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TBT Stipulations and Stakeholder Responses: Repercussions in the Sea Food Sector of India and the Tuning up Process in the State of Kerala

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Abstract
Sea food is a globally traded product. The trading is mostly from the developing to the developed countries. The very basic factor beholding this is the income elasticity driven demand from the affluent consumers of the developed world. The rich fishery resource availability of the developing countries has helped to become the major beneficiaries of this trade process. The rich resource of India and Kerala have indeed helped in reaping this benefit. However, the post WTO period also witnessed big transformation in the fishery trade with more stringent restrictions, regulations and quality assurance practices mostly imposed by the importers of seafood. These include strict quality standards stipulations, technical barriers and non-tariff barriers imposed by the developed economies towards seafood exports. In these, TBT measures and SPS standards have differently been treated by different importers in the EU, Japan and the US and this is stipulated mostly for the prime export item of Kerala the shrimp. Though it has affected every seafood exporter globally, its repercussion in India and Kerala is also big as these measures have been detrimental to the progress of the export sector. India could soon try to galvanize these issues. The result is that India has come out from the shackles of TBT conundrums. But the fact is that when one of the issues is settled, the EU and the US are coming with newer stipulations. The paper tries to addresses the fisheries trade with the existing theoretical framework. It also gives an overview of various agreements prevailing in the seafood export sector with the aid of secondary information.
Keywords: Fishery Trade, Technical Barriers to Trade (TBT), Non-Tariff Barriers (NTB), Trade agreements, Sanitary and Phytosanitary, Codex, WTO.
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1. Introduction

The fishery trade becomes important in terms of foreign exchange earnings for the developing countries. It is of twin effects, firstly of its nutritional value and health aspects and secondly owing to the high-income elasticity of demand of the fish-eating population of the developed economies. Recently, the markets of the emerging economies like China and Gulf have made further impetus of fishery trade. The beneficiaries of this transformation have been the developing countries with a good harvest and aquaculture sectors. The Indian fishery sector also witnessed tremendous transformation during this period with considerable amount of export earnings from seafood export as it grew from a subsistence one to an export-oriented modern sector. Kerala has also benefitted from this as Kerala has good potential in exportable species and a prominent marine product producer and processing state in India. Post WTO period also witnessed big transformation in the fishery trade with more stringent restrictions, regulations and quality assurance practices mostly imposed by the importers of seafood. These include TBT measures, and SPS standards which have differently been treated by different importers in the EU, Japan and the US and this is stipulated mostly for the export item of Kerala the shrimp. Change of GATT to WTO has led to a reduction in tariff barriers, but technical and non-tariff barriers like quality standards, anti-dumping, sanitary and phytosanitary measures like, antibiotic residue, heavy metals residue and US Bioterrorism Law by the developed countries have far reaching implications in the seafood export units in Kerala. Technical barriers to trade (TBT) per se is mostly stipulated as government administrative measures for environmental protection, safety, national security, and consumer interests, which have increasing impact on international trade. With the setting up of WTO, the processors and exporters of the developing countries faced huge challenges so as to adhere to the quality standards, technical barriers and non-tariff barriers imposed by the developed economies towards seafood exports. Though it affected every seafood exporter globally, its repercussion in India and Kerala is also big as these measures have been detrimental to the progress of the export sector. India responded quickly and hence Kerala too had to meet the challenges of the seafood sector conundrum. Initially the state faced some rejections of the consignment of the EU and the US, but soon the processing industry sets its standards, though with a high cost, with the government of India, MPEDA and

Export Inspection Agency. The challenges faced by the seafood exporters and processors in the state in the background of importers challenges of quality standards and the wherewithal of its addressing mechanisms are indeed significant.

