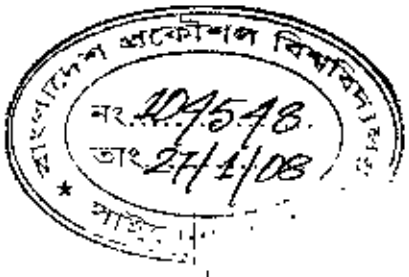
Impact of Micro-Finance on Reducing Vulnerability of River Erosion and Flood Affected People in Bangladesh



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ABSTRACT

Bangladesh is crisscrossed by hundreds of rivers. Since the country is geographically a deltaic plane, it is vulnerable to water allied natural disasters like flood and river erosion. In Bangladesh, the frequency of hazards is such that efforts to mitigate one disaster are often followed by another event, thus entailing the need for all-year-round preparedness. That is why, the local NGOs (Non Government Organization) or MFIs (Micro Finance Institutions) are the most important organizations to play a significant role in disaster fighting.

This research is an attempt to examine the role of Micro Finance Institutions in reducing vulnerability of flood and river erosion affected people. This study has been conducted on 5 villages from Char Algi Union of Mymensingh District and 5 villages from Mohonpur Union of Chandpur District which are vulnerable to flood and river erosion respectively. The over all activities of Micro-finance Institutions in the study areas along with their activities for disaster management has been identified in this research. To reach the goal, this research has examined the comparative advantage and disadvantage of the Micro-finance program beneficiaries in coping with disaster as well as the change in disaster fighting ability of the beneficiaries after being member of MFIs through conducting an extensive field survey.

In order to assess the comparative advantages of MFI members in coping with flood and erosion, the level of difference between the beneficiary and non-beneficiary in some social, economic and health indicators related to vulnerability to flood and erosion have been examined. Similarly, to assess the impact of MFI activities on its members, the extent of change in social, economic and health indicators related to vulnerability to flood and erosion have also been examined. Following the analysis and findings on vulnerability indicators, some critical comments and recommendations have been made for further restructuring of MFI's activities and programs toward the more effective contribution to disaster management. Hopefully this research will open up some new vistas for the intervention of micro-finance in disaster management.

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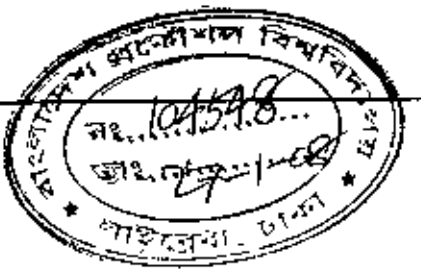
ABBREVIATIONS

ADB	Asian Development Bank
HFWC	Health and Family Welfare Centre
LGED	Local Government Engineering Department
MFI	Micro Finance Institution
NGO	Non- Government Organization
NILG	National Institute of Local Government
RIIP	Rural Infrastructure Improvement Project
UNO	Upazilla Nirbahi Officer
USC	Union Sub Centre

CHAPTER 01



INTRODUCTION

1.1 Background

Micro credit has proven its value in many countries as a weapon against poverty and hunger. With access to micro credit, people with low income can earn more and better protect themselves against unexpected setbacks and losses (Pitt, 2005). Micro credit and microfinance in general are not yet fully utilized as tools for reducing disaster impacts, but some concrete experiences in India and Bangladesh have shown their potential and highlighted the need to further explore these opportunities (Nagarajan, 1998). The use of microfinance for disaster risk management is still some what experimental, but research should be undertaken to explore how microfinance can be used to mitigate against more widespread natural disasters.

It is known that both episodic and regular natural disasters (like floods, drought, earthquake, cyclone etc.) make people vulnerable, as it takes away their livelihoods at the first instance, and left them with little resources to overcome from the situation. In developing countries, facilitation of micro finance - firstly to empower the populace and secondly to secure their livelihoods - to overcome from the situations posed by the natural disasters should be a part of the regular natural disaster management strategy. Unlike developed countries, developing countries do not have adequate financial resources to tackle the problems related to the natural disasters to the great extent. Therefore, it is important for developing countries to seriously think to diversify the empowerment programs (coping mechanism) through micro-finance which will not only secure livelihoods but also increase the resilience capacity to overcome from natural disasters (Pitt, 2005)

In the year 2005, the theme of the 'International Day for Disaster Reduction and Campaign' aimed at increasing disaster resilience using micro-finance and safety nets. The objective was twofold: to raise awareness among the social and financial communities and institutions on their potential role in reducing disaster risk; and to raise awareness in the

disaster and risk management community on the use of existing financial tools and safety nets to reduce the vulnerability of hazard-prone populations (Briceno, 2005). But awareness campaign will not be enough to reduce vulnerability of hazard prone population. Disaster management activities should not be limited within awareness creation. Since disaster makes people poorer than ever before, it should be confronted with enormous efforts from the Government, Local Government bodies, Social Institutions and over all the people themselves.

Bangladesh is frequently hit by disasters, particularly cyclones, floods, river erosion and drought. Its tropical monsoon climate is influenced by the Himalayan, the Assam and the Burmese mountain ranges in the north and the northeast and the Bay of Bengal in the south. The strong monsoon rains, coupled with Bangladesh's location in the delta of the world's second largest river basin, make it extremely vulnerable to recurring floods. In addition, the country's approximately 600 kilometers of coastline leave huge tracts of land open to the destructive effects of cyclones and storm surges. In a disaster situation, those living near the poverty line can easily slip below it. The landless and near landless may be forced to sell their limited assets for survival needs. Those who depend upon wage labor for subsistence are forced to compete with those entering the labor market. The labor market, in turn, becomes further depressed by the loss of harvests and alternative sources of employment. Therefore, it is quite evident that frequent natural disasters possses greater impact on social and economic condition of the country.

Poverty, illiteracy and unemployment are the major factors which have compelled emergence of Non-Government Organizations (NGOs) in Bangladesh. In order to alleviate the pervasive poverty, Government of Bangladesh coupled with thousands of NGOs/MFIs (Micro-Finance Institutions) are formulating as well as implementing their development policy strategies with heavy importance on poverty issues. As a result, the NGOs and MFIs in Bangladesh are specially trying to alleviate poverty through micro-credit programs. But it's a matter of great regret that, the attempts taken by MFIs often goes in vain due to various seasonal natural disasters. The poor people, who are the beneficiaries of micro-credit programs undertaken by MFIs/NGOs, are often vulnerable to natural disasters. As a

result, they are suffering from the vicious circle of poverty in spite of the micro-credit programs. It is evident that many of NGO attempts for poverty alleviation were worthless due to natural disaster. Hence, it is quite significant to incorporate micro-finance activities with disaster management for sustainable poverty alleviation programs.

A recent study on "Microfinance and the Poor -an overview of the sector in Bangladesh" (By Harun Rashid and Frank Matsaert) shows the currently operating micro-finance sectors and the percentage of MFI involvement in those sectors.

Table 1.1: Sector wise investment of MFIs

Major Sectors of Investment	Percentage of Investment
Housing	1.49%
Handicraft	2.83%
Transport	3.39%
Fisheries	4.33%
Others	4.18%
Food processing	10.19%
Agriculture	12.19%
Live Stock	17.94%
Trading	42.13%

Source: DFID Bangladesh, 2005

From the table, it is quite clear that MFIs are mostly interested to invest in micro-entrepreneurship. The other sectors of their interest are live stock, agriculture, food processing and similar types of income generating activities. This table shows the scenario of overall involvement of micro-finance throughout the country. It cannot be ignored that MFI's investment in housing, agriculture, livestock can eventually increase the coping capacity of the beneficiaries with disaster, but the MFIs should also concentrate separately

on some vulnerability indicators. The investment of MFIs in disaster management sector is very negligible (in the table, the investment in Disaster management sector is under the domain of the sector named "others" with a percentage of 4.18) where as the MFIs cannot ignore the possibility of being impacted by natural disasters. Therefore, all the NGOs/MFIs should incorporate disaster management activities and programs to safeguard the vulnerable beneficiaries as well as to make their poverty alleviation and income generating program a successful one. Experiences of several MFIs in disaster-prone areas, however, have demonstrated that access to micro-finance services can support disaster preparedness and risk reduction by decreasing client vulnerability. When clients have access to needed financial services during crisis situations, the impact of the disaster may considerably be lessen.

The role of micro-finance services in responding to disaster risk was demonstrated first in Bangladesh during the 1998 floods. Bangladesh experienced the worst floods in its history from July to September 1998. About 30 million people were affected in 52 out of 64 districts (Nagarajan, 1998). All the MFIs in Bangladesh responded to the unprecedented situation of floods. Workers of the MFIs carried money with them and provided immediate interest-free consumption loans so that the members would not go hungry. They provided a number of financial services such as savings, credit etc. (Vatsa, 2000). These attempts by the MFIs have unveiled a new dimension of micro-credit program.

Numbers of seminars, trainings and working papers and researches have been carried out on disaster management and micro-credit programs in Bangladesh but there were no intentions of integrating micro credit with disaster management. That is why a research on "To examine the role of MFI in reducing vulnerability of flood and river erosion affected people" with the following research questions will be a most rational one in the context of our country.

1.2 Research Questions

Following the aforementioned problem, this research will try to seek answers of following queries under these dimensions.

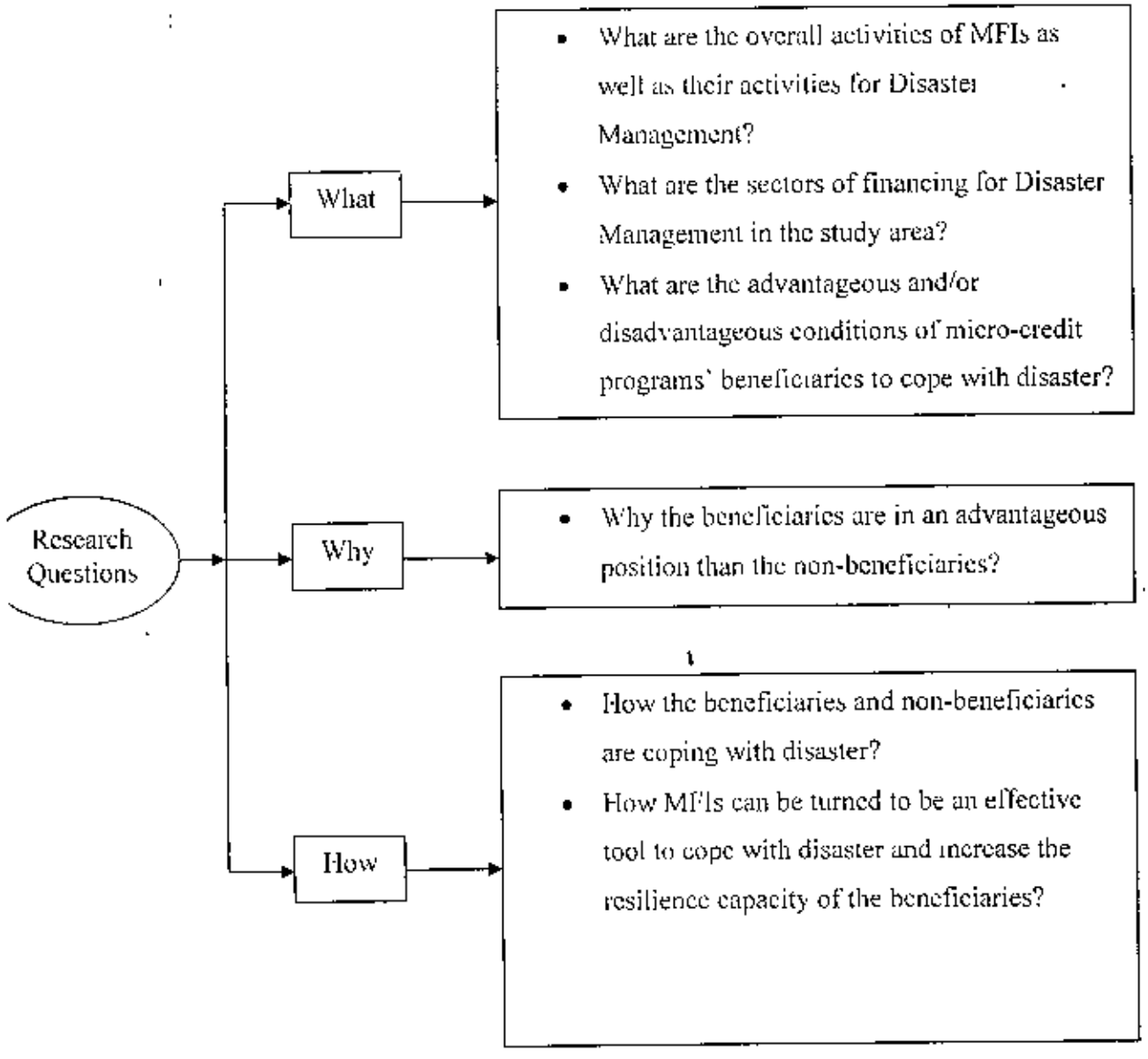


Figure 1.1: Research questions

1.3 Rationale of the Study

The research questions stated above clearly reveals the relationship between micro-finance and disaster management. Bangladesh is one of the world's most disaster prone countries, suffering frequently from natural disasters such as cyclones and associated storm-surges, floods, droughts, tornadoes, river-bank erosions and earthquakes. The frequency of hazards is such that efforts to mitigate one disaster are often followed by another event, thus entailing the need for all-year-round preparedness. These disasters continue to have a major impact on the development of our country. To prepare ourselves for major growth and development with minimal risk from disaster, it is necessary to undertake proper incentives for disaster mitigation and management. Being a disaster prone country, various programs and projects have already been examined and implemented in the disaster affected areas of Bangladesh. Despite the proven potential of Micro-credit programs, the impact of micro credit on disaster management has not yet been investigated in the context of our country. Since poverty alleviation is the supreme issue of our country, most of the NGOs and MFIs are carrying out their micro-credit programs for poverty alleviation only. For poverty alleviation, the MFIs are investing mostly in integrated rural development, savings and credit, family planning, income generation and training, women empowerment, health, education, adult education, relief and rehabilitation, social awareness and motivation, legal aid, human and civil rights. They basically try to improve the overall social and economic condition of their beneficiaries through the aforementioned programs. Since the beneficiaries of MFIs are not economically solvent, they often used to live in low cost disaster prone areas and thus make themselves vulnerable to disaster. That is why, the beneficiaries of micro-credit programs are mostly vulnerable to natural disasters and only one event can destroy all the attempts taken by the MFIs to alleviate poverty. As a result, the condition of the beneficiaries remains the same as before and the attempts taken by MFIs go in vain. Keeping the fact in mind, many leading NGOs like Grameen Bank, Proshika, Padakkhep, ASA and BRAC has taken 'pre disaster', 'during disaster' and 'post disaster' rehabilitation program to reduce vulnerability of their beneficiaries. The main platform of this research lies on the impact study of the MFIs activities in reducing vulnerability of the flood and erosion affected people. Therefore, a comprehensive study on

the matter becomes increasingly important to encourage the MFIs to involve themselves in disaster management programs more actively.

