



Khulna University
Life Science School
Forestry and Wood Technology Discipline

Author(s): Md. Sazib Uddin

Title: Livelihood status of Sundarbans adjacent people at Shymnagar Upazila of Satkhira, Bangladesh

Supervisor(s): Dr. Md. Golam Rakkibu, Professor, Forestry and Wood Technology Discipline, Khulna University

Programme: Masters of Science in Forestry

This thesis has been scanned with the technical support from the Food and Agriculture Organization of the United Nations and financial support from the UN-REDD Bangladesh National Programme and is made available through the Bangladesh Forest Information System (BFIS).

BFIS is the national information system of the Bangladesh Forest Department under the Ministry of Environment, Forest and Climate Change. The terms and conditions of BFIS are available at <http://bfis.bforest.gov.bd/bfis/terms-conditions/>. By using BFIS, you indicate that you accept these terms of use and that you agree to abide by them. The BFIS e-Library provides an electronic archive of university thesis and supports students seeking to access digital copies for their own research. Any use of materials including any form of data extraction or data mining, reproduction should make reference to this document. Publisher contact information may be obtained at <http://ku.ac.bd/copyright/>.

BFIS's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission you may use content in the BFIS archive only for your personal, non-commercial use. Any correspondence concerning BFIS should be sent to bfis.rims.fd@gmail.com.

**Livelihood Status of Sundarbans Adjacent
People at Shymnagar Upazila of Satkhira,
Bangladesh**



MD. SAZIB UDDIN
Student ID : MS-140505

Forestry and Wood Technology Discipline
Khulna University, Khulna
Bangladesh

2016

**Livelihood status of Sundarbans adjacent
people at Shymnagar Upazila of Satkhira
district, Bangladesh**

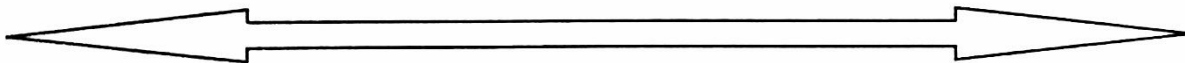


MD. SAZIB UDDIN
STUDENT ID: MS140505
Khulna University, Khulna

This project thesis has been prepared for the partial fulfillment of the requirement for the one year M.S degree in Forestry from Forestry and Wood Technology Discipline, Khulna University, Khulna, Bangladesh.

**Livelihood status of Sundarbans adjacent
people at Shymnagar Upazila of Satkhira,
Bangladesh**

MD. SAZIB UDDIN



Forestry and Wood Technology Discipline

Khulna University, Khulna

Bangladesh

2016

**Dedicated
To
My beloved Parents**

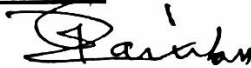
**Livelihood status of Sundarbans adjacent
people at Shymnagar Upazila of Satkhira
district, Bangladesh**

Course Title: Project Thesis

Course NO: FWT- 5112

*[This project thesis has been prepared for the partial fulfillment of the requirement for M.S
degree in Forestry from Forestry and Wood Technology Discipline, Khulna University, Khulna]*

Supervisor



Dr. Md. Golam Rakkibu
Professor
Forestry & Wood Technology,
Khulna University
Khulna – 9208
Bangladesh.

Submitted By



Md. Sazib Uddin
Student ID: MS140505
Forestry & Wood Technology,
Khulna University
Khulna - 9208
Bangladesh.

Acknowledgements

I would like to express my appreciation to all the people whose effort and input made it possible for this research to carry on to completion. First, my sincere gratitude goes to my supervisor Dr. Md. Golam Rakkibu, Professor, Forestry and Wood Technology Discipline, for his constant supervision, effective guidance and encouragement during the entire process of this research. My Special thanks go to my co-supervisor Dr. Md. Nazmus Sadath, professor, Forestry and Wood Technology Discipline, Khulna University for his effective guidance and encouragement during my research work. I am grateful to the ACF of Burigulani range for his cordial support during my research work. I express my deep gratitude to the community's people of the study area for their heartiest cooperation throughout the study period. Specially, I would like to give my cordial thanks to my beloved parents and brother for their continuous support and inspiration throughout the study period.

My special thanks go to my friends Anawar Rana, Ahsik Tanvir Sezer, Abul kalam Azad and all my class mates' of Forestry and Wood Technology Discipline who's helped me a lot to make this research fruitful.

ABSTRACT

The study examines the roles of the Sundarbans to the livelihood of the local community. It is based on sustainable livelihood framework and the information was collected through household surveys and focus group discussions. About 69% people are fully dependent and 22% are partially dependent on Sundarbans for their livelihood. They mostly collect fish, crab, fuel wood, Goran, Golpata and honey for their consumption and income. Fuel wood is the major sources of energy and more than 50% of it is collected from the Sundarbans. Only 63% respondents have their livestock like cows, poultry and goats. Though their income percentages can be increased by providing them different IGAs (Income Generating Activities) trainings but enough IGAs training are not available there. The research also explore that people adjacent to Sundarban are not getting actual benefit from the Sundarbans due to some problems such as Pirates, Forest staffs corruption, high rate of loan interest. Most of the people living here are not satisfied with their present occupations so they want to change their occupations if they get alternative options. This research also finds out the major problems and recommends some suggestions regarding the livelihood of the study area.

Table of contents

Contents	Pages
Title	1
Dedication	3
Acknowledgements	5
Abstract	6
Table of Contents	7-9
List of tables	11
List of figures	11
CHAPTER I: INTRODUCTION	10-11
1.1 Background of the study	10-11
1.2 Objectives	11
CHAPTER II: LITERATURE REVIEW	12-15
2. LITERATURE REVIEW	12
2.1 Livelihoods	12
2.2 Livelihood assets	12
2.2.1 Human Capital	13
2.2.2 Social Capital	13
2.2.3 Physical Capital	13-14
2.2.4 Natural Capital	14
2.2.5 Financial Capital	14
2.3 Livelihood strategies and outcomes	14
2.3 Sustainable livelihood	15
CHAPTER III: METHODOLOGY	16-19
3.1 Geography of the study area	16-17
3.2 Methodology	18-19
CHAPTER IV: RESULT & DISCUSSIONS	20-38
4.1 HUMAN CAPITAL	20-22
4.1.1 Family members and different age group	20-21
4.1.2 Literacy level	21-22
4.1.3 Occupation of the respondents	22-24

4.2 NATURAL CAPITAL	25-28
4.2.1 Land status	25
4.2.2 Mode of Energy and energy sources	26
4.2.3 Dependency on Sundarban and products from Sundarban	27-28
4.3 PHYSICAL CAPITAL	29-30
4.3.1 Drinking water and sources of drinking water	29
4.3.2 House and others necessary physical asset	30
4.4 SOCIAL CAPITAL	31-32
4.4.1 Respondents with & without social institutions	31-32
4.5 FINANCIAL CAPITAL	32-34
4.5.1 Respondents income	32
4.5.2 Livestock and their types	33
4.5.3 <i>Reasons for not having livestock</i>	34
4.6 Local people's attitude towards their present occupations	35
4.7 Desirable alternative occupations of the local people	36
4.8 AIGAs (Alternative Income Generating Activities) training	37
4.9 Respondents with different AIGAs training	38
4.10 Co-management on Sundarbans	39
4.11 Factors affect on harvester income	40
CHAPTER V: PROBLEMS OF LIVELIHOODS AND RECOMENDATIONS	41-42
5.1 Problems of Livelihoods	41
5.2 Recommendations	41-42
CHAPTER VI: CONCLUSION	
6.1 Conclusion	43
REFERENCES	44-45
Questionnaire	46-50

List of Tables

Table NO	Title	
Table1	Surveyed villages in Shymnagar Upazila	19
Table2	Family size	20
Table 3	Major occupation of the respondents	24
Table 4	Major sources of energy	26
Table 5	Sources of drinking water	29
Table 6	Different physical asset those belong to respondents with respondent's percentages	30
Table 7	Respondent percentages whose get help from social agency/institution/persons	32

List of figures

Figure 1: Age distribution of sample	20
Figure 2: Contribution of livelihood for different age group	21
Figure 3: literacy rate of the sample respondents	21
Figure 4: Occupation of the sample respondents	22
<i>Figure 5: SRF related occupation of the sample respondents</i>	23
<i>Figure 6: SRF non- related occupation of the sample respondents</i>	23
Figure 7: Respondents having land in decimal	25
Figure 8: Respondents with different land category	25
Figure 9: Respondents using different type of energy	26
Figure 10: Respondents dependent on Sundorban	27
Figure 11: Respondents collected different product from Sundarban	27
Figure 12: Respondents with safe and unsafe water availability	29
Figure 13: Respondents with earthen and bricks house	30
Figure 14: Respondents with & without NGOs	31
Figure 15: Respondents income per month	32
Figure 16: Respondents with & without livestock	33
Figure 17: Different types of livestock	34
Figure 18: Respondents without livestock due to different problem	34
Figure 19: Respondents those are intended to change their occupation	35
Figure 20: Respondents with desirable alternative income sources	36
Figure 21: Respondents with & without AIGAs	37
Figure 22: Respondents with different AIGAs	38
Figure 23: Respondents with & without Co-management	39
Figure 24: Factors affect harvester income	40

CHAPTER I: INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The Sundarbans Reserved Forest (SRF) is situated in the extreme south-west corner of Bangladesh between the river Baleswar and Harinbhanga adjoining to the Bay of Bengal and it covers 6017 sq. km. out of which 4,143 sq. km is land area and 1,874 sq. km is water area comprising rivers and tidal waterways. The SRF is situated at the southern part of Khulna, Bagerhat and Satkhira civil district lying in between latitude 21 ° 27' 30" & 22° 30' 00" North, and longitude 89° 02' 00" & 90° 00' 00" East. The forest is bounded in the north by the private settlement, in the south by the Bay of Bengal, in the east by the Baleswar River and in the west by the Harinbhanga, Raimongal and Kalindi river which is also the international boundary with India and to the north. There is a sharp interface with intensively cultivated agricultural land of the north with the Sundarbans mangrove forest of the south, which is intersected by a network of tidal rivers, canals and creeks. The areas 99% covered by the districts of Satkhira, Khulna and Bagerhat while other areas are in Patuakhali and Barguna districts (Information Sheet on Ramsar Wetlands, 2001)

Sundarbans is our asset. These are not only our asset but also our pride. Sundarban plays a significant role for local, regional and national economy and provides varieties and abounded resources specially fisheries resources and various non-timber forest products. Fishes resources of Sundarbans export all over the world. But it is a great regret that this forest is being destructed due to the population pressure whose live adjacent to the Sundarbans. Most of these people are directly or indirectly dependent on Sundarbans (World's Largest Mangrove Forest) specially the poor people. They collect fishes, fuel wood, small timber, goran (*Ceriops decandra*), goalpata (*Nypa fruticans*), crab, honey etc. from Sundarbans.

In the Satkhira district, Shymnagar Upazila is an important place as it is directly connected with world's largest Mangrove forest namely Sundarbans. A large number of people of Shamnagor Upazila are thought to be dependent on the Sundarbans directly and indirectly for their livelihood. It is important to know the present status of livelihood and contribution of Sundarbans in order to

formulate policies and management strategies towards sustainable management of the Sundarbans.

We have to raise awareness among the local people and manage the alternatives to their present occupations. Actually, to find out the future possibilities and alternatives to the dependency on Sundarbans this 'livelihood study' has carried out.

