

Socio Economics and Livelihoods of Beel Fishermen: Cases from North-Western Bangladesh

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ABSTRACT

The socio-economic condition and livelihood was studied. Religious status of the study area was more or less equal- 52.66% Muslim and 47.34% Hindu. Educational condition was very poor- 65.96% of the total fishermen are either illiterate or can sign only, the major group (35.11%) of fisherman was young of 21-30 years of age, average household size of the two beels was 4.75, Most of the fishermen family were poor- 79.79% houses were kacha and only 3.72% were pucca houses, 80.85% fishermen use drinking water from other's tube well, 64.89% fishermen do not use electricity, sanitation condition of the study area is very poor- 51.06% fishermen have no sanitation facility and only 12.77 have pucca sanitation facility, the ratio of on farm and off farm was 1:0.25 indicating greatly dependency of the fishermen's livelihood on the beels. In terms of well-being ranking, 60.6% belongs to lower class category followed by middle class (34.6%) indicating poor condition of the studied fishermen. The studied fishermen were found to have limited options to adopt strategies for sustenance of their livelihood. Some fishermen have changed their profession to other. Both private and public sectors should work properly, at the same time target group should be motivated sufficiently so that water body could be used maintaining its sustainability.

Keywords: Socio-economics; Livelihood; Hilna; Beel-Kumari; Fishermen

INTRODUCTION

The successful development of capture fishery requires receptive and supportive socio-economic conditions [1]. The social and economic conditions of the households of fishermen are of much significance in planning of development activities, whose nature and extent is influenced largely by such issues. It is therefore, important to look into the inner dynamics of the fishing community.

A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future, while not understanding the natural resource base. According to Ashley et al. [2], a sustainable livelihood (SL) approach is a way of thinking about the objectives, scope and priorities for development, in order to enhance progress in poverty elimination. SL approaches aim to improve the lives of the poor and link three extant concepts of capability, equity and sustainability. SL approaches respond to people's own interpretation of and priorities for their livelihood. The sustainable

livelihood framework includes the livelihood assets and the effect of: 1) vulnerability context, 2) transforming structures and process, 3) livelihood strategies and 4) livelihood outcome on the livelihood assets. Livelihood assets are the asset pentagon which is composed of five types of capitals [3] viz. Natural capital, Social capital, Human capital, Physical capital and Financial capital.

Fishermen community is deemed to be one of the most vulnerable communities in terms of their livelihood opportunities in Bangladesh [4]. Majority people living near the floodplain or beel area carry out some fishing activities during a year either for their livelihoods or for own consumption. But very little effort is taken to improve the livelihood of the fishermen while they are affected with the reduced fish catch and other associated factors. Being an isolated community, fishermen are deprived of many amenities of life. Actual conditions of the fishermen community must be assessed in detail to know the real potential of capture fisheries and to ensure sustainable livelihood. Thus the present study was performed with a view to learn the livelihoods of the fishermen community of the catchment area of the Hilna beel and the Beel Kumari beel.

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MATERIALS AND METHODS

Experimental site and duration

The experiment was conducted over 4 months during February to May 2017 in BeelKumari beel under Tanore Upazilla of Rajshahi district and Hilna beel lying at Manda Upazila of Naogaon and Mohonpur and Tanore Upazila of Rajshahi district (Figure 1) [5].

Experimental design

In the present study, three sites were randomly selected for each beel. For Hilna beel Chauja (Manda), Pariladanga (Mohonpur) and Majhipara (Tanore) villages and for Beel Kumari, the sites were Gollapara, Kuthipara and Gokul villages. For the present study a total of 84 fishermen for Hilna beel and 104 fishermen for Beel Kumari were randomly selected covering each site (village) and fishermen type (professional, part-time and subsistence) equally. A standard questionnaire was purposively developed, pre-tested and finalized for data collection. Each respondent was given a brief introduction about the purpose of the study during the interview. The questions were asked systematically in a very simple manner with explanations wherever necessary. Local customs and manner was always followed for collecting

information and it was soon recorded. The recorded data was crosschecked subsequently. Some RRA tools (resource mapping, wealth being ranking, mobility chat, SWOT analysis, Venn diagram, participatory action planning etc.) were also applied for rapport building and information picking.

Data analysis

Collected information obtained from the survey was accumulated, grouped and interpreted according to the objectives as well as parameters. Some data contained numeric and some contained narrative facts. The collected data were then edited; summarized and graphical representations were made. All the statistical analyses were done using MS Office Excel 2016.

