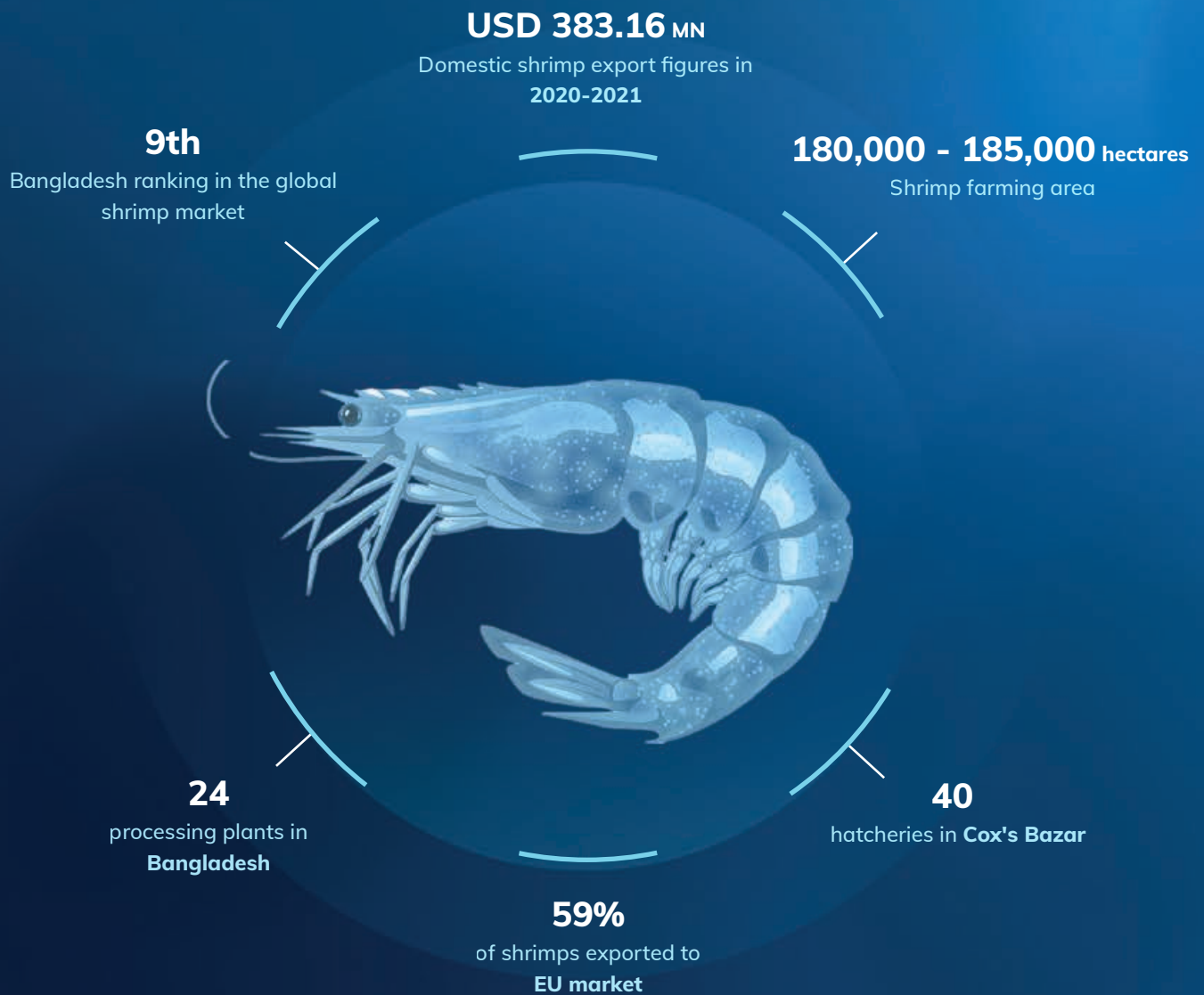


# Bangladesh Shrimp Sector: Transitioning Towards Sustainable Growth

Post Pandemic Recovery and Emergence  
of Vannamei



# Acknowledgments

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We are indebted to the thirty plus shrimp value chain actors including farmers, intermediaries, and processors for sharing their valuable insights. We received strategic inputs from industry associations and regulators, which have further enhanced our understanding of the systemic challenges experienced by the shrimp sector. We're particularly grateful to the following individuals for their cooperation and assistance:

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# Foreword

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Bangladesh has witnessed commendable economic progress since its independence in 1971. The nation's robust growth rightfully placed itself as one of the leading high growth developing markets, and has successfully contributed towards the rising Middle and Affluent Class (MAC) population, with a year-on-year 5+% consumption growth rate.

Bangladesh's growth can be attributed to two broader pillars: Remittances and Exports. In FY 21-22 the country for the first time earned more than USD 50 Billion in export receipts, attaining a historic milestone along the way. However, the export basket is still apparel heavy and for years, the Bangladeshi policymakers tried devising strategies to diversify the export portfolio. Amidst these discussions, the Shrimp processing sector repeatedly came up as an export engine.

In 2022, Bangladesh received heritage certification for Black Tiger Shrimp (Monodon), which is a significant stride towards positioning "Bagda" as a premium choice of crustacean for export across the world. However, premium pricing would necessitate the need for traceable backward linkage, compliant farming and processing, best practices across the value chain actors, as well as ensuring minimal environmental degradation.

Furthermore, the global shrimp industry itself is largely dominated by Vannamei (White legged) due to affordable pricing (USD 5-7/kg lower than Monodon on average) among mass consumers. The USA is the biggest importer of shrimp across the world and have mostly limited their consumption to Vannamei, catalyzing the transition from Monodon to Vannamei for major shrimp production hubs like India and Vietnam.

Bangladesh is on the verge of joining the Vannamei bandwagon with a successful piloting by BFRI at a productivity of 8500-9000kg/Ha. As more producers and processors are piloting Vannamei farming in the hopes of tapping into the mass market, it is important to take into account the need for improved technological advancements and access to finance among producers to facilitate the transition and integrate best practices from the inception stage. Additionally, the industry leaders should also facilitate the growth trajectory of Monodon in the global market, establishing Bangladeshi "Baghda" as a premium quality product.

The future of Bangladeshi shrimp industry is pivotal for the economy and the southern belt of the country. As the industry aims to cater to two distinct western customer segments: Vannamei for mass market and Monodon for niche premium segments, the leaders cautiously need to develop economically profitable processes that ensure environmental and commercial sustenance.

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# Acronyms

<b>A</b>	Actual	<b>HOSO</b>	Head On Shell On
<b>ASC</b>	Aquaculture Stewardship Council	<b>IQF</b>	Individually Quick Frozen
<b>BAP</b>	Best Aquaculture Practice	<b>KG</b>	Kilogram
<b>BDT</b>	Bangladesh Taka (BDT 1 = USD 0.011 on May 1st 2020)	<b>MN</b>	Million
<b>BFFEA</b>	Bangladesh Frozen Food Exporters Association	<b>MOFL</b>	Ministry of Fisheries and Livestock
<b>BFRI</b>	Bangladesh Fisheries Research Institution	<b>MRP</b>	Maximum Retail Price
<b>BN</b>	Billion	<b>MT</b>	Metric Ton
<b>BSCI</b>	Business Social Compliance Initiative	<b>OEC</b>	The Observatory of Economic Complexity
<b>CAA</b>	Coastal Aquaculture Authority	<b>p.a.</b>	Per Annum
<b>CAGR</b>	Compounded Annual Growth Rate	<b>PBT</b>	Profit Before Taxes
<b>CPDTO</b>	Cooked Peeled and Deveined Tail On	<b>PDTO</b>	Peeled Deveined And Tail On Deveined
<b>CY</b>	Calendar Year	<b>P&amp;D T/ON</b>	Peeled Deveined And Tail On
<b>DOF</b>	Department of Fisheries	<b>PL</b>	Post Larvae
<b>EBITDA</b>	Earnings Before Interest, Taxes, Depreciation and Amortization	<b>PND</b>	Peeled Deveined and Tail Off
<b>EPB</b>	Export Promotion Bureau	<b>SAP</b>	Society of Aquaculture Professionals
<b>EUR</b>	Euro	<b>SO</b>	Shell-On
<b>F</b>	Forecast	<b>SPF</b>	Specific Pathogen Free
<b>FAO</b>	Food and Agriculture Organization	<b>USD</b>	US Dollars
<b>FCR</b>	Feed Conversion Ratio	<b>USDA</b>	United State Department of Agriculture
<b>FOT</b>	Free On Trunk	<b>Y-o-Y</b>	Year-on-Year
<b>FY</b>	Fiscal Year		
<b>GM</b>	Gross Margin		
<b>GSA</b>	Global Seafood Alliance		
<b>Ha</b>	Hectare		
<b>HLSO</b>	Headless Shell On		