1.2 SPECIFIC OBJECTIVES

- ✓ To identify livelihood status of the people living adjacent to the Sundarbans
- ✓ To identify the dependence on Sundarbans for their livelihood

CHAPTER II: LITERATURE REVIEW

2. LITERATURE REVIEW

Forests are among the most diverse and widespread ecosystems on earth and millions of people living in most tropical countries derive a significant part of their livelihoods from various forest products for centuries. These products also play a vital role to the livelihoods of people living in or adjacent to forests. According to the World Bank (2002), more than 1.6 billion people throughout the world relying heavily on forests for their livelihoods and some 350 million people depends only on forest both for their subsistence and income. Over two billion people, a third of the world's population, use biomass fuels, mainly firewood, to cook and heat their homes, and billions rely on traditional medicines for their ailment harvested from the forests. In some 60 developing countries, hunting and fishing on forested land supplies a significant amount of the protein requirements' (Mery *et. al.* 2005). Over the last two decades, the significant role of various forest products for household's food and livelihood security is increasingly recognized and the main emphasis was given on the Non- Timber Forest Products (NTFPs). In fact, for a large number of peoples of the world, NTFPs are more important forest resources than timber. Some estimates suggests that, part of South East Asia's tropical forest promote up to 50 US\$ per month per hectare to local people from exploiting forest resources, without considering the commercial timber values (Sedjo 2002; Caldecott 1988)

2.1 Livelihoods

A livelihood comprises the capabilities, assets (including both material and social resources) 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 undermining the natural resource base (Chambers & Conway 1991).

2.2 Livelihood assets

Assets may be tangible, such as food stores and cash savings, as well as trees, land, livestock, tools, and other resources. Assets may also be intangible such as claims one can make for food, work, and assistance as well as access to materials, information, education, health services and employment opportunities Another way of understanding the assets, or capitals, that people draw

upon to make a living is to categorize them into the following five groups: human, social, natural, physical, financial, and political capitals

2.2.1 Human Capital

According to the Sustainable Livelihood Approach (SLA) (Sayer and Campbell 2003) "Human Capital represents the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives". Human capital must be seen as a keystone within the SLA, for the reason that the other capitals are, at the least, partly based on the human capital as a basic requirement. Especially for rural, resource dependent people the assessment of this capital implicates difficulties, as for example indigenous knowledge is difficult to evaluate (Kollmair 2002).

2.2.2 Social Capital

Social Capital is, as Human Capital, difficult to grasp with distinctive indicators. Conforming to the SLA Social Capital implicates social resources, "including informal networks, membership of formalized groups and relationships of trust that facilitate co-operation" (Clark and Carney 2008, Sayer and Campbell 2003). The nature of social capital is often determined by the social class of the stakeholder, often influenced by gender, age and/ or caste. The inclusion of stakeholders into a network or group implicates the exclusion of others which can result in an interference of development. The high local value of the social capital clearly derives of its capacity of compensating calamities or shortage of other capitals. However, not only the potential of communal solidarity represents the high local value of this capital (Bebbington 1999) clearly indicates a strong connection between social capital and poverty, apparently studies indicate the involvement into village organizations lead to an enhancement of income.

2.2.3 Physical Capital

Physical capital is a measure for the existence of physical requirements needed to support livelihood in a sense of infrastructure. The role of this asset can be seen in the context of opportunity costs, where an existing accessible infrastructure releases either labour or provides time as a resource for example education.

2.2.4 Natural Capital

Natural capital describes especially for resource dependent communities the stock all livelihood Activities are built on. This capital represents in particular for rural communities, with a high proportion for poor stakeholders, an essential value which in fact is prone to calamities. Not seldom these calamities are caused by natural processes e.g. floods, fires, seasonal storms, earthquakes.

2.2.5 Financial Capital

Financial capital can be accumulated from two different sources; one source is represented by available stock in the form of cash or equivalent available assets as livestock, the other source is characterized by the external inflow of money which originates of labour income, pensions, remittances or other types of financial liabilities. Within the five capitals, the financial capital enables people to adapt to different livelihood strategies. It sets the precondition for the creation or improvement of other capitals than financial capital.

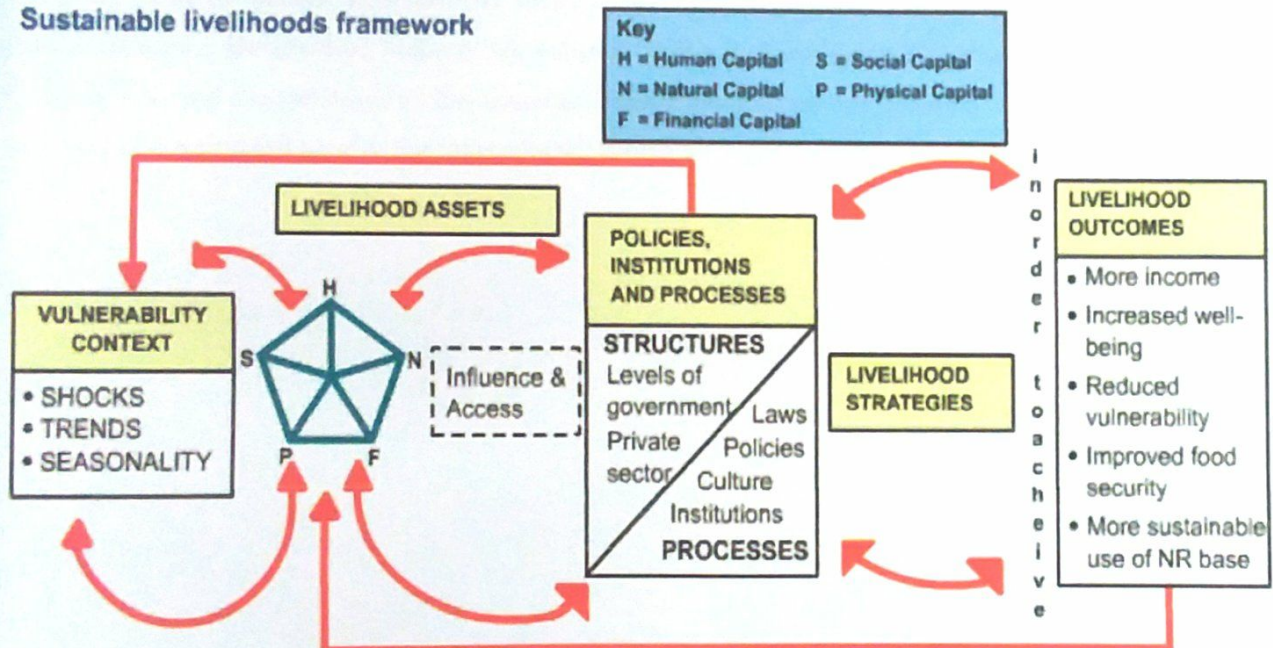
2.3 Livelihood strategies and outcomes

The most basic livelihood outcomes relate to satisfaction of elementary human needs, such as food, water, shelter, clothing, sanitation, health care, and others. The ultimate outcome is to achieve the preservation of the household and to rear the next generation with a desirable quality of life. People tend to develop the most appropriate livelihood strategies possible to reach desired outcomes such as food security, good health, "well being" etc. Unstable or unsatisfactory livelihood outcomes may be the result of several factors which often interact, including low levels of livelihood assets, high degree of vulnerability to external shocks, and insufficient livelihood support from surrounding institutions (e.g. local government, financial markets)

2.4 Sustainable livelihood

“A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living; a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long-term.” (Chambers & Conway 1991).

Sustainable livelihoods framework

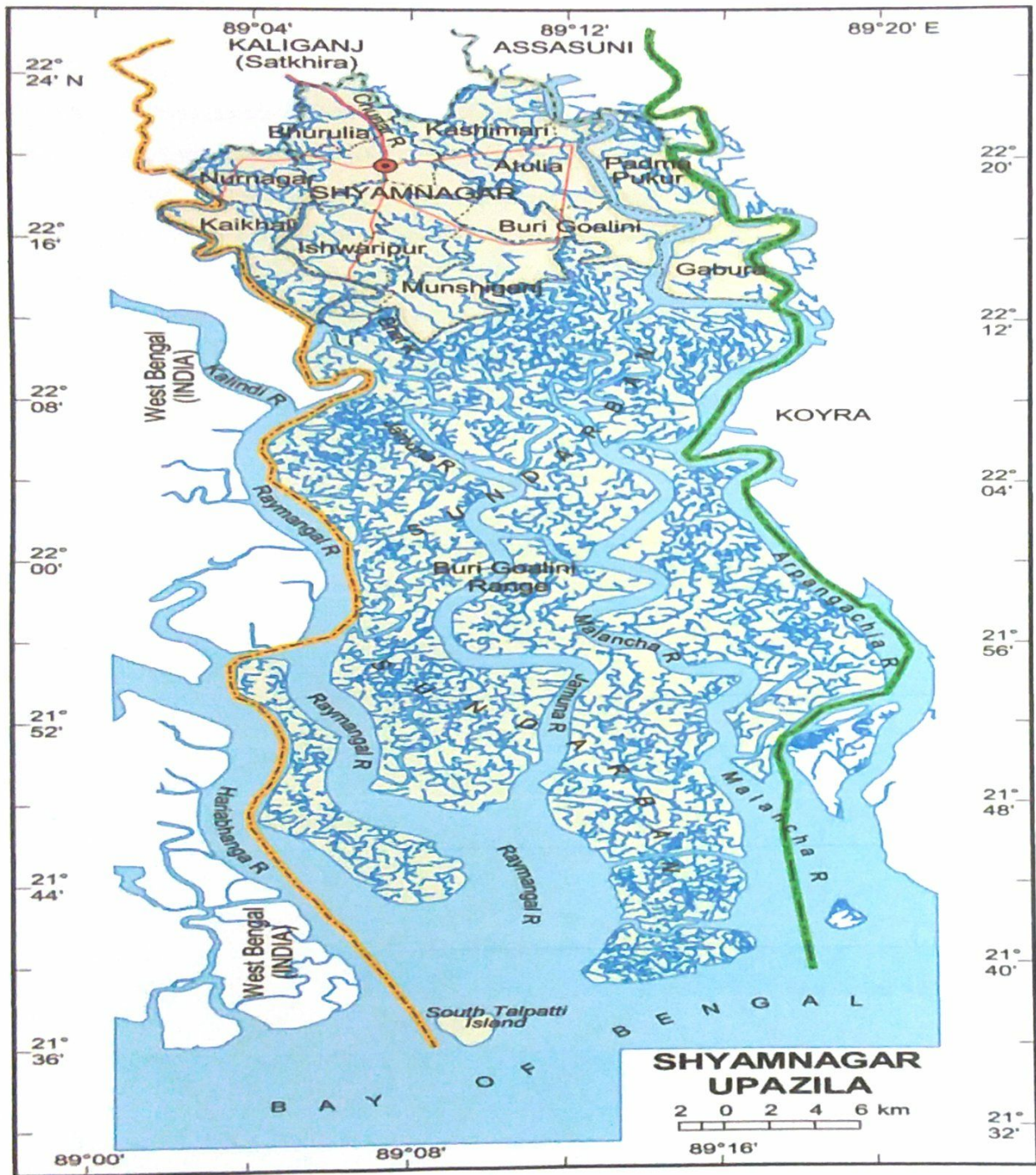


(Sources, DFID 1999)

