FOOD PROCESSING

Towards Sustainable Growth Opportunities

Sector Profile

Fisheries & Aquaculture

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Preface

The Indian food-processing sector has witnessed remarkable growth during the last 9 years ending 2023-24 with an Average Annual Growth Rate (AAGR) of around 6.55% as compared to around 6.06% in manufacturing at 2011-12 prices. The sector constituted as much as 7.93% share of FPI in manufacturing sector in 2023-2024. The sector is one of the largest employment providers in the organised manufacturing sector with 12.91% employment in the total registered/organised sector. This highlights its competitiveness and capacity to cater to global markets.

India is the world's largest producer of milk, pulses and jute and ranks as the second largest producer of rice, wheat, sugarcane, groundnut, vegetables, fruit and cotton. It is also one of the leading producers of spices, fish, poultry, livestock and plantation crops. This abundant raw material base offers immense potential for value addition and export. Notably, India reported the processed food exports amounted to USD 10.09 billion in 2024-2025 with significant shares in processed vegetables and fruits, pulses, cereal preparations etc. Further, the sector has attracted 7.21 billion FDI inflow in the last one-decade ending 2024-25. Recognizing the sector's significance, Ministry of Food Processing Industries has extended support and incentives for creation of modern infrastructure with efficient supply chain management, creation of employment opportunities, reducing post-harvest losses, increasing the processing level and enhancing export of the processed foods.

Fisheries sector in India play a significant role in the Indian economy and remains to be an important source of food, nutrition, income, supporting **28 million livelihoods** through fishing, processing, and marketing. Fish is an affordable and good source of animal protein, a good option to reduce hunger and malnutrition in the country. Indian Fisheries sector evolved gradually over the years and become an important socio-economic attribute for the nation. India contributed to around 9% of the global fish production, ranking second in world after China in fish production through aquaculture in FY 2023-24.[1] The fisheries and aquaculture sector plays a crucial role in the Indian food processing landscape, offering substantial prospects for growth and employment generation.

Sector has immense potential to enhance incomes and usher in economic prosperity to stakeholders. Hence it is essential that sustained and focused attention is given to the fisheries sector through policy and financial support to accelerate its development in a sustainable, responsible, inclusive and equitable manner. The rising interest in seafood, fueled by growing health-conscious consumer, act as a key driver of expansion within the fish processing market in India. Processed and value-added seafood products undergo various preparation and preservation methods to extend shelf life, enhance flavor, and improve convenience.

[1] https://dof.gov.in/sites/default/files/2025-04/AnnualReport2025English.pdf

1. Introduction

The fisheries sector is a crucial component of India's economy, generating significant employment opportunities, and contributing substantially to the country's economic growth and development. Over the past two decades, India's fisheries sector has witnessed significant growth and transformation. From technological advancements to policy reforms, the period from 2004 to 2024 has been marked by milestones that have bolstered India's position in global fisheries and aquaculture. With a rich marine and inland water resource base, India's fish production has increased from 24.42 lakh tonnes in the year 1980-81 to 18.40 MMT in the year 2023-24.

India's vast coastline of 8118 km, a stretch of 2.02 million sq. km of Exclusive Economic Zone, 0.53 million sq. km. continental shelf, an extensive system of rivers, and a significant number of ponds, tanks, and reservoirs have made the country a major producer of fish and seafood products. The Indian Blue Revolution has led to a major improvement in the fishing and aquaculture industries. The industries are regarded as sunrise sector and are anticipated to have a big impact on the Indian economy. The consumption behavior has been found skewed towards protein-rich foods, with increased fish consumption due to fish being a healthier and more affordable option compared to other animal protein substitutes. India's yearly fish consumption in the year 2021-22 was 478.120 per capita/kg[2].

During the FY 2023-24, India exported all time high volume 1.78 MMT of marine products worth ₹ 60,523.89 Crore (US$ 7.38 Billion). USA and China are the major importers of Indian seafood. Frozen Shrimp continued to be the major export item. Despite facing various challenges, including sluggish consumer demand in major export destinations due to inflation in the USA, EU, and UK markets and the issues with the Red Sea route, seafood sector performed considerably well during 2023-24. The exports increased by 2.67% in quantity during the year. (MPEDA)

India's fish processing industry is driven by a rich raw material base, shifting consumer preferences, and growing demand for healthy food. The sector has achieved success through sustainable practices including the use of advanced technologies such as Recirculating Aquaculture System (RAS), bio floc, and raceways for the culture of shrimp, fish and other species. Additionally, initiatives undertaken by the government aiming to boost production, establishing cold chain facilities, post-harvest infrastructure, modernization of ports, and a strong focus on addressing challenges like food safety, regulations, and standards are fueling holistic growth in the sector.

This fisheries sector profile emphasizes global trends in the fisheries and aquaculture sector and the nation's strong potential in the sector which is underpinned by a supportive regulatory framework, advanced research and development (R&D) and skill development ecosystem, and various Government initiatives that enhance the sector's resilience. These factors collectively contribute to an environment that fosters growth, encourages innovation, and supports the development of a vibrant ecosystem from local to global.

