

# A study on Marketing Dimensions of Fisheries Products of Sundarbans in India and Bangladesh

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## Abstract

The survey highlights the marketing aspects of fisheries products in the Sundarbans, as well as the roles of fishermen and merchants in India and Bangladesh. The Sundarbans region is an important ecological and economic zone for around 700,000 people including 500,000 fishers and 200,000 traders who rely on the fisheries sector. The study uses a sample of 385 participants including 275 fishermen and 110 merchants selected at a 3:1 ratio which closely mirrors the demographic distribution of the region. It included 60% from Bangladesh (n=165) and 40% from India (n=110). Statistical narratives describe a renewal of fisheries production in the Sundarbans of India, as production tised from 0.872 million tons in 2017–2018 to 0.956 million tons in 2021–2022 with a average increase of 2.6% in 2018 and 3.1% in 2022 (Fisheries Handbook of India, 2022). However, there are still major challenges facing the fisheries sector, including overfishing, environmental degradation, and the effects of climate change. This is particularly complicated by the socio-economic asymmetries between India and Bangladesh in terms of resource management and marketing practices, hindering efforts towards sustainable development. The results of the study indicate that better marketing, optimized resource management, and the impact of climate change have significant implications for the sustainability of fisheries in Sundarbans in upcoming times.

**Key words:** Sundarbans, Fishing Industry, Fishermen, Merchants, Marketing Dimensions, Mangrove Forests, Fisheries Products, Economic Zone, Biodiversity, Fish Farming, Overfishing, Climate Change, Socio-economic Disparities.

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## I. Introduction

The Sundarbans one of the world's largest and most ecologically vital mangrove forests stretches across the delta created by the meeting of the Ganges, Brahmaputra and Meghna rivers in southern Bangladesh and eastern India. Due to its significance for the environment, particularly as a buffer for climate change (coastal erosion and storm surges), the Sundarbans have been declared a UNESCO World Heritage site. Besides its environmental value, the Sundarbans is also a vital economic zone, especially for the fishery sector providing livelihood for hundreds of thousands of people living in India and Bangladesh (Khan et al., 2020). Fishing in the Sundarbans is a major source of income for both local and national forms of economy and over 300,000 fishermen depend on the waters of the Sundarbans for their livelihood (Amin et al, 2019). The relatively shallow seas surrounding the region are littered with enormous tidal waterways, mudflats and islands, providing an ideal environment for the breeding of hundreds of other aquatic species, from freshwater to marine fish, making it a popular fishing and fish farming area. Despite the energy of fish resources, the region's drive on the local fishing economy is also beyond recognition of challenge like overfishing, ecological destruction and climate change (Bashar et al., 2018). Additionally, the socio-economic differences on resource management and marketing practices between these two countries further hinders the sustainability of the fishing sector in the Sundarbans.

Assuming a total population of around 700,000 for the Sundarbans region, with approximately 500,000 individuals as fishermen and 200,000 as merchants, and aiming for a total sample size of 385, we calculate that the sample would need to include 275 fishermen and 110 merchants to reflect the 3:1 ratio accurately (Cochran, 1977). This method allows for a balanced representation of each occupational group, ensuring the sample reflects the broader demographic distribution in the Sundarbans. The selection process for fishermen and merchants was as follows:

### Sample Size:

#### Total Participants: 385 Fishermen and Merchants

- Fishermen:
- Bangladesh (60%): 165
- India (40%): 110

- **Merchants:**
- **Bangladesh (60%): 66**
- **India (40%): 44**

### **Methodology of Data Collection**

#### **Empirical Survey**

This study services an empirical survey method to explore the marketing aspects of fisheries products in select fish markets of the Sundarbans, spanning both India and Bangladesh.

#### **Data Sources**

Data collection relies on a combination of primary and secondary sources to confirm comprehensive coverage and accuracy.

##### **1. Primary Sources:**

- **Fishermen:** Data collected directly from fishermen engaged in the fisheries employment in the Sundarbans.
- **Middlemen:** Information from intermediaries who facilitate transactions between fishermen and merchants.
- **Merchants:** Insights from merchants who buy and sell fish products in local markets.
- **Cooperative Groups:** Contributions from cooperative fishing groups regarding collective marketing practices and challenges.

##### **2. Secondary Sources:**

- **Government Publications:** Official reports, statistics, and documents published by governmental agencies related to fisheries.
- **Non-Government Publications:** Research papers, articles, and reports from non-governmental organizations (NGOs) and independent researchers.

### **2. Quantity of Fisheries Caught of Sundarbans in India and Bangladesh**

One of the largest and most important mangrove regions in the world, the Sundarbans hosts rich biodiversity and is a major source of livelihood from fisheries, straddling territories between India and Bangladesh. The fisheries sector here is vital to the economy and food security of the two countries. Data on the fish catch in the Sundarbans of India and Bangladesh helps to comprehend the development and sustainability trends of a sector clearly. The contrasting production volumes, growth rates and environmental impacts provide a more detailed picture of the fisheries sectors in each country.

