Rich Resources, Poor People

The paradox of living in Tanguar Haor

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1. People-Ecology Linkages – the background

Tanguar Haor is a wetland system comprising of 10000 ha of land area and is located at the north-eastern district of Sunamgonj and at the foothill of the Khasi Hills. This wetland has been classified as a wetland of international importance under the Ramsar Agreement since 2000.

The ecological system surrounding the Tanguar Haor provides livelihood to some 77,000 population spread over 88 villages (Census of TH, 2007). For these people haor is a source of them income, employment as well as their livelihood. It provides rice and fish to them – the major two sources of income earning for the households. With these two major economic activities, there are many other subsidiary and also minor income earning sources for them. However, central to their living is the mighty haor – the wetland ecosystem – which also, at the same time, is a cause of their poverty.

While the area is quite rich in terms of its ecological, environmental and resource characteristics, and is located only 10-20 km northeast of Sunamgonj district town, it is also considered an equally remote area. As one villager put it during discussion "*the villages of Tanguar are so remote that even news from the radio reaches a day later*".   The schools in the village are without teachers and as one of the influential government officer put it, "*nobody wants to stay in Tanguar to teach at schools and we also cannot find local girls [qualified enough] to be appointed in the school*".[1]

Bangladesh is known for its NGOs in the world. It has some of the finest and most active NGOs of the world, along with a rich group of Civil Society Organizations that are spread throughout the country. According to a nation-wide survey, nearly 50% of the rural households in Bangladesh are connected to NGO activities. Yet, many of these large and active NGOs did not operate in the remote areas of the Tanguar Haor.

The haor ecosystem is also known for its mother fishery where parent fishes take refuge in the winter and in early monsoon the grassland and rice field surrounding the haor becomes their spawning ground. Moreover, the haor also protects the low lying land (mostly crop fields) from early mansoon flood by taking in water and hence delays the flooding of the low lying area. The delay is sufficient enough for people to harvest their crops. The swamp forest land of the haor is another unique ecological feature of

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[1]   According to the rule of the Government of Bangladesh and as per the affirmative action plan, only girls can be appointed as teachers in schools and the action will continue until it reaches the 60% female quota set by the government.

the haor ecology. The Hijol-Koroch (*Barringtonia acutangula* and *Pongamia pinnata*) forests are now considered a threatened forests ecosystem in Bangladesh. The rich fishery of the haor ecosystem also provides the largest amount of revenue earnings for the Government. According to government revenue record, Sunamgonj and Kishoregonj are the two largest revenue earnings districts of Bangladesh and both of these districts are dominated by haor systems. The source of such revenue is from leasing of the haor for fishing activities.

The Haor is also a resting place of waterfowls in the winter months. The rich fish stock in the *beels* of the haor is a perfect resting place for the birds which migrate from the north to avoid the cold Siberian winter months. Estimates show that between 100,000 and 200,000 birds arrive in this ecosystem every year.

However, the ecology of the haor went so bad that in 1999 the government of Bangladesh declared the Tanguar Haor as an 'Ecologically Critical Area (ECA)'. There are two main reasons for this; a) over exploitation of fisheries by the leaseholders and b) population pressure on the haor ecology for other resources like forests products, paddy cultivation, and so on. The government, therefore, halted its age-old system of leasing the haor for revenue generation and enlisted as a 'Ramsar Site' under the Ramsar Agreement. The policy of commercial exploitation of the haor, under the Agreement, is expected to be replaced by a policy of 'wise use' which allows local people to harvest resources but not for a pure commercial point of view. The haor also came under the management of the Ministry of Environment and Forests (MOEF) [it was traditionally under the management of the Ministry of Land].

The new management and the new rules of engagement is a challenge for all the parties involved. It has, therefore, asked IUCN to provide technical assistance on developing a management regime for sustainable management of haor resources. The Swiss Development Cooperation (SDC) came forward with a package of financial help to ensure that the Haor is managed in a sustainable manner – ensuring appropriate conservation of resources and at the same time guaranteeing growth of income for the people living inside the haor. The rules for management of the haor for the benefit of the people and also for the

Hijol Koroch– *Endangered Swamp Forets*

benefit of the environment is currently under consideration and the Ministry of Environment and Forests, the World Conservation Union (IUCN) are jointly working towards this.

1.1 The Study

To develop comprehensive management structure for sustainable management of the haor and for sustainability of the livelihood of the people of the haor, this socio-economic study was conducted in addition of base line census.

The objectives of the survey were as follows:

- To understand the socio-economic status of the people

- To understand their priorities in terms of developing the resources of the haor.

- To understand their exact nature of dependency of the people with the haor/beels in terms of seasonality and also in terms of resources.

- To learn about the pattern of community structure and to assess their perception on community based activities and cooperation among themselves.

2. The Method of Study

Tanguar Haor, an area of 10000 hectares of land, is spread widely in two Thana (police station) and 4 unions. The area is thinly populated in 88 island-like villages with as low as 5 households in a village to as big as 571 households (Census Data, TH, 2007). The length and the breadth of the haor, its remoteness in terms of communication and also its very low level of education in these villages brings in a challenge for social researchers. However, the study had one significant advantage – the raw data of the Census of the TH Villages were already available for study.

To collect information from rural villages, it is possible to use a Rapid Rural Assessment tool (like PRA) and develop a general understanding of the rural livelihood and their economic interdependence with the haor. It was also possible to use a more sociological research tools like participatory observation, key informant method to understand the power structure and rural sociology of the area so that the stratification of the society in understood. And at the same time, it was possible to use a questionnaire survey on a random sample and get actual household level information on their livelihood, income and relations with the haor ecology. We opted for the latter. This is because, unlike in many household survey, a fully randomized sampling is possible in this case (because of the access provided by IUCN in its Census data). As a result, it is possible to develop statistically robust information on the household. This can, therefore, be used to develop a better management strategy for sustainable management of the haor.

2.1 Sampling

The study has been conducted on the based on base line census survey of IUCN. On the basis of base line data, the survey was designed. The *sampling frame* was the complete census data and the strategy of sampling was based on stratification by major occupation of the head of the household. Based on the Census information, a total of 900 households were initially selected for the survey. At the end, 821 households were available for the survey. This is presented in Table 1 below. The table shows the sample distribution according to the main occupations of the household's head and union wise in two Upazillas of Sunamganj district where the Tanguar haor is situated.

