Livelihood Pattern of Flooded Families in Bangladesh: A Study in Two Villages

M. Phil Dissertation

Sabiha Afrin

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Livelihood Pattern of Flooded Families in Bangladesh: A Study in Two Villages

This is submitted to the Institute of Social Welfare and Research (ISWR) of the University of Dhaka as partial fulfillment of the requirements for the degree of M.Phil in Social Work.

Submitted by

Sabiha Afrin
Reg. No. 169
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Institute of Social Welfare and Research (ISWR)
University of Dhaka

Supervisor

Dr. Md. Nurul Islam
Professor
Institute of Social Welfare and Research
University of Dhaka

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Declaration

I hereby declare that the entire findings of the research entitled "Livelihood pattern of Flooded Families in Bangladesh: A Study in Two Villages" is completely accumulated by my own sincere effort. So far I presume no research on same topic was held earlier. I have not submitted any part or chapter of my M.Phil thesis to any other university or publishers for degree or publication.

Sabiha Afrin
M.Phil Fellow

Institute of Social Welfare and Research

University of Dhaka

Certificate

I hereby certify that the M.Phil Dissertation entitled "Livelihood pattern of Flooded Families in Bangladesh: A Study in Two Villages" was carried out by Sabiha Afrin under my guidance and supervision. It is further certified that the work presented here is original and suitable for submission as an M.Phil Dissertation.

Dr. Md. Nurul Islam
Professor
Institute of Social Welfare and Research
University of Dhaka

Date: 29/11/2015

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I acknowledge with deep respect my gratitude to my honorable supervisor Professor Dr. Md. Nurul Islam, Institute of Social Welfare and Research who gave me this golden opportunity to do this wonderful research topic on Livelihood Pattern of Flooded families in Bangladesh which also helped me in doing lots of research and I came to know about many things. I would like to thank him again for giving me his valuable guidance, suggestion and his supervisory conference at all my research work. This study might not have been possible without the meticulous support and guidance that I received from him throughout the study. I would also devote my sincerity to my parents and my friends who helped me a lot in finishing this research within a limited time.

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I am really thankful to the villagers of Rupchandrapur and Madon whose were very helpful to collect information and find out the actual livelihood pattern of them. They provided me information willingly and in a co-operative manner.

I would like to end my stating that, the limitations of this M.Phil thesis are entirely mine.

Sabiha Afrin

M.Phil Fellow
Institute of Social Welfare and Research (ISWR)
University of Dhaka

Executive Summary

Inundation of land by the rise and overflow of a body of water is Flood. Floods occur most commonly when water from heavy rainfall, from melting ice and snow, or from a combination of these exceeds the carrying capacity of the river system, lake, or the like into which it runs. Usually the combined flow of several water-swollen tributaries causes flooding along a river bank or shoreline. Accounts of floods that destroyed nearly all life are found in the mythology of many people's.

The climate of Bangladesh is tropical monsoon climate influenced by the Himalayan Mountains in the north and northeast, and the Bay of Bengal in the south. High monsoon rains associated with Bangladesh's unique geographical location in the eastern part of the delta of the world's second largest river basin make it extremely vulnerable to recurring floods. Agriculture is the dominant land use in the country covering about 59% of the land, rivers and other water bodies constitute about 9% (BBS, 2002). Monsoons with varying degrees of associated flooding are anticipate annual events in Bangladesh.

There are five objectives in the study to find out the real cause of flood and try to overcome its losses. The general objective of the study is to know the livelihood pattern of flooded families in Bangladesh. Here I have studied on two villages named Rupchandrapur and Madon. 20% family heads was randomly selected from each village. For depth of the study and understanding the problems I have included here three case studies. I have collected data through interview and observation methods. The main occupation of the study area is agriculture. Male respondents are more concern than female. Here education rate is very poor. Only 40% people can sign. It has been seen that the average member of each family is four. They try to follow to maintain the birth control activities. There are about 74% people who are directly involved with agriculture. It has been found that the average range of salary is 13,000/- taka. In the study here I have used present data and past data in comparing their living place.

The primary source for drinking water in study area is tube well. Among the respondents 50.5% have their own tube well while it was 62.05% before flood. There were no respondents who use pond, river or other sources of water except tube well for the drinking purpose. Among respondents of the study and 84% said that they preserved food before coming rainy day. Maximum respondents had said they have to face water problem. To overcome this situation they use water purifying tablet and boiling water while flood water flooded the village area. To identify the causes of flood 78.05% respondent of the study mentioned five points at a time. There are increasing rainfall, river over flow, unplanned damp, lacking of proper drainage system and decrease of river navigability. About 60% respondent mentioned three points that are suffered more during flood. These are children, domestic animal and older people.

85% respondent specified some points which are the impact of flood. These are drowning crops, spoiling crops, problem in preserving seeds etc. To know about their preparedness to develop present condition of life to a satisfying standard 70% respondent of the study mention make awareness. 70% respondent noticed government and NGOs to take more effective steps to make a good condition against flood.

To create a better world for living we have to work for reducing the cause of natural disaster. Flood is like a curse for our country. We have to take proper action against flood.

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Abbreviation

BBS	:	Bangladesh Bureau of Statistics
GO	:	Government Organization
NGO	:	Non Government Organization
MoWR	:	Ministry of Water Resources
GDP	:	Gross Domestic Product
DFID	:	Department for International Development
ICT	:	Information and Communication Technology
PIPs	:	Politics, Institutions and Processes
UP	:	Union Parishad
ASA	:	Association for Social Advancement
BRAC	:	Bangladesh Rural Advancement Committee
DMB	:	Disaster Management Bureau
BMD	:	Bangladesh Meteorological Department
BWDB	:	Bangladesh Water Development Board
CPP	:	Cyclone Preparedness Program
IMDMCC	:	Inter-Ministerial Disaster Management Coordination Committee
MDG	:	Millennium Development Goals
PRSP	:	Poverty Reduction Strategy Paper
ISDR	:	International Strategy for Disaster Reduction
CCA	:	Common Country Assessment

WSSD	:	World Summit on Disaster Reduction
WCDR	:	World Conference on Disaster Reduction
UNDAF	:	United Nations Development Assistance Framework
UNFCCC	:	United Nations Framework Convention on Climate Change
GK	:	Gonoshasthy kendra
CARE	:	Cooperative for Assistance and Relief Everywhere
ADPC	:	Asian Disaster Preparedness Centre
UK	:	United Kingdom
BDPC	:	Bangladseh Preparedness Centre
CCDB	:	Cell Centered Database
IVS	:	Internet Via Satellite
BDRS	:	Bangladseh Dinajpur Rural Services
OTEP	:	Oral Therapy Extension Program
DMC	:	Disaster Management Committee
CRA	:	Community Redevelopment Agency
ECHO	:	Emergency Care Health Organization

Abstract

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Chapter One: Introduction

1.1 Introduction

1.2 Rational of the study

1.3 Objectives of the study

1.4 Definition of the key concepts used in the study

1.5 Assumption

1.6 Methodology of the study

1.1 Introduction

The South Asian country of Bangladesh is prone to the natural disaster of flooding due to being situated on the Ganges Delta and the many tributaries flowing into the Bay of Bengal. The coastal flooding twinned with the bursting of Bangladesh's river banks is common and severely affects the landscape and Bangladeshi society. 75% of Bangladesh is less than 10m above sea level and 80% is flood plain, therefore rendering Bangladesh a nation very much at risk of further widespread damage despite its development. Whilst more permanent defenses, strengthened with reinforced concrete, are being built, many embankments are composed purely of soil and turf and made by local farmers. Flooding normally occurs during the monsoon season from June to September during the monsoon. The convectional rainfall of the monsoon is added to by relief rainfall caused by the Himalayas. Melt-water from the Himalayas is also a significant input and flood every year. Less than 25% of Bangladesh is only 1 meter above sea level!

Each year in Bangladesh about 26,000 km^2, (around 18%) of the country is flooded, killing over 5,000 people and destroying 7 million homes. During severe floods the affected area may exceed 75% of the country, as was seen in 1998. This volume is 95% of the total annual inflow. By comparison, only about 187,000 million m^3, of stream flow is generated by rainfall inside the country during the same period. The floods have caused devastation in Bangladesh throughout history, especially during the years 1966, 1987, 1998 and 1988. The 2007 South Asian floods also affected a large portion of Bangladesh.

From March to September in a typical year, the citizens of Bangladesh are the most susceptible to major flooding, as a mixture of the monsoon seasons and the rising of major rivers and their tributaries reach their peak as the snow starts to melt and the rain starts to pour.

Widespread flooding in Bangladesh, as seen in 1988, 1998and 1991 has caused widespread destruction in one of the least developed countries in the world. With three of the world's mightiest river systems and being situated in the world's largest delta, river bank erosions are taking away precious land from the small nation with a growing population every year. The economic development of the rural sphere is largely intertwined, as every year the populace loses property and livelihood. South Asian people, 70 percent of whom lives in rural areas also account for 75 percent of the poor, most of who rely on agriculture for their livelihood. Each year they are disproportionately affected by the effects of climate change. Two catastrophes alone, 1991 Bangladesh cyclone-1997 and [Cyclone Sidr-2007] cost the nation around a quarter of a million of its residents. There needs to be serious considerations to mitigate the effects of climate change and invest in capacity building of each system component to secure the future of this country.

This global change is likely to have a more dramatic effect on the global agriculture than previously predicted meaning that the world hunger situation and Bangladesh's food security issues will only get worse. The difference between historical and projected average temperatures each season throughout the world has revealed that harvests from major staple crops could drop by 40 percent by the end of the 21st century due to high temperatures in the growing seasons. A research study predicted this by using the patterns and characteristics of 23 global climate models. Not only do the harvests get affected, the grain yield is also predicted to decrease anywhere from 3 to 15 percent.

In Bangladesh, the following types of floods are normally encountered. Flash floods in the eastern and northern rivers are characterized by a sharp rise followed by a relatively rapid recession, often causing high flow velocities that damage crops and property. Local floods due to high localized rainfall of long duration in the monsoon season often generate water volumes in excess of the local drainage capacity, causing localized floods due to drainage congestion. Monsoon floods from the major rivers

generally rise slowly and the period of rise and fall may extend from 10 to 20 days or more. Spilling through distributaries and over the banks of the major rivers causes the most extensive flood damage, particularly when the three major rivers rise simultaneously. In the 19th century, six major floods were recorded in 1842, 1858, 1871, 1875, 1885 and 1892. Eighteen major floods occurred in the 20th century. Those of 1987, 1988 and 1951 were of catastrophic consequence. More recent floods include 2004 and 2010.

1.2 Rationale of the Study

Bangladesh is one of the most disaster prone countries of the world. It is often buffeted with disasters like cyclone, floods, mudslides, and earthquakes. These disasters often put the people of Bangladesh in tough situations and further eroded an already weak socio-economic condition. Flood is the most common hazards of Bangladesh. Almost every year they have to prepare for this disaster. It is more or less a recurring phenomenon in Bangladesh. Occasionally it become divesting. During the rainy season when the water exceeds the holding capacity of rivers, canals, beels, haors, low-lying areas inundates the whole area causing damage to crops, homelands, roads and other properties. In the middle of September, 2010 the North western part of Bangladesh experienced heavy rainfall resulting in flash floods. 13 districts: Kurigram, Sirajganj, Gaibandha, Bogra, Sirajganj, Jamalpur, Rajbari, Faridpur, Shariatpur, Madaripur, Munshiganj, Manikganj and Sylhet were hit by flood. A rush of water damaged flood control embankments and roads in some areas causing submersion of villages. Growing river erosion has further added to the suffering of people affected by the floods. People suffered due to a shortage of food, drinking water and other essentials. According to a primary assessment by the Department of Agriculture Extension, floods left around three million people marooned in different districts of the country and submerged over 20,000 hectares of farmland. At the end of September the flood situation improved gradually in all the districts while river erosion has accelerated causing suffering and disruptions to people's lives. Thousands of people from Kurigram, Gaibandha, Sirajganj, Rangpur,

Nilphamari, Madaripur, Faridpur and Chandpur have lost their homes and farmland to river erosion. Two monsoon depressions also caused heavy rainfall in the country for several days. Thousands of people remained marooned as tidal surges coupled with rain submerged vast areas in coastal districts, destroyed standing crops, houses and washed away shrimp enclosures and flood protection embankments. 12 people were killed and many fishermen in the coastal areas were missing. About 2,500 thatched houses were completely destroyed. About 75 km of embankment was completely damaged and another 415 km partially in the southwest region. Flood is like as a curse for a village as well as a country. During the flood period the sources of safe drinking water are not available. People are vulnerable to many water borne diseases due to their patterns of the use of water. Most of the house-holds do not have the sanitary latrine in village area. The government's initiatives in this regard are very minimal. Flood is one of the harmful reasons for our underdevelopment.

So we find that the livelihood pattern of flooded families in Bangladesh is affected and divested by flood almost every year. During flood and after that they face difference sorts of harmful problems which caused main drawback of their improvement. It exigent to find out their problems and solve it as soon as possible. Many international, national and local NGOs are working with this issue. Moreover, in recent time policy makers are giving importance on indigenous skills and knowledge to solve their facing problems and for sustainable development. After completion of this research **"Livelihood Pattern of Flooded Families in Bangladesh : A Study in Two Villages"** it will be an enriched documents to know the family life of flood affected people. I hope we can get a proper suggestion or advice from this research to reducing the flood damages and launching rehabilitation program.

1.3 Objectives of the study

The general objective of the study is to know the livelihood pattern of flooded families in Bangladesh. In light of this general objective some special objectives are taken-

1. To study the socio-economic condition and demographic situation (age, sex, family) of the flood affected people.
2. To identify the causes of flood in village area.
3. To know the impact of flood on the village people.
4. To know the rehabilitation programs to rehabilitate flood affected people.
5. To know about their preparedness to develop present condition of life to a satisfying standard.

1.4 Definition of the key concept used in the study

Village

A village is a clustered human settlement or community, larger than a hamlet with the population ranging from a few hundred to a few thousand (sometimes tens of thousands), Though often located in rural areas, the term urban village is also applied to certain urban neiborhoods. Villages are normally permanent, with fixed dwellings; however, transient villages can occur. Further, the dwellings of a village are fairly close to one another, not scattered broadly over the landscape, as a dispersed settlement.

Family life

Family is a primary social group consisting of parents and their offspring. The principal function of which is provision for its members. It is a group of persons related by blood, descended from a common ancestor.

Flood

Commonly when water from heavy rainfall, from melting ice and snow, or from a combination of these exceeds the carrying capacity of the river system, lake, or ocean into which it runs. Usually the combined flow of several water-swollen tributaries causes flooding along a river bank or shoreline. Accounts of floods that destroyed nearly all life are found in the mythology of many peoples. The overwhelming flood that covered the earth and destroyed every living thing floods occur most flood.

1.5 Assumption

1. Socio- economic condition of flood affected people can improve through applying effective strategy.
2. Consciousness is essential for sustainable development of flood affected people.
3. Development of infrastructure should be improved for reducing damages.

1.6 Methodology

Area of the Study

This study will be conducted on villages named Rupchandarapur and Madon located in Atpara upazila under Netrakona district. Noteworthy, the villages are elected purposively for the convenience of the investigation.

Population of the study

All family heads in the selected area will be considered as population of this study and each of the family members will be considered as the unit of analysis.

Sampling

This study is based on sample survey method of social research. 20% family heads will be randomly selected from each of the proposed village. Case study method will be used in this study for in depth study and better understanding of the study problem. This will also work out the study within time limit.

Technique of the data collection

Information for the study will be collected through interview and participant observation. For collecting relevant data adequate preparation and precaution will be taken. Before finalizing interview schedule a protesting will be conducted for more standardization.

Data processing analysis and interpretation

Collected data will be processed and analyzed following proper research and statistical procedure. Firstly the data will be edited these will be classified and tabulated. After that the classified and tabulated data will be analyzed using statistical procedure including percentage, central tendency and correlation.

Publication of Research Report

After completion of qualitative and quantitative analyzed data will be finally checked and edited and responses of the structured and unstructured question will be carefully coded. Data will be analyzed and interpreted according to the objectives and assumption of the study.

Chapter Two: Literature Review

2.1 Flood affected Children in Bangladesh: Impact and Remedies

2.2 Livelihood System of Cyclone Affected people of Costal Area: A Study on Village

2.3 Child Health Situation in Haor Area: A Study in Netrokona

2.1 Flood affected children in Bangladesh: Impact and Remedies

This research has studied to find on the exact picture of hazards and suffering of the children during flood from July to September, 2004. This research is mainly a social research to exploit facts. Sample survey has been taken as research methods. Moreover to ensure the quality of this research case study has also been taken as supporting method. The parts of Dhaka city area which were affected by flood in 2004 has considered as the research area. From the 26 Thana (Police Station) of Dhaka District Badda, kamrangirchar Thana (Police Station) has been taken purposively for study as these areas were affected by flood 2004 entirely. All flood affected children, their parents and the local people (who have experienced about flood affected Children) of the Badda and Kamrangirchar Thana has been considered as the research population. Every flood affected children, their parents and the local people (who have experienced about flood affected children) have been considered as a unit of analysis for collecting data and receiving interview. By non-probability sampling from the affected area 120 units of analysis have been collected. By accidents sampling 80 children and 40 parents and local people have been interviewed face to face throw a questionnaire for collecting data. Data have been collected from the primary and secondary sources of affected area.

To visualize and better understand the exact condition of the suffering that the children faced during the flood of 2004, a study that the children faced during the flood of 2004, a study was undertaken in December, the same year. The main purpose of the study was to identify the impact of flood on children and remedies to the situation. The study has found the following major facts:

- The flood 2004 had badly effect on food consumption of the children during flood. All the respondent children eat almost three times a day presently and used to eat the same times before flood. But during flood one third (32.5%) of the remained starved more or less.

- Only 12.33% of children to whom relief was required got sufficient relief which is 11.25% of the total child respondents. 30.14% got insufficient relief for them. However the biggest tragedy lies upon 34.25% to whom sufficient relief was badly required but they did not get one kind of relief during that disaster period. The survey has found a serious social taboo for which 23.29% did not go for relief. They needed relief but the taboo forced them to stay put at home and remain starved. They think that taking relief would lose their social prestige.

- The study finds a worsen situation of water supply in Dhaka city during flood. Flood water and sewerage water mixed with water supply lines and become undrinkable. Children informed that the supply of pure drinking water was inadequate during flood. If the situation of water supply become so bad in Dhaka city where water supply is better than any part of the country, the situation of the rest of the affected area can easily be assumable.

- Children are the most vulnerable group regarding health issues during flood. They suffered from various diseases and some of might cause death. Children are the major part of the population that suffers diarrhea and fever during any natural disaster like flood. The flood of 2004 is no exception to this. 50% of them suffered by diarrhea. On the other hand, 33.33% of the respondents were affected by fever. Of the sick children 5.56% suffered stomach pain. 11.11% suffered skin diseases. These diseases were chiefly caused by the poisonous and dirty environment during flood.

- Children especially the girl is the most vulnerable groups regarding security issues during any disaster like flood. They suffer from various kinds of security problems. 68.75% children informed that they informed that they faced various security problems during the last devastating flood of 2004.

- Natural disaster such as flood impacts on children's education harmfully. 7% of the school going children was drop-out from school for the flood 2004.