#### ***Fisheries Production of Sundarbans in India***

Year	Fisheries Production (million tons)	Growth Rate %
<b>2017-18</b>	0.872	2.6
<b>2018-19</b>	0.895	2.4
<b>2019-20</b>	0.91	1.7
<b>2020-21</b>	0.927	1.8
<b>2021-22</b>	0.956	3.1

**Table No-1: Fisheries Production of Sundarbans in India**

Source: Handbook Fisheries Statistics of India-2022

The Indian Sundarbans region represent an integral part of the fisheries sector of the country, making important contributions to the local and national fish production. With the passage of time, there has been a regular rise in fisheries production in the region. An analysis of the data from 2017 to 2022 shows that fisheries production in India's Sundarbans follows a consistent upward trajectory; experiencing a slight dip in the growth rate from 2019 to 2020 which was soon rectified in subsequent years. Production in 2017-18 was 0.872 million tons and grew by 2.6% over the previous year. In 2021-22, the output rose to 0.956 million tons registering a sustained growth, at an improved growth rate of 3.1%.

This increase was as a result of new fishing techniques, better management policies and an increasing demand in the local and international markets. Nonetheless, future growth is snarled by climate change and overfishing. What does that mean for its fisheries, where rising sea levels, salinity changes, and habitat degradation need to be tackled to ensure sustainable fishing practices?

**Fisheries Production of Sundarbans in Bangladesh**

Year	Fisheries Production (million tons)	Growth Rate %
2017-18	0.018	0.7
2018-19	0.018	0.3
2019-20	0.021	14.9
2020-21	0.021	2.5
2021-22	0.024	12.6

**Table No-2: Fisheries Production of Sundarbans in Bangladesh**

Source: Handbook Fisheries Statistics of Bangladesh-2021-22.

The Sundarbans fisheries production in Bangladesh was lower than that of the Indian counterpart but a high growth rate was observed in Bangladesh in recent years. Bangladesh enjoyed healthy growth rates, especially from 2019 to 2022, which is noticeable due to the high growth compared to previous years. For instance: 2017-18, production was just be 0.018 million tons are at a growth rate of 0.7%. It produced 0.024 million tons in 2021-22, a growth of 12.6%. The increase in growth rates from 2019 to 2022 reflect better fishing practices, government programs, and the development of eco-tourism and sustainable fisheries management in the region. But despite good growth, total quantity caught in Bangladesh is still much smaller than that of India, which may be due to reasons such as smaller coastal areas under Bangladesh’s jurisdiction in this region and different developmental priorities of the two countries.

**Comparative Discussion: India vs Bangladesh**

When we compare with the number of fisheries caught in the Sundarbans in India with that in Bangladesh emerged several differences and similarities:

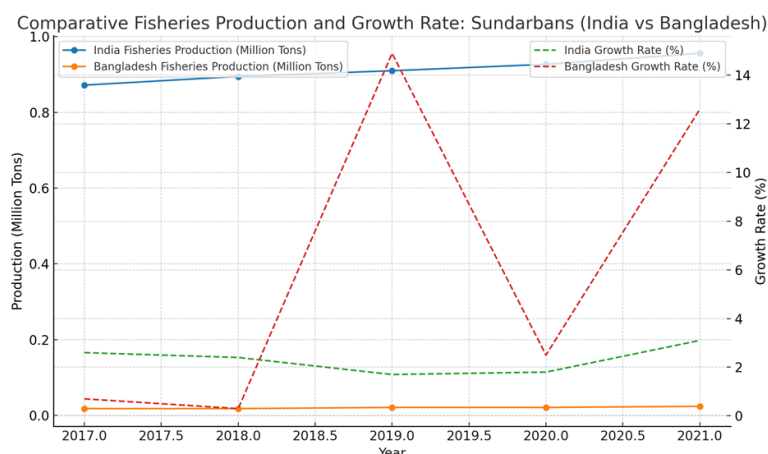
**Total Production:** The volume of fish production from the Sundarbans in India is much larger. India fished 0.956 million tons in 2021-22 while Bangladesh only fished 0.024 million tons during the said period

**Growth Rates:**

In recent years higher growth rates have prevailed in Bangladesh. For instance, the growth rate for Bangladesh was the highest (14.9%) in 2019-20 while India’s was 1.7%. India’s production is still far greater in absolute terms, though. Fisheries production both in India and Bangladesh has been consistently shown positive growth, but India showed slower growth over the years since the last few decades, while Bangladesh actually shows higher percentage growth since 2019.

**Environmental & Management Factors:**

India’s fisheries production has been driven by greater mechanization and improved coastal management practices, while Bangladesh has emphasized sustainable, community-based fishing methods. Nevertheless, both regions are adverse to challenges such as pollution, climate change, and salinity intrusion that can affect the overall productivity.