Table 2.1. Distribution of samples according to union and occupation

Upazilla and Police Stations	Union	Main occupation (No. of households) Household Head						
		Agriculture	Fishing	Day labour	Petty business	Sand and coal collection	Others	Total
Tahirpur	North Sreepur	119	55	49	20	25	23	290
	South Sreepur	44	48	38	13	1	16	160
Dharampasha	North Bangshikanda	48	45	43	14	2	21	172
	South Bangshikanda	91	29	43	15	0	21	199
The Sample		302	177	173	62	28	81	821
Percent of Household (Census data)		36.78	21.56	21.07	7.55	3.41	9.87	100

NOTE: Household Survey, 2008, IUCN

2.1 Quality Control of Data

Twenty field enumerators were trained for collection of data in Sylhet (students of Shahjalal University of Science and Technology). Each of the enumerator was given the list of household with name of the head of the household to conduct the survey. In case of absence of the household head, one member of the household (who can provide reliable information) was interviewed; however, other members were allowed to seat and listen to it to either express their viewpoint or to correct for omissions and errors in the information.

The data collectors were supervised and monitored by the local partner NGOs of IUCN that have been ensured the authenticity and validity of the data. The data collected in this process were entered in a laptop using two research assistants.

Furthermore, inconsistency and logical errors identified during the processing of the data were rechecked with enumerators to remove possible entry errors. The analysis is done using the software SPSS.

3. People of Tanguar Haor

3.1 Socio-economic Life

People living in the villages of Tanguar Haor do not have access many of the basic amenities of life like electricity, water, sanitation, school and also markets. The size of the villages varies from very small (as revealed in the census data) to a few large villages but the geography of the area is such that during six months of a year they live in island-like villages. The area surrounding the villages become a continuous water body (this is the *de* facto Tanguar Haor) and is, therefore, cut-off from all sorts of social and administrative supports. The water body is so huge that it becomes difficult for villagers to send their children to schools and so in many cases schools are shut-off or are run without majority of the students. These are expected to have some impacts of the socio-economic characteristics of the villages.

According to the Bangladesh Bureau of Statistics the average size of household is 4.9 (BBS 2007) but in Tanguar Haor it is nearly 6, for a population living in poverty this is not very high compared to the national average. Table 3.1 shows the basic statistics at the household level in our Survey. It is found from the table 2 that 95.4 percent households are dependent on male earning members and the average male earning member is 1.45. However, 1.8 households are female-headed households in our sample and at the same time 4.5 percent of the households had both male and female earning members. At the same time about 1.9 percent of the households reported no regular income while the rest 0.9 percent of the families reported income but no earning members implying that their bread earner either live outside the Tanguar Haor (emigrated outside the region for work).

Table 3.1. Family size and distribution of earning members per household

Gender	Average person per HH	Distribution of earning members		Percent of female headed HH	Percent of hh with both male and female earners
		Average earning members per HH	Percent of HH		
Male	3.13	1.45	95.4		
Female	2.86	1.77	6.3		
Household	5.94	1.54	97.2	1.8	4.5

Source: IUCN Survey, 2008.

In terms of religious belief, the Tanguar haor people are mostly (84.65 percent) Muslims but the percent of Hindu population (13.64%) is larger than the national average of 9.xx percent. Table 3.2 shows illustrate the distribution of population by religious beliefs.

Table 3.2 Religion Status of the Households

Religion	No of Household	Percent
Islam	695	84.65

|		
Hindu	112	13.64
Christian	11	1.34
Others	3	0.37
Total	821	100.00

Source: IUCN Survey, 2008

About 68 percent of the households reported that their occupation is agriculture (including both primary and secondary occupation) and despite the fact that it is a major fishing area, about 47 percent of the households had fishing income. In this connection, it should be noted that households in haor regions needs at least two income sources because during the rainy season haor is a water body and during the winter it is mainly cropland. Table 3.3 shows the details of the occupational distribution of the households. It also shows that 44 percent of the households earn their income as day labourer, while 15 percent are engaged in small businesses, and only 4 percent are involved in local mines (coal and sand mining activities). At the same time, nearly 16 percent reported no specific sources of occupation.

Table 3.3. Occupational Distribution of the Household Heads

Type of occupation	Main occupation		Secondary occupation	
	No of Households	Percent	No of households	Percent
Agriculture	302	36.83	178	31.12
Fishing	173	21.10	152	26.57
Boatman	2	0.24	7	1.22
Day labourer	173	21.10	137	23.95
Petty and small business	62	7.56	45	7.87
Allowances			1	0.17
Sand and Coal collection	28	3.41	10	1.75
Others	80	9.76	42	7.34
Total	820	100.00	572	100.00

Source: IUCN Survey, 2008

In terms of monthly income distribution is shown in Figure 3.1. It shows clearly that majority of the people of the haor live below 5000 taka income per month. More precisely, nearly 30 percent of the respondents are earning Taka 1500 – Tk. 3000 in a month and 39 percent are earning Tk. 3000 – Tk 5000 in a month. There are only 2.57 percent respondents are earning more than Tk.10000 and nearly 6 percent live with income as low as 1500 taka per month or less.

Figure 3.1 Income Distribution
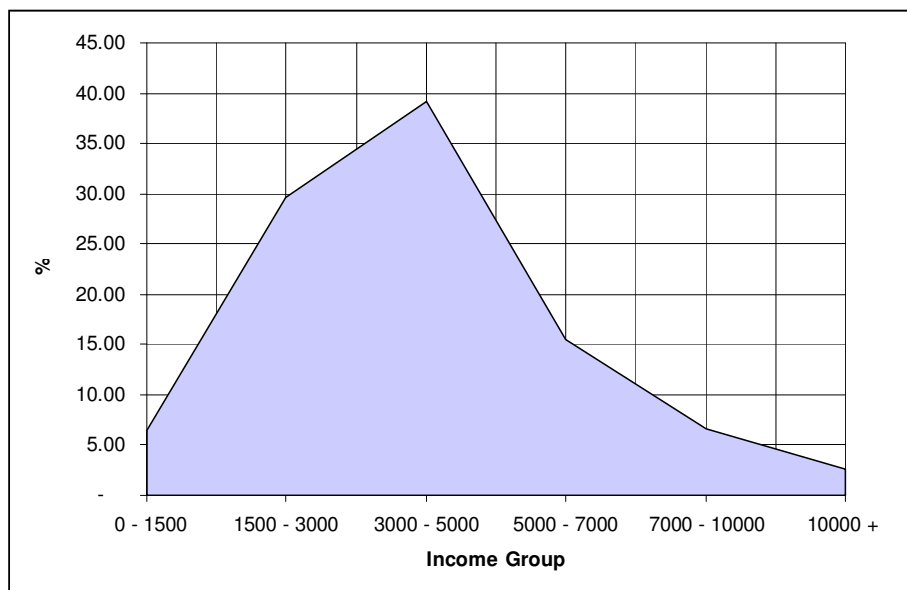
Source: IUCN Survey 2008

In terms of average income by occupational group, annual average income of the households are shown in Table 3.4. It shows that nearly 67% of the households had shown income from agriculture and their average annual income is about 21212 thousands taka per year. At the same time there is a large degree of variation in their income which shows the skewness of the distribution of income with few large farmers and a majority of them are rather small farmers. Table 3.5 shows the correlations between various income sources and its shows that agricultural income is significantly correlated with fishing income. The distribution of income for each sources are shown in Appendix 1. Table 3.4 further illustrates that nearly 95% of the households use haor as a resource to earn their living in the Tanguar Haor area. It is also evident from the survey data that nearly 72% of the households earn their living from the haor but it is not from agriculture rather it is from a) fishing b) fish trading, and c) boating. Their average income from these sources is about 65% of the total average income. However, if income from agriculture is included then on average household derive 81.3% of their income from haor based resources. Clearly, the report shows the dependence of haor resources of the people of Tangaur villages.

