

The Global Demand for Soy Products



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Table of Contents

THE GLOBAL DEMAND FOR SOY PRODUCTS	4
Introduction	4
Soybean Meal	4
Soy Oil	5
Soy Beverages	6
Soy Protein Concentrates	8
Soy Protein Isolates	9
Soy-based Meat Alternatives	10
References	12

THE GLOBAL DEMAND FOR SOY PRODUCTS

Introduction

Around the world, there is a surging demand for soy and soy products. Soy is a globally traded commodity produced in both temperate and tropical regions and serves as a key source of protein and vegetable oil. Since the 1950s, global soybean production has increased 15 times over, due to the 150 per cent improvement of yields, and most importantly, the 400 per cent increase in the area used to grow soy. The U.S., Brazil, and Argentina together produce about 80 per cent of the world's soy. China is the world's largest soybean importer with 60 per cent of the global imports¹ and it is expected to significantly increase its import of the commodity.

In 2020, the world's soy production was 353 million tonnes, with a total cultivated area of 127 million hectares. Brazil produced 122 million tonnes, and the U.S. 112.5 million tonnes. Individually, they each account for around one-third of global production. The other major producer is Argentina, which produced 49 million tonnes, accounting for approximately 14 per cent of the global soy production. It is followed by Paraguay and Canada with 11 and 6.4 million tonnes, respectively.

Soybeans are mainly used for animal feed in the form of soy meal. Only one fifth of the world's soybean is used for direct human consumption and a very small percentage is used for fuel. Most of the soybean used for food is processed as oil, representing 13.2 per cent of the total soy production. Other uses include tofu, soy milk, tempeh, and soy ingredients for the food processing industry. Following are some of the products made out of soy including soy meal, soy oil, soy beverages, soy protein concentrates, soy protein isolates, and soy-based meat alternatives.

Soybean Meal

Soybean meal is very high in protein. Ninety-eight per cent of soybean meal is used for animal feed (mostly poultry, hogs, and cattle) and only two per cent is used to produce food for people, mainly for soy flour and other products.

In 2022, the total global imports reached \$36 US billion, with Vietnam, Indonesia, Thailand and the Philippines being the top four importers for \$4.0, \$3.2, \$1.9 and \$1.6 US billion, respectively. The total volume was 64 million tonnes. China comes far from the top, in the 62nd position, as an importer of soybean meal, clearly fulfilling its demand for soy products by importing whole soybeans for further local processing, using its own technology, labour and facilities.

Argentina, Brazil and the U.S. are the largest exporters of soybean meal, with 35.5, 24.8 and 14.3 per cent, respectively of the global exports in value over the period from 2017 to 2022.² Global exports have seen a Compound Annual Growth Rate (CAGR)³ of 8.4 per cent over the period from 2017 to 2022, thanks to high soybean prices and the increase of soybean production and processing.

¹ Global Trade Tracker – February 2023

² Global Trade Tracker – February 2023

³ CAGR - Compound Annual Growth Rate

Soy Oil

Soybean oil is a vegetable oil derived from the seeds of the soybean plant. More than 13 per cent of the world's soybean is used for soybean oil production. In 2022, global soy oil retail sales represented 23.1 per cent in volume and 17.8 per cent in value of the total global edible oil retail sales. Soy oil was the top edible oil in volume and the third in value as per Table 1.

Table 1 – Global retail sales of edible oils by category⁴

Category	Retail volume million litres 2022	Current Year Growth	% CAGR (2008-2022)	%CAGR (2023-2027)	Retail Value RSP ⁵ USD million Current 2022	Current Year Growth	% CAGR (2008-2022)	%CAGR (2023-2027)
Olive Oil	2,081.20	-1.1	0.8	1.8	16,907.30	4.6	3.8	7.1
Corn Oil	2,033.40	0.2	2.5	1.4	5,411.50	10.4	5.2	4.8
Palm Oil	7,649.40	-3.6	2.0	3.0	18,820.10	12.8	9.1	6.1
Rapeseed/Canola Oil	3,884.70	0.7	3.3	2.6	10,518.20	8.8	8.4	7.8
Soy Oil	10,171.60	-0.7	1.1	1.0	21,530.20	13.2	7.4	4.0
Sunflower Oil	9,158.00	-4.4	1.4	2.9	23,208.60	10.4	8.7	6.3
Other Edible Oil	9,077.50	2.5	4.4	4.7	24,573.20	12.9	8.1	7.7

