

An Analytical Study of Marine Exports from India

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ABSTRACT

The paper focuses on the international trade aspect of the fisheries sector in the Indian economy. The sector has regained its prominence as it evolved as the largest group in Indian agricultural exports in recent times. The study showed that the exports of Indian marine products have grown remarkably over the past two decades. Crustaceans dominated the exports, followed by molluscs and frozen fish. Fish fillets have also experienced significant growth in both quantity and value, contributing a good share to total exports. Despite challenges in live fish exports, most marine product groups have shown substantial growth rates in quantity and value. India has established itself as a prominent player in the global fisheries market, bagging a remarkable 5% share, with increasing shares in crustaceans and molluscs exports. The sector's contribution to India's total agricultural exports and its status as a consistent net exporter underscore its importance in trade dynamics. The United States has been the primary importing partner, but the rise of Vietnam, China and Thailand as significant players in recent years highlights the evolving export destinations. It is necessary to diversify the exports, prioritize value addition, and take up export promotion measures and market intelligence support to sustain and enhance the growth of Indian marine products exports. The growth of Indian marine products exports benefits the economy, supports nutritional security, and provides livelihood opportunities for coastal communities.

Keywords: Marine products exports, Crustaceans, Molluscs, Frozen fish, Compound growth rate

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INTRODUCTION

The fisheries sector has been instrumental in developing the country's economy and it has played a crucial role in generating employment and income for millions nationwide and ensuring food security in the process. Off late, the sector has experienced significant growth and has recently emerged as the largest group in Indian agricultural exports (Kumar, 2004). The sector also contributes to economic growth through domestic consumption and export earnings. India is the world's 3rd largest fish producer and ranks 2nd in the world aquaculture production and 4th in the world capture fish production in 2020 (FAO, 2022).

As a maritime nation, India comprises vast resource potential due to its extensive coastline and Exclusive Economic Zones (EEZ). The country's coastline is spread over 8,118 kilometers, providing abundant opportunities for marine-related activities. India's EEZ covers more than 2 million square kilometers, providing exclusive rights to explore and exploit the marine resources within this zone (Department of Fisheries, 2021). India is also home to over 10% of the world's fisheries biodiversity. It has a continental shelf area of approximately half a million square kilometers, further enhancing India's resource potential in terms of resources and

biological diversity.

In 2021, Indian fish production reached 162.48 lakh tonnes, registering an average annual growth of 6.23% from 2019 to 2021. During 2021, the sector contributed 13.7 lakh crores (i.e., around 6.7%) to the total agricultural GVA (at constant prices 2011-12). In India, Gujarat, Kerala, Tamil Nadu, Andhra Pradesh and Karnataka were the top marine fish-producing states, and Andhra Pradesh was at the top in inland production, followed by West Bengal, Uttar Pradesh, and Odisha in 2021 (Department of Fisheries, 2022).

The international trade in fish and fishery products has been progressively growing in recent years. The mounting demand for fish and seafood products in Europe and America and the rising consumption in Asia and other developing regions are key drivers among the various factors contributing to the growth trajectory (Shinoj *et al.*, 2009). Notably, developing countries have emerged as the top seafood exporters in the international market in recent years (FAO, 2021). India's exports of marine products have a long history, which dates back to as early as 1938-39 (Anantharaju *et al.*, 2016). Nowadays, India has grown to be the fourth largest fisheries exporter in the world. It exports more than 50 different species

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of fish destined for more than 120 countries around the globe (Guledagudda, 2020).

During 2020, the fisheries sector's contribution to the overall GVA of the country was 1.09%. Therefore, international trade in the fisheries sector is significant in income generation through employment opportunities. Venturing into international trade allows fishermen and fish farmers to access larger consumer markets worldwide. It also encourages related industries such as processing, packaging, transportation, and marketing, further contributing to employment generation along the supply chain.

Indian fisheries exports have experienced notable changes over time regarding the quantity exported, the composition of the export basket and even the export destinations. Thus, it is crucial to gain a comprehensive understanding of the trends, dynamics, and market shifts in exports of the fisheries sector to develop proper perspectives about the sector's future prospects.

