PRESENT STATUS OF FISHERIES RESOURCES, LIVELIHOOD PATTERN AND COPING STRATEGIES OF FISHERMAN OF TANGUAR HAOR

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Abstract - This study is intended to find the present state of fisheries resources and the factors responsible for changing the fishing environment in Tanguarhaor. Also, attempt was made in this paper to know the socio-economic condition of fishermen as well as what are the hurdles facing by Tanguarhaor fishermen and their coping strategies. It is an explanatory type of research and mixed questionnaire (Open ended and close ended) has used as the main data collection instrument for this study. The findings of the study established that the amount of fish production of tanguarhaor is decreasing at an alarming rate as a result of manmade and natural causes like siltation, illegal fishing, using toxic chemical fertilizer and pesticides, natural calamities, etc. The fishing communities are the main players in the fisheries sector. Fishermen of tanguarhaor are mostly poor, landless and neglected in the society and are often deprived of their access of right to fisheries resources due to unclear policies and interventions undertaken by affluent and powerful people. Livelihoods of fishers are also affected by fishing ban or restriction imposed by the government and during lean fishing periods as they do not have any alternate job opportunity.

Index Terms - Tanguarhaor, fisheries resources, fishermen, livelihood, socio economic condition, coping strategies of fishermen

I. INTRODUCTION

TanguarHaor is one of the most important wetlands not only of Bangladesh but also of South Asia. It is a unique wetland ecosystem of great national importance in Bangladesh and has now gained international focus. There are three prominent seasons observed in TanguarHaor. During full flood, when huge water inundates all the Zones of except the settlements, every micro-habitat within TanguarHaor and adjacent areas becomes deeply flooded.

During post monsoon, after gradual recession of water from the area, all the microhabitat: (Swamp, Reed lands, Grassland, Mudflats, Canals, Natural levees, Rivers) take their shapes and exposes with their identical morphological features in a gradual way [1].

During winter, with all the dominant ecological features of wetland, tanguarHaor becomes a paradise of birds. Thisis the prime time when all most all the winter visitor birds are congregated in the haor areas. In some areas where water is fully drained, cultivation of huge quantity of boro paddy carry out every year. This contributes a lot in the total paddy production of the country[2].

The Government of Bangladesh declared TanguarHaor as an Ecologically Critical Area in 1999 considering its critical condition as a result of overexploitation of its natural resources and declared as a Ramsar site in the year 2000 [3].

TanguarHaor is extremely rich in terms of fisheries resources that play a critical role in Bangladesh's economy. There are more than 140 species of fresh water fish in the Haor [4]. The more predominant among them are: ayir, gang magur, baim, tara, gutum, gulsha, tengra, titna, garia, beti, kakia etc. Hijal, karach, gulli, balua, ban tulsi, nalkhagra and other freshwater wetland trees are in this Haor.

The livelihoods of the people of 88 surrounding villages largely depend on this wetland and its natural resources[6]. Fishermen of Tanguarhaor are facing hurdles to earn their livelihoods as the authorities concerned has put a limit to fishing in the haor's core zones this year. For example, local communities lost their rights of fishing in the Haor for undue pressure of the elites. As the fishers do not have any alternate job opportunity, they suffer badly during fishing restriction and adopt some sort of coping strategies.

II. OBJECTIVES OF THE STUDY

A. General objectives:

This study is conducted to know the present condition of fisheries resources and for sustainability of the livelihood of the fishermen of the haor and their coping strategies.

B. Specific objectives:

- To understand the present state of fisheries resources of Tanguarhaor.
- To understand the livelihood pattern and socio-economic status of the Tanguarhaor fishermen.
- To find out what are the hurdles facing by Tanguarhaor fishermen and their coping strategies during difficulties.
- To build awareness for future development of Tanguarhaor fishing sector.

III. METHODOLOGY

A. Typology of Study:
It is an explanatory type of research which has used to explain how independent variables affect dependent variables.

B. Research Method:
Data will be collected through the survey method.

C. Approach of the Study:
In this study quantitative approach has been used.

D. Sources of data:
1) **Primary Sources:** The primary data has been collected from individuals through simple questionnaire.
2) **Secondary Sources**: Secondary sources of data have been used to enrich this study. Secondary data has been collected from published books, e- books, journals, articles, reports of different organization which are related to the study.