**Figure No-1: Fisheries Production Trends**

**Impact: India and Bangladesh**

The fisheries sector of the two nations is deeply pertinent to the economic aspect.

**Economic Impact:** The fisheries industry contributes significantly to the economy, both directly by production, and also as an export, employment, and coastal development market. For Bangladesh, though the production is

lower, the past years it has been increasing at a rapid range which has enhanced local income generation, rural growth and exports (mainly aquatic exports to world markets).

**Environmental Concerns:** There are environmental issues in both countries that could impact future output. Key concerns are rising sea levels, increased salinity and pollution in the Sundarbans. Both countries need to secure the sustainability of their fisheries sector by harvesting fish sustainably.

**Social Impact:** The fisheries sector in India and Bangladesh, both provide livelihoods for millions of people, particularly for those residing in coastal areas and riverine communities. But overfishing and degradation of the environment may threaten food security and livelihoods for these communities.

### 3. Market Information of Sundarbans in India and Bangladesh

#### India

In the Indian part of the Sundarbans, fishermen and merchants utilize a range of information channels to stay updated on **market trends, price fluctuations, and demand patterns**. The **Table No-3** below shows the primary sources of market information in India, derived from a field survey:

Sources Name	Fishermen (No.)	Merchants (No.)
Co-op society	21	8
Commission agents	24	10
Wholesale merchants	25	9
Newspaper	0	0
Radio	0	0
TV	29	12
Others	11	5
<i>Total</i>	<i>110</i>	<i>44</i>

**Table No-3: Sources of Market Information in India**

Source: Field Survey

In India, the co-operative society plays a significant role in providing market information. It is the primary source for about 21 fishermen and 8 merchants. Co-operative societies help members with collective bargaining and access to market trends. Commission agents (24 fishermen and 10 merchants) are another critical source of information, assisting in price setting and facilitating access to larger markets. However, newspapers and radio seem to be less popular in disseminating market information, with no respondents indicating their use in the survey.

The most commonly used source of information for both fishermen and merchants in India is television 29 fishermen and 12 merchants, providing updates on market prices, government policies, and fishing seasons. Wholesale merchants also play a significant role in providing market trends, especially for larger-scale merchants involved in cross-regional trade. Other sources, such as word of mouth and informal local networks, are also noted but are less formalized compared to institutional sources like co-operatives.

#### Bangladesh

The **Bangladesh** portion of the Sundarbans exhibits a similar reliance on specific sources for obtaining market information, though there are noticeable differences in the type of sources used and the extent to which fishermen and merchants rely on them. **Table No-4** below outlines the sources of market information in Bangladesh:

Sources Name	Fishermen (No.)	Merchants (No.)
Co-op society	31	11
Commission agents	37	14
Wholesale merchants	36	16
Newspaper	0	0
Radio	0	0
TV	44	17
Others	17	8
<i>Total</i>	<i>165</i>	<i>66</i>

**Table No-4: Sources of Market Information in Bangladesh**

Source: Field Survey

In Bangladesh, co-operative societies have a similarly important role, with 31 fishermen and 11 merchants relying on them for market information. Commission agents 37 fishermen and 14 merchants are also highly significant, playing a vital role in connecting fishermen to large-scale buyers and providing them with pricing trends. Wholesale merchants 36 fishermen and 16 merchants are the next most important source of market information. Unlike in India, where more merchants used TV, Bangladesh fishermen are more likely to rely on television 44 fishermen as a primary source for information.

However, similar to India, newspapers and radio do not serve as meaningful channels for disseminating market information, as reflected by the responses in the survey, where no respondents indicated their usage. The reliance on TV as a source of market data in both countries is likely tied to the increasing penetration of television in rural areas and its role in broadcasting fisheries-related news, government programs, and market trends.

### **Comparative Discussion: India vs Bangladesh**

While both India and Bangladesh show similarities in their reliance on co-operative societies, commission agents, and wholesale merchants for market information, the key differences are in the degree to which television and co-operative societies are utilized by the fishermen and merchants in each country.

**Television:** In Bangladesh, television is the leading source of information for fishermen 44 and merchants 17, whereas in India, it is relatively less used by merchants 12 compared to fishermen 29. This discrepancy suggests that Bangladesh may have a slightly more integrated media-based market information system, with fishermen in the region turning to TV for the latest market trends and policy updates.

**Co-operative Societies:** Both countries utilize co-operative societies, though Bangladesh shows a higher proportion of fishermen 31 and merchants 11 relying on these institutions for market information compared to India 21 fishermen and 8 merchants. This indicates that co-operatives may play a more formalized role in the market systems of Bangladesh, possibly due to better-established cooperative networks in the region.

**Commission Agents and Wholesale Merchants:** Both countries heavily depend on commission agents India: 24 fishermen, 10 merchants; Bangladesh: 37 fishermen, 14 merchants and wholesale merchants India: 25 fishermen, 9 merchants; Bangladesh: 36 fishermen, 16 merchants for obtaining pricing and market information. This suggests that intermediaries have a central role in market access and the flow of information in both nations.