- Flood makes the children vulnerable. As they are young they do not have any experience to cope with that kind of situation. They were scared and did not have any mental support. The feelings of insecurity pressures on them. They had nothing to do but crying fear.

- There was a dramatic fall in use of sanitary latrine. Among the respondent 45% children used sanitary latrine but it is notable that during flood it decreased to only 20%. More than 51% respondent children used flooded latrine at that time. Some of them added that their latrine was sanitary but it was flooded.

- All respondent of the second respondent group think there are a serious limitation of the programs and activities of the GO and NGOs to solve food and water problem during flood. The highest numbers of respondents thinks that insufficient food and water supply is the main limitation of the programs and activities. It is notable that corruption in relief distribution is one of the major limitations of these activities during flood. They also mentioned food market was not under control which destroyed all success of the Government activities for flood. Absence of social mapping is also a great problem for relief activities.

- In this study there had some suggestions as the remedies to the problems:
  1. Sufficient food supply for children.
  2. Controlling corruption in relief distribution.
  3. Food price should be controlled.
  4. Engaging skilled industries manpower in relief distribution.
  5. Families should have emergency food storage.

6. Business man should be awarded.
7. Numbers of doctors should be increased in temporary medical camps.
8. Increasing medical supply for flood affected areas.
9. More medical center should be opened.
10. Awareness programs should introduce regarding public health especially in flooding situation.
11. Food for education program after flood.
12. Financial support for rearranging study for flood victim children.
13. Arranging home visit by teacher to reduce drop-out.
14. Awareness program should introduce for parents.
15. Examination dates of the school should be fixed during the dry seasons when there is minimum possibility of heavy rain or flood.

The study has tried to figure out the exact pictures of hazards and sufferings of the children during the flood times. Besides it has tried to find out the possible remedies on this kind of situation. As my study is also on flood, it is similar to my study. So I have included it as a literature review in my research.

2.2 Livelihood System of Cyclone Affected People of Costal Area: A Study on a Village:

This research has studied to find out the exact picture of livelihood system of cyclone affected people of costal area. It is conducted in June, 2010. The male respondents were more responded than female respondent. It proves that the male are mostly involved with the livelihood activities at coastal area.

In the study, the illiterate respondents percentage was 20, while literate who can sign their name only is 32%, up to class five from class one among the respondents are 24%, from class six to class ten 16% and above this that means there found only 4 respondent completed higher secondary education. The study shows that the education facility of the willingness of education is still beyond the expected line. Drop out is the major problem here. Before completion of their primary education they usually involve with income generating activities.

It has been seen that the highest number of family member is four. There were only one respondent who is alone. The highest number of family members was found as seven in four families. Twelve families found where family member were six. In the study, there was present data and past data. It has been seen that man were gradually improved their livelihood. Within 10 years the scenario was not same. There were 26% respondent who had tin, wood and bamboo made house before 10 years, but now the number is 36%, on the other hand semi paka houses also inceased during the last cyclone as it was 14% before and now it is 34%. There are only 6% houses made of straw called as hut, it was 28% before cyclone. Only 6% respondents have hut for living while it was 28% before cyclone.

Among the respondents 32% have own house, and it was 74% before cyclone. 44% of the respondents lives in other property but not rented this property is mainly belongs to the Government, it was 8% before. Respondent livings in a rented house

are only 14% and were 10% before. There were some respondents who did not live these types of houses rather some of them lived with other relatives family.

The primary source of drinking water of the research area is tube well. Among the respondent 8% have their own tube well, while it was 6% before cyclone? At present the highest portion of the respondents use the community tube well given by different NGOs or Governments. There were no respondents who use river, pond or other sources of water except tube well for their drinking purpose but it was 12%, 4% and 00% respectively before cyclone.

In the study, it has seen that almost all respondent use sanitary latrines, the percentage is 38%, other 46%respondents only use kancha latrine. But before cyclone 64% respondents had sanitary latrine, 30% had kancha latrine and 6% would go open place. At present 16% respondents go open place for toilet.

The highest number of the respondents mentioned they go to Government hospital during sickness and the percentage is 66% while it was 60% before cyclone, among the respondents 12% visits private doctor or clinic but it was only 10% at before. Only 16% of the respondents take homeopathy treatment during sickness which was 18% before cyclone. There is 6% of the respondents go to religious or other quacks for treatment, it was 12% before cyclone.

Among the all respondents only 16% respondents have personal fixed assets before cyclone 74% of the respondents had fixed assts. 84% of the respondents have to fixed assets on the other hand 24% of the respondents had no fixed assets before cyclone. Due to the recent cyclone, sidr, sea level raise they lost their assets like land.

The present occupation of the people of the study area was found business of sea sell, it is small handicraft business, among the respondents 34% at present involved with this business, before cyclone it was 4%. The most popular occupation is fishing 36% at present but it was the most popular occupation before cyclone that was 50% of the study area was involved with this. 2% respondents are involved with

farming at present and it was 18% in the past. A small no of respondent now involved with tourist business they are 4% at present and was 6% at the past.

In the study, it is found that the highest range of salary is 23001-25000 taka and the frequency is 3, it means that only three families now earn this range of money and it is only 6% of the 4% before cyclone. The maximum no. of family earns a range of 19001-21000 taka a month now, and was the same as before they are 16% of the respondents. 14% of the respondents earn between 5001 -7000taka a month and it same as before. The lowest income of a family is 1000-3000 taka range at present it is 4% and before cyclone it was 2% only.

76% of the respondents work for a long duration of up to 12 hours a day, it was 80% before cyclone. Among the respondents only 6% have to work up to 8 hours and it was 12% before. 18% respondents have to work in duration of more than 12 hours it was for 8% before cyclone.

38% respondents think that the barrier of their occupation is `transportation is not good to attract travelers' emphasis on fixed market given by 28 respondents, the 3rd important barrier they think Government loan is not available, opined by 26 respondents, 19 respondents think that lack of fishing instrument is the barrier of their occupation.

To improve livelihood 42 respondents supports that support during natural disaster' is most important, 38 respondents think that credit facility by Government can help to improve livelihood, 32 respondents considered upgrading of transportation, fixed lease market is needed to improve livelihood supports by 26 respondents, mainly the respondents related to fishing supports that support providing instrument for fishing can improve their livelihood.

Among the respondents 92% hand heard about climate change, and rest 8% said that they didn't hear about climate change. 28 respondents think that due to climate change sea level will rise, 16 respondents think that increasing worming is

the impact of climate change, frequent natural disaster supported by 12 respondents, 10 respondents think that decreasing rain fall is an impact of climate change, among the respondents 12 have no idea about the impact of climate change.

Among the respondents 14 respondents had no idea about the causes of climate change, 32 respondents think due to deforestation may a cause of climate change,12 respondents think that increasing of sin and injustice is the cause of climate change, 8 respondents think industrial smoke and wastage may cause of climate change. Among the predefined recommendation highest support given to the regular learning of sea coast, then developing tourist spots, then to stop unethical activities at the hotel and the beach.

This research is similar to my research. It is based on cyclone affected people. Cyclone is one of the mostly random disasters in our country like flood. Here briefly discussed the livelihood pattern of cyclone affected people of costal area. I have got some ideas from it about the holistic livelihood pattern of disaster porn area.

2.3 Child Health Situation in Haor Area: A Study in Netrokona:

Children are the future leader of the nation. To lead the nation towards prosperity, comprehensive child health is needed on a priority basis. But child health situation in our country is not good. In our country children are in the most vulnerable situation. Most of the time they suffer different kinds of diseases which is ignorable in developed country. Because of proper care, consciousness, inadequate health facilities of child, prejudice are the main factors behind this. The ratio of children diseases is more in rural area like haor, boar and hill-tracts area.

In this study researcher collected data from Fakni situated at Modon under Netrokona district. The situation of child health of this area is very poor. Here purposive survey method used for data collection.

In this research it is found that there are 36.19% people do not know how to sign and only 24.76% know how to sign and read latter. In this area the livelihood pattern of people are very poor. 49.52% people's income under 1500tk which is the main cause for their vulnerable health situation. About their children health 57.14% respondent said their children health are bad, it is mentioned that 91.42% children immunized. About 77.15% children had been suffered from various diseases for last six months. Pneumonia, cough, fever , malnutrition etc are the regular health crisis of them. 80.95% children take treatment from different places,. Among them 55.29% go to polli doctor and 61.17% go to hospital / health complex. It is observed that 77.61% children are taken treatment and most of them are depended on kobiraji and homiopathi medicine. It is also observed that the living place of the dwellers of the village is 6-10 k.m far from hospital or health complex. The respondent said doctors and medicine are not available in local area. About sanitation 31.42% go to open space for toilet and 58.09% use katcha latrine. About 65.7% do not use soup or ash for washing hand. Health care program of GO and NGOs is still unknown in remote area.

This research to similar to my research. Because it is studied on Netrokona District. Here mostly highlights the children health situation of Haor area. My study is also on Netrokona district. From this research I have got some important points about the overall health situation of Haor area as well as the remote area of Netrokona distract. A proper situation of health of a village is very much important for their standard livelihood pattern. To know the overview of health situation of a village I have taken it in my research as a literature review.

Chapter Three: Theoretical Part of the Study

3.1 Flood

3.2 Types of Flood in Bangladesh

3.3 Causes of Flood in Bangladesh

3.4 History of Flood in Bangladesh

3.5 Recent Devastating Flood in Bangladesh

3.6 Guidelines on Reduction: the impacts of Flood

3.1 Flood:

At the present time the Ganges-Brahmaputra Delta and its 130 million people living in Bangladesh are facing a serious challenge. While delta growth is striving to keep pace with local relative sea-level rise, the people are repeatedly confronted by natural and human-made catastrophes such as cyclones, tornadoes, earthquakes, riverbank erosion, surface and groundwater pollution, air pollution, droughts, wetland loss, coastal erosion, and floods. While some of these environmental degradations are not directly related to human activities and land-use practices (such as earthquakes, tornadoes, and cyclones), others are related to human interactions with the nature. Flooding is one such water related environmental problem magnitude of which is very much dependent on land-use practices in the watershed of each rivers or streams.

Revering floods occur when the amount of runoff originating in a watershed (the area that collects and directs the surface runoff into the rivers, streams and lakes that drain it) exceeds the carrying capacity of natural and constructed the drainage system. Flooding can occur due to river overflow or surface runoff. There are two types of floods which occur in Bangladesh: annual floods (barsha) that inundate up to 20% of the land area; and low frequency floods of high magnitude that inundate more than 35% of the area (bonna). While the annual floods are essential and desirable for overall growth of the Bangladesh delta and the economy, the low frequency floods such as those that occurred in 1954, 1955, 1974, 1984, 1987, 1988, 1993, 1998, and 1999 are destructive and cause serious threat to lives.

3.2 Types of Flood in Bangladesh:

Floods are annual phenomena with the most severe occurring during the months of July and August. Regular river floods affect 20% of the country increasing up to 68% in extreme years. The floods of 1988, 1998 and 2004 were particularly catastrophic, resulting in large-scale destruction and loss of lives. Approximately 37%, 43%, 52% and 68% of the country is inundated with floods of return periods of 10, 20, 50 and 100 years respectively (MPO, 1986). Four types of flooding occur in Bangladesh:

1. Flash floods caused by overflowing of hilly rivers of eastern and northern Bangladesh (in April-May and September-November).
2. Rain floods caused by drainage congestion and heavy rains.
3. Monsoon floods caused by major rivers usually in the monsoon (during June-September).
4. Coastal floods caused by storm surges

The 1988 flood affected about two-third area of the country. The 1998 flood alone caused 1,100 deaths, rendered 30 million people homeless, damaged 500,000 homes and caused heavy loss to infrastructure. The 1998 flood lasted for 65 days from July 12 to September 14 and affected about 67% area of the country. This devastating flood had an enormous impact on the national economy, in addition to causing hardships for people, and disrupting livelihood systems in urban and rural areas.

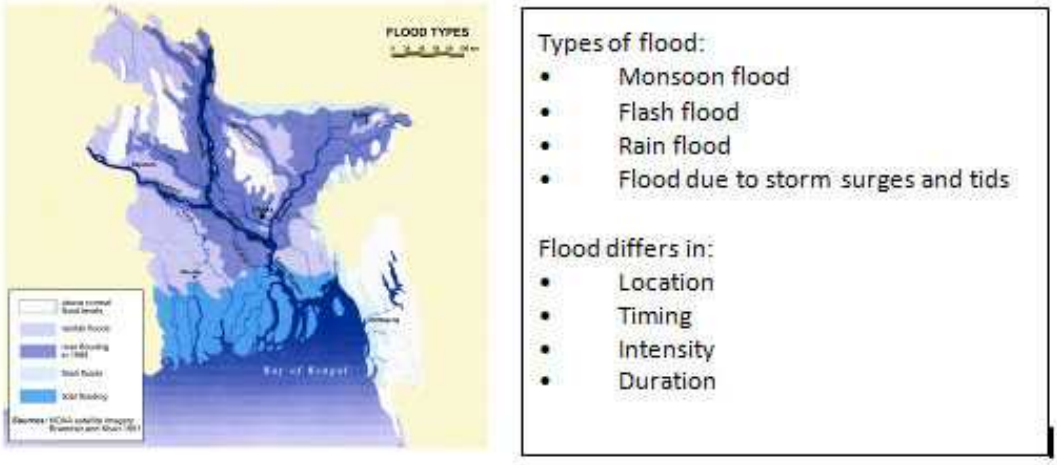


Figure 3.2.1: Types of Flood

Types of flood

1. Monsoon Flood
2. Flash Flood
3. Rain flood
4. Flood due to Storm Surges and tide

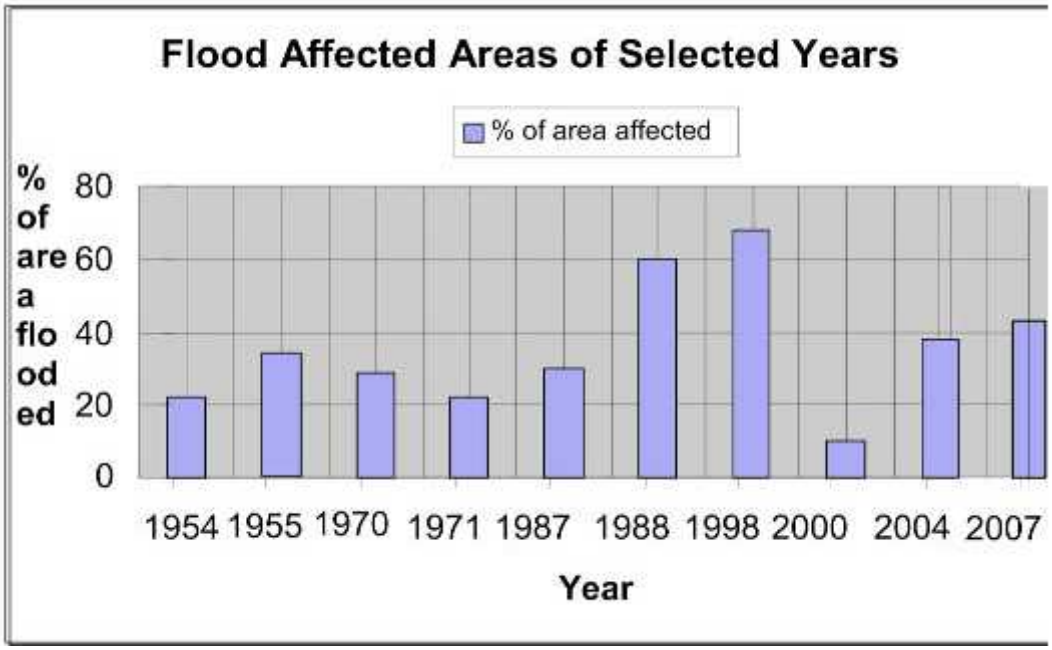


Figure 3.2.2: Flood Affected Areas of Selected Years

In the year 2000, Bangladesh faced an unusual flood over its usually flood-free south western plain, which also caused loss of life and massive damage to property. In 2004, floods inundated about 38% of the country (WARPO, 2005). About 747 people lost their lives. About 2500 kilometers of embankment were damaged. About 74 primary school buildings were washed away. This flood caused economic loss of about US$ 2200 Million. Floods continue to be major hazards in Bangladesh. To mitigate the impacts of floods, the government has been developing and implementing various measures to better equip the country to deal with floods. The Ministry of Water Resources (MoWR) is leading the country on flood mitigation initiatives. Important initiatives include Flood Action Plan, Flood Hydrology Study, Flood Management Model Study, National Water Management Plan, National Water Policy, Flood Early Warning System Study, etc.

3.3 Causes of Flood in Bangladesh

Bangladesh is one of the world most densely populated country and one of the most susceptible countries to flood disasters. It also has one of the three most powerful rivers passing though it Ganges, Meghna and Brahmaputra. About one half of the land area in Bangladesh is at an elevation of less than 8 meters above sea level. Up to 30% of the country has been covered with flood waters. In 1991 more 200,000 deaths resulted from flooding and associated tropical cyclones.

There are some causes of flooding in Bangladesh:

1. Monsoon climate brings very heavy rain and snow soils are leached and heavy runoff results in soil erosion.
2. Spring snow-melt results in soil erosion and a rapid increase in River Discharge.
3. Deforestation in Headwater Area due to increasing population in Nepal 7& Tibet. Trees cleared for fuel and grazing land. Less Evapotransporation, more runoff and faster soil erosion. Landslides also occur.

4. Rivers silt-up due to increased soil erosion. This raises the river bed and reduces the capacity of the channel resulting in increased likelihood of flooding.
5. 80% of Bangladesh lies on a huge floodplain and delta, most of which is only 1m above sea level.
6. Much of the Ganges has been diverted for irrigation purposes, this removes some of the silt and prevents the floodplain further downstream from being built up.
7. Cyclones (violent storms) frequently hit Bangladesh.

There are many physical and human causes that allowed the floods to be worse; such as:

The Physical Causes of the Floods:

- Most of the country consists of a huge flood plain and delta.
- Snowmelt from the Himalayas takes place in late spring & summer.
- 70% of the total area is less than 1 meter above sea level.
- 10% of the land area is made up of Lakes and Rivers.
- Bangladesh experiences heavy monsoon rains, especially over the highlands.
- Tropical storms bring heavy rains and coastal flooding.
- The main cause was the above average & long period of heavy rain which caused all 3 rivers to have their peak flow at the same time.
- In the spring, melting snow from the Himalayas further increases the flood risks as torrents of melt water enter the rivers at their sourc.

The Human Causes of the Floods:

- Deforestation in Nepal and the Himalayas increases run off and add to deposition and flooding downstream.
- Urbanization of the flood plain has increased magnitude & frequency of floods.

- Global warming is blamed for sea level rise, increased snow melt & increased rainfall in the region.
- The building of dams in India has increased the problem of sedimentation in Bangladesh.
- Poorly maintained embankments (levees) leak & collapse in times of high discharge.
- Increasing population pressure in Bangladesh itself has resulted in the sinking of many new wells resulting in the lowering of the water table and the subsequent subsidence of land making it even more prone to flooding.

3.4 History of Flood in Bangladesh::

Like any other disaster, flood disrupts the normal life patterns and individuals, families as well as the nation are exposed to great material and personal losses. Flood occurs in Bangladesh more or less every year. It shatters the economic backbone of the wage-laborers and sharecroppers, as many become practically unemployed for certain period of time.

