

Impact of COVID-19 on Indian Seafood Industry and Potential Measures for Recovery: A Mini-review

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Authors' contributions

This work was carried out in collaboration among all authors. Authors SM and TP planned and conceptualized the design of the article and wrote the first draft of the manuscript. Authors AI and SN contributed substantially for the literature searches and correction. Authors DB, SJ and AM critically reviewed the article for important intellectual content. All authors read and approved the final manuscript.

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ABSTRACT

Global seafood sector is going through a massive shock during a global-scale disturbance named "COVID-19 Pandemic". Restricting national and international trade and traffic was the most needed step to contain the spread of virus; meanwhile it has wreaked havoc on all import-export businesses. Seafood sector, is one of the major pillar behind agricultural export (fisheries sector contributing 1.07% to the Indian agricultural GDP) and blue revolution. But due to uncertainty of the lockdown periods, the Indian seafood sector has crashed, affecting livelihoods of all fishing and

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related communities, export and supply chain (both domestic and international), demand and consumption etc. The sudden crisis has exposed various shortcomings of the sector and expanded our vision to look ahead of temporary solutions and find long-term sustainability. Unavailability of real-time data from planned surveys are one of the major reasons behind this failure. This article aims to highlight the present scenario of the Indian seafood sector during the pandemic through assessing various news articles, national reports and publications. Further it suggests some recovery steps like building up alternative seafood networks, promoting domestic demand and markets, forming fishing community friendly schemes (medical and insurance), adopting new technologies to prevent and handle any future crisis.

Keywords: Indian seafood industry; COVID-19; impacts; recovery.

1. INTRODUCTION

SARS-CoV-2, a narrative coronavirus strain causing COVID-19, was first reported from a meat market in Wuhan, China [1]. Severe outbreaks of the same have occurred globally across 240 countries outside China and have been devastatingly affecting mankind since [2]. SARS-CoV-2 (previously known as 2019-nCoV) turned out to be a highly infectious and dangerous virus. It has been reported that one infected person can spread the virus to up to six persons on average [3]. It is a severe acute respiratory syndrome, severity ranging from asymptomatic to fatal [4]. With the number of confirmed cases increasing at an alarming rate every day, World Health Organization (WHO) declared COVID-19 as a "pandemic" on March 11, 2020 [5]. The first confirmed COVID-19 case in India was reported on January 27, 2020, from Kerala [6]. Initially, the numbers of infected patients were low, but the pandemic raged later throughout the country. The only way to contain the virus was to immobilize the population and quarantine simultaneously. Countries across the globe started enforcing strict nationwide lockdowns as an immediate response to the pandemic threat [7]. The severity of the disease proved the failure of well-resourced countries to combat the situation. Mobility is the key to the economy, which suffered heavily due to lockdowns and containments. The continuous upgrowing pressure of the disease damaged crucial systems of the countries such as healthcare and food. COVID-19 pandemic has disrupted the national and international trade in the sectors of production, food, agriculture, tourism, transportation, etc. [8,9,10,11,12,13]. UN's Trade and Development Agency, UNCTAD, predicted that the global economy will slow down under 2% and might lose 1 million dollars in 2020 [14]. The Government of India (GoI) imposed 21 days lockdown across the country from March 24, 2020, to minimize the health hazards and

infection caused by COVID-19, immobilizing a major work-force of the country [15]. Except for the essential requirements (pharmacy, grocery, etc.), all other businesses, irrespective of their scale, have been shut down. Livelihoods of millions are at stake, supply chains are disrupted, markets are non-functional, and consumption demand decreases [16]. According to the Centre for Monitoring Indian Economy, the employment rate in December 2020 rose to 9.1%, which was the highest throughout the recovery period since June 2020 [17]. According to Joshi et al. [18], India's economy will face a catastrophic effect both in external trade and domestic marketing. The food supply system of a country depends upon its agriculture. Rules and regulations implemented by the government have stalled the sector. Restriction in inter-state transport, shortage of work-force, non-availability of fertilizer, seeds, feed, wastage of harvested crops are the prime reasons behind it [19]. China is a major consumer and producer of agricultural goods and being affected by COVID-19, it has lost its potential; thus, reflecting negative effects on developing countries like India [20].

Fish and its wide range of products are major trade products in the global food industry, with global fish exports reaching 67.1 billion tonnes worth USD 164 billion [21]. The fisheries sector contributes substantially to the Indian economy, but halt in international and domestic trade, reduced demand due to misconceptions and non-availability, border restrictions, shortage of labour, and cold storage – have combinedly exacerbated the crisis. The motility of all the components of the seafood industry is the key factor for its growth, which also leads to food security and employment [22]. In this article, the impacts of the pandemic on the seafood sector of India and its components, along with some possible recovery solutions, are discussed. Data from various media reports (from esteemed news portals), google searches are collected for

assessment of sector in current times. Real-time data are not available in case of seafood sector, instead we have to rely on yearly publications from national bodies like Marine Products Export Development Authority (MPEDA), National Fisheries Development Board (NFDB), Central Marine Fisheries Research Institute (CMFRI), Government of India (GoI), etc. Opinions from various recent publications are taken into consideration for comparison and assessment of current situation of Indian seafood sector.

