2304.92

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

the fish stock, and the portion of the country (region) on the world market of fish and fish products. The two largest exporting regions are Europe ($54.6 billion in 2019) and East Asia and the Pacific ($53.8 billion), while the shares of other regions in global exports of fish, crustaceans, and mollusks are significantly lower (Fig. 3.9).

China is well ahead of other countries in terms of the value of fish exports. China's share of global exports increased from 7.10% in 2000 to 12.76% in 2010, and then

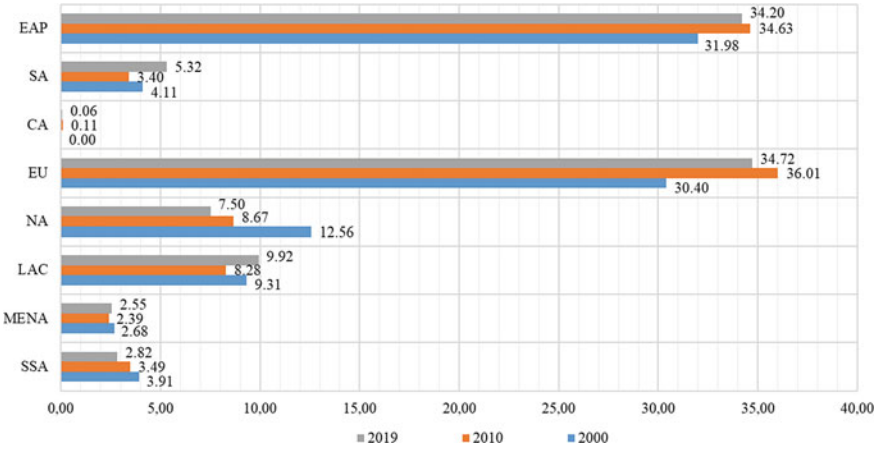

Fig. 3.9 Exports of fish, crustaceans, and mollusks by geographic region, portions in international exports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

to 14.78% in 2019. In addition to China, Vietnam is a major exporter among the countries of East Asia and the Pacific (+3.62% points in the composition of world exports). Thailand has lost its leading position in exports, falling to the fifth position in the list of top ten exporters by 2019 (−4.46% points).

Among the countries of Europe, the main exporters of fish, crustaceans, and mollusks are Norway (+1.35% points), the Netherlands (+0.74% points), and Spain (−0.32% points). In the geographic regions of South Asia and Latin America, where the fisheries sector is one of the most productive and dynamic industries (Shamsuzzaman et al., 2020), the largest exporters are India (+1.62% points) and Chile (+0.88% points), respectively. The portion of North America in the composition of global fish exports has decreased significantly over the past two decades, including due to the decline in the shares of the USA (−2.41% points) and Canada (−1.87% points) (Table 3.7).

Despite its position as one of the world's leading exporters, the region of Europe is still a net importer of fish, crustaceans, and mollusks. In 2019, the value of imports amounted to $60.9 billion and the trade deficit reached $6.3 billion. The shares of Europe and East Asia and the Pacific in world imports are unstable, and significant fluctuations are observed during the period under review (Fig. 3.10). The geographic region of East Asia as a whole is a net exporter of fish, but several countries are large net importers. For example, in Japan, the fish trade deficit amounted to $12.6 billion in 2019, in South Korea—$3.7 billion, and in Singapore—$759.3 million. The regions of Sub-Saharan Africa and the Middle East and North Africa have also increased imports of fish. This trend confirms the recent observation of Nankwenya et al. (2018) and Guedri and Chakour (2015) that the demand for fish across Africa has grown to the level where current production has failed to meet it.

Table 3.7 Top ten exporters of fish, crustaceans, and mollusks in 2000–2019, $ million

2000			2010			2019		
Place	Country	Exports, $ million	Place	Country	Exports, $ million	Place	Country	Exports, $ million
1	Thailand	4325.67	1	China	13,198.08	1	China	23,255.98
2	China	3651.90	2	Norway	8665.81	2	Norway	12,638.44
3	Norway	3435.05	3	Thailand	6981.04	3	Vietnam	10,219.36
4	USA	2949.54	4	Vietnam	5015.35	4	India	6766.06
5	Canada	2807.11	5	USA	4477.43	5	Thailand	6217.01
6	Denmark	1870.91	6	Canada	3802.90	6	Chile	6122.66
7	Spain	1640.21	7	Netherlands	3455.46	7	Netherlands	5675.12
8	Indonesia	1582.86	8	Spain	3236.61s	8	Canada	5645.94
9	Chile	1546.25	9	Chile	2820.50	9	USA	5247.07
10	Netherlands	1475.32	10	Denmark	2703.72	10	Spain	4517.68

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

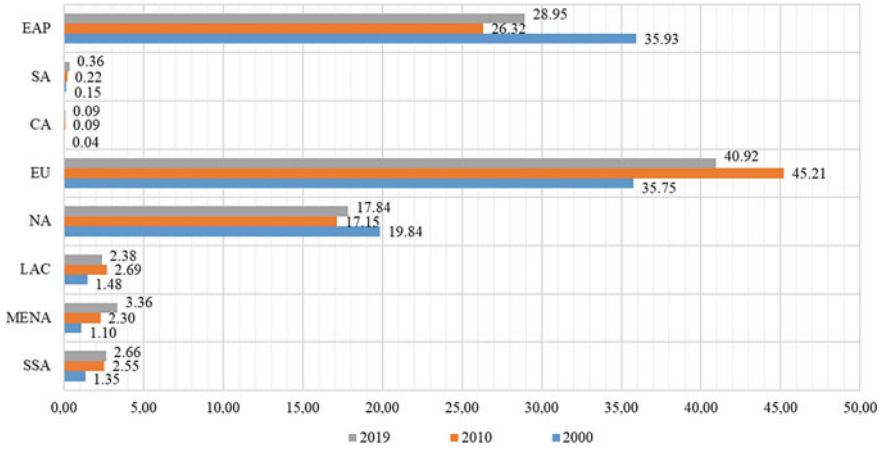

Fig. 3.10 Imports of fish, crustaceans, and mollusks by geographic region, portions in international imports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

The region of North America is also a major importer of fish, crustaceans, and mollusks. The value of North America's imports has more than doubled since the beginning of the 2000s to more than $26.5 billion in 2019. The deficit increased from $4.9 billion in 2000 to $14.8 billion in 2019. However, it should be noted that the entire amount of trade deficit is accounted for the USA, while the remaining countries of North America are net exporters of fish and aquatic products. The share of the USA in global imports of fish decreased from 17.32% in 2000 to 15.49% in 2019, but the country remains the world's biggest consumer well ahead of Japan, China, and some European countries (Table 3.8).

3.2.5 Cereals and Cereal Preparations

Cereals, including wheat, rice, corn, and barley, are essential elements of diets (Garkusha & Beybalaeva, 2019; Pospelova, 2019), as well as the traditional basis of cuisines in many countries. Under the influence of both natural and climatic factors (Nistor et al., 2010) and socio-cultural preferences of people in different parts of the world, a certain specialization in the production of particular crops has developed (Erokhin, 2020; Sobolev, 2019). With the development of international trade, natural agricultural advantages were transformed into the economic specialization of countries in the world market as producers, exporters, and importers of various crops (Dupas et al., 2019; Erokhin et al., 2014; Shurenkova, 2019).

The "Cereals and cereal preparations" category is the second-largest in international agricultural trade in terms of turnover value. In 2019, the trade turnover reached $360.4 billion, an increase of 3.72 times compared to 2000 and by 39.67% compared

Table 3.8 Top ten importers of fish, crustaceans, and mollusks in 2000–2019, $ million

2000			2010			2019		
Place	Country	Imports, $ million	Place	Country	Imports, $ million	Place	Country	Imports, $ million
1	Japan	15,304.74	1	USA	15,341.13	1	USA	23,062.45
2	USA	9906.76	2	Japan	14,393.78	2	Japan	14,761.64
3	Spain	3382.11	3	Spain	6420.18	3	China	11,874.87
4	France	2910.69	4	France	5831.17	4	Spain	7912.72
5	Italy	2512.47	5	Italy	5280.45	5	France	6549.27
6	UK	2179.06	6	Germany	4628.42	6	Italy	6473.41
7	Germany	2076.43	7	China	4412.73	7	Germany	5813.36
8	South Korea	1337.60	8	UK	3576.86	8	South Korea	5431.19
9	Canada	1332.50	9	Sweden	3239.28	9	Sweden	5240.38
10	China	1210.28	10	South Korea	3090.86	10	Netherlands	4466.82

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

to 2010. Over two decades, the value of cereals exports increased 3.66 times and reached $180.9 billion in 2019, including $83.9 billion in Europe, $34.2 billion in North America, $23.6 billion in East Asia and the Pacific, and $20.9 billion in Latin America and the Caribbean (Fig. 3.11).

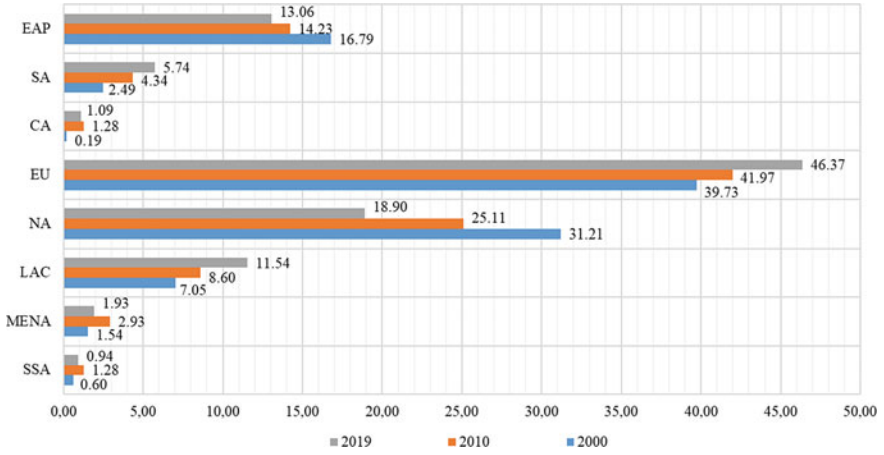

Fig. 3.11 Exports of cereals and cereal preparations by geographic region, portions in international exports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Today, almost half of the world's cereals production is provided by developing countries in Asia, mainly China, India, and Indonesia. Specialization in the production of certain types of cereals, however, is not always translated into an export competitive advantage in the world market. Thus, China and India, the world's largest wheat producers, use produced cereals mainly for domestic consumption (Erokhin, 2019). Ten leading producer countries provide more than 67% of the world's gross output of cereals, but the composition of cereals output by crops varies depending on the region. In Asia, rice dominates in the structure of gross cereals output (73.3% in Indonesia and 54.2% in India).

The USA and the countries of Latin America are prominent producers of corn. In the geographic region of Europe, countries are more focused on the production of wheat (Russia and France). The leading exporters of cereals are the USA (11.56% of international supply of cereals and cereal preparations in 2019), France (6.32%), and Canada (6.29%) (Table 3.9).

It should be noted that the share of major suppliers in the global market has decreased. The USA, France, and Canada have lost 10.85, 4.65, and 1.92% points in 2019 compared to 2000, respectively. At the same time, the value of exports from developing countries is growing, including in Russia (from 0.34% of the global cereals market in 2000 to 5.82% in 2019), Brazil (from 0.13 to 4.43%), and Ukraine (from 0.31 to 4.82%).

The geography of cereals supplies is very wide. There is no distinct largest consumer among importing countries. Significant volumes are exported to Europe ($60.0 billion in 2019, a threefold growth compared to 2000), East Asia and the Pacific ($38.6 billion, a fourfold increase), and the countries of the Middle East and North Africa ($32.6 billion, a threefold increase) (Fig. 3.12).