[2] https://dof.gov.in/sites/default/files/2024-06/Handbook.pdf

2. Global Overview of the Fisheries sector

2.1 Global Market Overview[3]

Global Fisheries

Global fisheries and aquaculture production reached a historic high of 223.2 million metric tonnes (MMT) in the fiscal year 2022. This figure includes 185.4 MMT of aquatic animals (live weight equivalent) and 37.8 MMT of algae (wet weight). China remained the major producer (36 percent), followed by India (8 percent), Indonesia (7 percent), Viet Nam (5 percent) and Peru (3 percent).[4]

World aquaculture

World aquaculture production reached a new record of 130.9 million tonnes in 2022, valued at USD 313 billion and comprising 94.4 million tonnes of aquatic animals and 36.5 million tonnes of algae. Asia contributed 91.4 percent of the overall total, followed by Latin America and the Caribbean (3.3 percent), Europe (2.7 percent), Africa (1.9 percent), Northern America (0.5 percent) and Oceania (0.2 percent). Ten leading countries (China, Indonesia, India, Viet Nam, Bangladesh, Philippines, Republic of Korea, Norway, Egypt and Chile) produced 89.8 percent of the total. In 2022, production of animal species from aquaculture (51 percent) surpassed for the first time that from capture fisheries, with inland aquaculture producing 62.6 percent of total farmed aquatic animals.

World capture fisheries

World capture fisheries produced 92.3 million tonnes in 2022, 91.0 million tonnes of aquatic animals and 1.3 million tonnes of algae. China remained the top capture fisheries producer (14.3 percent), followed by Indonesia (8.0 percent), India (6.0 percent), Peru (5.8 percent), the Russian Federation (5.4 percent), the United States of America (4.6 percent), Viet Nam (3.9 percent) and Japan (3.2 percent).

2.2 Global Consumption Overview[5]

Seafood is a rich source of essential nutrients such as proteins, vitamins, and minerals, making it a staple in many diets worldwide. The global consumption of seafood is driven by its high protein content, convenience in cooking, and health benefits. Processed seafood, in particular, has gained popularity due to its ease of preparation. The popularity of processed seafood is on the rise, driven by its convenience and high protein content. Consumers are increasingly opting for protein-rich foods like seafood products, which offer a blend of health benefits and

[3] The State of World Fisheries and Aquaculture (SOFIA) 2024
[4] Ibid
[5] Ibid

convenience. The diverse range of processed seafood available in convenient, ready-to-cook packaging saves time and effort for busy consumers.

In 2022, of the 165 million tonnes destined for human consumption, live, fresh or chilled accounted for about 43 percent. This continues to represent the preferred and most high-priced form of aquatic food products, followed by frozen (35 percent), prepared and preserved (12 percent) and cured (10 percent). Freezing is the main method of preserving aquatic foods, accounting for 62 percent of the 93 million tonnes of processed aquatic animal production for human consumption (i.e. excluding live, fresh or chilled). Significant differences exist in the utilization and processing methods across continents, regions and countries, and even within countries. Preservation and processing may vary due to differences between species related to their characteristics, composition, size and shape. Aquatic species can be prepared using a wide range of methods, from manual to fully automated.

Overall, in high-income countries, aquatic foods are more processed than in other countries, with an increasing share of high-value-added products, such as ready-to-eat meals. In 2022, over 55 percent of the aquatic animal production destined for human consumption in high-income countries was in frozen form, 26 percent in prepared and preserved form, and 13 percent in cured form. In many countries, processing of aquatic products has been evolving from traditional methods to more advanced value-adding processes, depending on the commodity and market value. In 2022, about 31 percent of the aquatic food production of upper- and lower-middle-income countries was utilized in frozen form, 9 percent each in canned and cured forms, and over 50 percent in live, fresh or chilled form. In contrast, for low-income countries, only 7 percent was frozen, about 20 percent cured and about 70 percent live, fresh or chilled.

Approximately two-thirds of the fisheries and aquaculture production used for human consumption is in frozen, prepared and preserved forms in Europe and Northern America. In Asia and Africa, the share of aquatic food production preserved by salting, smoking, fermentation or drying is higher than the world average. The share of fisheries and aquaculture production utilized for reduction into fishmeal and fish oil is highest in Latin America, followed by Asia and Europe. A proportion of the production of aquatic animals for human consumption is commercialized in live form; this form is principally appreciated in East and Southeast Asia and has niche markets in other countries, mainly to supply Asian communities. Some examples of processed fish and fish by-products include fish meal, fish oil, fish by product utilisation. Aquatic by-products can be converted into food products for human consumption.

2.3 Global Trade Scenario

The most traded fish products include salmon, tuna, cod, and tilapia, contributing to the market's vibrancy, each offering unique flavours and nutritional profiles. Salmon, known for its rich omega-3 fatty acids, remains a popular choice among health-conscious consumers.

Tuna, prized for its versatility, is widely used in various cuisines globally. Cod, with its mild taste and firm texture, is a staple in many traditional dishes. Tilapia, a mild-flavoured white fish, appeals to those seeking a lighter option. Crustaceans including crabs, lobsters and shrimps share the market equally. Molluscs including a wide variety of organisms, such as clams, snails, slugs, oysters, octopuses, and squids share the trade market and the rise in consumption of molluscs such as oysters are highly nutritious as they provide an extensive range of health benefits.

Table 1: Top exporters of HS Code 03- Fish and crustaceans, molluscs, and other aquatic invertebrates[6]

Top Exporting Countries	Total Exports in 2024 (USD Million)
Norway	15.47
China	10.35
Ecuador	7.35
Chile	7.30
India	6.14
Viet Nam	6.01
Russian Federation	5.63
Canada	5.26
Sweden	5.25
Netherlands	4.75

Table 2: Top importers of HS Code 03- Fish and crustaceans, molluscs, and other aquatic invertebrates[7]

Top Importing Countries	Total Imports in 2024 (USD Million)
United States of America	21.02
China	17.88
Japan	9.43
Spain	7.38
Italy	6.45
France	6.00
Sweden	5.77
Korea, Republic of	4.75
Germany	4.50
Thailand	3.49

[6] www.trademap.org
[7] www.trademap.org

Table 3: Top exporters of HS Code 16- Preparations of meat, of fish, of crustaceans, molluscs or other aquatic invertebrates, or of insects[8]