Table 3.4. Source wise distribution of annual income of the households

Source of Income	Percentage of HH	Annual Average income
Agriculture	67	21212
Day labourer	52	23300
Open access fisheries	38	21053
Culture fisheries	1	14417
Fish business	5	28145
Transportation	4	25441
Small business	18	32782
Remittance (inland and abroad)	3	20444
Others	21	16988
Total Income	**100**	**46769**
Income from Haor	**95%**	**38059**
Income from Haor (non agriculture)	**72%**	**30553**

Source: IUCN Survey, 2008.

Table 3.5. Correlation between various income sources

	Agriculture	Day Labour	Open Fishing	Culture Fishing	Fish Trade	Transportation	Small Business	Remittance	Other income
Agriculture	1.00	0.04	(0.13)*	0.90**	0.24	0.24	0.05	0.21	0.02
Day Labour		1.00	0.11		(0.16)	0.09	0.12	0.77**	(0.03)
Open Fishing			1.00		0.34	0.45	(0.27)	0.08	(0.02)
Culture Fishing				1.00			0.99*		
Fish Trade					1.00				0.23
Transportation						1.00	(0.99)*		0.42
Small Business							1.00		0.38*
Remittance								1.00	(0.32)
Other income									1.00

Source: IUCN Survey 2008

Note: * 10% level of significance, ** 5% level of significance, numbers within parentheses are negative numbers.

Figure 3.1 shows the distribution of income for various households in Tanguar Haor area. It shows that majority of the people in TH area are either farmers, or fisher or day labourer. Other sources of income, although higher than these, employ only a smaller percentage of people.

95% of the people are engaged in farming, fishing, fish trading, and boating activities.

Figure 3.1: Average Annual Income and Percent of Household
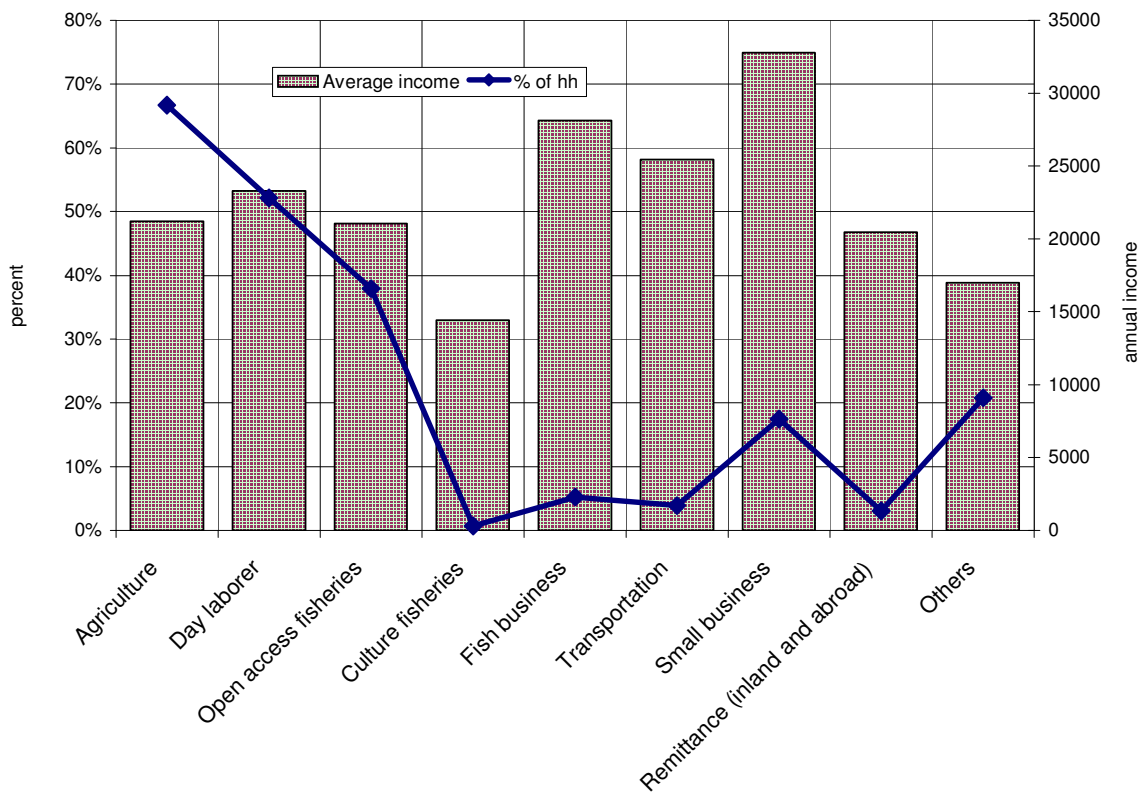
In summary, it can concluded that Tanguar people are highly dependent on the haor ecosystem for their income. Nearly 72% of their income is either directly or indirectly derived from the haor. Consequently, **sustainable management plan of the haor must involve these people in order to ensure that while maintaining the ecological sustainability, the people of Tanguar do not lose their livelihood.** This is important for developing the management of Tanguar Haor.

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3.2 Living in Tanguar

Tanguar haor is one of the remote places of Bangladesh. Its access to major cities is limited by its backward infrastructure and also by the economic condition of the people. Consequently, living in Tanguar is also very strenuous. Materials for making houses in Tanguar, used to come from the haor itself. The reeds used to supply the roofing materials, the swamp forest supplied the structure of their houses. However, over time these sources became scarce as the condition of the haor itself ran from bad to worse. Brick structure of the houses, which is so common in rest of Bangladesh is very uncommon in Tanguar. Only 1.1 percent of the household had brick walls. Bamboo based wall is the most common and tin roof has now replace the reeds for most of the households. Table 3.6 illustrates the houses of Tanguar.

Table 8. Type of house materials

House structures	Percent of Household	Percent of Response
Wall-Roof of the houses		
Thatched-Thatched	14.2	18.4
Thatched-Tin	32.1	41.7
Thatched - Others	0.6	0.7
Bamboo - Thatched	1.8	2.3
Bamboo - Tin	14.1	18.3
Wood/Tin - Tin	35.7	46.3
Brick – Tin	1.1	1.5
Brick - concrete	0.5	0.6
Total	100	129.8
Roof materials		
Thatched	25.1	30.4
CI Sheet	72.3	87.7
Cement	1.8	2.1
Others	0.9	1.1
Total responses	100	121.4

Source: IUCN Survey, 2008.