1.1 WTO and trade agreements in fisheries

A thorough change has been identified in international trade regimes with the formation of the World Trade Organization (WTO) in 1995. The WTO was established under the aegis of the final Uruguay round of multi-lateral trade agreements which consummated in the Punta del Este, Uruguay in September 1986 and further concluded in Marrakesh, Morocco in April 1994. The WTO succeeded the long-standing General Agreement on Tariffs and Trade (GATT). Liberalization of trade as per WTO agenda has resulted in higher export of fish and fisheries products by the developing countries to the developed countries with mutual benefits. However, higher foreign exchange earnings have resulted in over-exploitation of fisheries resources with requisite quality stipulated by the developed countries resulted in the impetus in the fishery trade in the initial stages. Subsequently newer stipulations and quality consciousness of the buyers slowly witnessing wide changes in quality stipulations mostly based on WTO rules and even some importers have started their own quality standards and stipulations. This has led to the need to regulate the sector in terms of quality and safety standards. Moreover, stipulating with the need of the importers highlighting the need for food safety and quality became binding with respect to the Agreement on the Application of Sanitary and Phytosanitary (SPS) and again as measures relating to the Agreement on Technical Barriers to Trade (TBT Agreement). These agreements subsequently became not only coroner stones but it also could play a major blow to most of the fishery exporters. The major advantages in either case (TBT and SPS) is to provide technical assistance to the developing countries as well as in extending/providing a longer deadline or time frame to adhere to and implement quality standards. This is more for the products exported from the developing countries in general and the least developed countries in particular. Though the fisheries trade liberalization under the ambit of WTO has brought in opportunities to the developing economies, the challenges and threats which are arising out as safety and quality standards are really working as major hurdles. To assist the exporters in adhering to the TBT and SPS stipulations, the WTO has an alert system, which issues notifications to the WTO members. This is done in the platform of the SPS/TBT agreements of the WTO under the sponsorship of the and the benchmarking role of the Codex. The tragedy befalls mostly to the resource scarce and technical know-how poor developing nations who are always in a disadvantageous position in this regard. There are instances that the TBT stipulations are misused to the importing countries by unnecessary restrictions to regulate the imports so as to protect the domestic producers. However, the agreement conceptualizes a balance between protection of human and environment without imposing unnecessary restrictions. Though the importance of the TBT stipulations cannot be ruled out, it is a fact that they can vary based on country. As far as the exporters are concerned, such a variation is a nightmare for them to adhere to. Biased and arbitrary application of standards by the importers can impede trade and can lead to protectionary practices. Abolition of the tariff barriers means in a way is intensified the application and intensity of the TBT and this has been severely impacting trade of fishery products from the developing countries with the issue of the increasing number of TBT notifications. This is contrary to the original intension of the formation of WTO. This has increased the production and processing cost of the exporters, which acts as a major drawback of the TBT, whereas it helps in improving the quality of the products. This implies that a better or well-equipped competitor exporter will only survive in the market, an espousal of trade in the game theory perspective.

2. Theoretical framework and literature

In fisheries sector, international trade theory implies that the fisheries resources can be optimally utilized to the world through free and unhindered trade. The basic of international fishery trade is linked with the ‘resource-based theory’ which gives an idea of distributing fishery resources from poor country to rich country. However, free trade in fisheries is often hindered by tariff and non-tariff barriers. Those who propound free trade quote ‘Environmental Kuznets Curve’ (EKC) which states that there is an increase in environmental damage in early stages of growth which eases down as there is increase in national income (Harris and Roach 2017). The trade regulations by the importing countries, by and large, may end up with contradictory basis of the WTO rules like TBT, rules of origin, subsidies, eco-labelling and anti-dumping etc. Depending on how broadly protection of human health and the environment are interpreted, efforts to promote marine conservation leads to a proliferation of trade restrictions that are allowable under WTO rules (Asche and Smith, 2010). Several economic models are available to access the issues of TBT on fishery trade. Seminal works in this regard are that of Henson and Loader (2001) and that of Petrey and Johnson, (1993); Ndayisenga and Kinsey (1994); Sykes (1995); National Research Council (1995); Hillman (1997); Thilmany and Barrette (1997); Digges, Gordon and Marter (1997); Jaffee (1999).

3. Materials and methods

The study primarily uses secondary information pertaining to fisheries trade, NTMs and various development schemes targeting marine products exporters from the country to adhere to the stipulations imposed by the seafood importers so as to minimize or reduce rejections of consignments. The major sources of secondary information are FAO Fishstat, WTO Integrated Trade Intelligence Portal, UNIDO Trade Compliance Database and MPEDA.