E. Technique of Data Collection:
The technique of data collection depends on the nature and objective of the study and availability of related resources. The primary data will be collected through most common method of data collection technique mixed questionnaire (Open ended and close ended) and participant observation. Secondary data will be collected through content analysis of internet browsing and published magazines and journals.

F. Population of the study:
A unit about which information are to be collected in particular research is an element and the aggregate of all such elements is termed population. Here population has been identified as the people and fishermen of the TanguarHaor.

G. Sampling Method and sample size:
Here random sampling method has used. The total number of respondent or sample size is 50.

H. Selection of Study area:
This study will cover the area of Tanguarhaor, located in the Dharmapasha and Tahirpurupazilas of Sunamganj District in Bangladesh. The area of Tanguarhaor including 46 villages within the haor is about 100km^2 of which 2,802.36 ha^2 is wetland.

IV. DATA ANALYSIS AND FINDINGS

Result and Discussion:
People living in the villages of TanguarHaor do not have access many of the basic amenities of life like electricity, water, sanitation, school and also markets. People's perceptions about the past and present status of fisheries resources, the causes behind the depletion of these resources and livelihood pattern of fishermen and their coping strategies are presented. To perform the survey work a total of 50 respondents of different categories were selected.

Profile of the participants of the study area:

Indicators	variable	Percent (%)	No. of respondent (N)
Gender	Male	96%	48
	Female	04%	02

Table 1. Profile of the respondent of the study area

General awareness about fisheries resources of TanguarHaor:

Indicators	Variable	Percent (%)	Total No. of respondent
Present status of fisheries of TH	Known	88%	44
	Unknown	12%	6

Table 2. Awareness about the present status and past status of fisheries resource of TH

Status of Fish production of TH
Among the total respondents majority (90 %) said that the amount of fish production of TH is decreasing day by day while few (8%) respondents said no change in production and very few (2%) of them said fisheries resource is increasing day by day.

Variables	Percent (%)	Total No. of respondent (N)
Decreasing	90%	45
increasing	2%	01
In a stable situation	8%	4

Table 3. Respondent's opinion about Status of fish production of TH

Factors responsible for changing the fishing environment in Tanguarhaor:
Respondent's opinion factors responsible for changing the fishing environment of TH are given in. These factors also causes of fisheries resources declination. Illegal fishing and capture of local types fishing and Using toxic chemicalfertilizer and pesticides are find major factors for changing the fishing environment in TanguarHaor.

Factors	Percent (%)	Total No. of respondent (N)
Climate change	4%	02
Natural calamities (flood/drought, etc)	8%	04
Using toxic chemical fertilizer and pesticides	14%	07
Decreasing the area of water bodies	4%	02
Illegal fishing and capture of local types fishing	70%	35

Table 4.Factors responsible for changing the fishing environment in TH

Roles of government	Percent (%)	No. of Respondent
Development of fishing environment	20%	10
Subsidy and supply of fishing instrument	18%	9
Proper management of haor and related water bodies	32%	16
Reduce the illegal role of political leaders	26%	13
Ensure the free breeding of fishes	4%	2

Table 5: Role of government for the conservation of the fishing sector of Tanguarhaor.

Measures for Future development of TanguarHaor fishing sector:

Measures	Percent (%)	No of respondents
Sustainable management of fishing sector	30%	15
Selecting appropriate guidelines and policies	12%	6
Proper implementation of policies and development projects	30%	15
Awareness building among the fishermen about the importance of fishing sector	20%	10
Spread the slogan "Fish for existence"	8%	4

Table 6: Measures for Future development of TanguarHaor fishing sector

According to respondent, 30% said that sustainable management of fishing sector and proper implementation of policies and development projects. Among few (20%) of respondents said that selecting appropriate guidelines and policies and awareness building among the fishermen about the importance fishing sector for future development of TH fishing sector.

Livelihood pattern and socio-economic conditions of TanguarHaor fishermen:

Fishermen living in the villages of TanguarHaor do not have access many of the basic amenities of life like electricity, water, sanitation, school and also markets. Figure1 shows the housing condition of the fishermen of TanguarHaor. Among the total respondents 78% of people said that their housing condition is Katcha and few of their housing condition are pucca (7%).

