

# Livelihood Status of the Hilsa (*Tenualosa ilisha*) Fishers: The Case of Coastal Fishing Community of the Padma River, Bangladesh

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## ABSTRACT

The Padma is the second longest river of Bangladesh and contributes significantly to fisheries production and dependent fishers' livelihood. The present study assessed livelihood status of the hilsa fishers employing household interviews, Focus Group Discussions (FGDs), and key informant interviews from July to October, 2018. Main livelihood activities were fishing; fish drying, fish trading, net mending, boat making and repairing activity, agriculture, small business and daily labor. Among total 288 households, 150 were exclusively involved in fishing, 110 fishing and other agricultural farming and only 28 were involved in small business. Maximum number of fishers (39%) belonged to the age group of 31 to 40 years, 21% belonged to the age group of 21 to 30 years. Fishers' annual income ranged from 32000 ± 510 BDT to 48000 ± 750 BDT whereas 10% had annual income 100,000 ± 1120 BDT. The overall livelihood status of the hilsa fishers was not satisfactory due to some social and economic constraints like increasing fishers' number, low income, lack of alternative income generating activities, loan problems, piracy, price hike and conflicts with stakeholders for resources. Effective initiatives and their proper implementations are very crucial to improve the livelihood of the fishers.

**Keywords:** Hilsa fishers; Livelihood; Padma river; Bangladesh

## INTRODUCTION

Hilsa (*Tenualosa ilisha*) is an anadromous and widely distributed fish and occurs in the freshwater rivers, estuaries, coastal and marine waters [1]. The high nutritional value, taste and culinary properties of hilsa makes it macher raja (king of fish) in Bangladesh [1-3]. There are three types of hilsa species in the Bay of Bengal named as *Tenualosa ilisha*, *Tenualosa toil* and *Hilsa kelee*. *Tenualosa ilisha* is recognized as the national fish of Bangladesh as majority of Hilsa fish captured in Bangladesh is *Tenualosa ilisha* [1,3,4]. Among the total Hilsa catch most of the hilsa (60%) has been caught from Bangladesh, 15% from India, 20% from Myanmar and remaining from some other countries [3,5]. Hilsa contributes 11% of total national production (394, 951 MT) and constitutes 1% of the Gross Domestic Product (GDP) of Bangladesh [1,6]. Hilsa fishery also support livelihood of a large number (4 million) of people of

Bangladesh directly or indirectly [7,8]. Approximately 1 million fishers directly depend on hilsa for their livelihood another 3 million people indirectly depend on hilsa fishery through trading, transportation, marketing and processing [7,8]. Any negative fluctuation of hilsa catch put adverse impact on the livelihoods of hilsa dependent community as well as in country's economy [8-10].

A sharp drop was observed in hilsa catch during 2001 to 2003 that put significant impact on the economy of the country and livelihoods of hilsa dependent community [1,4,11]. The main causes of such reduction included use of small meshed net, increasing number of fishers, discrimination in relief distribution and nepotism of the local representatives, poverty and greedy nature of fishers, lack of Alternative Income Generating Activities (AIGAs), overfishing, pollution, poor implementation of existing policies, political influence, bribery tendency among

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different stakeholders, ignorance and illiteracy of fishers, lack of patriotism, lack of Community Based Management (CBM) and co-management, change or closure of migratory routes, climate change and indiscriminate catch of brood and juvenile fish (locally called jhatka) [6-8,11,12]. Considering the situation the Government of Bangladesh has taken significant initiatives to conserve hilsa including establishment of hilsa sanctuary, closing fishing area, restricting illegal gears and fishing seasons with enforcement of legal issues [3,8,13,14]. These measures were taken to ensure the sustainable production of hilsa and sustainable improvement of the socioeconomic status of the fishing communities. In the year 2005-06, about over 10% of the country's total fish production came from hilsa [15,16]. Average hilsa production was about 215 thousand MT worth US \$380 million that contributed 1.0% to the GDP and hilsa production was increasing day by day that became 387 MT [1,17,18] (Figure 1).