1.4 Objectives

The study has been conducted to fulfill the following objectives:

1. To identify the over all activities of Micro-finance Institutions as well as their activities for disaster management.
2. To assess the comparative advantages of the Micro-finance program beneficiaries in river erosion and flood prone areas.
3. To examine the change in the disaster fighting ability of the beneficiaries before and after the implementation of Micro-finance program for disaster management.
4. To suggest policies for further restructuring the micro-finance programs toward the more effective contribution to disaster management.

1.5 Possible Outcome

This research will show the overall activities of MFIs, their activities to cope with disaster and their sector of financing for disaster management in the respective study area. It is expected that the result will reveal some facts about the very few ongoing programs for disaster management under taken by some renowned NGOs in the study area. It will also express the advantageous and disadvantageous conditions of the micro-credit programs' beneficiaries to cope with disaster. This will help to show the comparison between beneficiaries and non-beneficiaries on some pre-determined social, economic and health indicator which will eventually reveal their coping mechanism with disaster. This research will also help MFIs to diversify their services and offer special products and services aimed at reducing disaster risk.

1.6 Scopes and Limitations

This study has delimited within Mymensingh and Chandpur district from Dhaka and Chittagong divisions respectively. These are the two main districts frequently affecting by flood and riverbank erosion respectively. Since a vast tract of land of our country is

vulnerable to numbers of natural disasters like flood, cyclone, riverbank erosion, tornado, drought, earth quake, etc. it is not possible to conduct extensive study on all of those disasters simultaneously Moreover, the vulnerability indicators to be selected for analysis will not be similar for different types of disasters. For this reason, the study has restricted only over two regular and seasonal disasters, namely, flood and riverbank erosion. This study has shown the over all activities of MFIs including their activities for disaster management in pre-disaster, during disaster and post disaster period only within the study area. This study has focused on the comparative analysis of micro-finance beneficiaries and non-beneficiaries in coping with disaster. Despite micro-finance having enormous potential in poverty alleviation, micro-entrepreneurship, trading, self-employment and women empowerment; this study is concentrated only to explore its disaster management potential. This study has thoroughly investigated the overall condition of the respondents in social, economic and health indicator related to vulnerability to flood and erosion. The investigation includes the followings:

1. Identification of overall activities and disaster related activities of the MFIs.
2. The socio-economic (Occupation, education, land ownership pattern, monthly income) condition of local people.
3. Comparative analysis on social, economic and health indicators related to vulnerability to flood and erosion such as:
    - Construction material of main dwelling unit
    - Plinth height,
    - Ceiling height,
    - Condition of toilet, cooking place and bathing place.
    - Source of drinking water.
    - Stock of money, food, safe drinking water, medicine and fuel.
    - Savings.
    - Extent of damage to properties (House, food stock crop, livestock, etc.).
    - Source and amount of credit during disaster period.
    - Ease of payment of credit.

- Types of water-borne diseases affecting during flood.
- Amount of land eroded during erosion.
- Shelter during erosion period
- Time requires constructing a temporary shelter after erosion.

This study has the following limitations due to lack of time, manpower and resources:

1. This study has not included the environmental and institutional issues with their effects on disaster fighting.
2. The sustainability of the micro credit programs implemented by the MFIs in flood and erosion pone areas has not been investigated.
3. The study has not included the need assessment of the respondents in order to sort out the basic and urgent needs of the community people in the study area.
4. Furthermore, this study has not included the credit disbursement strategy or individual project implementation strategy of the MFIs in the study area.
5. A long time field survey was required during pre-disaster, disaster and post-disaster period in the two different locations to investigate the MFIs' activities more intensively but due to lack of manpower and time, it was not possible.

CHAPTER 02

LITERATURE REVIEW

2.1 Concept of Micro-Finance

Because of general acceptance, the term "Micro-Credit" is most often used though many literatures illustrate the term as "Micro-Finance". In fact, these are synonymous words. The simplest way to introduce micro-finance is the extension of small loans to group of people to achieve a certain pre-determined objective. In most cases, micro-finance programs offer a combination of services and resources to their clients. It often includes saving facilities, training, networking and peer support (Micro-Credit Summit, 1997). Micro-Finance better describes the activities involved, which includes credit, savings and capacity building.

According to ADB's illustration, micro-finance is the provision of a broad range of financial services such as deposit, loan, payment services, money transfer and insurance to poor and low income households and their micro-enterprises. In fact, concept of micro-finance can be explained by its name it self: 'micro'. There exists wide range of implications in the word 'Micro'. For instance:

- Small size of loans made,
- Small size of savings made,
- Smaller frequency of loans,
- Shorter repayment periods and amounts.
- Micro/ local level activities and
- Micro/ local level i.e. community based immediacy.

Micro-finance services are provided by three types of sources:

- Formal institutions such as. Banks or cooperatives,
- Semiformal institutions, such as non government organizations
- Informal sources, such as money lenders and shopkeepers.

Micro-finance Institutions are defined as institutions whose main business is the provision of micro-finance services.

2.2 History and Role of MFIs in Bangladesh

The emergence of the NGOs in the institutional contour of Bangladesh society has opened up a new avenue of external resource delivery into areas where old institutions were becoming inadequate. More particularly, in the aftermath of the liberation war of 1971, it was found that donor supported NGOs could substantially contribute to the relief and rehabilitation needs of war-affected communities. Since then NGOs have consolidated their presence and have acquired recognition as partners in development vis-à- vis the state, the political parties and the traditional civil society institutions (Hashemi and Hasan, 1999). Given the "extremely complicated, sensitive and highly politicized" (Rosberg, Michael and Desrochers 1992) realities of community organizations in Bangladesh, NGO contributions have often been found commendable in poverty alleviation, women empowerment as well as in coping with recurring natural disasters alongside creating a base for community participation. The great majority of indigenous MFIs in Bangladesh is engaged in activities falling under the 'welfare' category and is registered under the Voluntary Social Welfare Agencies Act (as described, for example, in 'An Assessment of the Role and Impact of NGOs (MFIs) in Bangladesh', Asian Development Bank, December 1992). Such organizations are said to number over 13,000 but few of these are believed to be currently active. Main areas of operation include health and family planning, whilst other organizations come into activity only in response to natural calamities. Only some 200 indigenous bodies registered under this Act are using foreign funding sources. More than 90 overseas bodies also have such registration, even though many of these are in fact developmentally focused. Developmental MFIs wishing to receive foreign funding should be registered with the NGO Affairs Bureau and nearly 900 have such a registration (rising from only 300 in 1991). They should then comply with the provisions of a series of Ordinances passed in 1978 and 1982. Other MFIs not under the view of the Bureau are registered with the Social Services Ministry, Department of Education, Department of Youth Affairs, Ministry of Forests and the Environment or the Women's Affairs Ministry and receive overseas project funding directly through the respective line Ministries. From the early stage, developmental MFIs have laid emphasis on empowering the poor against those above them in the social system, notably landowners, money lenders and local politicians, which are often closely inter-connected or overlapping categories. These

members of the local elite are seen as depriving the poor of opportunities to sustain themselves through productive activities and of monopolizing access to resources provided by Government. Early attempts to empower the poor had an ideological focus, placing emphasis on the process of 'concretization' through a cycle of action, reflection and improved action, often in parallel with educational and training activities. Whilst some MFIs, (such as Nijera Kori) retain their concentration on this process, many others now place their major emphasis on provision of services, and most particularly credit, with concretization remaining as a relatively minor component of activities in the field. Although the main emphasis of many NGOs has shifted from consciousness-raising activities, most still operate under an ideological approach which differs from that underlying government programs in similar fields. For example, in an ADB report (ADB 1992) it is observed that 'many NGOs have micro-credit/employment-generation projects similar to the Government's BRDB-Rural Poor Program. In the former, however, the care and attention given to the formation of borrower groups is much greater and is provided within a particular value-framework. The far less rigorous social preparation of BRDB is generally accepted as the major reason for lower group sustainability, poorer loan recovery and greater mis-targeting compared to major MFI programs'.

2.3 Major Sectors of MFI Operation

The prime strategy of most of the MFIs is giving access of micro-credit to the poor, especially to the women for their self employment and thus poverty alleviation. These programs are representative of group based lending process followed by more than 750 NGOs in Bangladesh targeting the poor (Parvin, 2003). These programs mainly targeting the following issues:

– Poverty alleviation;

– Concretization and mobilization of local groups;

– Development of local and regional organizations of the poor to defend their rights and interests.

Non-formal activities employ about one third Bangladesh's population but account for 55 percent of income (Khandker, 1998). Due to having this high level of income generating

potential, micro-credit programs prefer their credit disbursement to non-farm sectors though they disburse for livestock, fisheries too. The broader sectors of credit disbursement are trading, then services, manufacturing, livestock rearing and fisheries (Ahmed and Karim, 1996). The major sectors of MFI's activities have already been portrayed in table 1.1.

2.4 Micro-finance and Disaster Management

The aftermath of a natural disaster often poses a monumental challenge to the locals of the affected country in terms of recovery and restoration. Homeless citizens need replacement, housing, water, sewage and other public services must be restored to maintain public health and support other recovery activities; and the process of reconstruction of damaged infrastructure like dams, bridges, electric poles and schools need immediate attention. Natural disasters also pose challenges to the economy and resources of both developed as well as developing countries, however their effect on developing countries is perhaps more severe because of these countries' limited ability and resources to cope with their own losses

Previous researchers (Barraclough, 1999; Burby, 1998; Davis, 1978) have correctly pointed out the fact that it is the poor who primarily bear the brunt of the post-disaster losses, tending as they do to live is areas most exposed to hazards and in fragile structures offering little protection. Given this context, one can begin to understand the effect of natural disasters like cyclones, tornados, floods, river bank erosion and earthquakes on vulnerable developing countries, the examples for this case being flood prone South-Asian countries like Bangladesh.

The Honduran Government in its National Plan for National Reconstruction following Hurricane Mitch's massive destruction emphasized that "the relation between global climatic changes and phenomena like hurricanes be recognized", and concluded by drawing attention to the importance of hurricane-warning systems and other precautionary measures which will need to be taken if the massive loss to life and property is to be avoided in the future.

A research was conducted on "Institutional Framework for Cyclone Disaster Management in Bangladesh" by Dil Rowshan in 1991. In this research, the author has discussed the nature of institutional facilities that exists in the country for cyclone disaster management and at the same time, people's participation in the process of disaster management. This study suggested some institutional frame work both for government and non-government sector for taking appropriate initiatives during pre-disaster and post disaster period.

Another research was conducted on "Formulation of Planning and Land-use policies for Disaster Management in Chittagong Metropolitan area of Bangladesh" by A. K. M. Rejaul Karim in collaboration with UNCRD. This research has provided some land-use planning proposals, development control mechanisms, land-use micro and macro zoning, subdivision regulations and open space control mechanisms to reduce the impact of cyclone disaster in Chittagong.

In January 1991, UNCRD-CIRDAP conducted a country seminar on "Development of Modules for Training on Integrated Approach to Rural Development and Disaster Management in Bangladesh". The main objective of the seminar was to identify the problems and constrains, prospects and potentials of integrated approach to rural development and disaster management with people's participation.

2.5 Natural Disasters, Disaster Mitigation and Disaster Management

A **Natural Disaster** is "a natural event, sudden or progressive, with such severity that the affected community or country has to respond by taking exceptional measures". (Silver, 2001).

Disaster Mitigation is "measures aimed at reducing the impact of a natural or man-made disaster on the nation or community; and the application of these measures to moderate or reduce the effects and impacts of current or future disasters". (Silver, 2001).

Disaster Management is "an applied science that seeks by systematic observation and analysis of disasters, to improve measures relating to prevention, mitigation, preparedness, emergency response and recovery". (Silver, 2001).

Severe natural events include flood, cyclone (or typhoon/hurricane), fire, blizzard, earthquake, tsunami, volcanic eruption, etc. Some of these are "rapid-onset", some are "slow-onset", some are seasonal, some are predictable, and some are restricted to specific geographic areas.

Disaster management is a complicated, on-going concern, involving far more than the immediate distribution of emergency relief in the wake of a natural disaster. There is a cycle of activities that are in progress long before a natural disaster strikes and continue long after the causal event has passed.

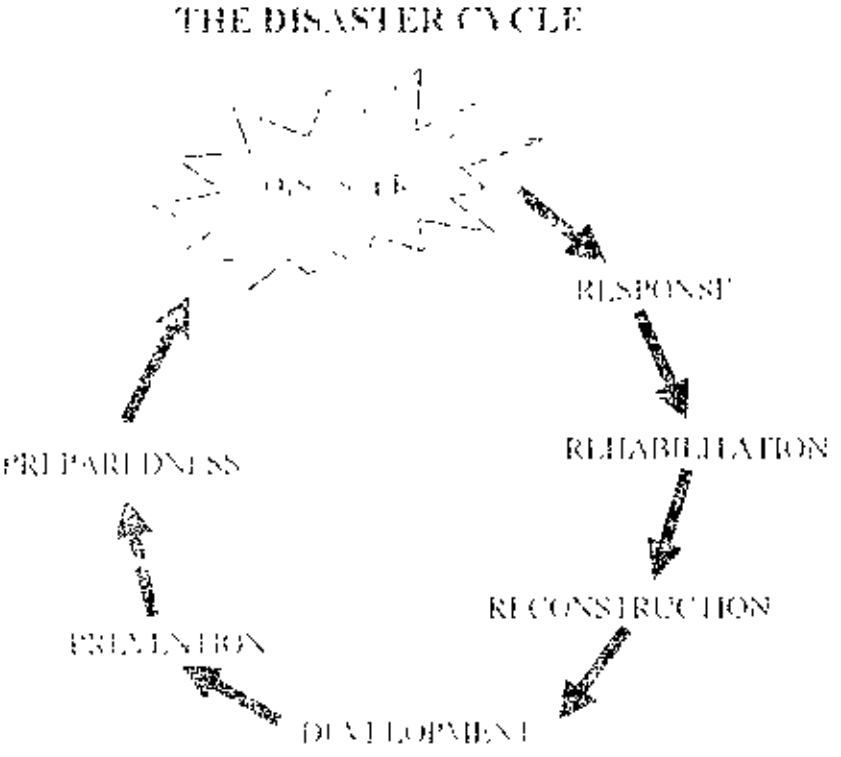


Figure 2.1: Disaster cycle

It is important to note that use of the term "disaster" is not an indication of the severity of a natural event but of the severity of its impact on people and the environment. Therefore, all

response, rehabilitation and reconstruction can all serve to reduce the impact of a severe natural event.

While natural events are indiscriminate, their impact is usually more devastating for poor households because they have fewer options for coping with them. Poor households are also more likely to be located in "danger" zones, for example, below the flood line. This is why natural disasters appear to strike the poor more often – because, in fact, they do.