**Others:** In both India and Bangladesh, there is a smaller group relying on informal sources, such as local traders or informal networks, highlighting a potential gap in formal market systems in rural and isolated regions.

The sources of market information in the Sundarbans of India and Bangladesh reveal significant patterns in the way fishermen and merchants access pricing, demand, and market trends. While co-operative societies, commission agents, and wholesale merchants are the primary sources in both regions, television emerges as a slightly more important information source in Bangladesh, particularly for fishermen. The market information systems in both countries share similarities but also reflect the differences in the media access and the role of cooperative institutions.

Improving the formal market information channels and increasing digital literacy could help bridge the gaps in the information system, benefiting the livelihoods of fishermen and merchants in both the Indian and Bangladeshi Sundarbans.

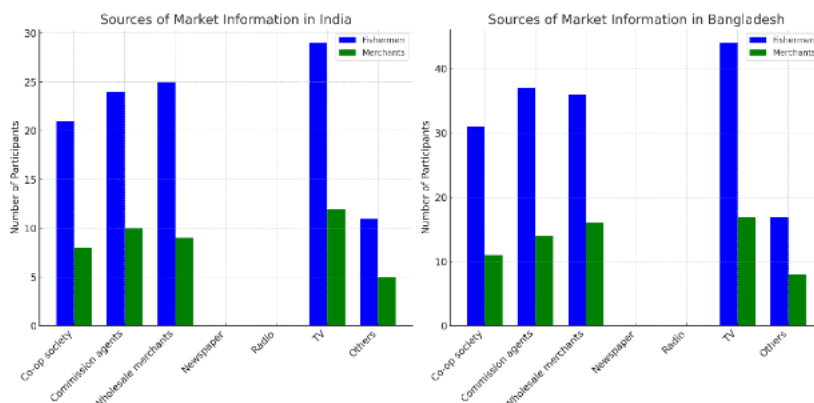
### **Impact of Market Information of Sundarbans in India and Bangladesh**

Market information has a crucial role in the economic return of fishermen and merchants in the Sundarbans. The provision of accurate market information enables fishermen to sell their catch at the best possible prices, resulting in increased profitability. In addition, it allows merchants to analyze market trends, calculate stock levels and finalize their pricing strategy. In major markets, such mispricing, waste of fish, and other discontent can arise from information not being timely and/or accurate.

In India and Bangladesh, television is the most widely used modern information source, enabling fishermen to stay informed about market prices and information about other factors, such as weather, that are crucial in the fishing sector.

Co-operatives and commission agents are nevertheless important sources of market information, although their position has weakened against media outlets.

So, finally, communicating quality data is the mission of the market information system in Sundarbans to facilitate the fishing communities of Indian and Bangladesh integrate and equip themselves to get accurate information about prices, demand, and trends. Even though sources such as co-operative societies, Commission agents and wholesale merchants still account for most of sales, modern media, mainly television, is gaining prominence. The change in sources of information underscores the increasing role of information technology in market access and economic performance of the actors of fishing in the Sundarbans.



**Figure No-2: Market Information**

#### 4. Marketing Finance of Sundarbans in India and Bangladesh

In India, a significant number of fishermen 23 and merchants 10 rely on market finance to meet transportation costs, highlighting the importance of logistics in the fishery supply chain. This is followed by financial needs for processing 20 fishermen, 8 merchants), assembling 17 fishermen, 7 merchants and paying wages and salaries of salesmen 12 fishermen, 5 merchants. Notably, there are no reported financial needs for packing or insurance, indicating a gap in financial awareness or the availability of insurance products for the fishermen and merchants in this region. Furthermore, the need for finance to meet taxes 9 fishermen, 3 merchants and commission payments 9 fishermen, 3 merchants underlines the significance of intermediaries in the region's market structure.

In Bangladesh, the financial patterns mirror those of India, with significant financial allocation towards transportation 36 fishermen, 14 merchants, processing 33 fishermen, 12 merchants, and wages 20 fishermen, 8 merchants. However, the reliance on finance for assembling 28 fishermen, 10 merchants is higher than in India, which could be reflective of the larger-scale operations or more decentralized fishing activities. Like India, there is no mention of finance being directed towards packing or insurance. There is also a notable increase in finance needed for taxes 18 fishermen, 9 merchants, suggesting that tax obligations may be more complex in the Bangladeshi context.

#### Comparative discussion: India vs Bangladesh

Fishers and merchants in India and Bangladesh have some notable differences in their market finance needs. In Bangladesh, financial requirements for the transportation, processing and wages are evident, possibly representing larger transaction volumes or coverage of larger geographical fishing and trading areas. Moreover, although the need for finance in respect of packing and insurance is limited in both regions, the dependence on finance for assembling activities is significantly higher in Bangladesh compared to Guatemala. This may be a reflection of differences in the local infrastructure and the logistical frameworks of both countries. But both regions have a common need finance to pay taxes and commission that suggests the big role that intermediaries play in the fish trade.