Yearly flooding during monsoon season and other forms of inclement weather has forced the people of Bangladesh to adjust their lifestyle in order to prepare for the worst. One thing that people are doing to avoid the effects of the flooding is building elevated houses. These raised houses are built on platforms raised above the typical water level a flood can reach. In many cases, neighborhoods of people build these raised homes and end up creating a “Cluster Village” which is essentially a village that is all raised above flood level. This has proven to be very effective at avoiding the immediate effects of flooding. Furthermore, children who even prior to a natural disaster did not receive proper schooling benefited from the opening of Floating Schools, making these communities a beneficial learning spot.

However, there are some effects from flooding that cannot be avoided simply by raising houses above flood level. Water contamination, for example, is very difficult to cope with during floods. Many cities also have flood shelters, which are

large raised platforms where people can find refuge from the effects of the on-rushing flood. As a result of several demanding summer floods; in 2004, the government of Bangladesh made the step of seeking foreign aid rather than try to assist the millions of homeless people on their own. Nearly all of the 147 million people living in Bangladesh at the time were forced to adapt to intense rainfall and water-borne disease exposed conditions. An increase of salinity, a lack of food distributors, and the effects of seeing slum dwellers survive on flood water were just the initial blows to a monumental flood season that summer, exceeding beyond the Bangladesh's borders and effecting India, China, Nepal, and Vietnam as well.

These may all be great solutions to the problem of flooding, but some cities do not have raised houses or flood shelters. These cities typically have rescue boats that can search for people who were unable to get above flood level and help them get out of the water. These boats are very important; they rescue over a thousand people over the course of some years.

Bangladesh is largely a flat deltaic country formed by the confluence of great river systems of the Ganges, the Brahmaputra and the Meghna. These river systems annually drain a vast basin about 12 times its own size. Since the water of the above three major river systems passes through Bangladesh (only 7.5% of total catchment area) to the Bay of Bengal, the country becomes the worst victim of excessive rainfall in the upper catchment area outside its territory. Due to the low gradient of the rivers of Bangladesh and a flat terrain, every year, floods inundate a substantial part of the country and causes destruction to lives and properties. But at times it turns into catastrophic proportion. Bangladesh witnessed severe floods in 1954/55, 1974, 1987, 1988, and 1998 when about two third of the country went under water causing immense damage to lives and properties. The flood in 1998 was termed as catastrophic when 67 percent of the country's land was inundated an average of 8 to 9 weeks. During that flood 55 of the total 64 districts (32 in the riverine areasof

Jamuna, Brahmaputra, Padma and Meghna) and 33 million people were affected of which 18 million needed emergency food and health services (Ahmed et al, 1999).

The worst flood recorded was in 1998, and total damage was worth US $ 3 billion. It was estimated that cumulative loss of 1987 & 1988 floods was worth US $ 2 billion, reducing GDP by about 4% (Hossain, 2004). The area submerged in the flood of 1998 was about 100,000 sq km, which was much higher than the flood of 2004 that covered an area of about 30,582 sq km till August 4, 2004. The severity of the floods blighted the lives of about 30 million people and overstretched the entire flood response systems. The flooding, which caused property and infrastructure damage of US$ 7.2 billion, is the heaviest seen in Bangladesh since 1988 when it claimed (6 August 2004) over 650 dead and left 21 million homeless (Asia News, 2004).

3.5 Recent Devastating Flood in Bangladesh

From March to September in a typical year, the citizens of Bangladesh are the most susceptible to major flooding, as a mixture of the monsoon seasons and the rising of major rivers and their tributaries reach their peak as the snow starts to melt and the rain starts to pour.

Small scale flooding in Bangladesh is required to sustain the agricultural industry, as sediment deposited by floodwaters fertilizes fields. The water is required to grow rice, so natural flooding replaces the requirement of artificial irrigation, which is time consuming and costly to build. Salt deposited on fields from high rates of evaporation is removed during floods, preventing the land from becoming infertile. The benefits of flooding are clear in El Niño years when the monsoon is interrupted. As El Niño becomes increasingly frequent, and flood events appear to become more extreme, the previously reliable monsoon may be succeeded by years of drought or devastating floods. Also, some three thousand people were left homeless or killed.

While the issue of flooding and the on-going efforts to limit it's damages are prevalent throughout the entire country, there are several types of floods that have recently occurred regularly, affecting different areas in their own distinct way. These flood types include flash floods in hilly areas, monsoon floods during monsoon season, normal bank floods from major rivers (Brahmaputra, Ganges, Meghna) and rain-fed floods.

In the 19th century, six major floods were recorded: 1842, 1858, 1871, 1875, 1885 and 1892. Eighteen major floods occurred in the 20th century. Those of 1987, 1988 and 1951 were of catastrophic consequence. More recent floods include 2004 and 2010.

The catastrophic floods of 1987 occurred throughout July and August and affected 57,300 km^2 of land, (about 40% of the total area of the country) and were estimated as a once in 30-70 year event. The flood's main cause was the creation of Erranticophrus (top soil wash away reaction) from the inhabitants of the Himalayas irrigating their mountains vertically. The seriously affected regions were on the western side of the Brahmaputra, the area below the confluence of the Ganges and the Brahmaputra and considerable areas north of Khulna.

The flood of 1988, which was also of catastrophic consequence, occurred throughout August and September. The waters inundated about 82,000 km^2 of land, (about 60% of the area) and its return period was estimated at 50–100 years. Rainfall together with synchronization of very high flows of all the three major rivers of the country in only three days aggravated the flood. Dhaka, the capital of Bangladesh, was severely affected. The flood lasted 15 to 20 days.

In 1998, over 75% of the total area of the country was flooded. It was similar to the catastrophic flood of 1988 in terms of the extent of the flooding. A

combination of heavy rainfall within and outside the country and synchronization of peak flows of the major rivers contributed to the river.

The 2004 flood was very similar to the 1988 and 1998 floods with two thirds of the country under water. Dozens of villages were inundated when rain pushed the rivers of northwestern Bangladesh over their banks in early October 2005. The Moderate Resolution Imaging Spectrometer on Terra satellite captured the top image of the flooded Ghaghara and Atrai Rivers on October 12, 2005. The deep blue of the rivers is spread across the countryside in the flood image.

Widespread flooding in Bangladesh, as seen in 1988, 1998 and 1991 has caused widespread destruction in one of the least developed countries in the world. With three of the world's mightiest river systems and being situated in the world's largest delta, river bank erosions are taking away precious land from the small nation with a growing population every year. The economic development of the rural sphere is largely intertwined, as every year the populace loses property and livelihood. South Asian people, 70 percent of whom lives in rural areas also account for 75 percent of the poor, most of who rely on agriculture for their livelihood. Each year they are disproportionately affected by the effects of climate change. Two catastrophes alone, 1991 Bangladesh cyclone-1997 and Cyclone Sidr-2007 cost the nation around a quarter of a million of its residents. There needs to be serious considerations to mitigate the effects of climate change and invest in capacity building of each system component to secure the future of this country.

3.6 Guidelines on Reduction: the impacts of Flood

Flooding is a natural process that can happen at any time in a wide variety of locations. It constitutes a temporary covering of land by water and presents a risk only when people, their property and/or environmental assets are present in the area which floods.

Flooding from the sea and from rivers is probably best known but prolonged, intense and localized rainfall can also cause sewer flooding, overland flow and groundwater flooding. Flooding has significant impacts on human activities; it can threaten people's lives, their property and the environment. Assets at risk can include housing, transport and public service infrastructure, and commercial, industrial and agricultural enterprises. The health, social, economic and environmental impacts of flooding can be significant and have a wide community impact.

Flooding is the unusual presence of water on land to a depth which affects normal activities. Flooding can arise from:

- Overflowing rivers (river flooding),
- Heavy rainfall over a short duration (flash floods), or
- An unusual inflow of sea water onto land (ocean flooding). Ocean flooding can be caused by storms such as hurricanes (storm surge), high tides (tidal flooding), seismic events (tsunami) or large landslides (sometime also called tsunami).

Important facts to know about floods

River and flash flooding usually result from abnormally high rainfall over a relatively short period: Hours for flash floods; Days for river floods. Rapid snow melt can bring more water into the hydrological system than can be adequately drained; leading to what is generally called spring floods. Heavy rainfall during the tropical rainy season can lead to monsoon floods, which can affect rivers and may also occur as flash flooding.

Sedimentation of river beds and deforestation of water catchment areas can exacerbate conditions leading to river valley floods. Deforestation and paving over land can significantly increase the risk of flash floods. Building in flood plains or in environmentally degraded areas, or changing the natural drainage systems, can significantly increase the risk of flood damage.

Not all floods are bad. Seasonal flooding can be an important source of nutrients for agricultural lands, and recharge water supplies in dams and underground aquifers. In some parts of the world, a lack of seasonal flooding is a disaster. A disaster usually occurs when people are not prepared for a flood due to the lack of early warning systems, preparedness and mitigation measures. Flooding which occurs at night, which happens rapidly, or both, is the most dangerous type of flooding.

The elements which are most important at risk during floods:

- any structure situated within a flood plain
- earth buildings or masonry with water-soluble mortar
- buildings with shallow foundations or weak resistance to lateral loads or impact roads and bridges
- basements or underground buildings
- utilities
- machinery and electronics, including industry and communications equipment
- food stocks
- cultural artifacts
- fields and orchards
- confined livestock
- fishing boats and other maritime industries

Here are some things that can be done to protect homes and communities from the damage caused by flooding:

Before the floods:

- Raise community awareness about flooding and flood protection measures.
- Include flood awareness and preparedness in school programs.
- Publicize flood risk areas, warning signs and evacuation plans.

- Collect the local history of flooding, mark areas affected (flood height markers) and commemorate the dates of significant floods.

Conduct risks assessments:

- Identify locations which might be affected by flooding, determine how often the flooding may occur and identify what might be damaged in a flood.
- Distribute flood hazard maps so that people know where there is a risk of flooding. Flood maps identify risks to individuals, enable preparation of emergency response plans, and determine where flood protection measures must be taken. They are also a great tool for community education and awareness.
- Install sign posts marking possible flooding levels in the community to remind people of flood risks. Prepare community plans of action that explain what to do in case of flooding.

Undertake non-structural measures:

- Identify ways in which the use if possible flood areas can be change to avoid or reduce the impact of flooding.
- Have a good early warning system in place. Local and regional weather information can be used to let the public know when flooding is a risk.
- With advance warning, steps can be taken to increase protection,
- Such as placing emergency response teams on high alert and preparing emergency shelters.
- Educate people about the causes, risks and warning signs of floods.
- Develop evacuation plans, not forgetting the very young, elderly and disabled who may not be able to evacuate easily.

Undertake structural measures:

- Build dams and reservoirs, dikes and levees, retaining ponds, flood channels, and flood walls may help to reduce flooding. However, these measures can be very expensive!
- Protect well water from contamination, as flood waters often carry toxic materials, including raw sewage, animal waste, oil, and chemicals.

Land planning:

- Where possible, prevent building and development on flood-prone lands. Use land along rivers for parks or ecological reserves.
- If industry is based on the flood-prone areas, ensure there is flood proofing and plans to evacuate machinery and materials which might be damaged by a flood.
- Protect wetlands and flood plains.
- Maintain natural vegetation and forest cover in wetlands and flood plains. Trees help the soil hold water.
- Restore and protect degraded wetlands and flood plains. These areas can store large amounts of flood water.
- Make room for rivers to flow naturally. Creating more space for rivers, flood plains, and wetlands is a major contribution to flood prevention and protection

Increase building resilience:

- Elevate the homes, schools and public buildings above flood level.
- Use water-resistant building materials, such as concrete or ceramic, in areas where frequent flooding is a risk.
- Ensure that important appliances, such as heating and electrical systems, are raised high above flood level.
- Install water-tight flood shields or barriers for basement windows, doors, and other openings.
- Flooding can cause sewage to back up into houses through drain pipes, creating a health hazard. Install sewer backflow valves to prevent this risk
- Buy flood insurance.

During the floods:

- Evacuate: An evacuation should be based on a pre-flooding plan, include provision for elderly, young and disabled, and provide for evacuation shelters which have adequate food, water, sanitation and lodging facilities.
- Provide information to the evacuated on flood levels, possible damage and when people can expect to return. Most people do not want to say away from their homes more than necessary and want to return to rebuild as quickly as possible.
- Ensure that utilities are cut-off in flooded areas to avoid unnecessary damage or risk of injury.
- Plan for post-flooding damage assessments.
- Work with schools, government and business to ensure that normal activities can continue as much as possible during the flooding.
- Finding work, even temporary, may be very important for some of the evacuees.
- Continuing schooling and social and commercial activities such as markets, are important for evacuees to provide a sense of normal to their lived disrupted by the flooding.
- Work with professional services to providing counseling to those who are most affected by the flooding.

After the floods:

- Conduct and publicize impact assessments.
- Develop recovery plans which ensure people can quickly rebuild their homes and that social and commercial services will re-open as quickly as possible.
- Assist people in returning to their home and communities as quickly as possible, but not so soon that it is dangerous.
- Warn returnees of the risks of injuries and health problems in rebuilding from flood damage.

- Ensure flood victims have fair and easy access to information on relief and recovery services and assistance which may be available.
- Provide advice and training to flood victims on ways to quickly rebuild in ways which will reduce future damage from floods.
- Provide appropriate assistance to the elderly and other disadvantaged groups (the ill, orphans, disabled) who need additional assistance to recovery from the flooding.
- Draw lessons from the impact of the floods and enhance measure to prevent or mitigate these impacts in the future.
- Invest in mitigation measures.

In recent years, we have become increasingly aware of the importance of factoring the risk to people, property, the overall economy and the environment from flooding into the planning system, and the role that good planning has in avoiding and reducing such risk that could otherwise arise in the future.

There are many areas, including towns and cities that are already at risk from periodic flooding. The effects of climate change, such as more severe rainfall events and rising sea levels, will increase these risks and may put other areas at risk that may not have flooded in the past. Adapting to the reality of climate change therefore requires us to be even more vigilant in ensuring that risks of flooding into the future are integrated into the planning process, first through the spatial planning process at regional, city and county and local levels, and also in the assessment of development proposals by planning authorities.

The guidelines are required the planning system at national, regional and local levels to:

- Avoid development in areas at risk of flooding, particularly floodplains, unless there are proven wider sustainability grounds that justify appropriate development and where the flood risk can be reduced or managed to an acceptable level without increasing flood risk elsewhere;
- Adopt a sequential approach to flood risk management when assessing the location for new development based on avoidance, reduction and mitigation of flood risk; and
- Incorporate flood risk assessment into the process of making decisions on planning applications and planning appeals.

The Government places a high degree of importance on planning and development measures as a critically important element of its overall strategic approach to adaptation to climate change and flood risk management, building upon its long-standing acknowledgement of flooding in legislation as an important planning issue. We have to aware not only where we live or work but also especially whose are in low- lying areas, near water, or downstream from a dam. Even very small stream, culverts, dry streambeds or low-lying ground that appears harmless in dry weather can flood.

Chapter Four: Livelihood Pattern of Flooded Families

4.1 Livelihood System

4.2 Towards an Application of Livelihood Approaches

4.3 Livelihood Pattern

4.4 Disaster-Coping Strategies

A livelihood system is defined as the numerous bio-physical and socio-economic forces and factors that affect the family. A person's livelihood refers to their "means of securing the basic necessities -food, water, shelter and clothing- of life". Livelihood is defined as a set of activities, involving securing water, food, fodder, medicine, shelter, clothing and the capacity to acquire above necessities working either individually or as a group by using endowments (both human and material) for meeting the requirements of the self and his/her household on a sustainable basis with dignity. The activities are usually carried out repeatedly.

4.1 Livelihood Systems:

Webster's (1997) dictionary defines livelihood as "a means of support or subsistence" (p. 434).

Webster's (1997) dictionary describes a system as "a group of unites so combined as to form a whole and to operate in unison" (p. 735).

A livelihood system is defined as the numerous bio-physical and socioeconomic forces and factors that affect the family (Pomeroy, Gough, Baker & Hildebrand, 2002).

livelihood approaches:

- Livelihoods approaches are a way of thinking about the objectives, scope and priorities for development. They place people and their priorities at the centre of development. They focus poverty reduction interventions on empowering the poor to build on their own opportunities, supporting their access to assets, and developing an enabling policy and institutional environment.

  Core to livelihoods approaches are a set of principles that underpin best practice in any development intervention:
- People-centered

- Responsive and participatory
- Multi-level
- Conducted in partnership
- Sustainable
- Dynamic
- In addition to these principles, livelihoods approaches are based on conceptual framework to aid analysis of the factors affecting peoples' livelihoods including;
- The priorities that people define as their desired livelihood outcomes
- Their access to social, human, physical, financial and natural capital or assets, and their ability to put these to productive use
- The different strategies they adopt (and how they use their assets) in pursuit of their priorities
- The polices, institutions and processes that shape their access to assets and opportunities
- The context in which they live, and factors affecting vulnerability to shocks and stresses.

Livelihood assets

People and their access to assets are at the heart of livelihoods approaches. In the original DFID framework, 5 categories of assets or capitals are identified, although subsequent adaptations have added others, such as political capital (power and capacity to influence decisions). The original 5 categories are:

- Human capital: skills, knowledge, health and ability to work
- Social capital: Social resources, including informal networks, membership of formalized groups and relationships of trust that facilitate co-operation
- Natural capital: Natural resources such as land, soil, water, forests and fisheries

- Physical capital: Basic infrastructure, such as roads, water & sanitation, schools, ICT; and producer goods, including tools and equipment
- Financial capital: Financial resources including savings, credit, and income from employment, trade and remittances

Assets can be destroyed or created as s result of the trents, shocks and seasonal changes in the vulnerability context within which people live. Policies, institutions and process can have a great influence on access to assets – creating them, determining access, and influencing rates of assets accumulation. Those with more assets are more likely to have greater livelihood options with which to pursue their goals and reduce poverty.

Vulnerability context

The vulnerability context within which people pursue their livelihoods includes:

- Trends: such as economic trends, resource trends
- Shocks: such as conflict, economic shocks, health shocks and natural shocks such as earthquakes
- Seasonality: seasonal fluctuations in prices, production, health, employment opportunities

These factors can have a direct impact on people's assets and the options available to them to pursue beneficial livelihood strategies. Shocks can destroy assets directly or force people to abandon or prematurely dispose of them as part of their coping strategies – for example selling off livestock in the face of drought or to pay for medical care. Not all trends are negative or because increased vulnerability – for example new technologies, medical advances or positive economic trends can help improve people's livelihoods.

The vulnerability context of poor people's livelihoods is usually influenced by external factors outside their direct control and is dependent on wider policies,

institutions and processes. To support people to be more resilient to the negative effects of trends, shocks and seasonality, development policy-makers and practitioners can support people's access to assets and help ensure that critical policies, institutions and processes are responsive to the needs of the poor.

Livelihood strategies

Livelihood strategies are the combination of activities that people choose to undertake in order to achieve their livelihood goals. They include productive activities, investment strategies and reproductive choices. Livelihoods approaches try to understand the strategies pursued and the factors behind people's decisions; to reinforce the positive aspects of these strategies and mitigate against constraints.
The choice of strategies is a dynamic process in which people combine activities to meet their changing needs. For example, in farming households, activities are not necessarily confined to agriculture but often include non-farm activities in order to diversify income and meet household needs. Migration, whether seasonal or permanent, is one common livelihood strategy.