This research addresses some broader issues of "Microfinance and Disaster Management", in recognition of the need for MFIs to take a more responsive (and less reactive) approach to disaster management and mitigation. There are numerous opportunities for collaboration between MFIs and DMAs that go beyond emergency relief activities to pre-disaster risk mitigation, longer-term post-disaster rehabilitation, and disaster research. This collaboration can be mutually reinforcing, allowing MFIs and DMAs to concentrate on their core competencies and to maximize the efficacy of their interventions.

CHAPTER 03

METHODOLOGY OF THE STUDY

3.1 Research Dimensions

Since natural disasters are regular phenomenon in the country, the nationwide MFIs like Grameen Bank, Proshika, Padakkhep, ASA and BRAC has taken pre disaster awareness campaign, during disaster relief distribution and post disaster rehabilitation program to reduce vulnerability of their beneficiaries. These initiatives have been taken in few extreme disaster prone areas since 1998 flood. But it is necessary to examine the magnitude of success of such initiatives in coping recurring disaster.

Vulnerability is an alarming issue in disaster management. It was observed that mainly the poor people who cannot afford to construct house in high land, generally construct their house in low lying areas and thus making themselves more vulnerable to disaster like flood and river erosion. These poor people vulnerable to disaster are the primary target of the MFIs. This research is an attempt to show whether the Micro-finance program being able to reduce vulnerability of its beneficiaries or not. This research has fulfilled its objectives in the following manner:

1. Following the first objective, this research has identified the overall activities of MFIs as well as their activities for disaster management in the study areas through conducting an extensive survey on local MFIs.

2. In order to fulfill its second objective, this research has examined the comparative advantage and disadvantage of the Micro-credit program beneficiaries in coping with disaster through conducting field survey. The comparison between the beneficiary and non-beneficiary group in coping with disaster has been made on some common vulnerability indicators which have been presented in Coordination Schema.

3. This research has also examined the change in disaster fighting ability of the beneficiaries after being member of MFIs to fulfill its third objective. There is no way to disagree that the MFIs have very few programs which are solely

disaster oriented. The MFIs in Bangladesh are rather reactive than pro-active. Majority of them used to limit their disaster management activities into distribution of relief. Only BRAC, Padakkhep, ASA and Grameen Bank have separate disaster mitigation strategy. But the MFIs in the study areas including BRAC, Padakkhep, ASA and Grameen Bank implement a number of programs such as 'Housing Loan', 'Health and Family Planning', 'Water Supply and Sanitation', 'As Free Water', 'Savings Generation' which are not directly disaster oriented but posse multiplier effect on reducing vulnerability of the disaster affected people. For this reason to assess the accurate impact of MFIs on its beneficiaries in coping with disaster, the overall activities of MFIs have taken into account for this particular study. The overall activities and disaster related activities have been discussed and compared to each other in table 5.1 and 5.2 of chapter 05.

4 Following the analysis and findings on vulnerability indicators, some critical comments and recommendations have been made for further restructuring of MFI's activities and programs toward the more effective contribution to disaster management which has eventually fulfilled the final objective of this study.

Analyzing empirical evidences both from primary and secondary sources this research explored critical issues related to vulnerability to disaster. Conventional as well as relevant methods, techniques and tools were used for data collection, data processing and analysis. The Coordination Schema reveals detail dimension (or parameter) of this research. The Coordination Schema guided to formulate questionnaires and collect information in a systematic manner.

3.2 Finalization of Research Goal and Objectives

The goal of the research is to examine the role of MFIs in reducing vulnerability of flood and river erosion affected people. In order to reach the goal this research has tried to identify the over all activities of Micro-finance Institutions along with their activities for disaster management. It has also assessed the comparative advantages of the Micro-finance program beneficiaries in river erosion and flood prone areas and has examined the change in the disaster coping ability of the beneficiaries before and after the implementation of Micro-finance program. An extensive ground work and relevant

literature review helped to find out research gap in this field and thus to finalize the objectives.

3.3 Literature Review

In order to develop a conceptual framework, an intensive literature survey has been conducted to acquire relevant knowledge. Literature review has been given efficient direction to achieve objectives and formulate the variables for data collection. Relevant literature like published and unpublished theses, journals and books have been reviewed to obtain information regarding disaster management and micro-credit programs. It also includes an intensive study of the micro-credit programs for disaster management operated by local NGOs.

3.4 Selection of Study Area and Justification

This study has been conducted on 5 villages from Char Algi Union of Mymensingh District and 5 villages from Mohonpur Union of Chandpur District which are vulnerable to flood and river erosion respectively. The following villages have been selected for primary data collection:

Table 3.1: Name of the selected villages

Districts	Upazillas	Unions	Villages
Chandpur	Matlab	Mohonpur	Mohonpur
			Mathabhanga
			Sankibhanga
			Modapur
			Shigir Char
Mymensingh	Gafargaon	Char Algi	Nakkatar Char
			Nidhiar Char
			Chandir char
			Gainpara
			Noyapara

Source: Field Survey, Dec, 2006- Jul, 2007

Secondary information and past visual experiences prove that the above 10 villages from Chandpur and Mymensingh districts satisfy the following criteria considered during selection of study area.

a) **Area having similar geographic characteristics**

Mohonpur union of Chandpur district and Char Algi union of Mymensingh district are situated on the bank of Lower Meghna and Old Brahmaputra, the two main rivers of Bangladesh respectively (Map 3.1 & 3.2). Due to similar geographical location, these two areas are vulnerable to water allied disasters like flood and river erosion.

b) **Area being vulnerable to water allied natural disaster**

Natural disasters are annual events both in Mohonpur union of Chandpur district and Char Algi union of Mymesingh district.

Table 3.2: Trend of natural disasters in the study area

Year	Mohonpur Union	Char Algi Union
1987	Flood + Erosion	Flood + Erosion
1988	Flood + Erosion	Flood + Erosion
1989	Erosion + Tornado	Flood
1990	-	Flood
1991	Erosion	Flood
1993	Flood + Erosion	Flood
1994	-	Tornado
1995	-	Tornado
1996	Erosion	Flood
1997	Flood + Erosion	Flood
1998	Flood + Erosion	Flood + Erosion
1999	Erosion + Tornado	Flood
2002	Erosion	Flood
2003	Erosion	Flood
2004	Erosion	Flood
2005	-	Tornado
2006	Erosion	Flood
2007	Flood + Erosion	Flood + Erosion

Source: UNO Office of Mohonpur and Char Algi Union

Table 3.2 shows that river erosion is the major natural disaster in Mohonpur union and flood is a regular episodic natural disaster in Char Algi union. Therefore, Mohonpur union has been selected for study on river erosion and Char Algi union has been selected for study on flood.

Table 3.3: Water Level in five villages of Char Algi union during flood 2007

Villages	River	Station Name	D.L. (m)	Water Level (cm) as on 17.09.07
Nakkatar Char	Old Brahmaputra	Mymensingh	12.50	+9 cm above D.L.
Nidhiar Char	Old Brahmaputra	Mymensingh	12.50	+9 cm above D.L.
Chandir char	Old Brahmaputra	Mymensingh	12.50	+9 cm above D.L.
Gainpara	Old Brahmaputra	Mymensingh	12.50	+9 cm above D.L.
Noyapara	Old Brahmaputra	Mymensingh	12.50	+9 cm above D.L.

D.L. = Danger Level

Source: Podokkhep Local Office, 2007

Table 3.4: Erosion in Mohonpur union during 2007

Name of river	Rate of erosion	Widening rate	Scenario of 2007		
			Land Eroded	House-hold affected	Population affected
Lower Meghna	824 m/year	100 m/year	800 Acre	190	1478

Source: UNO Office, 2007

Table 3.3 shows that selection of Char Algi union for study on impact of Micro-finance on reducing vulnerability of flood affected people is a rationale one. On the other hand table 3.4 shows the justification behind selection of Mohonpur union for conducting similar study on river erosion.

c) **Area where micro credit program has been implemented for last five years**

Both of the study areas have been experienced with a number of micro finance programs for last five years.

Table 3.5: MFIs in study areas

Study Area	No. of MFIs	Name of MFIs	Year of Establishment
Char Algi Union	6	BRAC	22.09.1994
		PROSHIKA (Manobik Unnayan Kendra)	20.12.1996
		ASA	10.11.1995
		Padakkhep	10.10.2000
		PDBF (Palli Daridro Bimochon Foundation)	30.04.2000
		Social Development Program	15.10.2001
Mohonpur Union	5	BRAC	20.01.1993
		PROSHIKA (Manobik Unnayan Kendra)	18.10.1994
		Grameen Bank	01.01.2000
		Nijera Kori (do ourselves)	01.06.2001
		Chasi Kallyan Samiti (Peasant Welfare Society)	01.02.2002

Source: Field Survey, Dec, 2006- Jul, 2007

During field survey it was found that all the MFIs in both of the study areas have at least five micro-credit programs on different issues.

d) Area having ease of access by available means of transportation

Gafargaon is connected with Dhaka City by Dhaka-Mymensingh highway and Dhaka-Gafargaon railway respectively. The villages under Gafargaon upazilla are also served by a large number of rural feeder roads and circular waterways. Feeder Road Development Project of Local Government and Engineering Department (LGED) have significantly developed the accessibility of the study area. Matlab Upazill is connected with Dhaka City by Dhaka-Chittagong highway. Mohonpur is connected with Matlab by 30 km. road. Water transport is also available from Sadarghat Lawnch terminal to arrive at Mohonpur Terminal and it is the easier mode to reach Mohonpur.

3.5 Sample Design

Sample design is one of the prime parts of any research, since perfection in sample design lead to have a satisfactory outcome from the research. There are three main components under sample design such as a) Sampling Unit, b) Sample Size and c) Sampling Methods. Details of these three components under this research are going to be discussed hereunder.

a) Sampling unit

Sampling units under this research have been grouped into three levels: 1) Macro, 2) Meso and 3) Micro. Sampling units in different level are shown in the following diagram.

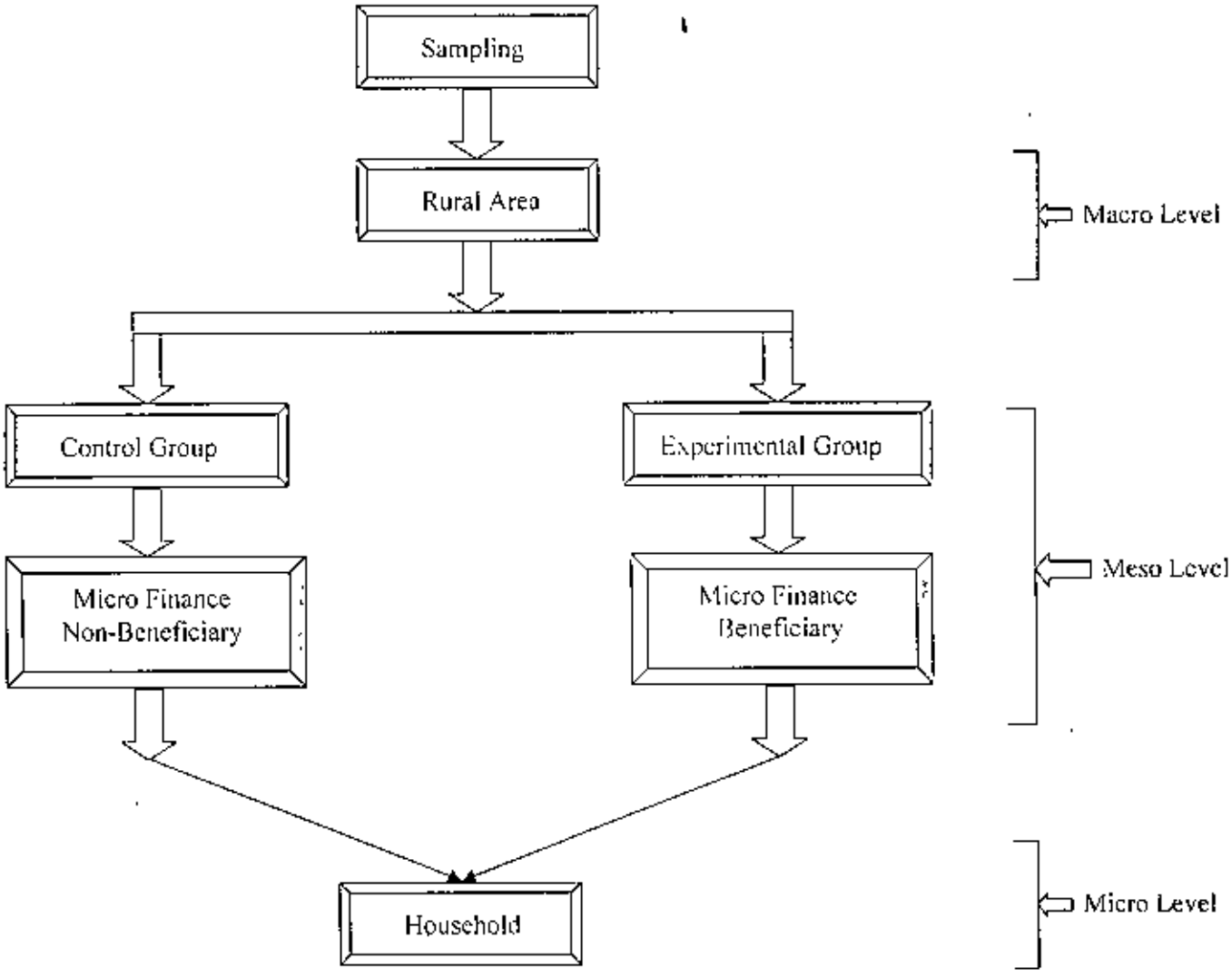


Figure 3.1: Sampling unit of the research

According to the considering criteria two groups has been selected from among the river erosion and flood affected people; one is the **control group** (Micro-finance non-beneficiary) and the other is the **experimental group** (Micro-finance beneficiary). Most of the micro-finance programs implemented by local MFIs have the condition that only one member from each house-hold can be the member. Therefore, household has been taken as the micro level sampling unit and the respective member of MFI (in case of beneficiary) or household head (in case of non-beneficiary) is the prime respondent for this research.

b) Sample Size

After selection of the study area and respective natural disasters for study, demographic information about the study area has been collected. Considering the selection criteria of the study area, villages have been selected for study. From each of the village more than 10% of the households have been selected as the sample household where equal number of control group and experimental group members has been included. In order to have equal number of control group members and experimental group members from each village, it was not possible to select 10% respondent from each village equally. Number of studied households and sample size are,

Table 3.6: Study area with number of households (HHs) and sample size

District	Upazilla	Union	Villages	Number of HH	HH Covered	
					Beneficiary	Non-beneficiary
Chandpur	Matlab	Mohonpur	Mohonpur	50	5	5
			Mathabhanga	60	5	5
			Sankibhanga	50	5	5
			Modapur	40	5	5
			Shigir Char	60	5	5
Mymensingh	Gafargaon	Char Algi	Nakkatar Char	145	10	10
			Nidhiar Char	195	10	10
			Chandir char	125	10	10
			Gainpara	140	10	10
			Noyapara	205	10	10
Total				**1070**	**75**	**75**

Source: Field Survey, Dec. 2006- Jul, 2007

c) Sampling Method

From the UNO office and Union Parishad Chairman Office information regarding the unions and their trend of being affected by natural disasters has been collected. Information regarding the on going micro-credit programs of the MFIs, total number of beneficiaries, list of their names, involved economic activities as well as the ideographic information documents of each member have also been collected from their local offices. After having these information, sample 'Villages' have been selected by simple random sampling where both the control group and experimental group were present. Since examination of the comparative advantage and disadvantage of the micro-credit program beneficiaries and non-beneficiaries in their disaster coping ability is one of the prime objectives in this research, socio-cultural matters and economic activity types have been considered during using sampling method.