Top Exporting Countries	Total Exports in 2024 (USD Million)
China	11.19
Thailand	7.00
Germany	3.98
Poland	3.58
Spain	2.70
Netherlands	2.64
United States of America	2.63
Viet Nam	2.54
Italy	2.04
Ecuador	1.72

Table 4: Top importers of HS Code 16- Preparations of meat, of fish, of crustaceans, molluscs or other aquatic invertebrates, or of insects[9]

Top Importing Countries	Total Imports in 2024 (USD Million)
United States of America	7.04
Japan	6.09
United Kingdom	5.61
Germany	4.20
France	3.25
Netherlands	2.22
Italy	2.13
Spain	1.99
Belgium	1.71
Canada	1.66

Table 5: Seafood export year wise comparison 2021-22 to 2023-24[10]

Year	Value (USD mn)	Quantity (MMT)
2016-2017	5777.61	1.13
2017-2018	7081.55	1.37
2018-2019	6728.5	1.40
2019-2020	6678.69	1.30
2020-2021	5956.93	1.16
2021-2022	7759.58	1.37
2022-2023	8094.31	1.73
2023-2024	7380	1.78

[8] www.trademap.org
[9] www.trademap.org
[10] https://mpeda.gov.in/wp-content/uploads/2020/12/Annual_Report_2023_24.pdf

3. Overview Of Fish Processing Sector in India

The fisheries sector in India is a vital component of the country's economy, contributing significantly to food security, employment, and export earnings. With its vast coastline, extensive inland water resources, and diverse aquatic ecosystems, India is one of the leading producers of fish in the world. The sector supports millions of livelihoods, particularly in coastal regions and rural areas, and plays a crucial role in the socio-economic development of these communities. Over the years, India's fisheries have evolved from traditional practices to a more structured and modernised industry, encompassing marine, inland, and aquaculture sectors. This sector's continuous growth and development enhances its contribution to the national economy and positions India as a critical player in the global seafood market. The status of the fisheries sector in India can be seen in the following points[11]:

- India is the second largest fish producing country in the world and accounts for 8 percent of the global production. The total fish production during FY 2023-24 is estimated at 18.40 MMT with a contribution of 13.91 MMT from Inland sector and 4.49 MMT from Marine sector.
- The fisheries sector plays an important role in the national economy with the share of Fisheries sector in the total Gross Value Added (GVA), at constant prices, in 2022-23 is estimated at Rs. 1,65,075 Crores that constitutes about 1.12 percent of the total national GVA and 7.26 percent of agricultural GVA.
- The sector has shown an impressive growth rate of 7.58% (Constant Price: 2011-12) during the year 2021- 22 to 2022-23. However, the annual average growth rate in the Fisheries sector has been 6.30% over the last five years.
- During FY 2023-24, export of marine products stood at 1.78 MMT and valued at Rs. 60,523.89 Crores (USD: 7.38 billion) with an annual growth rate of about 2.67% (in Quantity).
- The leading states in the production of fish during 2022-23 were Andhra Pradesh, West Bengal, Karnataka, Odisha, Kerala, and Uttar Pradesh whereas the highest-ranking states for yearly fish consumption (per capita/kg) were Andaman & Nicobar Islands (114), Lakshadweep (89), and Tripura (27.62). During this period, India has a total of 1897 ice plants with a combined production capacity of 29.5 lakh tonnes, and the leading states are Gujarat, Kerala, Karnataka, Andhra Pradesh and West Bengal.[12]
- As per MPEDA, India has a well-established fish processing infrastructure, with a total of 637 plants across the country, capable of processing 36.79 thousand MT. The top five regions with the highest concentration of processing plants and storage facilities are Kochi, Veraval, Mangalore, Mumbai, and Kolkata.

[11] https://dof.gov.in/sites/default/files/2025-04/AnnualReport2025English.pdf
[12] https://dof.gov.in/sites/default/files/2024-06/Handbook.pdf

Market Overview:

The Indian fish market size was valued at 22.32 Million Tons in 2024. Looking forward, IMARC Group estimates the market to reach 43.77 Million Tons by 2033, exhibiting a CAGR of 7.38% from 2025-2033. The Indian fish market is witnessing steady growth, driven by rising domestic consumption, improved aquaculture practices, and government support for fisheries development.

Attribute	Key Statistics
Base Year	2024
Forecast Years	2025-2033
Market Size in 2024	22.32 Million Tons
Market Forecast in 2033	43.77 Million Tons
Market Growth Rate 2025-2033	7.38%

Innovation in technology is one of the key drivers of India's fish sector growth. The use of advanced technologies, including automated feeding systems, water quality monitoring equipment, and genetic breeding methods, has transformed the efficiency and viability of fish farming.

Major Traded Commodities

India managed to achieve a significant increase in exports, particularly in the export of frozen shrimp. Other items like frozen fish, frozen squid, frozen cuttlefish, dried items, chilled items, and live items also showed growth in both quantity and value.

India ranks 5th globally in the export of fish and seafood products (HS Code 03: Fish and crustaceans, molluscs, and other aquatic invertebrates), accounting for 4.6%[13] of the world's total exports after Norway, China, Ecuador and Chile. These products are exported to a diverse range of 129 countries, showcasing the sector's strong international presence and competitiveness. India has recorded an all-time high of seafood exports worth USD 7.38 bn in the year 2023-2024[14], with the USA, China, and Japan being the major importers.

- **Frozen Shrimp:** Frozen shrimp remained the top product to be exported by India in the year 2023-24. The export of frozen shrimp during 2023-24 was to the tune of 7.16 lakh MT worth USD 4.88 bn. The export of frozen shrimp accounted for 40.19% in quantity and 66.12% of total USD earnings.