CHAPTER III: METHODOLOGY

3.1 Geography of the study area

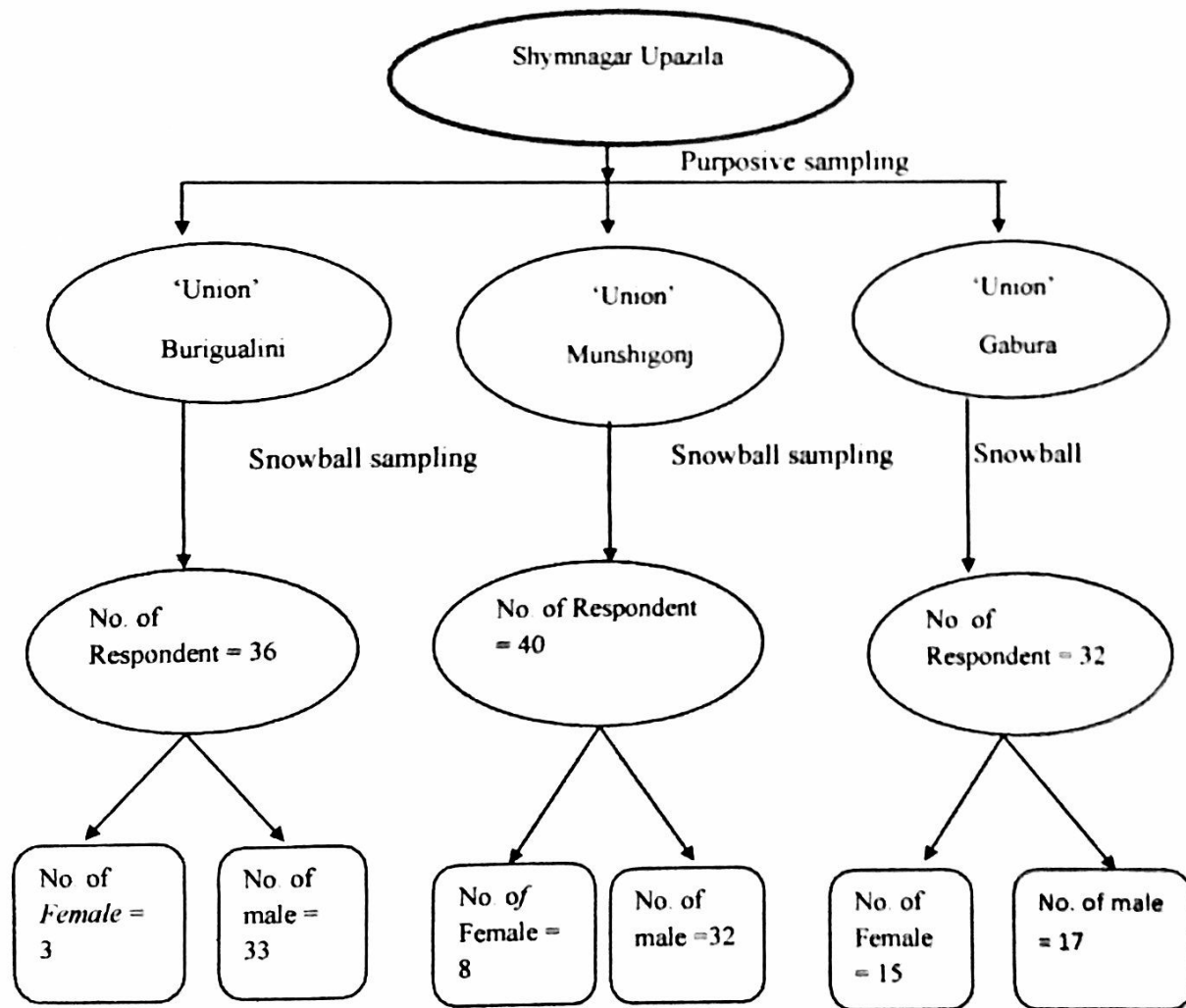
Satkhira is a district in the South-western part of Bangladesh. It lies along the border with West Bengal in India. Shyamnagar Upazila is bounded by Kaliganj (Satkhira) and Assasuni upazilas on the north, Sundarbans and Bay of Bengal on the south, Koyra and Assasuni upazilas on the east, West Bengal of India on the west. The main rivers here are: Raymangal, Kalindi, Kobadak, Mother Kholpetua, Arpangachia, Malancha, Hariabhanga and Chuna. Shyamnagar is regarded as the largest upazila of Satkhira district. The upazila occupies an area of 1968.24 square kilometer including 1622.65 square kilometer of forest. There are 12 unions, namely as Shyamnagar, Atulia, Bhurulia, Burigualini, Gabura, Ishwaripur, Koikhali, Kashmiri, Munshigonj, Numagar, Padmopukur, and Ramjannagar in this upazila. Among these 12 unions, Gabura, Munshigonj and Burigualini are situated near to the Sundarbans (World's Largest Mangrove forest).



(Source: Google Earth)

3.2 METHODOLOGY

The relevant primary data were collected from study area through household survey by using purposive and snowball sampling methods. At first I selected three unions (Gabura, Munshigonj and Burigualini) adjacent to the Sundarban and ten villages from the selected unions by following purposive sampling method. I selected respondents from the villages by following snowball sampling method. For this task, I prepared a semi-structured questionnaire including the necessary questions to collect relevant information from local respondents. I surveyed more than 30 respondents from each union and 108 respondents in total from the study area. According to Yen, 60 to 120 samples are handsome enough for evaluating a fact in a social survey; a higher numbers has been selected because of diversification in population (Yen, 1984). Sampling process are given below-



Flow-chart of local sample respondents in Study area

I selected 10 villages from the three unions those are adjacent to the SRF. On the other hand secondary information such as statistical data, reports, and maps were collected from various Government, Non-government organizations, literature and internet. The collected data were processed by using Microsoft Excel in order to calculate necessary indices.

Table1: Surveyed villages in Shymnagar Upazila

Study area		
Unions	Villages	Sample size
Burigualini	Nildomor	11
	Kalbari	25
Munshigonj	Chunkori	16
	Munshigonj	5
	South Kadamtala	5
	Singhatali	14
Gabura	7 no sora	10
	Dumuria	11
	Nanosura	5
	Chakbara	6



Picture 1: Household interview at Munsigonj union



Picture2: Interview at Burigolini union

CHAPTER IV: RESULT & DISCUSSIONS

4.1 Human capital

4.1.1 Household size and age classes

Table1: Family size

Number of family members	Percentage of respondents
2-3	28.7
4-5	50
5-6	15.74
>7	5.55

The above table shows the family size of sample households. There are about 50% households living 4-5 members, so most of the family is medium in size in term of family members. Only a few are in joint family that is about 5.55%. It was observed that family sizes do not have any effect on their livelihood strategies because most of the people are dependent on Sundarbans for their livelihood whether the number of family members is small or large.

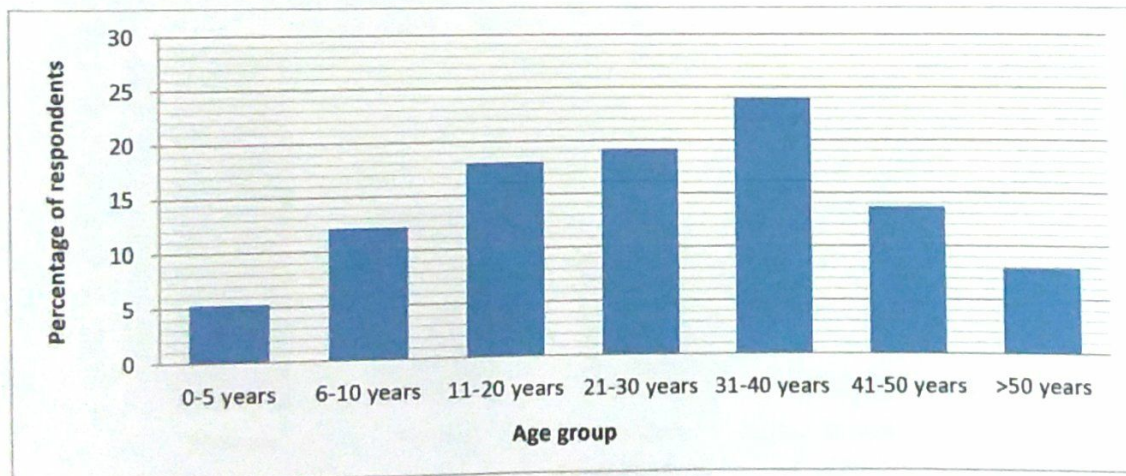


Figure 1: Age classes of Samples

There are different age group people in the area but maximum number of the population are within 31-40 years of age group that is about 24%, number of children are few than the other age

group (Figure). Among different age group, the major livelihood contributor age groups are 31-40 years, 21-30 years, and 11-20 year (Figure 2).(Different age group can contribute for livelihood in a family for this reason summation of percentages is more than 100 in figure 2)



Figure 2: Contribution of livelihood for different age group

4.1.2 Literacy level

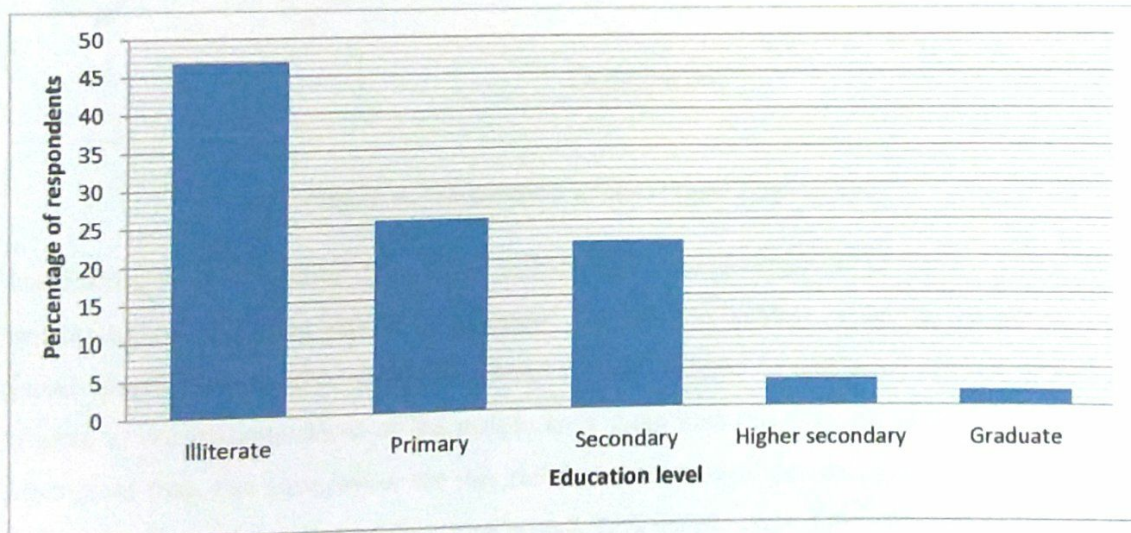


Figure 3: Education status

Education is the back bone of a nation. But it is a great regret that most of the people in the study area are illiterate. Significant percentages of the family members are illiterate 46.8%. Higher secondary and graduation level are very low (3.5% and 1.97% respectively) among the households. So there are a very few graduated people in the study area mean there has scarcity of higher education. Due to lack of proper education, people are not aware of controlled use of SRF resources. It was found that the people those are educated they are not dependent on Sundarban for their livelihood because they like to do governmental or nongovernmental job or like to run small business. So it is possible to reduce the dependency on Sundarban through education.