An attempt has been made to analyze the export performance of the sector, examining specifically the changes in the composition of exports, growth in export of various marine export product groups, and the sector's performance in countries of international trade and major export destinations over the past two decades.

MATERIALS AND METHODS

The study utilizes time series data on the export of marine products from India. The data on the marine products exports of India and the world were taken from the International Trade Center (ITC) and the United Nations FAOSTAT of the Food and Agriculture Organization from 2001 to 2021. The categorization of marine products used in this study was based on ITC Harmonized system codes up to the 4-digit level. All the values of exports were denominated in US thousand Dollars to escape the effects of exchange rate fluctuations, and quantities were referred to in tonnes to achieve uniformity.

Triennium averages were computed to study the composition of total marine products exported from India to minimize the influence of any random anomalies and short-term fluctuations. To study the contribution of Indian marine products exports to the Indian and world exports, per cent shares were calculated.

Compound annual growth rate analysis

To understand the trends in different categories of fish products exported from India, Compound growth rates were computed using the log-linear function of the form:

$$Y = AB^t$$

$$\log Y = \log A + t \log B$$

Let $\log Y = y$, $\log A = a$ and $\log B = b$

$$y = a + bt$$

$$r = (\text{antilog } b - 1) * 100$$

Wherever needed tabular analysis was done to achieve the other objectives of the study viz., examining specifically the changes in the composition of exports, growth in export of various marine export product groups, and the sector's performance in countries of international trade and major export destinations over the past two decades.

RESULTS AND DISCUSSION

Composition of export of Indian marine products

The export of different marine product categories in terms of export value and quantity were summarized in Table 1 for the study period from 2001 to 2021. The total marine products were classified based on the ITC HS codes up to the 4-digit level. Different categories under which marine products being exported from India were Crustacean (HS 0306), Molluscs (HS 0307), Frozen Fish (HS 0303), Fish Fillets (HS 0304) Fish-Dried/Salted (HS 0305), Fish -Fresh/Chilled (0302) and Live Fish (HS 0301). Table 1 depicts that the export of Indian marine products has increased tremendously over the last two decades. The value of exports increased from around 1.3 billion USD in TE 2003 to as high as around 6 billion USD. In terms of quantity, exports grew by more than double the quantity from around 0.5 million tonnes in TE 2003 to 1.14 million tonnes in TE 2021.

Looking at various export categories, all the categories except Fish (Fresh/Chilled 0302) and Live fish (0301) registered continuous increases in exports in terms of value and quantity exported over the study period. The Fish -Fresh/chilled export increased in quantity and value terms from TE 2003 to TE 2015. However, it declined in the later period. The value had increased from 136 million USD in TE 2003 to 858 million USD in 2015 and dipped to 531 million USD in 2021. In terms of quantity, it rose to 38 thousand tonnes in TE 2015 from a mere 9.5 thousand tonnes in TE 2003 and fell to 27 thousand tonnes in TE 2021.

In the case of Live Fish exported from India, exports fluctuated over the study period. The decline in export quantity was more pronounced than the value. The quantity of live fish exported has declined from 162 tonnes in TE 2003 to as low as 65 tonnes in TE 2006, which increased slightly to 403 tonnes in 2018 but again declined to 157 tonnes in 2021. The export value, though, has declined from 17 million USD in TE 2003 to 14 million and further to 11 million USD in TE 2006 and TE 2012; it increased in the later period and reached 28 million USD in TE 2021.

Over the entire study period, Indian marine products exports were dominated by export item Crustaceans (0306) followed by Molluscs (0307) and Frozen Fish (0303). In TE 2003, the crustacean exports alone constituted a share of 36% by quantity and 70% by value in total sector exports. The exports of crustaceans have tremendously increased over the study period from 0.1 million tonnes in TE 2003 to around 0.6 million tonnes in TE 2021 in quantity terms. The share of crustaceans in total exports of the sector also raised from 36% in TE 2003 to 55% in 2021 in terms of quantity which was more pronounced than the rise in shares from 70% in 2003 to 76% in TE 2021 in terms of export value.