- **Frozen Fish:** Frozen fish ranks 2nd in the export basket with a share of 21.42% in quantity and 9.09% in USD earnings. The export of frozen fish during 2023-24 was to the tune of USD 0.67 bn as compared to 0.69 in 2022-23.

[13] https://www.trademap.org/Index.aspx?nvpm=1%7c%7c%7c%7c%7c%7c%7c%7c%7c%7c%7c%7c%7c%7c%7c%7c%7c

[14] India’s seafood exports touch all-time high by volume in FY 2023-24, PIB 19th June’24

- **Fish and shrimp- meal & feed- non-edible dried items:** Fish and shrimp- meal & feed-non-edible dried items rank 3rd in the export basket with a share of 15.89 % in quantity and 6.08% in value.

- **Frozen squid:** Frozen squid ranks 4th accounting for a 5.25 % share in quantity and 5.06 % in dollar earnings.

Table 6: Item-wise exports (value) during Years 2021-2024[15]

S. No	Products	2021-2022 (value in USD Mn)	2022-2023 (value in USD Mn)	2023-24 (value in USD Mn)
1.	Frozen Shrimp	5828.59	5481.63	4881.27
2.	Frozen Fish	471.45	687.05	671.17
3.	Frozen Cuttlefish	280.08	295.49	274.62
4.	Frozen Squid	383.37	454.61	373.40
5.	Dried Item	143.46	384.05	496.21
6.	Live Items	47.98	55.47	48.61
7.	Chilled Items	63.92	77.17	83.85
8.	Others	540.73	658.84	552.74

Figure 1: Species wise export in 2023-24[16]

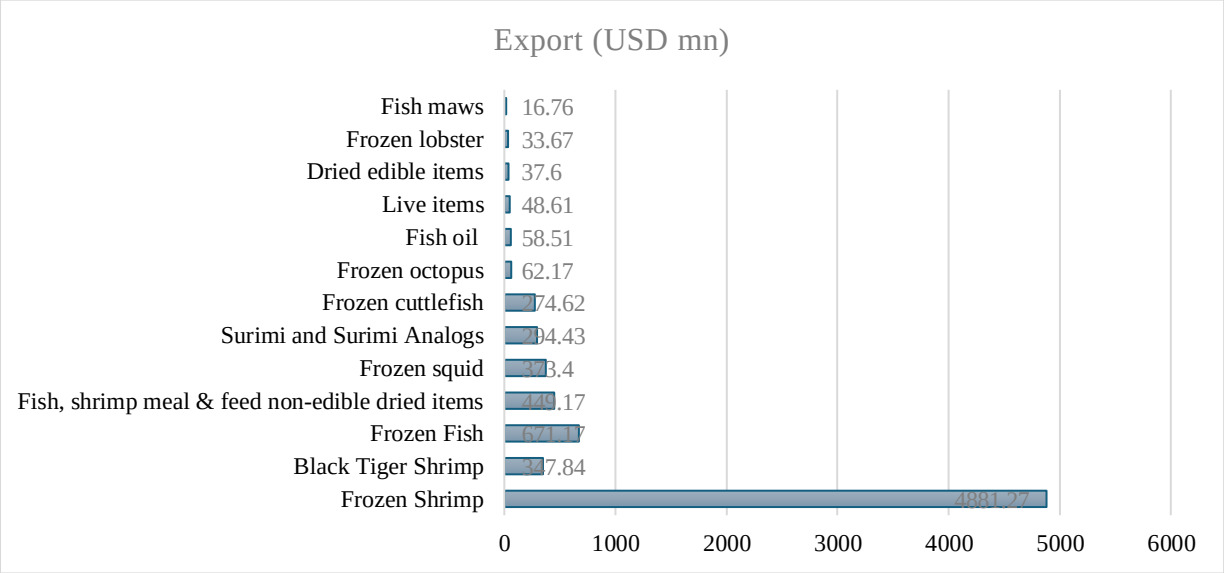
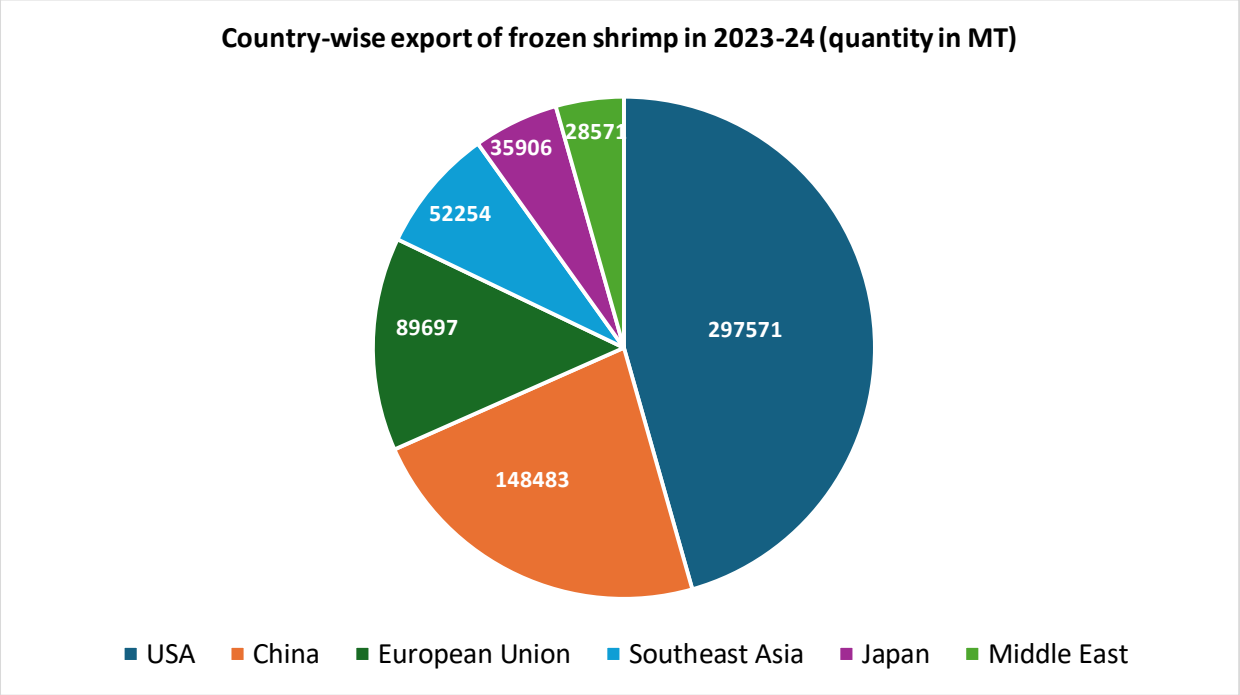