RESULTS AND DISCUSSION

Socio-economic condition

Ethnic group: In the present study, 42.86% of the respondent fishermen families of Hilna beel were Muslim and the rest 57.14% were belongs to Hindu with no Buddhist or Christian. In case of Kumari, 60.58% and 39.42% were belongs to Muslim and Hindu respectively (Figure 2). Overall, the study area was Muslim majority- 52.66% was

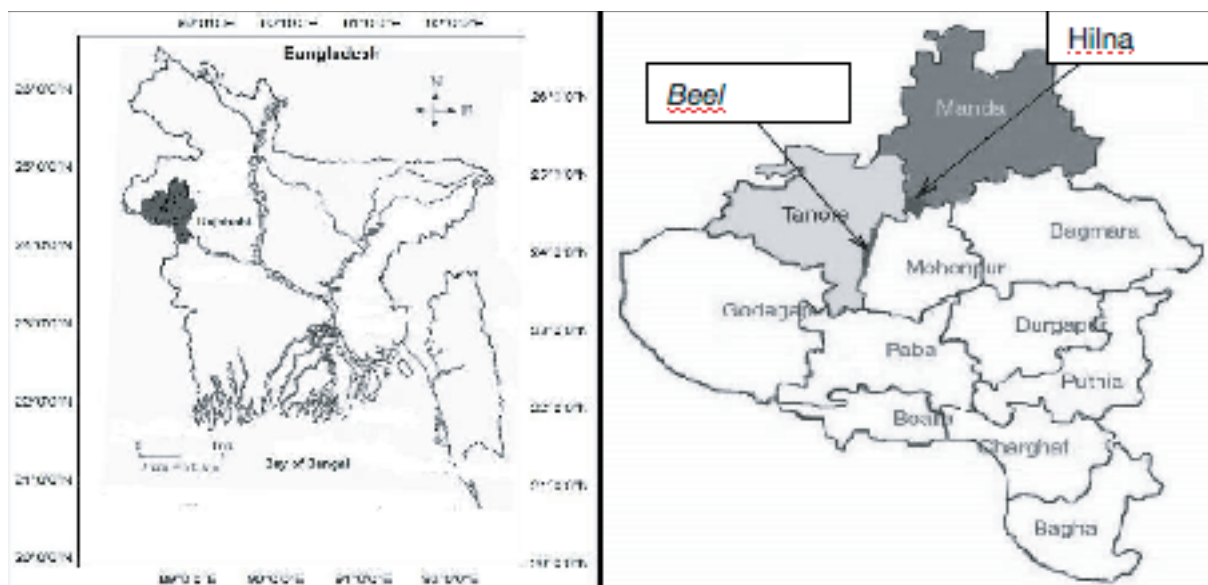


Figure 1: Location of the study area. Closed circle and arrow indicates experimental site [2].

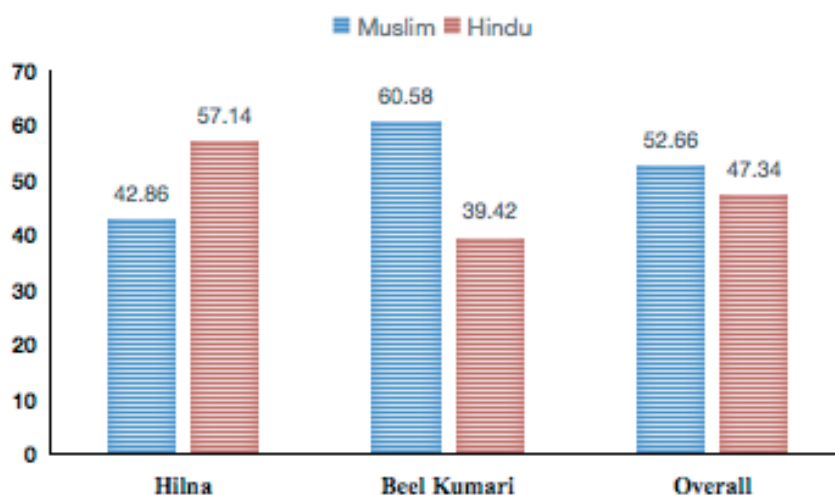


Figure 2: Ethnic status of the fishermen of the studied two beels during the study period.

Muslim and the rest was Hindu.

Hossain et al. [6] recorded majority Hindu fishermen (88%) in Jelepara of Pahartali under Chattogram district. Morsheduzzaman et al. [7] also found Muslim majority (64%) in the fishing community of Ichamati River in Santhia upazila under Pabna district. Ethnicity can play a very important role in the socio-cultural environmental life of people of a given area, and can act as a notable constraint or modifies in social change. Thus, Woolly et al. [8] noted that amongst other influences, social changes are related not just to economic factors, but also to ethnic factors.

Education: In this study, education level of the respondent fishermen was divided into Illiterate, Can sign, Can read, Can keep accounts only, primary, secondary and above groups. Among the groups, Can sign occupies the highest portion (38.83%) followed by Illiterate group (27.13%) and Primary group (24.47%) (Table 1).

There is a strong relationship between society and education [9]. Human resource development is largely a function of literacy and educational attainment. This study indicates that fishermen were mostly illiterate. Because can sign and can read group occupy a nominal portion (each 0.53%). Jahan et al. [10] reported 45% of the fishermen were illiterate which was higher than the present one. Average literacy rate of 15 and above aged people in Bangladesh is 73.91% [11].