A major influence on people's choice of livelihood strategies is their access to assets and the policies, institutions and processes that affect their ability to use these assets to achieve positive livelihood outcomes.

People are often forced to compete for limited resources: Fundamental to livelihoods approaches is the principle that development support aimed at improving the livelihood strategies of some should not disadvantage those of others now or in the future. Social protection programmes can support the extreme poor to achieve their own positive livelihoods outcomes in cases where they are unable to compete with those with greater access to assets.

Policies, institutions and processes

The Policies, institutions and processes (PIPs) element of the livelihoods framework covers the complex social, economic and political context within which people pursue their livelihoods strategies.

Policies, institutions and processes include the inter-related issues of:

- Social relations: The way in which gender, ethnicity, culture, history, religion and kinship affect the livelihoods of different groups with a community
- Social and political organization: Decision-making processes, civic bodies, social rules and norms, democracy, leadership, power and authority, rent-seeking behavior
- Governance: The form and quality of government systems including structure, power, efficiency and effectiveness, rights and representation
- Service delivery: The effectiveness and responsiveness of state and private sector agencies engaged in delivery of services such as education, health, water and sanitation
- Resource access institutions: The social norms, customs and behaviours (or rules of game) that define people's access to resources
- Policy and policy processes: The processes by which policy and legislation is determined and implemented and their effects on people's livelihoods

PIPs operate at global, national regional, district and local levels. Key to understanding their impact on local livelihoods is an analysis of the operation, or absence, of links between micro, me so and macro level.

Given its complexity, there are have been several attempts to 'unpack the PIPs box' to improve understanding of the institutional context, including exploring the links between rights-based and livelihoods approaches, and trying to sharpen our comprehension of the role of governance in sustainable livelihoods. Different organizations have found their own ways to understand the PIPs box and apply that

understanding to their policy and programmers: some include political capital as an additional asset; some put gender at the centre of the framework; others argue that an in-depth understanding of market systems is key to successful livelihoods support.
With the movement of development aid 'upstream' to focus on director budget support, country-led development strategies, macro-economic growth and governance, livelihoods approaches can play an important role in 'ground-thuthing' – ensuring that policies, institutions and processes are informed by, and directly linked to, the complex reality of poor people's lives.

Livelihood outcomes

Livelihood outcomes are the goals to which people aspire, the results of pursuing their livelihood strategies. Livelihoods approaches stress the importance of understanding and supporting poor people's efforts to achieve these goals.
Example of livelihoods outcomes might include:

- Increased income
- Reduced vulnerability
- Increased well-being
- Improved food security
- More sustainable use of natural resources

Livelihood outcomes are important because they help us understand:

- The results of people's livelihoods strategies in a particular context;
- Why people pursue particular strategies and what their priorities are ;
- How people are likely to respond to new opportunities or constraints.

Livelihood principles

The following principles underpin DFID's and others livelihoods approaches:

- People-centered: focusing on poor people's priorities, understanding the differences between groups of people and working with them in a way that is appropriate to their current livelihood strategies, social environment and ability to adapt
- Responsive and participatory: Listening and responding to the livelihoods priorities identified by poor people themselves
- Multi-level: working at different levels to reduce poverty- ensuring that micro level reality informs development of policy and an effective enabling environment, and macro level structures support people to build on their own strengths
- Conducted in partnership: with the public and private sector
- Sustainable: balancing economic, institutional, social and environmental sustainability
- Dynamic: recognizing the dynamic nature of livelihood strategies and responding flexibly to people's changing situations.

Since guidance o livelihoods approaches were published in the late 1990s by DFID, other organizations have developed their own methodologies and approaches. Some have added new principles such as:

- Building on strengths: working to develop poor people's strengths – their skills, knowledge and resources, rather than focusing solely on their needs
- Holistic: understanding the complex reality of poor people's livelihoods rather than taking a purely technical or sectoral approach

4.2 Towards an Application of livelihood approaches Approaching livelihood with a threefold focus

Focus I is on the key elements in the context of a livelihood system. Focus II and III concentrate on the core of a livelihood system. While focus II is on the asset portfolio, focus III concentrate on the decision making place in which people develop

and /or adapt their livelihood strategies and strive for outcomes with their own perception of inner and outer realities of their livelihoods. External support becomes meaningful, if they succeed in improving their livelihood strategies more sustainability.

Analyzing the context of a livelihood system

Focus I, represented graphically on the preceding page, invites exploration of four crucial dimensions of the context of a livelihood system. Four key questions are used to address these dimensions.

Risk and Vulnerability: renders peoples livelihoods vulnerable

Risks and shocks, adverse trends and seasonality have a bearing on people's Livelihood. Yet, a livelihood becomes truly vulnerable when it lacks adequate coping or adapting capacities on the micro-level of livelihood. Compare. The level of these capacities is explored with focus II (asset portfolio) and focus III (livelihood strategies). These two focuses help to clearly the fooling question. " should the poverty reduction measure tackle an observed rick and reduce an assessed vulnerability in the context of poor people's livelihood, or should they target the core of livelihood and aim to increase people's coping capacity?.

4.3 Livelihood Pattern:

This policy framework, and especially the newly emerging coastal policy process, aims to directly address the vulnerabilities that comfort poor coastal communities. How well does it does it reflect the distinctive livelihood patterns of coastal areas? The stability of people's livelihoods depends largely on their vulnerabilities and the resources that they depend on. In the coastal zone the following main livelihood patterns can be distinguished.

- The large absentee landowners are the main local power brokers. Their livelihood pattern is one of constant adaptation to the most profitable economic activities. Many have left the agriculture sector and moved into other activities. With access to institutional capital, fisheries and business expertise, the international market, and the political power structure, they have

found shrimp cultivation a golden opportunity to get rich quickly. The negative environmental impacts of their activities do not affect them as they live elsewhere.

- For large farmers who still live in the coastal zone, most often inside a polder, agriculture has become less profitable due to rising cost of inputs, including labor, and stable output prices, particularly for rice. These large farmers see the dilemma of what to do. Some have moved into shrimp cultivation while others still continue with farming and some others have moved into sectors such as transportation (often in conjunction with farming).
- Study area has a diminishing number of small and marginal famers as well as tenants. It is quite likely that the same applies to most of the coastal zone. Existing input and output prices, lack of control over water level, increased salinity, and drainage congestion have made their small and marginal farms economically unviable, and in some cases, unproductive. Many have sold their land and diversified their livelihoods into non farming activities.
- Households send their sons to the city or abroad. Tenant farming, too, has diminished because of the unfavorable tenancy arrangements. In spite of the official tenant laws, landlords, without incurring any costs, still claim two thirds of the output as land rent instead of one third.
- In the past, wage laborers in the study area, would have worked as agricultural laborers, either on a contract or a daily basis. The number of permanent contract laborers has decreased, and large farmers now employ more casual labor. Nowadays, agriculture is no longer the mainstay by moving into non farming activities as well as self-employment opportunities. Employment opportunities have increased considerably, but labor supply seems to outstrip the demand in many places. Until about a decade age, migrant labor from the north would assist during the harvesting season. There is now a reverse flow of laborers seeking work outside the areas.

- The category of self-employed persons has increased considerably. The main driving force is the availability of credit through NGOs. Another factor is the increased road network, which has created opportunities for road transport as well as agricultural and nonagricultural activities. This catagory includes women who are involved in various home-based income-generating activities as well as catching shrimp fry in the rivers. Many women and girls are involved in this activity, sometimes as wage laborers, sometimes as self-employed persons.
- Fisheries have always been a sizeable group in Polder 55/1 and throughout the coastal zone. Before the emboldening, they used to fish in the rivers and the channels of the island. Since the mid-1970s the common resource fish stock inside the polder has decreased considerably and the fishers now go fishing in the adjacent rivers. From the early 1990s culture fisheries in the channels of the polder have increased. While the elite control this resource, the local fishers have benefited marginally from the additional work this provides to them.
- As such, it is clear that the livelihood patterns in coastal areas are changing, with traditional agricultural activities declining and new opportunities emerging. The exclusive focus on agriculture as the main source of livelihoods is no longer appropriate and coastal policies need to ensure that coastal communities, especially the poor, are able to access new opportunities that emerge as the coastal area is more effectively integrated into the rest of Bangladesh. They should also ensure that the many effective coping strategies that local people have developed to deal with the multiple vulnerabilities that they face are supported.

Water resources

Because the coastal zone is a delta, water resources are considerable. The most visible resources are the rivers. Over the last few decades the salinity of the river

water has steadily increased, mainly because of a reduced inflow of sweet water in the dry season. This has increased the salinity of the land and the groundwater. The rivers provide an easy means of transport as well as various fisheries resources. The Bay of Bengal features key spawning ground as well as rich offshore marine habitats.

The rivers and internal channels are usually government-owned land (called Khas Lan). Nevertheless, many farmers with land adjacent to the channels have appropriated the land/or water resources of the channel for their private use. In line with the prevailing law, the Ministry of Youth and Sports leases out stretches of channel for fisheries.

Some parts of the coastal zone have low-lying areas, called beels. These used to produce a wide variety of common resources such as reads, aquatic plants, snails, and fish, which were important resources to support livelihoods of the poorer sections of society. In many places over drainage and encroachment have reduced the size of these beels and common access, beneficial particularly to the poor, limited.

The quality of the groundwater varies. In some areas the shallow 10-30 top layer is sweet, followed by a layer of saline groundwater that can extend up to several hundred feet. The deep water layers are again sweet. Groundwater is used for drinking and domestic use, but not normally for irrigation as Sweet River water is available for part of the dry season.

Local Institutions

In most of the coastal belt, the informal village power structure is the single most important institution. This is particularly the case with new land until the area is officially recognized and brought under the official administration. This recognition can take many years and, until that time, local power brokers rule.

Bangladesh has number of political parties and these are well represented in the coastal area. Although technically political parties are formal institutions, at local levels they function closer to the informal power structure. The case study suggests that control over local resources is often more important to the power brokers in the area than party politics. To secure and control access, groups of different parties forget about their differences and untie.

The Union Parishad (UP) is the lowest elected body in Bangladesh and with issues that directly affect local people. Elections for the UP are keenly contested. Traditionally, local elite occupy most UP seats. From 1997, the UP has three seats reserved for women and a few are elected directly to general seats as well. The UP chairman and members protect factional and or private interests.

Until the mid-1980s, few NGOs were active in the coastal zone, but since then, their number and coverage has increased. In Polder 55/1, there are national NGOs such ad ASA, BRAC and the Grameen Bank, and smaller local NGOs and internationally funded activities such as Danida's water supply and sanitation program. The consensus is that NGO activities have helped reduce the severity and extent of poverty.

In many parts of the coastal zone, including Polder 55/1, private commercial business is now well established. Agricultural inputs such as seeds, fertilizer, and pesticides are widely available, though often too expensive in the eyes of the farmers. The commercial sector has invested heavily in road and river transport, contributing to overall development of the zone.

In its Fifth Plan, the Government identifies the coastal zone as neglected, and sets goals to rectify this. The effectiveness of government agencies in coastal areas such as study area has been limited, however, reflecting poor coordination between different agencies and the problems of staffing posts in what are regarded ad remote and low prestige areas.

4.4 Disaster-coping strategies:

The main disaster coping strategy of almost all groups in the coastal zone is diversification of income sources. Instead of households depending on one or two activities, they now spread their working age adults over different activities, and if

possible, localities, thereby ensuring that problems in one area of their livelihoods has a lesser impact on them.

To cope with the possible damage of storms, people protect their homestead by planting trees around it. That strategy is fairly effective when it comes to protecting homesteads and houses, but it is insufficient of protect crops against strong winds.

Farmers have tow strategies to cope with the increased salinity. The first is to plant boro late to avoid the time when water is most saline. In practice, the boro crop then moves into the traditional aus seasons and is therefore referred to as braus (as Dr. Hugh Bremmer Phrased it). In cases where salinity is extreme, farmers drop boro altogether and only produce aman.

Since the 1970s many cyclone shelters have been built in the coastal zone. Initially people were reluctant to use them for cultural and practical reasons. In the last few decades, these shelters have been made multipurpose buildings and are therefore easily accessible in time of need. Also, arrangements have been made for women and men to stay in separate parts of the building during a cyclone.

Furthermore, the cyclone warning system has improved and now more people go to the shelters when warned by radio of and approaching cyclone. This effective disaster response system has lessened greatly the specter of the destruction of life and livelihoods during the immediate time of the cyclones.

The main man-made vulnerability is misuse of power by local lords and government officials. This often occurs in relation to shrimp cultivation. In many areas large absentee landlords start shrimp cultivation on new land outside the water and poverty: the realities embankment, often in and around the major outlet channels of polder. This has resulted in drainage congestion inside the polder. The next step is then to start shrimp ponds inside the polder itself. For this, they allow saline water into the area, upsetting agricultural production.

Courageous farmers and some government officials have tried to challenge the stranglehold of the local elite over water management in the polder through the courts. The elite have fought back and to date their use of all sorts of pressure tactics have ensured that the power brokers remain in full control. Those who have challenged the local power structure have usually ended up with more trouble. Most of the poor therefore cope with the vulnerability of misuse o power by lying low, keeping their mouth shut, and minding their own business.

These coping strategies are a key feature of life in coastal areas on which actions to reduce coastal vulnerabilities can be based. Key government programs such as empolderment and cyclone shelters can be very effective, as can programs such as tree planting to protect homesteads, and actions to reduce the institutional and governance weaknesses of coastal areas.

Chapter Five : Disaster Management in Bangladesh

5.1 Disaster and its Classification

5.2 Related Concepts of Disaster

5.3 Common Hazards in Bangladesh

5.4 Disaster Management in Bangladesh

5.5 Role of DMB in Disaster Management program in Bangladesh

5.6 Role of NGOs in Disaster program in Bangladesh

5.7 Mainstreaming Risk Reduction-The Strategies

5.8 Government and NGOs relationship on Disaster Management

Bangladesh is a low-lying deltaic country in South-Asia formed by the Ganges, the Brahmaputra and the Meghna rivers. It is a land of about 144 million people within its 147,570 sq.km territory. More than 230 rivers and tributaries have made this country a land of rivers. Diversified cultural heritage, archaeology sites and natural beauty of the country have made this land attractive. The country has the world's longest unbroken sandy beach of 120 km. sloping gently down to the blue water of the Bay of Bengal. Around 52% of the civilian labor force of the country is engaged in agriculture and 14% is engaged in industry. The geographical location, land characteristics, multiplicity of rivers and the monsoon climate render Bangladesh highly vulnerable to natural hazards. The coastal morphology of Bangladesh influences the impact of natural hazards on the area. Especially in the South-eastern area, natural hazards increase the vulnerability of the coastal dwellers the process of social and economic development.

5.1 Disaster

Disaster is an unexpected man made or natural event that causes a lot of sufferings and overwhelm a community in a way that the affected community will not be capable alone to cope with such event and they need help from local, national, and international level.

We find the following features of a disaster:

- it is an unexpected event;
- it may be man-made or natural;
- it causes a lot of sufferings;
- it overwhelms a community;
- the affected community cannot cope with such even'";
- the affected community needs local national and international aid to cope with such event.

Classification of Disaster

Disasters may be classified into two classes:

1. Natural Disaster: Flood, earthquake, cyclone, river bank erosion, tidal bore etc,
2. Man-made Disaster: War, pollution, terrorist attack, fire, inflation etc.

5.2 Related Concepts of Disaster

Hazard

Hazard is an event that has potentiality to cause harm. It may be man made or natural. It is a phenomenon or situation which has the potential to cause disruption or damage to people, their property, services and environment. Such as flood, earthquake, terrorism, fuel shortage etc.

We can measure hazards by following way-

- Hazards to the people: death, injury, stress and trauma
- Hazards to goods: property loss and damage both to individual and state
- Hazards to environment: loss and damage of flora and funa
- Hazards to development: infrastructure damage and loss, loss of livelihood etc.

Risk

Risk is sometimes taken as synonymous with hazards but risk has additional implication as it also means increased livelihood of a particular hazards actually occurring. It is the probability or threat of damage, in1ury, liability, losses or their negative occurrence caused by external or internal vulnerabilities and which may be neutralized through premeditated action. Risk may be measured applying the following formula:

Risk: (Probability of event occurring)x(impact of event occuning)

Vulnerability

Vulnerability is a state or condition of a community created by man made ornatural disaster wherever the people can noteam their normal livelihood. It may bemeasured applying the following formula:

Vulnerability = Hazard-Coping.

Capacity

Capacity is the cumulative ability f a person to fake action when necessary based on a number of factors: cognitive faculties, physical characteristics, personality factors, financial and other resources, knowledge, experience, link to others and opportunity It is the ability cope with a threat or resist the impact of a hazard. It is those positive conditions or abilities which increase a community's ability to deal with hazards.

Disaster: Hazards ×Vulnerability

Disaster: Damage/capacity building

Disaster Response

Disaster response is the sum total of actions taken by the people and the institutions to face a disaster.

Recovery

Recovery activities refer to actions by disaster victims that enable them to begin the process of rebuilding their homes, replacing property, resuming employment, restoring their business, rebuilding public infra-structure and mitigating future disaster losses.

Shows that a disaster happens only if a hazard meets a vulnerable situation based on idea that a number of factors influence vulnerability to disaster

HAZARD	DISASTER	VULNERABILITY
Tigger events	**Elements at Risk**	**Vulnerable Conditions**
- Earthquake - High wind - Flooding -Volcanic eruption - Landslides - Drought - Sand storm	Physical surroundings. I louses, water supplies. Infrastructure, crops. Livestock, industries -Economic, savings, jobs - Natural environment -Social group and network, family	- Economic: fragile livelihoods, no credit and saving facilities - Natural: access to natural resources - Constructed: structural design; location of Houses on Marginalized and - Individual: lack of skills or knowledge; lacking opportunity due to gender or social discrimination, age (elderly or very young): HIV or AIDS - Social: disorganized or fragmental society; bad leadership - Cultural: fatalistic attitude towards disaster

Table 5.2.1: Chart of Hazard, Disaster and Vulnerability

5.3 Common Hazards in Bangladesh

Bangladesh is exposed to natural hazards. Such as Hoods, river erosion, cyclones, droughts, tornadoes, cold waves, earthquakes, drainage congestion/water logging, arsenic contamination, salinity intrusion etc. But the nature of occurrence, season, and extent of effect of the hazards are not the same in all places. Discuss about these hazards in brief is given below-

I. Flood

Floods are annual phenomena with the most severe occurring during the months of July and August. Regular River Hoods affect 20% of the country increasing up to 68% in extreme years. The Hoods of 1988, 1998 and 2004 were particularly catastrophic, resulting in large-scale destruction and loss of lives. In the year 2000, Bangladesh faced an unusual flood over it's usually flood free south western plain, which also caused loss of life and, massive damage to property. This devastating flood had an enormous impact on the national economy, in addition to causing hardships for people, and disrupting livelihood systems in urban and rural areas.

II. Cyclones and Storms Surges

Tropical cyclones from the Bay of Bengal accompanied by storm are surges are one of the major disasters in Bangladesh the country is one of the worst sufferers of all cyclonic casualties in the world. The high number of casualties is due to the fact that cyclones are always associated with storm surges. Storm surge height in excess of 9 m is not uncommon in this region.