Figure 2: Country wise export of frozen shrimp in 2023-24[17]

[15] India's seafood exports touch all-time high by volume in FY 2023-24, PIB 19th June 2024
[16] India's seafood exports touch all-time high by volume in FY 2023-24, PIB 19th June 2024
[17] India's seafood exports touch all-time high by volume in FY 2023-24, PIB 19th June 2024



2.3.2 Major export destinations

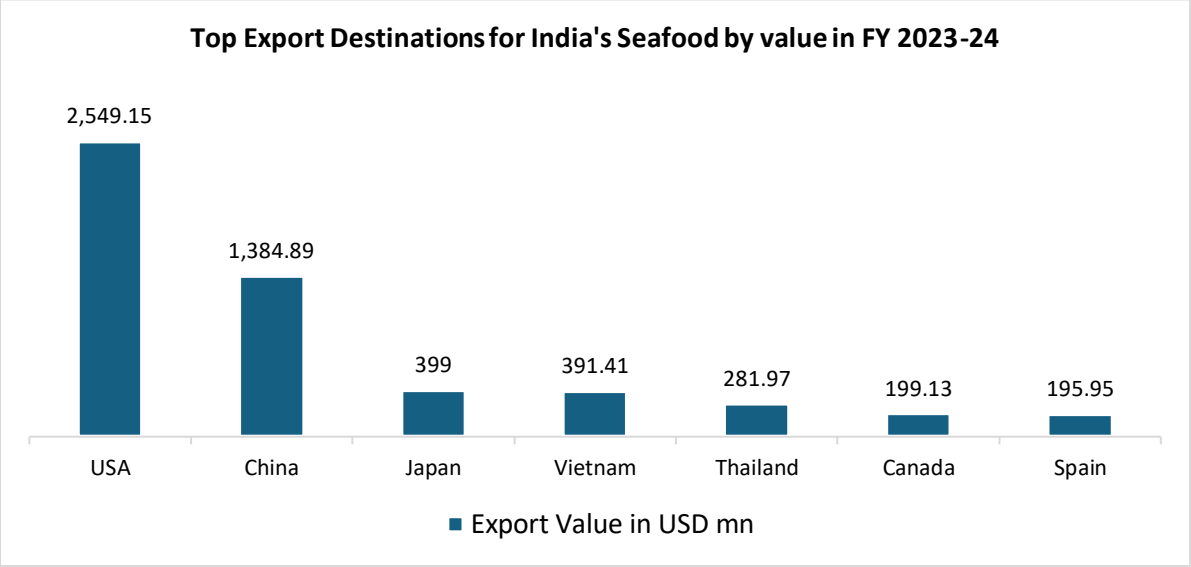
Table 7: Market-wise export quantity (MT) during Years 2021-2024[18]

S No	Market	2021-22 (quantity in MT)	2022-23 (quantity in MT)	2023-24 (quantity in MT)
1.	Japan	90308	109199	107968
2.	USA	372611	306334	329192
3.	EU	198484	207976	192505
4.	China	266989	405547	457215
5.	Southeast Asia	243401	431774	378630
6.	Middle East	58426	77677	75046
7.	Others	139045	196780	241045

The leading exported products include frozen shrimp, frozen fish, fish and shrimp meal and feed, non-edible dried items, frozen squid, surimi and surimi substitutes, frozen cuttlefish, chilled products, frozen octopus, fish oil, live seafood, dried edible items, frozen lobster, and fish maws, with frozen shrimp consistently maintaining its top rank in FY 2023-24.[19]

Figure 3: Top Export Destinations for India's Seafood by value in FY 2023-24[20]

[18] India's seafood exports touch all-time high by volume in FY 2023-24, PIB 19th June 2024
[19] India's seafood exports touch all-time high by volume in FY 2023-24, PIB 19th June 2024
[20] India's seafood exports touch all-time high by volume in FY 2023-24, PIB 19th June 2024



3.1. Key Industry Players in the fisheries and aquaculture sector in India

Table 8: Major players in the sector

Key Player	Description
Devi Fisheries Ltd	Vertically integrated shrimp company with global exports and advanced certifications.
Devi Sea Foods Pvt Ltd	Specializes in shrimp processing (raw, cooked, value-added) with strong global market presence.
Kader Exports Pvt Ltd	Involved in shrimp and seafood export, operating processing units in coastal India.
Asvini Fisheries Private Limited	Seafood exporter focused on processing and overseas markets, especially shrimp.
Sandhya Aqua Exports Private Limited	Engaged in marine product exports; operates seafood processing facilities.
Falcon Marine Export Pvt Ltd	Exports marine products with processing capabilities for global distribution.
Gadre Marine Export Pvt Ltd	Processes and exports frozen seafood, especially shrimp, to global markets.
Nekkanti Sea Foods Pvt Ltd	Major shrimp exporter with focus on frozen seafood and global distribution.
Sagar Grandhi Exports Pvt Ltd	Engaged in processing and export of seafood, especially to U.S. and Japan.
Apex Frozen Foods Ltd	Integrated shrimp producer with hatchery, farming, processing, and export facilities.