4. Fishery trade scenario and discussions

Global fisheries trade has had a hoary history and it is the mostly traded product globally, comes to more than 30 percent in the agricultural and allied sectors. In the fishery sector itself, more than 50 percent of the harvested resources are going in the international trade channels and in this around 55 percent of the seafood entering into trade are from developing countries. In the past, perishability factor along with the fact that drying and processing of fish was costly, time consuming and mostly inefficient and hence limited the volume of trade (Asche and Smith 2010). But technological change and use of modern harvesting and processing technology made the global fisheries sector to expand in manifold levels over the past three decades and production, trade and consumption reached all-time high in 2018 as per the FAO statistics. Though the technological innovations like better craft-gear combinations, storage facilities and other fishing infrastructure helps in opening up of economies for free trade, has helped the fishermen and the export processing units in enhancing production, the technical standards and stipulations imposed by the importers changed the very nature of the seafood export sector.

High export demand that is generated globally, the price of fishery products is showing a positive trend and this is expected to continue at least until 2030. Though such a trend is identified, it is estimated that compared to the past decades, growth in fishery trade will be changing its trajectory. The data on global fishery trade for three time periods is shown in Table 1. The total export was at 22 million tons in 1996 which increased to 57 million tons in 2010 and subsequently to 67.1 million tons in 2018. In value terms, the market has expanded manifold levels during the period. From $ 52.5 billion in 1996, the trade market showed more than three times increase to $ 164.1 billion which is a CAGR of 5.32 percent during the period. The latest share of exports in total fish production is 37.6 percent (FAO 2020). This shows that, though there was an increase in exports, production also increased especially in the aquaculture front which was just enough to cater to the higher export demand.

4.1 India-Kerala situations

With a coastline of 8118 kms with 2.02 million sq. km EEZ and 0.53 sq. km of continental shelf area, total fish production in India as per the 2019-20 statistics is 14.16 million metric tons. The fisheries sector contributed 212915 crores in GVA terms to the India economy during 2018-19. Globalization in the fisheries sector through mechanization and modernization of crafts and gears along with the export orientation has brought in tremendous progress unleashing the sector as one of the most export concentrated resource-based sectors in the country. As per the MPEDA, there are 1337 marine product exporters in the country, out of which 642 are manufacturer exporters, 552 are merchant exporters and 100 are routing through merchant exporters. Kochi (203), Kolkata (189) and Veraval (172) are the regions with highest number of exporters.

Table 3 depicts the marine products exports from India. Seafood exports from India are to the tune of 1289651 tons and thereby bringing foreign exchange worth Rs. 46662.85 crores during 2019-20 which decodes to 6678.69 million USDs. The unit value is Rs. 361825.42 per-tons and Unit Value Index is 14521.01. Since 1995-96, there has been a tremendous increase in marine products exports both in terms of quantity and value, the exports in terms of quantity increased from 296277.0 MT in 1995-96 to 813091.0 MT in 2010-11 and further to 1289650.9 in 2019-20. The total value of marine products exported also showed an increase during the period under review from Rs. 3501.11 crores in 1995-96 to Rs. 46662.85 crores in 2019-20. However, a meagre decline in 2020-21 seafood export data was witnessed due to the outbreak of Covid-19 pandemic. Despite this slowdown, the overall data reveal that both in terms of quantity and value, the export of marine products from India have shown an increase. This is because of the cost advantage possessed by the Indian fishery exporters and the ability to adhere to stringent quality standards stipulated by the importing countries.

Kerala seafood is globally acclaimed, particularly the export of shrimp and other crustaceans. This is because the state has a vast coastline of 590 km and a highly productive continental shelf area of 39139 square km. Fish production is 6.8 lakhs MT out of which 4.75 lakh MT is from the marine and 2.05 lakh MT is from the inland sector (GoK, 2019). One of the important aspects in the fisheries sector of Kerala is the fact that the sector contributes immensely to the export earnings of the state. Globalization in the form of Indo-Norwegian project of the fishing sector in the 1950s has enormously helped in this export orientation. Though WTO stipulations and quality standards and TBT restrictions on the part of the EU, the US and Japan had initial setbacks, soon it had been realized the need for and importance of compliance of these standards for the uninterrupted flow of export of the seafood products from Kerala, resulted in quality improvement and standards and thereby recoup the lost