The quantity of Molluscs exports increased from 62 thousand tonnes in TE 2003 to 0.6 million tonnes in TE 2021. Moreover, in terms of value, it increased from 12 billion USD in TE 2001 to 64 billion USD in TE 2021. Although its exports have significantly increased over the period, its share in total exports of the sector remained more or less constant, hovering around 13 to 19% in quantity and 10 to 16% in export value. Meanwhile, frozen fish export declined to 19% in TE 2021 from a huge share of 45% in TE 2003, making frozen fish the second major export item during 2003.

Table 1: Composition of exports of Indian marine products

Categories (ITC HS based)		2003	2006	2009	2012	2015	2018	2021
Crustacean (0306)	Q	169334 (36.29)	176454 (40.24)	134998 (33.04)	233627 (28.45)	339811 (37.09)	527166 (44.98)	623259 (54.64)
	V	894960 (69.75)	917875 (67.34)	822039 (57.42)	1502834 (52.08)	3335280 (66.84)	4279419 (70.33)	4605028 (75.97)
Molluscs (0307)	Q	62802 (13.46)	82273 (18.76)	79192 (19.38)	147602 (17.98)	173872 (18.90)	188610 (16.09)	164643 (14.43)
	V	124808 (9.70)	189416 (13.90)	225343 (15.74)	495373 (17.17)	563771 (11.30)	753447 (12.38)	647490 (10.68)
Frozen Fish (0303)	Q	208285 (44.64)	153415 (34.99)	135648 (33.20)	334481 (40.71)	291482 (31.81)	323545 (27.60)	211129 (18.51)
	V	227066 (17.67)	195008 (14.31)	276940 (19.34)	658764 (22.83)	678567 (13.60)	693588 (1140)	439454 (7.25)
Fish Fillets (0304)	Q	9411 (2.02)	8496 (1.94)	28606 (7.00)	69583 (8.47)	66500 (7.26)	96284 (8.21)	100484 (8.81)
	V	16340 (1.27)	26194 (1.92)	61902 (4.32)	159827 (5.54)	145171 (2.91)	218505 (3.59)	239810 (3.96)
Fish -Dried /Salted (0305)	Q	7230 (1.55)	6831 (1.56)	8699 (2.13)	10459 (1.37)	5928 (0.65)	10569 (0.90)	13264 (1.16)
	V	8709 (0.68)	10484 (0.77)	12827 (0.90)	18884 (0.65)	35433 (0.71)	77735 (1.28)	72727 (1.20)
Fish -Fresh /chilled (0302)	Q	9363 (2.01)	10957 (2.50)	21291 (5.21)	25212 (3.07)	38346 (4.19)	25547 (2.18)	27743 (2.43)
	V	13617 (1.06)	22674 (1.66)	30196 (2.11)	48990 (1.70)	85845 (1.72)	59208 (0.97)	53135 (0.88)
Live Fish (0301)	Q	162 (0.03)	65 (0.01)	140 (0.03)	135 (0.02)	119 (0.01)	403 (0.03)	157 (0.01)
	V	1726 (0.13)	1463 (0.11)	2433 (0.17)	1190 (0.04)	1926 (0.04)	1630 (0.03)	2800 (0.05)
Total	Q	466586 (100)	438491 (100)	408574 (100)	821098 (100)	916058 (100)	1172124 (100)	1140680 (100)
	V	1287278 (100)	1363113 (100)	1431681 (100)	2885861 (100)	4990011 (100)	6084864 (100)	6061745 (100)

Source: International Trade Center (2014).

A similar scenario was observed, with their exports' value declining to 7% in TE 2021 from 18% in TE 2003. As a result, Molluscs exports bagged the second position by constituting a share of 11% in terms of value in total exports of the sector during TE 2021. The exports of fish fillets showed a significant increase from 9.4 thousand tonnes in TE 2003 to 0.1 million tonnes in TE 2021 in quantity, and in terms of value, it increased from 0.1 billion USD in TE 2003 to as high as 2.3 billion USD in TE 2021. This has resulted in a great surge in the share of fish fillets in the sector's total exports from 2 to 9% in quantity terms and 1 to 4% in value terms from TE 2003 to TE 2021.