2. STATUS OF INDIAN SEAFOOD SECTOR AND IMPACTS OF COVID-19 ON VARIOUS DIMENSIONS OF THE SECTOR

It is a fact that the blue economy contributes 3.5-7% to the global GDP. India exports 50 different types of fish and fish products, INR 451.06 billion and 1.377 million tonnes in terms of value and quantity, respectively [23]. In recent times, India's seafood sector is recognized as one of the major sources of nutritional benefits and employment, along with being a crucial economic booster. India is the fourth biggest seafood exporter in the world, possessing a 4.41% overall share of the global seafood market and further gearing up for 6.7% in 2030 [24]. Seafood worth INR 44368.44 crores (USD 6.72 billion) with 13.92 lakh tonnes of the volume was exported during 2019 [25]. South-east Asian countries, China, USA, Japan, European Union, Middle-east countries are the major export markets for Indian seafood, including fish, crustacean, mollusc, etc. But the current situation has slowed down the growth of this industry. The pandemic has awfully impacted the backbone of this sector that includes integration of the production of seafood, supply chain, export and marketing, employment, and consumption.

2.1 Production (Capture and Culture Fisheries)

For seafood export, production comprises of both capture and culture (shrimps and prawns primarily). 2019 witnessed an uplift of 2.1% in marine landing data, i.e., 3.56 million tonnes [26]. Under the influence of pandemic and subsequent lockdowns, this data may face downfall (official data unpublished). To ensure social distancing and proper safety measures, capture fisheries is significantly halted, which might positively affect fish stock and negatively affect the industry. Culture fisheries are also unable to support the industry as there is a shortage of seeds, feed,

and fertilizers due to the lack of transportation during lockdowns. Moreover, due to uncertainty regarding marketing facilities and consumers' demand, farmers have halted their culture. The lockdown period, i.e., from March to July, usually yields 60% of the shrimp production, but due to the stay-at-home regulations and disruption in inter-and intra-state movement, many farmers have "panic-harvested" small-sized shrimps to avoid further huge losses. Production capacity and cost have decreased and increased, respectively, as prices have been curbed due to the mandatory public health measures and this situation is responsible for unregulated price hikes in the supply chain of the final products.

2.2 Employment Crisis

The Indian fisheries sector employs nearly 15 million people; in processing industries, 65% of total workers are women [27]. During the pandemic period, the workers faced a new form of immobility due to suddenly ceased fishing activities or shutdown of processing plants. In both cases, they are losing jobs or reduced salary as maximum processing and fishing firms are self-financed, and the owners are unable to continue the daily wages of workers; the scenery is quite same globally [28]. Prolonged lockdown, disruption in internal and foreign trade, and reduced demand from importer countries have led to the closure of hatcheries, feed mills, and other accessory businesses in the fisheries sector [22]. Unemployment crisis have given rise to dire assumptions regarding extremely negative impact of COVID-19 [29]. Currently, jobless and homeless migrant laborers finding interstate borders closed has become a critical issue for the government.

2.3 Distribution and Trade

The seafood industry is connected by the continuous flow of products through the global value chain. Where some flows have been uplifted by the pandemic, others have been provided with chokepoints. 50% reduction in export has been predicted due to stringent lockdowns during this pandemic, losses incurred is estimated to be INR 4883.24 crores [30,31]. United States of America is the World's top importer of seafood, but currently the market is undergoing major shock; as a result India's trade basket is also destabilized [32,33]. Having international and inter-state trades been halted, food giants closed, local retail markets and grocery stores have emerged as an alternative

option for canned and frozen products. Many retailers have found strategies to deliver the products at consumers' doorsteps. But accordingly, demand is not met with adequate supplies due to government-imposed lockdowns [34]. Many processing factories have been shut down with excessive products that are nowhere to be transported and need extra frozen storage. Aftermath the lockdown period, slowly the trade is being mobilized but is currently facing issues like reduced demand for some species or products and prices downfall. Disruption in the supply chain might lead to the global food crisis.