Table 3.9 Top ten exporters of cereals and cereal preparations in 2000–2019, $ million

2000			2010			2019		
Place	Country	Exports, $ million	Place	Country	Exports, $ million	Place	Country	Exports, $ million
1	USA	11,064.61	1	USA	23,092.41	1	USA	20,898.85
2	France	5417.45	2	France	11,050.62	2	France	11,426.39
3	Canada	4056.68	3	Canada	8335.36	3	Canada	11,375.01
4	Australia	3125.24	4	Germany	7805.07	4	Russia	10,532.94
5	Germany	3096.97	5	Thailand	6031.09	5	Argentina	9642.70
6	Argentina	2622.86	6	Australia	5393.57	6	Ukraine	8718.85
7	Italy	2089.98	7	Argentina	5356.69	7	Germany	8257.63
8	UK	1959.03	8	Italy	4656.85	8	Brazil	8011.69
9	Thailand	1832.49	9	Belgium	3478.22	9	India	7646.95
10	China	1816.88	10	Vietnam	3417.99	10	Australia	6841.83

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

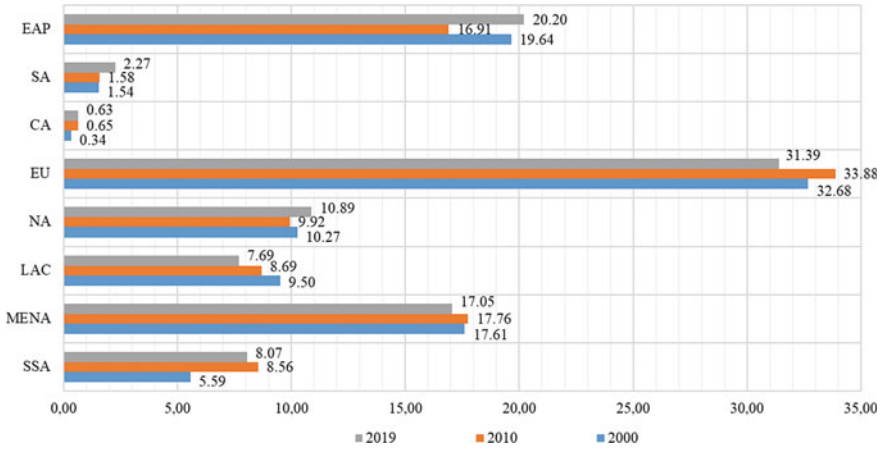

Fig. 3.12 Imports of cereals and cereal preparations by geographic region, portions in international imports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Until the 2010s, Japan was the world's largest importer of cereals and cereal preparations, but it had lost its leadership by 2019. Currently, the USA, China, and Japan taken together account for 14.73% of global imports of cereals (Table 3.10). Traditionally large importers of cereals are the countries of Europe. Germany, the

Table 3.10 Top ten importers of cereals and cereal preparations in 2000–2019, $ million

2000			2010			2019		
Place	Country	Imports, $ million	Place	Country	Imports, $ million	Place	Country	Imports, $ million
1	Japan	4300.85	1	Japan	8012.95	1	USA	11,469.33
2	USA	2558.73	2	USA	6704.36	2	China	9590.74
3	UK	1823.86	3	Germany	5082.86	3	Japan	7096.55
4	Mexico	1766.18	4	Saudi Arabia	4585.54	4	Germany	6792.00
5	Germany	1675.39	5	Netherlands	4061.04	5	Netherlands	5826.13
6	Italy	1660.57	6	Italy	3996.20	6	Mexico	5578.38
7	France	1638.54	7	Mexico	3847.47	7	UK	5426.34
8	South Korea	1622.23	8	South Korea	3737.68	8	Egypt	5364.74
9	Saudi Arabia	1476.91	9	UK	3724.84	9	Italy	5046.16
10	Brazil	1465.19	10	France	3682.11	10	Spain	5000.12

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

Netherlands, and the UK account for 3.55%, 3.05%, and 2.84% of global cereals imports in 2019, respectively. In the region of the Middle East and North Africa, the largest importers of cereals are Egypt (2.81% of global imports of cereals in 2019) and Saudi Arabia (2.58%), in Latin America—Brazil (1.53%) and Colombia (0.98%), in Sub-Saharan Africa—Nigeria (1.15%) and South Africa (0.64%). Geographic regions and individual countries specialize in the production of certain types of crops. Thus, rice production is concentrated in East and South Asia, wheat production—in Asia and Europe, corn production—in North America (mainly, the USA), and barley production—in Europe. China, USA, and India produce about half of the total world's output of cereals, but among the main producers, the output has been growing in India and Indonesia only. In other countries, it has been either fluctuating (USA, Russia, France, Ukraine) or even decreasing (China).

The largest producers of cereals are not necessarily the largest exporters. Such a situation is typical for many developing countries, for which ensuring the stability of domestic food supply and achieving food security targets are extremely important (Baskov et al., 2019; Pasara & Diko, 2020).

3.2.6 Vegetables and Fruits

As noted previously in Sect. 3.1, vegetables and fruits are the most valuable group of agricultural products in international trade. Also, this category is characterized by the most dynamic growth among all types of food and agricultural products considered in the study. During 2000–2019, the trade turnover of vegetables and fruits increased by 5.57 times and reached $549.0 billion. Exports quadrupled from $69.3 billion in 2000 to $185.3 billion in 2010 and then to $280.1 billion in 2019. The largest exporters of vegetables and fruits are European countries, but their share in world exports has been steadily declining since the early 2000s (Fig. 3.13). Such deceleration could be associated with either the slowdown of vegetable and fruit production or the decline in the food processing industry across Europe during the 2000s, as reported by Domján and Fekete Farkas (2011). In terms of value, exports from Europe tripled during the period under review, while the value of supplies from the geographic region of East Asia and the Pacific grew almost sevenfold.

Europe as a whole is a net importer of vegetables and fruits, but some countries act as net exporters on the world market. The largest exporters of vegetables and fruits among European countries are the Netherlands (8.43% of world exports in 2019), Spain (7.41%), and Belgium (3.41%). The USA, the world's largest exporter for many years, has been gradually losing its leadership position in the market amid rapid growth in exports from China. In 2000, the share of the USA in international supplies of vegetables and fruits was 11.74%. It had fallen to 9.63% by 2010 and then to 9.04% by 2019. China, on the contrary, increased its contribution to global exports of vegetables and fruits from 4.76% in 2000 to 8.63% in 2010 and then to 9.98% in 2019. Azam and Shafique (2018) attributed such rapid growth of exports to China's

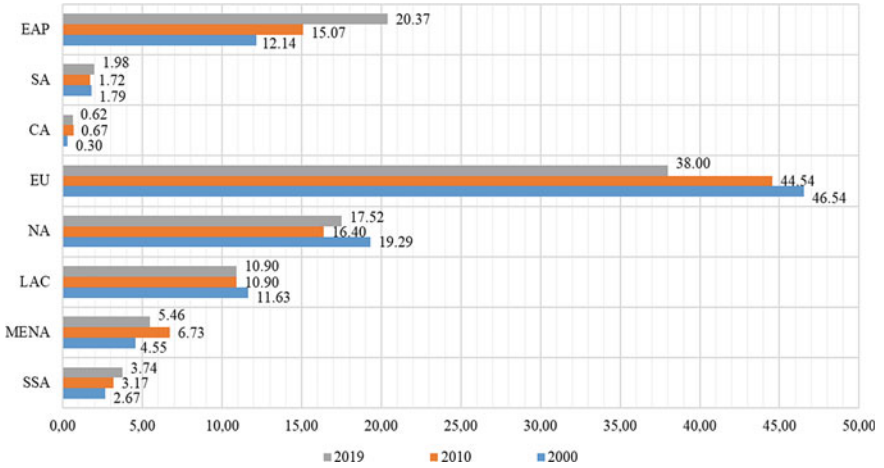

Fig. 3.13 Exports of vegetables and fruits by geographic region, portions in international exports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

accession to the WTO in 2001, as well as the expansion of domestic production due to the increasing level of income and consumer demand.

Several "new" countries have made a breakthrough to top ten world's exporters, including Vietnam (from 0.59% of the global exports in 2000 to 2.94% in 2019), Chile (from 2.22 to 2.63%), and Turkey (from 2.60 to 2.87%) (Table 3.11).

Table 3.11 Top ten exporters of vegetables and fruits in 2000–2019, $ million

2000			2010			2019		
Place	Country	Exports, $ million	Place	Country	Exports, $ million	Place	Country	Exports, $ million
1	USA	8143.63	1	USA	17,838.25	1	China	27,942.19
2	Spain	6875.40	2	Netherlands	17,256.62	2	USA	25,306.95
3	Netherlands	5689.33	3	China	15,996.58	3	Netherlands	23,613.26
4	Italy	4027.80	4	Spain	15,110.29	4	Spain	20,757.61
5	Belgium	3830.48	5	Italy	8740.84	5	Mexico	16,593.95
6	China	3299.04	6	Belgium	8549.17	6	Belgium	9555.07
7	Mexico	3255.76	7	Mexico	7552.28	7	Italy	9229.93
8	France	3196.81	8	Turkey	6150.78	8	Vietnam	8228.37
9	Canada	1978.99	9	France	6130.05	9	Turkey	8033.20
10	Germany	1903.05	10	Germany	5529.23	10	Chile	7364.67

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

As mentioned above, Europe is a net importer of vegetables and fruits, including organic farming products (Pérez-Flores et al., 2020). Thus, being the world's main exporter, the geographic region of Europe is also the largest importer, while the domination of Europe in global imports of vegetables and fruits is much more pronounced compared to that in exports (Fig. 3.14).

Similar to the declining trend revealed for Europe's portion in the composition of global exports, the share of European countries in global imports of vegetables and fruits has been decreasing, but the trade deficit has been growing. Imports exceeded exports by $9.7 billion in 2000. The deficit had increased to $15.9 billion by 2010 and then to $25.7 billion by 2019. The deficit-turnover ratio declined from 13.07% in 2000 to 10.78% in 2019, which indicates a slight improvement in Europe's self-sufficiency in vegetables and fruits.

Among the world's leading consumers of vegetables and fruits, the largest net importers in the geographic region of Europe are Germany, UK, France, and Russia, while the Netherlands and Belgium both enjoy a significant excess of exports over imports. Among other regions of the world, it is necessary to emphasize the strong leadership of the USA as the main importer of vegetables and fruits since the early 2000s. The USA's share in world imports increased from 12.23% in 2000 to 14.70% in 2019. In recent years, China has become an increasingly large consumer of vegetables and fruits, with the value of imports growing twenty-five times from $524.4 million in 2000 (0.70% of world imports) to $12.9 billion in 2019 (4.66% of world imports) (Table 3.12). The emergence of China and other developing countries as importers of vegetables and fruits accords to the suggestion of Sonntag et al. (2016) that exporters tend to deliver their products to Asian countries, where maximum residue levels are

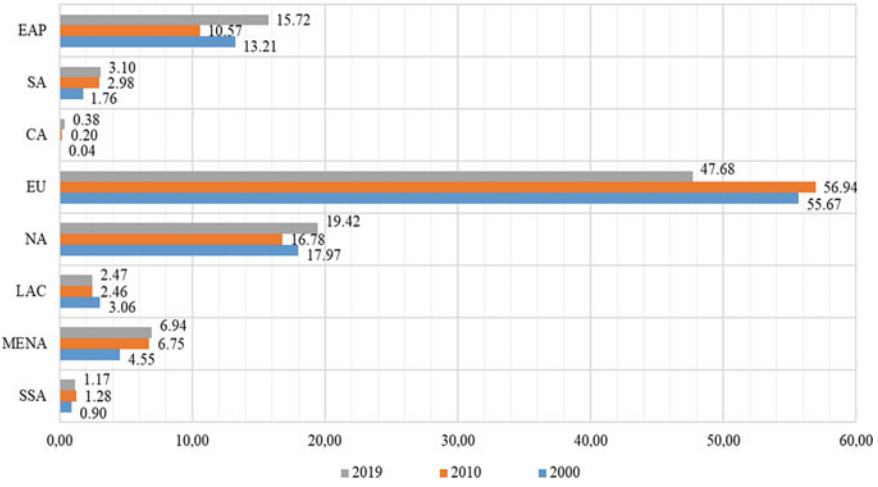

Fig. 3.14 Imports of vegetables and fruits by geographic region, portions in international imports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Table 3.12 Top ten importers of vegetables and fruits in 2000–2019, $ million

2000			2010			2019		
Place	Country	Imports, $ million	Place	Country	Imports, $ million	Place	Country	Imports, $ million
1	USA	9285.90	1	USA	23,032.04	1	USA	40,721.40
2	Germany	9106.20	2	Germany	18,905.60	2	Germany	22,865.71
3	Japan	6348.28	3	UK	11,955.66	3	UK	14,744.71
4	UK	6254.16	4	France	11,217.45	4	Netherlands	14,659.82
5	France	5190.49	5	Netherlands	9925.51	5	France	13,553.93
6	Netherlands	3772.49	6	Russia	8695.10	6	China	12,923.84
7	Canada	3340.03	7	Japan	7996.77	7	Canada	10,759.09
8	Belgium	3272.09	8	Canada	7711.34	8	Japan	9903.57
9	Italy	2565.16	9	Belgium	6760.89	9	Russia	8186.39
10	Spain	1711.37	10	Italy	5772.83	10	Belgium	7802.59

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

higher, while phytosanitary regulations are lower. Due to stringent food standards in combination with stagnating production, the markets of developed countries are becoming less attractive in comparison to Asia and other developing regions.

3.2.7 Sugar and Honey

The "Sugar, sugar preparations, and honey" category contributed only 2.86% to the composition of the international agricultural trade turnover. Since the beginning of the 2000s, the value of trade in sugar and honey has almost tripled to $89.6 billion, but the portion of the category in agricultural trade has decreased by 0.65% points. By 2019, the value of sugar and honey exports had reached $43.5 billion, while the structure of exports by region has undergone significant fluctuations over the past two decades. Among the geographic regions of the world, only East Asia and the Pacific has managed to steadily increase the value of sugar exports and strengthen its market position, while the portions of European and Latin American countries in global exports of sugar and honey have significantly decreased compared to the levels of 2000–2010 (Fig. 3.15).