Annual global soy oil retail sales have been increasing in value and volume during the 2008 to 2020 period, to then decrease only in volume in 2021 and 2022, due to the COVID-19 pandemic. The CAGR for the 2008 to 2022 period was 7.4 per cent and a forecasted CAGR of 4.0 for the 2023 to 2027 period, as shown in Table 1.

In 2022, global retail sales reached a record high of \$21.5 US billion in value and 10.7 billion litres in volume, an increase of 111 and 53 percent respectively, compared to 2008. Retail sales of edible oils as a group have also seen an increase in value of 83 per cent and in volume of 67 per cent in the period from 2008 to 2022.

India was the main importer of soy oil, with 33.5 per cent of the imports in value for the 2017 to 2021 period. In 2022, India imported 3.6 million tonnes of soy oil, for a total value of \$5.7 US trillion. The CAGR for the 2017 to 2022 period reached 14.5 per cent, values seen also in other importers such as Peru, Morocco and South Korea with 15.6, 11.9 and 18.2 per cent respectively.⁶ Argentina, Brazil and the U.S. are the main exporters of soy oil, with 39, 13 and 7.5 per cent of the total exports for the period 2017 to 2022. In value, total global exports reached \$18.2 US trillion in 2022. Brazil, the second largest exporter, has seen a CAGR of 30.8 per cent, due to both increase in soy oil prices and increase in export volumes.

The vast majority of soy oil was retailed through offline channels, with grocery retailers selling 95.8 per cent in value of the total global retail sales of 2022, down almost two percentage points from 2017 (Table 2). Retail e-commerce channel has increased almost two percentage points in the last five years, boosted by the pandemic that accelerated the use of this channel.

⁴ Euromonitor – January 2023

⁵ Retail value RSP data tracks the monetary value of sales sold through retail channels, measured at retail selling prices. This includes the impact of wholesaler/distributor markups, retailer markups, and taxes on the item's price, and essentially reflects the price the consumer pays for the product in the store.

⁶ Global Trade Tracker – January 2023

Table 2 - Retail Channels for Edible Oils (Retail Value RSP 2022 and Percentage Point Growth - 2017-2022)

Channel	% Breakdown 2022	% Breakdown 2017
Retail Channels	100	100.0
Retail Offline	96.5	98.4
Grocery Retailers	95.8	97.6
Convenience Retail	1.8	1.8
Supermarkets	28.5	30.6
Hypermarkets	12.8	13.9
Discounters	3.9	3.5
Warehouse Clubs	1.2	0.8
Food/drink/tobacco specialists	1.4	1.3
Small Local Grocers	46.2	45.8
Non-Grocery Retailers	0.7	0.8
General Merchandise Stores	0.3	0.4
Home Products Specialists	-	-
Health and Beauty Specialists	0.1	0.2
Other Non-Grocery Retailers	0.2	0.2
Direct Selling	-	-
Retail E-Commerce	3.5	1.6

Soy Beverages

Soy beverages are a plant-based drink produced by soaking and grinding soybeans, boiling the mixture, and filtering out remaining particulates. They are popular among consumers because of their availability and health benefits. Soy beverages are considered substitutes for milk, juice, sodas and alcoholic beverages. More lactose intolerant consumers are replacing dairy-based beverages with soy beverages, as they are a nutritious replacement for animal-based beverages and a vegetarian protein source. However, consumers are increasingly choosing homemade protein-rich beverages, like protein shakes and smoothies, which might hamper the market's growth in the future.