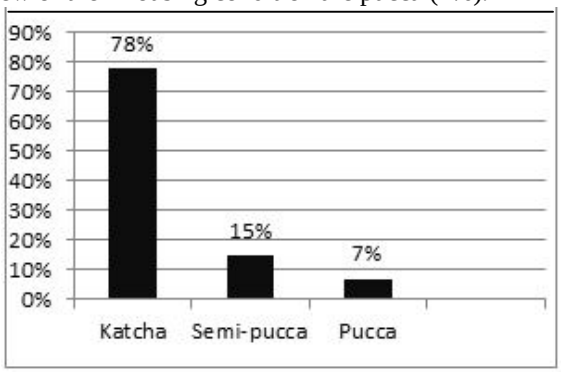


Figure 1: Housing condition of fishermen

Socio-Economic condition:

Fishers are mostly poor, landless and neglected in the society. They are backward in education and economically depressed. Figure2.0 shows the monthly income, about 27% of the fishermen income is Tk.3000 to Tk.5, 000. More than 30% of fishermen income is Tk.5000 to Tk.7000 and 25% of fishermen income is Tk.1500 to Tk.3000. The monthly income of about 6% is less than 1500. Due to decline of catch and hindrance in fisher's access to the resource in absence of alternate income generation activities the fisher's economic conditions has deteriorated.

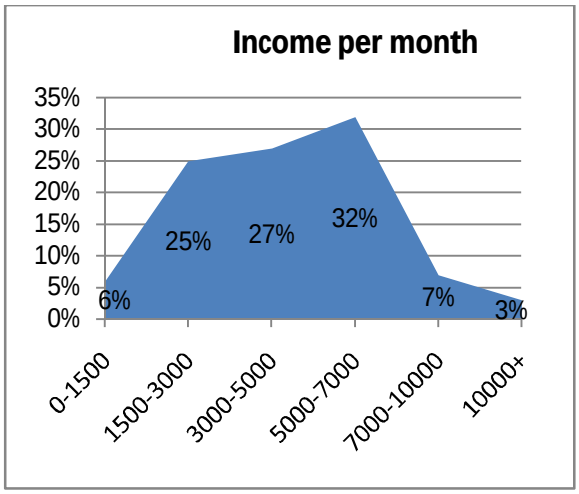


Figure 2: Monthly income of TanguarHaor fishermen

In this study most the fishermen of about 88% fishermen don't have any savings for facing any need.

Do you have any savings?

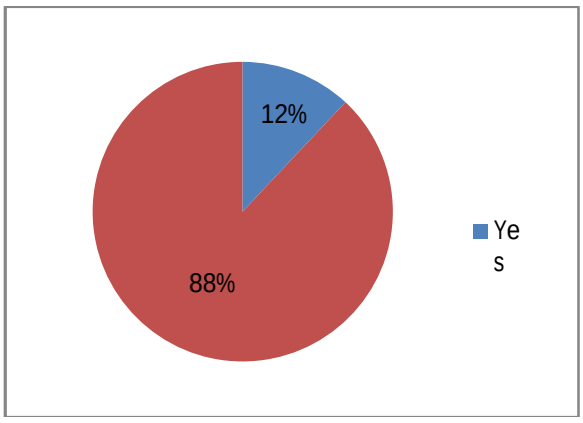


Figure 3: Savings for facing any crisis

Reason for leaving TanguarHaor & Major risks in fishing profession:

Among the total respondent few (16%) of their habitation isn't original. If there habitation isn't original then why they leave that place, majority (55%) said that they leave that place for better opportunity and about 21% said lack of employment and few (10%) said for natural disaster and political harassment.

