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http://currentagriculturetrends.vitalbiotech.org/

**ISSN (E): 2583 – 1933**

*Curr. Agri.Tren.:e- Newsletter,* (2026) *5*(8), 10-14

Current Agriculture Trends: *e-Newsletter*

Article ID: 697

# Marine Products Export, Value Addition and Regulatory Framework in India: Opportunities for Blue Economy Development

**Swati S. Sharma**[1], **Kiran N. Patel**[2]

[1]Professor,
ASPEE Agribusiness Management Institute
Navsari Agricultural University,
Navsari – Gujarat

[2]Assistant Professor,
ASPEE Agribusiness Management Institute
Navsari Agricultural University,
Navsari - Gujarat



*Corresponding Author
**Swati S. Sharma***

**Article History**
Received: 24.07.2026
Revised: 29.07.2026
Accepted: 04.08.2026



## INTRODUCTION

The marine products sector has emerged as a strategic component of the global Blue Economy, contributing significantly to food security, nutritional well-being, employment generation, foreign exchange earnings, and sustainable economic development. Marine products include fish, crustaceans, molluscs, cephalopods, seaweeds, and other aquatic resources harvested through capture fisheries and aquaculture, along with a wide range of value-added products such as frozen, canned, dried, smoked, and ready-to-eat seafood. Growing consumer preference for protein-rich diets, rapid expansion of international seafood trade, technological advancements in aquaculture, and improvements in processing and cold-chain infrastructure have transformed the marine products industry into one of the fastest-growing sectors of the global economy.

India possesses immense comparative advantages in the marine sector owing to its coastline of approximately 11,098 km, an Exclusive Economic Zone (EEZ) of about 2.02 million sq. km, diverse marine ecosystems, and abundant fisheries resources. The country is the second-largest fish producer and among the world's leading exporters of seafood. Marine product exports contribute substantially to agricultural exports while supporting the livelihoods of millions of fishermen, fish farmers, processors, traders, and exporters. Frozen shrimp remains the dominant export commodity, followed by frozen fish, squid, cuttlefish, and other value-added seafood products, with major export destinations including the United States, China, the European Union, Japan, Southeast Asia, and the Middle East.

ISSN (E): 2583 – 1933

The increasing emphasis on value addition, sustainable fisheries management, seafood processing, marine biotechnology, traceability, and international quality certification has created new opportunities for enhancing India's competitiveness in global seafood markets. Simultaneously, regulatory institutions and policy initiatives play a crucial role in ensuring food safety, environmental sustainability, resource conservation, and compliance with international trade standards. The Government of India's focus on the Blue Economy through programmes such as the Pradhan Mantri Matsya Sampada Yojana (PMMSY), Fisheries and Aquaculture Infrastructure Development Fund (FIDF), and coastal infrastructure development has further accelerated the growth prospects of the sector.

**Marine Products Export Scenario**

Marine products constitute one of India's most important agricultural export commodities, contributing significantly to foreign exchange earnings, employment generation, and the development of the Blue Economy. Blessed with a coastline of over 11,000 km, an Exclusive Economic Zone (EEZ) of about 2.02 million sq. km, and abundant marine biodiversity, India has emerged as one of the leading seafood-exporting nations in the world. The country's marine export sector encompasses capture fisheries, aquaculture, seafood processing, cold-chain logistics, and value-added seafood products, thereby supporting millions of fishermen, fish farmers, processors, and exporters. Over the past two decades, India's seafood exports have expanded steadily owing to the rapid growth of shrimp aquaculture, modernization of processing facilities, adoption of international quality standards, and increasing global demand for protein-rich seafood. In 2024–25, India exported about 1.70 million metric tonnes of marine products valued at approximately ₹62,408 crore (US$7.45 billion), despite global market uncertainties, demonstrating the resilience and competitiveness of the sector. Frozen shrimp remains the largest export commodity, contributing nearly two-thirds of total export earnings, while frozen fish, squid, cuttlefish, dried marine products, and value-added seafood products also occupy an important share in the export basket. Indian marine products are exported to more than 130 countries, with the United States, China, the European Union, Japan, Southeast Asia, and the Middle East serving as the principal export destinations. Continuous improvements in quality assurance, traceability, sustainability certification, cold-chain infrastructure, and value addition are expected to further strengthen India's global competitiveness and enhance the contribution of marine exports towards sustainable Blue Economy development.

**Export Trends and Major Markets**

India has emerged as one of the world's leading exporters of marine products, with seafood exports playing a vital role in agricultural exports, foreign exchange earnings, employment generation, and coastal economic development. Supported by a vast coastline of approximately 11,100 km, an Exclusive Economic Zone (EEZ) of about 2.02 million sq. km, abundant marine biodiversity, and a rapidly expanding aquaculture sector, India has established a strong presence in the global seafood market.