Growth in exports of Indian fisheries products

Compound growth rates (CAGR) were calculated and presented in Table 2 for the different export items constituting

total exports of the fisheries sector. The growth rates were calculated for export value, physical quantity, and unit value for the study period from 2001 to 2021.

The table depicts that all the export items grew significantly in terms of quantity and export value except Live Fish exports. The unit value realized from exports also registered positive and significant growth for all the export items but with few exceptions. The annual growth was observed to be highest for the exports of Fish fillets, with a significant rate of 16.8 % per annum in quantity and 17 % per annum in value. However, the unit values did not grow significantly over the period. The export of crustaceans was found to be growing at a rate which was the second highest. It grew at an annual rate of 8.7 % in quantity and 11.7% in value of exports. Their unit values grew at a significant positive rate of 2.7%.

Meanwhile, Molluscs exports registered an annual growth of 6.5 % in quantity and 10.8% in value of exports and their unit value grew at an annual rate of 4 % which was significant. The growth in the export of fish (dried) group and fish (fresh/chilled) was seen to be more pronounced in terms of the value of their exports rather than the quantity exported.

The value of exports of the fish (dried) group grew at an annual rate of 14.5%, and their unit value registered the highest annual growth of 11.2%, while their quantity grew merely at the rate of 2.8% per annum. The value of export of fish (fresh/chilled) grew at an annual rate of 8.6% while their quantity grew at 6.9% per annum; however, their unit value did not grow significantly.

Table 2: Growth Trends in the Export of Fisheries Products from India (2001-2021)

Compound growth rates (CAGR) in per cent			
Export Items (ITC HS based)	Quantity	Value	Unit Value
Crustacean (0306)	8.72*	11.70*	2.73*
	(-0.01)	(-0.01)	(-0.01)
Molluscs (0307)	6.55*	10.82*	4.01*
	(-0.01)	(-0.01)	(0.00)
Frozen Fish (0303)	2.99*	6.76*	3.67**
	(-0.01)	(-0.01)	(-0.01)
Fish Fillets (0304)	16.75*	17.04*	0.24 ^{NS}
	(0.02)	(0.01)	(0.01)
Fish-Dried/Salted (0305)	2.86*	14.51*	11.27*
	(0.01)	(0.01)	(0.01)
Fish-Fresh /chilled (0302)	6.93*	8.64*	1.53 ^{NS}
	(0.01)	(0.01)	(0.01)
Live Fish (0301)	4.23 ^{NS}	1.42 ^{NS}	-2.71 ^{NS}
	(0.02)	(0.01)	(0.02)
Total	6.73*	11.04*	4.05*
	(0.01)	(0.01)	(0.01)

*Figures in parentheses indicate standard errors.

Nevertheless, the value of total exports of the sector grew at an annual rate of 11% while the total export quantity grew by 6 per cent annually. Their unit value grew at a significant annual rate of 4% for 21 years.

Share of Indian major marine products export in world trade

Table 3 presents India's share in the world exports of major fisheries product categories over different years. It can be perceived from the table that Indian crustacean exports maintained a substantial share of the world crustacean market. The share of crustacean exports initially declined from 7.3% in TE 2003 to 5.4% in TE 2009. However, it increased continuously and reached around 15% in 2021. This point to the remarkable performance of Indian crustacean exports over the last two decades.

In the case of Molluscs exports, India has increased its share in the world market for Molluscs from 2.5% in TE 2003 to around

Table 3: India's share in world trade of major marine products

Years	Crustaceans (0306)	Molluscs (0307)	Frozen Fish (0303)	Total fisheries
2003	7.30	2.50	2.53	2.90
2006	6.63	3.03	1.60	2.33
2009	5.40	3.13	1.90	2.03
2012	7.90	4.83	3.17	3.10
2015	13.50	4.93	3.00	4.70
2018	15.20	5.57	2.97	5.13
2021	15.03	4.93	1.87	4.90

*Figures indicate TE average shares in value terms.