#### Impact Market Finance of Sundarbans in India and Bangladesh

The market finance patterns in both India and Bangladesh reveal several implications for the sustainability and growth of the Sundarbans fishery sector. The lack of financial resources for packing and insurance may hinder the ability of fishermen and merchants to scale up operations, leading to increased vulnerability to market risks. Furthermore, the heavy reliance on finance for transportation and wages suggests that a large portion of the operating costs is fixed, potentially reducing profit margins for participants. Addressing these financial constraints could improve the competitiveness of the Sundarbans fishery sector, allowing for more efficient operations and better economic outcomes for fishermen and merchants alike.

#### 5. Marketing Cost of Sundarbans in India and Bangladesh

The marketing costs for fisheries in the Sundarbans, spanning both India and Bangladesh, represent a critical component in the value chain of the fishing industry. These costs reflect the various stages of the supply chain, from the initial gathering of fish to the final sale to consumers. The main components of these costs include assembling, storing, grading, processing, transporting, packing, and insurance, payment of taxes and fees, and other miscellaneous costs.

In India, marketing costs for fishermen and merchants in the Sundarbans can be broken down into several categories:

**Assembling Cost:** This cost, which typically ranges between Rs. 2000 to Rs. 8000, accounts for the expenses related to the initial gathering of fish. The average cost stands at Rs. 5000. **Grading Cost:** The grading process, which involves sorting the fish based on size and quality, incurs a cost between Rs. 2000 and Rs. 24000. The average grading cost is Rs. 13000, indicating significant variation depending on the quality of the catch. **Transportation Cost:** This is one of the most significant costs in the supply chain, with a range from Rs. 2000 to Rs. 20000 and an average of Rs. 11000. Given the remote location of the Sundarbans, transportation costs are crucial in determining the final price of fish. **Taxes and Fees:** Fishermen and merchants pay taxes and fees ranging from Rs. 6000 to Rs. 100000, with an average of Rs. 53000. These charges reflect the regulatory environment governing the fishing industry in India. **Other Costs:** Additional costs, which include miscellaneous expenses such as labor and small overheads, range between Rs. 9000 and Rs. 18000, with an average cost of Rs. 13500.

In Bangladesh, the marketing costs follow a similar pattern to India, with some variations in specific areas:

**Assembling Cost:** The cost of assembling fish in Bangladesh ranges between Rs. 2500 and Rs. 8000, with an average of Rs. 5250. This is somewhat comparable to the Indian context but shows a slight increase in the minimum cost. **Grading Cost:** As in India, grading is an essential part of the supply chain, costing between Rs. 2000 and Rs. 24000, with an average of Rs. 13000. **Transportation Cost:** Transportation costs in Bangladesh are slightly higher than in India, with a range from Rs. 2000 to Rs. 23000 and an average of Rs. 12500. This suggests that the transportation infrastructure in Bangladesh may be slightly more costly, especially in remote areas. **Packing Costs:** Unlike India, which shows no significant packing costs, Bangladesh incurs packing costs ranging from Rs. 3500 to Rs. 9000, with an average of Rs. 6250. This indicates the importance of packaging in maintaining the quality of the fish for transport. **Taxes and Fees:** Like in India, taxes and fees in Bangladesh range from Rs. 6000 to Rs. 100000, with an average of Rs. 53000. This shows that regulatory charges are consistent across both countries. **Other Costs:** As in India, the miscellaneous costs in Bangladesh range from Rs. 9000 to Rs. 18000, with an average of Rs. 13500.

#### Comparative Discussion: India vs. Bangladesh

The marketing costs of Sundarbans fisheries in India and Bangladesh reveal both similarities and differences:

##### Assembling and Grading Costs:

**Assembling and Grading Cost:** Both the countries show similar costs for assembling and grading with minor difference in terms of minimum and maximum amount. The average costs are nearly identical, suggesting a similar approach to these sections of the supply chain.

**Transport Cost:** Bangladesh has a marginally higher transport cost than India, indicating the need for an improved infrastructure and accessibility to remote areas in Bangladesh. These increased transportation expenses in Bangladesh may be attributed to more elaborate networks of logistics of fish distribution, or longer distances traveled.

**Packing Costs:** Bangladesh seems to have a higher incidence of packing costs, owing to the longer routes or higher standards pursued to preserve fish quality.

**Taxes and Miscellaneous Costs:** Tax and miscellaneous costs are fairly similar in both countries with an average of Rs. 53000 and Rs. 13500 respectively. This indicates that both countries' fishing industries operate under similar regulatory conditions.

##### Impact of Marketing Costs

Marketing costs in the fishing industry of the Sundarbans affect the sustainability and profitability. High transport, grading costs, taxes and other overheads eat a larger part of fishermen's and merchants margins. Seabird bycatch represents an important behavioural and ecological challenge for fishing and may indicate the intensity of economic activity in the sector, and these costs represent just a fraction of the final price of fish in both countries. These costs, particularly in transportation and packaging, could be mitigated with improved infrastructure, access to finance and regulatory processes. Additionally, by leveraging more efficient logistics and marketing approaches, including direct selling models or digital marketplaces, both India and Bangladesh may reduce the reliance on intermediaries, which would contribute to additional cost savings for fishermen.