III Tornado

This topical removing storm with far greater intensity than cyclone, often unpredictable and local/ed. usually hits during March- April every year. Loss of property due to tornadoes is often higher than the number of deaths. In 1988. 500 people were wounded and 500 houses collapsed in a tornado in North-central Bangladesh. The Bangladesh disaster forum reported that during 1999 there were at least 11 tornadoes reported in the media that killed five people; injured more than 400 people destroyed or damaged more than 55.000 houses and killed more than 600 animals. Nor'easter storms also have equally devastating effects.

IV. River Bank Erosion

Rivers in Bangladesh are morphologically highly dynamic. The main rivers are braided, and form islands or chars between the braiding channels. A study concluded in 1991 reported that: out of the 462 administrative units in the country. 100 were subject to some form of riverbank erosion, of which 35 were serious, and affected about 1 million people on a yearly basis.

V. Earthquake

Except for a number of sporadic and mild earthquakes (20-25 times a year) there has not been a major earthquake in Bangladesh in its recent history. However Bangladesh is situated close to three faults one in Assam. Tripura and Sub-Dauki, which makes it a potent earthquake zone in 150 years. Bangladesh has experienced 7 large tremors.

VI. Drought

Drought is experienced during the months of March- May due to lack of rain. This often unlashes a severe heat wave and affects agriculture and people. Poor people are affected by lack of employment and income during the period, particularly in the northern districts. Locally this condition calls Monga. During 1988-99 there was a dry spell of 132 days at stretch without any rainfall. This was considered are cord in last 50 years.

VII. Arsenic Contamination

The massive effort of providing safe drinking water for over 90% of its population through the use of hand pumps has recently been offset by the reports of arsenic contamination of ground water in large parts of Bangladesh. Arsenic pollution in drinking water now figures as the most dreadful public health disaster in the country According to one report. 5c; of the 64 districts of Bangladesh are under

the Arsenic threat with an estimated 20 million people assumed to be drinking contaminated water and another 70 million potentially at risk. The waters in the southwest and southeast parts of Bangladesh are highly contaminated with arsenic.

VIII. Salinity Intrusion

Saline water intrusion is highly seasonal in Bangladesh; in winter months the saline front begins to penetrate inland, and the affected areas rise sharply from 10percent in the monsoon to over 40% in the dry season. Coastal district such as sathkhira, Khulna, Bagerhat, Barguna, patuakhali. Bansar are the victims of salinity intrusion.

IX. Tsunami

Before the Asia Tsunami 2004, a few Bangladeshis ever thought that Bangladesh was vulnerable to tsunami hazard, considering the state of tsunami vulnerability and potential seismic sources the coastal belt of Bangladesh. Geological Survey of Bangladesh has divided the Bangladesh coastal belt into three zones:

a. Tsunami vulnerable zone-I (Chittagong-Teknaf coastline)-Most vulnerable)

b. Tsunami vulnerable Zone-II (Sundarban-Barisal coastline) – Moderately vulnerable.

c. Tsunami Vulnerable Zone-III (Barisal-Sandwip estuarine coastline) - Low vulnerability.

X. Fire Hazard

Fire incidents in the country are increasing at an alarming rate especially in urban area for unplanned urbanization. BSEC Bhaban firing is a great example for that. In 2004 alone, a total of 7,140 fire incident occurred which caused damage to property worth more than Tk. 200 cores. Besides this Nimtali Fire Incident is one of the tremendous examples of fire hazards in 2010.

5.4 Disaster Management in Bangladesh

We can avoid manmade disaster if we are conscious and sacrifice minded. But we cannot prevent natural disaster, It will occur by its own motion. So it will cause the damages of human life and resources. Therefore, disaster management indicates the disaster risk reduction of lives and resources ho human being and emergency response to cope with disaster. There are three phases in disaster management as follows:

1. Pre-disaster phase
2. During disaster phase
3. Post disaster phase

1. Pre- disaster phase

Disaster preparedness is taken at pre-disaster phase in disaster management. Disaster preparedness plays an important role to reduce the losses or damages of lives and resources in disaster. Preparedness means minimizing the adverse effects of a disaster through precautionary actions and measures.

The functions of pre-disaster phases as follows

- Awareness building among the people about disaster.
- Formation of disaster management committee.
- Preparing a map mentioning the risks and resources.
- Train up the volunteers and local facilitator team.
- Establishing shelter Centre.
- Constructing the houses according to building code.
- Setting disaster information Centre.
- Dressing the river bed.
- Tree plantation

2. During Disaster phases

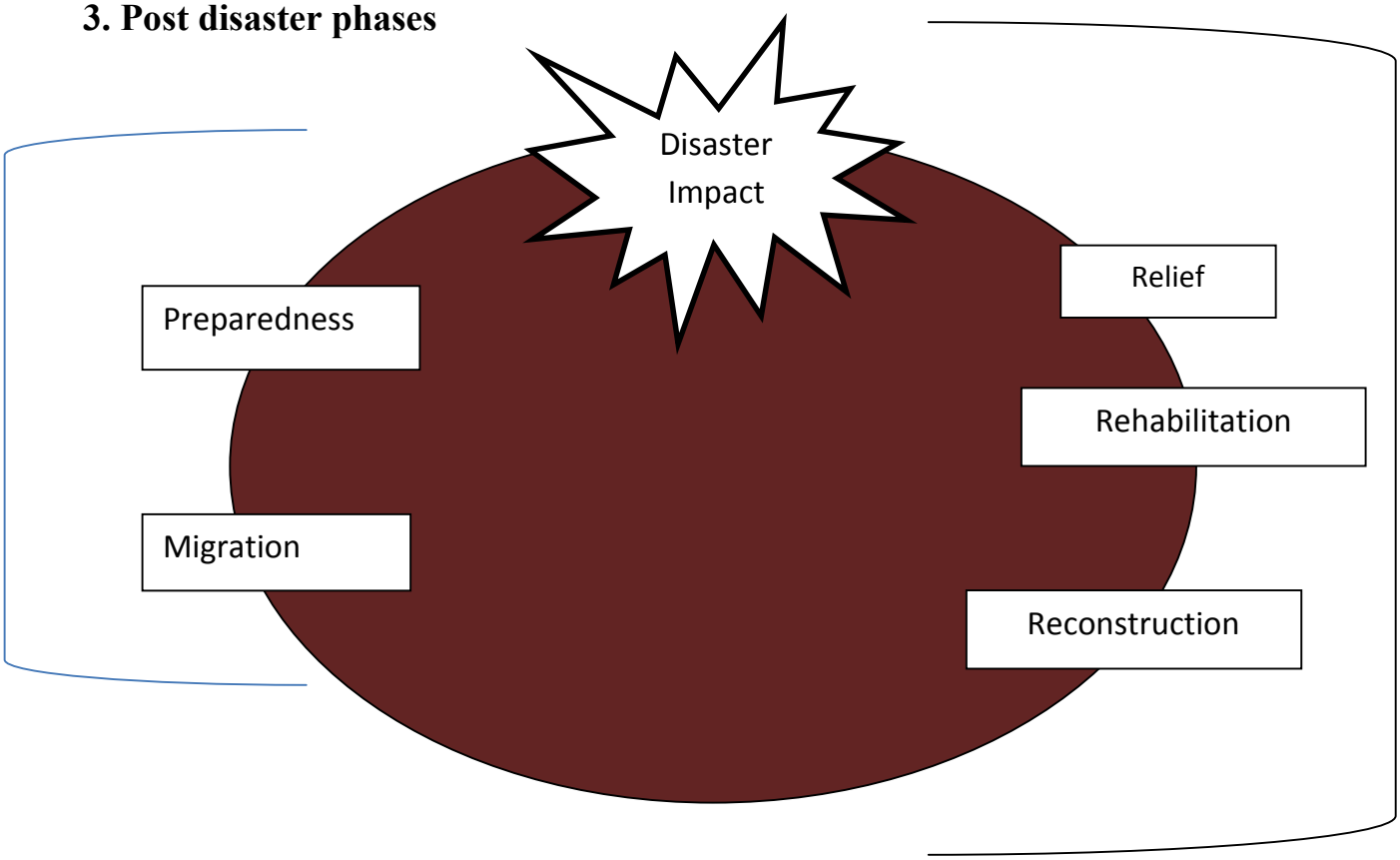
Evacuation is the main function of disaster management during disaster. Trained up and skilled personnel's (professional or volunteer) will participate this evacuation program' Evacuation team may use helicopter pr boat. There will distribute various instruments among the victims to survive. The team will evacuate the followings

- Children
- I ageing people
- Women
- The livestock
- The poultry
- Food
- Agro-crops etc.

The evacuated people must be provided the following things

- Food
- Drinking water
- Medicine
- Psychological support
- Security both people and their resources etc.

3. Post disaster phases



Post-disaster recovery phase

Source: ADPC, Internet

Figure 5.4.3: Chart of Post Disaster Phases

Disaster affected people become vulnerable. They need help to earn their normal livelihood. The disaster management committee with volunteers will ensure that assistance. The functions of disaster management in post disaster are as follows:

- Sending back the evacuated people their home from shelter centre
- Providing relief (such as food, drinking water, medicine, cloth etc.),
- Rebuilding the collapsed houses,
- Repairing the damaged roads, schools, Madrasha and markets etc.
- Creating income generating programs where the day laborer will work,
- Distributing seeds and agro-instruments among the farmers,
- Encourage and motivate the farmers to cultivate hybrid and early matured food crops etc.

5.5 Role of DMB in Disaster Management program in Bangladesh

In the backdrop of the gaps found in the actions taken to cope with the cyclone and storm surge of 1991, the need for creation of a separate Bureau under the then Ministry of Relief and Rehabilitation was strongly felt. Hence with help of UNDP, a project styled "Assistance to Ministry of Relief in coordination of Relief and Rehabilitation was undertaken for implementation. And in the light of the recommendations made in the project, the Disaster Management Bureau was established on 1st April, 1993. One Additional Secretary of the Government headsthe Bureau as Director General.

The DMB is a dynamic professional unit to perform specialist, functions, workingin close collaboration with the district-and thana-level authorities, and theconcerned line ministries, under the overall authority of a high-level inter-ministerial committee.

Specific tasks include

i) Duringnormal time'

- Developing a National Disaster Plan, and associated practical guidelines for those responsible for its implementation;
- Helping line ministries and agencies to develop and test their own contingency plans;
- Working with local authorities, BDRCS/CPP, NGOs and others to help union council and village communities in high-risk areas to develop their own action plans and increase their own coping capacity;
- Collaborating, with existing training institutes, training materials development units, and NGOs already engaged in relevant training activities, to coordinate and promote the production of curricula and relevant training materials for various target groups;
- Establishing arrangements for the mobilization of additional personnel for the EOC and to assist local authorities in the field, when required;

- Working with the Planning Commission and concerned line agencies to increase awareness of disaster risks and ensure that such risks, and possibilities to reduce them, are considered and appropriate measures incorporated in development planning;

- Monitoring and reporting to the Government/Parliament on the risks faced; the vulnerability of people and economic assets to known hazards; the status of preparedness in the country; and any delays/bottlenecks in the implementation of disaster prevention/preparedness programs and projects.

ii) During an emergency'

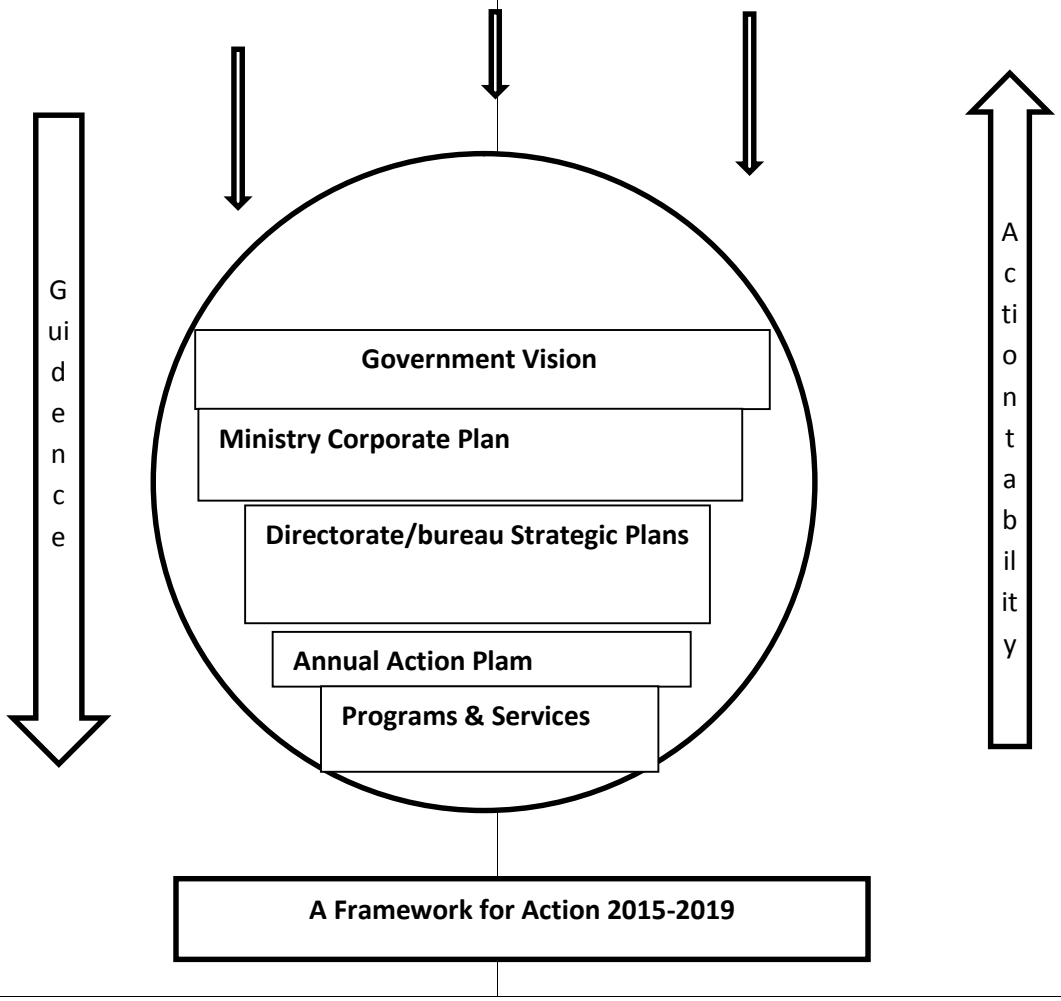
- Ensuring the effective dissemination of appropriate warnings, of floods and cyclones, through collaboration with BMD, BWDB, CPP, Radio, TV, and local authorities in particular;
- Activating and operating the national Emergency operations Centre (EOC, equivalent to a control room); receiving and analyzing information andmaking specific recommendations for actions; arranging rapid reconnaissance and assessment missions, where needed; providing advice and guidance to local authorities in relation to damage and needs assessment, and relief and rehabilitation assistance operations; etc.
- Providing secretariat services and expert to the IMDMCC, and helping to ensure coordination between line agencies and between Government and NGOs in relation to relief and short-term rehabilitation activities;
- Monitoring the progress of rescue, relief and short-term rehabilitation activities, identifying problems and unmet needs, and taking action to resolve/meet them or bring them to the attention of the IMDMCC for resolution; providing information to and liaising with ERD concerning requirements for international assistance, and with Molnfo;

iii During post-disaster, 'recovery'

- Cooperating with the Planning commission and line agencies, as required, in compiling data on reconstruction requirements and in coordinating the preparation of an integrated reconstruction program;
- Ensuring that risk reduction measures are built into all reconstruction programs as much as possible;
- Undertaking a final evaluation, or at least a "post mortem", on the emergency operation, drawing lesson and feeding them back to the IMDMCC and into training activities and up-dated guidelines.
- These tasks are significantly different from those of a normal government department on line agency. They require extensive, collaboration with a number of existing ministries and line agencies, and with a variety of training institutions, professional bodies. NGOs and voluntary organizations at all levels' A non-bureaucratic approach is essential. Particularly in respect of the tasks at union and village levels, and need is to facilitate and act as a catalyst, helping diverse groups to work together, within a mutually agreed framework.

Strategic Drivers:

Global Drivers	National Drivers
Millennium Development Goals (MDGs)	Poverty Reduction Strategy Paper (PRSP)
International Strategy for Disaster Reduction (ISDR)-National Platforms	Government of Bangladesh and United Nations Common Country Assessment (CCA)
World Summit for Sustainable Development (WSSD)	National Workshop on Floods 2004 Recommendations
World Conference on Disaster Reduction (WCDR)	United Nations Development Assistance Framework (UNDAF)
United Nations Framework Convention on Climate Change (UNFCCC)	



Source: Disaster Risk Reduction Begins at School, CDMP. 2009

Table 5.5.1: Chart of Strategic Drivers

5.6 Role of NGOs in Disaster Management programs in Bangladesh

The history of involvement of the NGOs in the disaster management programs Bangladesh shows that large, NGOs, which are internationally known for their innovative and effective socio-economic development programs, began purely as relief and rehabilitation operations.

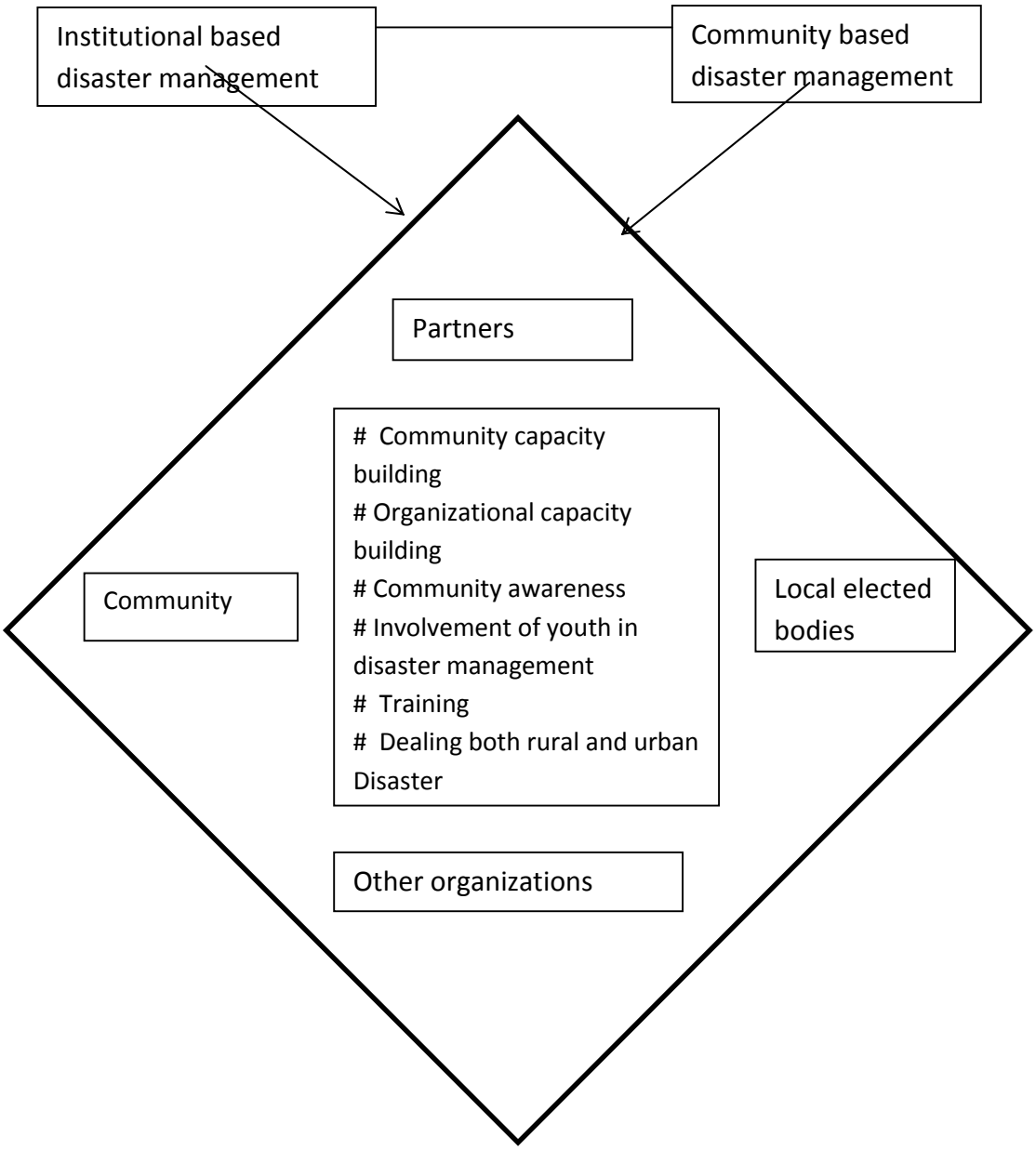
After the liberation war in 197l there was a desperate need for shelter, food, clothing and medical support for millions of people, BRAC, the largest NGO in the world Gonoshasthys Kendra (GK) and CARITAS were born to provide emergency survival relief programs, International NGOs like OXFAM, CONCERN, Lutheran world Federation started their operation in this part of world emergency relief which continued for years. The devastating floods of 1974 followed by the faminenec estimated the continuation of relief and rehabilitation operations. It was only during the second half of the seventies decade did the NGOs start initiating their development projects on education, credit and social awareness program through the target group approach etc.