Age: In the present study, fishermen age was divided into 5 groups, viz. 11-20 year, 21-30 year, 31-40 year, 41-50 year and above 50 years. Result shows that the highest 35.11% of the sampled fishermen were in the 21-30 years age group followed by 25.00% in the 31-40 year, 21.28% in the 41-50 year and 15.43% in the above 50 year group. The lowest 3.19% was in the 11-20 years age group (Figure 3). Hossain et al. [12] found most of the fishermen at 31-40 year age group which is more or less similar to the present one.

The age distribution of fishermen has an important influence on labour, and also on their perceptions of the future [13]. The result indicates that netting is a laborious work. So a fisherman of 21-30 age groups is physically fit for fishing. However, Siddiq et al. [14] found most of the fishers at middle age group (36-50 years).

Household size: In the present study, average number of household size in both beel fishermen was 4.75. The average family size was higher in Hilna beel fishermen (4.94) than that of Beel Kumari fishermen (4.60). Among the total participating households' population, 49.83% was male and 50.17% were female (Table 2). Most of the families were nuclear.

From the study, it is observed that total average household size (4.75) was higher than national average (4.35) of Bangladesh [15]. But it is lower than Morsheduzzaman et al. [16] who found the value 6.56, and Hossain et al. [12]. They recorded household size 5.6-5.8 of the fishermen community in Seasonal Floodplain Beels in Rajshahi District, Bangladesh.

Housing condition: In this study, the housing condition of the selected fishermen was divided into 3 (three) categories, viz. Kacha, Semi-pucca and Pucca. Figure 4 shows that 79.79% of the sampled fishermen had kacha house followed by 16.49% semi-pucca house. Only 3.72% has the pucca house.

The result indicates that most of the fishermen family is poor. This is supported by Flowra et al. [16] but not by Ahmed et al. [13]. He reported major portion of the respondent had semi-pucca house.

Dissimilar result is found in case of fish farmers that Siddiqua et al. [17] reported only 5% of the respondent's kacha house.

Drinking water facilities: The provision of clean and safe drinking water is considered to be the most valued elements in society [18]. Lack of drinking water hinders the development of a local economy and the removal of social marginality [19]. Study found that most of the fishermen (80.85%) have no tube well. Only 19.15% of the

Table 1: Educational status of the respondent fishermen.

Education level	Hilna beel	Beel Kumari	Total
Illiterate	32 (38.10)	19 (18.27)	51 (27.13)
Can sign	27 (32.14)	46 (44.23)	73 (38.83)
Can read	1 (1.19)	0 (0.00)	1 (0.53)
Can keep accounts only	1 (1.19)	0 (0.00)	1 (0.53)
Primary	17 (20.24)	29 (27.89)	46 (24.47)
Secondary	6 (7.14)	9 (8.65)	15 (7.98)
Above	0 (0.00)	1 (0.96)	1 (0.53)
All total	84 (100.00)	104 (100.00)	188 (100)

Figures in the parenthesis indicate percentage

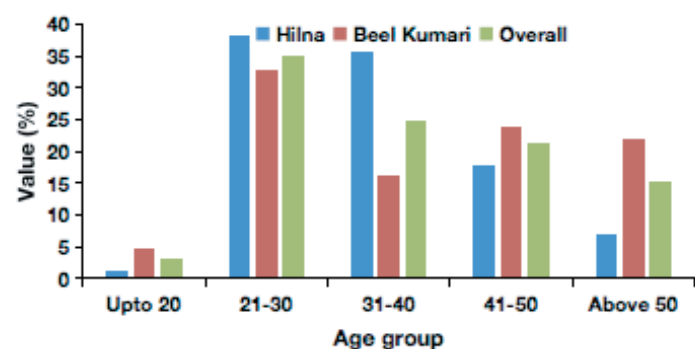


Figure 3: Age distribution of the fishermen of studied beels.

Table 2: Population distribution and average household size of the selected fishermen.

Beel	Male		Female		Total	
	No. of Population	Av. size (no./HH)	No. of Population	Av. size (no./HH)	No. of Population	Av. Size (no./HH)
Hilna	210	2.50 (50.60)	205	2.45 (49.40)	415	4.94 (100.00)
Kumari	235	2.26 (49.16)	243	2.34 (50.84)	478	4.60 (100.00)
Total	445	2.37 (49.83)	448	2.38 (50.17)	893	4.75 (100.00)

Figures in the parenthesis indicate percentage

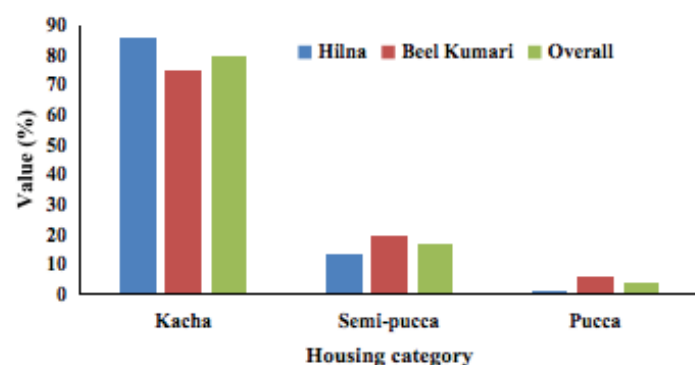


Figure 4: Housing condition of the studied beels during the study period.

sampled fishermen have their own tube well (Table 3). So, it is clear that the fisherman community is very poor and more unconscious than fish trader community.