## 6. Assembling, Processing and Storage of Sundarbans in India and Bangladesh

### Comparative Discussion: Assembling of India vs Bangladesh

Contrasting data of India and Bangladesh denotes that higher participations were assembled at Sundarbans shore and society premises in Bangladesh. This discrepancy may be due to a number of factors, including potentially a larger fishing industry, more orderly infrastructure, or a much higher dependence on centralized locations to manage the catch.

India is doing it in lower levels at society premises compared to Nepal, which may suggest that collective fish handling is operating under fewer formal mechanisms in India. The relative lack of activity found at private

premises or specialized storage units in both countries is suggestive of a preference for open, accessible areas such as the shore and cooperative space when assembling fish.

**Comparative Discussion: Processing of India vs Bangladesh:**

The storage practices among fishermen and merchants in the Indian and Bangladeshi territories of the Sundarbans are not the same, but they do share some similarities. Bangladesh on the other hand has both a higher percentage of fishermen (41) and merchants (16) using storage; India has only 27 fishermen and 11 merchants reporting use of the facilities. This is likely due to some underlying better access to storage infrastructure or more emphasis on holding product availability year round. But most fish producers in both India and Bangladesh depend to a great extent on selling the fresh product as soon as possible, which suggests that improvements can be made in adequate storage of fish, and the region is yet to make sufficient progress in that sector.

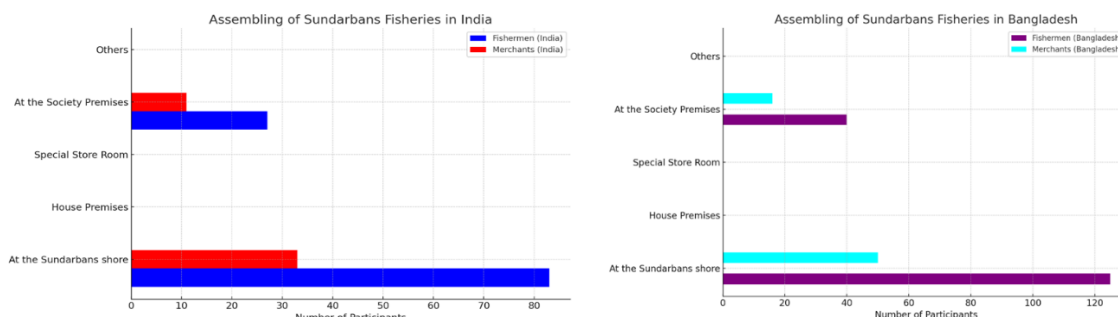
During seasons of overproduction, the lack of adequate storage in both regions could lead to massive wastage of fish. And this dependence on real-time market sales can lead to price volatility, especially when fish are plentiful. More widespread use of storage could stabilize market prices by averaging out fluctuations in supply and providing a steady source of availability.

**Comparative Discussion Storage of india and bangladesh**

The cold storage landscape in India and Bangladesh has some key similarities and differences.

Cost Distribution: The number of fishermen and merchants reporting cold storage costs above Rs. 200,000 per year in both countries. This indicates a pattern of growing investments into refrigeration and storage technologies in these two regions. Bangladesh, on the other hand, seems to have higher numbers of response rates of costs above Rs. 200,000 as compared to most countries which may show the extent of commercial scale of operations and requirement of advanced storage solutions that the country may be heading to.

Effects on Small and Large-Scale Fishermen and Merchants: Small-scale fishermen in both countries are more likely to report lower cold storage costs. Fruits and vegetables in cold storage are generally of waste, and the high price of large-scale operations demonstrates that cold storage is a considerable cost for people who want to save high volumes of fish with a wider molten range.



**Figure No-3 : Assembling in India and Bangladesh**

**7. Grading, Pricing and Distribution channels of Sundarbans in India and Bangladesh**

**Discussion of Comparative: Grading of India and Bangladesh**

India and Bangladesh Response Comparison: Grading Demand is much higher in Bangladesh than India. While in India, 90% of fishermen and 88.6% of merchants acknowledge the need for grading, in Bangladesh, it is 89.1% of fishermen and 89.4% of merchants. Again, while we see a strong consensus on the importance of grading in both regions, the marginally higher proportion of responders in Bangladesh could suggest that systems enabling grading processes are possibly more developed in that region. Additionally, more positive attitudes toward grading in Bangladesh might be correlated with a more structured system for fisheries management and fish product commercialization. By contrast, implementing grading systems on a large scale remains a challenge even for India, particularly where it comes to small-scale fishermen in rural locations who do not have access to sophisticated infrastructure.