The mighty Padma is one of the trans-boundary rivers that crosses through Bangladesh and India [19]. The river between Aricha and Sureshwar (Shariatpur) is therefore best called Padma. The Padma joins the Meghna 5 km from Sureshwar of Naria Upazila under Shariatpur district. The Lower Meghna is actually a joint flow of the Padma and the Meghna. People of riverside particularly from Char Atra, Sureshwar, Haloishar, Banglabazar and Gharishar of Naria Upazila depend on fishing particularly hilsa fishing for their livelihood. Livelihood comprises the capabilities, the assets, the activities and access of facilities that together determine the living standard of a household [18,19]. The livelihood assets such as human, physical, natural, financial and social capital form the building block of livelihoods [8,20,21]. Livelihood is sustainable when it can cope with and recover from stresses and shocks both now and in future [22,23]. Sustainable development of livelihood is pre-requisite for achieving the Millennium Development Goals (MDGs) [18]. Sufficient and authentic information on the livelihood characteristics of the target community is imperative and decisive but lack of necessary information of economically backward fishing community is one of the major barriers to the successful implementation of the livelihood developmental program [8,18].

Fishers are one of the most vulnerable communities in Bangladesh who lives from hand to mouth and are considered as poorest of the poor [8,19,24,25]. Per capital annual income of the fisherman are BDT 2,442 i.e. about 70% lower than the per capital income of the country as a whole [19]. Among the fishers hilsa fishers suffers more due to restriction on hilsa catch during ban period, frequent occurrences of natural calamities and seasonality. As a result, they are unable to earn sufficient money to meet basic needs [3,8,26-28]. So, the fishers become aggressive and exploit the available natural resources to support their livelihoods. Although hilsa

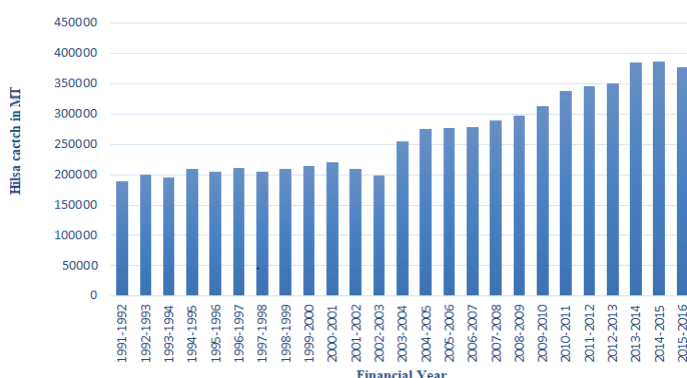


Figure 1: Catch of hilsa in Bangladesh.

fishery is playing a significant role in country's economy, there are very few studies on the livelihood characteristics of the hilsa fishers particularly fishers of the Padma river. Considering the above facts, the present study is carried out to assess the socioeconomic status, strength, weakness, opportunity, threat and potential AIGAs (Alternative Income Generating Activities) of the hilsa fishers of the Padma river.

## Materials and Methods

### Location of the study areas

The study was conducted in three fishing communities of Char Atra union of Naria upazila under Shariatpur district. Most of the fishermen of the selected communities were professional and they engaged in fishing round the year. The communities were Char Atra south, Char Atra middle and Char Atra north. The main criteria of selecting Char Atra Union were:

- Position on the bank of the lower Padma river that belong to the 5<sup>th</sup> Hilsa fish sanctuary of Bangladesh.
- Involvement of large number people in fishing (70% of the total professional of the village except the expatriates).
- Engagement of good number of women in income generating activities.
- Existence of fishers, missing name in the govt. fishermen list.
- Availability of active fishers' representative having good relation with DoF (Department of Fisheries) both in district and upazila.
- Connectivity with fish ghat (fish landing center).
- Presence of very poor, ladless fishing communities.
- Most of them had no fishing assets like boat, net etc. but didn't get any govt. support yet. They either rent or share the fishing equipments and work with boat owner as crew, only 20% fishermen could buy low cost net (e.g. current jal, moia jal etc.) by taking loan from different NGOs with high interest; these phenomena indicated that there was a very good chance of co-management by involving govt., NGOs, stakeholder and fishers.
- People were very eager to work cooperatively and deposited money for better livelihood; that indicated the possibility of community based fisheries management approach.
- People were very needy and very keen to work hard to improve their living status, by using this nature of the community there was a chance to work for the better livelihood of the fishing community through the involvement of AIGAs activities and proper training support that would abstain them from illegal fishing and ultimately increase Hilsa and other fish production (Figure 2).

### Data collection

The study was based on primary data that were collected through several approaches.

Household survey and survey during fishing, individual interviews, and focus group discussions, Key informant interview, ideas through direct observation were employed for data collection.