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# International Shrimp Demand Transitioned towards **Vannamei**

USD **17.9** Billion

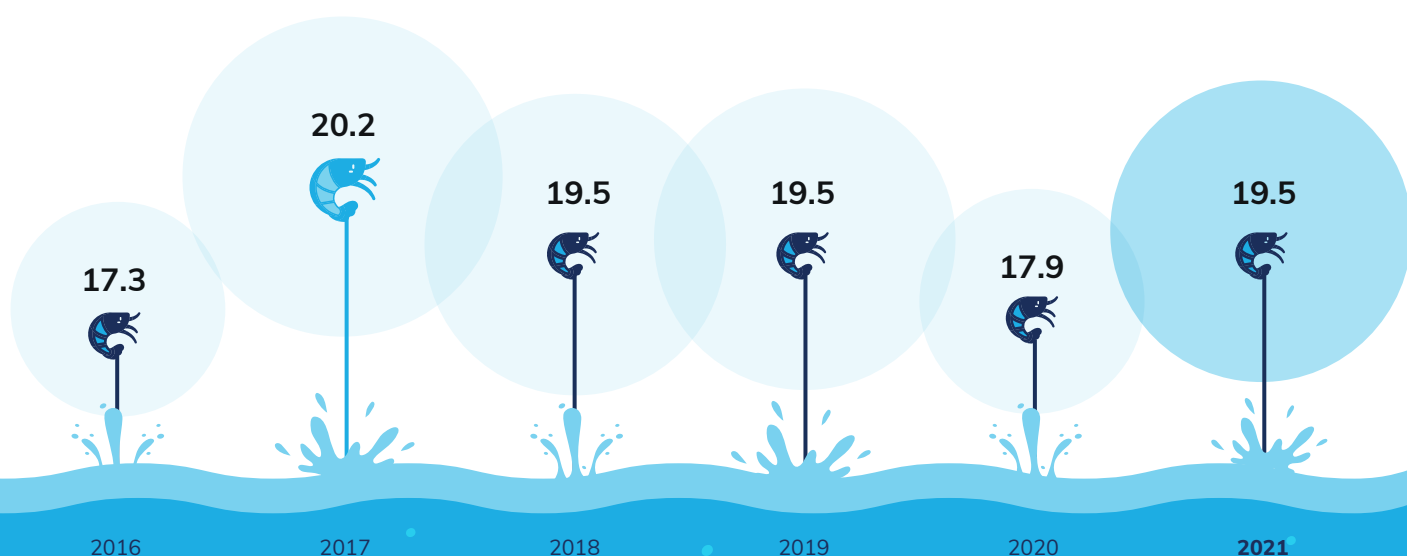
the global shrimp market (2020)

The global shrimp market has been increasing steadily on account of higher disposable incomes and rising expenditure capacity of the masses. In the global market, numerous varieties of shrimps, such as L. Vannamei, P. Monodon, and M. Rosenbergii are sold under the single term – prawns.<sup>1</sup> **Vannamei currently has the highest market share owing to lower pricing compared to second placed Monodon.** In 2020, the global shrimp market stood at USD 17.9 Billion, impacted by the advent of the pandemic.<sup>2</sup>

The pandemic that had ravaged the global economy had caused a steep decline in global shrimp production and consumption. It had delayed harvest in first half of 2020 and most of the shrimp producing countries postponed stocking their ponds given the uncertain demand, which eventually stemmed production. Additionally, distribution across the shrimp value chain was also significantly affected leading to declining export.

As the world economy continues to recover from the era of the pandemic, **the global shrimp sector witnessed a substantial volume recovery in 2021, compared to 2020.** CAGR for the global shrimp market in the pre-pandemic times (2015-2019) was around 5% and over the next 5 years, it is expected to grow similarly at a rate of 4-5%.

## Global Shrimp Market in USD Billions (FY 2016-2021)



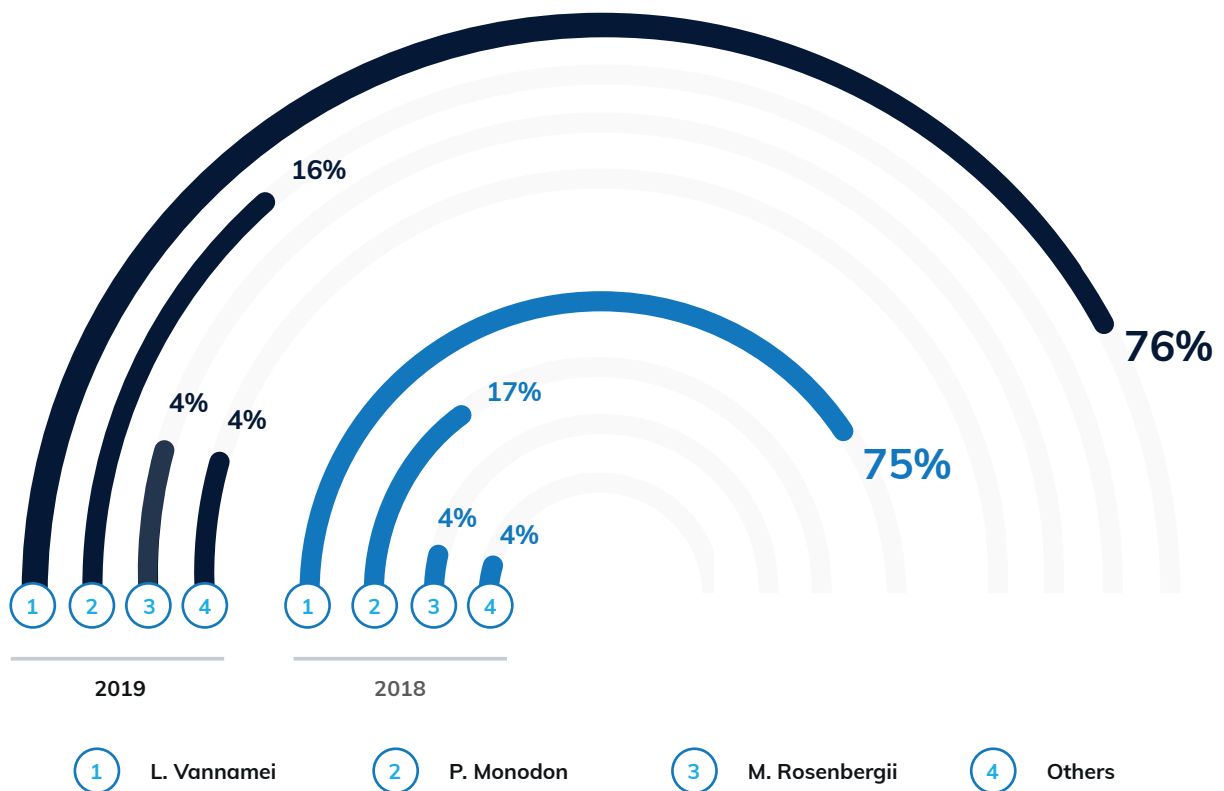
1. Imarcgroup-global-shrimp-market

2. OEC (Observatory of Economic Complexity)

The HORECA industry annually absorbs around 65 percent of the shrimp demand in the importing markets. Although commercial prawn sales tanked during the pandemic, increased retail sales partially offset the broader decline owing to higher household consumption internationally. The price of Monodon in the

global market is higher (Average USD 12-14/kg) compared to Vannamei (Average USD 7-8/kg) due to lower cost of production of the latter. Furthermore, according to World Bank estimates, average global shrimp price in 2022 is likely to increase to USD 15/kg (7%) compared to 2021 level, mainly due to rising logistics costs.<sup>3</sup>

### World Shrimp Production by Species Pre-Pandemic (2018-2019)



Approximately 80% of the shrimp consumed domestically in North America and Europe is imported. In 2015, a U.S. seafood company, The Fishin' Co. conducted a survey to gauge the US consumers' perception on farmed seafood. Among the consumers surveyed, 81 percent rated price as an extremely important factor during purchase, while 51 percent put the same