Table 3.6 shows that 72.3 percent used tin or CI sheet as their roofing materials while only 1.8 percent had RCC concrete houses. The most common wall materials are made of reed and bamboo and nearly 35.7 percent also used CI Sheet (tin) as their wall materials. Data shows that for 21.4 percent of the household, it is just a one room house, which is indicative of their poverty as well as scarcity of home stead land in the area.

21.4 percent of the people live in a one room house

3.3 Energy, Water and Sanitation in Tanguar

Energy

Tanguar people used to collect reeds, leafs, branches of trees from the swamp forest to cook their food. It was the major source of fuel wood for these people. Over time, cowdung has replaced the twigs of the trees (Table 3.7). This is significant negative impact on the environment as farmers are likely to become more dependent on chemical fertilizer.

Table 3.7. Source of fuel for cooking

Source of Fuel	Percent of HH	Percent of responses
Cowdung	27.7	67.6
Fuelwood	10.9	26.6
Hijol/Koroch branches	2	4.9
Drywood	16.7	40.6
Grass	18.3	44.5
Reed or Nol khagra *Phragmites karka*	4.4	10.7
Leaves	11.2	27.3
Others	8.8	21.5
Total response	100	243.7

Source: IUCN Survey, 2008.

The quality of fuel wood is an important determinant of the exposure to air pollution among the children and the women. Table 3.7 shows that cow-dung, grass, reed, leaves are used as fuel in more than 64 percent of the houses in Tanguar. Consequently, it is important that management of Tanguar Haor consider providing improved fuel supply for the people of Tanguar to reduce exposure to air pollution and hence to reduce respiratory related illness among them.

In terms of fuel for lighting, Kerosene is used for more than 88 percent of the household. However, solar connections exist in the locality (mainly due to activities of the NGOs) and so it is important that Tanaguar Management Plan includes provisions for providing lights to the people. This will be important to ensure better education for their children and as well as to reduce poverty.

Table 3.8. Source of light

Source of Light	Percent of HH	Percent of responses
Kerosene	88.6	93.9
Electricity	0.8	0.9
Biogas	0.3	0.4
Candle	4.3	4.5
Solar	4.5	4.8
Battery operated light	0.1	0.1
Others	1.4	1.5
Total response	100	106

Source: IUCN Survey, 2008.

Water

Despite the fact that Tanguar is a Ramsar site and a large wetland, Tanguar people do not have access to safe drinking water as much as others have in Bangladesh. The national average for access to Tubewell is 97%, whereas in Tanguar it is only 88.3 percent. Water is a major crisis for these people in all the seasons. Use of water from ponds, canals and rivers are history in many parts of Bangladesh but in Tanguar nearly 77.6 percent households still use them! Only 13 percent people have access to water from deep tube wells (Table 3.9).

Table 3.9. Source of water

Source of Water	Percent of HH	Percent of responses
Deep tubewell	7.0	13.4
Tubewell	46.1	88.3
Ringwell	3.4	6.6
Pond-Canal-River	40.5	77.6
Rain water	0.1	0.1
Others	2.9	5.6
Total responses	100	191.6

Source: IUCN Survey 2008

Sanitation

Sanitation is a major problem in Tanguar villages. Only 10.7 percent of the household or 11.6 percent of the people have access to sanitary (there is strong doubt weather the water-sealed sanitary latrines are at all functional in these villages) latrines. Another 12.8 percent of the people use ring-slab latrines while the rest 77 percent defecate directly to the local rivers, canals and creeks using bamboo-made, or semi-open or open latrines (Table 3.10).

Table 3.10. Type of latrine

Latrine Type	Percent of HH	Percent of responses
Sanitary	10.7	11.6
Ring-Slab	11.9	12.8
Bamboo-Mud	59	63.8
Open	16.4	17.7
Others	2	2.2
Total responses	100	108

Source: IUCN Survey 2008.

64 percent of the households use grass, leafs, cow-dung to cook food, 77 percent defecate into rivers, canals and creeks, and 77 percent use pond-river-canal water for their daily needs.

3.4 Food and Nutrition Status

Food intake per household (for an average size of 5.9 persons per household) is shown in Table 3.11. It shows that main food items are rice, vegetables, and fish. However, average intake per person is much lower than the daily calorie needs. Table 3.11 further shows that only 49 percent households eat potato weekly, only 2.8 percent eat red meat, 12.55 percent eat poultry, 21 percent use milk or milk based products, 42 percent eat eggs and only 5 percent take fruits per week.

Table 3.11. Weekly food consumption pattern per household of 5.9 persons

Consumption item	Unit	Amount	Percent of Households
Rice	KG	4.10	100.00
Potato	KG	0.50	49.21
Vegetables	KG	1.48	94.15
Pulses	KG	0.19	43.48
Milk & Milk Product	Litre	0.69	21.07
Edible oil	Litre	0.12	95.25
Meat	KG	0.25	2.80
Chicken/duck	KG	0.25	12.55
Egg	Number	1.71	42.75
Fish	Kg	0.81	92.57
Fruits	Mixed	0.50	5.36

Source: IUCN Survey, 2008

In terms of their expenditure of food and other items, Table 3.12 shows that average annual expenditure on education is about 15% of their income, health in another 15%, for lighting it is 13%, Cooking fuel is 6%, transportation is 13%, etc. In total it appears from the survey that nearly 20% of the income of the average people is spent on food.

Table 3.11. Distribution of household expenditure

Head of expenditure	Percent of Hosuehold	Annual expenditure (in Taka)	Percent of total income
Clothing	99.1%	4641	10%
Education	50.9%	6931	15%
Health	96.0%	7080	15%
Lighting	5.6%	6279	13%
Fuel	85.0%	2933	6%
Transportation	85.0%	6058	13%
Recreation	20.6%	3278	7%
Total Expenses	100%	37201	80%

Source: IUCN Survey, 2008

More than 50% people cannot afford milk, egg, meat, poultry, pulses, potato in a week. 20% of the income is spent on food while lighting costs is a staggering 15%, health costs is also 15% of their income.

4. Tanguar Haor and People

Income dependence

Dependence of the people on haor and its resources are very clear in preceding discussions. It is also evident that changes in the management practice (from leasing to government managed resources) did very little to help the local people to extract resources. While it is a matter of research to find out whether the ecosystem has reverted to normality because of the new management practice, it is clear that people are still dependent on haor. The Ramsar Convention allows local inhabitants to use these resources to enhance their income. However, the new management is yet to develop a comprehensive management system for this. This study shows that while 95% of the people reported some kind of dependency (through their occupation) with the haor, survey data further inquired into the income sources of the households in the past 12 months. It shows that 90% of their income can be attributed to haor and its resources (including agriculture) and at the same time 75% of the households are still dependent on haor resources, despite the fact that under the new management commercial fishing is by and large prohibited in the haor.