Over the last two decades, India's marine exports have witnessed remarkable growth due to technological advancements in aquaculture, expansion of shrimp farming, modernization of seafood processing facilities, implementation of international food safety standards, and increasing global demand for high-quality seafood. The export basket has gradually diversified from traditional frozen fish to high-value products such as frozen shrimp, cephalopods, ready-to-cook seafood, and value-added processed products.

According to the Marine Products Export Development Authority (MPEDA), India exported approximately 1.70 million metric tonnes of marine products during 2024–

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25, earning nearly ₹62,408 crore (US$7.45 billion). Although export quantity showed slight fluctuations due to global economic slowdown, logistics costs, inflation, and geopolitical uncertainties, export value remained relatively stable because of increased demand for premium seafood products and improved unit realization.

**Composition of Marine Product Exports**

Among these, frozen shrimp contributes approximately 66% of total export value, making it the backbone of India's seafood export industry. Other important export commodities include ribbonfish, cephalopods, tuna, pomfret, mackerel, sardines, and ornamental fish. Frozen shrimp continues to dominate India's marine exports, contributing nearly two-thirds of total export earnings. India is presently among the largest suppliers of farmed shrimp in the global market.

The major export products include:

- Frozen shrimp
- Frozen fish
- Frozen squid
- Frozen cuttlefish
- Dried marine products
- Chilled seafood
- Live seafood
- Value-added seafood products
- Fish meal and fish oil
- Ready-to-cook and ready-to-eat seafood

**Major Export Markets**

Indian marine products are exported to more than 130 countries, reflecting the global competitiveness of India's seafood industry. Export destinations have diversified considerably over the years.

The major importing regions include:

**United States**

The United States remains India's largest seafood market in terms of export value. The country imports premium-quality frozen shrimp, particularly Vannamei shrimp, along with value-added seafood products. Strict food safety regulations enforced by the US Food and Drug Administration (USFDA) have encouraged Indian exporters to maintain high production and traceability standards.

**China**

China has emerged as one of India's largest seafood buyers, especially for frozen fish, ribbonfish, cephalopods, and raw materials for further processing. Demand from China has increased significantly due to rising seafood consumption and expanding processing industries.

**European Union**

The European Union represents a premium seafood market characterized by stringent sanitary and phytosanitary standards. Major destinations include Spain, Italy, Belgium, Germany, France, and the Netherlands. Indian exporters supplying to the EU are required to comply with HACCP, residue monitoring, traceability, and sustainability requirements.

**Japan**

Japan imports high-quality seafood products such as shrimp, squid, cuttlefish, tuna, and octopus. Product quality, freshness, packaging, and food safety are critical determinants for market access.

**Southeast Asia**

Countries including Vietnam, Thailand, Malaysia, Singapore, Indonesia, and the Philippines import both raw seafood for reprocessing and finished seafood products. Vietnam has increasingly become an important processing hub for Indian marine products.

**Middle East**

The Gulf countries, including the United Arab Emirates, Saudi Arabia, Oman, Kuwait, Bahrain, and Qatar, constitute an expanding market owing to increasing expatriate populations, rising disposable incomes, and growing seafood consumption.

**State-wise Export Performance**

Marine exports are concentrated in a few coastal states possessing advanced fishing infrastructure, aquaculture facilities, seafood processing units, and export-oriented industries.

The leading exporting states include:

- Andhra Pradesh
- Gujarat
- Kerala
- Tamil Nadu
- West Bengal
- Odisha

Among these, Andhra Pradesh dominates shrimp exports because of its extensive aquaculture production, whereas Gujarat contributes significantly through capture fisheries, cephalopods, ribbonfish, and dried fish exports.

**Marine Biotechnology Opportunities**

The growing demand for sustainable seafood, eco-labels, carbon-neutral production systems, and traceability-based certification provides significant opportunities for Indian exporters to enhance competitiveness in developed markets.

- Rich marine biodiversity provides immense scope for developing high-value bioproducts.
- Marine organisms are sources of bioactive compounds used in pharmaceuticals, nutraceuticals, and cosmetics.
- Growing demand for omega-3 fatty acids, marine collagen, fish protein hydrolysates, and bioactive peptides.
- Large-scale cultivation of seaweed and microalgae for food, biofuels, fertilizers, animal feed, and bioplastics.
- Development of disease-resistant fish and shrimp through biotechnology and genetic improvement.
- Use of probiotics, vaccines, and molecular diagnostics for sustainable aquaculture.
- Scope for marine-based enzymes, pigments, antibiotics, and industrial chemicals.
- Promotion of marine biotechnology startups through research, innovation, and public-private partnerships.
- Significant opportunities for export-oriented, value-added marine products under the Blue Economy.