Before collecting the primary data, a draft semi-structured questionnaire was designed following De Vaus [29]. The



Figure 2: Location of the study areas.

questionnaires were pilot-tested with a small sample of respondents. According to the experience of pilot-testing the final questionnaire was improved, rearranged and modified. The final questionnaire included the questions on socioeconomic condition, age distribution, family size, literacy status, occupation, years of involvement in fishing, annual income etc. Community people were interviewed on boat, bank of the river, fishers' houses, fish markets, tea stall and where participants could sit and feel comfortable.

### Data analysis

The data obtained in the questionnaires were analyzed in MS Excel (Version 2010) using descriptive statistics in the form of frequencies and percentages. Data were presented in the form of graphs and tables to provide graphical representations of the data. After analyzing all the data, results were verified by nine household interviews (three in each community) and three FGD in the fishing community of the study areas (one in each community).

## Results and Discussion

### Social profile of the village

There were 288 household (HH) in the Char Atra village that support almost 2000 people. Among 288 HH, 150 HH were exclusively involved in fishing, 110 HH were involved both in fishing and other agricultural farming where 28 HH were involved in small business for the maintainannce of their day to day life. Only males were involved in fishing among the local inhabitant but some Gipsy women are also found in fishing in this area. There were at least 150 nomad found in this area who stayed in this village atleast 6 months a year mainly from Pabna, shirajgonj region (Table 1).

### Housing and infrastructure

Most of the fishers are poor, landless and helpless. 60% fishers live on others land by making tin shed house with wooden floor by paying 2000 taka per year while 40% fishers lived in their own

Table 1: Occupation wise number of household.

| Occupation                             | Number of Household (HH) |
|--|--------------------------|
| Exclusively involved in fishing        | 150                      |
| Fishing and other agricultural farming | 110                      |
| Small business                         | 28                       |
| Total                                  | 288                      |

house. Almost 100% house of this community was situated on high plinth to remain protected from unexpected overflow. Sunny et al. [8] also found similar housing pattern among the hilsa fishing community of the Meghna river.

Road and transportation system was not well developed. There was only a local highway road to communicate with district and upazila headquarter but the status of other roads which were used in local communication among the village were very poor. People had to depend on Motorcycle, Rickshaw, Auto for communication through very high cost. Mahmud et al. [3] found similar poor communication system in the area of the hilsa sanctuaries. Infrastructure and transportation was well in this area but status of housing and communication was very truculent adjacent to fishing communities in all areas but very worst in Char Atra south where dirt road became muddy in the rainy season and was dusty in winter or in the absence of rain.

### Age structure

In the present study among all the fishers 39% people were found engaged in fishing at the age group of 31-40 years, 31% people were in 21-30 years, 15% people were below 20 years, 11% people were between 21 to 30 years and only 4% people were above 50 years. The results of a number of studies were more or less convincing with the present study. Khan et al. [19] found most (57%) of the fishers of the Padma river were between 31 to 50 years old. Rana et al. [28] mentioned that 33% hilsa fishers were 31 to 40 years old in the Meghna river. Minar et al. [30] found that most of the fishermen belonged to the age groups of 31 to 40 years (56%) in the Kirtonkhola river of Barisal (Figure 3).

### Sex composition and religion

The sex composition of this area was female dominated and

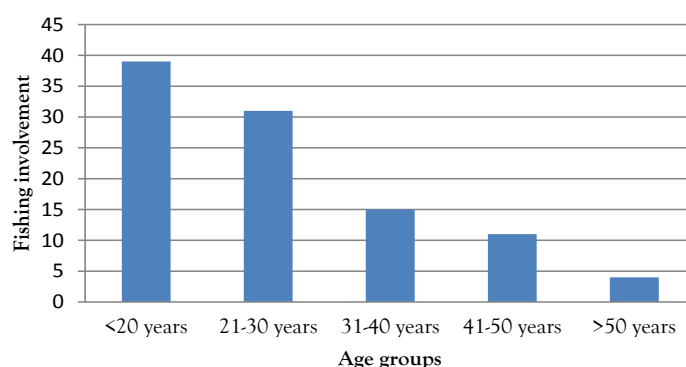


Figure 3: Age structure of the fishers of Char Atra village.

percentage comprised 45% male and 55% female but no female fisher was found. The main reason for no involvement of female fishers in the Padma river fishing was social restrictions. Similar findings were reported by Kabir et al. [31] and Hossain et al. [32]. Sunny et al. [8] also reported that women had less freedom both socially and economically than men that restricted their activities.