The market for soy beverages is very competitive with multiple international players, such as The Hershey Co., Trader Joe's and Danone, and local players, such as Vitasoy International Holdings Limited and PureHarvest, in developing countries.

The U.K., Germany, France, Belgium and the Netherlands represent over two-thirds of the global imports. In the period from 2017 to 2022, the U.K. had 20 per cent of the imports for a total value of \$566 US million.⁷ The global soy beverage market is expected to grow at a CAGR of 6.2 per cent by 2032.⁸ It is anticipated to reach a valuation of around \$8.5 US billion by 2027⁹.

⁷ Global Trade Tracker – January 2023.

⁸ Future Market Insights - www.fmiiblog.com

⁹ Euromonitor, January 2022

Table 3 - Sales of plant-based beverages in the world

Year	Retail Value RSP - USD million	% Y-O-Y Growth	Retail Volume - million litres	% Y-O-Y Growth
2008	6,081.40	-	4,296.10	-
2009	7,044.90	15.8	4,875.60	13.5
2010	8,667.90	23	5,806.60	19.1
2011	10,164.00	17.3	6,519.50	12.3
2012	11,623.30	14.4	7,272.10	11.5
2013	12,982.80	11.7	7,884.40	8.4
2014	13,530.60	4.2	7,975.10	1.1
2015	13,890.60	2.7	8,055.20	1.0
2016	14,343.40	3.3	8,198.70	1.8
2017	14,757.50	2.9	8,251.80	0.6
2018	15,644.00	6	8,516.40	3.2
2019	16,164.70	3.3	8,583.10	0.8
2020	15,573.50	-3.7	8,214.50	-4.3
2021	17,542.20	12.6	8,911.20	8.5
2022	19,064.30	8.7	9,200.30	3.2
2023	20,715.50	8.7	9,500.40	3.3
2024	22,235.20	7.3	9,772.70	2.9
2025	23,710.70	6.6	9,994.00	2.3
2026	25,241.60	6.5	10,216.30	2.2
2027	26,674.40	5.7	10,377.90	1.6

Table 4 – Sales of soy beverages in the world

Year	Retail Value RSP - USD million	% Y-O-Y Growth	Retail Volume - million litres	% Y-O-Y Growth
2008	4,267.60	-	3,096.10	-
2009	4,526.40	6.1	3,274.20	5.8
2010	4,787.30	5.8	3,523.50	7.6
2011	5,102.50	6.6	3,719.00	5.5
2012	5,557.10	8.9	3,986.90	7.2
2013	5,596.40	0.7	3,934.00	-1.3
2014	5,667.80	1.3	3,922.80	-0.3
2015	5,869.20	3.6	3,994.00	1.8
2016	6,125.80	4.4	4,094.30	2.5
2017	6,522.90	6.5	4,255.30	3.9
2018	6,796.10	4.2	4,332.30	1.8
2019	6,931.30	2	4,329.00	-0.1
2020	6,813.10	-1.7	4,175.00	-3.6
2021	6,898.40	1.3	4,125.80	-1.2
2022	7,214.50	4.6	4,132.50	0.2
2023	7,502.10	4	4,118.00	-0.4
2024	7,744.00	3.2	4,109.30	-0.2
2025	8,006.60	3.4	4,093.20	-0.4
2026	8,278.40	3.4	4,077.80	-0.4
2027	8,563.10	3.4	4,062.10	-0.4

In 2022, global retail sales of soy beverages were \$7.2 US billion in value, reaching a volume of 4.1 billion litres. As seen in Table 4, the year-over-year volumes of soy beverages have declined since 2018 onwards. They are also projected to decline slightly in the period from 2023 to 2027, due to the increased competition with other plant-based beverages introduced into the market in recent years. These options make the dairy alternative beverage sector stronger, as seen in Table 5, with a projected CAGR of 8.9 per cent for the 2023 to 2027 period. Despite the competition, the soy beverage market is projected to have a strong CAGR in value of 3.5 per cent for the 2023 to 2027 period (Table 5).