Both Europe and Latin America are net exporters of sugar and honey. Brazil leads the world as the largest supplier of sugar and sugar products. The value of Brazil's sugar exports quadrupled during the period under review. The country's share of global sugar exports rose sharply from 8.89% in 2000 to 27.56% in 2010, before falling to 12.44% in 2019. Among Latin American countries, Guatemala, Colombia, Cuba, Argentina, and Nicaragua also specialize in export of sugar (Rocha,

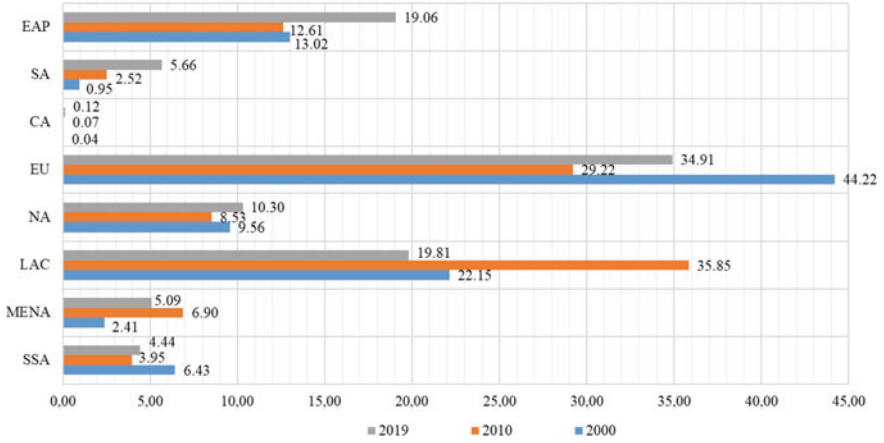

Fig. 3.15 Exports of sugar and honey by geographic region, portions in international exports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

2010), but the combined supply of these five countries account for less than half of Brazil's exports. Among European countries, Germany is placed consistently high in the ranking of top ten exporters of sugar (6.09% of world exports in 2019), while France and Belgium have lost 5.18 and 1.99% points, respectively, in the composition of world exports during 2000–2019. The geographic regions of East Asia and the Pacific and South Asia are net importers of sugar and honey, but there has been a significant increase in supplies from these regions due to several leading net exporters. Thailand's share of world supplies of sugar has remained high for many years, while China and India have only recently managed to enter the top ten ranking. China's share in global exports increased from 2.17% in 2000 to 5.54% in 2019, while that of India skyrocketed from 0.55 to 4.78%, respectively (Table 3.13).

The composition of shares in imports of sugar and honey between geographic regions is almost similar to that in exports. Despite the fact that by 2019, the region of Europe had become a net exporter of sugar, the surplus achieved was rather modest ($0.3 billion, or 1% of the trade balance). During the 2000s and 2010s. Europe had a deficit in global sugar trade ($0.8 billion in 2000 and $2.0 billion in 2010). Europe's portion in the composition of global imports of sugar and honey is declining as purchases by countries of East Asia, North America, and Sub-Saharan Africa are increasing (Fig. 3.16). All these regions are pronounced net importers of sugar. In the region of East Asia and the Pacific, the value of imports has quadrupled over the past two decades from $2.7 billion in 2000 to $9.3 billion in 2019. In Africa, it grew by 51.93% from $5.18 billion in 2000 to $7.87 billion in 2019 (although, according to Ungaya and Malenya (2018), domestic production of sugar is heavily supported across Africa), while in North America, it slightly increased by 7.68% from $13.7 billion to $14.7 billion, respectively.

Table 3.13 Top ten exporters of sugar and honey in 2000–2019, $ million

2000			2010			2019		
Place	Country	Exports, $ million	Place	Country	Exports, $ million	Place	Country	Exports, $ million
1	France	1401.32	1	Brazil	13,012.86	1	Brazil	5410.15
2	Brazil	1296.01	2	Thailand	2544.92	2	Thailand	2839.83
3	Germany	941.10	3	Germany	2087.93	3	Germany	2647.62
4	Thailand	753.83	4	France	1819.20	4	China	2408.85
5	Belgium	723.32	5	USA	1774.59	5	India	2077.62
6	USA	691.59	6	UAE	1660.87	6	USA	1957.30
7	UK	577.74	7	Netherlands	1472.36	7	France	1929.68
8	Cuba	522.32	8	China	1412.28	8	Netherlands	1800.49
9	Netherlands	487.21	9	Mexico	1365.55	9	Mexico	1533.99
10	Spain	479.31	10	Belgium	1311.12	10	Belgium	1293.69

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

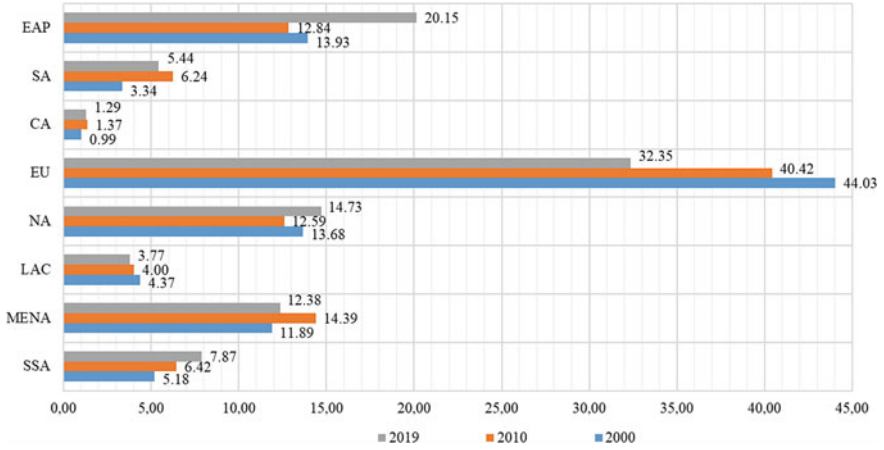

Fig. 3.16 Imports of sugar and honey by geographic region, portions in international imports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

The USA has been the largest importer of sugar since the early 2000s. Its share of global imports increased from 9.60% in 2000 to 10.62% in 2019 (Table 3.14).

Regarding other top ten importers, there is a tendency to shift imports from Europe to Asia. Thus, despite comparative advantages in sugar trade documented by many scholars (for instance, Smutka et al. (2019)), European countries have lost their positions as leading importers, including Russia (the portion in global imports declined from 7.20% in 2000 to 1.18% in 2019), the UK (a decline from 6.77% to 3.32%), and

Table 3.14 Top ten importers of sugar and honey in 2000–2019, $ million

2000			2010			2019		
Place	Country	Imports, $ million	Place	Country	Imports, $ million	Place	Country	Imports, $ million
1	USA	1564.22	1	USA	4274.16	1	USA	4892.69
2	Russia	1173.21	2	Russia	2247.76	2	Germany	1917.95
3	UK	1103.16	3	UK	1994.86	3	Indonesia	1858.90
4	Germany	784.47	4	Germany	1911.39	4	China	1543.08
5	France	556.00	5	India	1329.05	5	UK	1528.30
6	Japan	541.06	6	Indonesia	1289.99	6	Bangladesh	1144.91
7	Belgium	502.43	7	South Korea	1178.98	7	Italy	1129.14
8	Canada	493.45	8	Italy	1176.82	8	Netherlands	1118.52
9	Italy	419.35	9	France	1109.53	9	France	1092.88
10	Indonesia	404.90	10	Japan	1097.53	10	Canada	1092.26

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

France (a decline from 3.41% to 2.37%). At the same time, amid not very efficient regulatory interventions in the domestic production of sugar and problems in the institutional framework for trade policymaking (Stapleton, 2006), many countries of East and South Asia have substantially increased their purchases, for example, Indonesia (from 2.48% in global imports of sugar and honey in 2000 to 4.04% in 2019), China (from 1.09 to 3.35%), and Bangladesh (from 0.42 to 2.49%).

3.2.8 Coffee, Tea, and Spices

Coffee, tea, cocoa, spices, and manufactures thereof are one of the most valuable agricultural products traded in the international market. Since 2000, the value of turnover of this category of foodstuffs has increased by 3.67 times and amounted to $214.1 billion in 2019. For many countries, particularly, some developing and many least developed economies, coffee, tea, and spices are major sources of income, foreign exchange, and employment (Bacon, 2005; Kitti et al., 2009). Even though most people strongly associate both production and export of coffee with the geographic region of Latin America, the largest exporters are the countries of Europe (a fivefold increase in the value of exports to $48.5 billion in 2019 compared to 2000), East Asia and the Pacific (fivefold increase to $15.8 billion), and Africa (fourfold increase to $14.5 billion). The value of exports from Latin America also increased, but to a lesser extent compared to other regions of the world, which resulted in a reduction in the contribution of Latin America to international exports (Fig. 3.17).

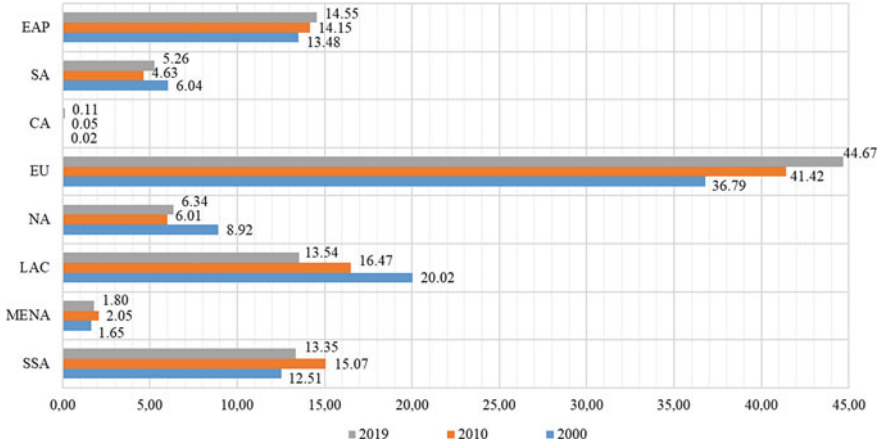

Fig. 3.17 Exports of coffee, tea, and spices by geographic region, portions in international exports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Such a decline in the share of the geographic region of Latin America and the Caribbean in the composition of global exports of coffee and tea was largely due to a reduction in supplies from Brazil, Peru, and Argentina. Compared to 2010, the value of coffee and tea exports from Brazil decreased by 9.34% in 2019, from Peru—by 13.73%, and from Argentina—by 6.93%. Following the line of argumentation of Pokorná and Smutka (2010), we may say that such a decline could be attributed to the lower added value received by developing countries from exporting unprocessed green coffee compared to the higher added value generated in developed economies that supply processed roasted coffee under world-famous trademarks. Evidently, European countries occupy consistently high positions in the ranking of leading exporters of coffee and tea. In particular, Germany has increased its share in the global exports by 2.23% points in 2000–2019, while the portions of the Netherlands and Italy have grown by 1.30 and 1.53% points, respectively (Table 3.15).

The regions of East and South Asia are both net exporters of coffee, tea, and spices, and some Asian countries have substantially increased the value of their supplies to the global market, in particular, Vietnam (a growth in share in global exports from 2.59% in 2000 to 4.09% in 2019), India (from 3.14 to 3.54%), China (from 1.97 to 3.07%), and Malaysia (from 1.08 to 1.73%). Among the countries of Sub-Saharan Africa, major exporters of coffee and tea, along with Cote d'Ivoire, are Ghana, Kenya, Uganda, Nigeria, Ethiopia, and Madagascar.