3.6 Methods of Data Collection

Since the goal of this research is to examine the impact of micro-finance on reducing vulnerability of river erosion and flood affected people, the common vulnerability indicators for both control and experimental groups have been selected prior data collection to prove a general platform for analysis. These indicators along with data type and level of measurement have been illustrated in the table of Coordination Schema which has been described below:

Co-ordination Schema

Part I: Ideographic Information of the Respondents

Parameter	Variable	Data Type & Source	Level of Measurement
Respondent's personal data	Name	Qualitative, Primary	Nominal
	Address	Qualitative, Primary	Nominal
	Age	Quantitative, Primary	Ratio
	Sex	Qualitative, Primary	Nominal
	Religion	Qualitative, Primary	Nominal
	Marital Status	Qualitative, Primary	Nominal
	Occupation	Qualitative, Primary	Nominal
	Educational Status	Qualitative, Primary	Nominal
	Migration	Qualitative, Primary	Nominal
	Membership of MFIs	Qualitative, Primary	Nominal
Socio-economic status of the House-hold	Income and Expenditure per month	Quantitative, Primary	Ratio
	Land ownership pattern	Qualitative, Primary	Nominal
	Condition of main dwelling house	Qualitative, Primary	Nominal

Part II: Indicators to Assess the Comparative Advantages of Micro-finance Program Beneficiaries in the Study Area

Dimensions	Parameter	Indicator	Data Type & Source	Level of Measurement
Social	Housing	Plinth height and ceiling height	Quantitative & Primary	Ratio
		Construction materials	Qualitative & Primary	Nominal
		Category of land eroded	Qualitative & Primary	Nominal
		Shelter during erosion period	Qualitative & Primary	Nominal
	Drinking water	Source of drinking water	Quantitative & Primary	Nominal & Ratio
		Storage of safe drinking water	Quantitative & Primary	Nominal & ratio
	Sanitation	Condition of toilet	Qualitative & Primary	Ordinal
		Condition of bathing place	Qualitative & Primary	Ordinal
		Condition of cooking place	Qualitative & Primary	Ordinal
Economic	Stock of food	Amount of dry food preserved for disaster period	Quantitative & Primary	Nominal & Ratio
	Food consumption pattern	Food consumption during disaster period	Quantitative & Primary	Nominal & Ratio
	Stock of medicine	Type and quantity of medicine	Quantitative & Primary	Nominal & Ratio
	Saving	Saving generation per month before and after being members of MFIs	Quantitative & Primary	Ratio
	Extent of damage	Extent of damage to housing	Qualitative & Primary	Ordinal
		Extent of damage to the source of safe drinking water	Qualitative & Primary	Ordinal
		Extent of damage to sanitation	Qualitative & Primary	Ordinal
		Extent of damage to food stock	Qualitative & Primary	Ordinal
		Extent of damage to crop and livestock	Qualitative & Primary	Ordinal

	Credit	Source of credit	Qualitative & Primary	Nominal
		Ceiling of credit	Qualitative & Primary	Nominal
		Ease of payment	Qualitative & Primary	Ordinal
	Utilization of credit delivered by MFIs	Investment in housing	Quantitative & Primary	Ratio & Ordinal
		Investment in education	Quantitative & Primary	Ratio & Ordinal
		Investment in productive asset generation	Quantitative & Primary	Ratio & Ordinal
		Investment for pure drinking water, sanitation and hygiene	Quantitative & Primary	Ratio & Ordinal
		Investment for food stock	Qualitative, Quantitative & Primary	Nominal & Ratio
Health	Diseases	Spread of water borne diseases like diarrhoea, cholera, typhoid.	Qualitative & Primary	Ordinal
		Extent of ability to cope with diseases	Qualitative & Primary	Ordinal
Institutional	Extension Services	Types of services provided	Qualitative & Primary	Nominal
		Availability	Qualitative & Primary	Ordinal
		Quality/satisfaction of the members	Qualitative & Primary	Ordinal
	Motivation/ Awareness building	Existence of motivation program	Qualitative & Primary	Nominal
		Effectiveness of motivation	Qualitative & Primary	Ordinal

After the fixation of vulnerability indicators, the types of data to conduct this study have been grouped into two groups based on their sources. These are a) Primary data and b) Secondary data. Both of the groups are illustrated hereunder.

a) Primary data

This study is mainly based on primary data. This data has been collected from various sources and in various ways. Two prime tools of data collection were structured questionnaire and checklist. Both the questionnaire and checklist have been tested beforehand and necessary corrections have been incorporated. Two separate questionnaires have been prepared for the flood and erosion affected people respectively

and the checklist has been prepared for the MFI's staff and officials. Various methods used for data collection and collected data types are presented in the following table:

Table 3.7: Data collection methods, tools and types of data

Methods	Tools	Sources	Types of Expected Data
Questionnaire Survey	Questionnaire	Respondent: disaster affected household	• Ideographic information of respondents. • Information on social, economic & health indicators. • Information on vulnerability indicators associated with the respondents.
Semi Structured Interview	Checklist	MFI Officials and Officials of respective micro-credit and disaster related project	• Information on all ongoing projects and implementation procedure of the projects. • Strategies, goals, objectives, duration, funding and such other detail issues related with each projects. • Structure, strategy, principles and the working mechanism of MFIs.
Interview of Key Informants/ Informal Discussion/ Conversation	Electronic Recorder	Social elite, local formal and informal leaders, including Union Parishad Chairman and members, school teachers and researchers who are involved in this type of activities	• Views, opinions and attitude of the key informants. Level of community participation in Disaster Management.
Observation	Field Book	Researcher	• Physical, social, economic and environmental conditions of the area and the overall life style of the community.

b) Secondary Data

Secondary data was collected to supplement primary data and in order to develop conceptual framework. Secondary data was collected from statistical reports, annual development reports, national and district development plans, journal articles, published materials and official records of the involving agencies with the project. Literature review was part of getting secondary information.

3.7 Data Processing and Analysis

The collected data for this research are mainly two types: a) Quantitative and b) Qualitative. Almost all the collected information has been organized, processed and analyzed with the use of computational software (SPSS). Graphic software (MS'Excel) has been also used for graphical presentation.

In order to examine the qualitative information in a scientific manner it is needed to transform into quantitative types. In this research it has been done by following ways of analysis. The ways are,

3.7.1 Descriptive statistics

Initially Table of frequencies has been developed to show the comparative scenario of beneficiary and non-beneficiary group in disaster coping. Data have been presented both in frequency and percentage form. Under descriptive statistics, programs like mean, standard deviation, skewness, minimum, maximum, Pearson Chi-square value and degree of freedom have been used for analysis of demographic and socio-economic information.

3.7.2 Statistical test/Analysis of variance (ANOVA)

'Analysis of Variance' or 'F-test' is used to examine the significance of difference among two or more sample means. Among the two methods of analysis of variance, the 'One-Way Classification Model' has been used in this research. F- ratio has been calculated as follows:

$$F = \frac{\text{Variance between the samples}}{\text{Variance within the samples}} \quad \text{or} \quad F = \frac{(S_1)^2}{(S_2)^2}$$

This calculated value of F has been compared with the table value of F for the given degree of freedom at a certain criteria level (5% level of significance). If the calculated value of F is found greater that the table value of F, then the difference in sample means has considered as significant. On the other hand, if the calculated value of F is found less that the table value of F, then the difference is not significant. Under the Compare Means program, One-Way ANOVA table has been used to show the level of difference between beneficiary and non-beneficiary group on some pre-selected vulnerability indicators. This analysis eventually reveals the advantageous or disadvantageous position of MFI's members.

3.7.3 Correlation analysis

Correlation analysis has been done to determine the degree of relationship between two or more variables; such as membership status and vulnerability indicators. The Correlation Coefficient lies between -1 and +1. Symbolically, $-1 < r < +1$. When $r = +1$, it means there is perfect positive correlation between the variables. When $r = -1$, it means there is perfect negative correlation between the variables. When $r = 0$, it means there is no correlation between the variables. This analysis has shown how significantly the vulnerability indicators are related with membership status and whether the initiatives taken by MFIs have been able to reduce the vulnerability of their members.

Expected tools and programs for data processing and analysis are presented in the following table.

Table 3.8: Tools and programs used for data analysis

Tools	Program	Area of Analysis
Descriptive Statistics	**SPSS:** Frequency distribution, Mean, Median, Mode, Standard Deviation, Skewness, Pearson Chi-Square test, Degree of Freedom.	• Ideographic information of the respondents, demographic, social, economic and health related information of their households.
Analysis of	**SPSS:**	• Comparison between the

Variance and relationship measure	Cross Tabulation, Chi- square Test, Bivariate Correlation, One way ANOVA Table and such other Multivariate Analysis	beneficiaries and non-beneficiaries among different critical issues associated with vulnerability. • Showing the relationship between membership status and vulnerability indicators.
Bar Chart, Pie Chart	MS Excel	• Graphical Presentation and Analysis

3.8 Accumulation of Findings and Analysis in Thesis Form

After completion of all processing and analysis of data, all the out comes have been accumulated and organized in different chapters of this thesis. It is expected that the survey operation and observations has revealed some facts and findings about the ongoing micro-credit programs for disaster management in the study areas as well as their strength and weaknesses. These findings will help to disclose the followings:

- A comparative analysis on the advantages and disadvantages of Micro credit program Beneficiaries and Non- beneficiaries.
- Pre- disaster and Post- disaster supports from the MFIs and evaluation of the supports from the opinion of the respondents.
- Attempts of integrating disaster management with poverty alleviation program.
- And above all, whether Micro credit program is capable of playing a significant role in disaster management.

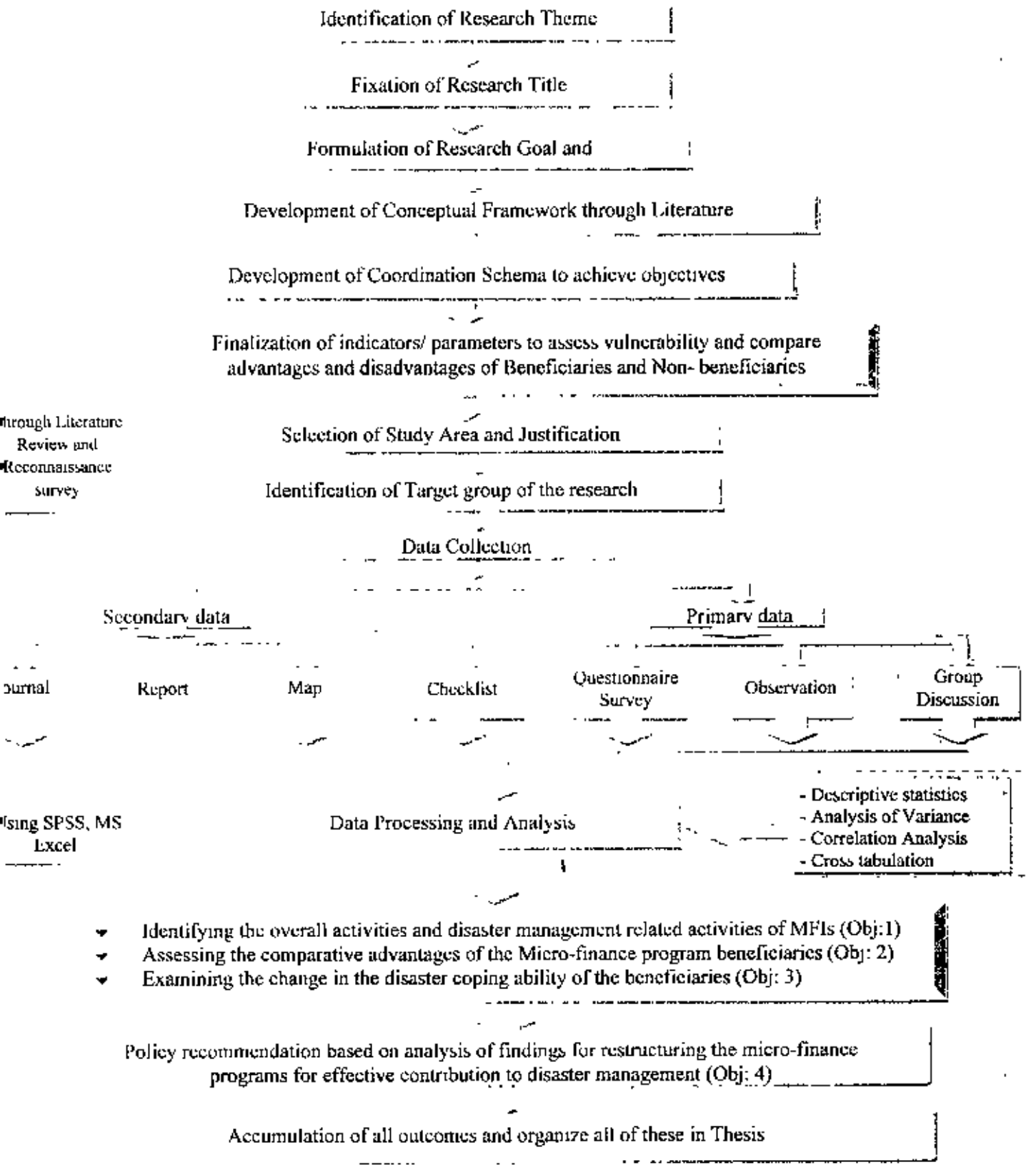


Figure 3.2: Sequential steps and schedule to conduct the research

CHAPTER 4

STUDY AREA PROFILE

4.1 Introduction

In order to measure the impact of MFIs on reducing vulnerability of flood and river erosion affected people, an extensive field survey was conducted by the author from December 2006 to August 2007. Data were collected from the beneficiary as well as non-beneficiary from 10 randomly selected villages (5 villages from Char Algi Union of Mymensingh District and 5 villages from Mohonpur Union of Chandpur District) of Mymensingh and Chandpur Districts. Here in this chapter the study area profile, respondents' profile and households' profile has been discussed elaborately.