markets of the seafood export products from Kerala. The total marine product exports of the state stood at 148227 tons in 2019-20 with a value of Rs. 5020.34 crores (Table 3). There has been a tremendous increase in the seafood exports from Kerala during the three review periods i.e., 1995-96, 2010-11 and 2019-20. Kerala is the leader in terms of number of export processing units in the country out of the 15 regions and this is because Kerala up to 1980 was the major marine products producing and exporting states in India and because of this most of the central institutes connected with research, production, technology and export of marine harvest and post-harvest sectors are located in Cochin (MPEDA, 2021).

4.2 NTMs in fisheries sector

Unlike other global trading products, trade barriers hinder the trade of fishery products the most. NTMs is more in the trade supply chain, which can be defined as the trade costs connected with policy and incurred from production to final consumption. The NTMs exclude any kind of tariff rules. The major NTMs include SPS, TBT and pre-shipment inspections. The three major markets where India exports fishery products are the EU, US and Japan (MPEDA, 2021). The EU has imposed some hygiene related quality standards to restrict food imports under the pretention of safety of the consumers. The quality standard compliance has been satisfactory on the part of export processing units from India as the Export Inspection Agency conducts visits and tests to make sure that the units coming for export set quality standards during processing. Japanese agencies evaluate the quality, and in most of the time 50 or even 100 percent of the cargo will be tested so as to overcome quality failure in the export chain. The implementation of the regulation is done through bilateral agreement. The United States Food and Drug Administration (USFDA) through the Food Protection Plan (FPP) regulates the quality of the seafood imported to the country. The US has the highest number of rejections of seafood imported from India compared to the other two major markets. Most of the fish and fishery products exported are impacted by one NTM or the other. Only less than 6 percent of the exporters face 1 NTMs, whereas majority of exporters are faced with 2-4 NTMs. This is high compared to the non-fish product NTMs, as one-fourth of the trade is not impacted by any NTM. In particular, the fish products from developing or the least developing countries are mostly impacted by the NTMs imposed by the developed nations. In this case, Japan and the US are prominent imposers of NTMs. It is also estimated that the impact of imposition of NTMs larger versus smaller firms, in the case of larger firms may find it easy to comply with the regulations, whereas the smaller firms find it difficult to comply the restriction owing to financial and monetary constraints.

Over a period of time, the number of NTMs have shown an increase as per the WTO data. The WTO has identified 1486 SPS measures and 1584 TBT measures notified by the member countries for fish and fishery products (HS Codes – 03, 1604 and 1605). Compared to 2010 data which showed 484 SPS and 324 TBT measures, which shows that the number of standards has increased. This is an indication of the ever-changing problems and challenges faced by the seafood exporters-especially the small-scale units in developing countries in adhering to the compliance requirements. The year-wise TBT and SPS measures imposed on fish and fishery products during the period 2010-21 are shown in Figure 1.

4.3 Rejection of India's marine product exports

Compared to other exporters, India has a rejection rate of 0.320 per million-dollar of export value. Other than Vietnam, which has a higher ratio, other exporters have a lower rate of rejection compared to India (Figure 2).

During 2010-18, 150 consignments have been rejected on an average every year. Year-wise number of rejections (Figure 3) show that there has been an increasing trend and of course with high level of variations. From 75 in 2010, the number of rejections increased to 209 in 2012. Then it declined to 117 in 2013 and further increased in 2016 to 222. Number of rejected consignments have been coming down and in 2018, it stood at 164.

Reasons for rejections are shown in Figure 4. The major grounds for rejection are bacterial contamination, hygiene failures and veterinary drug residues, which accounts for 87 percent of rejections during 2010-18. But bacterial contamination, hygiene failures and veterinary drug residues are the major reasons for rejection for nearly 90 percent of seafood export consignments as per the latest data, near to 41 percent of rejections happened due to bacterial contamination.