**Comparative Discussion: Grading Location of India vs Bangladesh**

When comparing grading practices between India and Bangladesh, both countries demonstrate a strong reliance on self-grading by fishermen and merchants, with fewer institutional or government-based interventions. However, Bangladesh shows a higher degree of involvement in cooperative society grading compared to India. In India, the cooperative society's role is less prominent, suggesting that the grading system might be less organized or institutionalized. Moreover, both countries lack government-appointed grading systems, which



highlights a gap in formal regulation and standardization in the grading process. This disparity might point to differences in local governance, institutional support, and infrastructure in the two countries.

#### **Packing of Comparative discussion: India vs Bangladesh**

Where fish packing practices are concerned, fishermen and merchants refuse to adopt methods of packing in both India and Bangladesh, indicating similar trends between the two countries. For packing, Bangladesh involves 13% of fishermen and merchants, while 13% (fisherman) and 14% (merchants) in India, thus involving slightly higher level in packing in Bangladesh.

While both countries exhibit some difficulties with implementing packing practices on a larger scale, Bangladesh seems to show a slightly more advanced infrastructure or market dynamics that promotes packing techniques, yet it is still quite limited. In contrast, India shows a significantly lower proportion of respondents packing their goods, suggesting potential opportunities for growth in packing infrastructure and practices.

#### **Prices of Comparative Discussion: India vs Bangladesh**

**Market Supply and Demand:** Both countries have a strong reliance on market supply and demand for determining prices, but the dominance is more pronounced in Bangladesh. Bangladesh has a larger number of respondents indicating this as the primary pricing factor. **Co-operative Societies:** The role of cooperative societies in price determination is marginal in both countries, with only a handful of respondents mentioning it, but India shows slightly more involvement from cooperatives. **Wholesale Merchants and Commission Agents:** In India, wholesale merchants and commission agents have a moderate role in pricing, with commission agents playing a slightly more significant role than in Bangladesh. In contrast, Bangladesh shows a higher dependence on wholesale merchants to fix prices, which might indicate a more centralized pricing mechanism at the wholesale level. **Other Mechanisms:** Neither country reports significant price-setting mechanisms beyond those discussed above, with others contributing no responses for either fishermen or merchants.

#### **Distribution channels of Comparative Discussion: India vs Bangladesh**

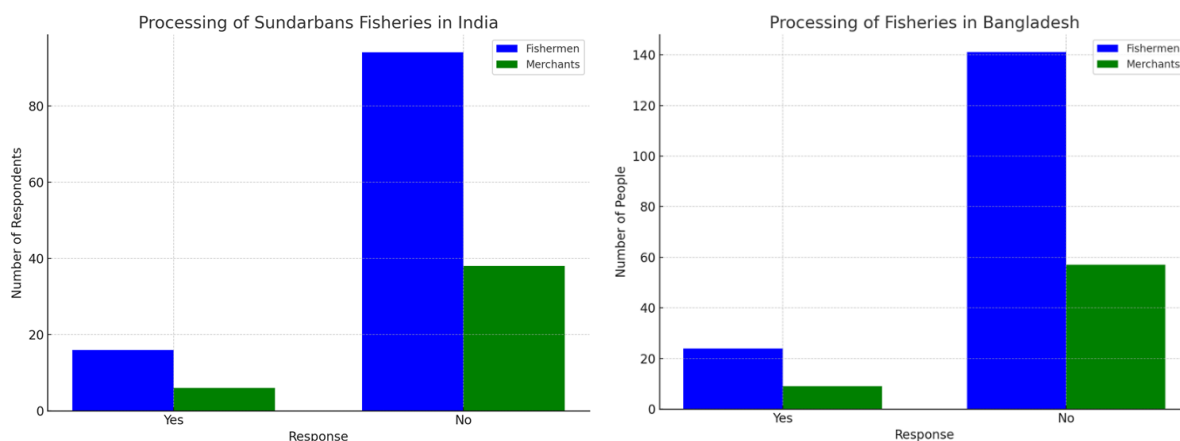
Analysis of the distribution channels of Sundarbans fisheries involved comparison of various similar and different aspects of both India and Bangladesh fisheries. Commission agents are the main intermediaries in the distribution process for both countries; such informal or intermediary-driven markets are common in this region, making these markets similar. In contrast, Bangladesh has greater participation from commission agents, suggesting that the market structure in Bangladesh is likely to be more fragmented/diverse than in India.

The biggest difference perhaps is in the key function of cooperative societies. The co-op societies' role in India's distribution chain is relatively small at just 13 fishermen and 5 merchants. In comparison, Bangladesh has a handful more in the co-op realm, at 19 fishermen and 8 merchants. This may imply that cooperative societies in Bangladesh take on a more crucial role in promoting collective action and enhancing market access, offering fishermen greater bargaining power in price discussions.

As well as while the number of wholesale and retail merchants is comparably large in each countries, Bangladesh has extra wholesale merchants and an extra important quantity of retail merchants. This may indicate a wider and more varied market of local consumers in Bangladesh that retail merchants have helped satisfy for different consumer demands.