4.2 Location and Areal Coverage of Study Area

4.2.1 Upazilla- Gafargaon

Gaffargaon Upazila (Mymensingh district) with an area of 401.16 sq km, is bounded by Trishal and Nandail upazilas on the North, Kapasia and Sreepur upazilas on the South, Hossainpur and Pakundia upazilas on the East, Trishal, Bhaluka and Sreepur upazilas on the West. Main rivers are Old Brahmaputra, Banar; noted beels are Taltala, Subi, Mulaplia, Badua, Hoara. There are fifteen unions under this upazilla named Rasulpur, Barabaria, Char Algi, Saltia, Jessora, Raona, Panchbag, Mashakbali, Usthi, Langair, Datterbazaar, Paithal, Tengab, Nigair. Among these fourteen unions Char Algi has been selected as the study area. Hereunder, a brief introduction of Char Algi union has been presented.

Union- Char Algi

Char Algi Union is situated just on the river Old Brahmaputra, at the north-east corner of Gafargaon upazilla. The union is surrounded by another upazillas of Mymensingh.

North- Trishal and Nandail Upazilla

South- Sreepur and Kapashia Upazilla

East- Pakundia and Hossainpur Upazilla

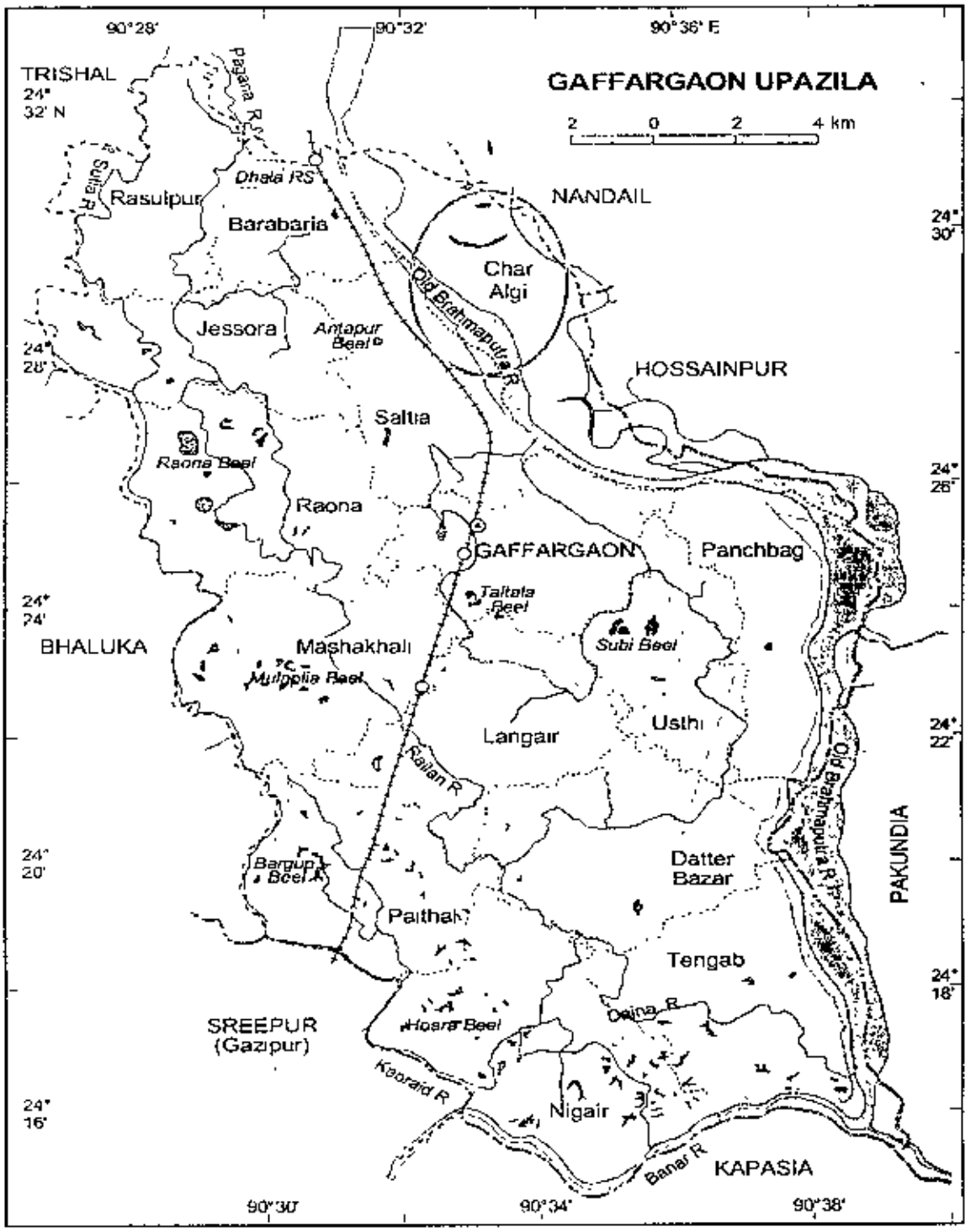
West- Bhaluka Upazilla

Char Algi is on the riverbank of Brahmaputra and it lies between North and East portion of the river. The location of the union is shown in the map (Map- 4.1)

Area

Gafargaon upazilla under Mymensingh district consists of 15 unions. Char Algi Union is one of them. The Area of the union is 8391 acre. There are 9 wards and 39 villages in Char Algi union. Among those 39 villages, 5 villages that are most vulnerable to flood and most densely populated have been selected for survey. Selected villages are: Nakkatar Char, Nidhiar Char, Chandir Char, Gain para and Noapara

Map 4.1: Gafargaon Upazilla



Source: LGED, 2006

4.2.2 Upazilla- Matlab

Matlab Upazila (Chandpur district) with an area of 409.22 sq km. is bounded by Daudkandi and Gazaria upazilas on the north, Chandpur Sadar and Hajiganj upazilas on the south, Kachua (Chandpur) upazila on the east, Munshiganj Sadar and Bhedarganj upazilas on the west. Main rivers are Lower Meghna, Gumti and Dhonagoda; Meghna-Dhanagoda Irrigation Project is notable. There are twenty unions under this upazilla named Sadullapur, Satnol, Mohonpur, Chengerchar, Durgapur, Kalakanda, Mohonpur, Farazikandi, Uttar Matlab, Dakshin Matlab, Dakshin Upadi Uttar Upadi, Narayanpur, Uttar Nayergaon, Dakshin Nayergaon, Khadergaon, Sultanabad, Islamabad, Purba Fatehpur and Pashim Fatehpur.

Union- Mohonpur

Mohonpur Union is situated just on the river Lower Meghna, at the west side of Matlab upazilla. The union is surrounded by another unions of Chandpur district.

North- Kalakanda Union

South- Eklashpur Union

East- Paschim Fatehpur Union

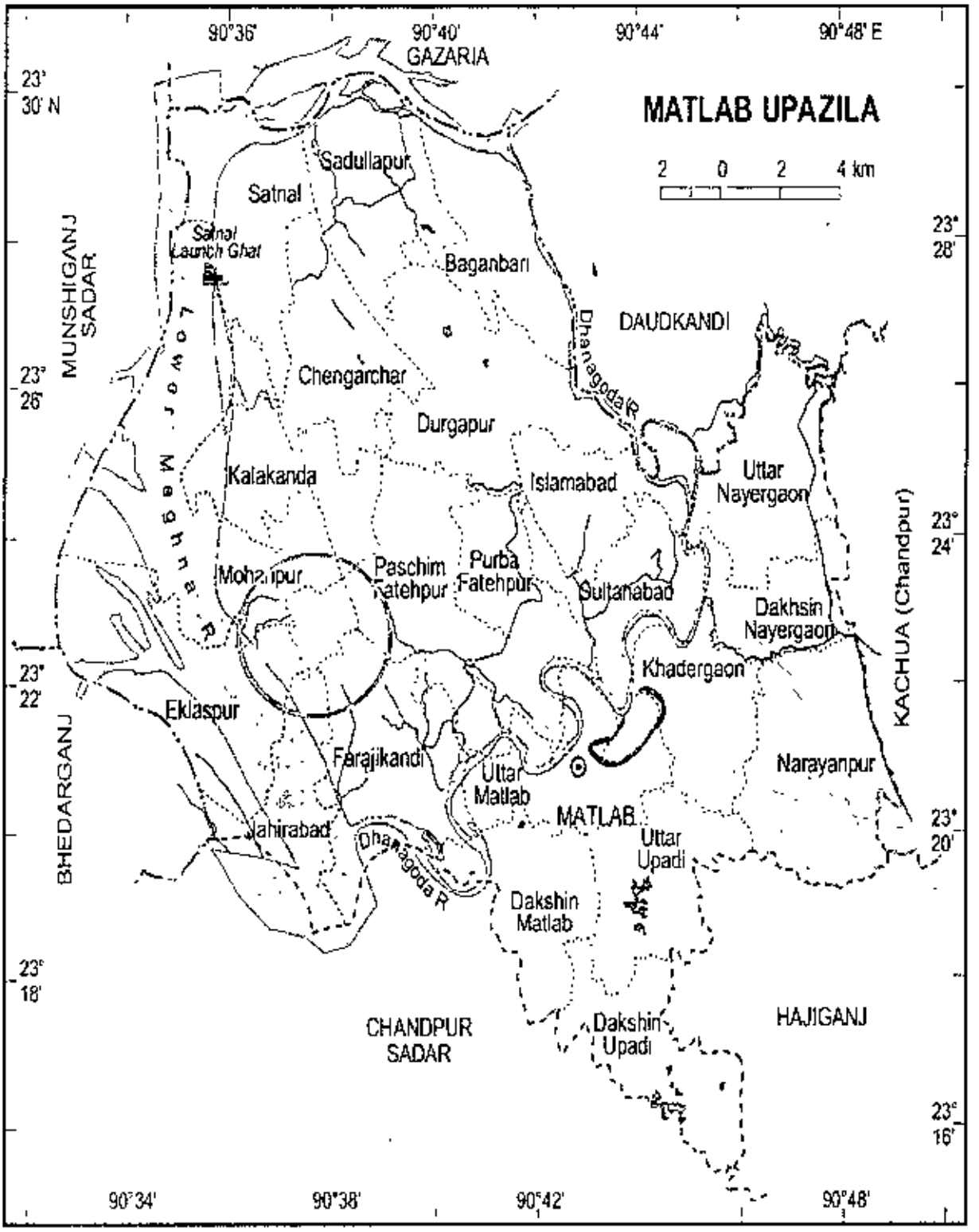
West- Lower Meghna River

The location of the union is shown in the maps (Map- 4.2)

Area

Matlab upazilla under Chandpur district consists of 20 unions. Mohonpur Union is one of them. The Area of the union is 20.46 Sq Km. There are 29 villages in Mohonpur union. Among those 29 villages, 5 villages that are most vulnerable to river-erosion and most densely populated have been selected for survey. Namely they are Mohonpur, Mathabanga, Sankibhanga, Modapur.

Map 4.2: Matlab Upazilla



Source: LGED, 2006

4.3 Demographic Condition of the Study Area

Total population of Char Algi is 25,000 and density is 335 people per acre. Most of the families are joint in nature and household size varies from 10-20 persons. A total of 810 families live in those 5 selected villages and among them 100 families (12.35%) were interviewed with a close-ended questionnaire.

Total population of Mohonpur is 27,000 and density is 1320 people per Sq. Km. Most of the families are joint in nature and household size varies from 10-20. A total of 260 families live in those 5 selected villages and among them 50 families (19.23%) were interviewed with a separate close-ended questionnaire.

4.3.1 Population distribution

The population and households in the selected study area has been presented in table 4.1.

Table 4.1: Population distribution with HH number and Sex

Union	Villages	Household	Population	Male	Female
Mohonpur	Mohonpur	50	496	268	228
	Mathabhanga	60	660	356	304
	Sankibhanga	50	450	261	189
	Modapur	40	480	278	202
	Shigir Char	60	540	270	270
Total		**260**	**2626**	**1433**	**1193**
Char Algi	Nakkatar Char	145	1595	830	765
	Nidhiar Char	195	2324	1186	1138
	Chandir char	125	1563	870	693
	Gainpara	140	1848	998	850
	Noyapara	205	2050	1031	1019
Total			**9380**	**4915**	**4465**

Source: Chairman, Union Parishad Office of Mohonpur and Char Algi Union, 2007

4.3.2 Migration status

Both in Mohonpur and Char Algi union most of the inhabitants are non-migrant. 18% respondents are in-migrant and 82% respondents are non-migrant in Char Algi union where as 28% respondents are in-migrant and 72% are non-migrant in Mohonpur Union.

4.4 Housing Condition of the Study Area

Most of the houses are constructed of tin in both Mohonpur and Char Algi Union. 22% families in Mohonpur Union and 12% families in Char Algi Union have mud and thatch houses. Recently some well-off families in Char Algi union (only 10%) and Mohonpur union (only 6%) have constructed brick- built houses in order to maintain their social standard. Houses are built on filled up land which is locally known as 'Bhiti'.

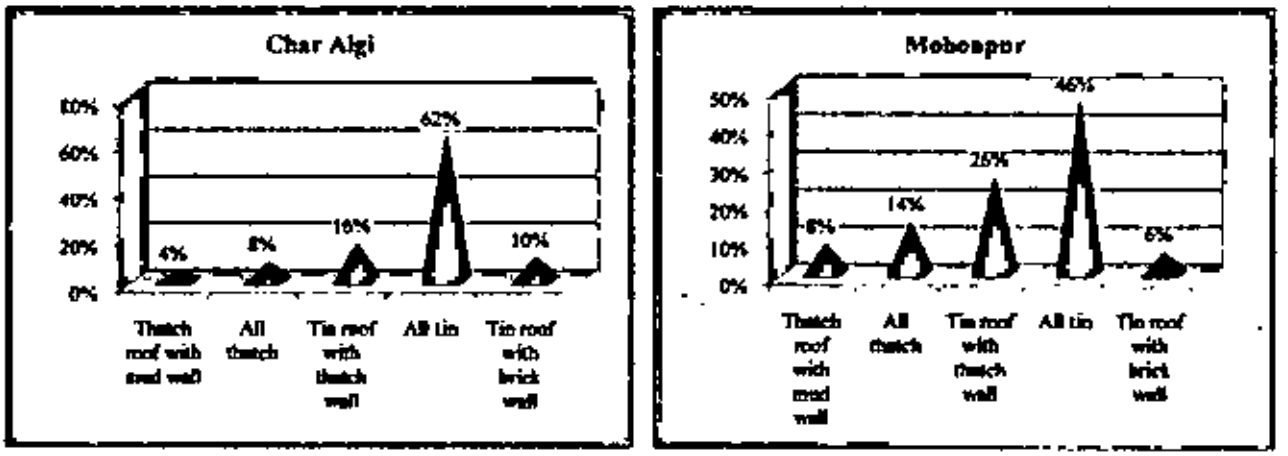


Figure 4.1: Housing condition of the respondent

4.5 Sanitation System

From the following diagram it is clear that most of the houses have sanitary toilet facility in both of the unions. People are very conscious about open defecation.