The major outcome of rejections to the exporter is financial loss and reputation of the firm. In this respect the burden befalls high for small export units. This is because the exporters consignments are rejected are in a way excluded from the market and these firms are also subject to stringent quality checks including additional verifications with higher sampling rate. Such a measure though happens at the firm, it effects the country of origin of the firm as the consignments from all exporters from a rejected country are prone to increasing scrutinizing. The cost of testing in such cases falls on to the exporter, the EU is a classic example in this case for the India exporters. In the case of India, the imposition of quality standards met with severe impact on the exporters initially as they had to upgrade the facilities and standards at the firm level. Non-compliance may also result in a complete ban for the country concerned. Compliance with the quality standards and minimizing or reducing rejections are the only solutions to ensure smooth fish products with a exports and better position of the

firms in the list of exporters. It is a fact that adhering to compliance requirements is bound to incur a cost to the exchequer as well as to the seafood export processing units in the country. But the benefits in the form of higher earnings due to low rejections and increase in exports due to higher global acceptance are way above the costs. Studies estimate that investing in compliance in the seafood export sector, India can increase exports by 8.4 billion USD by 2028.

4.4 Impact of TBT on trade

The implications and impact of TBT on fish products trade is multifarious as it influences in volume, probability and duration. Further classification of volume comes under a variety of products under trade and its value. Though the intensity of impacts of TBT on these aspects may differ from country to country, it is estimated that these are the major implications of the TBT on international trade. In terms of probability, added production and exporting cost on TBT compliance cost makes the processor/exporter to decide the probability of engaging in international trade or its probability in entering into a particular market. Hence, obstruction of market entry and reduced probability are basic implications of TBT to exporters. The impact analysis based on burden of TBT on increasing the cost of exporters, it is identifiable that the burden of such cost is falling more for the exporters from developing economies. This is because of the high cost required to procure technology and machinery to maintain the quality standards, the fact that most of the developed economies have the wherewithal to understand and assess easily the quality standards make their job easier and cost-effective. Hence, in this respect they have an advantage over the less developed countries.

For a sector like seafood exports, such a situation is common as most of the fish and fishery resources are exported from the developing parts of the world. Therefore, without adhering to global quality standards or stipulations in a particular importing economy, seafood from developing countries do not have any demand in the exporting market. In such case, the drawbacks as a result of the negatives of the TBT clearly outnumber the positives especially for the developing economies. With regard to the impacts on volume of trade, it is estimated that the overall volume of trade might increase for some economies who could adhere to the stipulations gain from the fishery export market, whereas the incompetent exporters are slowly withering of its market presence. TBT compliance helps to reduce the competition as it will discourage more players, which in turn increases the volume of the existing exporters. TBT is also supposed to aid trade duration for existing players in the market, nonetheless the probability of trade is reduced. For the existing trade relations, TBT compliance improves trade duration as it will reduce the probability of trade failure. Hence, in terms of probability, TBT compliance will help the volume and duration of the existing trade partners owing to adoption of TBT by the importing countries. In most of the situation the cost effect rules the game as the TBT decreases the trade. In the case of pairing partners of trade, the twin factors of reallocation or information effects help to boost the fishery trade both in terms of volume and duration.

4.5 Institutional framework in India for the fisheries exports

There are several institutions at the national and the state level in the country which helps in facilitating seafood exports at the pre-processing, processing and at the export levels. The activities of these institutions include conducting research for improvement of capture and aquaculture fisheries, financial assistance to the various stakeholders involved in the sector, support for the exporters by providing them with certificate and compliance requirements, training etc. Along with this, the banks and financial institutions provide financial assistance to the export processing units for plant expansion, machinery and other operating costs. Some of the major institutional supports include Department of Fisheries, Export Promotion (Marine Products) [EP (MP)] under the Ministry of Commerce, Government of India, Marine Products Export Development Authority (MPEDA), Export Inspection Council (EIC), Fisheries Science Division of Indian Council of Agricultural Research (ICAR), Seafood Exporters Association of India (SEAI), National Fisheries Development Board (NFDB), Central Institute of Fisheries Technology (CIFT), etc. The EP (MP) division aims for the promotion of export of marine products through with appropriate policy formulation by the government of India. The division has administrative control over the Marine Products Export Development Authority.