Table 4.1. Distribution of total income in past 12 month

Past 12 month's income	Percent of household	Average Income	Percent of income
All Households	100%	71,470	100%
Haor income	75%	63,994	90%

Source: IUCN Survey 2008.

Fishing

Fishing is obviously the most important economic activities in the haor. Nearly 65 percent of the people are involved in fishing or related activities. Table 4.2 illustrates the involvement of the local people in fishing and related activities.

Table 4.2. Type of involvement in fishing activities

Type of involvement	Percent of HH
Fish catch	55.5
Wholesale fish business	3.9
Retail fish business	21.6
Dry fishing activities	0.5
Trap making activities	0.5
Net/trap selling	0.4
Boatman	6
Fishing labor	1.9
Ice selling	0.1
Others	9.5
Total	100
Involved in fishing	65.41

Source: IUCN Survey, 2008

Fuel dependence

Supply of fuel for cooking is scarce in the region because of large scale deforestation that took place in the haor for many years. Free supply of fuel resources like twigs, branches, reed, etc. are being replaced by market based supply sources and by homestead forests. Table 4.3 shows that households use more than one sources of supply for their fuel for cooking. 60 percent of the households still collect it from haor, 66 percent from village forests, 30 percent buy them from the market, and so on.

Table 4.3. Dependency for fuel in different sources

Collection venue of fuel	Percent of Household	Percent of Responses
Haor	33.5	60.1
Village	36.9	66.2
Hills	3.2	5.7
Market	16.7	29.9
Others	9.6	17.2
Total responses	100	179.1

Source: IUCN Survey, 2008

In terms of the source of actual collection, 72 percent of the fuel supplies is still from the haor swamp forests, 83 percent is grass and reeds, 67 percent is cowdung. Clearly, the dependence of haor for fuel supplies cannot be underestimated (Table 4.4) while developing management plan for the haor.

Table 4.4. Dependency percentage of fuel according to fuel materials from haor

Source of supply	Percent of HH	Percent of responses
Haor based firewood	29.6	72.1
Haor based grasses	33.9	82.5
Cow dung	27.7	67.5
Others	8.9	21.6
Total response	100	243.6

Source: IUCN Survey, 2008

90% of their income can be attributed to haor and its resources (including agriculture) and at the same time 75% of the households are still dependent on haor resources, despite the fact that under the new management commercial fishing is by and large prohibited in the haor.

72 percent of the fuel supplies are still from the haor swamp forests, 83 percent is grass and reeds, 67 percent is cow-dung.

Management and its failures

Haor and its resources are the main source of income and livelihood of the people of Tanguar. This is possibly true in other wetlands of Bangladesh as well. This has been clear in the discussions above. Fish, rice, duck (poultry), milk and of course, rice are produced in the haor, housing materials come from the haors, the cooking fuel comes from haors too. Considering these, it is important to understand the extent of their dependency with the haor. It shall be noted that during the period of the survey the Tanguar haor is off-limit to commercial fishing, local people are allowed to fish in the haor for their daily needs, and the haor has been under the overall management of the district administration for the past two years (2005 onwards). While 95% of the people has already mentioned that their income sources is linked to the haor. There are some limitations of using haor under the current regime. For example, people are allowed to use the haor for agriculture, non-commercial fishing, transportation, and other activities but they are barred by the district administration to go for commercial fishing, collection fuel wood from the remaining (or reforested) swamp forests. They are allowed to have duck farming and can also use the grass land for grazing animals during the winter seasons.

Figure 4.1 shows the activities in which villagers faced entry restrictions. It clearly shows that although the district administration are supposed to halt commercial fishing activities and bird hunting, wood cutting, local people faced more restrictions than these. Activities like duck rearing, grazing, dung collection, fuel collection, feed collection, and food collection are supposed to be done freely in the area

Figure 4.1 Tanguar villagers report on prohibitions of activities
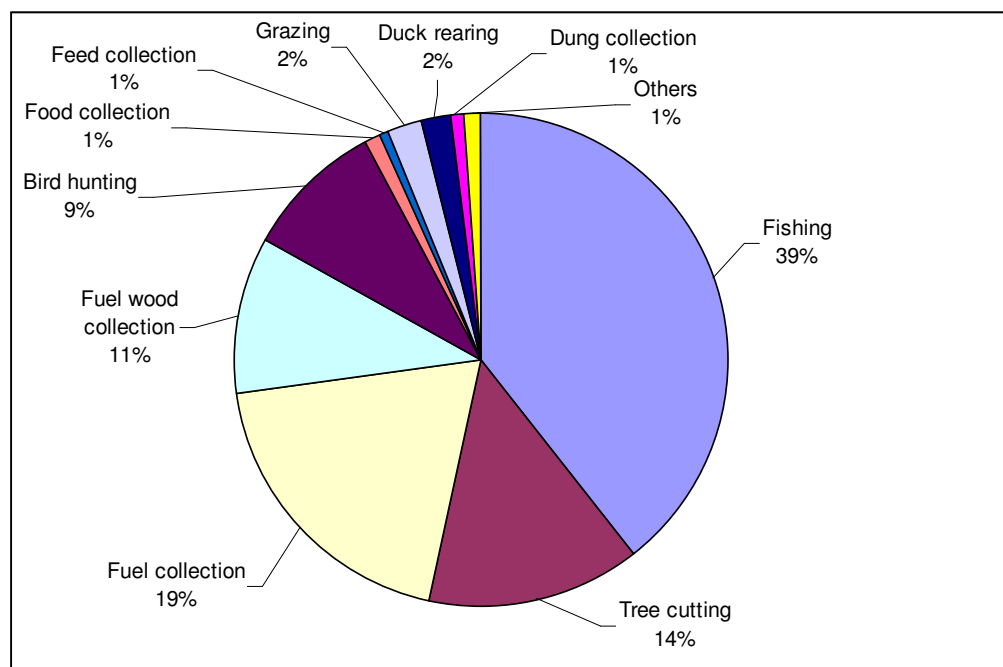
Source: IUCN Survey, 2008

under the management control of the government and yet many reported of not allowed doing so in the haor. On the other hand, fishing for living are supposed to be allowed by the authority. It is not clear what percent of villagers originally intended to do so and what percent of them are restricted to do so from this survey. Consequently, the interpretation of this data should be in the following line. These households faced restrictions in terms of doing these activities.