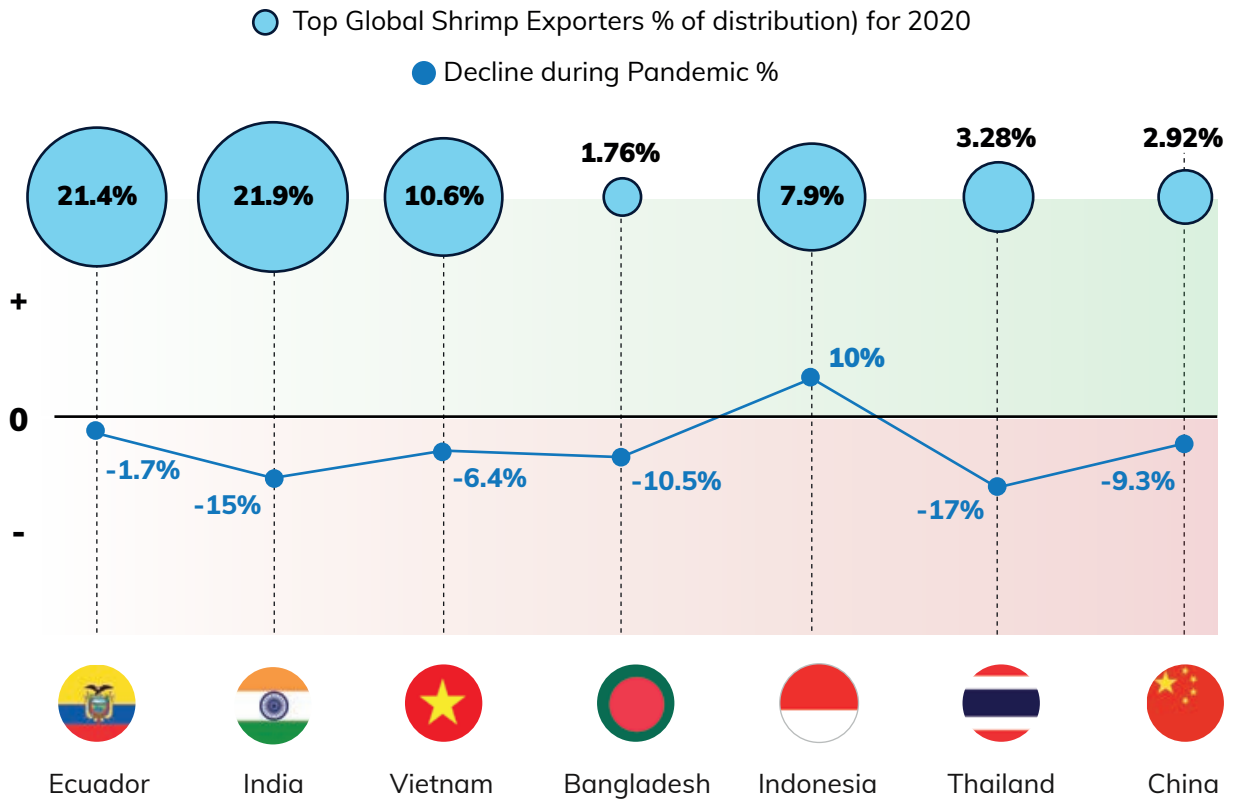
level of importance on sustainability.<sup>4</sup>

There is also a consensual shift towards ready to eat and ready to cook products among the masses which is driving higher demand for processed shrimp. Currently, Bangladesh caters to 1.76% of the global shrimp export.

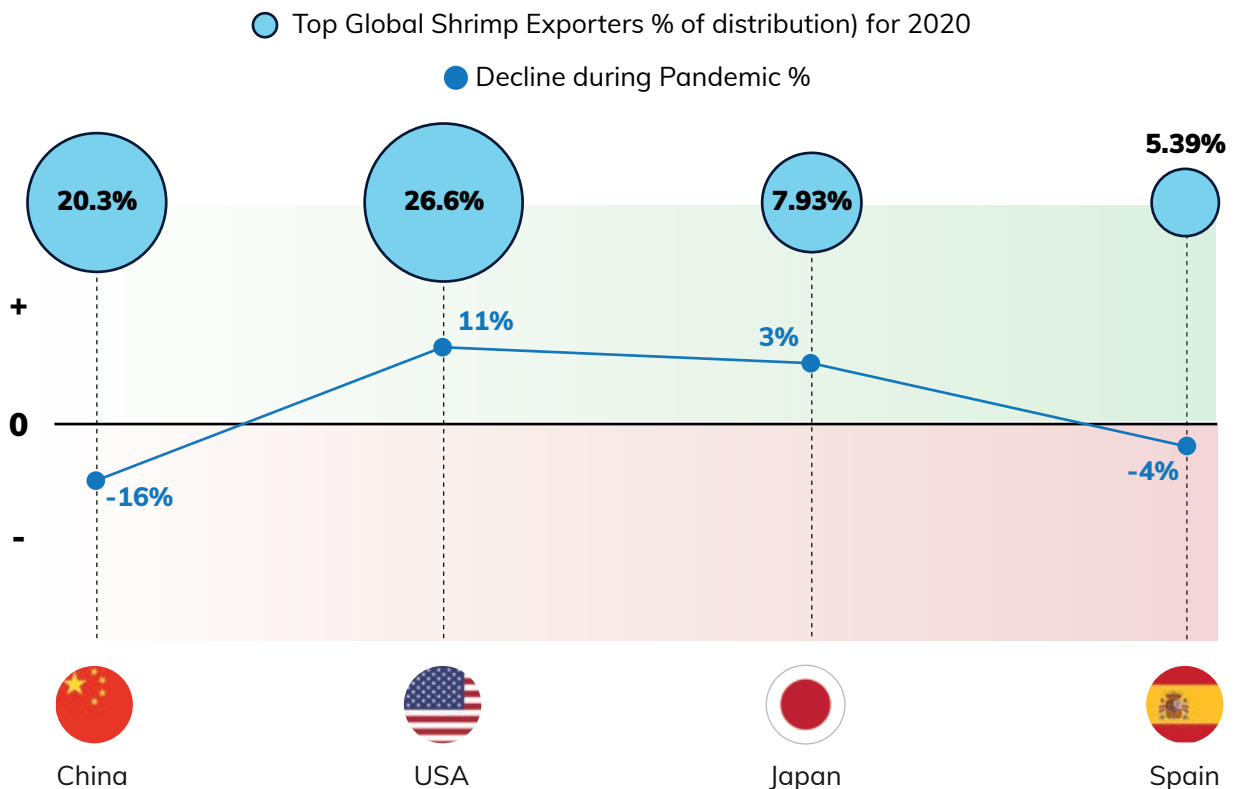
3. Increase in average shrimp price in 2022

4. Consumer survey explores farmed, wild seafood perceptions

### Export Trends by Major Destinations



### Import Trends by Major Destinations





# Case Study

## Ecuador's journey to becoming the second largest global shrimp exporter

In 2021, **Ecuador's** shrimp export reached the highest in the last 9 years, standing at **USD 5 Billion**, a significant jump from USD 3.82 Billion in 2020. This is due to the US market increasing its import of Ecuadorian shrimp exports to 22 percent in April'21, compared to just 6 percent in the same month of 2020. This monumental shift in Ecuador's production can be attributed to several achievements that the country was successful in accomplishing in the last few years:

- 1** Creating a powerful marketing and promotion board, touting Ecuador's shrimp as safe and sustainable.
- 2** Implementing strict biosecurity protocols, based on the WHO and FAO guidelines throughout the production chain.
- 3** Complying with the measures to enable greater certifications and fetching premium pricing.

Ecuador has proven that it is possible to raise the standards of shrimp production, especially on issues like traceability and antibiotic use.