**Regulations and Acts Governing the Marine Industry**

- **Indian Fisheries Act, 1897** – Prevents destructive fishing practices such as poisoning and use of explosives.
- **Environment (Protection) Act, 1986** – Protects marine ecosystems and coastal environments.
- **Water (Prevention and Control of Pollution) Act, 1974** – Controls water pollution affecting fisheries.
- **Wild Life (Protection) Act, 1972** – Conserves endangered marine species and biodiversity.
- **Coastal Aquaculture Authority Act, 2005** – Regulates environmentally sustainable coastal aquaculture.
- **Marine Fishing Regulation Acts (MFRAs)** – State-level laws governing fishing zones, licensing, seasonal bans, and mesh size regulations.
- **Food Safety and Standards Act, 2006** – Ensures food safety and hygiene in seafood processing.
- Compliance with international standards such as HACCP, SPS measures, traceability, and residue monitoring for exports.
- Regulations promote sustainable fisheries, environmental conservation, consumer safety, and export competitiveness.

**MPEDA and Marine Certification**

**Marine Products Export Development Authority (MPEDA)**

- Established in **1972** under the Ministry of Commerce and Industry, Government of India.
- Headquartered at **Kochi, Kerala**.
- Promotes export of marine products from India.
- Provides financial assistance, technical guidance, and market intelligence.
- Supports seafood processing, aquaculture development, cold-chain infrastructure, and export promotion.
- Organizes international seafood fairs and buyer-seller meets.
- Facilitates adoption of quality standards and traceability systems.

**Marine Certification**

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- Ensures food safety, quality, sustainability, and traceability.
- Major certifications include:
  - HACCP
  - ISO 22000
  - BRCGS
  - Best Aquaculture Practices (BAP)
  - Aquaculture Stewardship Council (ASC)
  - Marine Stewardship Council (MSC)
- Enhances market access, consumer confidence, and premium pricing in global markets.

**Opportunities under India's Blue Economy**

- Expansion of sustainable marine fisheries and aquaculture.
- Development of deep-sea fishing and mariculture.
- Promotion of seaweed cultivation and marine biotechnology.
- Growth in value-added seafood processing and exports.
- Rising domestic and international demand for healthy seafood products.
- Development of seafood parks, cold-chain logistics, and export infrastructure.
- Digitalization through AI, blockchain, satellite-based fish forecasting, and traceability systems.
- Employment generation for coastal communities, women, and youth.
- Promotion of eco-tourism, ornamental fisheries, and marine-based enterprises.
- Government support through Pradhan Mantri Matsya Sampada Yojana (PMMSY), Fisheries and Aquaculture Infrastructure Development Fund (FIDF), and Blue Economy initiatives.

**Challenges Affecting Marine Exports**

Despite impressive growth, India's marine export sector faces several challenges:

- Dependence on a limited number of export products, particularly shrimp.
- Heavy reliance on a few major importing countries.
- Frequent changes in sanitary and phytosanitary regulations.
- Residue and antibiotic compliance issues.
- Climate change and declining marine fish stocks.
- Disease outbreaks in shrimp aquaculture.
- High logistics and freight costs.
- Inadequate cold-chain infrastructure in certain coastal regions.
- Limited domestic value addition compared to competitor nations.
- Increasing competition from Ecuador, Vietnam, Indonesia, Thailand, and China.

**Future Outlook**

India's marine export industry possesses immense potential to become a major pillar of the country's Blue Economy. Greater investment in sustainable aquaculture, value-added seafood processing, cold-chain logistics, traceability systems, marine biotechnology, and digital marketing can substantially enhance export competitiveness. Diversification into emerging markets in Africa, Latin America, Central Asia, and Eastern Europe, along with product innovation and branding, will further strengthen India's position in the global seafood trade.

With effective policy support, improved infrastructure, sustainable resource management, and adherence to international quality standards, India is well positioned to achieve sustained growth in marine exports while simultaneously promoting employment generation, coastal livelihoods, foreign exchange earnings, and inclusive Blue Economy development.

## CONCLUSION

India's marine products sector plays a vital role in India's economy by contributing to exports, employment, food security, and foreign exchange earnings. With abundant marine resources, expanding aquaculture, increasing value addition, and strong government support, the sector holds immense potential for sustainable growth under the Blue Economy. Continued investment in technology, infrastructure, quality certification, research, and sustainable resource management will further enhance India's global competitiveness and establish the marine industry as a key driver of inclusive and environmentally responsible economic development.