Neither of these countries appears to export fish, as neither fishermen nor merchants have been recorded exporting fish beyond their national borders. This signifies attention on local consumption and local market demand rather than on foreign trade.

Thus, the distribution channels of Sundarbans fisheries in India and Bangladesh show some commonalities, however, Bangladesh has a comparatively more diversified and organized system with stronger participation of wholesale dealers, cooperative societies and retail merchants. Both countries heavily depend on intermediaries to link fishermen to larger markets, but the particulars of their distribution networks demonstrate some intriguing differences that reflect local economic, social, and infrastructural factors



**Figure No-4: Processing of Fisheries in India and Bangladesh**

## 8. Conclusion:

Fisheries marketing dimensions of the Sundarbans, the present study Reconnaissance of Full-length paper recognizes, the ginger job of this sector in teachers the livelihoods of 300000 fishermen and merchants in India and Bangladesh. In the Indian Sundarbans, fisheries production has risen steadily over the past years, from 0.872 million tons in 2017 – 2018 to 0.956 million tons for 2021 – 2022 (DESI, 2021) made possible despite the threats of overfishing, environmental degradation, and rising pressures from climate change. Findings indicate substantial socio-economic differences in resource utilization and marketing strategies between the two countries, and similar gaps within the Pakistani economy, confounding the need to maximize sector sustainability. These challenges can be overcome through improved resource management practices, including the implementation of stricter regulations and more eco-friendly fishing methods, the strengthening of marketing and distribution systems, and the adoption of new technologies to enhance effective utilization while reducing the ecological footprint. And we need to do everything we can to combat climate change, and especially protecting and restoring mangrove ecosystems. Later studies need to address issues dealing with how climate change can affect fisheries, how technology can help make fishing sustainable, how cross-border better resource management between India and Bangladesh can be pursued, as well as socio-economic disparities within the fishing communities of the Sundarbans to ensure equitable growth and long-term sustainability.

## References:

### Book Reference

- [1]. Editor-Director. 2014. Traditional Knowledge and Social Practices. pp. 1-248. (Published by the Director Zool, Surv. India, Kolkata)
- [2]. Hoq, M.E. and A.K. Yousuf Haroon (Eds.). 2012. Integrated Coastal Management (ICM) in Bangladesh. Support to Sustainable Management of the BOBLME Project, Bangladesh Fisheries Research Institute (BFRI), Bangladesh. 88 p.
- [3]. Hoq, M.E. and A.K. Yousuf Haroon (Eds.). 2012. Sundarbans Fisheries of Bangladesh: Current Status and Potentialities. Support to Sustainable Management of the BOBLME Project, Bangladesh Fisheries Research Institute, Bangladesh. 56 p.

### Journal Reference

- [4]. Amin, M., Hossain, M. A., & Raza, M. H. (2019). Fisheries of the Sundarbans: A socio-economic analysis of local fisher folk. *Aquatic Ecosystem and Fisheries Journal*, 12(3), 153-167.
- [5]. A.J., Madugu, A. Edward. Marketing and Distribution Channel of Processed Fish in Adamawa State, Nigeria, *Global Journal of Management and Business Research*, Volume 11 Issue 4 Version 1.0 March 2011.
- [6]. Abdul hakin, "Export Oriented Growth of fisheries an appraisal", *Seafood Export Journal*, Vol. 21, (3) Kochi 1979 pp23-27
- [7]. Abdulla-Al-Asif and Md. Ahsan Bin Habib, Socio-economic condition of fish farmers of Jhikargachha upazila in Jessore district, Bangladesh, *Asian J. Med. Biol. Res.* 2017, 3 (4), 462-475.
- [8]. Bangladesh Bureau of Statistics (BBS). (2021). Statistical Yearbook of Bangladesh 2021. Ministry of Planning, Bangladesh Government Press.
- [9]. Bangladesh Department of Fisheries. (2022). Annual Fisheries Statistics of Bangladesh. Dhaka: Ministry of Fisheries and Livestock.
- [10]. Bashar, M. A., Gazi, M. A., & Khatun, A. (2018). Climate change and its impact on fishery resources in the Sundarbans. *Environmental Science and Policy*, 39, 33-42. <https://doi.org/10.1016/j.envsci.2018.01.010>
- [11]. Bangladesh Fisheries Research Institute (BFRI): Bangladesh Fisheries Research Institute. (2022). Research and Development in Fisheries and Aquaculture.
- [12]. Khan, S., Rahman, M. S., & Karim, R. (2020). Economic significance of the Sundarbans fisheries in Bangladesh. *Journal of Environmental Economics and Management*, 18(4), 204-215.
- [13]. Siddique, A., & Foyzal, M. (2021). Ecological biodiversity of the Sundarbans and its role in coastal protection. *Marine and Coastal Ecosystem Studies*, 15(1), 67-78.