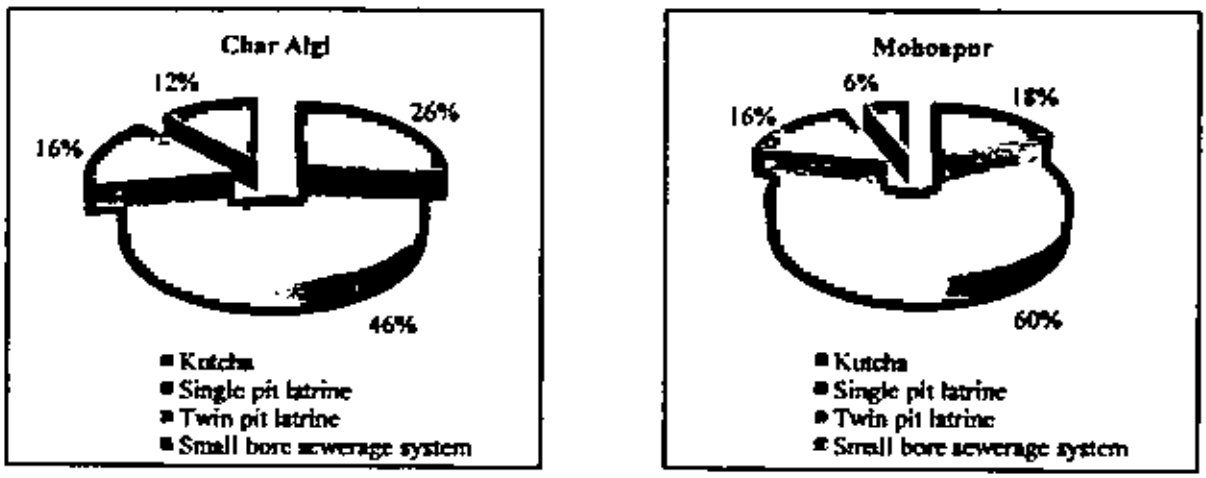


Figure 4.2: Sanitation system of the respondent

4.6 Educational Status

Literacy Rate of Char Algi Union is 45.5 % and Mohonpur union is 37.45% (Union Parishad Office, 2007). The following diagram shows the educational status of the household members of Char Algi and Mohonpur union.

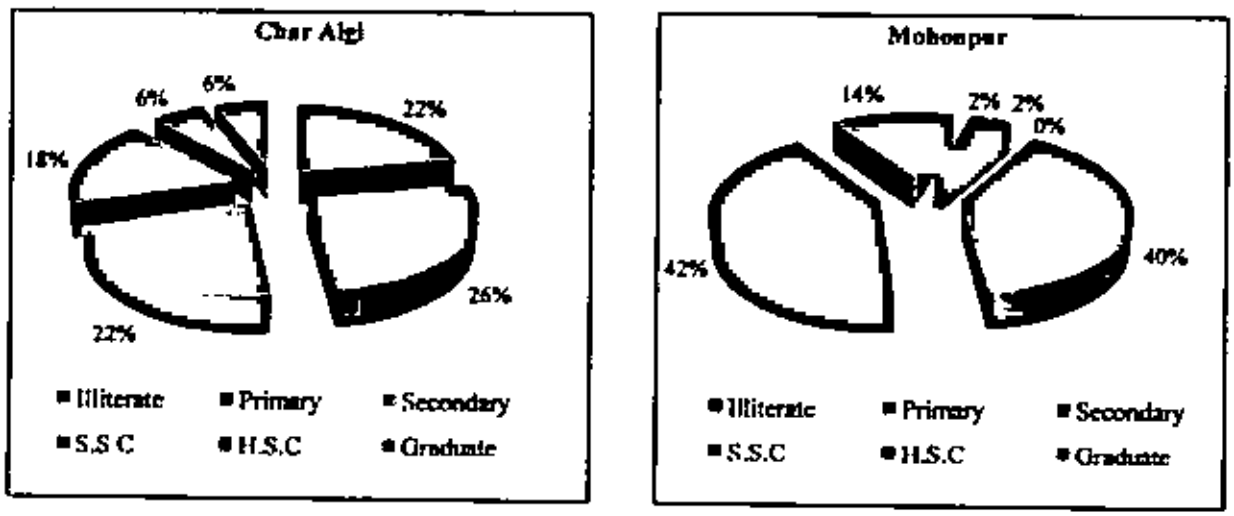


Figure 4.3: Educational status of the respondent

4.7 Economic Features of the Study Area

4.7.1 Occupation

Major income generating activities are agriculture and business which are common occupations in both the study area. Now a day, women have also engaged themselves in earning by livestock rearing, vegetable plantation etc.

Agriculture is the main source of earning for all families both in Mohonpur and Char Algi union. Small scale dairy firm, grocery shop etc become profitable secondary occupation of the villagers. Main agricultural crops are Paddy, Jute, Sugarcane, Brinjal, Pepper, Spices (Onion, Garlic, and Coriander seed), Masterd, Green Peas, Cucumber, Nuts, Betel- nuts etc. Almost every villager has some vacant land named as 'Balu Char' and these lands can be used for cultivation of nuts once in a year.

A small portion of the population (below 10%) are engaged in rickshaw pulling and day laboring. Some people made bamboo basket, cages, fence etc as their side business.

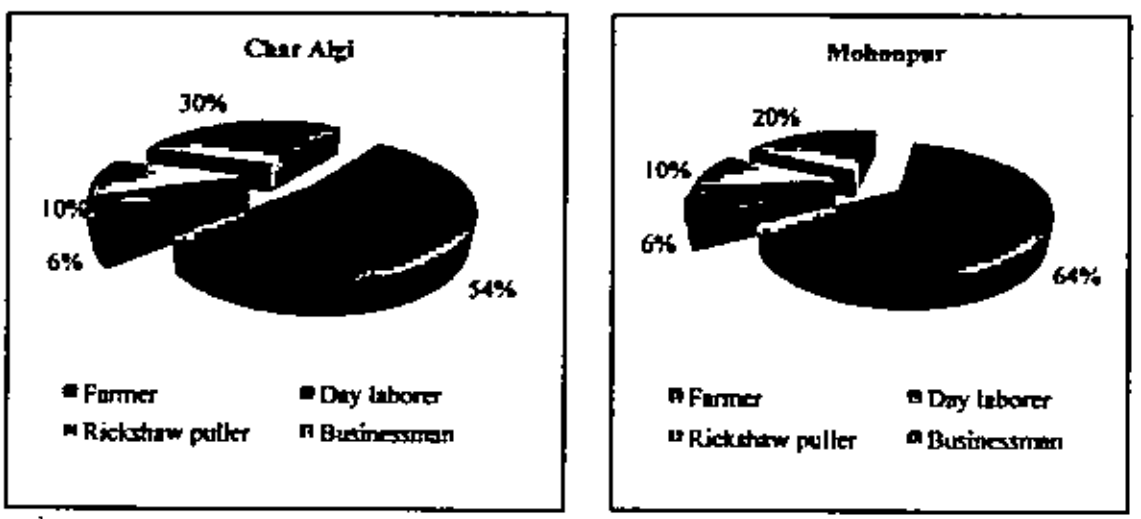


Figure 4.4: Occupation of the respondent

4.7.2 Monthly income and expenditure of the household

Income

Most of the inhabitants being farmer, they earn an average income of Tk. 6400. Some of them who are involved in business usually earn Tk 10000-Tk 20000 per month.

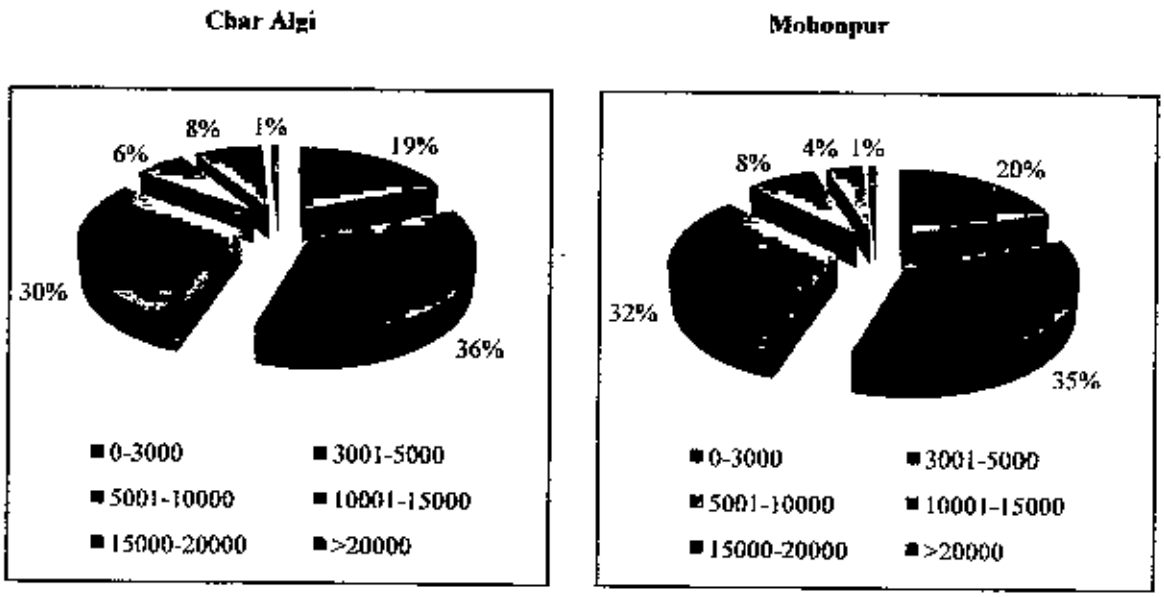


Figure 4.5: Monthly income of the respondent

Expenditure

Despite a significant similarity in occupation and earning, the expenditure pattern varies widely between these two unions. Being spontanuously affected by river erosuion, the expenditure of the inhabitants of Mohonpur union is much higher due to their struggling life. The average monthly expenditue in Char Algi union is Tk 6500. Whereas 66% inhabitants in Mohonpur union expends an amount of more tha Tk. 10000 per month.

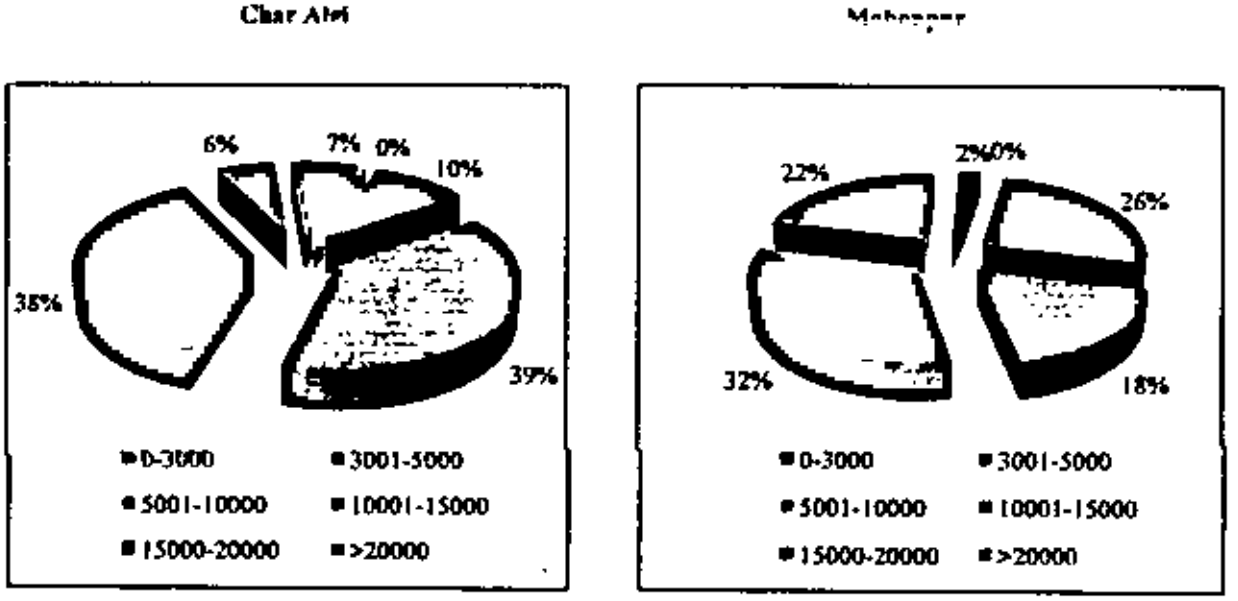


Figure 4.6: Monthly expenditure of the respondent

4.7.3 Land ownership pattern

Being a remote rural area, 62% of the inhabitants in both unions posses land for homesteade and cultivation. Only 20% lives in rented or leased house. In mohonpur union 2% inhabitants lives in Government or waqf property and they are in migrated from other areas.

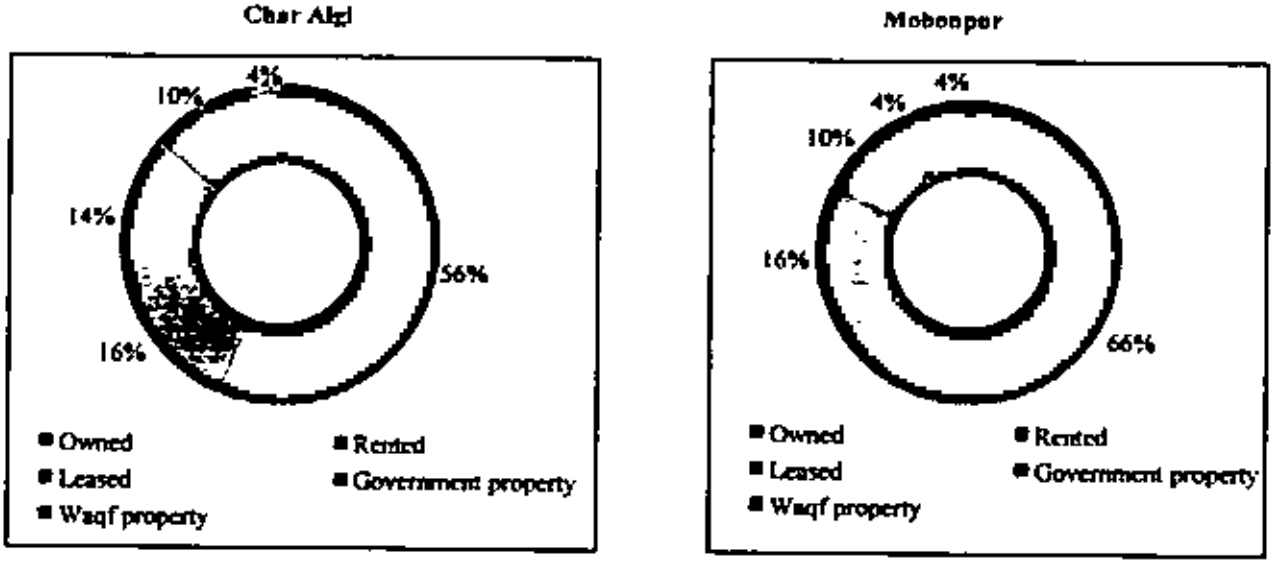


Figure 4.7: Land ownership pattern of the respondent

CHAPTER 05

ACTIVITIES OF MICRO FINANCE INSTITUTIONS IN THE STUDY AREA

5.1 Introduction

NGOs in Bangladesh are categorized by nature of their operations. Although not a distinct categorization, this reflects the particular focus and program emphasis of the NGOs. For example, categories are often made on the basis of orientation and programs on credit, health, urban poverty, human rights and legal aid services, women's issue, children's issue, environment and disasters. Most of the NGOs which have a strong program of savings and credit services for the poor; are known as credit NGOs or MFIs (Micro-Finance Institutions). The formal banking sector being unable to offer financial services to the poor, there has been a rapid growth of MFIs in the country. These organizations also play an important role in disaster preparedness and mitigation. Coming out of the dominant 'Grameen Model' of credit delivery, many medium and small MFIs are introducing innovative 'financial products' with the objective of poverty alleviation.