5% in TE 2021, indicating significant improvement in the molluscs' exports over the period. The Frozen fish exports of India indicated mixed trends in their share of the world market over the study period. It hovered around 2.5% over the study period.

However, in the world fisheries exports scenario, Indian fisheries products have significantly improved, especially over the past decade. The share of Indian fisheries has increased to 4.9% in TE 2021, a rise of over 3% from 2.03% in TE 2009 throughout the decade. This throws light on the fact that Indian fisheries possess huge potential. However, by and large, Indian marine exports remain a raw material supplier to foreign processors and lag behind other Asian countries (Shyam *et al.*, 2004). With a rising share in the world export market, given a further thrust to value addition and product development, it may significantly influence international market equilibrium besides the production levels. It may also greatly help to enhance nutritional security all around the world.

Performance of fisheries sector in Indian international trade

Data on various indicators of the trade performance of the Indian fisheries sector are summarized in Table 4, which highlights the significance of fisheries as an integral component of agricultural exports. Over the past two decades, the percentage share of fisheries exports in total agricultural exports ranged from 10 to 25%. The fisheries sector's contribution to India's total merchandise exports has consistently remained around 1 to 2.5%.

Table 4: Share of fisheries exports in agricultural and merchandise exports of India.

Year	Per cent share of Indian fisheries exports		Imports as per cent of Exports
	Agricultural Exports	Total merchandise exports	
2003	24.16	2.44	0.69
2006	16.49	1.35	1.45
2009	9.38	0.87	2.87
2012	11.04	1.04	2.74
2015	14.74	1.66	1.14
2018	20.78	2.05	1.30
2021	17.92	1.84	2.15

*Figures indicate TE average shares in value terms.

Notably, India has consistently been a net exporter of fish and fish products over the study period. Imports of fish and fish products comprised only a negligible proportion of total fisheries export value, as depicted in the last column of Table 4.

The ratio of the value of fisheries imports to fisheries exports varied over the period, hovering around 1 to 2.8%. From this, it can be perceived that the fisheries sector has made a remarkable contribution to India's foreign exchange reserves.

Major importers of Indian fisheries products

India exports fisheries products to many countries around the world. Exports to a particular country depend on various economic, political, and geographical factors. To determine the top importers of Indian fisheries exports over the study period, individual importers' shares in Indian total fisheries exports were estimated. The triennium averages of shares in value terms are presented in Table 5 for the entire study period.

Over the past two decades, the United States of America (USA), Japan, China, Vietnam, Thailand, Belgium, Spain, and the UK emerged as the top importing countries for Indian fisheries products. The USA has consistently been the number one importer of Indian fisheries products. Throughout most of the TEs, its share accounted for more than 25 per cent, with a few exceptions. For instance, TE 2003 constituted around 25.6 per cent of India's total fisheries exports, which dropped to 14.3% in TE 2009. However, it rebounded to 17% in TE 2015 and substantially increased to 39.7% in TE 2021.

Upon careful examination of the table, it becomes evident that Vietnam and China have become prominent players in recent years. Japan initially held the second position from TE 2003 to TE 2012 but later moved to the third position as Vietnam

surpassed its share. China held the third position in TE 2003 and 2006, but its share steadily declined, eventually dropping out of the top five rankings in TE 2015. Nevertheless, China's share saw resurgence, reaching 4.56% in TE 2018, and it further increased to 18.2% in TE 2021, positioning itself in the top second position.

The share of Spain has fluctuated between the fourth and fifth positions since TE 2003, while Belgium's share consistently declined over the years. Spain and Belgium lost their positions as Vietnam and Thailand began gaining a larger share of fisheries products exported from India. These shifting dynamics of export destinations highlight the changing landscape of India's fisheries exports, with Vietnam and Thailand gaining a larger market share.

CONCLUSION

The study showed that the exports of Indian fisheries have shown remarkable growth over the past two decades. Crustaceans dominated the exports, followed by molluscs and frozen fish. Fish fillets have also experienced significant growth in both quantity and value, contributing a good share to total exports. Despite challenges in live fish exports, most export items have shown substantial growth rates in terms of quantity and value. India has established itself as a prominent player in the global fisheries market, with increasing shares in crustaceans and molluscs exports. The sector's contribution to India's total agricultural exports and its status as a consistent net exporter underscore its importance in trade dynamics. The United States has been the primary importing partner, but the rise of Vietnam, China and Thailand as significant players in recent years highlights the evolving export destinations.