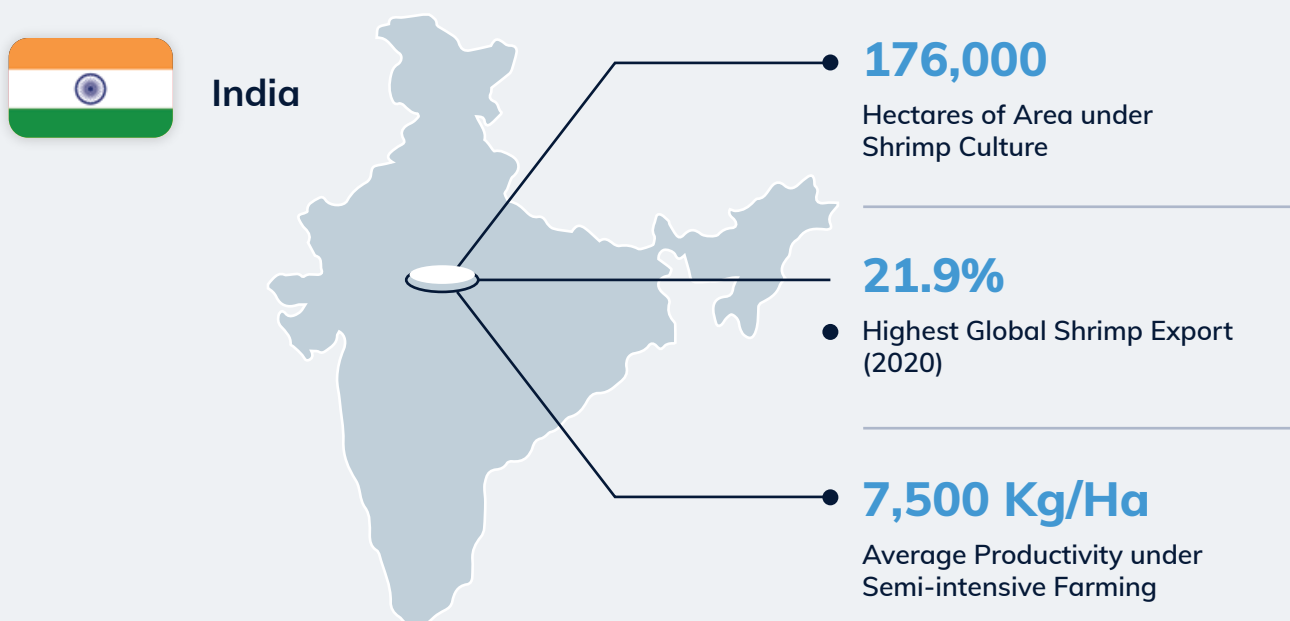
# Case Study

## India's transition from Monodon to Vannamei and becoming the largest Shrimp exporter in the world

India's Monodon shrimp production fell to 38,000 metric tons (MT) in the financial year 2019-2020, down from more than 100,000 MT of production achieved regularly between 2009 and 2011 and this de-growth is largely attributed to the introduction of Vannamei shrimp in 2008.

India decided to introduce Specific Pathogen Free (SPF) Pacific white shrimp (*L. Vannamei*) in 2008 and through careful introduction of the species by allowing a few selected entities to conduct an experimental import and perform trials. Farms who were previously culturing the black tiger shrimp experienced a boost in productivity due to higher stocking densities, lower incidence of diseases and higher growth rates after switching to SPF PL. However, most farmers were not ready for the transition as their infrastructure was built around Monodon production and traditional farming.

The country currently has **176,000** hectares of area under shrimp culture out of which about 91% is under *L. Vannamei* production, 8% for *Penaeus monodon* and only 1% for *M. Rosenbergii*. Despite witnessing substantial growth over the years, Vannamei cultivation is becoming less profitable in India due both to falling prices and mounting disease issues, and many Indian Vannamei farmers are no longer earning profits from their businesses. They are therefore, opting for Monodon production once again. Japan, which imports about 40 percent of India's black tiger shrimp production, last year lifted inspection on black tiger shrimp from India after residue of the synthetic antibacterial drug furazolidone was no longer detected in any Indian cargoes. If India starts to make the transition to Black Tiger shrimp again, Europe, Japan, and China will likely emerge as willing buyers of India's increased black tiger shrimp production.<sup>5</sup>



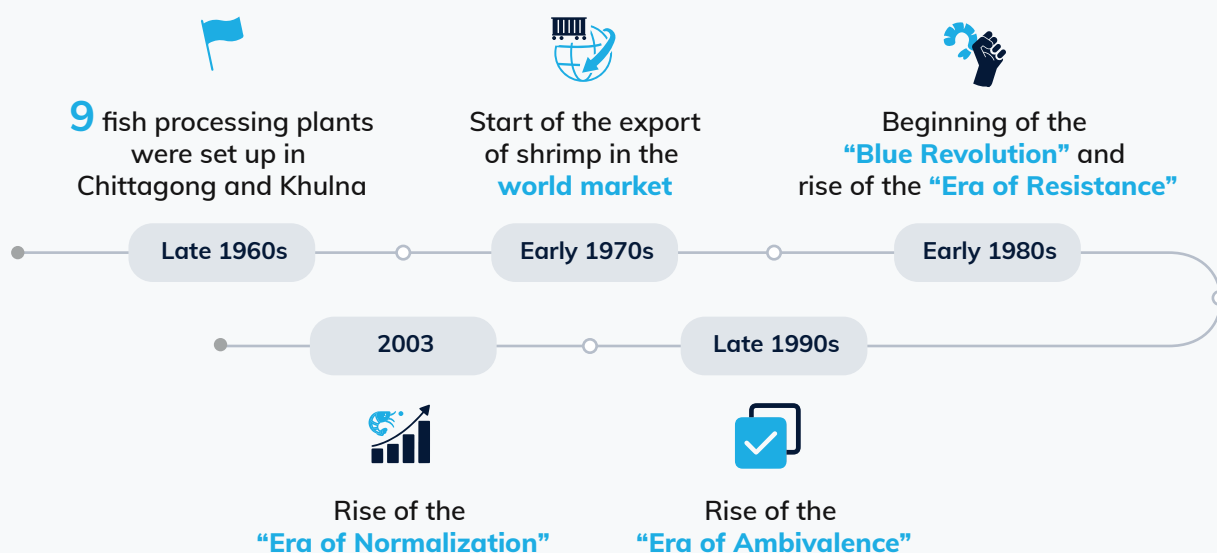
# Historical Emergence of Bangladeshi Shrimp Industry

## 1980s- Beginning of the Blue Revolution

The early 1970s was the inauguration of the commercialization of shrimp farming in Bangladesh, starting with nine fish processing plants being set up in Chittagong and Khulna, leading to shrimp export. Since then, commercial shrimp farming slowly started to gain popularity in the coastal regions, but it only dramatically escalated in the early 1980s. The journey of the shrimp sector of Bangladesh can be further classified into three broader segments, they are the era of resistance, the era of ambivalence, and the era of normalization.<sup>5</sup>

The era of resistance was a tumultuous time for the shrimp sector where it was governed by a complex system of political patronage consisting of powerful local officials, frequent exploitation of

power and malpractices in production. Altogether, with the help of existing NGOs, it led to a communal resistance against shrimp farming which perpetuated till the end of 1990s. In response to the resistance, Bangladesh authorities along with donor agencies established a series of environmental agendas, inspection and quality control institutions, HACCP based quality assurance programs and conducted training of key individuals from private and public sectors to demonstrate compliance and adherence to good shrimp aquaculture practices. Consequently, shrimp aquaculture began to be viewed in an ambivalent way and many rice farmers switched to shrimp farming on a trial basis and this led to the era of ambivalence among the locals which persisted until 2003. Beyond 2003, era of normalization began in shrimp aquaculture of Bangladesh. Many farmers, who had started shrimp farming on a trial basis permanently shifted their subsistence from rice to shrimp after witnessing profitability in the sector.



5. Shrimp Farming in Bangladesh: Why Shrimp Sector is Lagging Behind?



# In 2021

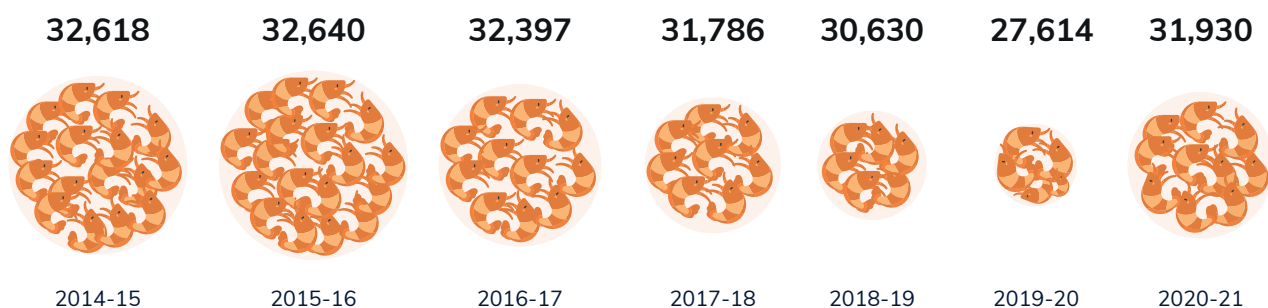
The Bangladeshi Shrimp Export Industry witnesses Growth in Export Volumes after 7 Years

During the times of the Covid-19 pandemic, export of Monodon had almost come to a halt and shrimp exports altogether witnessed the biggest dip in the year 2020. However, according to the data from Export Promotion Bureau (EPB), **in the last six months of the FY 2021-2022 (July- December), earnings from shrimp export stood at USD 268.96 million, a significant jump from USD 194.58 million registered in the same period last year.** After seven years of sector

de-growth, **Bangladeshi shrimp industry has finally made a turnaround and witnessed a staggering 39% increase in export volumes in FY 21-22.**

Additionally, the domestic market is growing for the country with improved middle and affluent class population and this in turn can partially cushion the sector from major export-oriented mishaps that the sector may face.