3.2. Key Growth Drivers

- **Rich raw-material base:**

India's extensive coastline of 8118 km and abundant marine resources offer immense potential for fish production. The country's diverse climatic and geographic conditions along with various inland water resources such as reservoirs, ponds, tanks, brackish water, rivers, canals, flood plain lakes and marine water resources contributes to more than 10% to the global biodiversity in terms of fish and shellfish species. Additionally, India's location in the tropical and sub-tropical regions of the world makes it an ideal location for the cultivation of various fish species that thrive in warm waters such as Indian Major Carps (IMC), Indian Minor Carps, exotic carps, tilapia, pangasius, etc.

- **Consumer Preference:**

Fish is an easy source of essential nutrients, such as omega-3 fatty acids, high-quality lean protein, healthy fat, important vitamins, and minerals, including selenium and Vitamin D. The rising awareness among consumers regarding the advantages of fish and seafood consumption has increased the demand for fresh fish and seafood products, and this trend is expected to continue and propel the growth of the market in the future.

- **Policy Support**:

The policies and schemes available under different ministries such as Ministry of Food Processing Industries (MoFPI) and Ministry of Fisheries, Animal Husbandry and Dairying (MoFAHD) support the fish processing sector in India by providing grants, subsidies and incentives for infrastructure development and improve the value chain.

4. Investment Opportunities in Fish Processing Sector in India

4.1. Logistics And Cold Storage

Logistics and cold storage play an important role in maintaining the quality and overall health of the products throughout the fish processing industry. There should be a rapid and uninterrupted transport of fish from the catch/ harvest sites to processing plants/ facilities, which is ensured by proper logistics. This minimizes the time spent at ambient temperature able to prevent and delay spoilage caused by microbial growth. Proper cold storage facilities are equally important to further slowdown enzymatic and microbial activity. Proper temperature control throughout the supply chain preserves the fish's texture, flavor, and nutritional value.

4.2. Expansion Of Domestic Market

The demand for processed food is anticipated to rise in the coming years due to various factors like an increase in disposable income, heightened awareness about health, and a preference for convenience. A range of factors can affect consumer preferences and trends. Nonetheless, there are some potential emerging trends, which are:

- Ready-To-Eat Seafood Snacks: Consumers prefer convenient snacks that are easy to carry and consume on the go, which has led to an increase in demand for ready-to-eat seafood snacks like fish fingers and popcorn shrimp.
- Canned And Packaged Seafood Products: Canned and packaged seafood products like tuna, sardines, and mackerel are popular because of their longer shelf life and ease of use in various recipes.
- Frozen Seafood Products: Freezing involves a change of phase from liquid to solid which is basically the conversion of water available in the products into ice, helping in retaining the quality of the fish and fishery products for a longer shelf life. This process requires the fish products to be exposed to a very low temperature of about -35^{o}C to enable freezing water and maintain at -18^{o}C till it is consumed. The methods such as Plate freezing, air blast freezing, cryogenic freezing and individual quick freezing are used in the processing industry to preserve the fish and fishery products. Frozen seafood products like shrimp, fish fillets, and crab others are convenient as they can be stored be stored for a longer period without compromising their quality.
- Fish Pickles and Chutneys: Fish pickles and chutneys are a traditional Indian delicacy that is made by marinating fish in spices and oil, which is then preserved for a longer shelf life.
- Seafood Spreads and Dips: Seafood spreads and dips like tuna spread and shrimp cocktail sauce are gaining popularity as a healthier alternative to traditional dips and spreads.
- Seafood-Based Ready-To-Cook Meals and Mixes: Consumers prefer easy-to-cook meals that require minimal preparation time and effort, which has led to an increase in demand for seafood-based ready-to-cook meals and mixes.
- Seafood Sausages and Burger Patties: Seafood sausages and burger patties are gaining popularity as a healthier alternative to meat-based sausages and patties.
- Fish and Shrimp Cutlets and Nuggets: Fish and shrimp cutlets and nuggets are popular as a

snack and can be easily prepared at home.

- Dried and Smoked Fish and Shrimp: Dried and smoked fish and shrimp are gaining popularity as they have a longer shelf life and can be used in various recipes.

4.3. Expansion Of Export Markets

The primary reasons for the surge in worldwide consumption of aquatic food will be the interplay of factors such as increasing demand due to higher incomes and urbanization, alongside the growth of fisheries and aquaculture production. India has a diverse range of processed, preserved and value-added products that have the potential for exports. These products range from specialty products, mince-based products, battered, breaded or coated products, surimi-based products, intermediate moisture products (IMF), pickled products, etc.

Eg.: The global tuna industry, valued at over $40 billion annually, plays a major role in the blue economy. The Andaman & Nicobar Islands represent a prime opportunity for this sector, with a vast 6 lakh square km Exclusive Economic Zone rich in high-value tuna species and an untapped oceanic potential of 60,000 metric tons. This includes 24,000 metric tons for Yellowfin and 2,000 metric tons for Skipjack, while current harvests stand at just 4,420 metric tons, leaving ample room for expansion. Strategically located near Southeast Asia, the islands offer efficient trade routes by sea and air, ideally positioning India to expand its tuna export capabilities. (Source: https://www.pib.gov.in/PressReleasePage.aspx?PRID=2073307)

5. Government Interventions for supporting Fish Processing Sector

The Government of India has implemented various initiatives to support and boost the Fisheries & Aquaculture Processing Industry in India.