Electricity facilities: In the present study, it is seen that only 35.11% of the respondent fishermen use electricity and 64.89% do not use (Figure 5). Electricity facility is a good indicator of social development. Presence of electricity in a village indicates that the village is developed or is in a developmental process. Ahmed et al. [13] reported a higher value (67.5%) of electrification among the fish trader house.

Annual income: Table 4 shows that annual per capita income of the fishermen of the studied beels is TK. 19293.06 of which Beel Kumari goes to slightly higher (22999.16 TK.) than Hilna fishermen (15024.34 TK.). The total ratio of the on-farm and off-farm is 1:0.25 which indicates that the livelihood of the fishermen is greatly depended on the studied beels. Siddiqua et al. [14] recorded 61,375 BDT annual incomes of professional fishers of Dogger beel in Hajigonj upazila of Bangladesh which is closely related to Hilna beel fishermen’s income. Hossain et al. [6] found 72000 BDT annual incomes of fishers’ from Jelepara of Pahartali upazila. Overall, the income indicates that the studied fishermen are very poor showing the real picture of Bangladesh fishermen community.

Sanitary facilities: The result of the present study reveals that 51.06% of the respondent fishermen have no latrine, 29.73% have kacha latrine but not sanitary, 6.38% have semi-pucca and only 12.77% have pucca sanitary facilities (Figure 6).

The result indicates that the sanitary status of the respondent fishermen is in alarming situation. Halim et al. [20] also reported that 70% fishers of Kafrikhal beel have seldom Pucca latrines.

Earners dependency ratio: In the present study, the earner dependency ratio was categorized in 4 groups, viz. < 0.2 (1:5), 0.21-0.35, 0.36-0.50 and >0.50. The earner dependency ratio of 18.18%, 33.33%, 39.40% and 9.09% of the respondent fishermen family of the hilna beel was in the group of <0.2, 0.21-0.35, 0.36-0.50 and >0.50 respectively and in Beel Kumari, 12.50%, 47.12%, 18.27% and 22.11% of sampled fishermen family was in <0.2, 0.21-0.35, 0.36-0.50 and >0.50 respectively (Table 5) (Figures 7-17).

Sustainable livelihood approach

The basis of sustainable livelihoods is income generation and food supply. If fishermen have access to a secure source of income they will eradicate poverty. The fishermen livelihood of the study area was analyzed with respect to the livelihood framework.

Livelihood capitals: Five types of livelihood capitals/assets are described below.

Human capital: From the present study it was found:

- People particularly youth were moderately healthy.
- Sometimes ill health child was seen.
- Their skill was only through their experience.

It was observed the community is to be skilled for sanitation, improving health to work more for sustainable livelihood. Children and old should be taken more care.

Natural capital: The situation of natural capital of the study area was;

Table 3: Status of drinking water facility of the selected fishermen.

Beel	Own tube well	Other’s tube well	Others (beel, pond, river, canal)	Total
Hilna	14 (16.67)	70 (83.33)	0 (0.00)	84 (100.00)
Kumari	22 (21.15)	82 (78.85)	0 (0.00)	104 (100.00)
Total	36 (19.15)	152 (80.85)	0 (0.00)	188 (100.00)

Figures in the parenthesis indicate percentage

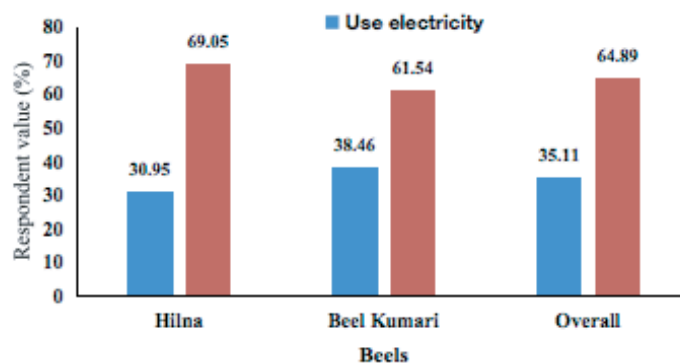


Figure 5: Use of electricity by studied fishermen.

Table 4: Average non-fishing annual income per household of the selected fishermen.