Table 5 - Retail Value RSP - USD million - Current – 2022

Category	Category Value	Current Year Growth	% CAGR (2008-2022)	%CAGR (2023-2027)
Soy beverages	7,214.50	4.6	2.0	3.5
Other plant-based beverages	11,849.80	11.3	7.6	8.9

Table 6 - Retail Volume - million litres – 2022¹⁰

Category	Category Value	Current Year Growth	% CAGR (2008-2022)	%CAGR (2023-2027)
Soy beverages	4,132.50	0.2	-0.6	-0.3
Other plant-based beverages	5,067.80	5.9	4.9	4.5

¹⁰ Euromonitor – January 2023

Soy Protein Concentrates

Soy protein concentrate is approximately 70 per cent soy protein. It is defatted soy flour without the water-soluble carbohydrates. Soy protein concentrate is employed as an emulsifier, fat and water-absorbing agent, and to boost the nutritional content of food items. Soy-protein concentrates are valuable food ingredients in many high-tech food systems by providing the functional performance and sensory quality desired by the manufacturers and consumers. They also provide a nutritionally-balanced, relatively low-cost and high-quality protein, which can be used either alone, or in combination with other protein sources.

The global soy protein concentrate market was valued at \$1.2 US billion in 2022. It is expected to reach \$4.5 US billion by the end of 2032, growing at a CAGR of 9.2 per cent during the period 2022 to 2032. The North American soy protein concentrate market is expected to grow at a rate of more than 7.8 per cent. This growth can be explained by the increased demand for healthier baked items¹¹ and the shifting toward plant-based protein products, among which, soy-based products continue to be the first choice of consumers.¹² Along with this, soy is a cheaper source of protein as compared to other sources, so it drives the market for soy protein concentrates globally.

In 2021, China was the dominant producer and exporter of soy protein concentrate for a total value of \$763.5 US million, followed by the U.S. and France with \$689.6 US million and \$391.6 US million respectively.¹³ The market size in volume reached 563 thousand tonnes in 2021, as shown in Table 7, with North America having the largest market with over 204 thousand tonnes.

Table 7– Soy protein concentrate market size volume (tonnes) by region¹⁴

Region	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Latin America	72,107	77,130	79,833	82,623	86,509	88,312	90,970	93,004	99,066	103,920
Asia Pacific	95,676	100,471	98,809	98,680	99,726	101,918	105,112	108,178	110,092	112,185
Australia/New Zealand	6,068	6,244	6,400	6,575	6,767	6,898	7,047	7,181	7,220	7,475
Eastern Europe	13,233	13,541	13,632	13,725	14,122	14,808	15,934	16,591	16,972	17,759
Middle East and Africa	4,857	5,156	5,435	5,748	6,019	6,436	6,768	7,099	7,272	7,555
North America	170,437	169,950	170,658	170,304	175,685	179,747	182,927	188,167	190,672	204,451
Western Europe	98,832	99,629	100,268	102,037	103,080	103,870	104,314	105,289	106,740	109,701
Total	461,210	472,121	475,035	479,692	491,908	501,989	513,072	525,509	538,034	563,046

The soy protein concentrate consists of a few leading transnational manufacturers dominating the industry. These include ADM (Archer Daniels Midland), Sojaprotein, DuPont – IFF (International Flavors & Fragrances Inc. - U.S.), IMCOPA, Goldensea Industry, Gushen Biological Technology Group., Cargill, Inc., Kerry Group, Wilmar International Limited (Singapore), NOW Health Group, Inc. (U.S.), Sotexpro S.A., Farbest Brands and Devansoy Inc. (U.S.). These companies offer plant proteins derived from soybean that are further used in dairy products, snacks and cereals, beverages, nutrition and energy bars, and vegetarian meat analogs. These companies have manufacturing facilities in over 70 countries, and sell their products in more than 125 countries worldwide. It is projected that the global market size volume will reach 664 thousand tonnes by the end of 2027, an increase of 18 per cent with respect to 2021. As shown in Table 8, Latin America is one of the regions with the largest promising growth in absolute values, with a projected volume of 138 thousand tonnes by 2027.