The prime strategy of most of the MFIs is giving access of micro-credit to the poor, especially to the women for their self-employment and thus poverty alleviation. These programs are representative of group based lending process followed by more than 750 NGOs in Bangladesh targeting the poor (Parvin, 2003). These programs mainly targeting the following issues.

– poverty alleviation;
– concretization and mobilization of local groups;
– development of local and regional organizations of the poor to defend their rights and interests.

5.2 Overall Activities of MFIs

The overall activities along with disaster related activities of MFIs in the study area are as follows.

Table 5.1: Overall activities of MFIs in the study area 01 (Char Algi Union)

Name of the organization	No. of Beneficiaries	Overall Activities	Disaster Related Activities
BRAC	2500	✓ Education and skill training ✓ Women empowerment ✓ Micro credit ✓ Livestock, poultry, fisheries development ✓ Raised homestead and tube-wells	○ Relief and Rehabilitation program ✓ Food support ✓ Medical Support ✓ Housing Material support ○ Interest free loan for house rebuilding/repair
Proshika	2800	✓ Micro credit ✓ Women empowerment ✓ Water Supply and Sanitation ✓ Health and family planning	○ Relief and disaster management ✓ Food ✓ Treatment ✓ Veterinary treatment ✓ Food for cattle ✓ Water purification tablet
ASA	3000	✓ Micro credit ✓ Non-formal education ✓ Health and family planning ✓ Sanitation ✓ As free water ✓ Safe motherhood ✓ Participatory livestock development ✓ Housing loan ✓ Small Holder Agricultural	○ Agricultural inputs and credit for post disaster rehabilitation ○ Relief operation

		Improvement Project ✓ Micro Finance for Marginal and Small Farmer Project	
Padakkhep	3000	✓ Micro credit ✓ Non-formal education ✓ Health and family planning ✓ Water Supply and Sanitation ✓ As free water ✓ Safe motherhood ✓ Participatory livestock development ✓ Housing loan ✓ Small Holder Agricultural Improvement Project ✓ Micro Finance for Marginal and Small Farmer Project	✓ Char Lander Group Project
PDBF	3400	✓ Training and skill development ✓ Agriculture ✓ Fisheries ✓ Poultry ✓ Livestock ✓ Micro credit ✓ Exhibition ✓ Coordination meeting on a specific topic each week	-
Social Development Program	1400	✓ Education and Skill Training ✓ Vulnerable group development and poverty alleviation ✓ Income Generating Activities for the Poor ✓ Social Forestry Development	-

Source: Field Survey, Dec, 2006- Jul, 2007

From table 5.1, it is found that BRAC, Proshika, ASA, three established micro-finance providing organizations mainly concentrates on during disaster relief and rehabilitation. But 'Agricultural inputs and credit for post disaster rehabilitation' of ASA and 'Char Lander Group Project' of Padakkhep are the two innovative projects which are beyond the traditional relief and rehabilitation approach. Under the 'Agricultural inputs and credit for post disaster rehabilitation' ASA distributes seed and fertilizer to its members to recover the loss in agricultural sector. Under the 'Char Lander Group' project Padakkhep distributes seed, fertilizer, insecticides to the flood affected farmers in the community.

Table 5.2: Overall activities of MFIs in the study area 02 (Mohonpur Union)

Name of the organization	No. of Beneficiaries	Overall Activities	Disaster Related Activities
BRAC	3000	✓ Education and skill training ✓ Women empowerment ✓ Micro credit ✓ Livestock, poultry, fisheries development	✓ Relief and Rehabilitation program o Food support o Medical Support o Credit for Housing Material Support
Proshika	3200	✓ Micro credit ✓ Women empowerment ✓ Water Supply and Sanitation ✓ Health and family planning	✓ Relief and disaster management o Food o Treatment o Shelter o Food for cattle o Water purification tablet
Grameen Bank	2400	✓ Micro credit ✓ Women empowerment ✓ Water supply and sanitation ✓ Health and family planning ✓ Savings Generation	✓ Support to disaster affected clients o Rescheduling of loan installment o Food support o Medical support

Nijera Kori (do ourselves)	1800	✓ Training and skill development o Agriculture o Fisheries o Poultry o Livestock ✓ Micro credit ✓ Exhibition ✓ Coordination meeting on a specific topic each week ✓ Cash for Work Program ✓ Emergency medical help and nutrition support for children.	✓ Food distribution during disaster
Chasi Kallyan Samity (Peasant Welfare Society)	1620	✓ Training on nursery development ✓ Vulnerable group development and poverty alleviation ✓ No Interest bearing current accounts for farmers ✓ Agricultural inputs distribution	-

Source: Field Survey, Dec, 2006- Jul, 2007

5.3 Remarkable Activities of MFIs in the Study Area

Despite the above-mentioned activities, there are some specific and remarkable activities of the MFIs, which contribute directly to flood and erosion-affected people. Those are as follows:

Remarkable Activity 01:

In the study area, Proshika and Padakkhep have installed tube-wells for the villagers. Proshika has installed 45 tube-wells in Nakkatar Char, Nidhiar Char and Noyapara villages and Padakkhep has installed 100 tube-wells in Char Algi Union which have included Chandir Char and Gainpara villages

Remarkable Activity 02:

Padakkhep is implementing a project named 'Char Lander Group' project which is lending money to 500 vulnerable farmers affected by flood. These 500 farmers are provided with seeds, fertilizer and seed money of tk. 4000-5000 at 0% interest. Padakkehep is also providing Housing Loan up to tk. 25,000.00 to its beneficiaries for construction of houses, which will be able to withstand against reeurring flood

Remarkable Activity 03:

Under the 'Interest free Loan for House Rebuilding' program of BRAC, the members who are severely affected by flood got interest free loan of Tk. 5000-10000 to construct new house or to repair the damaged house. The loan amount varies depending on duration of membership.

Remarkable Activity 04:

Nijera Kori implemented cash-for work program for construction of disaster shelters, toilet facilities, drinking water and child care facilities. The major feature of the program is that only women were allowed to participate. In the year 2007; 26 women participated in the program.

Despite all those abovementioned activities, the nationwide MFIs like BRAC, Proshika, ASA, Grameen Bank carried out several activities during disaster and post disaster period in the disaster affected areas of Bangladesh

CHAPTER 06

SOCIAL INDICATORS RELATED TO VULNERABILITY TO FLOOD

6.1 Introduction

The findings on educational status, source of drinking water, condition of the main dwelling house, plinth and ceiling height, sanitation condition and the condition of bathing place has been discussed in this chapter.

6.2 Educational Status

Educational status is the most important social indicator to differentiate the group of people in a community. The educational status of the beneficiary and non-beneficiary house-holds have been presented in Table 6.1.

Table 6.1: Distribution of beneficiary and non-beneficiary HHs by educational status

Educational qualification of the HH	Membership of MFI's				Total	
	Beneficiary		Non-beneficiary			
	f	%	*f*	%	*f*	%
Illiterate	8	16	14	28	22	**22**
Primary (Class I-V)	16	32	10	20	26	**26**
Secondary (Class VI-X)	8	16	14	28	22	**22**
S.S.C	10	20	8	16	18	**18**
H.S.C	4	8	2	4	6	**6**
Graduate	4	8	2	4	6	**6**
Total	**50**	**100**	**50**	**100**	**100**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

It is revealed from the table that the educational status of the beneficiary households is better than that of non-beneficiary house-holds. The children of the beneficiary households have the opportunity to get themselves admitted into the inclusive pre-schools run by BRAC and ASA under the Non-formal Education Program. It was found during survey that educated people are motivated to be the member of MFIs where as illiterate people are not

interested enough to be the member of MFIs. In most of the cases, it was found that the illiterate beneficiaries of MFIs cannot utilize the credit properly.

6.3 Source of Drinking Water

Source of drinking water is the only indicator where the beneficiaries and non-beneficiaries do not differ at all. This is because, in the study area, Proshika and Padakkhep have installed tube-wells for the villagers with their own fund. Proshika has installed 45 tube-wells in Nakkatar Char, Nidhiar Char and Noyapara villages and Padakkhep has installed 100 tube-wells in Char Algi Union which have included Chandir Char and Gainpara villages. That is why, all the villages have common source of drinking water which is safe and hygienic.

Photograph 6.1: Community Tube-well at Chandir Char village

Photograph 6.2: Community tube-well at Gainpara village

6.4 Condition of Main Dwelling House

The housing structure of the beneficiary and non-beneficiary households have been presented in table 6.2. It is revealed from the table that of the beneficiary households 12% houses are constructed of all thatch, 16% are tin roof and thatch wall and 50% are all tin. On the contrary, among the non-beneficiary house-holds 18% are constructed of all thatch,

18% are of tin roof and thatch wall and 44% are all tin. Among the non-beneficiaries only the well off families have better houses constructed of tin roof and brick wall.

Table 6.2: Distribution of beneficiary and non-beneficiary HHs by physical condition of the main dwelling house

Physical Condition of the Main Dwelling House	Membership of MFI's				Total	
	Beneficiary		Non- beneficiary			
	f	%	*f*	%	*f*	%
Thatch roof with mud wall	7	14	9	18	16	16
All thatch	6	12	9	18	15	15
Tin roof with thatch wall	8	16	9	18	17	17
All tin	25	50	22	44	47	47
Tin roof with brick wall	4	8	1	2	5	5
Total	**50**	**100**	**50**	**100**	**100**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

Table 6.3 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in housing construction materials

Variables		Sum of Squares	df	Mean Square	F	Sig.
Housing construction materials of the beneficiaries and non-beneficiaries	Between Groups	0.360	1	0.360	1.026	0.314
	Within Groups	34.400	98	0.351		
	Total	34.760	99			

From the table it is clear that the difference in housing construction materials between beneficiary and non-beneficiary is statistically not significant. It means that in case of construction material, the beneficiaries are not in a better position than the non-beneficiaries and the non-beneficiaries are very much conscious about the physical condition of their household. But a major change in construction material of the beneficiaries was found during survey and the fact is that their housing condition has improved after they have become the member of MFIs.

Table 6.4: Change of construction material of house after being member of MFIs

Construction materials	Beneficiary			
	Before		After	
	f	%	*f*	%
Thatch roof with mud wall	6	12	0	0
All thatch	4	8	2	4
Tin roof with thatch wall	40	80	8	16
All tin	0	0	36	72
Tin roof with brick wall	0	0	4	8
Total	**50**	**100**	**50**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

Table 6.4 reveals that after being member of MFIs, a remarkable change has occurred in construction material of dwelling unit of the beneficiaries. This change is a result of Housing Loan Scheme of ASA and Padakkhep.

Table 6.5 (One-Way ANOVA): Difference between the beneficiaries before and after being member of MFI in housing construction materials

Variables		Sum of Squares	df	Mean Square	F	Sig.
Housing construction materials of the beneficiaries before and after being member of MFI	Between Groups	3.164	2	1.582	20.915	0.000
	Within Groups	3.556	47	0.076		
	Total	6.720	49			

Table 6.5 shows that the difference in housing construction materials between beneficiary before and after is statistically significant. The members of ASA and Padakkhep have been financially supported to improve their housing condition. Thus, their housing condition has significantly improved after they have become the member of those particular MFIs.

However, the study area being frequently affected by recurring flood, the local MFIs are devoted to conduct motivational campaign in order to increase awareness about housing condition in the community.

Photograph 6.3: House constructed of tin roof and thatch wall

Photograph 6.4: House constructed of all tin

Photograph 6.5: House constructed of tin roof and brick wall

6.5 Plinth Height

Plinth height plays a significant role in coping with flood. If the plinth of the dwelling unit is elevated above the flood level, then the house remains safe from inundation.

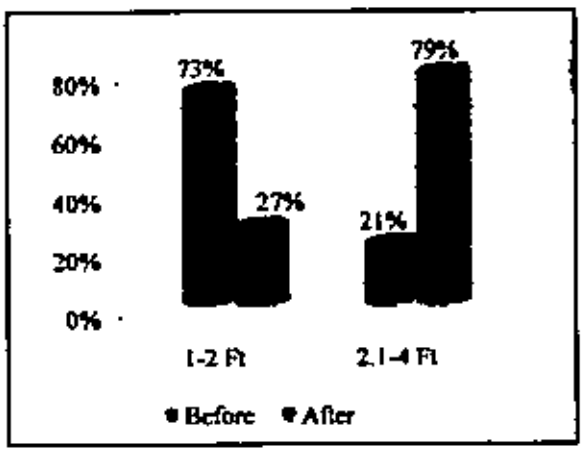


Figure 6.1: Change in plinth height before and after being the member of MFIs

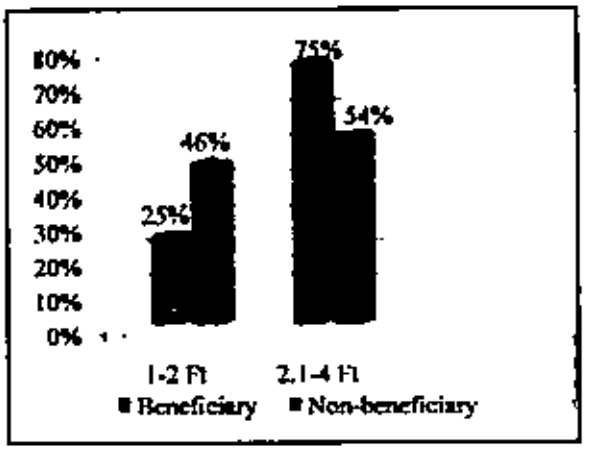


Figure 6.2: Plinth height of the dwelling unit of beneficiary and non- beneficiary

'Raised Homestead and Tube wells' Program of BRAC has enabled the beneficiaries to raise their plinth height above the highest flood level. Moreover, motivational campaign and regular sharing meetings organized by ASA and PDBF (Palli Daridro Bimochon Foundation) has significantly increased the awareness of the beneficiaries to arrange necessary adaptation to their households. That is why 75% beneficiaries have elevated their plinth up to 4 Ft and on the other hand 54% non-beneficiaries have increased their plinth height up to 4 Ft.