It is important to explore and tap into other potential markets apart from dominant markets like the USA, China, Japan, etc.,

Table 5: Top destinations for Indian fisheries exports

Year/Rank	First	Second	Third	Fourth	Fifth
2003	UAS (25.66)	Japan (24.1)	China (7.4)	Spain (5.4)	UK (4.8)
2006	USA (24.5)	Japan (17.6)	China (7.83)	Spain (7.60)	Belgium (6.90)
2009	Japan (14.93)	UAS (14.36)	Spain (8.60)	China (7.00)	Belgium (6.20)
2012	UAS (17.80)	Japan (12.16)	Vietnam (11.83)	China (7.73)	Spain (5.83)
2015	UAS (26.03)	Vietnam (20.33)	Japan (8.50)	Spain (3.6)	Belgium (3.8)
2018	UAS (30.13)	Vietnam (23.23)	Japan (6.76)	China (4.56)	Thailand (4.20)
2021	UAS (39.70)	China (18.20)	Japan (6.90)	Vietnam (4.76)	Thailand (3.44)

*Figure in parenthesis indicate TE averages of per cent shares in value terms

to sustain and enhance the growth of Indian fisheries exports. Efforts should be made to diversify export destinations to help reduce dependence on a single market and avoid risks associated with market fluctuations.

Focusing on value addition can help capture higher-value markets and increase export earnings. Providing export promotion and market intelligence through export promotion programs, including trade fairs, buyer-seller meets, and

training programs to enhance export capabilities and market knowledge among fisheries exporters can help India to further tap into the potential of its fisheries sector, increase market share, and contribute to foreign exchange reserves. The growth of the fisheries sector not only benefits the economy, but also supports nutritional security and provides livelihood opportunities for coastal communities.

REFERENCES

- Anantharaju V, Kumar R, Rahangdale S, Naveen Kumar BT, Abdul Azeez P and Kranthi Kumar D. 2016. Indian seafood export: trends, forecast and market stability analysis. *Indian Journal of Ecology* **43**:793-796.
- Department of Fisheries. 2021. *Annual Report 2021-22*, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India. Retrieved from https://dof.gov.in/sites/default/files/202204/Annual_Report_2021_22_English.pdf.
- Department of Fisheries. 2022. Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Government of India. Handbook on fisheries statistics-2022. Retrieved from: <https://ruralindiaonline.org/en/library/resource/handbook-on-fisheries-statistics-2022>.
- FAO. 2021. FAO Yearbook. Fishery and Aquaculture Statistics 2019. Food and Agriculture Organization of United Nations United Nations, Rome. <https://doi.org/10.4060/cb7874t>
- FAO. 2022. *The State of World Fisheries and Aquaculture 2022, Towards Blue Transformation*. Food and Agriculture Organization of United Nations, Rome. <https://doi.org/10.4060/cc0461en>.
- Guledagudda SS, Reddy SV and Paled MP. 2020. Analytical Study on Indian Fisheries Sector: Trends in Trade Performance. *Journal of Economics, Management and Trade* **26**(11): 54-65.
- International Trade Centre. (2014). ITC - Trade Impact for Good. <https://intracen.org>.
- Kumar A. 2004. Export performance of Indian fisheries: Strengths and challenges ahead. *Economic and Political Weekly* pp. 4264-4270.
- Shinoj P, Kumar Ganesh B, Joshi PK and Datta KK. 2009. Export of India's Fish and Fishery Products: Analyzing the Changing Pattern/Composition and Underlying Causes. *Indian Journal of Agricultural Economics* **64**(4): 541-556.
- Shyam SS, Sekhar C, Uma K and Rajesh S R. 2004. Export performance of Indian fisheries in the context of globalization. *Indian Journal of Agricultural Economics* **59**(3): 446-464.

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