5. Conclusion

The issue of TBT and its related stipulation of NTMs are really against the spirit of WTO and its formation goals. This is because WTO is developed under the vision to overcome the non-tariff trade restrictions, however the years after the inception of WTO newer and newer trade restrictions have been imposed in the name of TBTs and NTMs. But the sad fact is that these are imposed for their self-interest and also to protect the local producers. Several examples are available in the seafood export arena, the squid import restriction of Spain with the false notification of the presence of chemical contamination during the period of bumper production of squid in the Spanish economy and other noteworthy elucidation is the shrimp anti-dumping issues raised by the US to protect the local Louisiana shrimpers. This is really an espousal of the developed importers to the poor exporters and

mostly the tragedy befalls to the poor exporting countries. Moreover, it is easy for the developed importing countries to do any kinds of stipulations of TBT or NTM and most of the members in the technical committee are from the developed world and hence their clout in this respect is big. The paper gives such an overview highlighting various agreements prevailing in the seafood export sector with the aid of secondary information. How these stipulations impacting India's seafood export and the state of Kerala are also discussed with the aid of secondary data. Institutional action in this regard is stupendous to overcome the peril and hence most of the seafood exporting firms could be able to counter the issue without much delay, but the tiny firms it is really hard to meet the TBT and NTMs stands and stipulations.

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Table 1 Global fish and fishery trade

Year	Value (billion $)	Quantity (Million tonnes)
1996	52.5	22
2010	109.3	57
1996-2010 growth	5.38	7.04
2018	164.1	67.1
2010-2018 growth	5.21	2.06
1996-2018 growth	5.32	5.2

Source: FAO, 1996, 2012, 2020

Table 2 Marine Product Exports from India

Year	Quantity (MT)	Value (Rs crore)	Value (billion $)
1995-96	296277.0	3501.11	1111.46
2010-11	813091.0	12901.47	2856.93
2019-20	1289650.9	46662.85	6678.69
2020-21	1149510.0	43720.98	5956.93

Source: MPEDA, 2020-21

Table 3 Export of marine products (1995-96 to 2020-21)

Q: Quantity in M T, V: Value in Rs. Crore, $: US Dollar Million					
NAME		1995-96	2010-11	2019-20	2020-21
KERALA	Q:	78896	124614	148227	144700
	V:	856.9	2002.11	5020.34	5039.89
	$:	272.03	442.4	716.81	687.22
TOTAL	Q:	296277	813091	1289651	1149341
	V:	3501.11	12901.47	46662.85	43717.26
	$:	1111.46	2856.92	6678.69	5956.42
% Share	Q:	26.63	15.33	11.49	12.59
	V:	24.48	15.52	10.76	11.53
	$:	24.48	15.49	10.73	11.54

Source: MPEDA, 2020-21

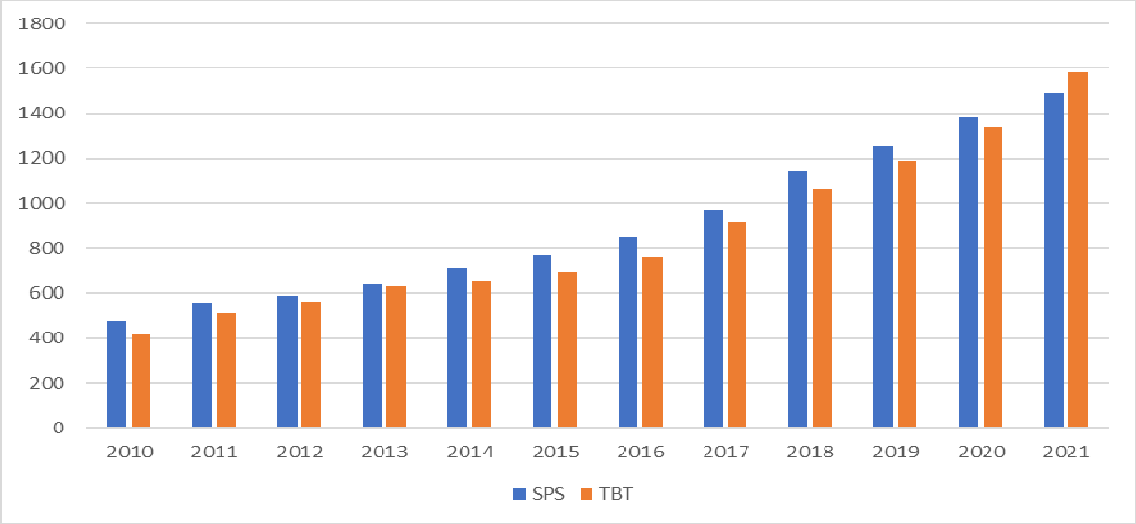


Figure 1 SPS and TBT measures imposed on fish and fishery products during 2010-2021
Source: WTO Integrated Trade Intelligence Portal, 2021