Four of the eight geographic regions we consider in this review are net importers of coffee, tea, and spices, including Europe (trade deficit of $9.2 billion, or 8.67% of trade turnover in 2019), North America ($11.0 billion, or 44.44%), Middle East and North Africa ($6.1 billion, or 61.33%), and Central Asia ($0.6 billion, or 79.81%) (Fig. 3.18). Each of these regions increased purchases in 2000–2019. The value of imports by European countries raised 3.5 times to $57.8 billion, while in the regions

Table 3.15 Top ten exporters of coffee, tea, and spices in 2000–2019, $ million

2000			2010			2019		
Place	Country	Exports, $ million	Place	Country	Exports, $ million	Place	Country	Exports, $ million
1	Brazil	2066.29	1	Germany	7699.49	1	Germany	10,205.21
2	Germany	2014.69	2	Netherlands	6474.07	2	Netherlands	7911.30
3	Netherlands	1684.16	3	Brazil	6380.82	3	Brazil	5784.86
4	Belgium	1447.70	4	Cote d'Ivoire	4355.34	4	Cote d'Ivoire	5494.72
5	Cote d'Ivoire	1334.53	5	Belgium	3873.82	5	Belgium	4952.25
6	Colombia	1191.06	6	Indonesia	3244.83	6	Vietnam	4446.42
7	France	1122.28	7	Ghana	3161.70	7	Italy	4024.31
8	Indonesia	1111.36	8	France	2724.65	8	India	3850.96
9	USA	1061.18	9	USA	2604.60	9	France	3707.31
10	UK	893.15	10	Vietnam	2595.09	10	Switzerland	3632.19

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

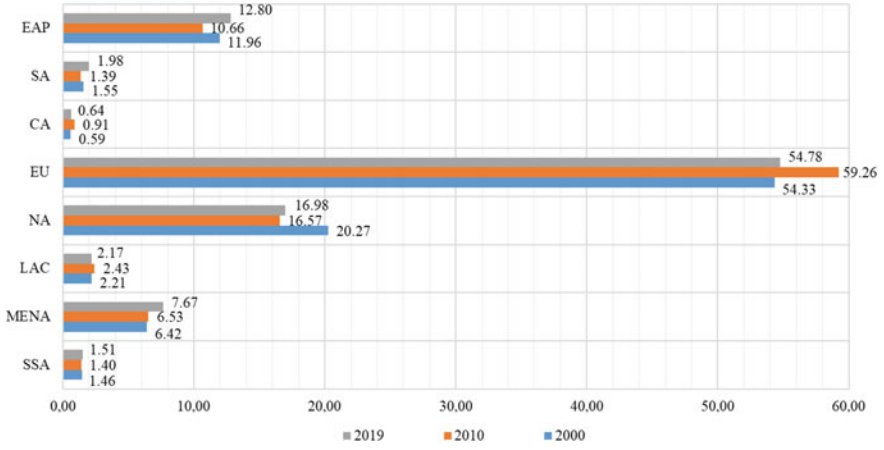

Fig. 3.18 Imports of coffee, tea, and spices by geographic region, portions in international imports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

of North America, Middle East and North Africa, and Central Asia, imports increased 2.9 times (to $17.9 billion), 4.2 times (to $8.1 billion), and 3.8 times (to $0.7 billion), respectively.

The composition of leading importers of coffee, tea, and spices has hardly changed since the early 2000s. The share of the USA in world imports declined from 16.04%

Table 3.16 Top ten importers of coffee, tea, and spices in 2000–2019, $ million

2000			2010			2019		
Place	Country	Imports, $ million	Place	Country	Imports, $ million	Place	Country	Imports, $ million
1	USA	4849.69	1	USA	10,902.98	1	USA	13,790.64
2	Germany	3072.91	2	Germany	8421.66	2	Germany	9092.86
3	France	2107.17	3	France	5185.65	3	France	6964.50
4	Japan	1796.17	4	Netherlands	4839.83	4	Netherlands	6825.71
5	UK	1789.26	5	UK	4049.59	5	UK	4855.56
6	Netherlands	1447.57	6	Belgium	3035.90	6	Belgium	4033.99
7	Italy	1066.93	7	Japan	2947.38	7	Canada	3348.02
8	Canada	1046.23	8	Russia	2725.35	8	Italy	3164.39
9	Belgium	1009.73	9	Canada	2640.87	9	Japan	2949.39
10	Russia	801.87	10	Italy	2623.02	10	Russia	2508.54

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

in 2000 to 13.08% in 2019. Germany and France have also decreased their portion in imports from 10.16 to 8.62% and from 6.97 to 6.61%, respectively (Table 3.16).

In the geographic region of the Middle East and North Africa, the largest importers of coffee, tea, and spices are Saudi Arabia ($1.5 billion, or 1.45% of global imports in 2019) and the UAE ($1.2 billion, or 1.14%), in the region of East Asia and the Pacific—Japan ($2.9 billion, or 2.80%) and China ($1.8 billion, or 1.70%), in the region of South Asia—India ($984.0 million, or 0.93%) and Pakistan ($707.5 million, or 0.67%), in the region of Latin America and the Caribbean—Brazil ($452.7 million, or 0.43%) and Chile ($321.6 million, or 0.31%), in the region of Sub-Saharan Africa—South Africa ($431.5 million, or 0.41%) and Sudan ($190.8 million, or 0.18%).

3.2.9 Feedstuff for Animals

The international trade turnover of feedstuff for animals has quadrupled in two decades to $166.3 billion in 2019. The portion of this category of agricultural raw materials in the composition of international agricultural trade fluctuated slightly between 5 and 6% and currently stands at 5.31%. The total value of exports increased from $20.6 billion in 2000 to $59.7 billion in 2010 and had reached $81.5 billion by 2019. The share of the geographic region of Europe in the composition of global exports by region has been growing (Fig. 3.19). Supplies of feedstuff from Europe increased 4.38 times during 2000–2019 up to $33.1 billion. Relative to the shares of other suppliers in the global market of feedstuff for animals, the portion of Latin

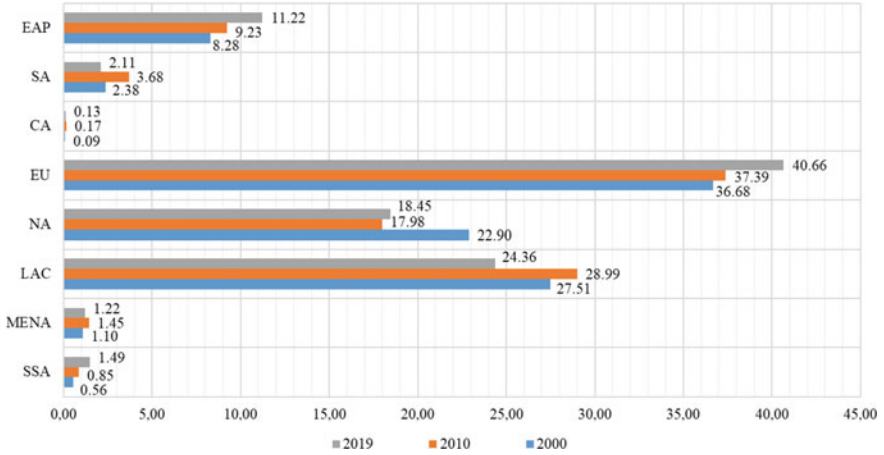

Fig. 3.19 Exports of feedstuff for animals by geographic region, portions in international exports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

America, the world's second-largest exporter, declined slightly, but the value of exports increased 3.5 times from $5.7 billion in 2000 to $19.8 billion in 2019. The main growth, however, occurred in the first decade of the XX century. Since the 2010s, the export of feedstuff from Latin America has been growing at a slow pace and has even declined in some countries of the region (Chile).

Similarly to that in Latin America, the share of North America in international exports of feedstuff is also declining. In terms of value, exports are growing in all countries of the region, but the growth rate is lower compared to that of the world exports. Overall, while global exports grew 3.96 times in 2000–2019, supplies from the geographic region of North America increased 3.18 times from $4.7 billion in 2000 to $10.7 billion in 2010 and then to $15.0 billion in 2019. During the entire period under review, the USA remains the largest feedstuff exporter among both the countries of North America (79.87% of the region's exports in 2019) and worldwide (14.74% of international exports in 2019).

The second-largest exporter of feedstuff for animals in North America is Canada. Its share of world exports has increased slightly in recent years, but overall, the composition of major exporters has not changed significantly. Very similar to previous decades, the ranking of top ten suppliers in 2019 included Argentina (a decline of the share of exports by 0.20% points to 11.59% in 2019), Brazil (a decline by 0.54% points to 7.77%), the Netherlands (a decline by 1.15% points to 7.44%), as well as Germany, France, Belgium, and Peru. In China, the share in global exports of feedstuff increased by 2.42% points to 3.89% in 2019 (Table 3.17).

In terms of imports, Europe is the largest importer of feedstuff for animals in the world, but its share in global purchases is declining, while those of East Asia and the Pacific and other regions of the world are growing (Fig. 3.20). The value of imports

Table 3.17 Top ten exporters of feedstuff for animals in 2000–2019, $ million

2000			2010			2019		
Place	Country	Exports, $ million	Place	Country	Exports, $ million	Place	Country	Exports, $ million
1	USA	4073.56	1	USA	9316.12	1	USA	12,005.48
2	Argentina	2431.58	2	Argentina	8785.08	2	Argentina	9444.45
3	Netherlands	1772.55	3	Netherlands	5886.04	3	Brazil	6328.34
4	Brazil	1713.78	4	Brazil	5038.46	4	Netherlands	6058.61
5	Germany	1206.59	5	Germany	3608.38	5	Germany	5035.21
6	France	1161.95	6	France	2792.07	6	France	3284.82
7	Peru	901.99	7	India	2066.74	7	China	3172.93
8	Belgium	866.67	8	China	1979.17	8	Canada	2593.39
9	Canada	623.15	9	Belgium	1862.48	9	Belgium	2415.56
10	Australia	564.73	10	Peru	1712.71	10	Peru	1824.75

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

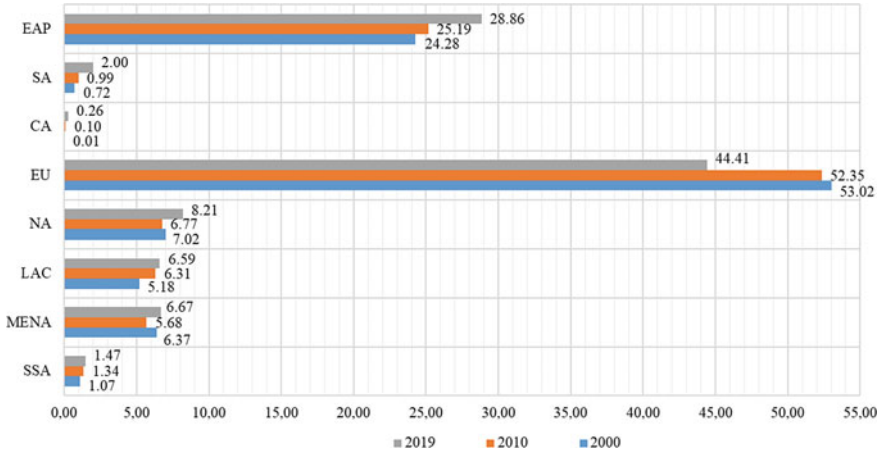

Fig. 3.20 Imports of feedstuff for animals by geographic region, portions in international imports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

by European countries increased 3.14 times to $37.7 billion in 2019, while the growth rate amounted to 4.45 times in Est Asia and the Pacific (up to $24.5 billion), 4.38 times in North America (up to $7.0 billion), 3.92 times in the Middle East and North Africa (up to $5.7 billion), and 4.77 times in Latin America and the Caribbean (up to $5.6 billion).

Table 3.18 Top ten importers of feedstuff for animals in 2000–2019, $ million

2000			2010			2019		
Place	Country	Imports, $ million	Place	Country	Imports, $ million	Place	Country	Imports, $ million
1	Japan	2035.86	1	Netherlands	4063.21	1	China	4820.84
2	Germany	1481.78	2	Japan	3895.60	2	Germany	4430.07
3	France	1428.23	3	Germany	3740.06	3	Vietnam	3896.77
4	Netherlands	1232.77	4	China	3301.04	4	Netherlands	3690.80
5	UK	1103.29	5	France	2873.87	5	Japan	3548.91
6	Italy	1004.79	6	UK	2652.76	6	USA	3480.35
7	China	907.86	7	Vietnam	2175.51	7	France	3167.69
8	Belgium	897.75	8	Italy	2109.64	8	UK	3108.67
9	Spain	882.06	9	South Korea	1895.15	9	Indonesia	2729.02
10	Denmark	640.63	10	Indonesia	1745.44	10	South Korea	2571.62

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

The growth in the share of East Asian countries in world imports of feedstuff for animals is largely due to increased imports by China, Vietnam, Indonesia, and South Korea. All of these countries are among the world's largest net importers of feedstuffs, as is the entire region of East Asia and the Pacific. The portion of China in the composition of world imports of feedstuff for animals increased from 4.01% in 2000 to 5.68% in 2019, Vietnam—from 0.70 to 4.59%, Indonesia—from 2.11 to 3.22%, South Korea—from 2.55 to 3.03% (Table 3.18).

Along with the geographic region of East Asia and the Pacific, the net importers of feedstuff for animals are the regions of the Middle East and North Africa (in 2019, trade deficit amounted to $4.7 billion, or 70.69% of the turnover), Europe ($4.6 billion, or 6.44%), Central Asia ($118.4 million, or 36.04%), and Africa ($38.5 million, or 1.56%). Among the countries of the Middle East and North Africa, the largest importers are Saudi Arabia ($871.5 million, or 1.03% of global imports of feedstuffs in 2019) and Iran ($759.4 million, or 0.89%), in Europe—Germany ($4.4 billion, or 5.22%) and the Netherlands ($3.7 billion, or 4.35%), in Central Asia—Uzbekistan ($102.5 million, or 0.12%) and Kazakhstan ($93.2 million, or 0.11%), in Africa—South Africa ($378.5 million, or 0.45%) and Kenya ($98.5 million, or 0.12%).