2.4 Export Business

After exporting 13,92,559 MT of seafood worth Rs 46,589.37 crores (US\$ 6,728.50 million) in 2018-19 [25], India was gearing up for a US \$ 7 billion export in 2019-20. But due to various reasons like sluggish demand from major exporters, cancellation of several orders, delayed

and reduced payments, decreased cargo mobility, less capture from the west coast due to lockdown, etc. India could not achieve the target and shipped 12,89,651 MT of seafood worth Rs 46,662.85 crores (US\$ 6.68 billion) this year [35]. Though export has resulted in a 0.16% increase in rupee term, quantity and US dollar value declined by 7.39% and 0.74%, respectively [36]. The largest importers for the Indian seafood industry have been the USA (value-wise) and China (quantity-wise), followed by European Union, South-east Asia, and Japan. Initially, in January 2020, China closed the ports for live lobsters and other products, which forced many cargoes to reroute, and orders were cancelled. Later on, after restrictions eased up globally, India has been able to export to the major countries, with frozen shrimp (6,52,523 MT worth USD 4,889.12 million) and frozen fish (USD 513.60 million) being the major items.

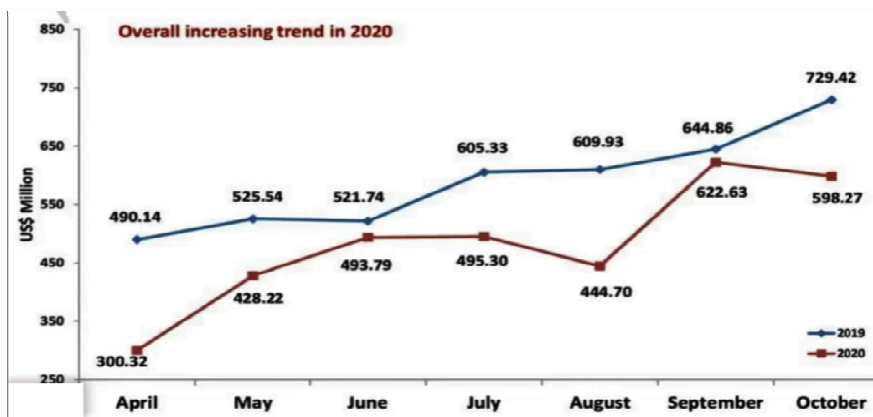


Fig.1. Month wise value export trend: April-October 2020 Vs April-October 2019 [35]

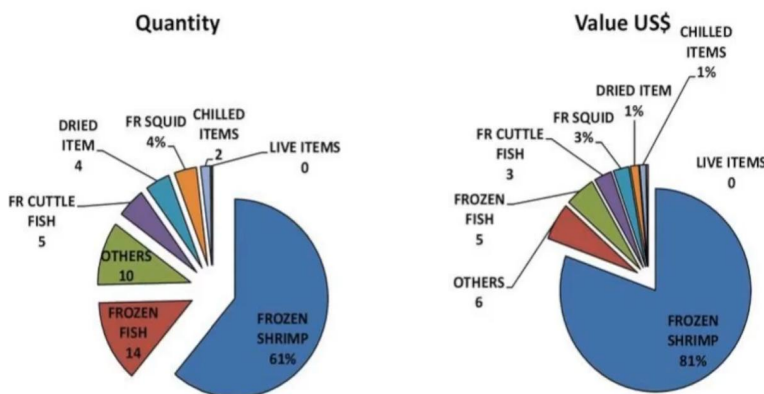


Fig. 2. Major item wise share in exports April-October 2020 [35]

2.5 Consumption

Seafood is a healthy option for nutrition and is being widely accepted all over the world. However, due to false perception regarding the origin of the novel coronavirus from the seafood market of Wuhan, China, consumers are panicking regarding fresh seafood consumption. There has been clear discussion regarding fish and shellfish not being host the virus [37]; however, the threat of contamination from affected food handlers and merchants cannot be ignored. In this scenario, the trade of fresh and frozen seafood is damaged to a certain extent. Rather an increase in consumption of processed, packaged, and canned foods are observed; consumers perceiving these products as less threatening, non-perishable, and a little cheaper might be the cause behind this. It's good to observe the growing attention towards processing industries, but at the same time, the bleak demand for fresh and live seafood must be restored as well.

3. POTENTIAL MEASURES FOR RECOVERY OF THE SEA FOOD SECTOR

The environment created during the pandemic is fearsome and full of uncertainty and anticipations. The national economy has been crashed, with GDP contracting by 7.4% in 2020 (as estimated by DBS Bank) [38]. The overall agriculture system has been hampered, along with the fisheries sector contributing 1.07% of overall GDP [23]. This socio-economic situation has negatively impacted all facets of the seafood

industry as well and could not be recovered and restored overnight. The problems have to gradually address by newer policies and changed attitudes and practices of both government and society.