In 1984 the monsoon floods affected the western part of Bangladesh and flashflood hit the north-eastern part. The divesting UrirChar Cyclone of 1985 attracted massive attentions from within and outside the country. The floods of1987 affected the entire west and north-western parts of Bangladesh causing severe damage' Then came the floods of 1988, the worst in the recorded history of Bangladesh 70% of the country was submerged affecting 60 million people. Every single NGO, by then 800 in number, participated in emergency survival relief operations' Next year in 1989, the high impact tornado of Saturia attracted almost all the large NGOs in the emergency part of the relief and rescue operations. NGOs sprung into action after the devastating

cyclone in the south-east coast of Bangladesh in April 1991. A massive emergency survival relief program was followed by very long term rehabilitation programs.

Interventions of NGOs in post-disaster response programs, particularly in the unprecedented floods of 1988 and the cyclone of 1991 were done on adhoc basis. Since there was no contingency plan and they were not prepared for massive and long term rehabilitation operations, their normal development programs were severely affected. Only at this stage did the NGOs start the pre-disaster preparedness program and that too aimed at developing the capacity of their staff members for responding to trjjg needs of the people very efficiently, effectively and within the shortest possible time Major NGOs e.g. CARE, BRAC, CARITAS,
PROSHIAK, CONCERN, OXFAM started the disaster management training program for their staff members. Bangladesh Development partnership Centre, South Asian Disaster Management Centre and Bangladesh Disaster preparedness Centre (BDPC) were born to provide training to representatives from small NGOs in disaster management. Senior management level staffs from large NGOs were sent to training institutes like Asian Disaster Preparedness Centre (ADPC) in Thailand and Royal Military college of science at crane field, UK.

Care-Bangladesh and most of the NGOs maintain the following framework for disaster risk management.



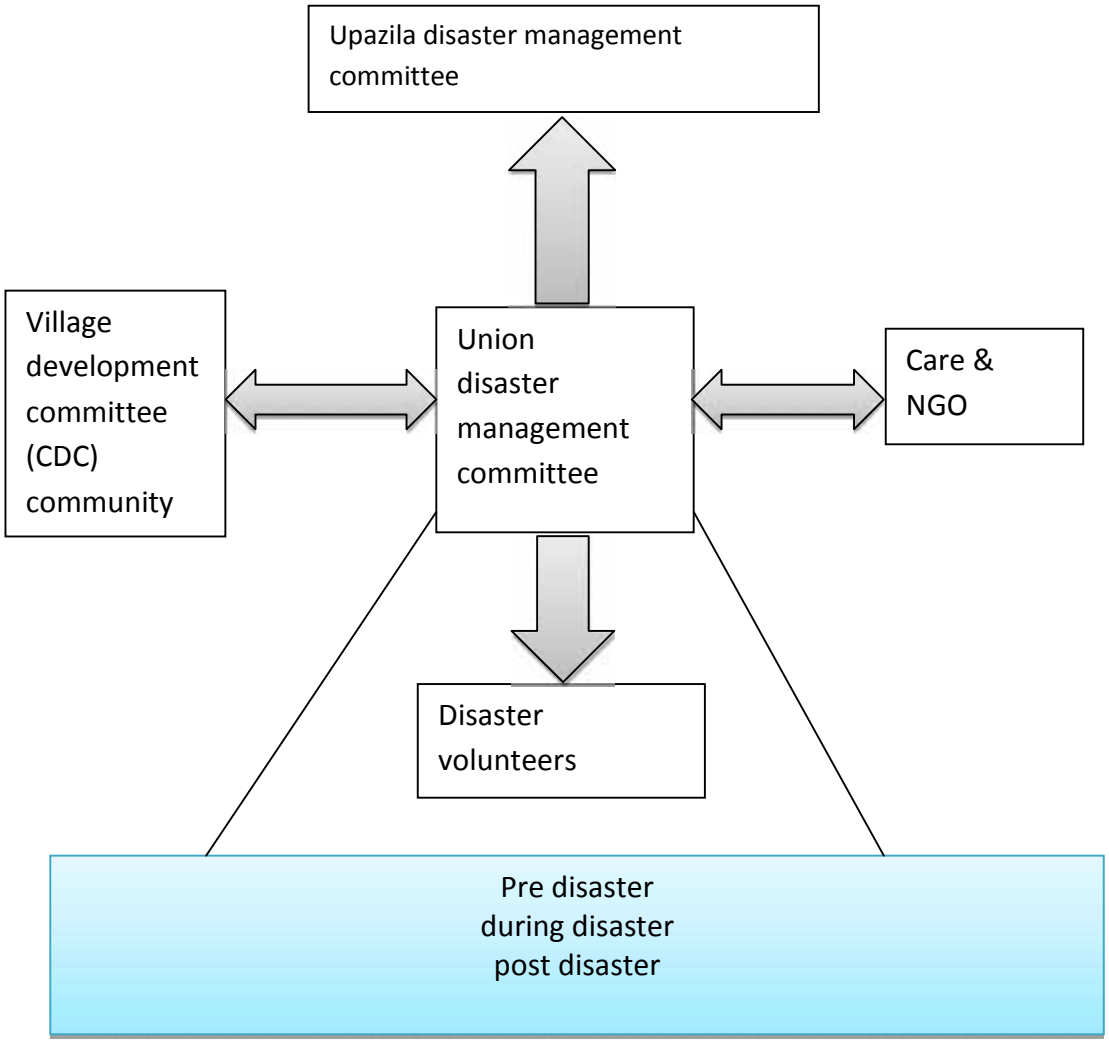


Figure 5.6.1: Framework for Disaster Risk Management & Response Team

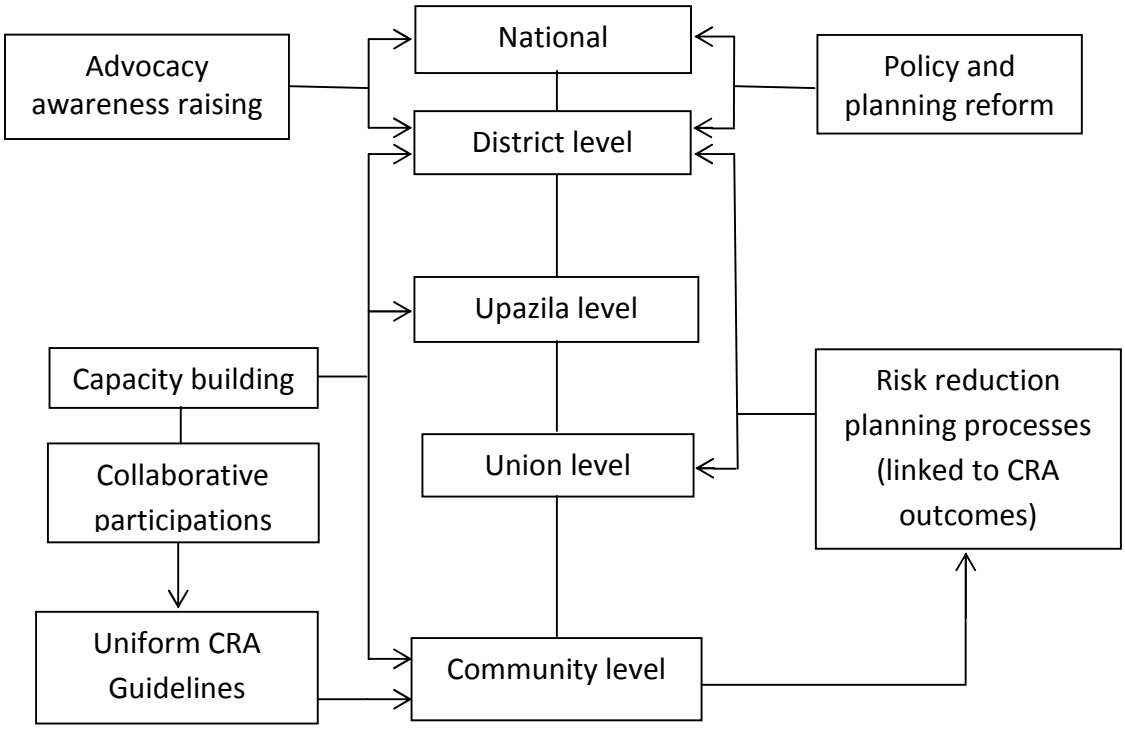
Some of the NGOs have appreciated that the potential capacity of the poor to live with disaster has to be enhanced; the coping mechanisms and survival techniques, practiced over hundreds of years, should be strengthened: investment in socioeconomic development programs should be aimed at the reduction of vulnerability to disasters' OXFAM has started providing support to their partner organization(GUK in Gaibandha, MMS in Chowhali) to integrate disaster preparedness components into the development programs. CCDB in association with IVS completed a program fro capacity enhancement of the poor in disaster managementin the island of Moheskhali in cox's Bazar. CARE has just formulated theirstrategy in developing public awareness under their Flood prolong pilot project

inthe thanas of Ulipur and Madan under the districts of Kurigram and Netrokona respectively, Rangpur Dinajpur Rural Services (RDRS) has designed their education, cultural and other development programs incorporating disasterpreparedness components.

Bangladesh Disaster Preparedness centre (BDPC) with the financial support from PRIP Trust has taken a pioneering role in the arena of family and community level disaster preparedness. It has trained over 150 indigenous NGOs from high disaster risk areas and encouraged them to form Disaster cells within their organizations. It has conducted a study in the island of Hatiya and planned an intervention project for family and community level disaster preparedness by involving all actors in community. They include imams of mosques, teachers, TBAs and Union parishad members' The emphasis of the program is on one to one contact (Inter personal communication) similar to the one followed by BRAC in their oral Therapy Extension Program (OTEP). The project is aimed at the integration of disaster preparedness activities into the normal day to day activities of an individual and the community.

5.7 Mainstreaming Risk Reduction- The Strategies

Mainstreaming risk reduction efforts within government, NGOs and private sector is viewed as being the key to achieving sustainable all hazards risk reduction interventions across the whole country. In Bangladesh mainstreaming is seen in much the same light down and bottom up briefly within figure as poverty reduction interventions. These in that it is the outcome of many to pare summarized below and articulate briefly within figure



Mainstreaming Strategies (Source: Rector, 2006)

Figure 5.7.1: Mainstreaming Strategies of disaster

Advocacy

Awareness rising among Political. Senior Policy and Government Department officials' Media and Academic Institution is a priority strategy for building knowledge and understanding on the benefits of risk reduction und the roles these organizations play in implementing risk reduction programs.

Policy and planning Reform

A significant review of disaster management and being undertaken to ensure that they facilitate comprehensive risk reduction culture.

Capacity Building

This strategy has targeted a complete review of the roles and responsibilities of disaster management committees (DMCO at all levels to ensure they reflect risk reduction as well as emergency response functions. A national training curriculum is

being developed to ensure that committees receive capacity building training to ensure they understand and can fulfill their functions effectively.

Planning Frameworks

Disaster management planning at all levels is being significantly overhauled to ensure that DMC plans accommodate risk reduction mainstreaming at all levels.

Uniform CRA Guidelines

Uniform CRA processes are being established to ensure consistency in the conduct of community risk identification and compatibility with the risk reduction planning processes of the respective DMCs. The guidelines also have steps to ensure strong linkages with scientific analysis information.

5.8 Government and NGOs relationship on Disaster Management

The NGOs simultaneously with the Government operate activity' To ensure coordination and so avoid duplication of rescue, relief, rehabilitation and disaster related training and public awareness building activities coordination between government and NGO is essential. NGO representatives are, therefore, included in different Disaster Management committees at a, levels. The Hon'ble Prime Minister in the above noted circular on 28th September requested NGO to operate' Disaster Management activities during disaster period close touch with the District, Thana and union Disaster Management Committees and the control Rooms set up for the purpose at different levels. The Hon’ble Prime Minister has instructed the Deputy commissioners/TNOs/Officers-in-charge of control Rooms to give specific suggestion within two hours of report of a NGOs to them' It was cautioned that concerned officer will be made liable for any type of delay in giving relevant instructions to the NGOs.

The same circular of the Prime Minister's office instructed NGO Affairs Bureau to keep constant touch with the NGOs and ensure coordination of their activities. It was also instructed that NGO Affairs Bureau should collects facts on NGOs activity on Relief and Rehabilitation work and report to the Ministry of Disaster Management & Relief and the Disaster Management Bureau for maintaining National Accounts of relief and rehabilitation activities. The NGO Affairs Bureau is also instructed to collect facts on Training and public Awareness activities on Disaster Management activities and report to Ministry of Disaster Management & Relief and the Disaster Management Bureau (DMB). The DMB is to print these facts in book and arrange wide.

Chapter Six: Discussion on findings

During the study it has been found that the male respondents were more than the number of female. As these area is based on agriculture male are front person. In the study we can see that the male are 62.5% while the female are 37.5%. It proves that the male are mostly involved with the livelihood activities at the flooded area. Mainly male are the head of a family as our culture.

In the study the illiterate respondents percentage is 12.5%, while literate who can sign their name only is 42.00%, up to class five from class one among the respondents class are 30.00% from class six to class ten 15.5% and above this that means there found only 3 respondent completed higher secondary education. The study shows that the education facility or the willingness of education is still beyond the expected line. Though there found a trend to get primary education but that stopped at after class five. Drop out is a big problem here. They are usually involved with other income activities rather leaving education.

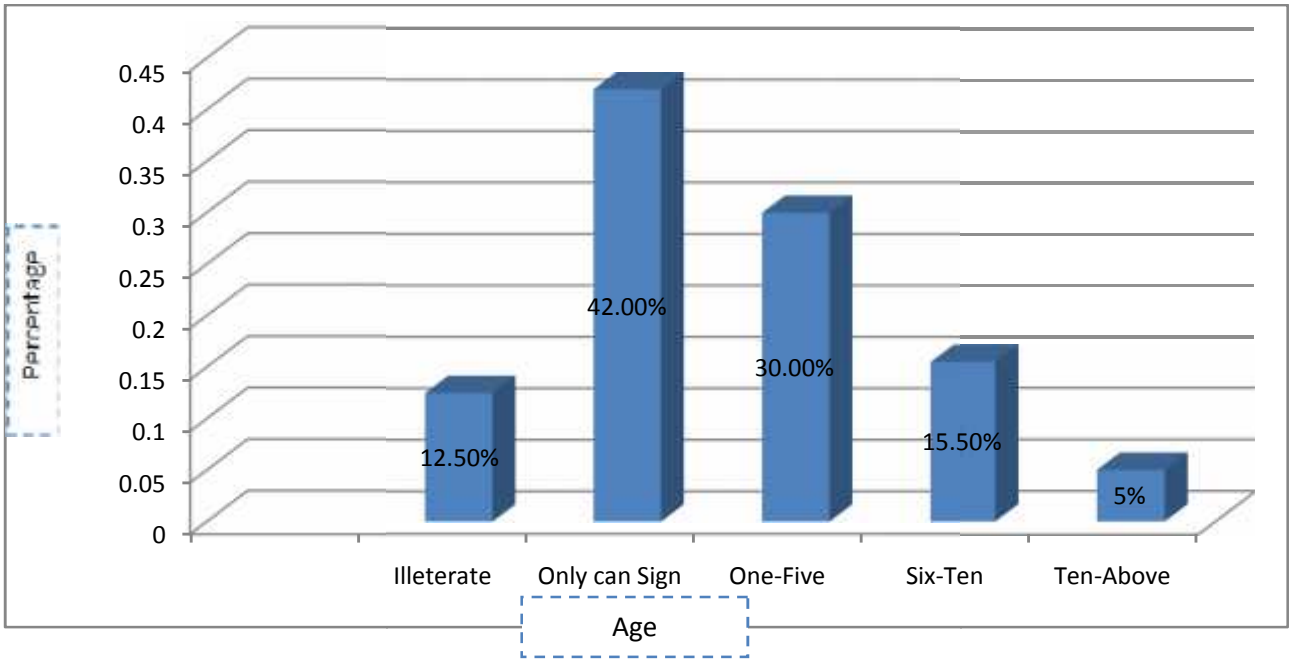


Table 6.1.1. Education rate of the respondents

From the survey it has been seen that the average member of each family are four. There were only two respondents who were alone. The highest numbers of family members were found as seven in six families. Ten families found where family member were six. The second highest numbers of family members were five and it was 26.00% of all respondents. 24.00%of family contained 12 members, 8.00% of family contained7 members and the highest percentage was 34%contained 4 family members. Only 5% family contained 2 and 3 family members and 3% is only one member of all respondents.