The increasing birth rate affected the income of the household. In the present study 100% fishermen were Muslim. This study agrees with the finding of Hasan et al. [18] in Padma river. At present the involvement of Hindus are increasing in the Padma river fishing activities continuously which is also reported by Khan et al. [18] in Manikganj district.

### Marital and family status

Marital and family status is important indicator due to its active influence on occupation, income, socio-economic status, food consumption and nutritional status of the households. Among all the fishermen 60% were married, 30% unmarried and 10% were divorced. No oppressed persons were found in the study. Nevertheless, the results of a number of studies were more or less convincing with the present study. Very similar finding were reported by Halder et al. [33] who found that most of the fishermen (78%) were married and 22% were unmarried.

Family set up is changing from joint to nuclear type. Nuclear and joint family were present in the study areas where nuclear families included husband, wife, children and joint family included parents, husband, wife, children, brother in law, sister in law, nephew etc. Size of the family was  $5.1 \pm 2.11$  members (mean  $\pm$  standard deviation) persons in nuclear families and  $10 \pm 2.05$  members (mean  $\pm$  standard deviation) persons in joint families. Hasan et al. [18] found that among fishers of the Padma river in Rajshai region 78% had average five members in their family and 14% had 3 members while 8% had nine members in their family that support the findings of the present study (Figure 4).

### Educational status

Education is very important in socio-economic aspects. 41% people of Char Atra were totally illiterate i.e couldn't sign but the literacy rate was 85% among the young children that indicated the educational status in the study areas was improving day by day. Majority of them (46%) were within the level of primary education. Here 9% people were in secondary level, 2% in higher secondary and 2% completed their graduation. It was found that due to the fisher's poor socio-economic conditions, they could not get the opportunity to take education that was supported by the findings of Khan et al. [19]. Again, The findings of the study was different from the findings of Ali et al. [34] who reported most of the fishers was illiterate and the value was 88% (Figure 5).

### Health status

Health status is an important indicator of the livelihood status. Health facility of this community was not up to the mark. Upazila

hospital was very far from the community. People had to take treatment from the community clinic of their village but there was no proper facility for necessary pathological test and scarcity of expertise doctor and nurse was also notable. It was found that  $70.2\% \pm 3.1\%$  fishers (mean  $\pm$  standard deviation) took treatment from village doctors who had only limited knowledge of practical works but no knowledge of medical sciences,  $22.7\% \pm 2.4\%$  from Upazila hospital and  $7.1\% \pm 1.3\%$  from kabiraj. The findings of the study agreed with findings of Hasan et al. [18] and Khan et al. [19] who found 68% and 72% fishing household took health facilities from the village doctors.

### Nutritional status

Status of nutrition was very poor among the fishing community. Most of the families didn't have proper knowledge on nutritional quality of food and importance of balance diet. Price hike of the daily commodities, ignorance of the fishers, more income tendency were the main reason of the malnutrition of this community. Fishers wanted to sell all of their catch in search of more money, ignoring the protein and nutritional demand of their family. Hasan et al. [18] found that most of the fishermen sold their catch that being captured from the Padma River except some low value fish. Islam et al. [35] also found nutritional callousness among the marginal fish farmers of Barisal region.

### Drinking water facility

It was very inspiring that almost 100% people of this community used safe drinking water from their own tube-wells or neighbors tube-wells as a source of water for drinking. They used safe water not only for drinking but also for cooking and bathing etc. which was not common in all fishing communities. Hasan et al. [18] found in their study 100% fishers of the Padma river used tube-well as a source of drinking water. Khan et al. [19] reported that 94.44% non-migratory fishers of the Padma river used tube-wells as a source of drinking water while only 10.53% migratory fishers of the Padma river used nearby tube-well water whereas, the greater proportions (89.47%) used river water for drinking and other purposes.