## Adjusted Shrimp Export Figures (MT)



Source: DoF, BFFEA, LightCastle Calculations

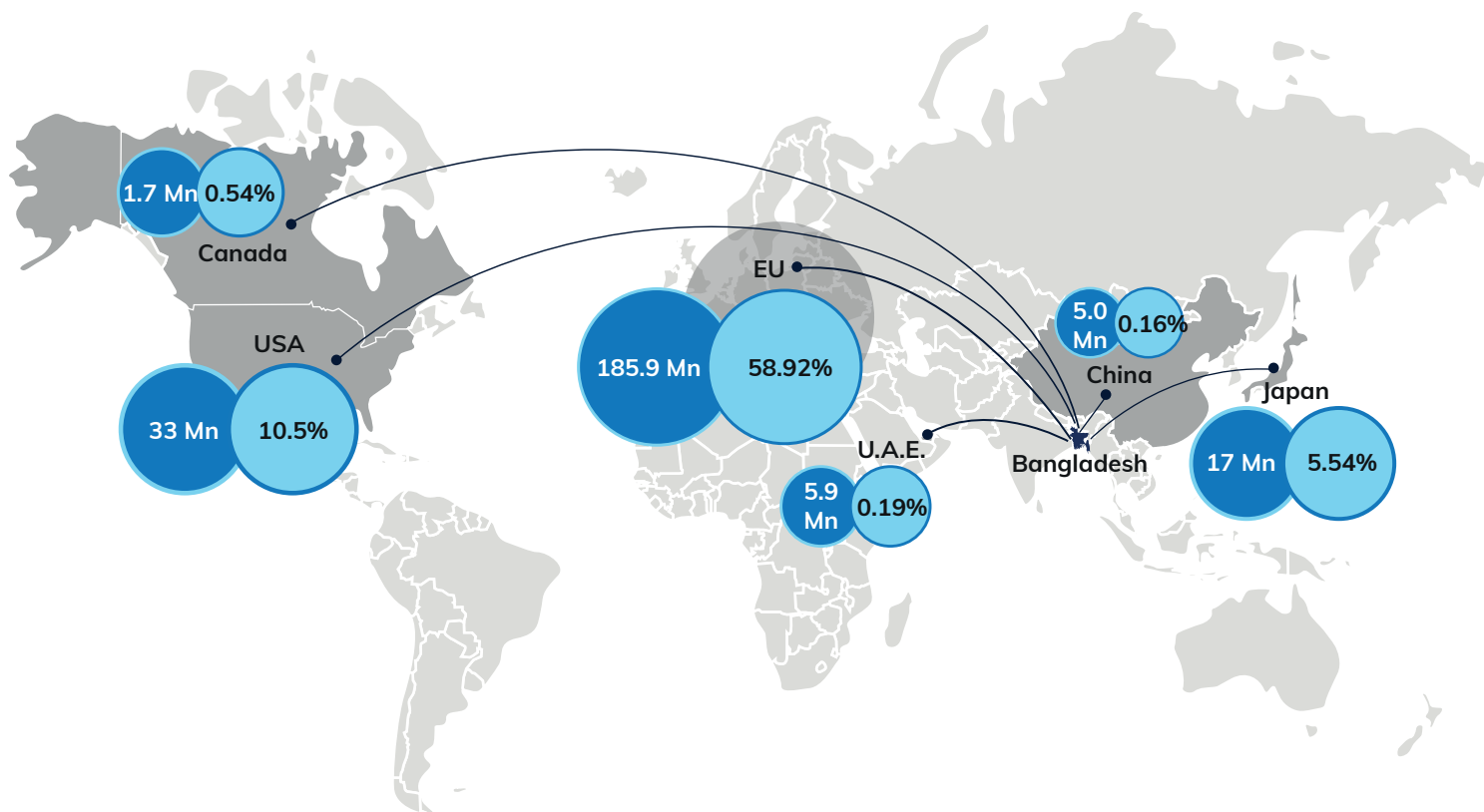
The largest share of exports for Bangladesh are destined for the European and the US markets. In recent times, Bangladesh has been struggling to maintain international market share owing to the standards imposed by international buyers. Bangladesh's share in the export market has

been shrinking during the pre-pandemic period, as high-priced Bangladeshi Monodon gets outcompeted by cheaper Vannamei. **Moreover, post LDC graduation, Bangladesh is likely to face trade restrictions and stricter rules of origin requirements in export destinations.** This

altogether is likely to diminish export earnings, if product traceability, health and safety compliances are not strengthened further.

Additionally, the US market is currently inaccessible due to customers opting for Vannamei shrimp instead of Monodon.

### Bangladesh Export Destinations (FY 2020-2021)



Source: EPB

# Value Chain Analysis of the Shrimp Sector of Bangladesh

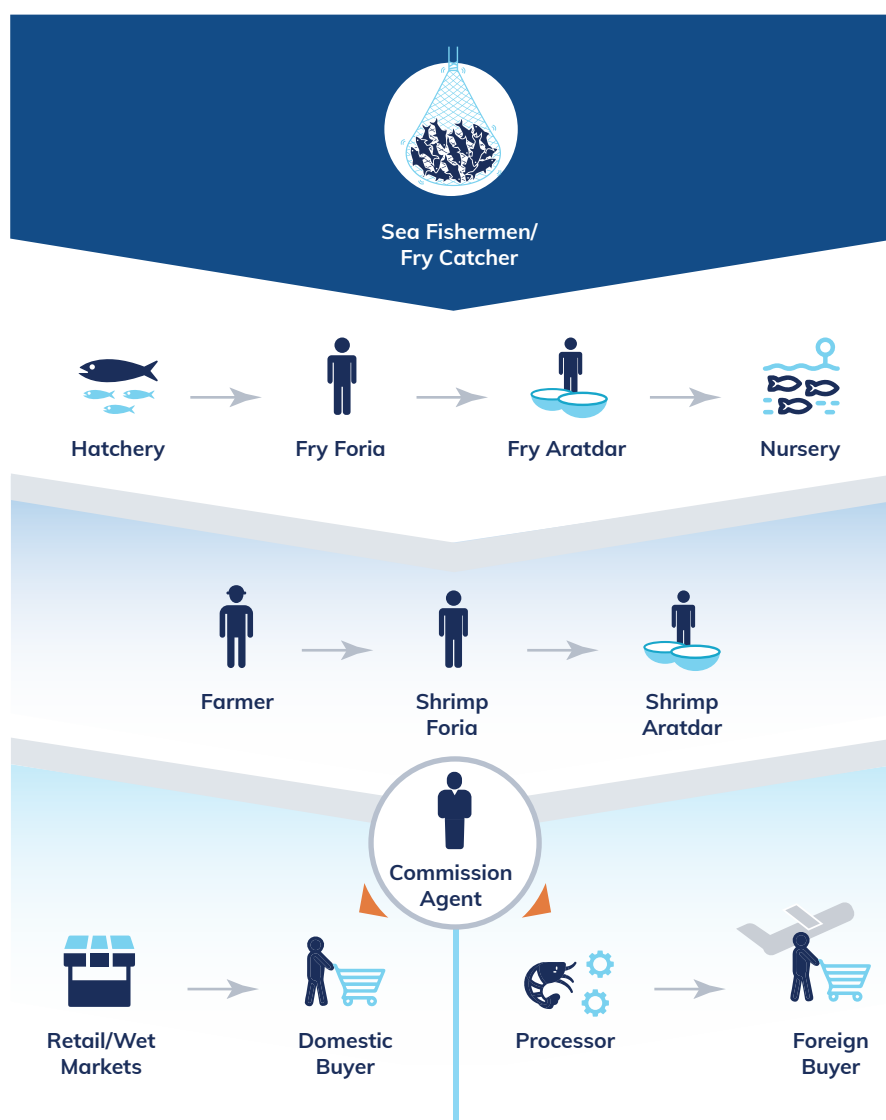
The **shrimp value chain** consists of several intermediaries, often jeopardizing the quality and compromising fair pricing for producers