As an immediate response to the towering pandemic, the government imposed lockdowns and border restrictions to ensure safety throughout the country. This lockdown made all the large-scale fishing activities to be halted [39]. Still, fortunately, after few days into the lockdown, the government has exempted fishing activities, including culture, capture, processing and marketing, from the restrictions identifying the sector as an essential one [40]. Despite this fact, the industry had to incur losses as a result of additional costs due to enhanced medical regulations during production and processing.

For recovery of the sector and national economy from this crisis, domestic consumption has to be boosted up through encouraging and promoting local and online markets, creating more outlets all over the country, etc. Processed fishery products also need to be endorsed and made available for both urban and rural consumers; enforcement of minimum support prices fixed by the government is also vital for this cause. Updated communication portals are required to assess and track the demand of the products in both domestic and international markets. As a long-term measure, a number of cold storages throughout the country need to be increased to prevent losses of raw material during failed transportation and logistics in future emergencies, if any. To regain the wavered trust of consumers regarding seafood, extra care should be taken while forming and imposing more advanced safety and hygiene guidelines in the industry.

The abrupt closure of trade (both national and international) has forced all the industries and marketing sectors to look for alternative global markets, rather than relying upon some selective ones. To build up a stable alternative seafood network, it is vital to involve local and regional markets, as they are out of the global network and certainly are less impacted by the pandemic. Not to mention, the sudden crisis has paved a new path for artificial intelligence and self-automization in the sector. Now that the world has been going through unprecedented times, it would be quite useful to analyze and identify all the resiliencies and vulnerabilities of the seafood system to remain adequately prepared for the worst. And with this target, it is essential to explore all kinds of new resources and technologies in the sector.

The crisis period has affected the most vulnerable groups, including migrant fishers, labours, women (processors and vendors), crew members, and ethnic minorities [41,42]. Much of these communities are unregistered informal labours working without any labour policy or social protection [43]. The government should form registration and working policies to ensure their job. Affected fishers and the related community should be provided with temporary economic support till restoration of the sector as coastal communities depend largely upon it. Other than that, life insurance, health coverage, and gratuity should be provided for full-time permanent workers. Reserve Bank of India (RBI) responses in the form of monetary policies,

subsidies and loans are also required to recover the companies and stakeholders from the losses and assist them in further intensifying production. The framework and implementation of the new policies and subsidies are very crucial as they should discourage unregulated and illegal overfishing; instead, it should support the sustainable use of resources [44]. For export improvisation, technical support, policies, and reforms, recorded data and statistics are required from authorities.

All small efforts and actions together will definitely be able to mobilize the system and make it more functional than before, reaching the 7 billion export goals and increase in global market share. Many remedies are being taken, and INR 20 lakh crores under the "Atma-Nirbhar Bharat" (Self-Reliant India) plan announced by the prime minister will definitely benefit the fisheries sector as well [45]. Additionally, the launch of Pradhan Mantri Matsya Sampada Yojana (PMMSY) is expected to facilitate a "Blue Revolution" by strengthening the fisheries sector of India [46]. The implementation period of this scheme (with an outlay of INR 20,050 crores) is 5 years. It shall definitely benefit the socio-economic lives of the fishing community and boost up income, employment, and future of this sector. Surely with passing time, the pandemic will end, and global market and trades will be restored as earlier, and it can be predicted that the Indian Seafood Sector may reach the peaks in no time.

4. CONCLUSION

The novel corona pandemic has wreaked havoc on national and global economy, and the impacts are assumed to be worse than the "Great Depression". Trade, distribution and supply chains in all sectors are affected and are continuously contributing to the contracting national GDP. Human resources, transport, and logistics chain are the fundamental components of the seafood system and the pandemic has made all the vulnerabilities of this system quite clear. With the aim to contain the spread of novel coronavirus in the country, the government imposed stringent lockdown, which resulted in an economic crisis. With passing time, restrictions are being eased up, and the industry has been working to restore their earlier state. Although it cannot be the same as earlier, but recovery up to some extent is possible. All the short-term issues has to be addressed and should be turned into long-term solutions. Already it is being

anticipated that the seafood exports will face an upliftment in the second half of the fiscal year due to shipping of *Penaeus vannamei* broodstock, which was halted for 50 days during the lockdown [47]. To outgrow the losses incurred from this global-scale disturbance, all the components of this sector have to accept the new normal and work accordingly. This fact remains undeniable that the pandemic has also opened new doors for newer technology, practices, policies, and perceptions. Following proper guidelines and forming appropriate strategies like insurance schemes and medical aids (regular health check, personal protection kits, proper sanitization) for fishing community, subsidized production-capture-export, creating and stabilizing alternative seafood network, government aids and investments, regular surveys for real-time data both in culture and capture sectors, will surely help the industry to intensify its potential and be efficiently prepared for any future crisis.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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