4.1.3 Occupation of the respondents

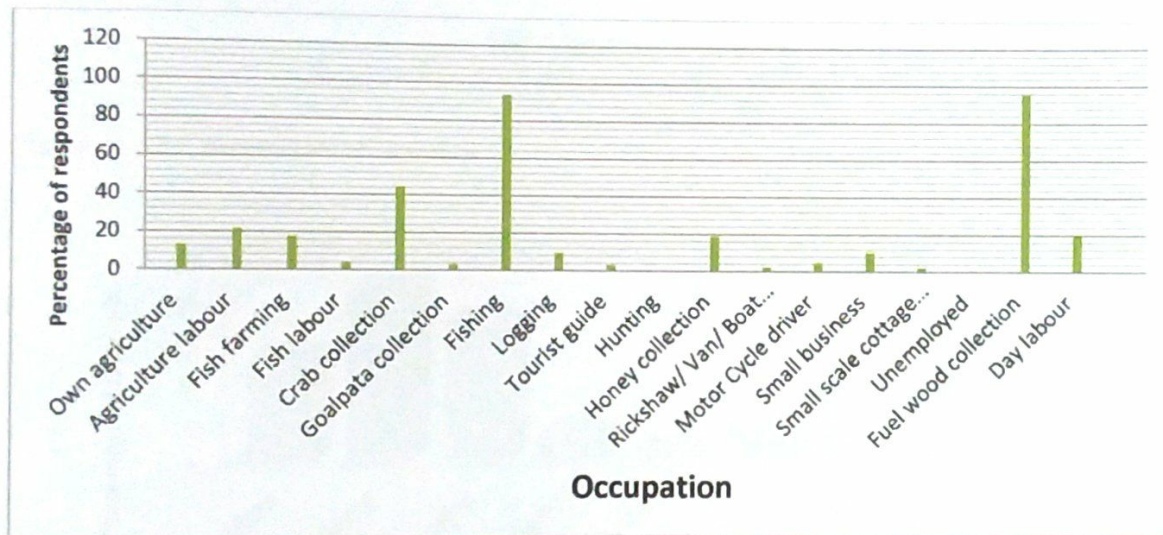


Figure 4: Occupation of the sample respondents

Occupation is an important factor that reflects one's socio-economic position. I observed 108 respondents of the three unions (Munsigonj, Gabura, Burigualni) in the Shymnagar upazila. I found several occupations some are related to SRF (Figure 5) and some are not related SRF (Figure 6) occupations. Most of the people have more than one occupation (Most of the people have more than one occupation for this reason summation of percentages is more than 100 in figure 6). About 95% people collect fuel wood, 93% people catch fish, 44% people collect crab, 20% people work as agriculture labour for their livelihood as their occupation. There are others occupations also but very few people are associated with that

occupation such as 11% respondents were daily labor, 10% respondents were fish farmer, 8% respondents were small business holder and so on. (Figure 4)

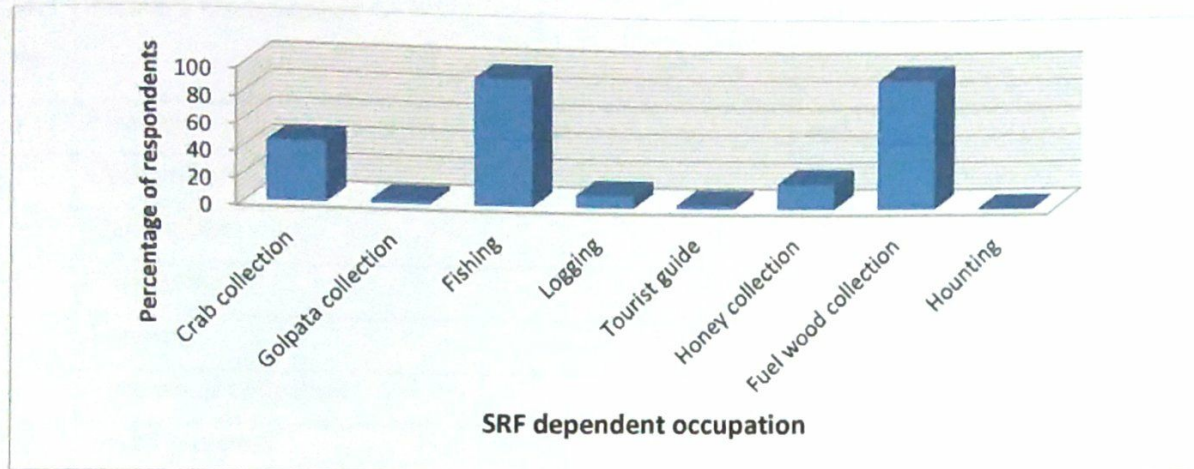


Figure 5: SRF dependent occupation

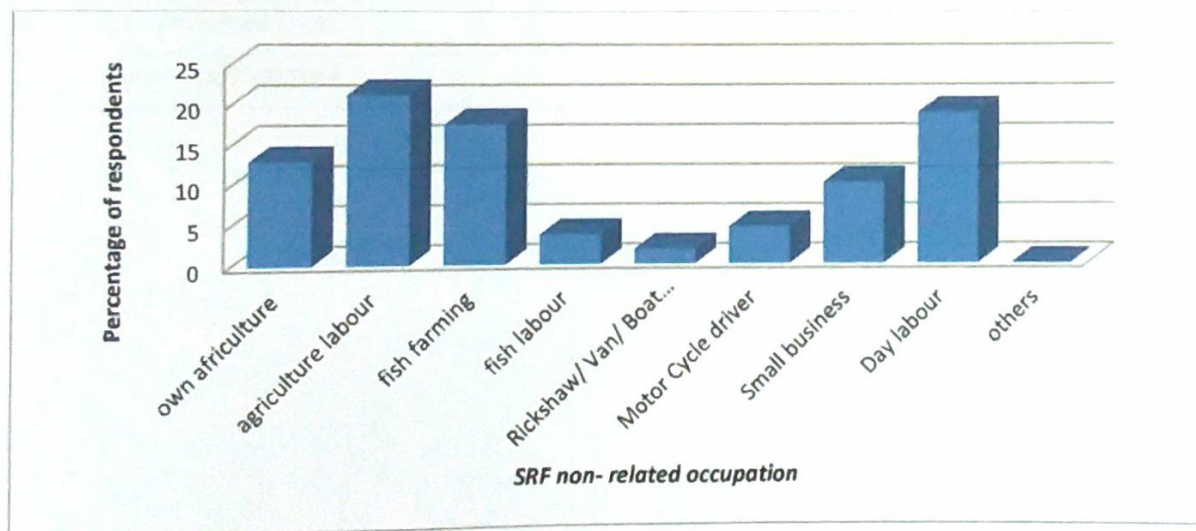


Figure 6: Occupation not related to SRF

I calculated the major occupation of the respondents on basis of their maximum cash income per month and I found there are 11 major occupations in the study area and maximum number of respondents depends on fishing (40.62%) and crab collection (15.62%) as their major occupation (Table 2). These two major occupations are directly related with SRF.

Table 2: Primary occupation of the respondents

Sl. No	Primary Occupations	Persons in Percentages (%)
1	Fishing	40.62
2	Crab collection	15.62
3	Daily labor	13
4	Fish farm	9.38
5	Logging	3.7
6	Fuel wood collection	4.52
7	Small business	4.69
8	Agriculture	3.80
9	Honey collection	2
10	Rickshaw/van/Boat	4.56
11	Motor cycle driving	1.28

4.2 Natural Capital

4.2.1 Land status

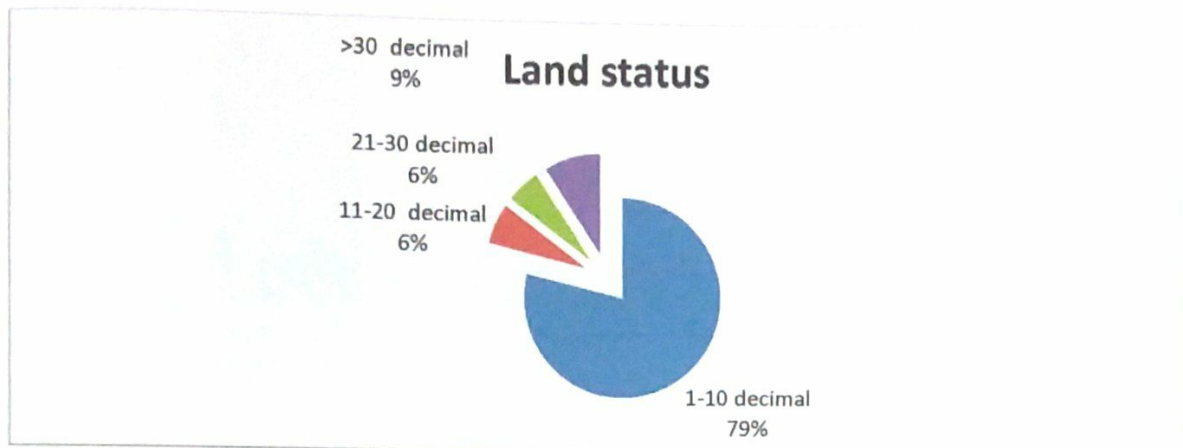


Figure 7: Respondents having land in decimal

Land is an indicator of the socio-economic condition of the local people. In the study areas, Most of the people do not have enough land. There are seventy nine people have only 1-10 decimal land (Figure 7). It means that in this land they have only a small home. They have no income sources from their own land such as home garden, rearing of livestock, agricultural crops and gher. Figure 8 represents that 30% respondents have only homestead so it is clear that most of the people have not enough land for their livelihood. Only 10% people have land for homestead, agriculture and gher. About 2% people are landless mean they have no any own land. So they are to depend on SRF for their livelihood.