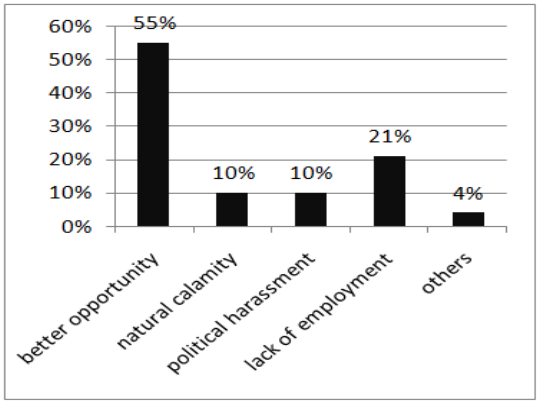


Figure 4: Reason for leaving TanguarHaor

Major risks in fishing profession:

Fisher men although the government has put a restriction to catch fishes in the core zones, fishing in buffer zones are rampant and they have been affected by the restriction as they cannot catch fishes even in the buffer zonesas there is no alternative source of income. Overall about 54% said capturing by magistrate or security guard is the major risks in fishing profession during the restriction. About few 14% said, uncertainty of environment and fall of fish price/Instable market is also a major risk in fishing profession. Very few (10%) of said that lack of available capital also a major risk in fishing profession.

Risks in fishing profession	Percent (%)	No. of respondent
Uncertainty of environment	14%	7
Lack of available capital	10%	5
Fall of fish price/Instable market	14%	7
Low income and high expense	8%	4
Captured by magistrate or security guard (Illegal fishing)	54%	22

Table 7: Major Risks in fishing profession

Coping strategies of fishermen

During the off season of fishing most of the fishermen's (59%) occupation is agricultural labor. More than 20% of fishermen occupation during off season is day labor and few of them about 15% use boat transport in the off season of fishing

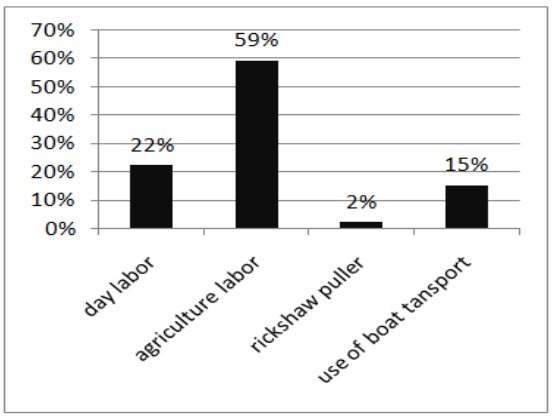


Figure 5: Occupation during the off season of fishing

During off season fishermen suffer much and their livelihoods are affected as they do not have opportunities for alternate income generating activities. About 50% of fishermen take loan from local fishing association with low interest, 14 % of fishermen take loan from NGOs, 12% of fishermen take loan from relative, communal member and other sources for maintaining their livelihood during difficulties or any accident occur.

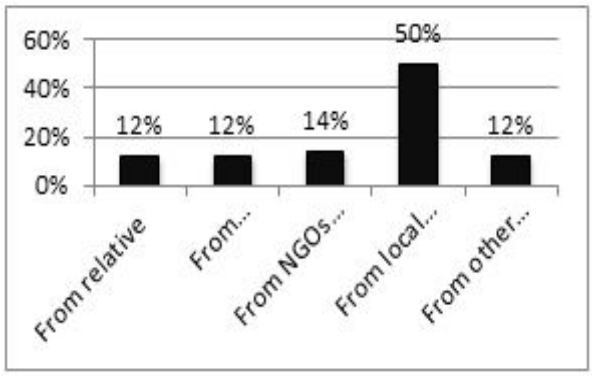


Figure 6: coping strategies adopted by fishermen

Measures taken when fishing is in loss: When fish is in loss project about 45% of fishermen take initiatives for agricultural labor as alternative source of income. About 22% of fishermen would be taken migration to another place for employment and few (19%) of people would be taken day labor as alternative source of income. Very few (9%) would be taken transport as an alternative source of income.