Table 4.3 Activities of facing barrier for accessing in haor areas

Barrier facing activities	Percent of respondents	Percent of Responses
Fishing	39.40	92.8
Tree Cutting	13.80	32.5
Fuel Collection	19.40	45.8
Dead tree collection	10.50	24.7
Hunting	9.00	21.3
Food collection	1.20	2.7
Feed gathering	0.50	1.3
Grazing	2.10	5.1
Duck rearing	2.10	5.1
Cowdung collection	0.90	2.1
Others	1.00	2.3
Total	100.00	235.7
Willing to enter to haor for resources	**62.61**	
Facing barrier to access	**92.22**	**Percent of all household**
Changes of profession	**7.67**	**Percent of all household**
		Percent of all household

Source: IUCN Survey, 2008

Table 4.3 shows that on average, each household faced between two to three restrictions (235%) while entering into the haor. About 92.2 percent of the families reported similar events while 62.6% did eventually managed to enter into the haor for their activities.

In terms of who imposed these restrictions, survey data shows that nearly 50% of them are from law enforcing agencies (who currently control the resources of the haor). However, to our surprise 21 percent of the household reported that local private guard (outside local law enforcing agencies) and at the same time 2.2 percent faced entry restrictions from local influential persons, 1.8% from the forest department officers, and 13 percent faced restrictions from the local administration. Table 4.3 illustrates the details.

Table 4.4 Factors of barrier for accessing in haor

Factors of creating barrier	Percent of household
Local law enforcement agency	49.8
Private guard	20.7
Local influential person	2.2
Land owner	4.4
Forest Department	1.8
Fisheries Department	1
District/Upazila administration	13.1
Others	7
Non response	1.27
Average kickback amount per day	89.96

Source: IUCN Survey, 2008

Table 4.5 shows that of the 36 percent household who eventually managed to enter into the haor 79 percent paid kickback amount for their entry. Of this, nearly 59% of the people paid the kickback to the local law enforcing agencies for their entry into the haor. About 13 percent paid to former leaseholders who still holds some power and about 21% paid kickback money to the private guards (appointed by former leasehold, local influential persons).

Table 4.5 Distribution of kickback amount among the different agencies

Collectors of extra-payment	Percent of respondents
Politicians	1.1
Former leaseholders	13.2
Local Hooligans	0.5
Local Elites	1.1
Law enforcing agencies	58.9
Private guards	20.5
Others	4.7
Total	100
Percent of households entered	35.93%
Percent of households paid kickback amount	78.89% (of those who entered)

62% want to use haor resources for their living, 36% collect fish, twigs, feed, water fruits, etc. 79% of them pay kickback money. Daily collection of kickback is about 90 taka per day for entry into the haor.

5. Poverty in Tanguar Villages

Despite the abundance of nature, a very low density of population, the birds, the rivers, the sand and coal mines in its vicinity, the Tanguar villages are dreadfully poor villages. People from outside consider it a natural beauty and many inside think it as a trap of nature! The haor ecosystem is such that it withholds the flow of water into the plains right after the early monsoon months and allows the people in the lower regions to harvest their crops while people inside Tanguar often have a fifty-fifty chance of harvesting their own crops. Many a times, it goes under water with early flash floods. Demand for embankment around the haor is, there, but closure of water bodies inside the haor during the crucial time of spawning might jeopardise the fresh water fish supplies in the country. They are therefore, under a double jeopardy.

In early summer and in rainy seasons the stagnant waters in the haor, the gusty winds of the early monsoon, the norwesters, the tornadoes and the lighting makes it difficult for people to travel. Each small village becomes an island with very little space to move for them. At the same time, continuous barrage of waves around the villages causes severe erosion of soil each year. It is, therefore, important that Tanguar Haor Management Plan takes into account not only the life style of the people but also considers the impact on the people who live on hand to mouth.

The poor households

The national poverty statistics show that nearly 28.6 percent of the households live below the lower poverty line in rural Bangladesh. National statistics reveals that nearly 43.8 percent of the households live below the upper poverty line in rural Bangladesh. This survey did not use a detailed income expenditure method to define poverty. Given this we used the following definition to define poverty in Tanguar villages.

Table 5.1: Classification of Poor Households

Classification of Poor Households	Characteristics	Percent of Hh
Poor Households	Less than 50 decimals of land	49.09
Ultra Poor Households	Less than 10 decimals of land	37.03
Extreme Poor Households	Less than 10 decimals of land and no income generating asset (non-land)	31.43
Asset Poor Households	No income generating or productive assets (non-land)	13.89
Female or Child headed family	No adult male income earning persons	2.80

Source: IUCN Survey 2008

Based on the above definition, Table 5.1 shows that 2.8 percent of the households have no adult male earning members. 13.89 percent of the households have not income generating assets (asset poor household), 31 percent of the households have less than 10 decimals of land and nearly 49 percent households have less than 50 percent of the land. Given the poor level educational attainments and the

dependence on the haor ecosystem for living, these households represent the bulk of the poor households in Tanguar villages.

Poor by occupational distribution

To develop further inside about the prevailing poverty in the Tanguar villages, a further analysis of the data was done using cross-classification based on main occupation of the household heads. Table 5.2 illustrates the results. It shows that among the ultra poor households are mostly concentrated among the day labourer, petty business and among the mine workers. Clearly, not having a regular source of income and not having land is a major determinant of poverty in the region.

Table 5.2. Distribution of poverty level according to the main occupation (in Percentage)

Percent	Poor Households	Ultra poor	Extreme Poor Households	No income generating asset	Female or Child Headed Households
Agriculture	24.57%	18.75%	18.22%	15.79%	13.04%
Fishing	24.3%	23.36%	27.52%	6.1%	
Boat man	0.5%	0.33%	0.39%		
Day labour	31.8%	37.83%	36.82%	51.8%	30.43%
Petty business	6.9%	8.22%	6.98%	11.4%	17.39%
Sand and coal collection	4.2%	3.62%	3.49%	6.1%	
Others	7.7%	7.89%	6.59%	8.8%	39.13%
Total	49.09	37.03	31.43	13.89	2.80

Source: IUCN Survey 2008

Table 5.2 shows that of the 49 percent poor households, day labourer, agriculture and fishing groups with less than 50 decimal lands dominates. Of the ultra poor groups, day labourer, fishing and agricultural households with less than 10 decimal land dominates. Again of the households with no adult male earning members, day labourer, petty businesses and other professions (these households did not want to reveal their actual main profession either because they are engaged in immoral activities or illegal activities).

49% of household with less than 50 decimal land, 37% with less than 10 decimal land and no income generating assets, 31% with less than 10 decimal land, 14% with no income earning assts, and 2.8 percent with no adult male income earner.

6. Local perceptions

Tanguar Haor Project has been in place for nearly a decade in various forms. In the beginning, people of the Tanguar were up against leasing of the fishing resources to individuals in the name of the fishing societies. People have mixed feelings on the leaseholders. Primarily, the practice provided an opportunity to the leaseholders to extract as much resources as it could during the period of lease. Since, local people were also living on the same fishing resources they came in conflicts with the leaseholders very quickly. However, under a revision of the law, government provided some guarantee to the leaseholder for renewal of contracts which led to some investment for conservation of fish stock. However, local people were deprived more because investment in fish stock by the lease holders came along with more control over resources. Leaseholders employed security guards to prevent people from fishing in the haor and at the same time people were prevented from bringing ducks in the beels on the plea that ducks will disturb the fishery. Allegation exists that leaseholders used to charge a toll for each duck reared by local people.