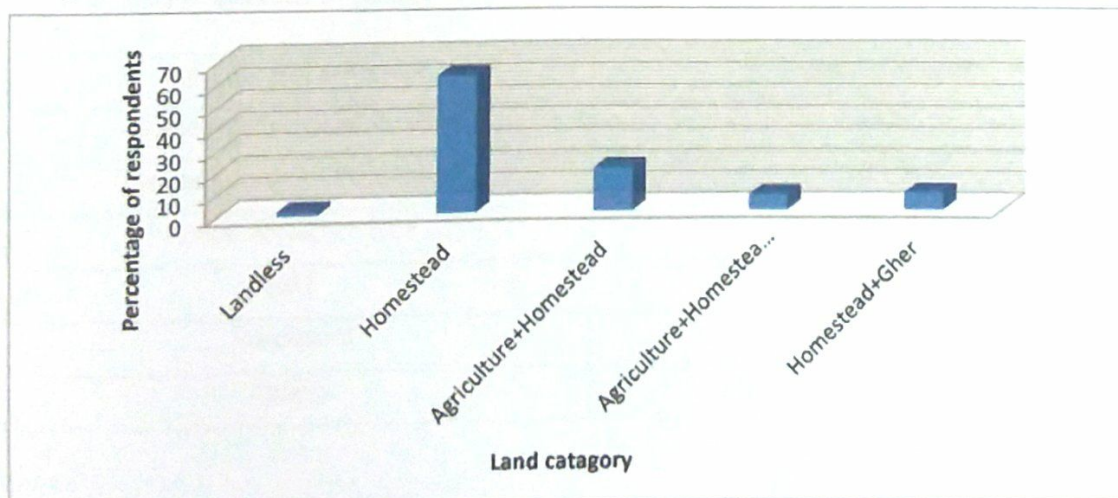


Figure 8: Respondents with different land category

4.2.2 Types of Energy and energy sources

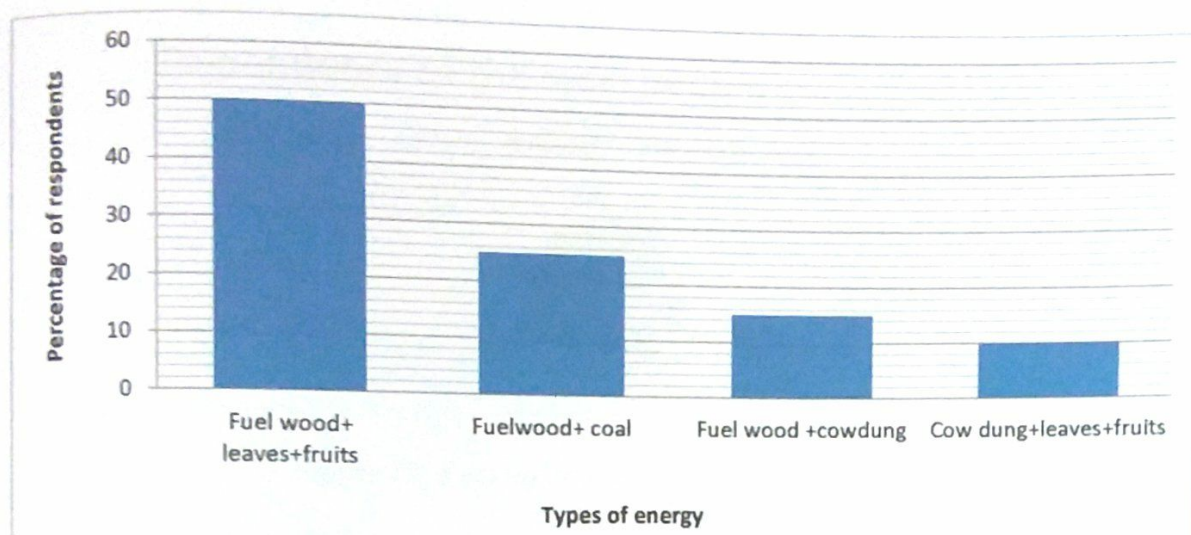


Figure 9: Types of energy used

People are using different types of energy such as fuel wood, cow dung, coal, leaves, fruit etc to fulfill their fuel energy demand. Maximum people are using fuel wood, leaves, fruits as their major energy sources (Figure 9) because other sources are not available for this area. People collect their fuel wood from different sources such as Homestead, Social forestry, SRF and small proportion is purchased too. Maximum number of people collects their fuel wood from SRF (40.7%) (Table3).

Table 3: Major sources of energy

Sources of fuel wood	Number of users
Homestead+ Social forestry	34%
Social forestry+ Purchased	10.5%
Social forestry+ SRF	8%
SRF	40.7%
Purchased	2.5%
Others	4.3%

4.2.3 Dependency on Sundarbans and products from Sundarbans

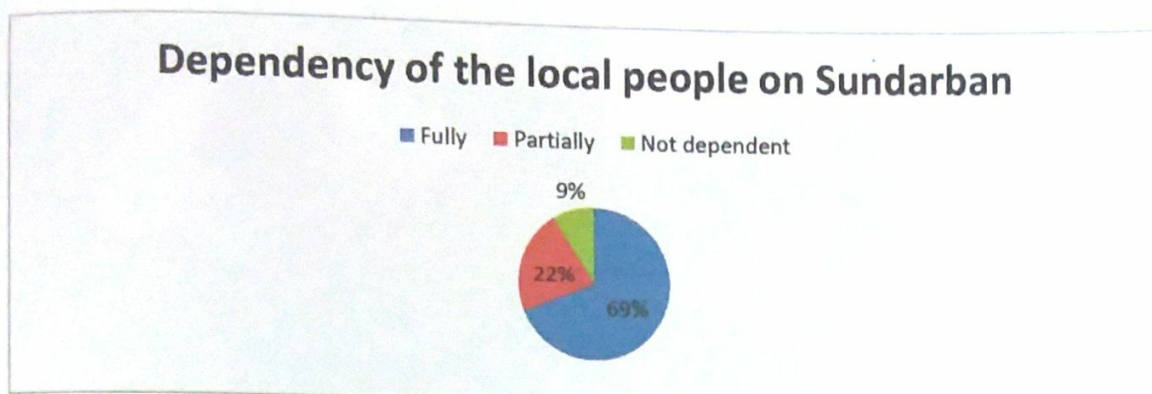


Figure 10: Respondents dependent on Sundorban

Figure 10 represents that most of the respondents are dependent on the Sundarbans for their livelihood directly or indirectly. About 69% people are fully dependent (those have not any alternative income rather than SRF resources) on Sundarbans and 22% respondents are partially dependent means 22% people can get their livelihood from both SRF related and SRF non related resources and only 9% respondents are not dependent on the Sundarbans. Mainly the poor people depend on Sundarbans for fishing, fuel wood collection, Goran, Golpata (*Nypa fruticans*) and honey collection. They also collect marine resources (crabs, shrimp etc) from the Sundarbans. They can collect more than one product at the same time. Figure 11 represents that more than 90% people collect fuel wood and fish from sundarbans for their livelihood. So most of the people depend on Sundarbans directly or indirectly in the study area.

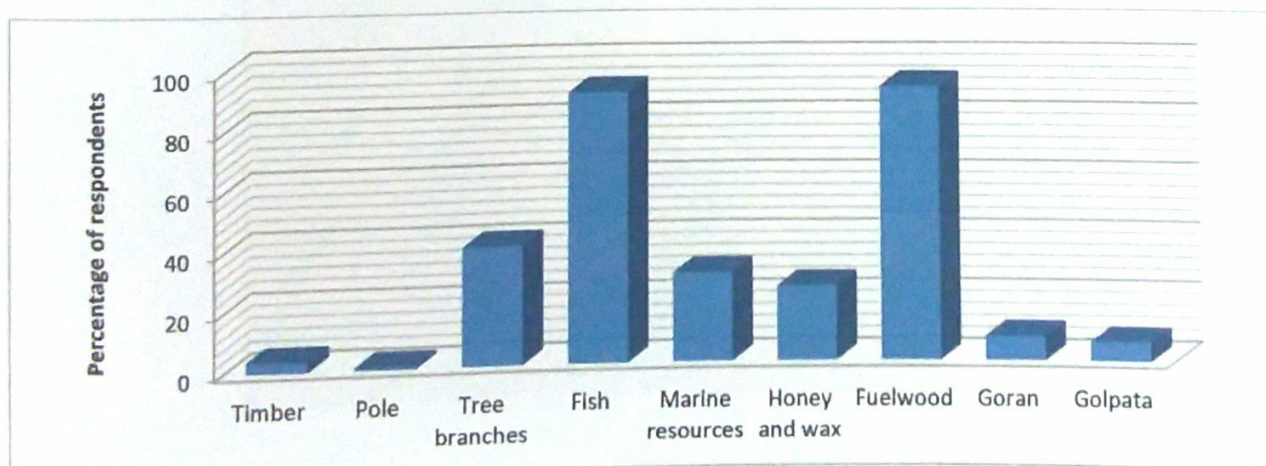


Figure 11: Respondents using different product from Sundarban

Picture 4: Fish and crab collection



Picture 5: Fishing at Sundarban

4.3 Physical capital

4.3.1 Status of drinking water

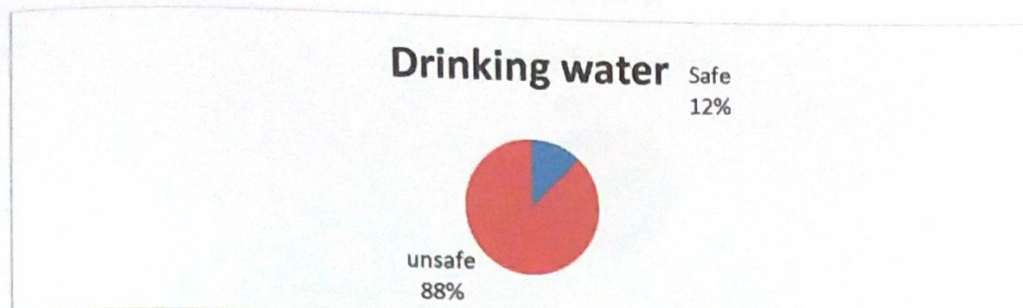


Figure 12: Respondents with safe and unsafe water availability

Safe drinking water is a severe problem. Large number of people (88%) does not get safe drinking water.

Table 4: Sources of drinking water

Sources of water	Percentage of users
Deep tube well	12
Ponds	23
Pond and Filter	25
Rain water and PSF	22
PSF(Pond Sand Filter)	18

They are to collect water from ponds, filter, PSF (Pond Sand Filter) and sometimes from deep tube-wells. Most people are to drink pond water (Table 4). People are to suffer water scarcity during summer season because in summer season they do not get enough water from pond as well as salinity of pond water increased. Sometimes many people store rain water for future utilization. Surface water is mostly unprotected and contaminated, and a huge number of children suffer from diarrhea and cholera every year due to the use of contaminated surface water.

4.3.2 House and others necessary physical asset

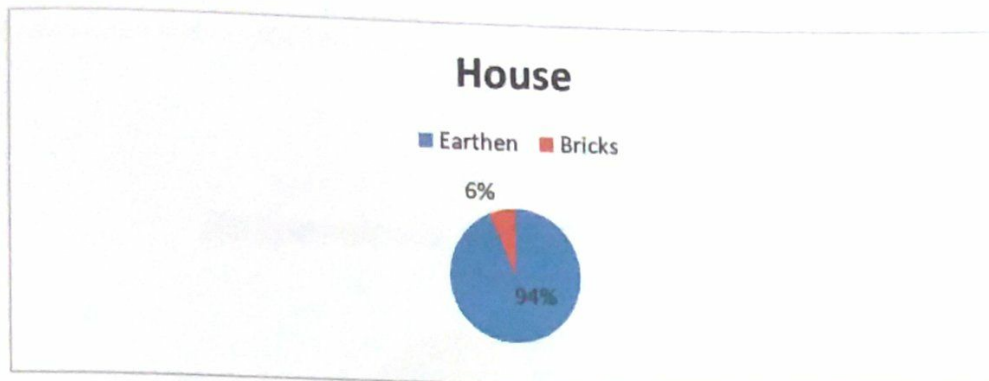


Figure 13: Respondents with earthen and bricks house

Housing facilities varied considerably from the higher income to the lower income households in the study area. Generally, the roofs of the majority of the houses were made of corrugated iron-tin, and the walls were made of earth, tin or wood or a combination of tin and wood. Most of the people of the study area ((Munsigonj, Gabura, Burigualni) are poor, they live under poverty line so most of them are to live in earthen house about 94% people (Figure 13) and very few have bricks house (only 6%)of the total population.

Table 5: Main physical asset belong to respondents

Name of the asset	Boat	Bicycle/Motor cycle	TV	Furniture	Frieze	Others
Respondents/Users	18.51 %	34.25%	20.37%	37.96%	4.62%	2.77%

The people have different types of physical asset but these are not enough according to their demand. The physical assets are boat, bicycle, motor cycle, television, furniture, frieze etc (Table 5). There are some people those have more than one physical assets, for this reason total percentages of the table is more than 100. Due to poverty, people cannot buy their essential physical goods those are badly needed to their daily life. For example boat is very much important asset for the adjacent people of the Sundarban to manage their livelihood but most of the people have no ability to buy it. So lack of enough physical asset is the major problem for sustainable livelihood.