¹¹ Future Market Insights

¹² For plant-based proteins, soy is a smart choice ([phys.org](https://www.phys.org))

¹³ Soy Protein global exports and top exporters 2022 - Tridge

¹⁴ Euromonitor – January 2023

Table 8 – Projection of soy protein concentrate market size in volume (tonnes) by region¹⁵

Region	2022	2023	2024	2025	2026	2027
Latin America	109,336	114,816	120,342	126,000	131,689	137,812
Asia Pacific	115,665	119,131	122,662	126,278	130,061	134,195
Australia / New Zealand	7,633	7,807	7,996	8,216	8,457	8,721
Eastern Europe	18,577	19,364	20,139	20,900	21,658	22,480
Middle East and Africa	7,998	8,395	8,795	9,221	9,679	10,170
North America	209,197	213,189	216,539	219,632	222,658	225,964
Western Europe	112,180	114,782	117,293	119,718	122,154	124,901

Soy Protein Isolates

Soy protein isolates are made much the same way as soy protein concentrates, except all non-protein components, including carbohydrates and fiber, are removed from the defatted soy beans. The resulting product is almost an ingredient with higher protein content, compared to soy protein concentrates. Soy protein concentrates contain at least 65 per cent protein on a dry basis, whereas soy protein isolate is 90 per cent protein basis. Soy protein isolates are commonly used in dietary supplements, such as protein powders; however, they are also used in many commercial foods to enhance nutritional values.

North America has been the largest market historically, reaching almost 82,000 tonnes in 2021, followed by the Asia Pacific region with 67,000 tonnes, as shown in Table 9. Seventy per cent of the world's supply of soy isolates, is processed in one region in China: Shandong Province.¹⁶ Projections indicate that North America will continue to be the largest market in the world with 95.6 thousand tonnes by the end of 2027, followed again by the Asia Pacific region with almost 90,000 tonnes as shown in Table 10.

Table 9 – Soy protein isolates market size volume (tonnes) by region

Region	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Asia Pacific	51,289	52,883	55,509	55,044	56,979	59,062	61,588	64,215	64,273	66,935
Australasia ¹⁷	1,413	1,521	1,589	1,629	1,693	1,751	1,813	1,889	1,802	1,820
Eastern Europe	4,640	4,860	4,922	4,993	5,147	5,382	5,704	5,895	5,838	6,054
Latin America	11,171	11,671	12,505	12,872	13,040	13,427	13,791	14,115	14,020	14,762
Middle East and Africa	9,692	10,158	10,516	10,881	11,180	11,685	10,052	10,633	10,914	11,364
North America	70,372	73,469	72,955	74,318	75,563	77,639	80,612	83,953	78,404	81,821
Western Europe	19,253	20,074	20,148	20,340	20,443	20,473	20,563	20,648	19,487	20,277

¹⁵ Euromonitor – January 2023

¹⁶ Good Food Institute – www.gfi.org

¹⁷ Australia, New Zealand, New Guinea, and neighboring Pacific Ocean islands

Table 10 – Projection of soy protein isolates market size volume (tonnes) by region

Region	2022	2023	2024	2025	2026	2027
Asia Pacific	70,352	73,808	77,380	81,160	85,164	89,480
Australasia	1,863	1,907	1,953	2,005	2,060	2,118
Eastern Europe	6,307	6,538	6,761	6,981	7,197	7,425
Latin America	15,474	16,169	16,859	17,568	18,299	19,082
Middle East and Africa	11,912	12,455	12,973	13,506	14,063	14,660
North America	86,377	89,336	91,446	92,992	94,267	95,613
Western Europe	21,060	21,543	21,903	22,287	22,596	22,945

Soy-based Meat Alternatives

Meat alternatives are typically made using concentrated sources of soy protein, such as soy protein isolate (SPI) and soy protein concentrate (SPC). They are naturally flavored to taste like beef, pork, chicken, and even fish. Among other products, there are 'veggie' burgers, hot dogs, and deli meats. These products vary in terms of how much they taste like the meat-based foods they are named after. Some taste remarkably like meat, while others do not. These foods are not only of interest to vegetarians, but are also of benefit to people who want to take advantage of the significant health benefits of soy.