### Sanitary status

Sanitary system of this community was satisfactory. Most of the people were aware of sanitary problems and very keen to ensure safe sanitary facility as a reason almost 100% people used sanitary latrine. Similar findings were reported by Kabir et al. [36] while the findings of Hasan et al. [18] were different from this study. They found poor sanitary condition in the fishing community of

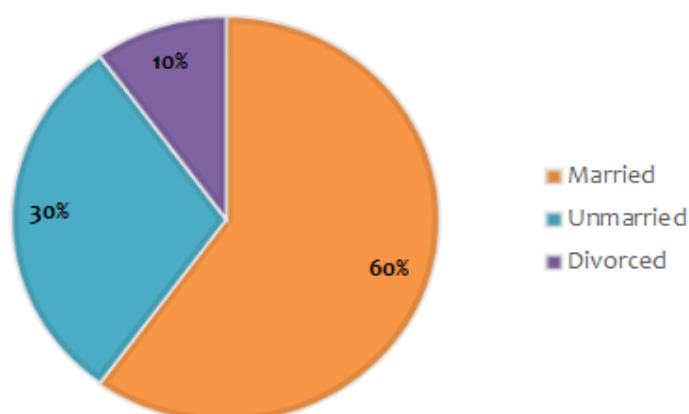


Figure 4: Marital status of the fishers of Char Atra village.

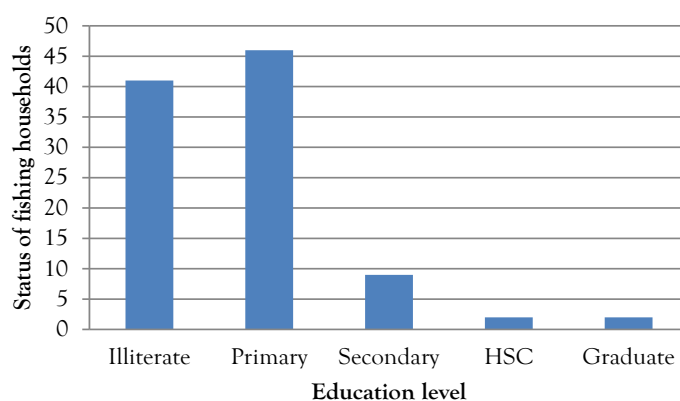


Figure 5: Educational status of Char Atra.

the Padma river in Rajshahi region where 92% fisher household used unhygienic toilet.

### Electricity facility

Status of electricity was very poor in this community. Only 30% people had electricity facility that put an adverse impact on literacy rate of the community. 70% of the people of this community used solar power as a source to enlighten their house.

### Occupational status

As the survey focused on the fishermen, fishing was obviously their main occupation. There were full time fishermen those solely depended on fishing for their livelihood. In the surveyed areas, 55% fishermen were involved solely in fishing, 15% in fishing with agriculture, and remaining 30% in day labor with other profession. Rana et al. [28] found that during the ban period fishermen seek alternative income opportunities and involved in various occupations as migrate to town 11%, boat and net making 24%, agricultural works 36%, rickshaw pulling 2% and remaining 27% without work.

### Income and living standard

The income of the fishermen was very poor. In most cases the fishers' income in Bangladesh was below poverty level [1,3,28]. There was rare alternative income source for the fishers for maintaining livelihood except catching and selling fish. There were very limited options for non-fishery related activities. Fishers got wages from 200 BDT to 300 BDT depending on their capability. During study period it was observed that the highest (45%) and the second highest number (30%) of the fishers' annual income was 32000 ± 510 BDT and 48000 ± 750 BDT respectively. The highest and the lowest 100,000 ± 1120 and 20,000 ± 205 BDT was earned annually by 10% and 15% of the fishers'. Moreover, every year many people were getting involved other profession as a result of increasing continuous fishing pressure and climate change [37,38]. Alternative income generating activities is must for improvement of living standard of the people of this community. Income source should be diversified and engagement of women in income generating activities by maintaining the norms of their own society and religions can alter the situation. Following suggested AIGAs (Alternative Income Generating Activities) could be helpful in this regards (Tables 2 and 3).

### Loan and Credits

Fishers took loan to maintain their family during ban fishing periods as well as for purchasing fishing equipments (e.g. net, fishing pot, boat etc.). Fishers took loan mainly from NGOs (40%), 35% took loan from boat owners or mahajon where they bound to work round the year. 22% fishers took loan from arottdar or



Figure 6: Occupational status of Char Atra village.