4.4 Social Capital

4.4.1 Involvement with social institutions

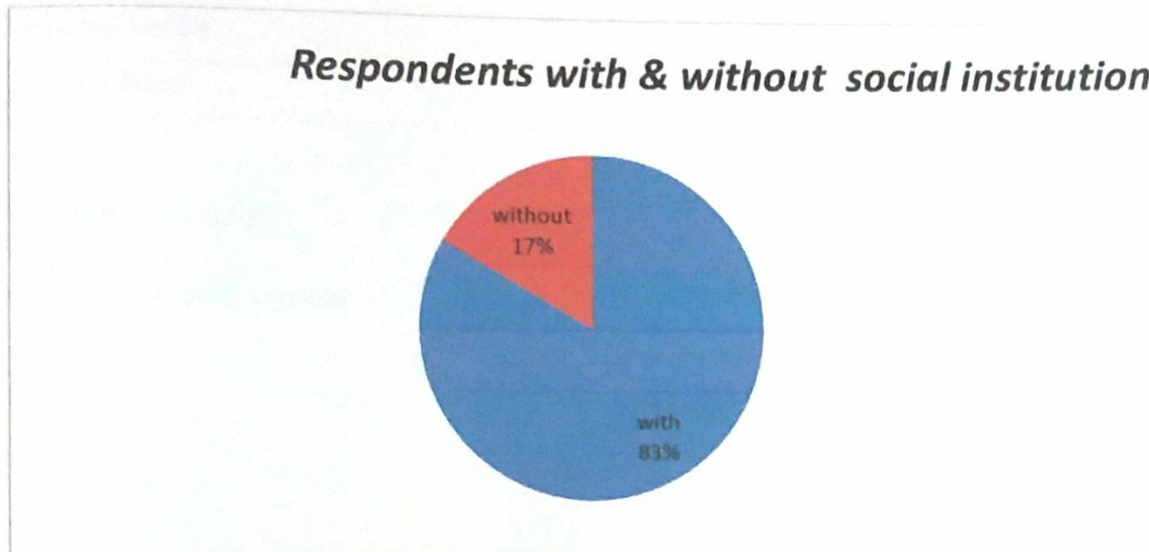


Figure 14: Respondents with & without social institutions

Organizational association of respondents was measured on the basis of their involvement with any social institutions. Above chart represents that about 83% respondents are connected with different social institutions. If social institutions offer them help with a master plan then the local people can be benefitted. Firstly, NGOs should search the actual problem of the local people and then they should take proper steps to solve the problems. NGOs are arranging different meeting to motivate local people towards SRF non-related livelihood. Sometimes people get and social /financial help from others agency such as local club, relatives, dadon/ private sectors etc.

Table 6: Respondents whose get help from social agency/institution/persons

<i>Financial agency/institution/person</i>	<i>Percentages of beneficiaries</i>
Club	8.3
NGOs	83.33
Mohazon/Dadon	5.62
Friend/Relative	2.77

4.5 Financial capital

4.5.1 Respondents income

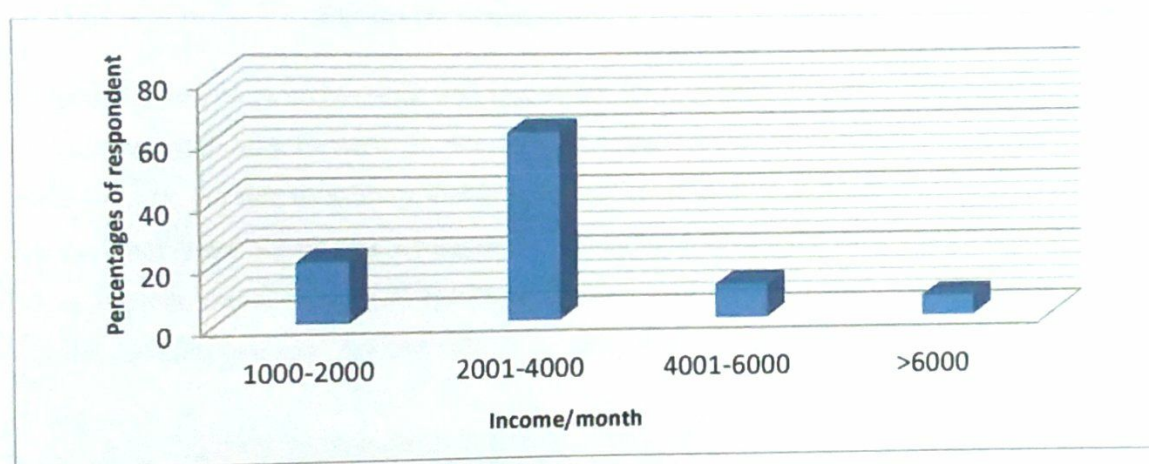


Figure 15: Respondents income per month

Most of the cases, I got weekly income of the respondents but I converted weekly income into monthly income. The monthly income is an important indicator about livelihood of any individual. It (Figure 15) represents that only 62% respondents earn 2001-4000 taka/month and 20% respondents earn only 1000-2000 taka/month. Only 6% earns more than 6000 taka/month. Here percentages of lower income holder are higher than higher income holder. With this poor income the local respondents can't provide their family with enough food and nutrition and others necessary things. Poor socio-economic condition of the respondents leads to the disappointment and malnutrition. If there is no alternative works of the respondents, the socio-economic condition may not be changed in the future.

4.5.2 Livestock and their types



Figure 16: Respondents with & without livestock

About 64% people have livestock and rest of the 36 % people have no livestock. There are a lot of problems of rearing livestock in this area. The major problem are land scarcity, lack of capital, high salinity, etc due to salinity problem enough food for livestock are not growing on the soil on the other hand sometimes livestock are to suffer different diseases due to drinking excess saline content water. Among livestock, there are hens, ducks, goats, cows (Figure17) but the numbers of cows are very few than others because of food scarcity and salinity problem.

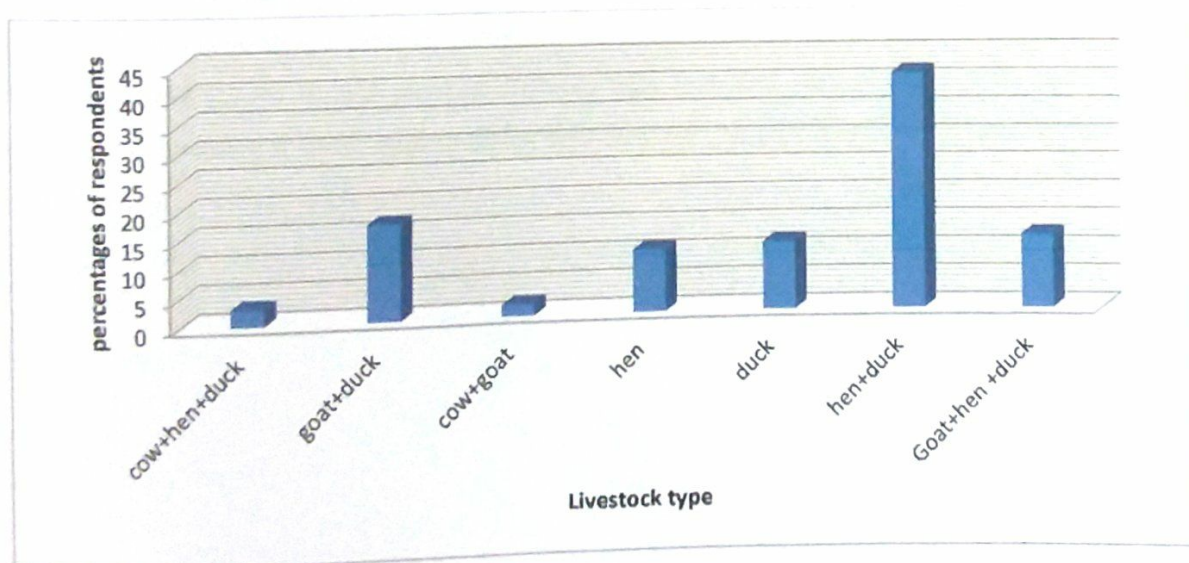


Figure 17: Different types of livestock

4.5.3 Reasons for not having livestock

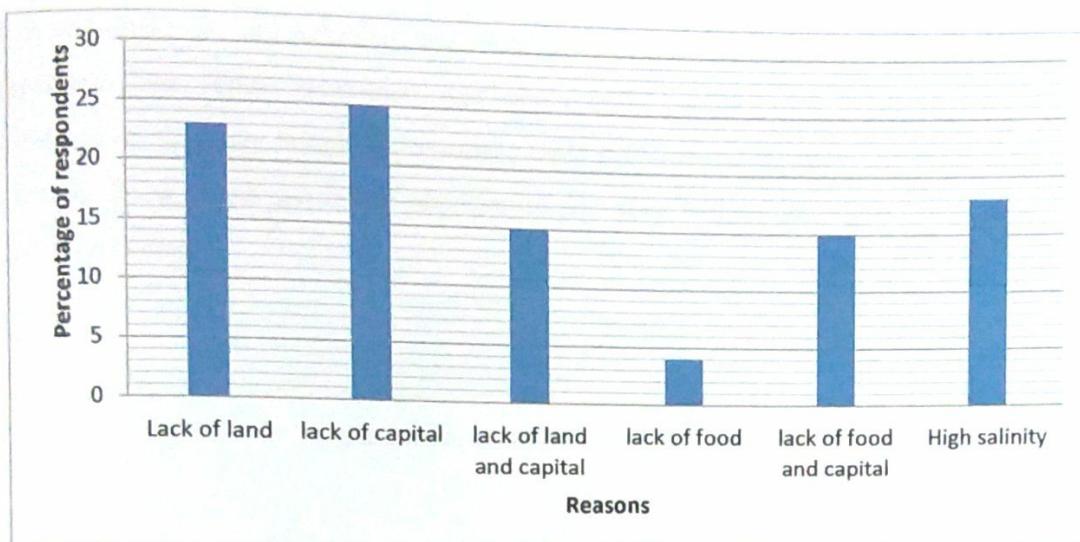


Figure 18: Reasons for not having livestock

Above figure represents that most of the people do not have livestock due to land scarcity, lack of capital, lack of animal food and high salinity problem. Among these problem, capital problem is the highest that is 25% means which is found very much prominent among 25% of the respondents. Next prominent problem is lack of land that is 23% of the total respondent. Here scarcity of animal food has minimal effect on livestock but salinity has much impact in this context. To improve this condition, Governmental Organizations (GOs) and Non-Governmental Organizations (NGOs) should provide different easy loan and various training for rearing up livestock. If people get these opportunities then they will be encouraged to reduce dependency on Sundorban.

4.6 Local people's attitude towards present occupations

The local people are not satisfied with their present occupations. They want to change their occupations. The figure represents that about 94% people want to change their present occupations if they get better opportunity. Only 6 % people want to continue their present occupation. So if people get better opportunity then they will reduce dependency on Sundarban for their livelihood.