4.1 Pradhan Mantri Kisan Sampada Yojana (PMKSY)

Ministry has been implementing Central Sector Umbrella Scheme –Pradhan Mantri Kisan Samapada Yojana(PMKSY) since May, 2017 across the country including NER with an allocation of Rs. 6,000 Crores for the period 2016-20 co terminus with the 14th Finance Commission Cycle. A new scheme "Operation Greens" was introduced in PMKSY in November, 2018 for integrated development of value/supply chain of tomato, onion and potato (TOP) crops in selected States on pilot basis with an outlay of Rs 500 Crores, which was subsequently extended to all notified crops and later to 22 perishables. Continuation of restructured PMKSY during 15th Finance Commission cycle i.e. till 31.03.2026 has been approved with an allocation of Rs. 5520 crores with following component schemes-

- Integrated Cold Chain and Value Addition Infrastructure
- Creation/ Expansion of Food Processing and Preservation Capacities (Unit Scheme)
- Infrastructure for Agro-processing Clusters
- Food Safety and Quality Assurance Infrastructure
- Human Resources and Institutions –Research & Development
- Operation Greens

The component schemes of Mega Food Park, Creation of Backward & Forward Linkages, Human Resource & Institution - Promotional Activities, Skill Development & HACCP, a component of Food Safety and Quality Assurance Infrastructure have been discontinued in the 15th FC cycle with the provision of committed liability.

Under constituent component schemes of PMKSY, the MoFPI provides mostly credit linked financial assistance (capital subsidy) in the form of grants-in-aid to the individuals, farmers, Farmer Producer Organizations (FPOs), Entrepreneurs, Cooperatives, Societies, Self Help Groups (SHGs), Private Companies and Central/ State PSUs etc. for setting up of food processing/preservation industries. Financial assistance to the eligible applicant is provided as per the Scheme guidelines and against the Expression of Interest issued by the Ministry from time to time to enable them to set up various food processing/preservation projects.

4.2. PM Formalization of Micro Food Processing Enterprises (PMFME):

MoFPI is implementing a centrally sponsored "PM Formalisation of Micro food processing Enterprises (PMFME) Scheme" under Aatma Nirbhar Bharat Abhiyaan initiative for providing financial, technical and business support for upgradation of micro food processing enterprises in the country. The scheme is operational from 2020-21 to 2025-26 with an outlay of Rs 10,000 Crore. Two lakh micro food processing units will be directly assisted with credit linked subsidy, capacity building and marketing and branding support. The objectives of the scheme are as under:

i) Increased access to credit by existing micro food processing entrepreneurs, FPOs, Self Help Groups and Co-operatives;

ii) Integration with organized supply chain by strengthening branding & marketing;

iii) Support for transition of existing 2,00,000 enterprises into formal framework;

iv) Increased access to common services like common processing facility, laboratories, storage, packaging, marketing and incubation services;

v) Strengthening of institutions, research and training in the food processing sector; and

vi) Increased access for the enterprises, to professional and technical support

The scheme aims to:

i) Enhance the competitiveness of existing individual micro-enterprises in the unorganized segment of the food processing industry and promote formalization of the sector; and
ii) Support Farmer Producer Organizations (FPOs), Self Help Groups (SHGs) and Producers Cooperatives along their entire value chain.

One District One Product:

PMFME Scheme adopts One District One Product (ODOP) approach to reap the benefit of scale in terms of procurement of inputs, availing common services and marketing of products. ODOP scheme provides the framework for value chain development and alignment of support infrastructure. The scheme also envisages strengthening backward and forward linkages, provision of common facilities, incubation centres, training, R&D, marketing & branding. These provisions would primarily be for ODOP products.

4.3. Production Linked Incentive Scheme for Food Processing Industry (PLISFPI):
For enhancing India's manufacturing capabilities and improving exports, in November 2020, Government gave approval to introduce the Production-Linked Incentive (PLI) Scheme in 10 key sectors, including food processing sector. The Union Cabinet approved the Production Linked Incentive (PLI) Scheme for the food processing industries on 31.03.2021 with a total outlay of Rs. 10,900 crores to be implemented over six years from 2021-22 to 2026-27.

The food segment identified includes Ready to Cook/ Ready to Eat (RTC/ RTE) foods including Marine Products and Mozzarella Cheese, and production of Innovative/ Organic products of SMEs including Free Range - Eggs, Poultry Meat, Egg Products. The scheme would also support for branding and marketing abroad to incentivise emergence of strong Indian brands for in-store branding, shelf space renting and marketing.
The Scheme supports food manufacturing entities with stipulated minimum sales and willing to make minimum stipulated investment for expansion of processing capacity and Branding abroad to incentivise emergence of strong Indian brands. It aspires to not only support creation of global food manufacturing champions, but also to strengthen select Indian brand of food products for global visibility and wider acceptance in the international markets, increase employment opportunities of off-farm jobs and ensue remunerative prices of farm produce and higher income to farmers.

4.4 Pradhan Mantri Matsya Sampada Yojana (PMMSY)
This flagship centrally sponsored scheme was launched in 2020 to transform India's fisheries sector through integrated development from fish production to post-harvest processing and marketing. PMMSY includes support for establishing hatcheries, fish harbours, cold storage, processing units, credit-linked subsidies, and infrastructure modernization. It targets doubling fishers' incomes, increasing fish production, reducing post-harvest losses, and boosting exports. The Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY) (Sub-scheme under PMMSY) was launched in 2024 and seeks to formalize unorganized fisheries through wearable digital identities for fishers, incentivizing aquaculture insurance, supporting micro & small fisheries enterprises, improving value chain efficiency, and facilitating safe fish production and quality systems.