3.2.9.1 Miscellaneous Edible Products and Preparations

The "Miscellaneous edible products and preparations" category includes margarine, shortening, and other not specified edible products and preparations. The portion of

this category in total international agricultural trade turnover was 6.36% in 2019, an increase by 1.18% points compared to 2010 and by 1.84% points compared to 2000. The value of trade turnover raised fivefold from $39.8 billion in 2000 to $118.7 billion in 2010 and then to $199.3 billion in 2019. About half of the global exports of miscellaneous edible products is provided by European countries. However, due to the rapid growth of supplies from the countries of East Asia and the Pacific, the shares in global export of Europe, North America, Latin America, and other exporters have declined significantly (Fig. 3.21). Over the two decades, exports of miscellaneous edible products from East Asia skyrocketed more than ninefold from $3.0 billion (15.4% of global exports) up to $28.1 billion (28.1% of global exports).

Many countries of East Asia and the Pacific have scaled up their supplies to the world market. Singapore became the largest exporter among the countries of the region and the third-largest in the world. Its share in the international export of miscellaneous edible products increased from 1.61% in 2000 to 7.45% in 2019. China was ranked fifth-biggest exporter in 2019, increasing its share in global exports from 3.19 to 4.74%. Thailand, Malaysia, Australia, Indonesia, and New Zealand have also increased the value of their exports. Amid such growth in exports from developing countries of Asia, the portions of developed countries of Europe and North America (leading exporters in the 2000s) in the composition of international supplies of miscellaneous edible products have been declining (the USA—from 15.48% in 2000 down to 10.03% in 2019, Germany—from 8.23% down to 7.25%, France—from 5.97% down to 4.26%) (Table 3.19).

A similar trend is observed in the distribution of the regions' portions in the composition of international imports of miscellaneous edible products and preparations. The share of Europe in imports is declining, while those of developing regions

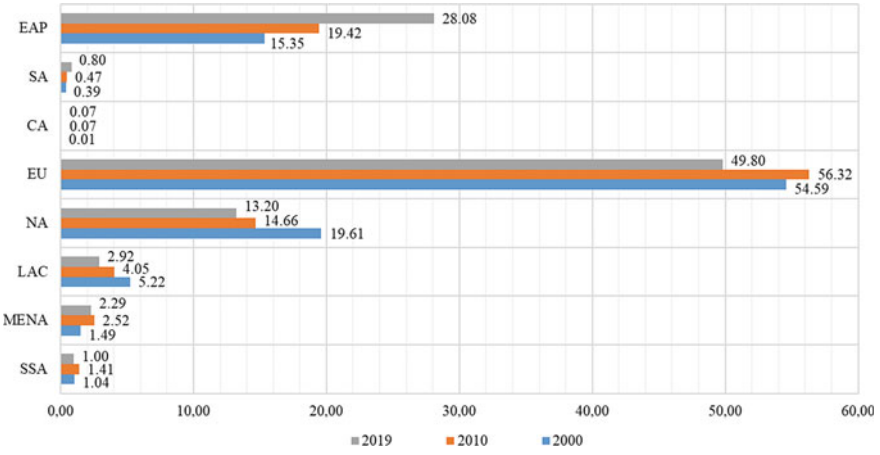

Fig. 3.21 Exports of miscellaneous edible products and preparations by geographic region, portions in international exports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Table 3.19 Top ten exporters of miscellaneous edible products and preparations in 2000–2019, $ million

2000			2010			2019		
Place	Country	Exports, $ million	Place	Country	Exports, $ million	Place	Country	Exports, $ million
1	USA	2986.52	1	USA	6178.58	1	USA	10,038.04
2	Netherlands	1593.05	2	Netherlands	5853.39	2	Netherlands	8947.64
3	Germany	1588.59	3	Germany	4830.22	3	Singapore	7462.27
4	Ireland	1237.32	4	France	3112.02	4	Germany	7262.69
5	France	1151.26	5	Italy	2354.44	5	China	4748.94
6	UK	852.56	6	Belgium	2218.19	6	France	4263.45
7	Belgium	829.79	7	China	2159.91	7	Italy	3952.17
8	Italy	743.52	8	Ireland	1953.84	8	Belgium	2924.64
9	China	614.72	9	Singapore	1822.10	9	UK	2813.64
10	Denmark	547.57	10	UK	1693.19	10	Thailand	2796.51

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

are growing. Europe is a net exporter of miscellaneous edible products, but it still leads the world in terms of the value of imports. The geographic regions of the Middle East and North Africa, Latin America and the Caribbean, Sub-Saharan Africa, and Central and South Asia are all net importers. In the Middle East and North Africa, the trade deficit increased fourfold and reached $5.4 billion in 2019, or 58.20% of trade turnover.

In Latin America, Sub-Saharan Africa, Central Asia, and South Asia, trade deficit amounted to $2.8 billion (32.31% of trade turnover), $3.0 billion (59.55%), $640.3 million (81.28%), and $188.5 million (10.48%), respectively (Fig. 3.22).

As in the case of leading exporters of miscellaneous edible products and preparations, one could observe a significant increase in the role of developing countries as leading importers. China's imports of miscellaneous edible products raised almost thirty times, while the country's portion in the composition of global imports increased from 1.51% in 2000 to 9.24% in 2019. In the majority of developed countries, contributions to the value of international consumption of edible products decreased, particularly, by 1.85% points in the UK, by 1.82% points in Germany, and by 1.12% points in France (Table 3.20).

Among the countries of the Middle East and North Africa, major importers of miscellaneous edible products and preparations are Saudi Arabia ($2.1 billion, or 2.11% of global imports in 2019) and the UAE ($1.1 million, or 1.15%), in Latin America and the Caribbean—Chile ($674.7 million, or 0.68%) and Brazil ($577.8 million, or 0.58%), in Sub-Saharan Africa—Nigeria ($809.2 million, or 0.82%) and South Africa ($306.9 million, or 0.31%), in Central Asia—Kazakhstan ($414.0 million, or 0.42%) and Uzbekistan ($162.7 million, or 0.16%), in South Asia—India ($232.7 million, or 0.23%) and Pakistan ($215.3 million, or 0.22%).

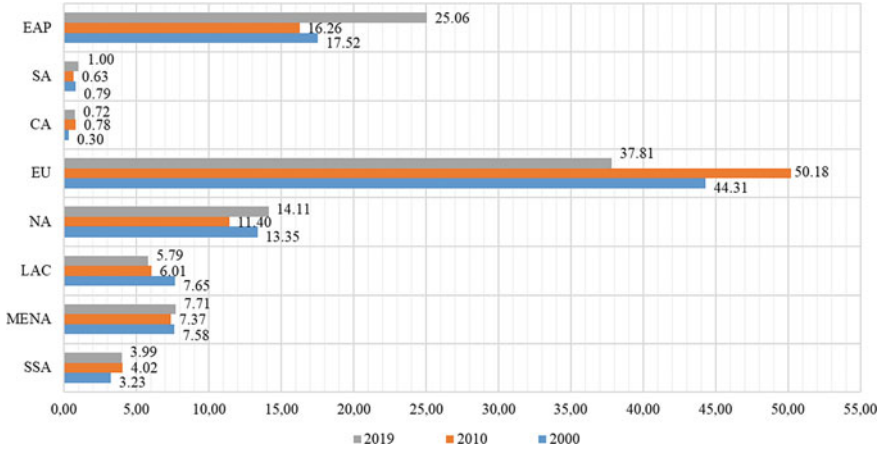

Fig. 3.22 Imports of miscellaneous edible products and preparations by geographic region, portions in international imports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Table 3.20 Top ten importers of miscellaneous edible products and preparations in 2000–2019, $ million

2000			2010			2019		
Place	Country	Imports, $ million	Place	Country	Imports, $ million	Place	Country	Imports, $ million
1	UK	1291.69	1	USA	3634.72	1	China	9159.49
2	USA	1249.17	2	Germany	3424.33	2	USA	9137.56
3	Germany	1242.28	3	UK	3332.80	3	UK	4407.79
4	Japan	1120.42	4	France	2615.43	4	Germany	4206.14
5	France	924.55	5	Canada	2332.50	5	Netherlands	3768.69
6	Canada	850.44	6	Netherlands	1972.04	6	Canada	3474.90
7	Spain	663.94	7	Japan	1884.97	7	France	3356.96
8	Mexico	635.40	8	Spain	1795.19	8	South Korea	2327.99
9	Netherlands	590.06	9	China	1721.33	9	Australia	2281.96
10	Belgium	559.87	10	Australia	1565.33	10	Saudi Arabia	2091.14

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

3.2.9.2 Beverages and Tobacco

The "Beverages and tobacco" category is the third-largest in international agricultural trade. It includes non-alcoholic and alcoholic beverages and manufactured and

unmanufactured tobacco and tobacco refuse (United Nations Conference on Trade & Development, 2020). Over the past two decades, the value of international trade in beverages and tobacco has increased almost threefold up to $327.6 billion, while the share of the category in the composition of global agricultural trade turnover declined from 12.89% in 2000 to 10.46% in 2019. The value of exports raised from $56.4 billion in 2000 to $120.6 billion in 2010 and then to $162.2 billion in 2019. The countries of Europe are distinct leaders in the supply of beverages and tobacco in the global market, while the shares of North America, Latin America and the Caribbean, and Sub-Saharan Africa have been declining since the early 2010s (Fig. 3.23).

The top ten ranking of leading exporters of beverages and tobacco is dominated by European countries, including France (11.72% of global exports in 2019), Italy (7.52%), and the UK (6.28%). However, in recent years, several European exporters have been losing their positions in the global market, while some Asian and Latin American economies have been scaling up their supplies. Thus, among the countries of East Asia and the Pacific, China, Singapore, and Thailand have substantially increased exports of beverages and tobacco (up to 2.47, 2.40, and 1.22% of the global exports in 2019, respectively).

In the geographic region of Latin America and the Caribbean, Brazil, Chile, Dominican Republic, and Argentina contributed the most to the composition of the region's exports. Among the countries of Sub-Saharan Africa, the largest supplier of beverages and tobacco is South Africa (0.84% of global exports) (Table 3.21).

European countries also lead the world in terms of the value of consumption of beverages and tobacco, but their portion in the composition of global imports has been declining rapidly since the 2010s. While the value of global imports has increased 2.90 times over the past two decades, the growth of imports in Europe

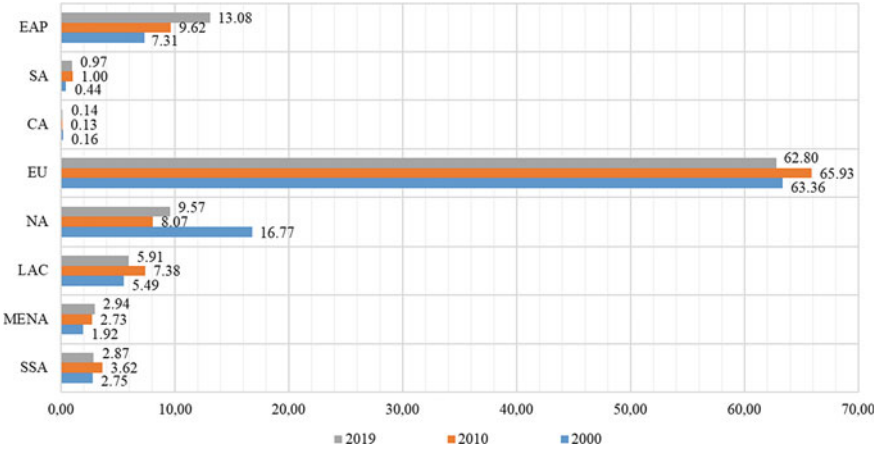

Fig. 3.23 Exports of beverages and tobacco by geographic region, portions in international exports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Table 3.21 Top ten exporters of beverages and tobacco in 2000–2019, $ million

2000			2010			2019		
Place	Country	Exports, $ million	Place	Country	Exports, $ million	Place	Country	Exports, $ million
1	France	8285.56	1	France	14,997.71	1	France	18,999.89
2	USA	6783.63	2	Germany	10,578.43	2	Italy	12,206.08
3	UK	6363.69	3	Netherlands	10,560.66	3	UK	10,184.43
4	Netherlands	4654.64	4	UK	9363.83	4	Germany	9844.14
5	Germany	3281.28	5	Italy	7216.84	5	Netherlands	8494.40
6	Italy	3214.73	6	USA	5459.07	6	USA	7541.60
7	Spain	1640.17	7	Spain	3726.10	7	Mexico	6700.87
8	Mexico	1613.75	8	Mexico	3327.44	8	Belgium	5650.14
9	Belgium	1492.60	9	Belgium	3172.36	9	Spain	5000.90
10	Canada	1052.21	10	Brazil	2866.21	10	Poland	4925.49

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

was only 2.42 times from $29.4 billion in 2000 to $71.1 billion in 2019. The value of imports increased much faster in other regions of the world, including East Asia and the Pacific (3.55 times to $30.8 billion in 2019), North America (3.18 times to $34.1 billion), Middle East and North Africa (4.17 times to $10.8 billion), Latin America and the Caribbean (3.33 times to $5.5 billion), Sub-Saharan Africa (4.19 times to $4.6 billion), South Asia (5.07 times to $1.1 billion), and Central Asia (6.69 times to $715.9 million) (Fig. 3.24).