Perception on development activities

Against this backdrop, government declared Tanguar as a Ramsar site in 1992 and developed its first management plan under the National Conservation Strategy –I in 1997. According to the plan, government stopped renewing the lease and in 2000, the Government of Bangladesh handed over the management of the haor to the Ministry of Environment and Forests. Consequently, local people are aware of the changes taking place in the haor basin. With hope for future development activities in the haor, people had developed expectations which need to be addressed by any future management plan of the hoar. Table 6.1 illustrates the expectation of the local people in terms of their participation in such activities.

Table 6.1. Expectation of participating in haor development activities

Participation - expectation	Percent of household	Percent of Response
Crop production	20.4	63.7
Labour supply	18.7	58.4
Business	12.9	40.5
Duck rearing	11.7	36.6
Grazing	10	31.2
Services	9.7	30.3
Tourism	4	12.6
Afforestation	3.7	11.4
Others	9.1	28.4
Total	100	312.9
Percent of household responded	96.95	

Source: IUCN Survey 2008

Nearly 97 percent of the local people have some expectation on their participation in the development activities in the Tanguar haor. On an average, they expect that in more than three ways they can participate in the haor development activities. Increasing rice production in the haor basin is their most cherished goal. The next most popular item is providing labour in the development works. In turn, it means that development activities will open up employment opportunity for them. 59 percent of the households expect to participate through this. Next is that there will be more business opportunities for them and so on (Table 6.1 for details).

Perception on economic activities in the haor

Table 6.2 illustrates their preferences in terms of being engaged in the type of economic activities inside the haor. Fishing and related activities the most popular among them. Nearly 34 percent of the households hopes to be engaged in it. Duck rearing, collection of reeds for business, supplies of fire wood for the people are the next most preferred economic activities by the local people. However, on average each household expected to be engaged in more than 2 of these activities.

Table 6.2. Preferred economic activities in Tanguar haor area

Economic activities	Percent of households	Percent of responses
Fisheries and related activities	34.2	97.6
Duck Rearing	15.1	43.1
Nol Khagra and Chilya Kata selling	14.8	42.2
Firewood supplies	14.5	41.4
Grazing	11.7	33.5
Bird hunting and trading	7.8	22.2
Others	1.9	5.5
Total	100	285.5
percent of household responded	97.32	

Source: IUCN Survey 2008

Perception on job creation

Years of awareness building program conducted under the NCS program and by local NGOs has resulted in some changes in the mindset of the local people. In earlier years, people used to engage in killing migratory birds. This has almost stopped now. However, people also need to find alternative opportunities for jobs. In this connection, local people think that in a positive investment climate, they themselves will open up new opportunities for jobs. Former leaseholders may also find and create new jobs for them. Table 6.3 illustrates this.

Table 6.3. Who would create jobs for local people?

Entrepreneurs of economic activities	Percent of households	Percent of responses
Local people	66.3	84.1
Lease Holders - former	17.1	21.7
Local Influential Individuals	5.3	6.7
Local Rich People	3.2	4.1
Local Politician	2	2.5
Others	6.1	7.7
Total	100	126.9
percent of household responded	95.98	

Source: IUCN Survey 2008

Perception on endangered haor resources

Tanguar is a major wetland in the area. Its value in terms of fisheries was well known to local people as well as to the government which used to earn tens of millions each year through leasing the fishing rights in the haor every year. To develop a sustainable management plan for the haor, local people should be taken on board.

Table 6.4. Perception on causes of resource depletion

Threats to the haor	Percent of household	Percent of responses
Catching mother fishes	29.7	75.9
Cutting trees	23.9	61
Dewatering of beels	18.9	48.4
Hunting	15.6	39.8
Alien fish culture	2.7	6.9
Others	9.1	23.2
Total	100	255.3
Percent of household responded	97.20	

Source: IUCN Survey 2008

Nearly 76 percent of the people think that catching mother fishes during the dry season led to depletion of fish stock in Tanguar. 61 percent thought that cutting trees from the swamp forests lead to depletion of its resources. 49 percent think that the practice of catching fish by dewatering the beels in the dry season lead to depletion of its fish stock. Nearly 40 percent thought that hunting activities in the region led to depletion of its resources. These perception analyses suggest that Tanguar Haor Management Plan should go beyond simple awareness building campaigns.

Perception on how to reverse the scenario

Reversing the trend of depletion is a major task that the new management plan must begin within the shortest period of time. There are many plans on the table suggested by experts. Table 6.5 gauges the popularity of these measures at the local level.

Table 30. Suggestive measures to conserve resources in haor

Measures to conserve	Percent of households	Percent of responses
Fish sanctuary	28.7	80.4
Fish culture	19.6	55.1
Alternative income source create	19.3	54.1
Awareness of local people	15.6	43.7
Forestation	7.7	21.5
Local tourism support	4.7	13.1
Others	4.5	12.5
Total	100	280.4
percent of household responded	97.32	

Source: IUCN Survey 2008

Establishment of fish sanctuaries, popularising culture fishery, creating alternative sources of income, raising local awareness are among the most popular measures at the local level. Tourism and afforestation activities are not among the most sought out activities by the local people yet.

Jobs for local people, increase in the production of rice and fishing are expected by the local people through the development projects.

People recognize that unsustainable practices of fishing are the major reason for its resource depletion.

Most popular measures among the public are establishment of fish sanctuaries, introducing culture fisheries, increase new opportunities of income. Least popular measures include popularizing tourism by local people and afforestation.

7. Community participation

The Tanguar Haor Management Plan envisaged people participation to ensure sustainable management of the haor resources. While this is an important requirement for success in the management of the haor, it is also important to recognize that Tanguar is one of the most sparsely populated regions of Bangladesh. The separation of communities in terms of space and distance is quite big and for this reason it is not one of the most popular destination of NGO activities in Bangladesh (despite its higher incidence of poverty). To understand this, this study probed into the existence of local organizations and its activities.

7.1 Local Social Organizations

Survey results suggest that Tanguar Haor Ad Hoc Committee, established by the project is where most people are currently involved. This provides a good as well as a bad picture for future management of the Haor. The sunny side of the story is that local people will be very enthusiastic about the organization because it is perhaps the only haor-wise organization in the haor and 11 percent of the people currently feel that they are part of it. The dark side of the story is that THMP must take into cognizance that huge expectation that it has created among the people about changes and most of them are neither experienced nor exposed to any community level organizations.