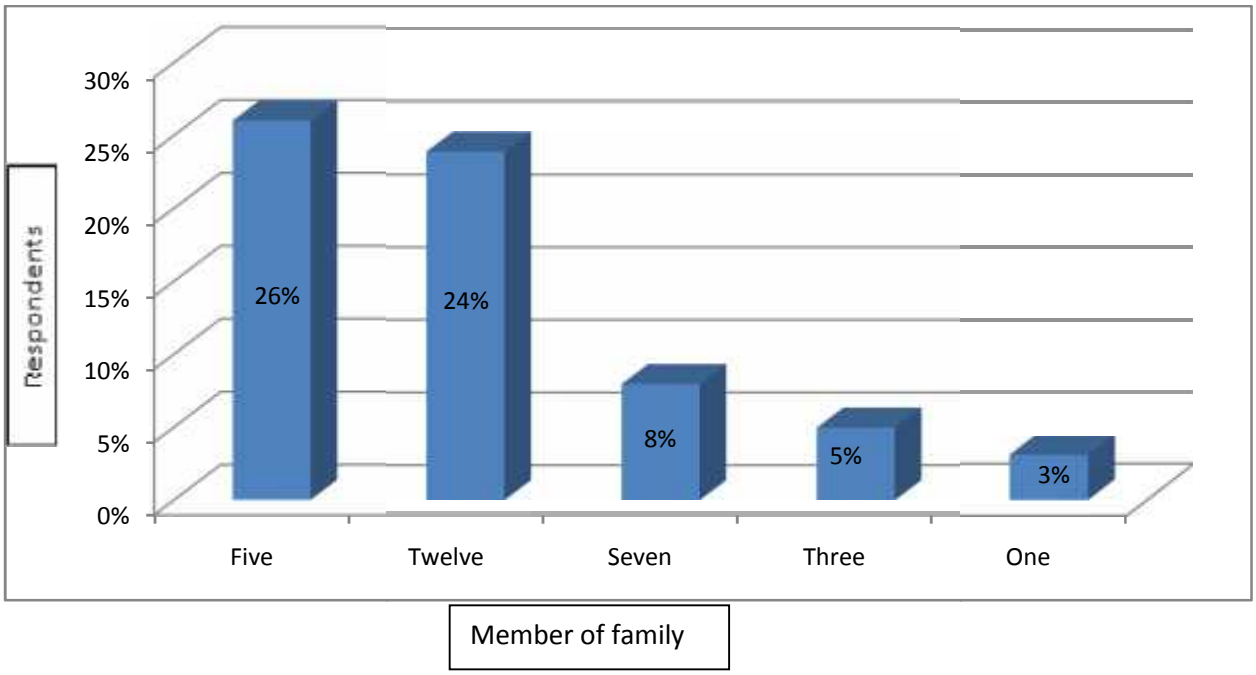


Table 6.1.2: Chart of Family member of the respondents

These two villages are mainly affected by flood every year. The economy is based on agriculture. So the occupation of the most people is related to agriculture. There are about 74% people who are involved with this occupation. 12.5% people are involved with teaching, local doctor; government service holder etc. 10.5% people are involved with private job like NGO's and 3% people are related to physical wage.

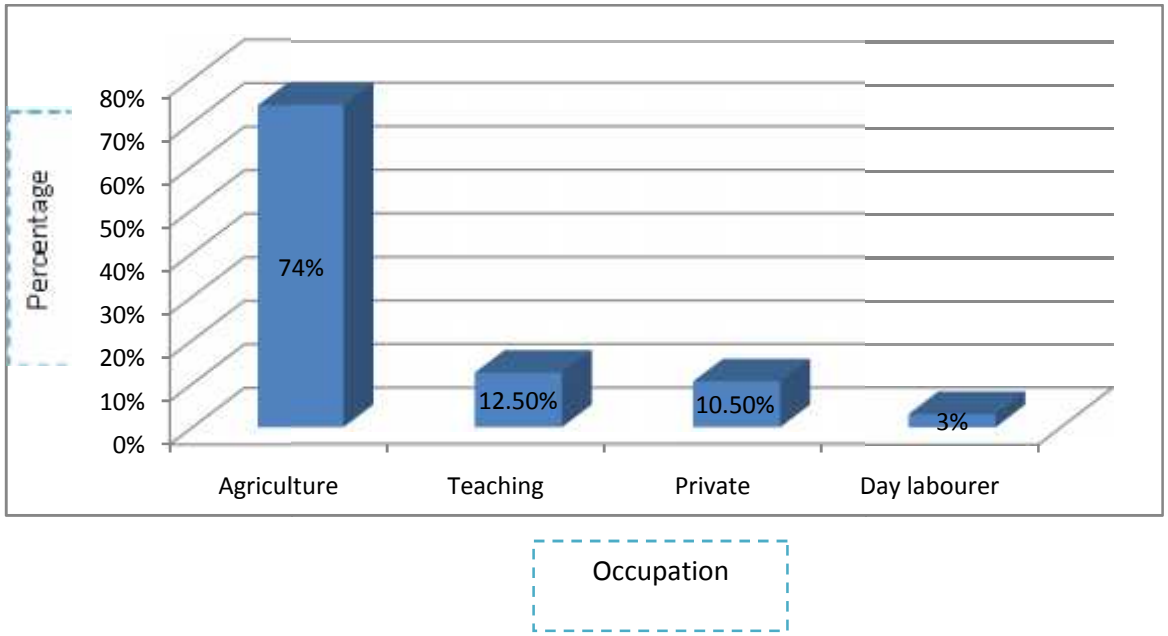


Table 6.1.3: Occupations of the respondents

It has been found that the average range of salary is 13,000/- taka. 13.5% of the respondent earn monthly 15,000/- taka to 18,000/- taka only. 70.00% of respondent earn monthly 10,000/- taka to 12,000/- taka and 16.00% of the respondent earn 8,000/- to 10,000/- taka only.

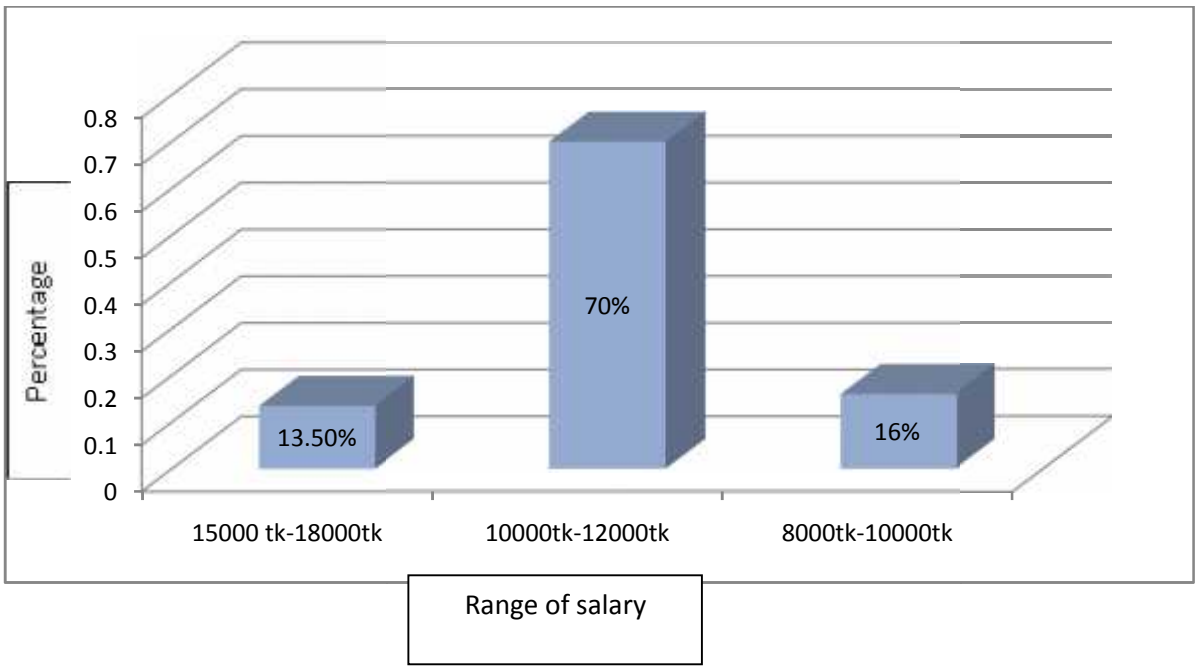


Table 6.1.4: Salary range of the respondents

In the study here I have used present data and past data. There were 26% respondents who had tin, wood and bamboo made house before 10 years but none the member is 46%. On the other hand semi Paka (break& tin) house also increased and the percentage is 58.05%. There is only 6% house made of straw called as hut. It was

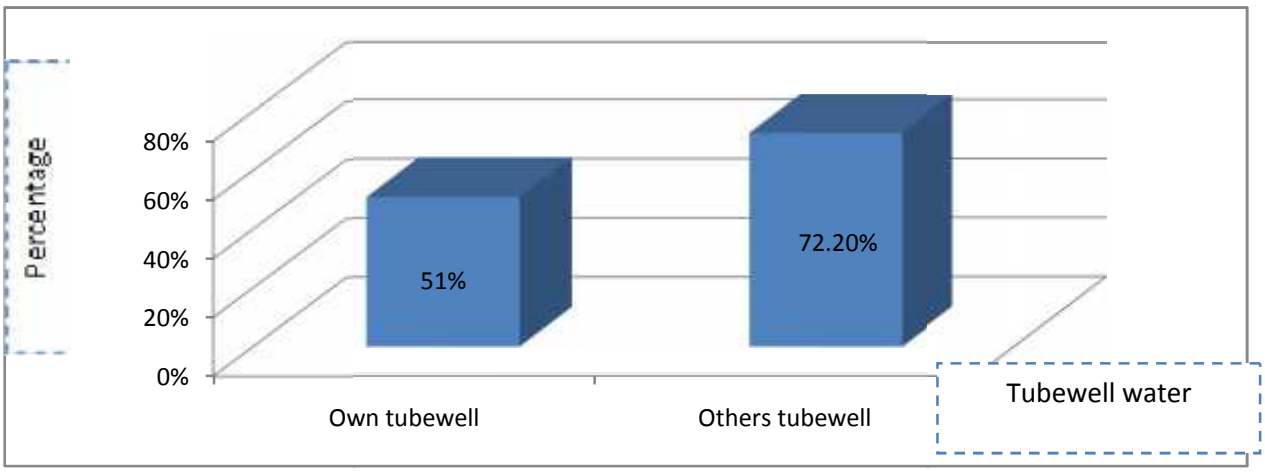


Chart of using tubwell of the respondents.

22% before flood. 20% respondents are living mud, tin and bamboo made houses while it was 28% before flood. Only 12% respondents have hut for living while it was 5% before flood.

Among the respondents 32% have own home and it was 74% before flood. 44% of the respondents lives in other land but not rented. This land is mainly belong to the government, it was 8% before flood. Respondent livings in a rented house are only 14% and were 10% before flood. There were some respondents who did not live these types of houses rather some of them lived with other relative family.

The primary source for drinking water is tube well. Among the respondents 50.5% have their own tube well while it was 62.05% before flood. Because of flood the tube wells are damaged. At present the highest portion of the respondents are the community tube well given by different NGOs or government for the whole community and percentage is 72%. 20% of respondents use others tube well and it was 15% before flood. There were no respondents who use pond, river or other sources of water except tube well for the drinking purpose.

Among respondents of the study and 84% said that they preserved food before coming rainy day. Maximum respondents had said they have to face water problem. To overcome this situation they use water purifying tablet and boiling water while flood water flooded the village area. 94% respondents suggested that the government and NGOs have to increase their consciousness program and require extension of their services which is very effective that time.

To identify the causes of flood 78.05% respondent of the study mentioned five points at a time. There are increasing rainfall, river over flow, unplanned damp, lacking of proper drainage system and decrease of river navigability. 60.05% said about a big water flow that comes from India which creates flood. Most of the respondent of study area agreed this point. 42.33% of respondent have thought that man are also caused for creating flood. 35% have considered changing river flow is one of the most affective activities for causing flood. 48% considered raise CO**2** in the environment. 14% considered about global warming and 3% respondent mentioned nothing.

About 60% respondent mentioned three points whose are suffered more during flood. These are children, domestic animal and older people. 40% respondent mentioned children and old people, 25% mentioned common people and 15% mentioned the poor people whose lives under poverty line. 84% respondent of the study said inadequate flood and food poisoning are the major problem they have to face during flood. Diarrhea and skin disease grow up mainly during flood89.5% respondent mentioned it. Some were mentioned about fever, Cholera, Dysentery etc. Most of the respondents of the research area noticed government and NGOs to take

the proper steps to solve the problem. They also mentioned it is occurred by nature. We cannot remove it. But we can reduce it's loses. Firstly they prescribed government as their guardian. Side by side they also mentioned NGO's and other organization whose are related about this.

85% respondent specified some points which are the impact of flood. These are drowning crops, spoiling crops, problem in preserving seeds. Discussing about the impact on economic condition during flood they have focused mainly one point and that is employment opportunity. The main occupation of the study area is agriculture. They have to live based on land. During flood they have to lead unemployed life. It is a big obstacle to increase their income as well as forming their standard livelihood and sustainable development. Children are hampered more than others. Their education, health, sanitation and food all these are affected by flood. Female respondents are more careful about cleaning and caring. Though mostly they do not have involvement in income generation they are the strong helping hand in their family.

About rehabilitation program against flood half of the respondents informed that they know about this. They mentioned supply of pure drinking water, re-build broken home, sanitation, food even sometime cash money is given by authority. 36% respondent mentioned two points to save their children from flood. These are keep it out from dirty water and replace them save place. The young educated people were more response than other about discussing the limitation of rehabilitation program. 30% respondent mentioned ignorance, 70% respondent liable lacking of proper distribution and lacking of proper systematic way of administration.

To know about their preparedness to develop present condition of life to a satisfying standard 70% respondent of the study mention make awareness, 35% respondent mentioned help the common people physically, 50% respondent of rural area where are included in study mentioned help them economically. 70% respondent noticed government and NGOs to take more effective steps to make a good condition against flood. 20% mentioned about local people and NGOs. They also identified about emergency need, long term effort, and rehabilitation program of flood affected people. They specified information supply and advocacy are the activities of local people against flood. For environment up gradation of this area 70% mentioned making awareness, 20% mentioned tree plantation, 30% mentioned improve transport and cleanliness, 40% mentioned all three four points. To improve their livelihood condition 60% considered interest free credit facility by the government, 75.25% considered upgrading of transportation, employment opportunity, electricity availability and availability of health facility.

Chapter Seven: Case Study

7.1 Case One

7.2 Case Two

7.3 Case Three

Case- one

Rupchandraur is a village under the Upazila of Atpara of Netrokona district. There are 120 families live in this village. Near about 800 people live in this village. The main occupation of the villagers is cultivation. Almost all of the family member are directed related with agriculture.

There are 10 Upazila under netrokona district. There are Netrokona Sador, Mohangonj, Malmakanda, Atpara, Barhatta and Purbdhula. The area of Netrakona in 2810.40km square kilometers. There are 86 union, and 2,282 villages in Netrokona district. It is established on 1 February, 1984. Atpara is the one of the flooded area of Netrokona district. It has 23395 units of house hold and total area 195.13 km² . Almost every year it has to face flood. Atpara is one of the flood area of Netrokona. As of the 1991 Bangladesh census, Atpara has a population of 120491. Males constitute 51.15% of the population, and females 48.85%. This Upazila's eighteen up population is 60858. Atpara has an average literacy rate of 24% (7+ years), and the national average of 32.4% literate

Md. Abul Hai lives at Rupchandraur in Atpara. He is 40 years old. He is a non-government high school teacher. He is B.A. The number of his family member is 8. His father passed away. He has 2 sons and one daughter. They are all students. 2 brothers and his mother stay with his family. He has to bear whole expenditure of his family. He is the only earning member of his family. His two brothers are under SSC and they engage in agricultural work. Both of them are single. The name of his wife is Sufia Akhtar. She is a housewife. She is 27 years old. She has no economic contribution on her family. She is also under SSC.

The monthly income of Md. Abdul Hai is 15000-17000/-. As he works in a non- government institution, His salary is not fixed. His brothers contribute in a low range. In off period of cultivation they become unemployed. They have nothing to do in that period. As they live in a joint family they do not need divided this land property. They have 2 bighas land property in which they cultivate. It is very hard to live solvent with this income. I got the opportunity to meet with Md. Abdul Hai for three times. First he accept me very spontaneously. But when I tried to interact with him with his personal and family attain he tried to confined himself with his own boundaries. As he more educated than others he could realized my research purpose. He tried to lead on behalf of villagers for their financial benefit.

I tried to make him easy by building rapport. Abdul Hai expressed that they were living well but the devastating flood of 2004 shattered their life to pieces. During flood, relief was required but they did not get any as their live in a remote area. Transport and communication system was not so called good to arrive relief things. They were deprived in all facts of life. He informed me that the price of food and other essential goods was very high at that time. They usually used tube- well water as the source of drinking water. But the tube-well was sunk by the dirty flood water. As a result they had to collect water from a long distance. Sometimes it was very difficult. It was very hazardous to cook as their kitchen was sunk as well. He informed me that sanitation creates a big crises during flood. Abdul Hai described the pathetic incident happened in his family. He has been working this high school since 2002. According to his word- my school was destroyed and break out by flood in 2004. In that time it was heavy rainfall and my cultivating land was devastated by the overflowed water. All of crops was destroyed. My brothers were immature. They were only five years and two years old. The whole family depends on my income.

We could not take any class during flood period. Almost every year it has to face devastating situation. In that year, the situation was indescribable. Near about nine month I did not get my salary. The school was so affected that it need to repair for a long time. The managing committee of the school could not manage the situation for want of money. My mother is a peasant of heart. She has got a heart attack that time. It was a major heart attack. I could not treat her properly in proper time. As a result my mother has to receive unexpected paralyzed. It's a measurable time in my life. Never I forget it. My family had to suffer a lot. Flood is like a curse for my family that has to face almost every year.

After analyzing the fact, it might be said that flood creates many financial crises. Abdul Hai is dedicated to his family. In village the family bondage relationship is strong still which tries to ignore in urban areas. It is a great concern our local government to improve the transport and communication system of rural areas. We cannot prevent flood but we can reduce its loses. For the sustainable development of our country we have to increase GOs and NGOs activities in according to flood affected areas.

Case -Two

Md Helim Mia is a farmer of Rupchandrapur village. He is 56 years old. He had no any opportunity to enlighten himself with education. It is a great sorrow of his life. Though he is aged enough he is active to earn. He has got marriage for two times and two of his wives are alive. He has four daughters and two sons. His daughters have to face early marriage. Helim was helpless because of his unavoidable poverty. The financial background of his son-in-laws is directly related with agriculture. The second youngest daughter of Helim Mia is divorced and she lives with his father's home. Helim Mia has to bear all expenditure of family. They are depended on his low income. His two sons live separate. They do not take care of him.

When I talked with Helim Mia it seems to me that he is little bit desperate in his life style. He is addicted to cigarette and tobacco. He is too poor as I think. I have got the opportunity to talk with him for four times. He lives in a vulnerable hut. He shared with me that several times he has to face the devastating flood in his life. Not only that almost every year he has to bear its indescribable sufferings. It's like an expected and habituated natural disaster. It occurs not only for heavy rainfall, the village is near about to the border of India. He said hill slope is one of the vital reasons of flood. He said here is a big swamp named ″Helochia". Near about one leads Rice they (the villagers) can get in one season. But in rainy season it gets full of water and submerges surrounding residence. In this period they have to receive the disguised unemployment.