Beel	Family members of sample fishermen	Total income of the sampled fishermen ('00 BDT)			Per capita income (BDT)	Ratio Fishing: Non-fishing
		Fishing	Non-fishing	Total		
Hilna	415	50203	12148	62351	15024.34	1:0.24
Kumari	478	87225	22711	109936	22999.16	1:0.26
Total	893	137428	34859	172287	19293.06	1:0.25

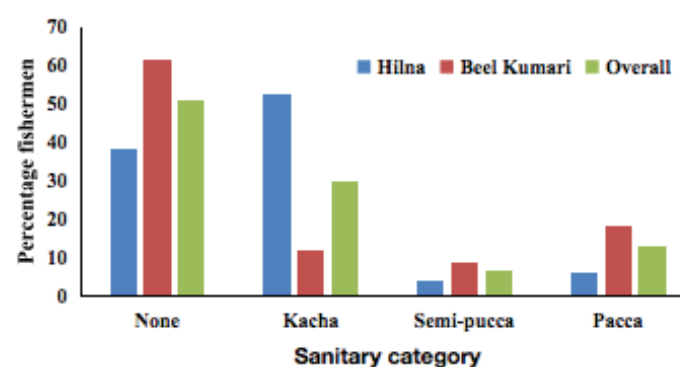


Figure 6: Sanitary status distribution of the respondent fishermen.

Table 5: Earner dependency ratio of the sampled household.

Beel	Number of household	Earner dependency category			
		<0.2	0.21-0.35	0.36-0.50	>0.50
Hilna	84 (100.00)	15 (18.18)	28 (33.33)	33 (39.40)	8 (9.09)
Kumari	104 (100.00)	13 (12.50)	49 (47.12)	19 (18.27)	23 (22.11)
Total	188 (100.00)	28 (14.89)	77 (40.96)	52 (27.66)	31 (16.49)

Figures in the parenthesis indicate percentage

- Good capital beels (Figure 1).



Figure 7: Wealth being ranking by the fishermen of Gokul.



Figure 10: SWOT is being done by the fishermen of Chauja.



Figure 8: Fishermen of Gollapara developing a Resource map.

ভোগ্য সামগ্রীর আর্থিক ও স্বাস্থ্যগত ক্ষয়ক্ষতি

	উচ্চ বিভাগ	মধ্যম বিভাগ	নিম্ন
স্বাস্থ্যগত ক্ষয়ক্ষতি	সামান্য/কম/অসুস্থ	সামান্য/কম/অসুস্থ	সামান্য/কম/অসুস্থ
নিম্ন	১০% S.S.C. পর্যায়ে	৬০% S.S.C. পর্যায়ে	৩০%
পারমাণবিক (কোয়ালিটি)	১০০%	৬০%	৭৫%
পানি বাষ্প	২৫%	১০%	০%
শিল্প কারখানা	১০০%	৬০%	১০%
ব্যক্তিগত আয়	১০০ - ১০০০০ টাকা	৬০ - ১০০০ টাকা	১০ - ১০০০ টাকা
সংস্কার	২৫% জন	১০ জন	১০ জন

Figure 11: Wellbeing ranking of Gokul village.



Figure 9: Fishermen of Pariladanga developing a mobility chart.

- Some had agricultural lands, some had timbers.
- People did not use these capitals properly; they were exploiting the beels continuously to earn more money instant without considering conservation.
- Improper use made their shortfall income affecting

livelihood.

- Some natural and manmade causes had affected the capital.

The fishermen had good capital beels which had been affected badly. They should take care of it. Other GO (Government Organization) and NGO (Non-Government Organization) should come to save the resources from over-exploitation and restoration of it.

Financial capital: In most cases of well-being ranking, fishermen divided themselves into three classes, viz. higher class, middle class and lower class (Hypothetical). The result shows that only 4.8% of the fishermen community was in higher class whereas 60.6% was in the lower class. Middle class occupies 34.6% of the total respondent. However, financial capital of Beel Kumari beel fishermen was better than that of Hilna beel [21] (Table 6 and Figure 18).



Figure 12: Venn diagram of Pariladanga village.



Figure 14: Resource map of Gokul village.

অংশ গ্রহণ জনক উন্নয়ন কর্ম পরিকল্পনা
সনাকার সমস্যা ও সমাধান
গ্রাম - চৌজা, মাদ্রাসা, নওগাঁ

সমস্যা	ক্রমিক সংখ্যা	কেন্দ্রীয় কর্মসূচি	কিভাবে
১. স্বাস্থ্য কেন্দ্র	২	সরকার	অর্থ দিয়ে
২. মাদ্রাসা	৩	সংগঠন	সংগঠনের অর্থ দিয়ে
৩. মাদ্রাসা	৭	সরকার	অর্থ দিয়ে
৪. মাদ্রাসা	৪	বিশ্বাস্য কর্মসূচি	" "
৫. মাদ্রাসা	৬	সরকার	" "
৬. মাদ্রাসা	৪০	"	" "
৭. মাদ্রাসা	২৬	নিজস্ব	সংগঠনের মাধ্যমে
৮. মাদ্রাসা	৬	"	" "
৯. মাদ্রাসা	২৭	সরকার	অর্থ দিয়ে
১০. মাদ্রাসা	৬	নিজস্ব	সংগঠনের মাধ্যমে
১১. মাদ্রাসা	২২	সংগঠন	অর্থ দিয়ে
১২. মাদ্রাসা	২০	নিজস্ব	সংগঠনের মাধ্যমে
১৩. মাদ্রাসা	২৬	সংগঠন	অর্থ দিয়ে
১৪. মাদ্রাসা	২৩	নিজস্ব	সংগঠনের মাধ্যমে
১৫. মাদ্রাসা	২০	"	"
১৬. মাদ্রাসা	৬	সরকার	অর্থ দিয়ে

Figure 13: Participatory action plan of Chauja village.