Well ahead of the other countries, the USA is the world's largest importer of beverages and tobacco throughout the period under review. Its portion in the composition of global imports has increased by 1.17% points from 16.22% in 2000 to 17.39% in 2019. Apart from the USA, Canada, China, and Japan, the top ten importers rating includes only European countries (Table 3.22). Almost all of them have reduced the value of their purchases in relative terms. Thus, the share of Germany in world imports of beverages and tobacco decreased from 7.55% in 2000 to 5.79% in 2019, the share of the UK—from 10.24% to 5.05%, and the share of France—from 5.08 to 3.68%. Most of non-European developing countries, on the contrary, have increased their portions in international purchases, including China (from 0.64% in 2000 to 4.92% in 2019), Singapore (from 1.64 to 2.16%), Iraq (from 0.36 to 1.23%), UAE (from 0.56 to 1.23%), South Africa (from 0.26 to 0.53%), and India (from 0.07 to 0.34%).

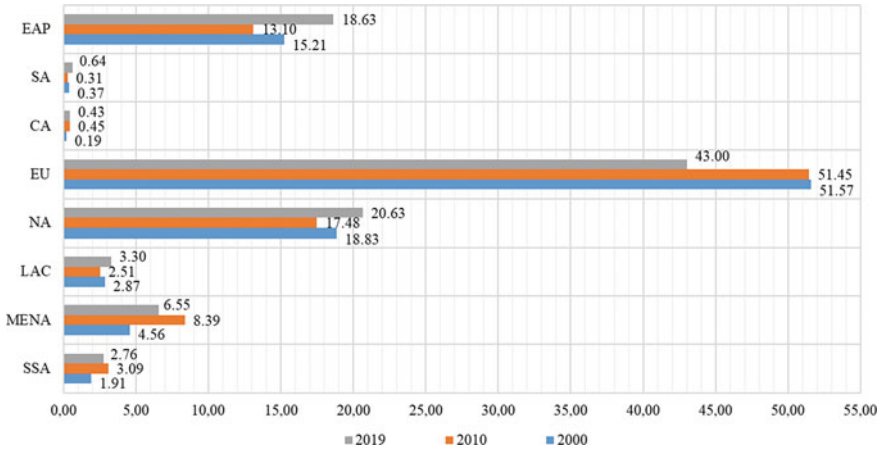

Fig. 3.24 Imports of beverages and tobacco by geographic region, portions in international imports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Table 3.22 Top ten importers of beverages and tobacco in 2000–2019, $ million

2000			2010			2019		
Place	Country	Imports, $ million	Place	Country	Imports, $ million	Place	Country	Imports, $ million
1	USA	9255.39	1	USA	17,484.50	1	USA	28,763.45
2	UK	5841.77	2	UK	9342.39	2	Germany	9580.95
3	Japan	4896.53	3	Germany	8412.88	3	Japan	8695.53
4	Germany	4310.21	4	Japan	6463.52	4	UK	8344.23
5	France	2899.32	5	France	5550.55	5	China	8143.12
6	Italy	2108.84	6	Italy	4634.38	6	France	6093.95
7	Netherlands	1923.85	7	Netherlands	4321.61	7	Netherlands	5344.45
8	Spain	1910.89	8	Spain	4059.83	8	Belgium	4730.62
9	Belgium	1883.52	9	Iraq	4049.86	9	Canada	4484.21
10	Canada	1244.06	10	Canada	3842.29	10	Italy	4321.93

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

3.2.9.3 Oilseeds and Oleaginous Fruits

The "Oilseeds and oleaginous fruits" category is one of the few among thirteen groups of agricultural products considered in this review where the region of Europe dominates neither in exports nor in imports. During twenty years, the value of trade turnover increased more than fivefold up to $167.7 billion in 2019. Such growth was primarily attributed to the increase in the value of exports from Latin America and

respective tremendous growth in the consumption of oilseeds in the countries of East Asia. According to Mittaine and Mielke (2012), oilseeds are particularly important in emerging markets due to the large population, rise in per capita consumption of vegetable oils and livestock products, and increase in disposable income in the past decades. Internationally, exports of oilseeds and oleaginous fruits increased from $14.6 billion in 2000 to $56.8 billion in 2010 and then to $77.6 billion in 2019. Latin America boosted its supplies almost ninefold up to $33.1 billion in 2019, becoming the world's largest net exporter of oilseeds and oleaginous fruits (Fig. 3.25). The regions of North America and Sub-Saharan Africa are the second and third largest net importers, respectively. In North America, the trade surplus reached $22.8 billion, or 78.24% of trade turnover, in 2019, while that in Sub-Saharan Africa amounted to $1.7 billion, or 72.63% of trade turnover.

In general, over the past two decades, the top ten ranking of oilseeds exporters has not changed significantly in terms of the composition of countries. Still, the positions of individual economies in this rating have changed. Thus, the USA, the unchallenged leader for many years, was displaced from the first position in the rating by Brazil. The portion of the USA in the composition of the global exports fell from 39.99% in 2000 to 34.86% in 2010 and then to 26.85% in 2019, while Brazil's share, in contrast, rose from 15.02% to 19.52% and then to 33.95%, respectively (Table 3.23). In addition to Brazil, major suppliers of oilseeds and oleaginous fruits in the region of Latin America and the Caribbean are Argentina (5.07% of world exports in 2019, a decrease by 1.85% points compared to 2000) and Paraguay (2.33%, a decrease by 0.73% points), in Europe—Ukraine (2.50%, an increase by 1.24% points) and France (1.69%, a decrease by 0.64% points), in East Asia and the Pacific—Australia (1.81%, a decrease by 1.05% points) and China (1.31%, a decrease by 1.55% points). India, the largest exporter in the region of South Asia, has increasingly become dependent

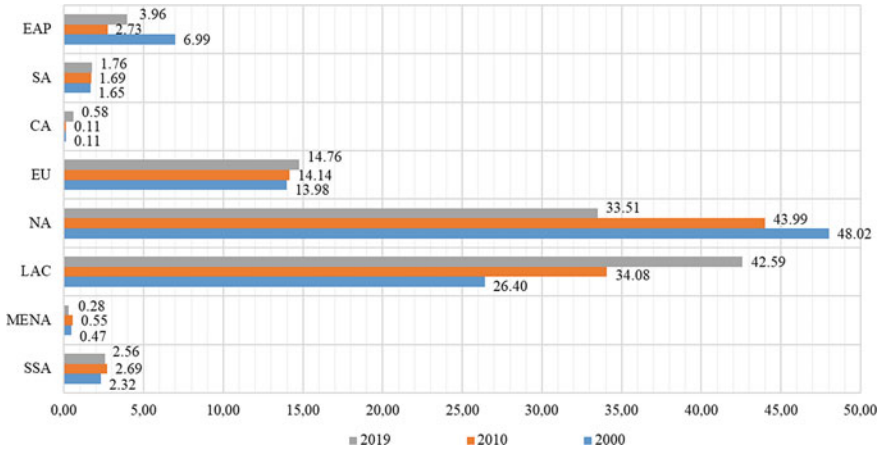

Fig. 3.25 Exports of oilseeds and oleaginous fruits by geographic region, portions in international exports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Table 3.23 Top ten exporters of oilseeds and oleaginous fruits in 2000–2019, $ million

2000			2010			2019		
Place	Country	Exports, $ million	Place	Country	Exports, $ million	Place	Country	Exports, $ million
1	USA	5831.40	1	USA	19,810.70	1	Brazil	26,349.09
2	Brazil	2189.92	2	Brazil	11,096.50	2	USA	20,836.22
3	Canada	1137.29	3	Argentina	5307.47	3	Canada	5155.97
4	Argentina	1005.98	4	Canada	5156.83	4	Argentina	3937.71
5	France	557.91	5	Paraguay	1948.46	5	Ukraine	1941.88
6	Paraguay	446.62	6	Netherlands	1104.28	6	Paraguay	1807.86
7	Australia	417.52	7	Ukraine	1039.54	7	Australia	1400.82
8	China	416.68	8	France	1033.60	8	France	1309.34
9	Netherlands	337.96	9	India	911.08	9	India	1290.10
10	India	221.31	10	Romania	752.74	10	Netherlands	1223.27

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

on the production of oilseeds. Bhati and Kumar (2020) and Renjini and Jha (2019) explain such dependence by the lower rate of growth in domestic production of oilseeds as compared to demand growth because progressing trade liberalization along with India's membership in the WTO resulted in a failure of many Indian producers in international competition.

The world's major consumer of oilseeds and oleaginous fruits is the geographic region of East Asia and the Pacific, whose share in the composition of world imports has grown rapidly since the early 2000s (from $6.4 billion in 2000 to $26.5 billion in 2010 and then to $53.3 billion in 2019) (Fig. 3.26). East Asia is a distinct net importer of oilseeds. Over two decades, the trade deficit has grown 9.35 times up to $50.2 billion in 2019, or 89.09% of trade turnover. This significant increase in the value of trade deficit could be attributed to the boom in China's imports. In 2019, China's share of aggregated imports of East Asia and the Pacific amounted to 84.22%, while the value of purchases of oilseeds and oleaginous fruits increased more than fifteen times to $44.9 billion compared to 2000. Oilseeds are primarily used as food, but alternative uses have been emerging lately, for instance, in chemistry, energy production, or as a feed in livestock production (Mittaine & Mielke, 2012).

Compared to China, which accounts for almost half of the world's imports of oilseeds and oleaginous fruits, the market shares of other countries are relatively small. Thus, Germany and the Netherlands, the second and third-largest importers, accounted for only 5.16 and 3.56% of global imports in 2019 (Table 3.24). Among other European countries, large importers of oilseeds and oleaginous fruits are Turkey (2.16% in world imports in 2019, an increase by 0.72% points compared to 2000), Spain (1.89%, a decline by 2.72% points), and Belgium (1.68%, a decline by 1.66%). Apart from China, big importers in the geographic region of East Asia and the Pacific

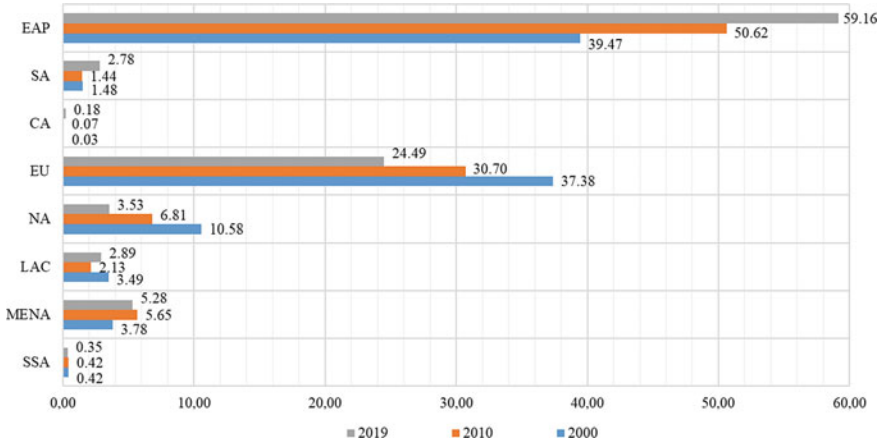

Fig. 3.26 Imports of oilseeds and oleaginous fruits by geographic region, portions in international imports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Table 3.24 Top ten importers of oilseeds and oleaginous fruits in 2000–2019, $ million

2000			2010			2019		
Place	Country	Imports, $ million	Place	Country	Imports, $ million	Place	Country	Imports, $ million
1	China	2943.59	1	China	26,540.98	1	China	44,867.97
2	Japan	1991.66	2	Japan	3335.78	2	Germany	4644.09
3	Netherlands	1441.14	3	Germany	3213.60	3	Netherlands	3203.54
4	Germany	1366.83	4	Netherlands	2756.78	4	Japan	2999.70
5	Mexico	1143.34	5	Mexico	2678.77	5	Turkey	1944.10
6	Spain	745.63	6	Spain	1715.42	6	Egypt	1909.72
7	Belgium	540.43	7	Belgium	1633.07	7	Spain	1706.23
8	South Korea	409.67	8	Turkey	1410.71	8	Argentina	1612.87
9	USA	346.05	9	Indonesia	1078.45	9	Belgium	1508.88
10	UK	342.63	10	Italy	961.01	10	Mexico	1508.42

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

are Japan (3.33%, a decline by 8.98% points), Indonesia (1.56%, a decline by 0.51% points), and Thailand (1.45%, a decline by 0.42% points).

In other regions of the world, the largest importers of oilseeds and oleaginous fruits are Egypt (2.12% of global imports, an increase by 1.16% points compared to 2000), Argentina (1.79%, an increase by 1.42% points), Mexico (1.68%, a decline by

5.39% points), Pakistan (1.27%, an increase by 0.49% points), and the USA (1.20%, a decline by 0.94% points).