The shrimp value chain consists of multiple intermediaries which increases the likelihood of compromised quality and also squeezes the farm gate price for producers. The overview of shrimp value chain is highlighted in the table below:

## The Shrimp Value Chain

Ancillary stakeholders supporting the shrimp value chain -

- 1 Ministry of Agriculture
- 2 Ministry of Commerce
- 3 Department of Fisheries
- 4 Associations
- 5 Development Agencies
- 6 Financial Institutions





### Hatchery segment:

The sea-fishermen catch mother shrimp from the ocean and supply brood stock to hatcheries for culture, after which farmers receive PL for shrimp farming. There are currently 40 hatcheries in Cox's Bazar that collect mother shrimps from the ocean. **These 40 hatcheries source around 180,000 to 200,000 pieces of mother shrimp stock yearly.** Hatcheries keep a separate controlled tank for nursing mother shrimp in order to prepare them for the egg hatching stage and after 4-5 days of nursing, the mother shrimp is transported to a different tank to lay eggs. Even though the best practice is to hatch twice, the usual trend is to hatch three times from one brood. Moreover, while the ideal standard practice is to carry one brood per tank, some hatcheries in Bangladesh allegedly nurse multiple broods in one tank, resulting in more diseases among the mother stocks.

### Farming segment:

Shrimp farmers mostly procure PLs from nurseries, hatcheries, fry faria, fry aratdar, or fry commission agents. Bangladesh currently grows shrimp on 180,000- 185,000 hectares of land in the saline-prone south-western coastal region, where 0.8 million farmers are directly engaged in cultivating. Shrimp aquaculture in Bangladesh is focused primarily on Monodon (Baghda) and Rosenbergii (Golda) production. **While Monodon accounts for ~60% of shrimp production, Rosenbergii accounts for ~31% of total shrimp production. The remainder of ~9% is composed of wild shrimp such as Horina (*Meta Penaeus monoceros*) and Chaka (*Penaeus indicus*).**

Monodon (Bagda) is being cultivated in about 150,000 ha of coastal and tidal lands in 'Ghers' and ponds (approximately 25,000-30,000 farms) at Satkhira, Khulna, Bagerhat and Cox's Bazar (including Chokoria and Teknaf) area under both

semi-intensive (5%) and traditional farming methods (95%). Data gathered through primary research states that Monodon shrimp culture has four cycles per year in traditional extensive farming practices, starting from March and ending in September. For Monodon the average yield stands at around 120-150 kg per hectare. However, if farmers maintain bio-security and use commercial feed along with home-mixed feed, production tends to be better, yielding 300kg of Bagda per hectare.

Rosenbergii (Golda) is being cultivated in around 30,000 ha in about 60,000 ponds in Bagerhat, Gopalganj, Faridpur, and Satkhira, where there is access to river water. Rosenbergii PL is released around March-April, but unlike Monodon, they are harvested after 8-9 months before pond preparation commences for the next cycle. The average yield is at around 80-100 kg per hectare.

### Some of the major challenges associated with the farming segment are:

- 🔄 Since shrimp farming is majorly conducted under extensive farming method, the most popular export grade (Grade 16-30) is produced only for 2 months per year. Therefore, Bangladesh loses out on export orders to neighboring competitors leading to loss in potential export earnings.
- 🔄 Transitioning to semi-intensive farming style requires access to finance which is not easy to avail for small subsistence farmers.
- 🔄 Use of commercial feed and standard bio-security protocols are overlooked by small farmers due to lack of proper know how, leading to lower productivity. Furthermore, technical capacity needs to be improved to contain mortality rate.

### Intermediary segment:

After harvesting, farmers sell their produce to Faria/ Aratdar. The mortality rate stands around 2-4% during transportation to the buyer. Once the shrimp reaches the Faria, it is washed and frozen with a 1:1 ice and shrimp ratio. The quality and grade of the shrimp are the main determinants of the price received by farmers. The price received by farmers is also predetermined by the exporting market supply and the buyer's quotation. The intermediaries such as shrimp Faria, Aratdar, and Commission agents perform important roles in shrimp distribution. Once the Faria/ Aratdar procures the produce, the consignment is channelled to the domestic retail and wet markets or procured by Commission Agents for shrimp processors and exporters. **90% of procurement is done through value chain intermediaries, while the rest is done directly from farms.**

#### Some of the major challenges associated with the intermediary segment are:

- 🌀 Due to the long intermediary chain in place, the product takes longer to reach the end consumers jeopardizing the overall quality of the product.
- 🌀 Malpractices carried out by some intermediaries compromises the quality and reputation of the country in the export market. Consequences of these mistakes are borne by the processors in terms of lower prices.
- 🌀 Presence of a strong syndicate also leads to reduced prices among producers.

### Processing segment:

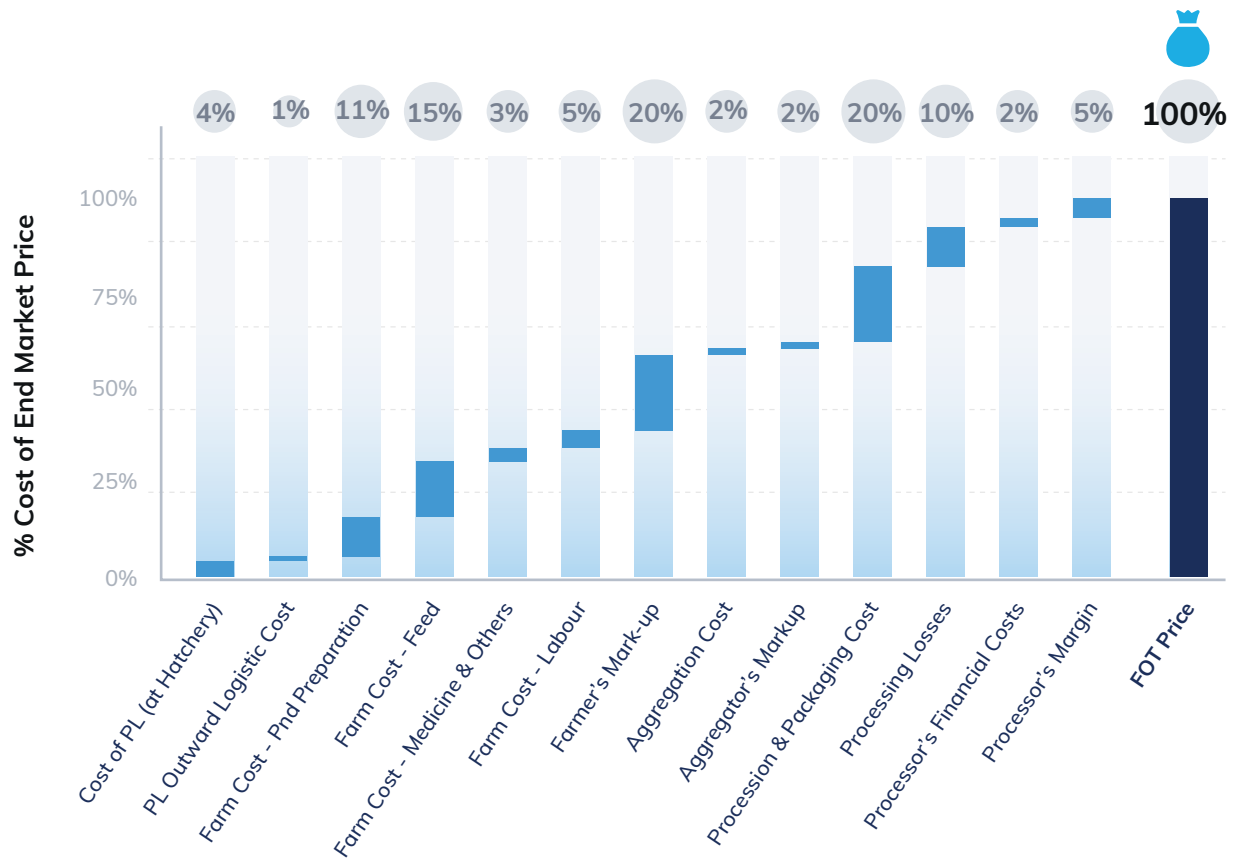
Shrimp is further processed based on requirements of the international buyers and subsequently exported. The two main processing clusters in Bangladesh are in Khulna division (primarily Khulna, Satkhira and Jessore) districts

and Chittagong division (covering primarily Chittagong and Cox's Bazar districts). Processing factories in Satkhira and Khulna are in close proximity to shrimp farmers (around 0-30km), while Chittagong-based processors enjoy easy access to Chittagong seaport, the largest in the country. Currently, there are 4 processing plants in Chittagong and 20 processing plants in Khulna. Due to the previously depressed international prices of Monodon, processors/exporters in recent times have experienced lower profit margins, due to higher cost of inputs and unused capacities. In 2021, Apex Seafood Ltd. exported shrimp of worth USD 34 Million, with Sobi Fish Processing Industry Ltd, Organic Shrimps Export Ltd and National Sea Food Industry Ltd following close behind exporting USD 26 Million, USD 22 Million and USD 21 Million respectively.