The people of Tanguar haor are involved with different types of community organizations those are working for community development. There are 11.33 percent of households are engaged with Tanguar Haor Union Ad hoc Committee and 27.53 percent of respondents are engaged with other societies as member. A very few people are working with other social organizations. But people are interested to work with Tanguar Haor Union Adhoc Committee as because it has been organized by the NGOs who are working for awareness and consciousness build up through local people participation. Overall nearly 28 percent of the households are involved in some social groups.

Table 7.1. NGO Penetration level

Type of organizations	Percent of HH
TH Union Ad hoc Committee	11.33
Fishers Society	4.75
Youth Cooperatives	4.63
Mohila Samiti	1.58
TH Village Group	1.58
Irrgation Pump Group	1.46
Farmers Society	0.73
Industiral labour union	0.73
Agri labour union	0.12
Voluntary workers	0.12
Membership	27.53

Source: IUCN Survey 2008

7.2 Microfinance Institutions

While social activities outside microfinance is very limited in Tanguar villages, nearly 48 percent of the households have linked with micro finance institutions like BRAC, ASA, FIVDB, CNRS, CARITAS and GAUS. Penetration of these NGOs inside the remote Tanguar villages level is amazing. Table 7.2 however, shows that Government Banks, Money Lenders and Friends and Relative still provides a much larger amount of loan than NGOs but nearly 62 percent of the households reported using NGO loans. Grameen Bank has been able to penetrate in 12.6 percent of the households but their loan size is the smallest of all.

Table 7.2 Penetration of credit disbursing institutions

NGOs	Percent of Response	Average Loan Amount	Percent of household took credits
Government Banks and Institutions	10.3	13046.94	9.94
Grameen Bank	12.6	5280.645	12.58
NGOs	62.1	8311.115	53.14
Money Lenders	9.9	10224.49	9.94
Friends, relatives, neighbors	20.5	10073.27	20.49
Others	13	9435	12.17
Total	128.4		100.0

Source: IUCN Survey 2008

7.3 NGO activities

In terms of what sort of benefits they expect to receive from the NGO activities in Tanguar villages, survey results show that most people expect to use NGO/MFIs to mobilise their small savings (60.7 percent), while only 43.9 percent think that NGOs will bring credit facilities to them. Benefits from NGOs are less pronounced in these villages as only 7 percent expect that NGOs will be helpful to develop skills.

Table 7.3. Kinds of benefits received from NGOs

Type of help	Percent Household	Percent of Responses
Savings	42.5	60.7
Credit facility	30.7	43.9
Training	5.6	7.9
Relief during disasters	3.3	4.7
Fishing at TH	1.6	2.3
Health education	1.6	2.3
Education	1.6	2.3
Marketing of produces	0.7	0.9
Others	12.4	17.8
Total	26.07	143

Source: IUCN Survey 2008

7.4 Voluntary Organizations

Tanguar people live in isolated small communities. As a result, local community based informal organizations exists in each of these villages. Nearly 55 percent of the households are involved in voluntary activities involving mosques. 14 percent are involved with development related works sponsored by local NGOs, 19 percent work with local educational institutions too.

Table 7.4. Involvement with community organization

Name of organization	Percent of respondents
Mosque	55.41
NGOs	13.38
Educational Institutions	18.47
Others	12.74
Total	100
Benefits from these organizations	
Development works	89.03
Credit facilities	10.97
Percentage of households membership with community based organizations	19.12

Source: IUCN Survey 2008

Nearly 19 percent of the people are engaged in community based organizations who have implemented development works at the local level.

11 percent of the households are involved in TH Ad Hoc Committee in Villages, 27 percent people have membership with NGO or similar groups, 19 percent works with community level organizations and implemented development works.
Volunteerism is not fully unknown to these communities. Mosques are leading in engaging communities in this. 60 percent want NGOs to collect small savings, and only 43 percent want NGOs to give credits.

8. Recommendations for developing THMP

The objective of this study were to develop a deeper understanding on the people living in Tanguar villages in terms of their current economic conditions, their understanding on the Tanguar Haor Management Plan, their expectation on future of the haor resources and develop successful strategies to engage local people.

The study analyzed information received from 821 households in preceding sections. Based on the analysis presented above, following are the recommendations of this study.

Poverty reduction measures are priorities

Although a resource rich region, people in Tanguar villages more poor than others. Poverty in terms of nutrition, food and also income are more pronounced in Tanguar villages. Development activities in Tanguar must therefore consider developing meaning income generating opportunities for them. Families involved in day labourer with land property less than 50 decimal shall be first set of target groups. At the same time families without a earning man, and/or without productive resources be taken under special schemes to reduce extreme poverty in Tanguar villages.

Fishing skills of the local people shall be exploited

Local people seem to be more engaged in fishing or related activities. Consequently, it will not be easy to remove them completely from the haor region. People are also fully aware of the benefits of fish sanctuaries in the locality. Therefore, considering their skills in fishing and related activities, Tanguar people shall be engaged in all activities related for fisheries development in the haor.

More jobs for local people

More jobs for local people must be ensured in the project to avoid conflicts, and to divert their dependence on haor based resources.

MFI and NGOs to mobilize savings and provide credits

NGOs activities shall be enhanced with an objective to provide credit for developing alternative income generating activities outside haor resources.

Right based approach to development

People living with extreme poverty are clearly engaged in illegal or immoral activities. To ensure that these people are engaged in gainful economic activities and that they also can claim benefits of government programs, right based development approach shall be promoted.

Solar lighting and local business

Remote Tanguar villages are unlikely to receive electricity in near future. At the same time, these small communities live in close proximity to each other in island like villages. Access to solar power to these

communities will improve their lifestyle, increase economic activities and will make communities aware on many social issues.

Harness volunteerism

Small communities in Tanguar villages are still not fully active, they provide voluntary labour to institutions like mosques. THMP should engage local mosque-centred or school-centred communities to support the development works for the poor people.

Improve rice production

Rice is their major source of income and employment. THMP should consider developing strategies to protect rice crops from the effect of flash floods. This will significantly reduce dependence on fisheries.

Duck rearing and cattle grazing

This is a very important economic activity in the region. It requires little or no skills to start with. THMP should develop strategies to promote these activities in all villages and to market their products in neighbouring markets.

Afforestation

Afforestation activities are important set of activities for the development of sustainable haor. However, it is not very popular among the local people as yet. Considering this, a meaningful strategy shall be developed to engage local people and to help them while continuing afforestation activities.

Ecotourism

Ecotourism is still a very new concept in the haor area. Most people have not been able to grasp it yet. Considering the perception of the people on this, the management plan shall take special care while developing the plan because a successful tourism scheme requires full cooperation from the local people.

Education

Children of Tanguar are among the most unfortunate people of all. They remain outside the schooling system during the summer months. Consequently, THMP shall develop strategies to engage students in schools during winter months and for this they need to work with the national curriculum board to develop alternative calendar for effective schooling in haor area.