Figure 15: Resource map of Chauja village.

Among the capital assets of the higher class fishermen, the highest position occupies by financial capital followed by social capital. In



Figure 16: Social map of Pariladanga village.

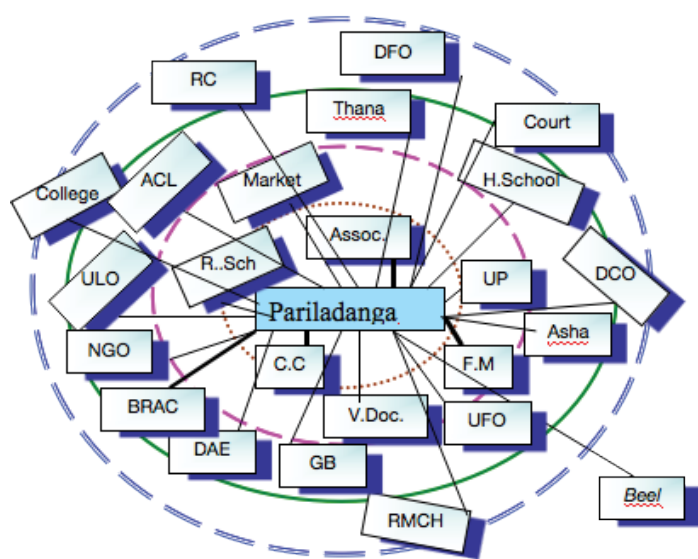


Figure 17: Fishermen’s mobility of Pariladanga village in 2017.

the middle class fishermen, financial assets are very poor. They may have good social assets and moderate natural assets. The lower class fishermen have no assets in good condition, all are in very weak. Poor fishermen are deprived due to poor financial capital. They have been being deprived by the rich (Figure 13). Government has decided to give credit to the farmer without interest. Fishermen should also be given such credit. They also should make capital by themselves.

Physical capital:

- Transport facility was poor in most of the villages.
- Housing condition was not good enough.

Table 6: Well-being ranking of the fishermen of the studied beels.

Beel	Higher class	Middle class	Lower class	Total
Hilna	4 (3.8)	34 (32.7)	66 (63.5)	104 (100.0)
Beel Kumari	5 (6.0)	31 (36.9)	48 (57.1)	84 (100)
Overall	9 (4.8)	65 (34.6)	114 (60.6)	188 (100)

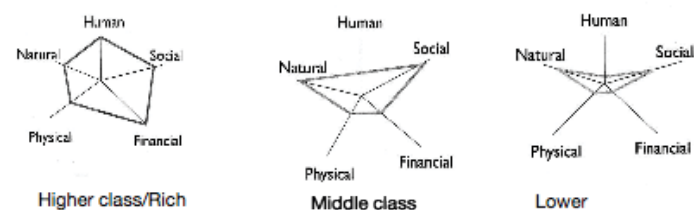


Figure 18: Livelihood capitals of the fishermen of the study area (Figure modified from DFID and FAO, 2000).

- Connecting roads from maximum villages were poor.
- Drainage facilities were inadequate in fish markets.
- In some villages no electricity.
- Muddy inaccessible roads for rickshaw, van and motorized vehicles.
- In some village sides of the beels no landing centres or fish market.
- Most of the fishermen have got fishermen ID (identity) card.

The villages of the fishermen community are neglected. Communication system of inter and intra-village are very poor. Most of the fishermen cannot have a good house. Electricity has yet not reached in some the villages. Drainage facilities in fish markets are inadequate. In some village sides of the beels no landing centre or fish market which affect the fishermen. Roads are needed to be developed because good communication is pre requisite for the development of a society. Although they have got ID card, they have not received any benefit as real fishermen from government or any other organization yet (Figure 19).

Social capital:

- Personal relation among most of the fishermen was good.
- Fisheries organizations were inactive, in some villages, no fisheries organization.

Fisheries organizations should be strengthened and where there is not it should be formed, trust, network, access to institution be improved for the betterment of the community. Ahmed et al. [13] also described such social capital.

Vulnerability context: In some vulnerable conditions fishing activities as well as livelihoods of the fishermen is affected.

- **Shocks** – During illness, natural disasters (flood, heavy rain, stormy/heavy cold weather etc.), social conflicts, political crisis etc. fishermen can’t catch fish resulting negative effect on their livelihoods.
- **Trends** – Increasing number of fishermen, decreasing stocks and species diversity in the beel aggravate the problem of meagre income of fishermen and associated groups.