3.2.9.4 Animal and Vegetable Oils, Fats, and Waxes

The "Animal and vegetable oils, fats, and waxes" category includes animal oils and fats, crude, refined, and fractioned fixed vegetable oils and fats, and processed animal and vegetable oils and fats. With the growth in world population and disposable income across developing countries (Wang, 2016), the share of this category in international agricultural trade went up from 4.68% in 2000 to 5.96% in 2019, while the value of trade turnover increased 4.53 times from $41.2 billion to $186.6 billion, respectively. More than three-quarters of total exports are provided by just two geographic regions, namely, East Asia and the Pacific and Europe (Fig. 3.27).

The countries of East Asia and the Pacific increased the value of their exports almost sixfold to $39.9 billion in 2019, while the supplies from Europe grew 4.52 times to $32.4 billion. For the two decades, Indonesia and Malaysia have been the largest exporters of animal and vegetable oils and fats among the countries of East Asia and the Pacific and the two largest in the world. The share of the former in world exports soared from 9.00% in 2000 to 20.16% in 2010 and then to 24.44% in 2019, while that of the latter first increased from 17.30 to 20.71% in 2000–2010, then fell to 13.19% by 2019. Among European countries, the largest exporters of animal and vegetable oils and fats are Netherlands (5.46% in global exports in 2019, a decline by 1.09% points compared to 2000), Spain (5.00%, a decline by 0.45% points), and Germany (3.28%, a decline by 1.86% points). Many of "traditional" European suppliers decreased their portions in the composition of global exports, while new

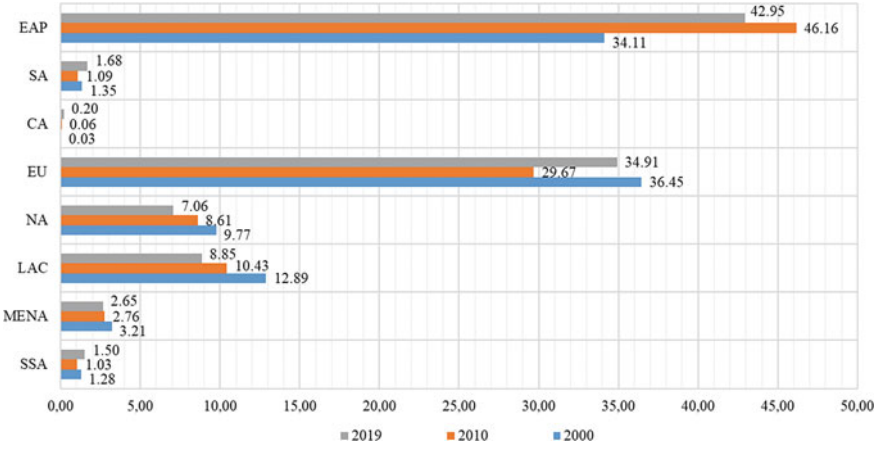

Fig. 3.27 Exports of animal and vegetable oils, fats, and waxes by geographic region, portions in international exports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Table 3.25 Top ten exporters of animal and vegetable oils, fats, and waxes in 2000–2019, $ million

2000			2010			2019		
Place	Country	Exports, $ million	Place	Country	Exports, $ million	Place	Country	Exports, $ million
1	Malaysia	3404.46	1	Malaysia	17,058.55	1	Indonesia	22,687.32
2	Indonesia	1771.78	2	Indonesia	16,607.64	2	Malaysia	12,239.74
3	Argentina	1648.23	3	Netherlands	5399.46	3	Netherlands	5067.70
4	USA	1436.89	4	Argentina	5028.14	4	Spain	4644.01
5	Netherlands	1289.18	5	USA	4458.20	5	Ukraine	4195.81
6	Spain	1071.99	6	Spain	3325.70	6	Argentina	4022.88
7	Italy	1017.62	7	Germany	2576.42	7	Canada	3221.14
8	Germany	1011.74	8	Ukraine	2555.21	8	USA	3156.43
9	Belgium	668.29	9	Canada	2520.59	9	Germany	3040.04
10	Philippines	476.55	10	Italy	2124.05	10	Russia	2906.38

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

export powers have emerged, including Ukraine (4.52% in global exports in 2019, an increase by 3.30% points compared to 2000) and Russia (3.13%, an increase by 2.73% points) (Table 3.25).

Among the countries of Latin America and the Caribbean, Argentina has reduced its contribution to the global supply of animal and vegetable oils and fats by 4.05% points in 2000–2019, while Guatemala, Honduras, and Colombia have gained 0.40, 0.34, and 0.33% points, respectively. In other geographic regions of the world, large exporters of animal and vegetable oils and fats are Canada and the USA in North America, Tunisia and the UAE in the Middle East and North Africa, South Africa and Cote d'Ivoire in Sub-Saharan Africa, India in South Asia, and Kazakhstan in Central Asia (Erokhin et al., 2020). Other regions of the world are net importers of animal and vegetable oils and fats. In South Asia, the trade deficit increased from $2.6 billion in 2000 to $13.4 billion in 2019, or 81.2% of trade turnover. In Sub-Saharan Africa, Middle East and North Africa, North America, and Central Asia, trade deficit amounted to $3.5 billion (55.80% of trade turnover), $4.2 billion (45.94%), $2.2 billion (14.30%), and $327.5 million (47.14%), respectively. Among net importers, Europe has the smallest trade deficit, but in terms of the value of imports, it is the world's largest consumer of animal and vegetable oils and fats (Fig. 3.28). In 2019, Europe's imports amounted to $33.3 billion, which was almost four times more compared to 2000. In terms of individual countries, the world's largest importers are the countries of South and East Asia. The share of India in global imports grew from 8.77% in 2000 to 11.03% in 2019, while that of China increased from 4.54 to 9.80%, respectively (Table 3.26).

Also, in East Asia and the Pacific and South Asia, large importers of animal and vegetable oils and fats are Bangladesh (2.70% in global imports in 2019, an

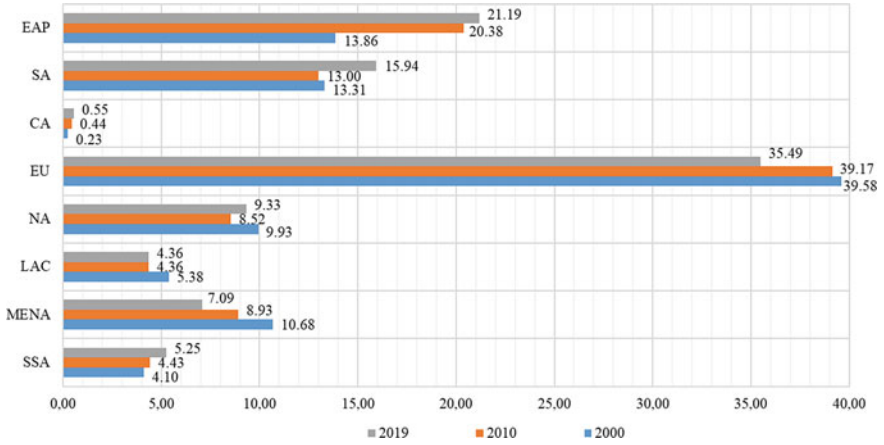

Fig. 3.28 Imports of animal and vegetable oils, fats, and waxes by geographic region, portions in international imports in 2000–2019, %. *Source* Authors' calculations based on United Nations Conference on Trade and Development (2020)

Table 3.26 Top ten importers of animal and vegetable oils, fats, and waxes in 2000–2019, $ million

2000			2010			2019		
Place	Country	Imports, $ million	Place	Country	Imports, $ million	Place	Country	Imports, $ million
1	India	1886.67	1	China	9017.25	1	India	9793.18
2	USA	1398.19	2	India	7584.60	2	China	9183.07
3	Italy	1222.93	3	USA	4535.60	3	USA	6963.05
4	Netherlands	1126.37	4	Netherlands	4370.61	4	Netherlands	5510.88
5	Germany	1085.73	5	Germany	4121.95	5	Italy	4086.26
6	China	976.39	6	Italy	3881.43	6	Germany	3739.42
7	UK	831.59	7	Malaysia	2244.06	7	Spain	2931.28
8	France	814.63	8	France	2141.96	8	Bangladesh	2530.31
9	Belgium	650.86	9	Pakistan	1869.22	9	Belgium	2198.83
10	Japan	595.50	10	UK	1845.79	10	UK	1995.52

Source Authors' calculations based on United Nations Conference on Trade and Development (2020)

increase by 1.12% points compared to 2000) and Pakistan (2.07%, a decrease by 0.14% points).

Six of the top ten importers of animal and vegetable oils and fats are European countries. Of these six, only Spain and the Netherlands have increased their purchases on the world market in relative terms (by 1.59 and 0.64% points, respectively, as a share of world imports in 2019). The portions of Italy, Germany, Belgium, and the UK in global imports have declined. In other geographic regions of the world,

major importers of animal and vegetable oils and fats are the USA and Canada in North America, Brazil and Colombia in Latin America, Egypt and Saudi Arabia in the Middle East and North Africa, and Ethiopia and South Africa in Sub-Saharan Africa.

3.3 Conclusion

Summing up the review of international agricultural trade, we acknowledge that over the past two decades, there have occurred structural transformations in the composition of consumers and suppliers of various categories of agricultural products in the global market (Table 3.27).

On the whole, although developed countries still occupy leading positions in the world in both exports and imports of most kinds of agricultural products, their shares in global agricultural trade are decreasing. In 2000–2019, both Europe and North America reduced their portions in trade in meat and meat preparations, milk and dairy products, vegetables, fruits, edible products and preparations, beverages, oilseeds, and animal and vegetable oils and fats. In contrast to the declining contribution of developed countries to the value of international agricultural trade, the shares of developing countries in trade turnover are growing. This tendency is especially noticeable in the cases of geographic regions of East Asia and the Pacific and Latin America and the Caribbean. The portions of East Asian countries in the compositions of world exports and imports are going up in most categories of agricultural products, including live animals, meat and dairy products, fruits and vegetables, sugar and coffee, feedstuff for animals, and animal and vegetable oils, fats, and waxes. Latin American countries have particularly scaled up supplies of oilseeds, cereals, meat, dairy products, and fish, as well as have increased purchases of feedstuff for animals, beverages, meat and meat preparations, and fish, crustaceans, and mollusks. In contrast to East Asia and Latin America, other developing regions of the world play a less prominent role in the composition of global agricultural turnover, but for some products, they are increasingly large exporters (live animals, vegetables, fruits, and coffee in Sub-Saharan Africa; dairy products, vegetables, and sugar in the Middle East and North Africa; meat products, fish, cereals, and sugar in South Asia) and importers (cereals, oilseeds, live animals, and meat and dairy products in the Middle East and North Africa; cereals, fish, and sugar in Sub-Saharan Africa).

Table 3.27 Major tendencies in international agricultural trade in 2000–2019 by products, geographic regions, and countries

Product categories	Export			Import		
	Regions[a]	Countries[b]	Shares in exports[b]	Regions[a]	Countries[a]	Shares in imports[b]
Live animals	EU, NA, EAP	Netherlands, France, Australia	EAP (+), SA (+), CA (+), EU (+), NA (–), LAC (+), MENA (–), SSA (+)	EU, NA, MENA	USA, Germany, Italy	EAP (+), SA (+), CA (+), EU (+), NA (–), LAC (–), MENA (+), SSA (+)
Meat and meat preparations	EU, NA, EAP	USA, Brazil, Australia	EAP (+), SA (+), CA (+), EU (–), NA (–), LAC (+), MENA (+), SSA (–)	EU, EAP, NA	Japan, China, USA	EAP (+), SA (+), CA (+), EU (–), NA (–), LAC (+), MENA (+), SSA (+)
Dairy products and birds' eggs	EU, EAP, NA	Netherlands, Germany, New Zealand	EAP (+), SA (+), CA (+), EU (–), NA (+), LAC (+), MENA (+), SSA (+)	EU, EAP, MENA	Germany, China, Netherlands	EAP (+), SA (+), CA (+), EU (–), NA (–), LAC (–), MENA (–), SSA (+)
Fish, crustaceans, mollusks, and preparations	EU, EAP, LAC	China, Norway, Vietnam	EAP (+), SA (+), CA (+), EU (+), NA (–), LAC (+), MENA (–), SSA (–)	EU, EAP, NA	USA, Japan, China	EAP (–), SA (+), CA (+), EU (+), NA (–), LAC (+), MENA (+), SSA (+)
Cereals and cereal preparations	EU, NA, EAP	USA, France, Canada	EAP (–), SA (+), CA (+), EU (+), NA (–), LAC (+), MENA (+), SSA (+)	EU, EAP, MENA	USA, China, Japan	EAP (+), SA (+), CA (+), EU (–), NA (+), LAC (–), MENA (–), SSA (+)
Vegetables and fruits	EU, EAP, NA	China, USA, Netherlands	EAP (+), SA (+), CA (+), EU (–), NA (–), LAC (–), MENA (+), SSA (+)	EU, NA, EAP	USA, Germany, UK	EAP (+), SA (+), CA (+), EU (–), NA (+), LAC (–), MENA (+), SSA (+)
Sugar, sugar preparations, and honey	EU, LAC, EAP	Brazil, Thailand, Germany	EAP (+), SA (+), CA (+), EU (–), NA (+), LAC (–), MENA (+), SSA (–)	EU, EAP, NA	USA, Germany, Indonesia	EAP (+), SA (+), CA (+), EU (–), NA (+), LAC (–), MENA (+), SSA (+)
Coffee, tea, cocoa, spices, and manufactures	EU, EAP, LAC	Germany, Netherlands, Brazil	EAP (+), SA (–), CA (+), EU (+), NA (–), LAC (–), MENA (+), SSA (+)	EU, NA, EAP	USA, Germany, France	EAP (+), SA (+), CA (+), EU (+), NA (–), LAC (–), MENA (+), SSA (+)