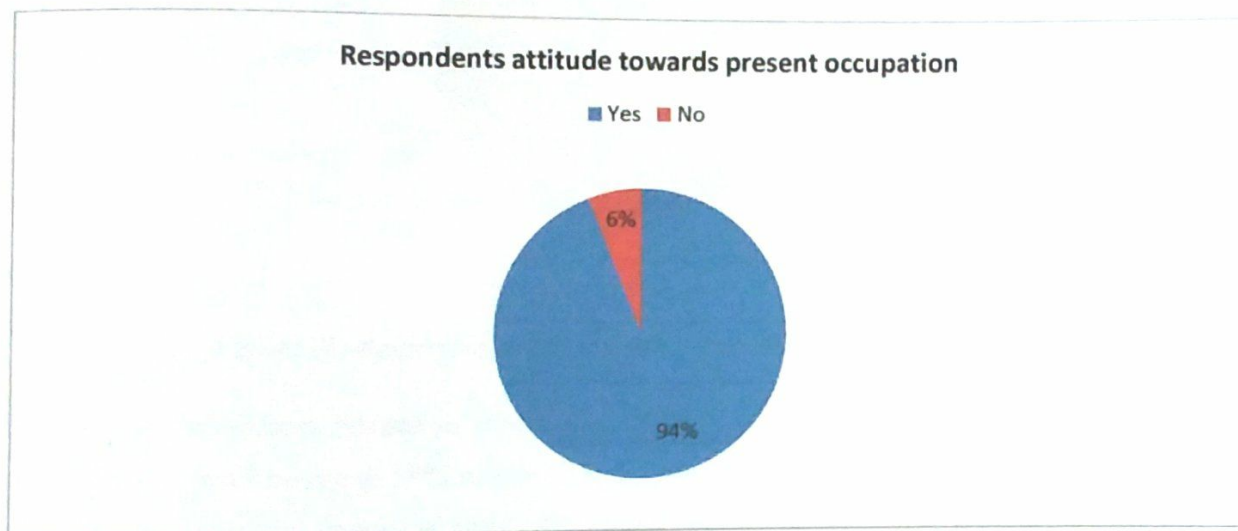


Figure 19: Respondents attitude towards present occupation

4.7 Desirable alternative occupations of the local people

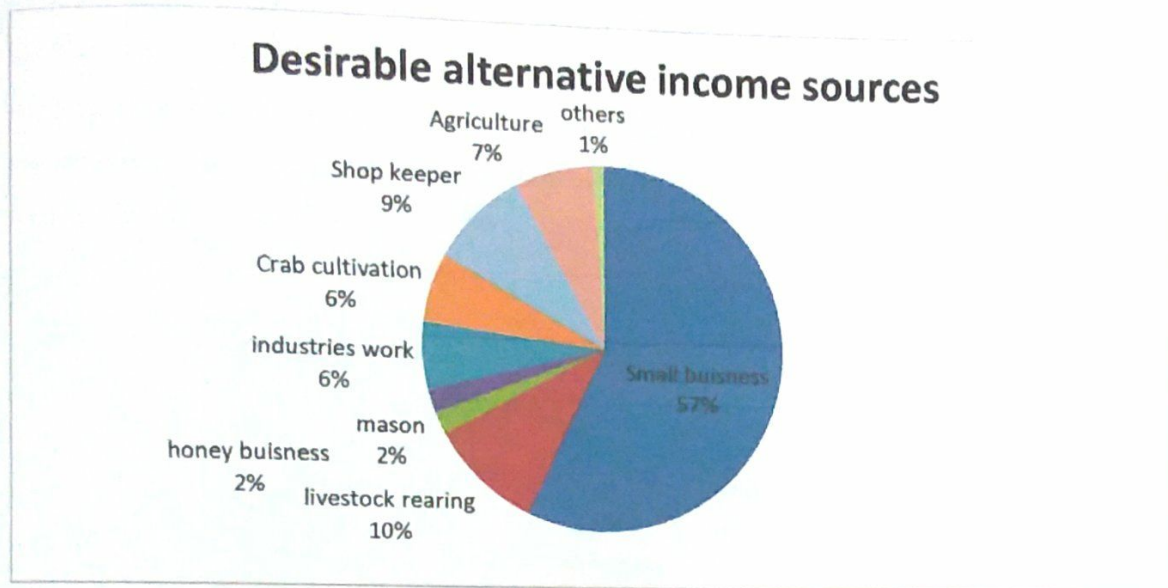


Figure 20: Respondents with desirable alternative income sources

Most of the respondents wanted to change their present occupation. About 57% respondents wanted to run small business, 10% respondents eager to start livestock rearing and another 6% respondents want to be engaged in crab cultivation. If we can provide these income facilities to the local people, they may change their present Sundarban related occupation and by the way, we can protect our Sundarbans from degradation.

4.8 AIGAs (Alternative Income Generating Activities) training

In my study area, it is found that only 18% respondents (Figure 21) have the knowledge of different AIGAs (Alternative Income Generating Activities) training and 82% respondents do not have knowledge about any AIGAs training. To develop the livelihood condition and to improve income, local people should be engaged with different AIGAs training program but for this different NGOs, Bank or Governmental organization should take necessary steps to offer AIGAs training.

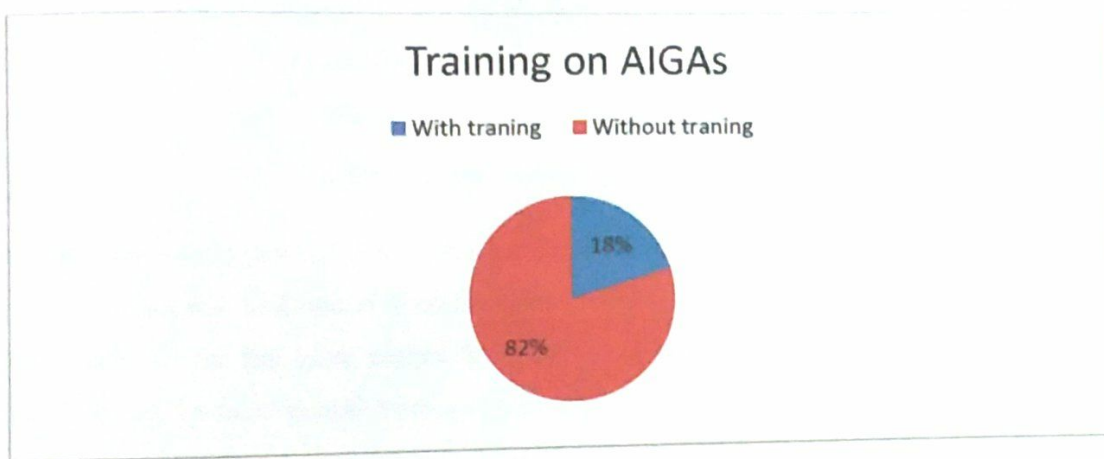


Figure 21: Respondents with & without AIGAs

About 18% people got different AIGAs training such as poultry rearing, small business, honey collection, Vegetable and rice cultivation, crab fattening, sewing, mat making and so on. If all the local people can be trained with different AIGAs training, then they will be benefitted and they will be able to improve their socio-economic condition.

4.9 Respondents with different AIGAs training

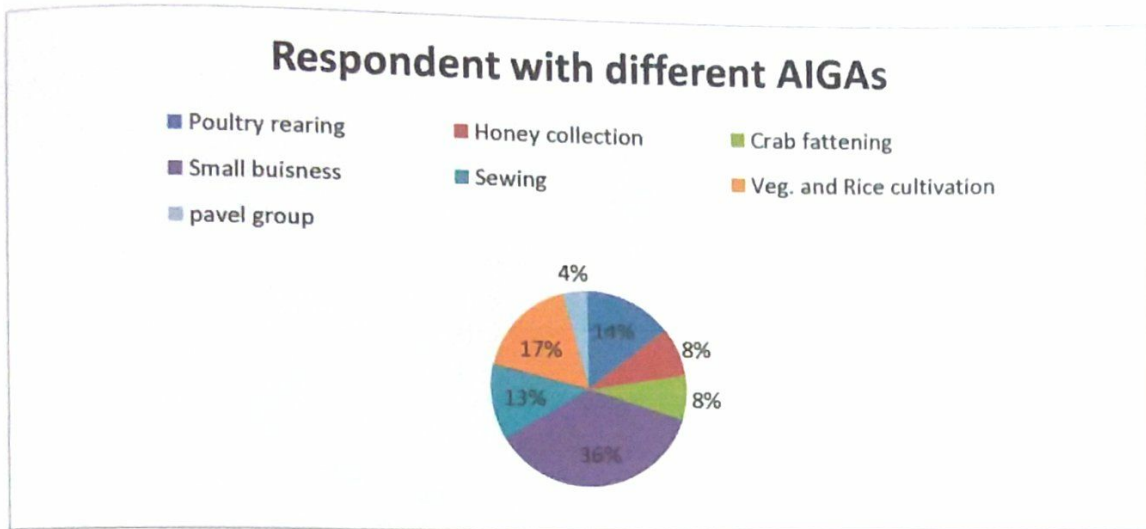


Figure 22: Respondents with different AIGAs

There are various types of AIGs training such as poultry rearing, small business, honey collection, Vegetable and rice cultivation, crab fattening, sewing, Pavel group. It can be ensured better livelihood for the local people by ensuring AIGAs training. If it is possible to ensure AIGAs training for local people then it will be also possible to reduce dependency on Sundarban of the local people

4.10 Co-management on Sundarbans

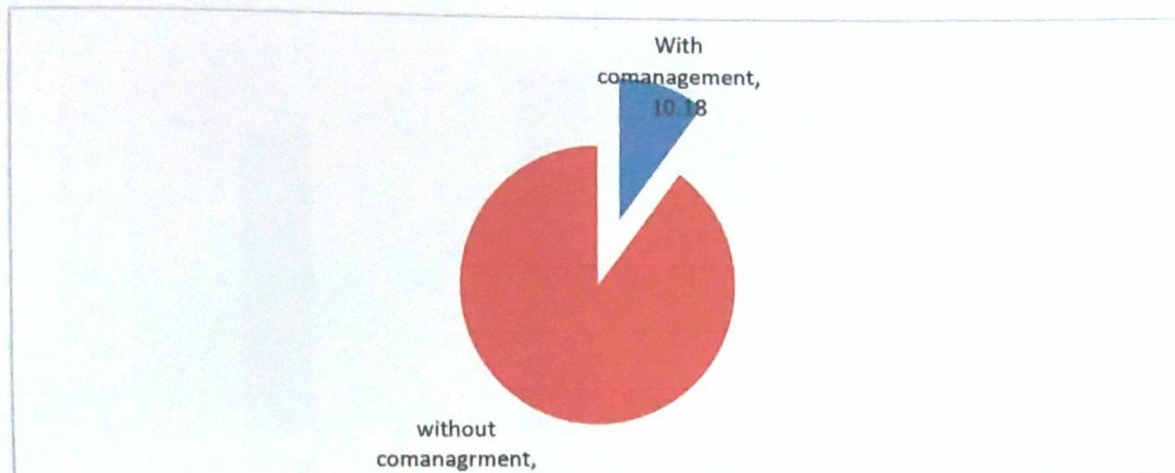


Figure 23: Respondents with & without Co-management

Different Co-management activities on Sundarbans are being run by different NGOs (Non-Government Organization) or by Government. But in my study areas, Most of the people do not know about Co-management. Only 10.18% people are known about Co-management and other 89.81% people are fully unknown about it. If we may involve them with Co-management, then they would be more conscious about SRF related resources as a result it would be helpful to conserve the SRF.