Table 2: Potential AIGAs for Fishermen.

| Name of potential AIGA  | Rank | Sutability                                  | Challenges                           |
|---|------|---|--------------------------------------|
| 1. Small business   | 1    | Who completed primary education             | • Lack of skill<br>• Lack of capital |
| 2. Auto mobile mechanic   | 1    | Part time/full time (Age 15 to 40)          | • Lack of skill<br>• Lack of capital |
| 3. Mobile mechanic  | 2    | Part time/during less availability (Age>40) | • Lack of skill<br>• Lack of capital |
| 4. Cage culture in open water   | 2    | Part time/during less availability (Age>40) | • Lack of skill<br>• Lack of capital |
| 5. Crop cultivation   | 1    | Part time/during less availability (Age>40) | • Lack of skill<br>• Lack of capital |
| 6. Aquaponics (Integrated culture of fish and vegetables in homestead area) | 1    | Part time/during less availability (Age>40) | • Lack of skill<br>• Lack of capital |
| 7. Poultry farm   | 1    | Part time/during less availability (Age>40) | • Lack of skill<br>• Lack of capital |
| 8. Rickshaw pulling   | 2    | Part time/during less availability (Age>40) | • Lack of capital                    |

Table 3: Potential AIGAs for fisherwomen.

| Name of potential AIGA                         | Rank | Sutability              | Challenges                           |
|--|------|-------------------------|--------------------------------------|
| 1. Sewing (Nakshi katha)                       | 1    | Age 15 to 40            | • Lack of matured value chain        |
| 2. Baby toys (made by cloth, clay, paper etc.) | 1    | Age 15 to 40            | • Lack of skill<br>• Lack of capital |
| 3. Handy craft (made by bamboo, cloth etc.)    | 1    | Age 15 to 40            | • Lack of skill<br>• Lack of capital |
| 4. Hen/duck rearing (indigenous)               | 1    | Age>40                  | • Lack of skill<br>• Lack of capital |
| 5. Vegetable cultivation in yard               | 1    | Age>40                  | • Unconsciousness                    |
| 6. Fish pot mending                            | 2    | Age>40                  | • Lack of skill<br>• Lack of capital |
| 7. Net mending                                 | 2    | House wife and children | • Lack of skill<br>• Lack of capital |

dadondar (money lender), only 2% could take loan from bank due to complexity of official system. Rana et al. [28] found similar scenario among the fishers of the Meghna River. They reported that 93% fishermen took loan but the institutional credit facilities were very limited for the fishermen community.

### Livelihood assets

Livelihood become sustainable when it can be able to cope with and overcome stresses, shocks, and maintains capabilities and assets for present and future generation [39]. The fishing communities had more or less various types of livelihood assets as defined by the DFID sustainable model which could be categorized as human, natural, financial, social and physical [40]. Natural capital of this region included land, water, wild fry, fish and minerals. Human capital included the knowledge, skills, working ability and good health of fishers. fishers' incomes, savings and credit are the financial capital.

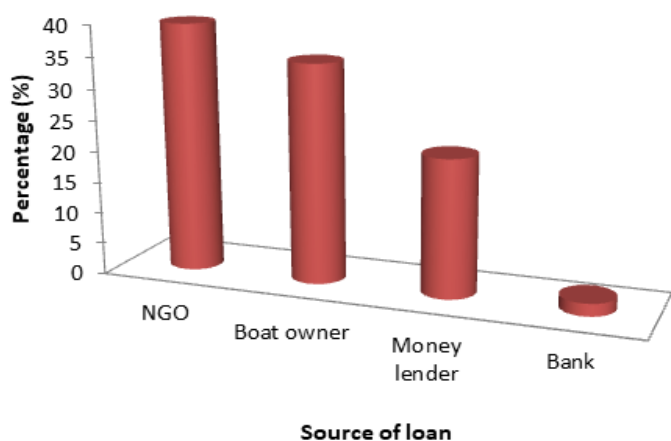


Figure 7: Source of loan taken by fisherman of Char Atra village.

House, fishing gear, boat, vehicle, road, communication system, market, electricity, water supply, sanitary and health facilities were considered as the physical capital of the fishing community. Social capital included relationship, cultural norms, sharing of knowledge and cooperation among rural communities (Table 4).

### Livelihood Constraints and Vulnerability Contexts

Fishers of the Padma river of the study sites encountered many problems from natural and anthropogenic sources. The main constraints were natural calamities, reduction in fish catches, ban periods, burden of dadon (rent money), poor market facilities, loss of fishing equipments especially nets and boats during fishing etc(Figure 8). Dependency on single profession (fishing) made their life more vulnerable. Conflicts between the stakeholders like boat owner, money lender, also hampered the stability of the livelihood and allures fishers to illegal fishing [3,12]. Fishers had to take loan from the local money lenders as they didn't have enough assets to mortgage in the bank and couldn't have access to take loan from the bank. Fishing ban period also induced fishers to take loan from the local money lender and NGOs with high interest to support their family as the support they got from the government was inadequate to maintain their daily needs. So, they couldn't go out from the debt cycle that made them poorer and poorer day by day. The vulnerabilities of this community could be discussed within three parts. These are- i) Shocks, ii) Adverse trends and iii) Unfavorable seasonal patterns that could affect the living status of the fishing communities(Table 5). All these had significant impacts to the livelihood of fishers.