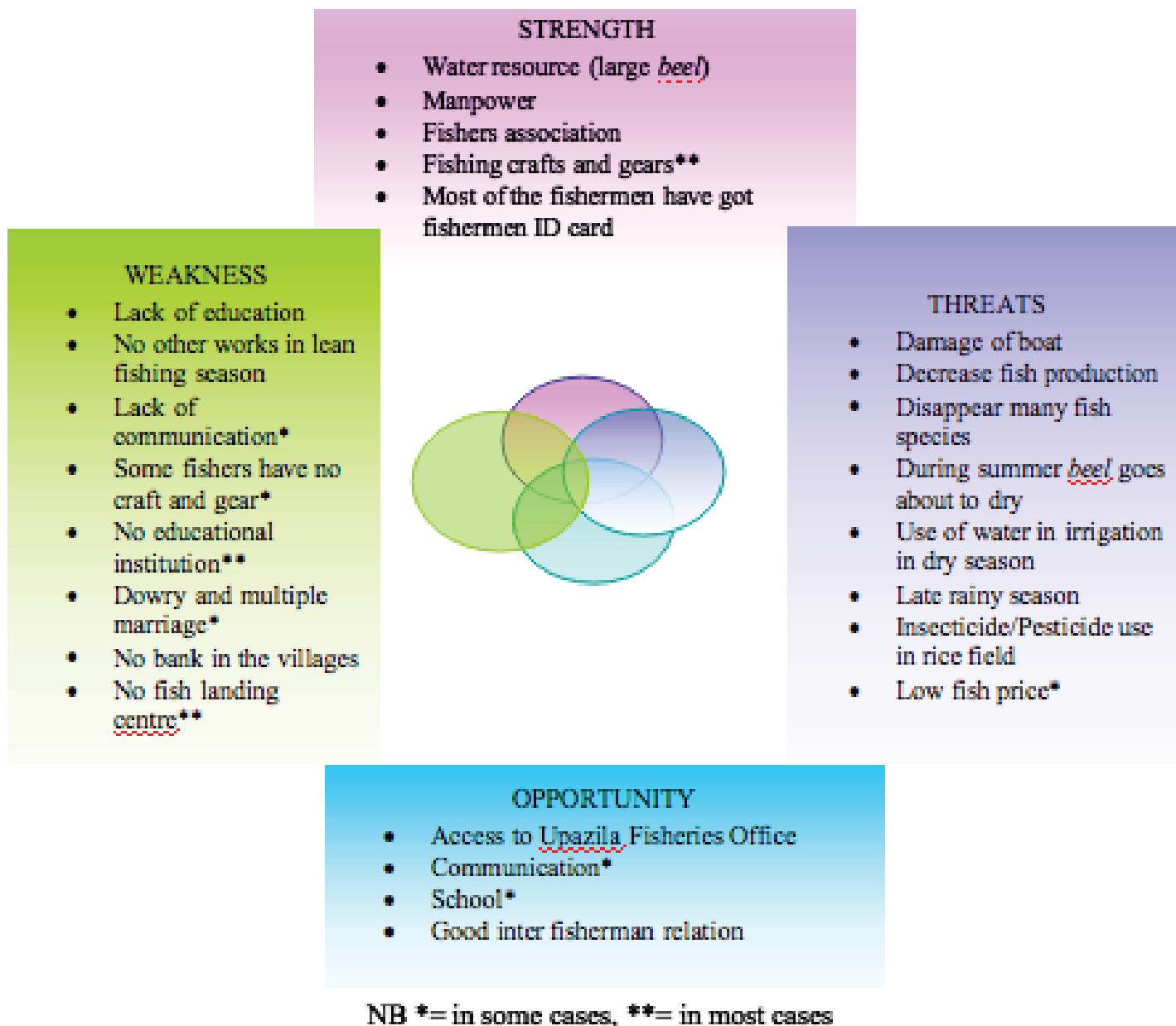


Figure 19: Combined SWOT analysis of the fishermen of different villages.

- **Seasonality** – Peak season, lean season and off season all have role in seasonal shifting of employment opportunities affecting livelihoods of fishermen.

Transforming structures and process: Understanding institutional processes allows for the identification of barriers and opportunities to sustainable livelihoods. Absence of appropriate structures and process is a major constraint that affect livelihood of beel fishermen. Both private and public sectors should work properly, at the same time target group should be motivated sufficiently so that water body could be used maintaining its sustainability. Ahmed [13] also reported that lack of institutional and administrative help, poor infrastructures and extension serves- all have affected livelihoods of poor traders and associated group.

Livelihood strategies: In the study area fishermen are left with a few options. So, there is a serious limitation for them to adopt strategies for sustenance of their livelihoods. The major strategy of the fishermen is to catch fish from the beel and sale it to the whole seller or retailer in the *arot*, local market or beel side. However, inadequate availability of fish in the beel, increasing number of

fishermen leads them to earn poor income, which in turn insecure their livelihoods in the long run. Sunny et al. [22] found some social and economic constraints for hilsa fishers that put them away from better livelihood strategies. Flowra et al. [16] and Ahmed et al. [13] also found limited option of occupation for Dahia beel fishermen community and Gazipur fish traders respectively.