4.11 Factors affect on adjacent people income

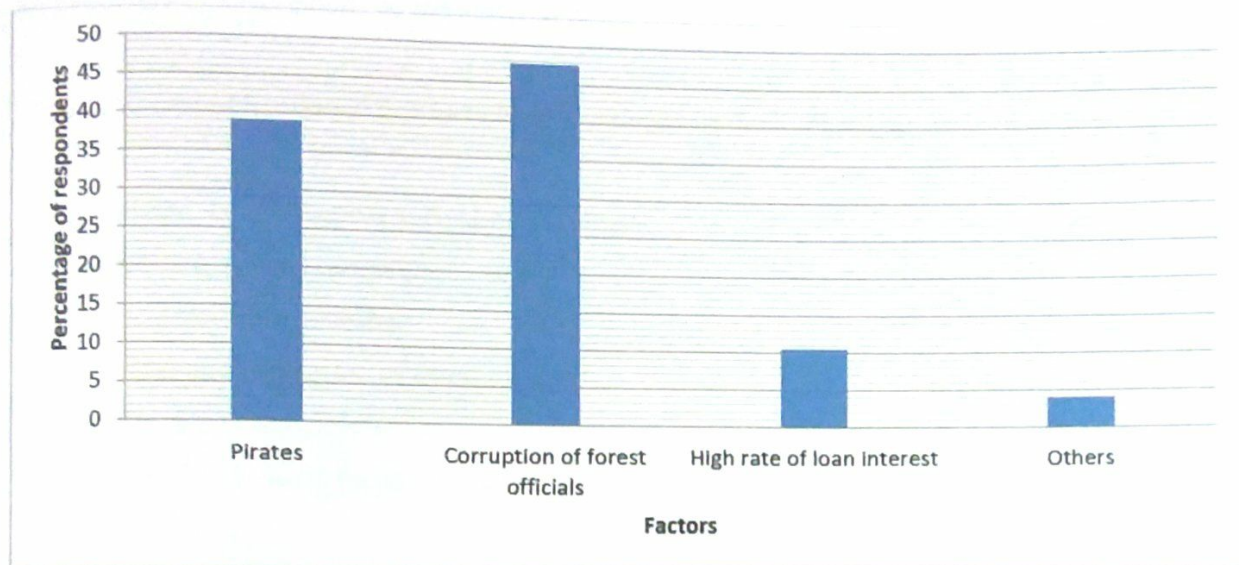


Figure 24: Respondents affected by different for earning income

Most of the people adjacent to Sundarban are to depend on Sundarban for their livelihood. But unfortunately they are facing problem to get proper income from SRF because sometimes they are to pay extra money to the forest officials to get pass for entering into the forest for their livelihood, about 48% people are victim of this problem. Pirate is another major problem for the Sundarban adjacent people, because when people enter into sundarban to collect fuel wood, fishing, and honey collection etc, then pirate kidnaps them and demand huge money to be free from them. Already have mentioned that most of people are poor of the study area so they are to take loan from the bank/ NGOs, sometimes they also take loan from others (dadon, friends, relatives etc) as a result they are to pay high interest for the loan, so this is another problem for livelihood.

CHAPTER V: PROBLEMS OF LIVELIHOODS AND RECOMENDATIONS

5.1 Problems of Livelihoods of the study area

Major problems of livelihood that have been mentioned by the local people are given below-

- Limited land resources and salinity problem
- Frequent natural calamities
- Unemployment problem
- Pirates and corruption of forest officials
- High rate of loan interest
- Lack of AIGAs (Alternative Income Generating Activities)

5.2 Recommendations

Livelihood of the people living adjacent to Sundarbans is vulnerable. They are facing different challenges such as pirates problem, corruption of forest officials, high interest rate of loan and crisis for drinking water. They have limited scope of land use and other sources of income. Pirate, forest officials, and high rate of loan interest significantly affecting their income and lead to low income. For low income they are not able to upgrade their living. Good governance, strong law enforcement and effective management system should be ensured for getting actual benefit from the Sundarbans resources and improving livelihoods of adjacent communities. For improving and securing livelihoods, I want to put some recommendations

- Law enforcement agencies should control pirates problem
- Local people should be provided different IGAs (Income Generating Activities)
- Education should be strengthen and incentives should be given to attract students and families towards education.

- Development and improvement of coastal afforestation
- Necessary efforts should be taken to reduce dependency, and allow limited/controlled livelihood earning from SRF that do not cause any harm to the SRF
- Develop sustainable eco-tourism and ensure the local community involvement and benefit from eco-tourism
- GOs or NGOs can support for development of livestock for forest dependent communities
- More salinity tolerant agricultural crops should be developed and introduced for increase productivity of agricultural crops in the saline area like Sundarban
- More people should involved in co-management of Sundarban and it can be a source of income through revenue sharing among participants

CHAPTER VI: CONCLUSION

6.1 Conclusion

This research presents livelihood status of the people living adjacent to the Sundarbans of Shaymnogor Upazila at Satkhira district on the basis of asset pentagon. It is found that, people do not have adequate means from sustainable livelihood. Cultivable land, the most important natural capital is very limited. Besides they have problems of salinity and frequent natural calamities. Employment is very limited and they are facing problems of pirates, corruption of government officials and high rate of interest from local loan ie. dadon. It is also found that lower income households depend heavily on Sundarbans forest resources for their livelihood. About 69% respondents are fully dependent and 22% are partially dependent on Sundarbans. They depend on Sundarbans for fishing, fuel wood collection, Goran, Golpata and honey collection. Most of the people are not satisfied with their present occupations. They are eager for better alternatives.

REFERENCES

- Bebbington, A. 1999. Capitals and Capabilities: A Framework for Analyzing Peasant Viability, Rural Livelihoods and Poverty. *World Development*, 27, 2021-2044
- Caldecott, J.O. 1988. Hunting and wildlife management in Sarawak. IUCN, Gland, Switzerland.
- Carney, D. 1998. Sustainable rural livelihoods: what contribution can we make? Paper Presented at the Department for International Development's Natural Resources Advisers Conference, London, UK.
- Carney, D. 2002. Sustainable livelihoods approaches: progress and possibilities for changes. Department for International Development, London, UK.
- Carney, D., Drinkwater, M., Rusinow, T., Neeffes, K., Wanamali, S & Singh, N. 1999. Livelihood Approaches Compared: A brief comparison of the livelihoods approaches of DFID, CARE, Oxfam, and UNDP. DFID: London.
- Carter, MR & May, J. 2001. One kind of freedom: Poverty dynamics in postapartheid South Africa. *World development*, vol. 29, no. 12, pp.1987-2006.
- Cattermoul, B, Sriskanthan, G & Campbell, J. 2008. The Coral Reefs and Livelihoods Initiative (CORALI) – Building an Improved Approach to Livelihood Enhancement and Diversification with Coral Reef Users in South Asia and the Andaman Sea.
- Chambers, R. & G. R. Conway. 1991. Sustainable rural livelihoods: practical concepts for the 21st century. Institute of Development Studies
- Clark, J. & D. Carney. 2008. A review of DFID's experience with sustainable livelihoods, Evolution of livelihoods approaches within DFID. Eldis.
- DFID. 1999. Sustainable Livelihoods Guidance Sheets. Department for International Development, United Kingdom
- Information Sheet on Ramsar Wetlands, RIS, 2001 (visited on 12/07/2010)
<http://www.wetlands.org/reports/ris/2BD001en.pdf>

Kollmair, M., Gamper, St. 2002. The Sustainable Livelihood Approach. In Development Study Group, University of Zurich (IP6). Aeschiried, Switzerland: Development Study Group, University of Zurich (IP6)

Mery, G., Alfaro, R., Kanninen, M., Lobovikov, M., Vanhanen, H. and Pye-Smith, C. (eds.). 2005. Forests for the New Millennium- making forest work for people and nature. International Union of Forestry Research Organization (IUFRO)

Sayer, J. & B. Campbell. 2003. The Science of Sustainable Development Local Livelihoods and the Global Environment Cambridge University Press

Sedjo, R.A. 2002. Tropical Forests and Poverty Alleviation- how can benefits be captured? In: Verweij, P. (ed). Understanding and capturing the multiple values of tropical forests. Proceedings of the international seminar on valuation and innovative financing mechanisms in support of conservation and sustainable management of tropical forests. Tropenbos International, Wageningen, Netherlands. 63-66 pp.

World Bank and Bangladesh Centre for Advanced Studies 1998. Bangladesh 2020: A Long-run Perspective Study. The University Press Limited, Dhaka. 127 pp

Yen, R.K. 1984. Case study Research: Design and Methods. Beverley Hills: Sage Publication

Questionnaire for livelihood assessment

Date:/...../ 2016

Respondents' Name:Age:

Sex: M / F Religion: Ethnicity:

Village: Union..... Upazilla:

1. HOUSEHOLD INFORMATION

Family size: and family information:

Age group	Sex		Education	Occupation	Training received (AIGA) (Name of the training)
	M	F			
<5					
5-10					
10-20					
20-30					
30-40					
40-50					
>50					
Total					

2. Land Holdings (decimal):

Category	Size (decimal)	Tenure	
		Own	Leased
Homestead			
Agriculture			
Tree land			
Bamboo Graves			
Gher /Pond			
others			

3 .Physical asset of respondent household-

Name of the asset		Price in Tk
House	Earthen	
	Bricks	
Rickshaw/van		
Boat		
Bicycle/Motor cycle		
Television		
Furniture		
Frieze		
Others		

4. Sources of Income-

SRF related										
Source of Income	crab collection	Golpata collection	Fishing	Goran	Timber	Honey collection	Hunting	Tourist guide	Fuel wood	others
Amount in Tk / month										
Total income /month										

SRF non- related										
Source of Income	Own Agriculture	Agriculture labor	Rickshaw/ van/	Fish framing	Fish labor	Motor cycle driver	Small business	Small scale cottage	Boat driver	other s
Amount in Tk / month										
Total income /month										

5. What do you produce or sell?

Products	Produce	Sell	Price
Rice			
Vegetable			
Poultry			
Milk			
Fish			
Handicrafts			
Others			

6. Do you have livestock? Yes / No

If yes, income from livestock-

Name of livestock	income
Cattle	
Poultry	
Others	

7. Sources of drinking water-

Source of drinking water	Tick mark	Distance from house
Pond		
Tube well		
Rain water		
Others		

8. Do you know about forest co management committee?

Yes		No	
-----	--	----	--

If yes, do you have any involvement?

Yes		No	
-----	--	----	--

9. Do you have any involvement with forest department in regards to forest management?

Yes		No	
------------	--	-----------	--

If yes, in which capacity?.....

10. Do you migrate seasonally outside?

Yes		No	
------------	--	-----------	--

Why you migrate and where and how long?

Reason	Duration in month
Lack of work	
Natural calamities (Flood, cyclone, etc)	
Others	

11. Do you get any financial support? Yes / No

If yes-

Sources/organizations	Amount and mode of support
GO	
NGO	
Bank	
Dadon/Private	
Others	

12. Source of energy/ energy consumption-

Types of energy used	Amount/day /week/month	Percentage of total energy consumption
Fuel wood		
Coal		
Electricity		
Caw dung		
Others		

13. Sources and amount of fuel wood-

Sources	Amount in Kg /day/week/month
Homestead	
Social forestry	
Collected from SRF	
Purchased	
Others	

14. Is/are there any factor(s), that can affect livelihood activities

- a. Yes
- b. No

15. If yes, what type of factors affect livelihood?

- a. Pirates
- b. Forest staff
- c. Loan interest
- d. Others.....

16. Do you want to change your present occupation if you get better opportunities? Yes/ No

17. What would be the alternative source of income other than entering Sundarban?

.....
.....