### Shocks

Illness of fishers was the main shocks as then they could not go out for fishing in that time and their income became stopped. Shocks

Table 4: Livelihood assets of fishers.

| Capital assets    | Available resources  |
|-------------------|--|
| Natural capital   | River, canal, pond, land, water, fish and natural biodiversity.                            |
| Human capital     | Fishing experience, traditional knowledge and ability to labor.                            |
| Physical capital  | Shelter, fishing gear, boat Vehicle, transportation, energy and road network.              |
| Social capital    | Membership of groups, networks of road, access to wider institution and community bonding. |
| Financial capital | Access to credit and micro-savings.  |

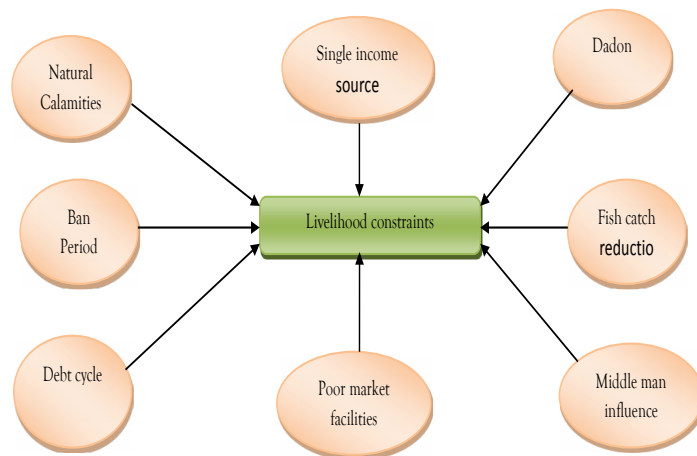


Figure 8: Livelihood constrains of the hilsa fishers.

Table 5: Vulnerabilities of fishing Communities.

| Shocks   | Trends  | Seasonality   |
|--|---|---|
| <ul style="list-style-type: none"> <li>Fishers' illness</li> <li>Damage due to natural calamity</li> </ul> | <ul style="list-style-type: none"> <li>Increasing number of fishers reduce access to natural resources</li> </ul> | <ul style="list-style-type: none"> <li>Seasonal shift of fish availability</li> <li>Natural resource based livelihood are subjected to seasonal stress</li> </ul> |
| <ul style="list-style-type: none"> <li>Reduced income</li> <li>Death of family member</li> </ul>           | <ul style="list-style-type: none"> <li>Environmental change affect income</li> </ul>                              | <ul style="list-style-type: none"> <li>Seasonal unemployment</li> <li>Ban period's sufferings</li> </ul>  |

in the form of floods or droughts in fishing communities also destroyed assets. Poor fishers were very vulnerable as shocks could force them to liquidate assets [41].

### Trends

Different trends affect the livelihood of fishing communities. Increasing population size, political crisis and environmental changes affected the income. Increasing pressure in the fishing activities due to the involvement of more people in fishing activities reduced individual access to natural resources.

### Seasonality

Various types of seasonal stress affect the livelihood of the fishing communities. Ban period and seasonal shifts in the fish availability make the fishers more vulnerable depending on the availability of fishes. People had nothing to do against seasonal stress periods due to lack of alternative sources of income (Table 5).

### Conclusion

The livelihood status of the hilsa fishers were not up to the mark. Most of the fishers were found as poor, landless, neglected in the society and solely dependent on fishing for their livelihoods. Due to some social and economic constraints like increasing fishers number, low income, lack of alternative income generating activities, loan problems, piracy, price hike etc. More initiatives should be taken to improve the livelihood of the fishers. Government should provide adequate support during ban periods. Training and motivational program should arrange to increase awareness among the resource users and improve their skill for sustainable use of natural resources. Effective management initiative like co-management with the help of both the government and nongovernment organizations may lead to a rapid development of the fisher's livelihood characteristics and existing status of natural resource.

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