I have tried to build up `Rapport' with Md Helim Mia. He felt free with me gradually. In a setting Helim Mia shared his intolerable and ineffable misery which was occurred in a heavy rainy day. According to his word,‘‘my second youngest daughter was pregnant. She was just waiting for the day of her new baby's born. Her mother was staying with her. One day morning I found flood water around our

dwelling. Within few hours it became knee-deep. On that day it was raining heavily. The weather was very wet and hazardous. It was a day of disaster but at evening my daughter gave birth to a boy. I forgot all my sufferings and shared sweets among my neighborhoods. My grandchild and his mother both were well and I thanked God. On the next day I went to field. But I could not imagine what was waiting for me. I returned home in the evening. It was raining heavily along with thunder and storm. Moreover flood water was increasing in a great speed. There was no electricity. When I reached home, I found my grandchild was seriously ill and my daughter was crying. I saw my grandchild's body become bluish and could not breath well. My mother-in-law told me that it was nothing, it had just affected by evil wind and she was going to have some spiritual treatment. Soon it would become well. But her word did not convince me. I was thinking to take him to the hospital. But it was a stormy night. The flood water increased up to four feet. I tried to find a vehicle to go to hospital but I was unable to manage any. The nearest hospital is about ten kilometers away from my house. My mother-in-law advised me notto worry. She suggested to wait up to the next morning. As I had no alternative I obeyed his advice. But alas! It took my all. At 1.00 am my grand infant was died. I had nothing to do but see only his passing away. I could not look my daughter's. Always she looked pale. As a father it was really painful to control it''. In this stage he broke out in crying and the situation become too pathetic to continue the conversation.

After analyzing the fact, it might be said that the death of the infant was caused mainly for flood. First of all, from all the symptoms it is clear that the infant was suffered by pneumonia which is a common disease of infants in our country. As the environment was very wet due to heavy rainfall and flood water entered inside their living room, the environment may cause pneumonia. Secondly, for this environment situation, it was not possible for them to make the child warm using warm and dry cloths. Finally, it was a stormy night and water flooded all roads of their locality. Nobody with a vehicle was found on the road. As a result, the infant died in lack of

treatment. It can be remarked simply that the devastating flood of 2004 killed an infant.

Case - Three

Khudeja Begum is an inhabitant of Madon village. The area of Madon is 3.2 2810.40km square kilometers. The rate of education is 22.5%. About eighty families live in this village. The main occupation of the villagers is cultivation. Almost every family is directly related with agriculture. Khudeja is not out of them. Now her age is near about 45. Her husband is died before ten years ago. It's a matter of great sorrow that she has been driving all kinds of responsibilities of her family for ten years. In the context of Bangladesh it's really a ineffable condition for a women. She could not her student life more than class five. She has two sons. One name is Alamgir and another one is Alamin. Khudeja's father's house is near about her eternal home. There is no one in her father's family to support her financially. The condition of her father's family is also vulnerable. That's why she has to receive early marriage in twelve years. Her husband was a day labor. His income was too poor to maintain his family. He did not have any savings.

According to khudeja Begum – `` During the flood of 2004 I have lost all of my surroundings. We had nothings but homestead. In 2004 I have lost all of my happiness with it. The homestead was sunk by flood water. We had to take shelter in nearest school. It is only one shelter home in our village during flood. We had been staying here for five days. After returning home I saw that there was nothing but a land. All of my things were inundated by flood. At this situation it was really difficult to rebuild my dream with my little sons. That time they were nine years and five years. Gradually I am trying to regenerate my dream. But the loser will not leave me. My husband is died of heart attack in this time. I fall in lowly jeopardy. I had to work in other's home for my career exploration. I could not fulfill the basic needs of my children. I admitted them in a primary school. But I could not fulfill their basic necessities. So that they had to include them in drop out system. It was really intolerable for me. I was helpless. In 2010, my elder son went to Dhaka for his career

exploration. He had got a job in a garment's factory. He sent me 1000/- monthly. My youngest son works at other lands as a day labor. I could not establish them with their receivable rights. They are grown up with all kinds of deprivation. It's an affliction to me. In 2012 my elder son has got marriage with a garments worker. After his marriage he does not send money to me. Now I am completely depended on my youngest son.

I observed that when she (Khudeja Begum) talked with me she let out a long sigh of despair. She said flood robs everything of me. She did not get any support. Her life is full of struggle. Still she is living with tears. I tried to interact with her to build up rapport and support mentally. After counseling with her I suggested her some GOs and NGOs activities which she can receive without expending money and she will be benefited with these. If she got any support she could overcome this kind of Calamitous. Her physical and mental situations both are fragile. She has no hope with her life. Now she is counting days for her death. She looks more aged comparing with her actual age. At this moment she is badly needed of financial help as well as physical and mental support. In our country there are a lot of women like Khudeja Begum whose are suffering for life time. There has no a strong helping hand to take the responsibility. Our Government is concern about these and takes proper action. But these kinds of activities cannot reach at root level because of corruption and administrative problem. We the general people have to work with GOs and NGOS agencies. We should share with them our necessities and ways of providing. We have to grow our mentality to work together for the betterment of our country.

Case - Four

Nazma is a five years old girl. She is lean and thin to look at bearing all signs of malnutrition in her body and appearance. Nazma's family consist of 5 members. Her father, mother, two brothers and herself. Her father is a poor farmer and his age near about 45. Their living house is made of bamboo. Their sanitation system is not well. They have a temporary latrine above on a canal. There have a community deep tube well. They have to collect drinking water far away from their house. Sometimes they use pond water for cooking. All of the family members wash cloth and bath in a small pond in front of their house. The atmosphere of their house is always samyatasamrate.

When Nazma was only three months she had to face a awful flood in 2010. Their house was flooded and they had taken shelter in near school. But their accommodation place was so crowded and unpleasant. During that time she was affected by pneumonia and skin diseases. Doctors and medicine were not available that time. After few days her father hospitalized her in Netrokona sadar hospital. She took treatment seven days in the hospital but she did not get improvement her health. After that time her health started break by trouble breathing. She also suffered by malnutrition. Nazma's father is a little earner farmer. He cannot accommodate them properly. During that time her life was in a critical condition. According to her mother by the grace of almighty Allah he gives the longevity my daughter. After that time several times she suffered by fever and cough and sometimes pneumonia symptom appears. She became weak to weaker day by day. It was hard to her father to maintain all of these with his limited income. She had been affected by several viral diseases. After that devastating flood her father took her again in hospital. That time she had to stay here for nine days. Gradually she improved her health condition.

According to her mother –" This flood is a curse of our life. We were in vulnerable situation. It has taken away all materials. The life of my daughter was in danger. It was the most devastating flood in my life. Allah saved us. Flood is a common hazard in this area. But sometimes it takes fatal forms. Children, elder people and women are the most vulnerable in flood. Government help does not reach here. Even Nongovernment programs are not available in endangered period. We are helpless and deprived in this situation. If we get any strong hand helping us we can reduce this losses."

I try to interact with Nazma's family and try to inform them about the disaster programs of GOs and NGOs organizations. I assure them about the developmental activities of Government. I also inform them about the health facilities of Government hospital and health complex and in where they can get the service easily. Some group discussion I have arranged there so that the community people can conscious about their basic needs. I hope they have learned something that will affect on their daily life style.

From the above discussion of case studies we can draw a summary about this. Flood is like a curse perspective of Bangladesh. Every year we have to face several kinds of natural disasters like cyclone, storms surges, tornado, earthquake, river bank erosion etc. But flood is the most common hazards in Bangladesh. We cannot ignore it ignore it but we can try to reduce its damages.

There are many ways to prevent damage to our home or business and our belongings even if water does come inside the building. It is important to decide which parts of our home and business to protect against damage and which may have to be replaced if there is a flood. How we proceed will depend on a lot of personal factors such as our lifestyle, the sort of home we have and how often and severely we expect to be flooded and the amount of warning we have before water may enter our building.

Many people are daunted at the thought of protecting their own homes from the effects of flooding. We have to mind one word of warning, always seek professional advice before making alterations to our home.

Basically there are two different ways to protect our home or business. One is called 'flood resistance' (trying to keep the flood water out of your home by using flood protection products) and the other is called 'flood resilience'~ which means modifying the inside of your home to reduce the impact any future flood will have, by significantly reducing the damage caused and it will also cut down on the length of time we have to be out of our home. Some people use a combination of both 'flood resistance' and 'flood resilience'.

Chapter Eight: Recommendations and Conclusion

8.1 Recommendations

Bangladesh is one of the most disaster prone countries in the world. Its total population is about 144 million where area is 147,570 sq. km. so disaster management is very much essential here, Previously disaster management means emergency response, relief distribution, and rehabilitation, but at present disaster management means disaster risk reduction, capacity building to reduce vulnerability) that means it emphasis pre-disaster management. In that ease, manpower who is involving in disaster risk management their quantity and quality measurement is important. Some recommendations are necessary for that purpose.

I. Man power sufficiency of disaster risk management

Most of the investment it is shown that manpower involvement of different disaster management activities are not sufficient, actually efficiency is important than sufficiency because few but skilled people are better than more but unskilled people' The existing status of manpower in disaster risk management field in Bangladesh is neither sufficient nor efficient. The lack of proper education and appropriate training on various aspect of disaster management. Therefore, immediate attention should be given both governmental and non-governmental level.

II. Identify Different Disaster

In Bangladesh different disasters are found in risk management disaster zoning is an essential, different area. So proper risk management disaster zoning is essential, because cyclone, storm surge are available in coastal area (southern part) and it isn't shown in north-eastern part of Bangladesh. Again flash flood, land-slide occurs in hilly area of Chittagong.Rangamati, Banderban, and Sylhet and so on. Drought is common problem in north-western part of Bangladesh. So we have to identify the spatial or regional pattern of disaster and thereby allocate appropriate manpower for each region for disaster management.

III. Strengthen Disaster Research

Research is an essential and indispensable part of disaster management in all over the world. But, unfortunately it is highly neglected in Bangladesh. For proper disaster risk management policy, a wide variety of research is essential and therefore, government should take immediate measure for strengthening disaster research at university level as well as at other institutions like DMB. DoE, and MoFDM etc.

IV. More Female Participation for Disaster Management

It has been observed in the study that disaster manpower in Bangladesh is heavy biased on male manpower. Female participation in disaster management is trying scantly. Given this situation, more number of female participation should been sured, It should be mentioned here that female population are more vulnerable to disaster than the male counterpart. To protect female and children for disaster, emphasis should be given to female education as well as female employment in disaster management field.

V. Media's participation should be positive

Media's are two types –

a. General media-newspaper and

b. Electronic media-television, radio etc.

They can play a vital role to disaster risk management. At present, among two types of media, newspaper is more agrees than electronic media in Bangladesh. But electronic media should be more active for disaster management. Newspaper publishes different issues of disaster more or less regularly, but most of our journalists have no experience about certain disaster and presents their news negatively' so especial training is essential for them and Journalism Department can provide special training and maintain an individual curriculum for disaster risk management.

Worldwide electronic media plays a great role to disaster risk management such as National Geographic channel, Discovery channel, Discovery channel, BBC world and so on, but our media's presentation is few than that. one of the BTV's agriculture banglaprogram "Matio Manush" is most acceptable all over Bangladesh. This type of program should be increased by government participation. Regular talk show, drama about disaster risk should be produced in easiest and acceptable way.

VI. Government NGO collaboration

To ensure coordination and so avoid duplication of rescue, relief, rehabilitation and disaster related training and public awareness building activities coordination between government and NGO is essential. A good start has been made with the standing orders on disaster for a useful NGO-government coordination of mitigation activities. The Standing orders issued to the government administration at different levels to made emergency responses to disaster situations seem to have worked well during the last floods. Generally speaking, there was a positive experience of collaboration and co-ordination between the NGOs and government agencies during the floods in 1998 & 2004. The role of NGOs and their importance in disaster management have been clearly recognized in the different policy and planning documents recently produced by the Government of Bangladesh. This kind of Govt-NGO collaboration needs to be more meaningful and worthwhile for better disaster management for the sake of greater interest of the disaster affected people' At the context of inadequate manpower in disaster management, the coordination between Go-NGO is urgently essential.

VII. Local Networking should be emphasized

Various forums for NGO collaboration and networking both locally and regionally have helped advocacy and sharing of information. Special networking protocols have been formalized among the local frontline NGOs more confident and more prepared' Many such NGOs should have contingency plans with funding pledges from the respective donors for unforeseen disaster. Besides, the networks are devoted to research, training development of analytical tools, and exchange of information on hazards and disasters on a regular basis. For a rapid but meaningful assessment of flood-damage and emergency needs of the victims, assessment procedures together with a particular data collection format have been jointly drafted by BRAC and the Disaster Forum. This initiative is primarily intended for the local partner NGOs supported by ECHO, but would also be useful to any NGO working in flood prone areas.

VIII. Reduce Disaster Risk to Reduce poverty

Bangladesh is a poor country with high degree of disaster proneness. Therefore, address poverty, disaster risk reduction is essential. In this context, a wide level disaster awareness program, particularly among the poor communities, should be undertaken. In addition, poor people should be accommodated into disaster manpower scheme, particularly at local level disaster risk management program.

Conclusions

In conclusion, therefore, flood control is too important an issue to be given up. people of Bangladesh who are not caught up with any vested interest, and can look at the problem with open mind, will have to come forward. The public has to be made aware of the pros and cons of alternative flood control approaches. There is too much of misconception and ignorance about various aspects of this issue, and this makes it easy for interested circles to have their way.

The government should open up this issue for wide public discussion. People with right ideas and with only greater interests of the country in mind will have to participate in this discussion. Let us hope that through the combined efforts of all, Bangladesh will finally be able to correct the direction of her flood control efforts. Through the pain and sufferings of this year's flood, let us hope that something good will come out.

Appendixes:

1. Map of Netrokona
2. Interview Schedule
3. Visual Presentation
4. Bibliography

Map of Netrokona Distric:

Interview Schedule

Research Title: Livelihood pattern of flooded families in Bangladesh: A Study in two village:

(Consent: This research is conducting for complementing the thesis of M.Phil (2011-2012) of Institute of Social Welfare &Research, University of Dhaka.You are selected as an interviewee for giving related research information. It is assumed you that all of your information will be used only for research and absolutely confidential as well as.)

(Respondent's information will be used only for research purpose and confidentiality of the informer will be maintain properly)

Schedule no:

A. <u>To study the socio-economic condition and demographic situation (age, sex, family) of the flood affected people:</u>

1. Name of respondent :
2. Father's / Husband's name :
3. Present age :
4. Sex : ☐Male☐ Female
5. Religion : ☐Islam ☐ Hindu ☐ Buddhist ☐Christian ☐Other
6. Level of Education : ☐Illiterate ☐Literate (can sign only) ☐Class-i– v☐Class-vi – x ☐Class- xi – Higher
7. Marital status : ☐Married ☐Unmarried ☐Widow ☐Divorcee ☐Others (specify)
8. Who is your family head : ☐Self ☐Husband/ wife ☐Father/ father-in-law

☐Mother-in-law ☐Others (specify)

9. Family Information:

SL. No	Name	Relation with respondent	Age(Year)	Level of Education	Marital Status	Current Occupation	Monthly Income

10. What type of your house:

i) Kure ghor(Hut) ii) Katcha (mud, tin, bamboo)

iii) Tin, wood & bamboo made iv) Semi paka (brick & tin)

11. Before flood how was the type of your house:

i) Kure ghor(Hut) ii) Katcha (mud, tin, bamboo)

iii) Tin, wood & bamboo made iv)Semi paka(brick& tin)

12. What is the type of ownership of your house:

i) Own ii) Own house on other's proper

iii) Other's house iv)Others (specify)

12. (a) Before flood how was the type of the ownership of your house?

i) Own ii) Own house on other's property

iii) Other's house iv) Others (specify)

13. what is the source of you drinking water?

i)owntubewell ii)other's tubewell

iii)communitytubewell iv)river water

v) pond water vi)other's (secify)

13. (a) Before flood what was the source of you drinking water?

i) owntubewell	ii) other's tubewell
iii) community tubewell	iv) river water
v) pond water	vi) other's (specify)

14. What type of food and water problems do you face during flood?

(a) Food problem .....

(b) Water problem .....

(c) What activities / programs were taken to solve these problems .....

.....

.....

(d) What was the limitation of that activity / programs .....

.....

.....

(e) Do you think the programs / activities those were taken to solve food and water problems were proper effectives .....

.....

.....

(f) What is your suggestion and recommendation for this issue .....

.....

.....

B. **<u>To identify the causes of flood in village area</u>**:

15. What do you think about the main cause of flood. Please mention

i) No idea	ii) River overflows
iii) Sea level rise	iv) Deforestation
v) Increasing rainfall	vi) Low land

vii) Other's (specify)

16. Does Man made activities causes flood?
    i) Yes ii) No
    iii) No idea

17. What do you consider most that man made activities cause flood? Please mention
    i) Deforestation ii) Rise CO2 In the environment
    iii) Make global worming iv) No idea

C. <u>To know the impact of flood on village people:</u>

18. Who do suffer more during the flood
    i) Common people ii) Children
    iii) Middle class people iv) Women
    v) Rich people

19. What do you know about the food problems do people face during flood
    i) Inadequate food ii) Food poisoning
    iii) No idea iv) All

20. What types diseases grow up during flood
    i) Diarrhea ii) Dysentery
    iii) Cholera iv) No idea
    v) Fever vi) Skin diseases

21. Who will take the steps to solve the problem
    i) Common people ii) NGO's
    iii) Governments All

v) No idea

22. Impact on cultivation and crops...

Specify.....

23. Impact on economic condition

i) Income ii) Expenditure iii) Poverty

or specify.....

24. Impact of economic life during flood

Specify.....

25. Impact on children life

i) Education.....

ii) Health.....

iii) Sanitation.....

iv) Food.....

26. Female participation in income generation in flood affected area

Specify.....

D. <u>To know the rehabilitations programs to rehabilitate flood affected people</u>:

27. Do you have any idea about rehabilitations programs against flood?

i) Yes ii) No

28. What do you know about rehabilitations Programs after flood: Please Mention?

i) Supply of pure drinking waters ii) Re-build broken home

iii) No idea

29. How can you save your children from flood?

    i) Keep it out from dirty water ii) Keep it out from wastes

    iii) All iv) No idea

33. What is the limitation of rehabilitations programs?

    i) Limited resources ii) Ignorance's / Illiteracy

    iii) No idea

E. <u>To know about their preparedness to develop present condition of life to a satisfying standard:</u>

31. Do you have any idea about preparation for developing present conditions?

    i) Yes ii) No

32. How can you help to develop the present situation? Which one is more important on you?

    i) Make awareness ii) Help the common people physically

    iii) Help them economically iv) No idea

33. Who can take more effective step to make a good condition against flood? Please mention?

    i) Government ii) Local People

    iii) NGO's iv) Civil societies

    v) No idea

34. What are the NGOs and Govt. activities to enhance the situation

    i) Emergency need.....

    ii) Long term effort.....

    iii) Rehabilitation program.....

35. What are the activities of local people participation against flood?
    Specify.....

36. What do you consider to improve the standard of your family members?
    i) If you get more facilities to educate them
    ii) Recreational arrangement by Govt.
    iii) More and easy health facilies iv) others (specify).....

37. What do you consider for environmental up gradation of this area?
    i) Develop the tourist spots ii) regular cleaning of sea coast
    iii) to stop unethical activities in the hotel and beach
    iv) Others (specify).....

38. What do you consider to improve your livelihood?
    i) Credit facility by the Govt. ii) Upgrading of transportation
    iii) Fixed lease of market iv) Support during natural disaster off time
    v) Support providing instrument for fishing
    vi) Others (specify).....

Visual Presentation

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