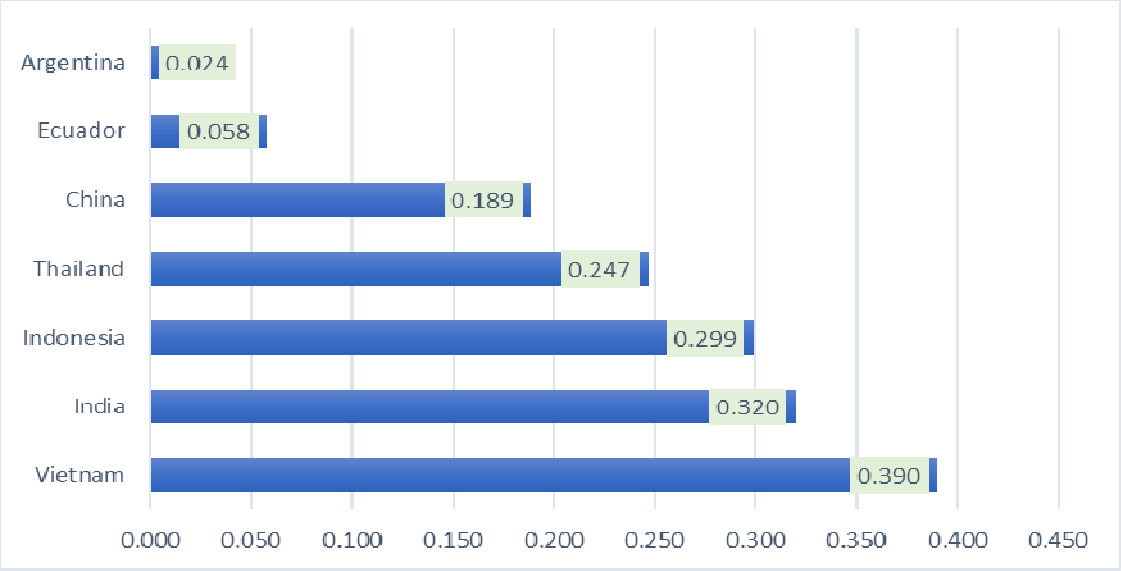


Figure 2 Rejection rate of India's marine products exports vis-à-vis other exporters
Source: UNIDO Trade Compliance Database, 2020