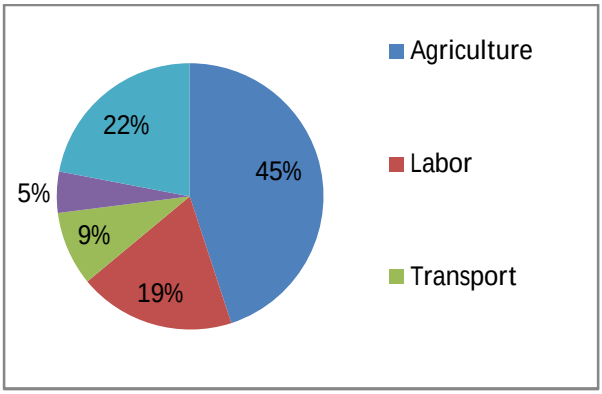


Figure 7: Measures taken when fishing is in loss as alternative source of income

The role of NGOs for developing fishermen's livelihood:

Role of NGOs	Percent (%)	No. of respondents
Easy loan facilities	50%	25
Awareness building	14%	7
Supply of modern fishing instrument	10%	5
To create alternative employment opportunities	26%	13

Table 8: The role of NGOs for developing fishermen's livelihood

According to the respondents, overall 50% of fishermen said easy loan facilities would be a great of NGO's for developing fishermen livelihood. About 26% of respondents said to create alternative employment opportunities would be an effective role of NGOs for developing fishermen livelihood pattern. According to respondent opinion, Awareness building (14%) and supply of modern fishing instrument (10%) also would a great role taken by NGOs for developing fishermen livelihood.

CONCLUSION & RECOMMENDATIONS

Propose Recommendation:

Based on the results and findings of the study the following recommendations are made-

- Proper management of Haor and related water bodies and Sustainable management of fishing sector should be taken for the conservation of fisheries resources of TanguarHaor.
- Spread the Slogan "Fish for existence."
- To create alternative employment opportunities for fishermen of TanguarHaor during restriction or off season of fishing.
- Provide easy loan facilities for developing fishermen's livelihood.
- Awareness building among the fishermen about the importance of fishing sector of TanguarHaor.

Concluding Remark:

The fisheries resources of TanguarHaor is very rich and has a high importance in terms of fish production, fish habitat, breeding support, national economy and livelihood support. Now-a-days, the numbers of fish species are decreasing at an alarming rate. From the study it is obvious that the main causes of fisheries declination are over exploitation of resources due to rapid population growth and illegal fishing. Manmade and natural causes like siltation and climate change effects are responsible for decline of fisheries resources and thereby, the fishermen livelihood are affected. Fishermen of TanguarHaor suffer during restriction or ban fishing period as they do not have any savings and opportunities for alternate income generation. The fishermen are not properly organized, so they need to be organized and empowered for community based management of fisheries resources.

REFERENCES

[1] Ahmed, M. 2012. Community led framework for estimation of sustainable exploitation level of fish and reeds in TanguarHaor. Community Based Sustainable Management of TanguarHaor Project-II, IUCN, SDC (Swiss Agency for Development and Cooperation).

[2] Ali, M.L., Hossain, M. B., Rokunuzzaman, M and Bhadra S. (2010) Access to Fisheries Resources by the Poor Fishers for Income Generation and Livelihood and Their Coping Strategies During Lean and Ban Fishing Period in Bangladesh. Available from: http://www.nfpcsp.org/agridrupal/sites/default/files/CF-9_0f_08_Liaquat_Ali.pdf<Accessed: 04/06/2015>.

[3] GoB.(2004). TanguarHaor Wetland, Biodiversity Conservation Project.Ministry of Environment and Forests.Government of the People's Republic of Bangladesh.

[4] Haque, A.K.E., Kazal, M.H. (2008) Rich Resources, Poor People: The paradox of living in TanguarHaor. Available from: https://cmsdata.iucn.org/downloads/rich_resources__poor_people__the_paradox_of_living_in_tanguar_haor.pdf<Accessed: 03/06/2015>.

[5] Mamun, S.A., Roy, S., Rahman, M.S., Islam, M.S., Jahan.(2013) Status of Fisheries Resources and Water Quality of TanguarHaor.<Online>J. Environ. Sci& Natural Resources, Chittagoan, Bangladesh. Available from: http://www.banglajol.info/index.php/JESNR/article/download/22048/15146<Accessed: 02/06/2015>.

[6] Sobhan, I.,Alam, A. B. M. S. and Chowdhury, M. S. M. (2012). Biodiversity of TanguarHaor:ARamsar Site of Bangladesh, Volume II: Flora. IUCN Bangladesh Country Office, Dhaka,Bangladesh.

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