#### Some of the major challenges faced by processors are:

- 🌀 Lack of certification due to traceability issues.
- 🌀 Most processors procure shrimp through intermediaries and do not operate in the contract farming modality leading to poor control over quality and traceability.
- 🌀 Currently, there are altogether 24 processing plants in the country running under capacity which previously stood at more than 100 operational plants in 2010. This is due to the global de growth of Monodon consumption and major quality compliance issues.

## Shrimp Value Chain Margin Build-up



# Bottlenecks hindering the Sustainable Growth of Bangladeshi Shrimp Industry

## Segregated Value Chain Actors Lead to Inconsistent Quality of Outputs

In order to pave a way forward for the sustainable growth of Bangladeshi shrimp industry, it is imperative to identify the current bottlenecks that hinders the growth of the sector. From the initial breeding stage, there are no proper disease screening conducted on the brood stock which leads to the prevalence of high rate of diseases. Furthermore, most of the brood stock are collected from the wild since SPF hatcheries are limited in number and poor transportation methods further worsens the mortality rate.

Subsequently, unbalanced nutritional components in the feed used by farmers, lack of proper knowledge in terms of farming practices, limited access to financial resources, inconsistent grade production of shrimp and weak bargaining power of farmers further disrupts the growth. Additionally, long chain of intermediaries with insufficient cold storage facilities, malpractices carried out by intermediaries and lack of proper certification puts shrimp processors at a disadvantage compared to their regional peers.

	Breeding	Feed		Farming		Processing Intermediaries	
Inputs	No disease screening for brood stock	Use of inconsistent nutritional components leading to inconsistent quality		High incidence of disease due to lack of SPF PL	Limited financial resources for semi-intensive farming style	Long chain of intermediaries leading to poor traceability	Insufficient cold chain facilities at processing hubs
Production, Technology, and Equipment	Low penetration of SPF hatchery	Inefficient use of raw materials	Shortage of production	Lack of knowledge on good farming practices	Poor bio-security protocols	Under-utilization of processing plants (60% used on an average)	In plant product wastage
Output, Quality, and Sales	Poor quality seed available and poor transportation methods	A credit driven market pushing out players with low capital		Inconsistent grades of shrimp production	Weak negotiation power	Lack of proper certifications for different markets	Malpractices leading to poor quality and reputation in the global market



## Impact of Climate Change, Declining Cultivable Land and Consequences of Shrimp Farming on the Environment

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Extensive shrimp farming for long periods of time often irreparably damages the environment by degrading the water quality and harming biodiversity. Findings from a study on the ecological impact of shrimp farming in the coastal regions, show that the continuous and unregulated shrimp farming has immense impacts on human, ecology, environment and sustainability through saline water intrusion, soil and water quality deterioration, mangrove destruction, pollution, sedimentation, disease outbreaks, loss of biodiversity and destruction of local ecosystem.<sup>6</sup> Since the practice of shrimp farming requires saline water as an input to the shrimp pond, shrimp farmers open sluice gate for saline water by canal when the salinity in the shrimp pond decreases and saline water exchange from the river. When the sluice gate is opened for collecting saline water by canal, the saline water exchange occurs from the river. Inundation of land by saline water for long period leads to its percolation into the surrounding soils, resulting in altered soil chemistry and the increase of soil salinity in non-saline areas hampers crop production and shrimp farming as well. Available land is expected to decline by 16.4% subjected to dryness.

In Bangladesh, climate change has profound impacts on rainfall intensity and variability, and it is predicted that by 2030, monsoon rainfall will

increase about 10 to 15%. According to a study done by the School of Natural Resources, coastal flooding was the most significant climatic variable that affected shrimp farming, followed by cyclone, sea-level rise, salinity, drought, rainfall, and sea surface temperature.<sup>7</sup> Proximity to the sea is a key determinant in deterring the effect of different climatic variables on shrimp farming and according to the study climatic variables were seen to have severe effect on future shrimp production.

One of the byproducts of climate change is increasing coastal flooding and shrimp production is extremely vulnerable to it due to low-lying topography and poor protection against tidal surges. Sudden or prolonged floods often cause physical damage to shrimp farms and preventing the escape of shrimp becomes a challenge during flooding. Farmers are also unable to raise their narrow and low dikes and floods often allow predatory fish to enter to the shrimp farms. Furthermore, water quality of shrimp farms is also affected by coastal flooding due to contamination with land-based pollutants.

According to the aforementioned study, most cyclones in recent years hit over 80% of shrimp farms in southwest Bangladesh. Cyclones also caused a short-term decline in the abundance of wild PL and all of these affect shrimp marketing,

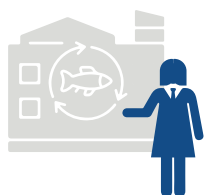
6. Impact scenarios of shrimp farming in coastal region of Bangladesh: an approach of an ecological model for sustainable management

7. Impacts of climate change on shrimp farming in the South-West coastal region of Bangladesh

processing, and exporting. During the cyclone Sidr in 2007, the loss of the shrimp sector in Bangladesh was US\$36 million. The rise in sea-level is also known to affect the ability of farmers to trap wild shrimp fry due to reduced abundance in the coastal areas and altogether diminish the catch rate.

Although salinity is not a problem for Monodon shrimp culture, increased salinity can lead to

change in the physical environment of shrimp farms and increase the prevalence of shrimp disease leading to higher mortality rate. Furthermore, increased water temperature caused by climate change and global warming leads to shrimp consuming lower amount of feed, and thus, contribute to lower productivity.



## Attain Improved Gender Equity Through Greater Participation of Female Population as **Entrepreneurs** and White-Collar Executives in **Processing Plants**

Small-scale shrimp farming is increasingly important because of its potential to generate employment and income and despite, more than 1.4 million women engaged in Bangladesh's aquaculture sector, they work mostly in low-status, low-paid and arduous jobs. It is often observed that despite, 80 percent of casual laborers in shrimp-processing factories being women, they make up less than 1 percent of managers in these factories.

Women mostly process shrimps and prawns in most processing plants, and despite gaining financial freedom, the combination of gender barriers and working conditions means that these come at a high physical and social cost. Women often work 8–12-hour shifts standing on their feet

in very low temperatures and their hands often hurt from handling the shrimp, with their sharp edges, and the ice in which they are packed. Alongside, entrenched gender stereotypes, limit women from being promoted to more senior roles such as supervisors. Therefore, they earn less compared to their male counterparts.<sup>8</sup> Often times, women are employed as only casual labors with no job security or social benefits which further puts them at a disadvantage. A similar case can be observed in farming segment as well, where women are witnessed to be extensively engaged in pond preparation, buying feed and PL, managing and repairing dykes, and yet do not have any ownership of the farm.<sup>9</sup>

8. Women in shrimp processing in Bangladesh: Challenges and ways forward

9. Gender-focused training courses empower women in Bangladesh's shrimp production sector



# Future-proofing the shrimp sector of Bangladesh

## Monodon, Rosenbergii and Vannamei Production in Bangladesh Need to Co-exist

Depressed market prices during the pandemic have been a hurdle for Monodon shrimp farmers and exporters. In the five years till 2018-19, Bangladesh's share in the world shrimp market had fallen from 4% to 2% and shrimp exports dropped by 33%. Additionally, production had also shrunk by 28.5%. Furthermore, Bangladesh had a reputation for producing seafood not meeting minimum international standards as specified by the Codex Alimentation Commission. With a low market share, and compromised reputation in terms of quality, Bangladesh has mostly been a price taker in the export market, rather than a price-setter.<sup>10</sup>

**In 2022, Monodon (Bagda) received the GI (geographical indication) status with the designation of 'Bagda shrimp of Bangladesh'.<sup>11</sup>**

Under any usual circumstance, this new status code is likely to fetch higher prices for the shrimp in the global market.