4.5 Fisheries & Aquaculture Infrastructure Development Fund (FIDF)
This is a Rs 7,522.48 crore concessional loan fund launched in 2018–19, managed through NABARD/NCDC/banks. It finances infrastructure such as fish landing centres, harbours, cold storage, processing units, hatcheries, and feed plants, with substantial interest subsidies.

4.6 National Fisheries Digital Platform (NFDP)
Web-based information system to provide digital services to fishers/farmers, assist scheme monitoring, grievance redressal, and data-driven governance for fisheries sector modernization.

4.7 Matsya Kisan Credit Card (KCC)
A targeted credit facility extended to fishers and fish farmers under PMMSY and FIDF. It provides working capital and operational finance at concessional interest rates, integrated with formal banking.

6. R&D and Skill Development Ecosystem for Fish Processing

The research institutions actively involved in the research and development (R&D) in the Indian fisheries sector cover a wide range of areas such as post-harvest handling, processing, packaging, preservation, and value addition. These institutions work collaboratively with industry to develop innovative technologies that enhance production efficiency, minimize wastage, and improve quality and safety. Below listed are some of the prominent R&D institutions in the country working in the Indian fisheries sector across the value chain:

Table 9: Fisheries Institutes

FISHERIES INSTITUTES	DESCRIPTION
National Fisheries Development Board (NFDB)	It is an autonomous organization under the Ministry of Fisheries, Animal Husbandry, and Dairying, Government of India. Its main function is to promote and coordinate the development of the fishingindustry in India.
Central Institute of Fisheries Nautical and Engineering Training (CIFNET)	It is a premier national training institute in the field of fisheries and marine engineering, established under the Ministry of Fisheries, AnimalHusbandry, and Dairying. Its main objective is to impart training to personnel engaged in various activities related to the fishing industry.
National Institute of Fisheries Post Harvest Technologyand Training (NIFPHATT)	NIFPHATT headquartered at Kochi oversees all-round development of Post-Harvest Technologies. The institute works for research, training, and extension in post-harvest technology and management of fish and fisheries products. It provides training to stakeholders across the sector and conducts research onimproving the quality and safety of fish and fisheries products.
Fishery Survey ofIndia (FSI)	FSI serves as the nodal fishery institute in India with the primary responsibility of survey and assessment of fishery resources in the Indian Exclusive Economic Zone (EEZ) and adjoining areas for promoting sustainable exploitation and management of the Marine Fishery resources
Central Institute of Coastal Engineering for Fishery (CICEF)	It is a national-level institute under the Ministry of Fisheries, Animal Husbandry, and Dairying that focuses on research and development in the areas of coastal engineering and management, marine hydrodynamics, and fisheries engineering.
Coastal Aquaculture Authority (CAA)	It is a statutory body under the Ministry of Fisheries, Animal Husbandry, and Dairying, responsible for

	promoting and regulating the development of coastal aquaculture in India. It provides technical guidance, financial assistance, and monitors the implementation of coastal aquaculture activities.
ICAR Institutes	Central Institute of Fisheries Technology (CIFT) Central Institute of Fisheries Education (CIFE) Central Marine Fisheries Research Institute (CMFRI) ICAR - Central Inland Fisheries Research Institute (CIFRI) ICAR - National Bureau of Fish Genetic Resources (NBFGR) Central Institute of Brackishwater Aquaculture (CIBA) Institute of Freshwater Aquaculture CIFAICAR - Directorate of Coldwater Fisheries Research (DCFR)
Autonomous Bodies/ Boards	Tamil Nadu Fisheries University (TNFU) Kerala University of Fisheries and Ocean Studies (KUFOS) College of Fisheries, Mangalore Indian Council of Agricultural Research (ICAR)

Conclusion

The Indian seafood processing market has enormous growth and development potential. The Indian government is actively fostering the development of the Indian fisheries and aquaculture sector focusing on the processing sector through programs such as Pradhan Mantri Kisan Sampada Yojana (PMKSY) and Production Linked Incentive Scheme (PLI) under the Ministry of Food Processing Industries (MoFPI), Fisheries and Aquaculture Infrastructure Development Fund (FIDF), Pradhan Mantri Matsya Sampada Yojana (PMMSY), Pradhan Mantri Matsya Kisan Samriddhi Sah Yojana (PM-MKSSY) under the Ministry of Fisheries Animal Husbandry and Dairying. The Marine Product Export Development Authority (MPEDA) is a statutory body working with a primary objective to promote export of marine products by focusing on various aspects such as quality control, fixing of standards and specifications for marine products for purposes of export, regulating standards, market promotion of marine products outside India, establishing novel benchmarks in vessel design, storage facilities, processing plants, and transportation means etc.

Research institutes such as National Institute of Fisheries Post-Harvest Technology and Training (NIFPHATT) focuses on processing infrastructure, value addition, research, and development for the best post-harvest fish utilization and consumption with the least post-harvest losses, delivering the best quality fish and fish products. These interventions mostly aim at enhancing infrastructure, offering financial incentives, creating quality standards, and enabling market access for fish and fisheries products.

The regulatory framework, led by organizations such as the Food Safety and Standards Authority of India (FSSAI), the Bureau of Indian Standards (BIS), and the Agricultural Marketing Information and Regulation Department (AGMARK), maintains seafood processing operations' governance and quality control. This framework ensures customer safety, encourages standard adherence, and promotes trust in Indian fishery goods both domestically and abroad.

It is essential to follow sustainable fishing practices, promote environmental conservation efforts, and embrace responsible aquaculture approaches to foster profitability and longevity of the fisheries sector while mitigating potential adverse impacts upon the oceanic ecosystems.

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