Meat alternatives are available frozen, canned, and dried. There are also fresh products, such as tofu, hot dogs, and veggie burgers, which can be cooked just like the meat-based varieties of these foods. Natural food stores and food co-ops have the widest selection of meat alternatives, but they are also increasingly available in mainstream grocery stores.

There are also products, such as soy bars and shakes, which contain concentrated amounts of isoflavones, the compounds in soy that are credited with health benefits.

There is, however, a negative perception of these products as they are classified as ultra-processed foods. Increasingly, recommendations are being made to restrict the consumption of ultra-processed foods because their intake is associated with a variety of adverse health outcomes. Explanations for the proposed adverse effects include their high energy density, high glycemic index, hyper-palatability, and low satiety potential. Claims have also been made that ultra-processed foods are not sustainably produced. Classifying soy-based meat as an ultra-processed food may hinder its public acceptance, which could detrimentally affect personal and planetary health as classification systems do not adequately evaluate the nutritional attributes of meat alternatives based on soy.

As shown in Table 11, vegetarian soy-based ready meals are expected to grow at a CAGR of 7.1 per cent for the period from 2021 to 2026 to reach 31.7 thousand tonnes in volume and \$527.7 US million.

Table 11 - CAGR for vegetarian soy-based ready meals

Historic Period Growth Years (2016-2021)	Volume (000 tonnes)	USD million
Historic Period Growth %	45.0	58.1
Historic CAGR%	7.7	9.6
Forecast Period Growth Years (2022-2026)	Volume (000 tonnes)	USD million
Forecast Period Growth %	21.5	41.2
Forecast CAGR %	4.0	7.1

Free-from-meat soy-based ready meals have seen an increase in retail value and volume year after year. In 2008, the retail value reached \$160 US million to almost triple in value in 2021, when it reached \$373.7 US million, as shown in Table 12. The same table shows how volumes almost double in the period from 2008 to 2021, going from 13.5 to 26.1 thousand tonnes respectively.

Table 12 – Retail volume and retail price RSP of free-from-meat soy-based ready meals

Year	Retail volume and price		Growth Y-O-Y	
	000 tonnes	USD million	000 tonnes	USD million
2007	13.5	159.9	-	-
2008	14.0	173.1	4.0	8.2
2009	15.1	182.3	7.5	5.3
2010	15.6	191.3	3.2	4.9
2011	16.0	203.2	2.8	6.3
2012	16.5	206.0	3.1	1.4
2013	16.7	215.5	1.3	4.6
2014	16.9	223.7	0.7	3.8
2015	17.3	227.5	2.6	1.7
2016	18.0	236.5	4.0	3.9
2017	19.4	257.5	7.8	8.9
2018	20.6	280.8	5.9	9.1
2019	22.5	306.0	9.2	9.0
2020	25.6	355.6	14.2	16.2
2021	26.1	373.7	1.8	5.1
2022	27.5	406.5	5.4	8.8
2023	28.6	436.7	4.0	7.4
2024	29.7	467.2	3.7	7.0
2025	30.8	498.1	3.6	6.6
2026	31.7	527.7	3.1	5.9

The COVID-19 pandemic brought changes to consumer behaviour. Home seclusion and more home cooking boosted sales of free-from-meat soy-based ready meals in 2020, as shown in Table 12. It also increased awareness of the need to adopt a healthier lifestyle and the importance of a healthy body and immune system. As a result, the interest in plant-based protein foods as meat substitutes continued to grow rapidly.

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