(continued)

Table 3.27 (continued)

Product categories	Export			Import		
	Regions[a]	Countries[b]	Shares in exports[b]	Regions[a]	Countries[a]	Shares in imports[b]
Feedstuff for animals	EU, LAC, NA	USA, Argentina, Brazil	EAP (+), SA (–), CA (+), EU (+), NA (–), LAC (–), MENA (+), SSA (+)	EU, EAP, NA	China, Germany, Vietnam	EAP (+), SA (+), CA (+), EU (–), NA (+), LAC (+), MENA (+), SSA (+)
Miscellaneous edible products and preparations	EU, EAP, NA	USA, Netherlands, Singapore	EAP (+), SA (+), CA (+), EU (–), NA (–), LAC (–), MENA (+), SSA (–)	EU, EAP, NA	China, USA, UK	EAP (+), SA (+), CA (+), EU (–), NA (+), LAC (–), MENA (+), SSA (+)
Beverages and tobacco	EU, EAP, NA	France, Italy, UK	EAP (+), SA (+), CA (–), EU (–), NA (–), LAC (+), MENA (+), SSA (+)	EU, NA, EAP	USA, Germany, Japan	EAP (+), SA (+), CA (+), EU (–), NA (+), LAC (+), MENA (+), SSA (+)
Oilseeds and oleaginous fruits	LAC, NA, EU	Brazil, USA, Canada	EAP (–), SA (+), CA (+), EU (+), NA (–), LAC (+), MENA (–), SSA (+)	EAP, EU, MENA	China, Germany, Netherlands	EAP (+), SA (+), CA (+), EU (–), NA (–), LAC (–), MENA (+), SSA (–)
Animal and vegetable oils, fats, and waxes	EAP, EU, LAC	Indonesia, Malaysia, Netherlands	EAP (+), SA (+), CA (+), EU (–), NA (–), LAC (–), MENA (–), SSA (+)	EU, EAP, NA	India, China, USA	EAP (+), SA (+), CA (+), EU (–), NA (–), LAC (–), MENA (–), SSA (+)

Note [a]Three largest exporters/importers (geographic regions or countries) in 2019 by value of exports/imports; [b]Share of a region in the composition of global exports/imports of a product category (" + " = an increase in the share in 2019 compared to 2000; "–" = a decrease in the share in 2019 compared to 2000)
Source Authors' development

References

Azam, A., & Shafique, M. (2018). An overview of fruits and vegetables trade of China. *International Journal of u- and e-Service, Science and Technology, 11*(1), 33–44.

Bacon, C. (2005). Confronting the coffee crisis: Can fair trade, organic, and specialty coffees reduce small-scale farmer vulnerability in Northern Nicaragua? *World Development, 33*(3), 497–511.

Baskov, V., Baskov, S., Kalyan, S., & Yarovitsyn, A. (2019). Current aspects of food security. *Academic, 3*, 4–17.

Benedek, Z., Bakucs, Z., Falkowski, J., & Ferto, I. (2017). Intra-European union trade of dairy products: Insights from network analysis. *Studies in Agricultural Economics, 119*, 91–97.

Bhati, M., & Kumar, R. (2020). Price volatility of oilseeds under trade liberalization in India: Analysis of rapeseed and mustard. *International Economic Studies, 50*(1), 29–40.

Chang, X., DeFries, R. S., Liu, L., & Davis, K. (2018). Understanding dietary and staple food transitions in China from multiple scales. *PLoS ONE, 13*(4), e0195775.

Chatellier, V. (2016). International, European and French trade in dairy products: Trends and competitive dynamics. *Productions Animales, 29*(3), 143–162.

Domján, E., & Fekete Farkas, M. (2011). Challenges of the vegetable and fruit market. *International Journal of Horticultural Science, 17*(1–2), 83–89.

Dupas, M. -C., Halloy, J., & Chatzimpiros, P. (2019). Time dynamics and Invariant subnetwork structures in the world cereals trade network. *PLoS ONE, 14*(5), e0216318. https://doi.org/10.1371/journal.pone.0216318.

Erokhin, V. (2019). Transformation of China's agricultural trade in response to emerging tensions on the global market. In A. Coskun Ozer (Ed.), *International trade policies in the era of globalization* (pp. 1–28). IGI Global.

Erokhin, V. (2020). Major grain crops: Global production and trade. *Marketing and Logistics, 30*(4), 11–29.

Erokhin, V., Ivolga, A., & Heijman, W. (2014). Trade liberalization and state support of agriculture: Effects for developing countries. *Agricultural Economics, 60*(11), 524–537.

Erokhin, V., Li, D., & Du, P. (2020). Sustainability-related implications of competitive advantages in agricultural value chains: Evidence from Central Asia—China trade and investment. *Sustainability, 12*(3), 1117. https://doi.org/10.3390/su12031117

Galloway, J., Burke, M., Bradford, E., Naylor, R., Falcon, W., Chapagain, A., Gaskell, J., McCullough, E., Mooney, H., Oleson, K., Steinfeld, H., Wassenaar, T., & Smil, V. (2007). International trade in meat: The tip of the pork chop. *Ambio, 36*(8), 622–629.

Gao, T., Ivolga, A., & Erokhin, V. (2018). Sustainable rural development in Northern China: Caught in a vice between poverty, urban attractions, and migration. *Sustainability, 10*(5), 1467. https://doi.org/10.3390/su10051467

Garkusha, V., & Beybalaeva, D. (2019). The grain industry in Russia: Status and problems of development. *The Bulletin of the South-Russian State Technical University, 28*(2), 210–216.

Girmay, G., & Yeserah, S. (2019). The impact of live animal export on meat and meat products export in ethiopia. *International Journal of Research -GRANTHAALAYAH, 7*(9), 162–171.

Guedri, S. E., & Chakour, S. C. (2015). Fish trade and the constitution of its prices in Algeria: An empirical approach. *International Journal of Development Research, 5*(4), 4210–4218.

Haq, Z., & Ishaq, M. (2008). A gravity analysis of global dairy products trade. *Sarhad Journal of Agriculture, 24*(4), 719–729.

Kitti, M., Heikkilä, J., & Huhtala, A. (2009). "Fair" policies for the coffee trade—protecting people or biodiversity? *Environment and Development Economics, 14*(6), 739–758.

Mittaine, J.-F., & Mielke, T. (2012). The globalization of international oilseeds trade. *Oilseeds and Fats, Crops and Lipids, 19*(5), 249–260.

Nankwenya, B., Phiri, A., Edriss, A.-K., Kaunda, E., Phiri, H., & Chimatiro, S. (2018). Determinants of fish trade flows in Africa. *Journal of Sustainable Development, 11*(3), 123–134.

Nielsen, M. (2009). modelling fish trade liberalisation: Does fish trade liberalisation result in welfare gains or losses? *Marine Policy, 33*(1), 1–7.

Nistor, C., Muntean, M.-C., & Nistor, R. (2010). Application of risk management in modelling international cereal trade. *WSEAS Transactions on Business and Economics, 7*(3), 231–241.
Pandian, S. S., Shree, S., Varathan, J., & Kumaravelu, N. (2015). Assessing the trade performance of meat and meat products in India. *Indian Journal of Applied Research, 11*(5), 421–423.
Pasara, M. T., & Diko, N. (2020). The effects of AfCFTA on food security sustainability: An analysis of the cereals trade in the SADC region. *Sustainability, 12*(4), 1419. https://doi.org/10.3390/su12041419
Pérez-Flores, M., Muñoz-Sánchez, M., Leal-Saragoça, M., Saudade-Baltasar, M., & Ramos, J. (2020). Comparative analysis of consumers of organic vegetables and fruits in Spain and Portugal. *Agricultura Sociedad y Desarrollo, 17*(2), 253–276.
Perrings, C., Burgiel, S., Lonsdale, W. M., Mooney, H., & Williamson, M. (2010). International cooperation in the solution to trade-related invasive species risks. *Annals of the New York Academy of Sciences, 1195*, 198–212.
Pokorná, I., & Smutka, L. (2010). What is the structure of the coffee market: can the real poor benefit from the coffee trade? *Agris on-Line Papers in Economics and Informatics, 2*(2), 27–37.
Pospelova, I. (2019). Grain production in the world: A comparative analysis. *Vector Economy, 41*(11), 26.
Rahim, S. A., Ahmi, A., & Rahman, N. A. A. (2020). challenges in sustainable supply chain management of live animal trading: A case study of live animal industry in Malaysia. *International Journal of Supply Chain Management, 9*(1), 447–454.
Renjini, V. R., & Jha, G. K. (2019). Oilseeds sector in India: A trade policy perspective. *Indian Journal of Agricultural Sciences, 89*(1), 73–78.
Rocha, L. B. (2010). The role of Latin America in the world sugar trade. *Sugar Industry, 135*(2), 103–108.
Shadbolt, N., & Apparao, D. (2016). Factors influencing the dairy trade from New Zealand. *International Food and Agribusiness Management Review, 19*(B), 241–255.
Shamsuzzaman, M., Mojibul, M., Mozumder, H., Mitu, S. J., Ahamad, A. F., & Bhyuian, S. (2020). The economic contribution of fish and fish trade in Bangladesh. *Aquaculture and Fisheries, 5*(4), 174–181.
Shanafelt, D.W., & Perrings, C. (2018). The effects of the post 2001 reforms on FMD risks of the international live animal trade. *EcoHealth, 15*(2). https://doi.org/10.1007/s10393-018-1315-8.
Shree, S. J., Pandian, S. S., & Natarajan, K. (2017). Changing direction of trade of dairy products in India—An application of markov chain analysis. *International Journal of Livestock Research, 7*(3), 57–62.
Shurenkova, V. (2019). Foreign experience in the production of grain. *Colloquium-Journal, 40*(16–9), 19–21.
Smutka, L., Pawlak, K., Kotyza, P., Pulkrabek, J., & Zielinska-Chmielewska, A. (2019). Polish sugar trade and comparative advantages distribution in relation to partner countries. *Listy Cukrovarnické a Řepařské, 135*(7–8), 262–268.
Sobolev, O. (2019). The impact of long-term climatic changes on the yield of grain and leguminous crops. *Economics of Agriculture of Russia, 4*, 68–71.
Song, J., & Sumner, D. A. (2005). Dairy Demand, supply and policy in Korea: Potential for international trade. *Canadian Journal of Agricultural Economics, 47*(5), 133–142.
Sonntag, W., Theuvsen, L., Kersting, V., & Otter, V. (2016). Have industrialized countries shut the door and left the key inside? Rethinking the role of private standards in the international fruit trade. *International Food and Agribusiness Management Review, 19*(2), 151–170.
Stapleton, T. (2006). Institutional determinants of Indonesia's sugar trade policy. *Bulletin of Indonesian Economic Studies, 42*(1), 95–103.
Ungaya, C. G., & Malenya, M. J. (2018). The use of supportive domestic mechanisms Is a distortion of sugar trade in the COMESA region. *International Journal of Scientific and Research Publications, 10*(8), 478–483.
United Nations Conference on Trade and Development. (2020). *Statistics database* [Data file]. Retrieved October 8, 2020, from https://unctadstat.unctad.org/EN/Index.html.

Vlad, I.-M., Beciu, S., & Ladaru, G.-R. (2015). Seasonality and forecasting in the Romanian trade with live animals. *Agriculture and Agricultural Science Procedia, 6*, 712–719.

Wang, J. (2016). Analysis and comparison of the factors influencing worldwide four kinds of vegetable oil trade: Based on gravity model. *Modern Economy, 7*, 173–182.

World Bank. (2020). *World bank country and lending groups*. Retrieved October 8, 2020, from https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups.

Yego, H. K., & Siahi, W. V. (2018). Trade Creation and trade diversion in the COMESA: Evidence of Kenya's import flows in food and live animals. *IOSR Journal of Economics and Finance, 9*(3), 60–66.

Zhou, Z. (2010). Achieving food security in China: Past three decades and beyond. *China Agricultural Economic Review, 3*, 251–275.

Zhou, Z., Liu, H., Cao, L., Tian, W., & Wang, J. (2014). *Food consumption in China: The revolution continues*. Edward Elgar Publishing.