To penetrate the international market, the GOB approved two pilot projects in 2020, allowing Vannamei production on a trial basis in order to assess performance. Under the supervision of the Department of Fisheries and Bangladesh Fish Research Institute, Sushilan, a non-governmental organization in Khulna along with MU Seafood

and Agri Business Enterprise in Chattogram commenced production of the non-native shrimp. One million Vannamei PLs were imported from India. **Vannamei production rate under a controlled environment has been 8,901 kg per hectare which reflects a promising opportunity as the average Indian production rate is around 7500/ha.** Based on the success, the government has permitted 13 more companies to begin processing Vannamei shrimp for export on a trial basis in order to gauge the industry's growth potential and the trail is currently ongoing.<sup>7</sup> However, according to industry experts, farmers in Bangladesh would require improved technical capacity, greater access to finance and enhanced technological adoption to migrate to intensive shrimp farming. Furthermore, industry insiders have been requesting the government to introduce Specific Vannamei Pathogen Free (SPF) hatchery for Vannamei fry production. Going forward, Vannamei production in Bangladesh is not a question of if but when and the industry leaders and government agencies need to strategically devise a transitional strategy to enter the Vannamei export market. Subsequently, the production of Vannamei, Monodon and Rosenbergii need to co-exist as each species cater to a unique customer segment.

10. Export Trends of shrimp industry in Bangladesh: An analysis

11. Bagda Prawn gets GI status



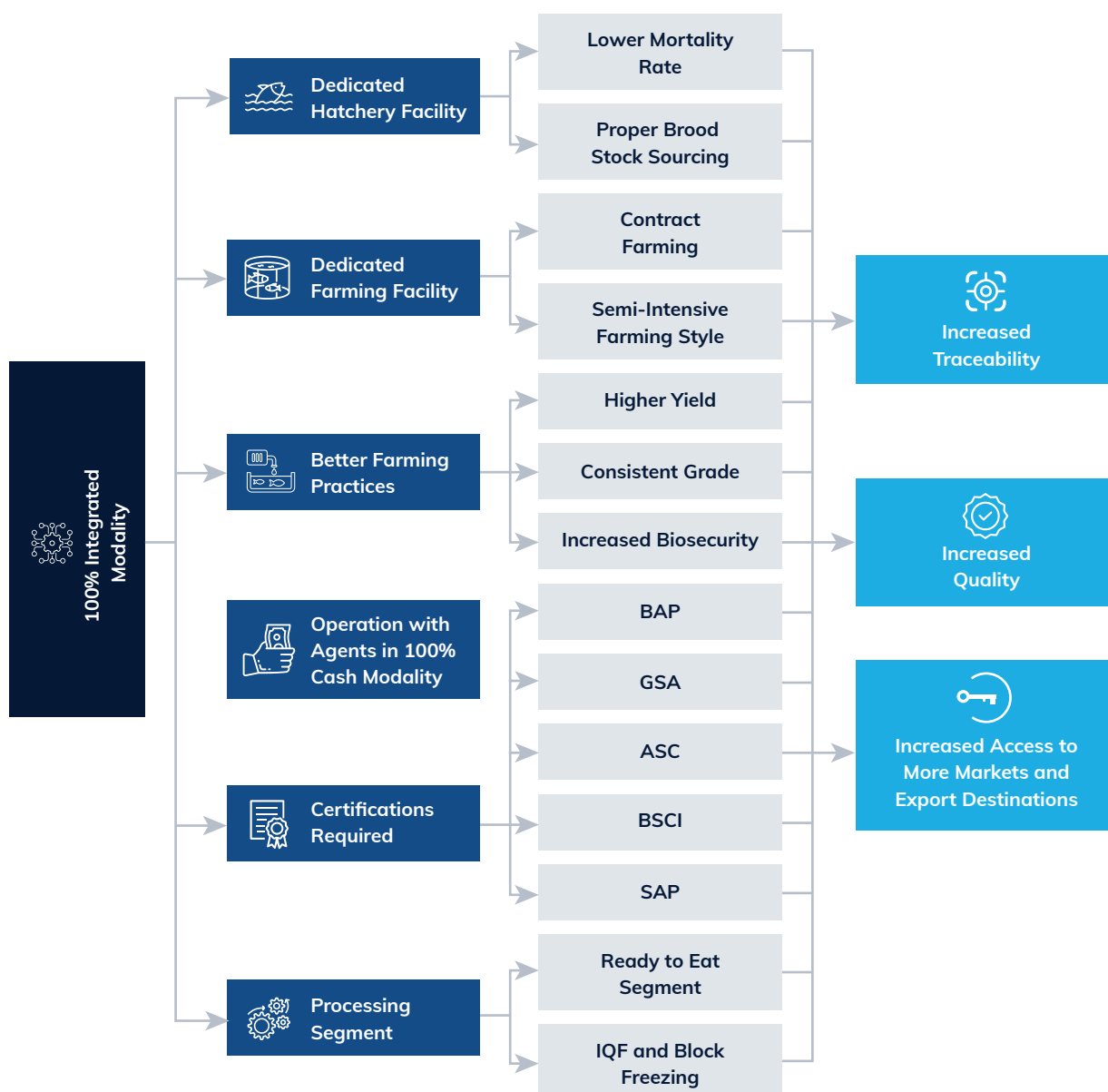
## Integrated and Traceable Backward Linkage

will Enhance Production and Quality Leading to Improved Export Performances

Despite a rebound in export performance, the sector requires renewed attention and concerted efforts for tackling existing systemic challenges. A number of steps by actors and policymakers will enable sustainable growth in production and export of shrimp.

**Integration across the value chain is key for ensuring better traceability and maintaining quality control for catering to the export**

**market.** Therefore, shrimp processors should consider developing capabilities across the backward linkage. In order for shrimp processors and exporters to ensure traceability, it is recommended that they take an integrated approach with sourcing of SPF PL with proper breeding and nursing practices and a contract farming model. Furthermore, adoption of semi-intensive farming method will yield higher productivity.



**In order to further ameliorate production, proper pond culture techniques, optimization of stocking density and water quality management are required.** Currently, shrimp cultivation in the country is done under mostly extensive farming methods and under this method traditional farming system is used, where rice farms have been converted to shallow shrimp ponds. This farming method uses low stocking density, poor biosecurity and water management system. Separate water inlets and outlets are not ensured which results in a lower survival rate of shrimp and this in turn leads to a lower production rate. Therefore, more farms need to be brought under semi-intensive farming which will require higher technology integration, more homogenous farm sizes and higher inputs.

In order for commercialization of Vannamei production, more controlled environments and SPF Vannamei hatcheries will be necessary. Sustainable production cannot be ensured if the production continues to rely on importing Vannamei PL. Also, farmers need to be equipped with the know how in order to partake in this transition with well thought out training modules.

#### **Industry Level:**

At present, the shrimp supply chain is inefficient with several intermediaries in place leading to poor maintenance in quality and proper storage procedures during transportation. Therefore, training of middlemen and traders needs to be ensured and supply chain infrastructure needs to be strengthened along with the installation of proper cold storage facilities and ice factories.

**Due to the highly fragmented value chain, traceability and proper documentation of all steps of the value chain is currently an issue. Therefore, formalization and the creation of an efficient framework is required.** Properly graded quality of input such as shrimp feed and larvae also need to be ensured. Currently, the production

of feed is lower than the demand, which has led to a higher cost of production for farmers due to the increased feed prices resulting from the shortage.

#### **Policy Level:**

In order to access different international markets, appropriate quality assurance certificates are required and they are: GSA, BAP, ASC, BSCI, SAP etc. Proper policy support and sustainable certification initiatives need to be introduced with sustainability as a core objective in order to battle the increasing threats associated with climate change and global warming. Apart from shrimp exporters receiving subsidies, the sector as a whole should receive access to low-cost financing facilities. Limited access to finance is one of the foremost hindrances to semi-intensive farming style.

Subsequently, in order to address the gender disparity that remains in the aquaculture sector of Bangladesh, better enforcement of existing policies that promote gender inclusion, equality and labor rights, such as the Women Development Policy of 2011, the Bangladesh Labor Act of 2006 and the National Agricultural Extension Policy of 2012, as well as reducing working hours and recognizing workers' rights is required. Alongside, increased media campaigns on gender awareness and benefits of women employment needs to be extensively conducted in the rural coastal regions of Bangladesh in order to transition to a more sustainable future.

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