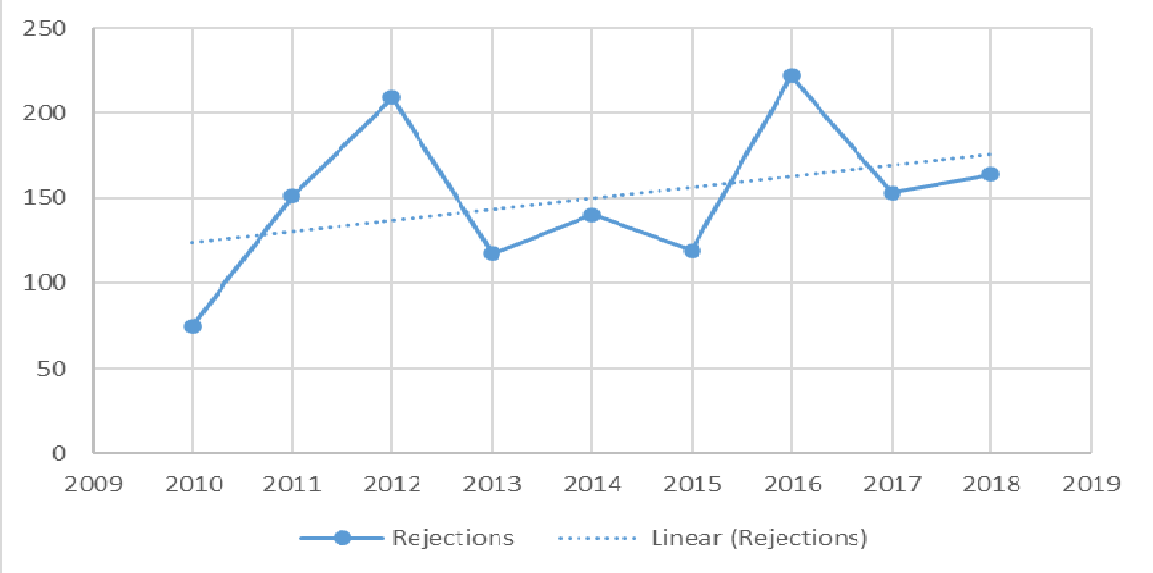
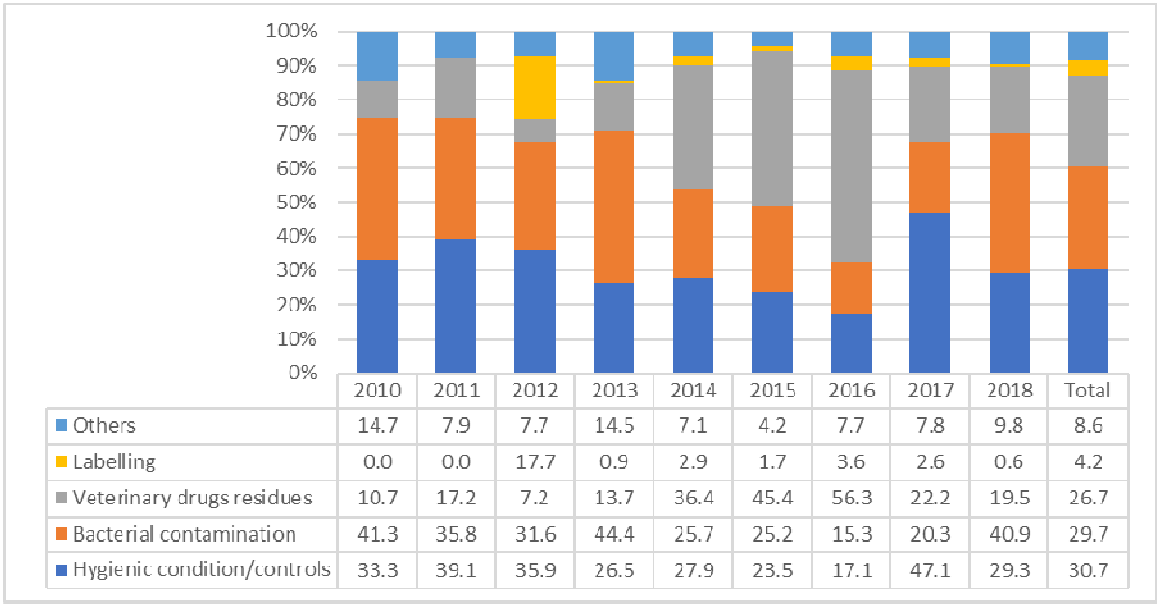


Figure 3 Year-wise Rejections of Indian fishery products 2010-2018
Source: UNIDO Trade Compliance Database, 2020



	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Others	14.7	7.9	7.7	14.5	7.1	4.2	7.7	7.8	9.8	8.6
Labelling	0.0	0.0	17.7	0.9	2.9	1.7	3.6	2.6	0.6	4.2
Veterinary drugs residues	10.7	17.2	7.2	13.7	36.4	45.4	56.3	22.2	19.5	26.7
Bacterial contamination	41.3	35.8	31.6	44.4	25.7	25.2	15.3	20.3	40.9	29.7
Hygienic condition/controls	33.3	39.1	35.9	26.5	27.9	23.5	17.1	47.1	29.3	30.7

Figure 4 Reasons for rejection of Indian fishery products
Source: UNIDO Trade Compliance Database, 2020