Livelihood outcomes: Due to natural and man-made causes fishermen's catch in the beel has been reduced. Demand for money has been increased day by day. But income from fish has not been increased such a way. So, some fishermen have changed their fishing profession to other (Figure 20). The rest are struggling with lives for better livelihoods. Government has taken a sanctuary programme in the beel. If people would be motivated, the beel will regain its glorious life to some extent and fishermen will get better livelihood. For better sustainability of their livelihood extension service, more research and knowledge are essential. Islam and Herbeck [23] said that fishermen's livelihoods are characterized by a series of vulnerabilities and their endemic poverty contributes to their migration decisions for better opportunities of livelihood

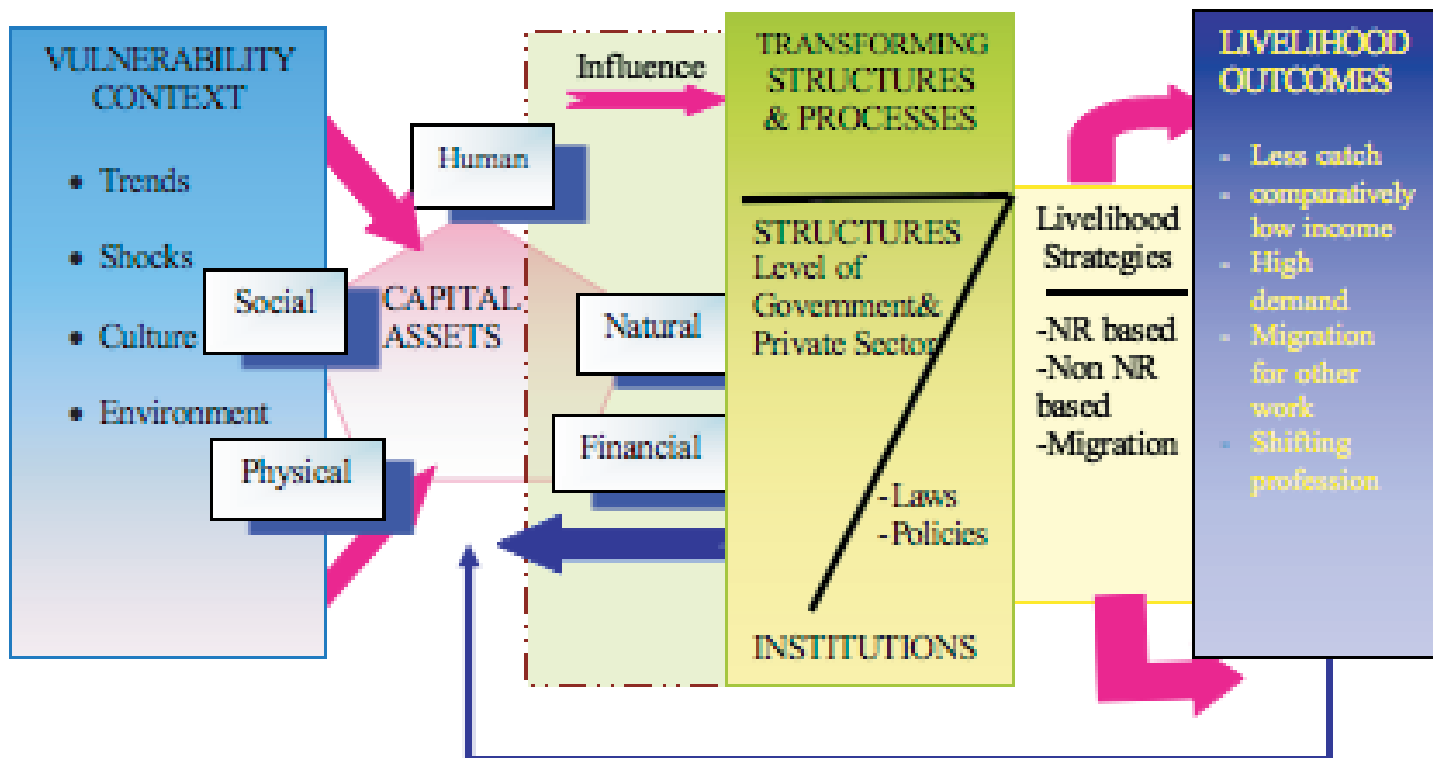


Figure 20: Livelihood framework of the fishermen of the study area [3].

these changes drive each individual in a decision-making process governed by his/her own goals or constraints [24].

CONCLUSION

When fishermen face any change in regulations or other fishery conditions, they develop strategies to pursue their livelihood; these changes drive each individual in a decision-making process governed by his/her own goals or constraints. In terms of well-being ranking, 60.6% belongs to lower class category followed by middle class (34.6%) indicating poor condition of the studied fishermen. The studied fishermen were found to have limited options to adopt strategies for sustenance of their livelihood. Some fishermen have changed their profession to other. Both private and public sectors should work properly, at the same time target group should be motivated sufficiently so that water body could be used maintaining its sustainability.

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