Table 6.6 (One-Way ANOVA): Difference between the beneficiaries before and after being member of MFI in plinth height

Variables		Sum of Squares	df	Mean Square	F	Sig.
Plinth height of beneficiaries before and after being member of MFI	Between Groups	2.455	1	2.455	12.343	0.001
	Within Groups	9.545	48	0.199		
	Total	12.000	49			

Table 6.6 shows that the difference in plinth height is statistically significant in case of before and after being member of MFIs. Due to the 'Raised Homestead and Tube wells' Program of BRAC, their members were provided with monetary and technical support to raise their plinth above highest flood level.

Table 6.7 (One-Way ANOVA): Difference between the beneficiary and non-beneficiary in plinth height

Variables		Sum of Squares	df	Mean Square	F	Sig.
Plinth height of respondents	Between Groups	5.760	1	5.760	32.667	0.000
	Within Groups	17.280	98	0.176		
	Total	23.040	99			

Table 6.7 shows that the difference in plinth height between beneficiary and non-beneficiary is statistically significant. It should also be noted that ASA and PDBF has motivated not only their members but also the community people as a whole to elevate their plinth up to 4 Ft. And only for this reason, 54% non-beneficiaries have become aware to raise their plinth height.

Photograph 6.6: Condition of house before increasing the plinth height

Photograph 6.7: Plinth raised above highest flood level

Photograph 6.8: Raised homestead through dumping of soil

6.6 Ceiling Height

High ceiling can be an important tool for preservation of food, medicine, cloths and crockery during flood.

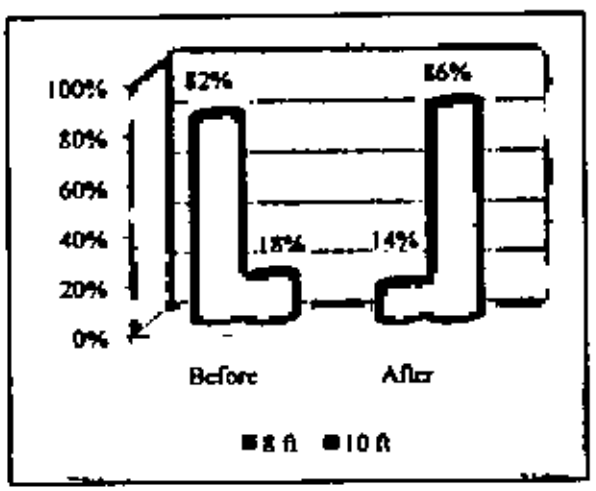


Figure 6.3: Change in ceiling height before and after being the member of MFIs

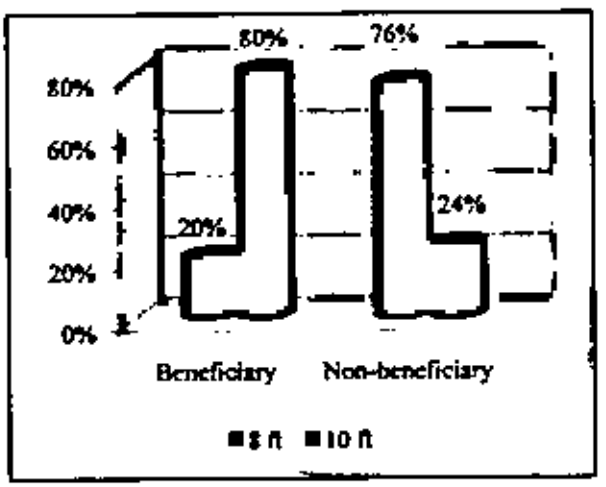


Figure 6.4: Ceiling height of the dwelling unit of beneficiary and non- beneficiary

From the above figures it is clear that after being member of MFIs, the beneficiaries have increased the ceiling height of their dwelling units. With 10 ft high ceiling, the beneficiaries can store emergency food, cloths, seed, cattle food and fuel above the false ceiling.

Table 6.8 (One-Way ANOVA): Difference between the beneficiaries before and after being member of MFI in ceiling height

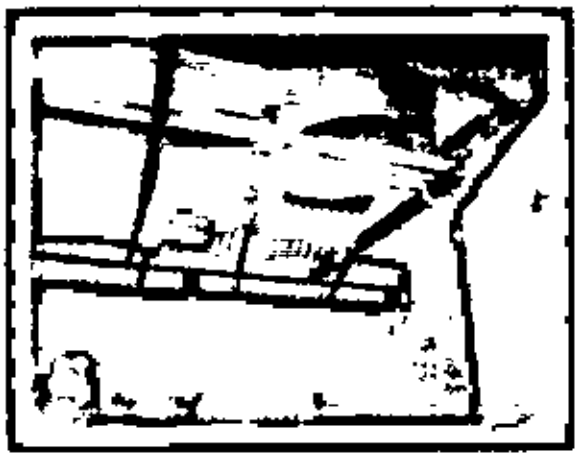
Variables		Sum of Squares	df	Mean Square	F	Sig.
Ceiling Height of beneficiaries before and after being member of MFIs	Between Groups	7.840	1	7.840		
	Within Groups	17.120	98	0.175	44.879	0.000
	Total	24.960	99			

Table 6.8 shows that the difference of ceiling height is statistically significant in case of beneficiaries before and after being member of MFIs. It means that the MFIs have successfully motivated their members to raise the ceiling height

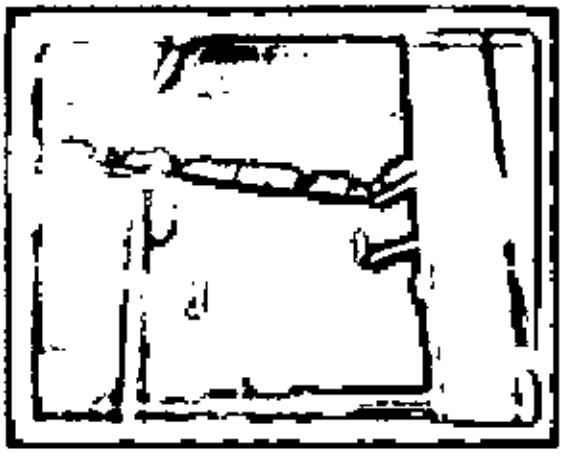
Table 6.9 (One-Way ANOVA): Difference between the beneficiary and non-beneficiary in ceiling height

Variables		Sum of Squares	df	Mean Square	F	Sig.
Ceiling height of respondents	Between Groups	7.840	1	7.840		
	Within Groups	17.120	98	0.175	44.879	0.000
	Total	24.960	99			

Table 6.9 shows that the difference of ceiling height is statistically significant between beneficiary and non-beneficiary. It means that in case of ceiling height the beneficiaries are in a better condition than the non-beneficiary. But it should also be noted that the non-beneficiaries are not aware enough about the false ceiling to store emergency food, medicine, clothes and crockery.



Photograph 6.9: False ceiling occupied with fuel stock



Photograph 6.10: False ceiling to store necessary things

6.7 Condition of Toilet

Households by toilet facility have been portrayed in table 6.10. It is observed from the table that access to pucca and slab latrine is very high among beneficiaries. 52% non-beneficiary households reported to use kutcha latrine and 100% beneficiary reported to use sanitary hygienic slab latrine although they use various types of sanitary latrines according to affordability.

Table 6.10: Distribution of HHs by toilet condition

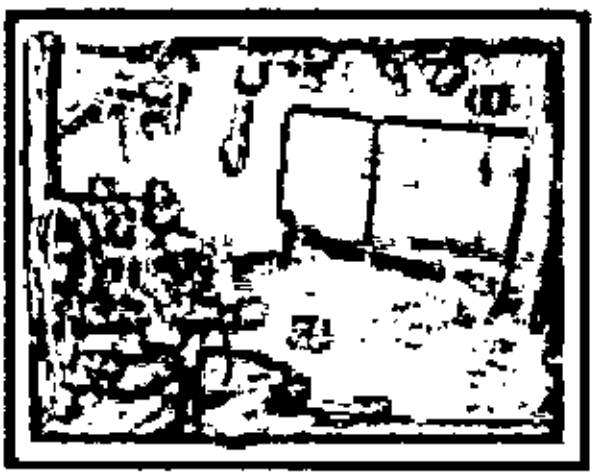
Condition of toilet	Membership of MFI's or others (Name of the MFI)				Total	
	Beneficiary		Non- beneficiary			
	f	%	*f*	%	*f*	%
Kutcha	0	0	26	52	26	26
Single pit latrine	22	44	24	48	46	46
Twin pit latrine	16	32	0	0	16	16
Small bore sewerage system	12	24	0	0	12	12
Total	**50**	**100**	**50**	**100**	**100**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

It is observed from table 6.10 that the access to pucca and slab latrine is not very high among the non-beneficiaries. 48% non-beneficiaries have access to single pit latrine only because of the success of "Health and family Planning Program" conducted by Proshika and Padakkhep.

The members of Proshika and Padakkhep have been motivated and supported to improve their sanitation condition under the 'Water Supply and Sanitation Program' and the result is presented in the following table.

Photograph 6.11: Open toilet



Photograph 6.12: Sanitary slab latrine

Table 6.11 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in condition of toilet

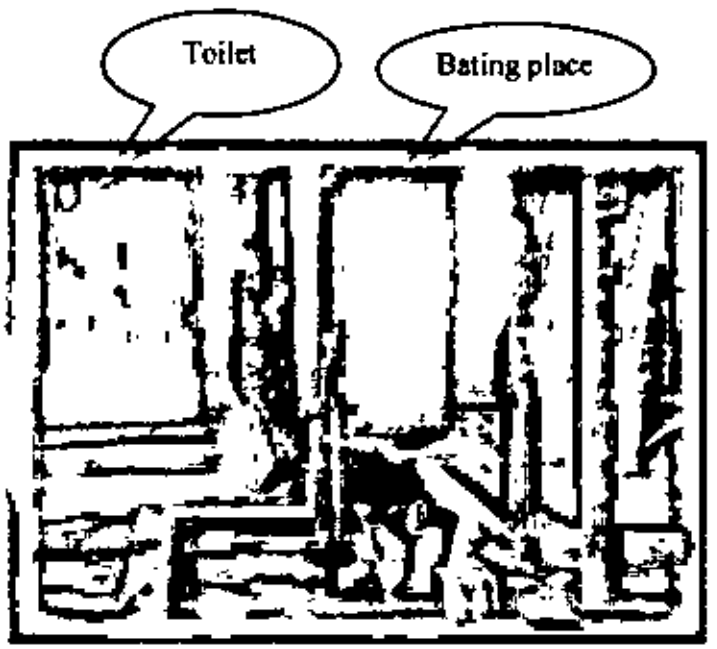
Variables		Sum of Squares	df	Mean Square	F	Sig.
Condition of toilet of the respondent	Between Groups	43.560	1	43.560	95.973	0.000
	Within Groups	44.480	98	0.454		
	Total	88.040	99			

Table 6.11 shows that the difference in condition of toilet between beneficiary and non-beneficiary is statistically significant. It means that the beneficiaries have access to pucca

or slab latrine which significantly differs from the non-beneficiaries because 52% of the non-beneficiaries still use kutcha latrine.

6.8 Condition of Bathing Place

In the study area, majority of the respondents have access to semi-pucca or pucca bathing place. Under the "Health and Family Planning Program" Proshika and Padakkhep have successfully motivated the community people to construct pucca bathing place. The members of Proshika and Padakkhep have received loan under "Health and family Planning Program" to improve the condition of toilet and bathing place. The following diagrams show the comparison of condition of bathing place among the beneficiaries and non-beneficiaries as well as the comparison of bathing place of the beneficiaries before and after being member of MFIs.



Photograph 6.13: Condition of bathing place

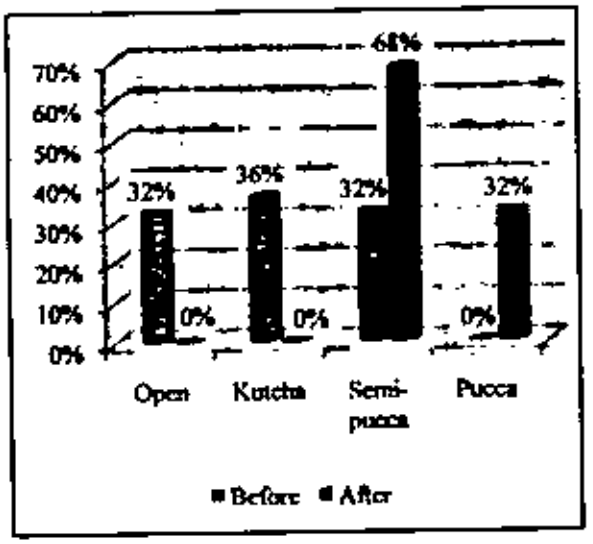


Figure 6.5: Condition of bathing place of beneficiary before and after being member of MFI

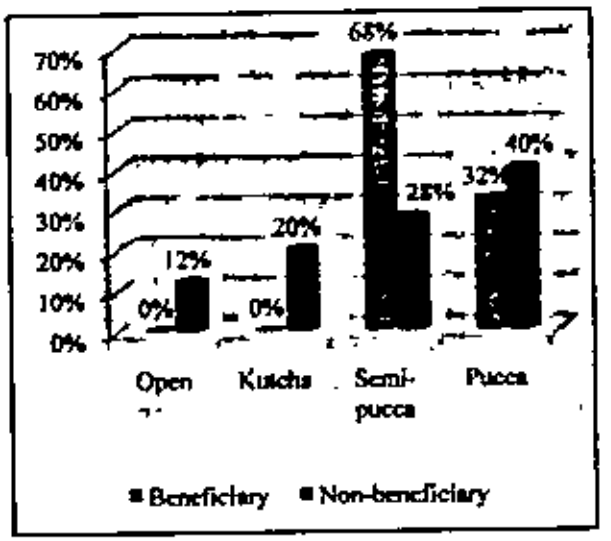


Figure 6.6: Condition of bathing place of beneficiary and non-beneficiary

From figure 6.5 it is clear that the condition of bathing place of the beneficiaries has significantly changed after they have become the member of MFIs.

6.9 Condition of Cooking Place

In the study area it was found that earthen furnace is the only appliance for cooking and there is no access for LP gas. People do not opt for kerosene because it is not cost effective for cooking. Earthen furnace is damaged during flood and people face extreme hardship for cooking. Local MFIs conduct campaign to elevate the earthen furnace above the highest flood level and also to store fuel and extra earthen furnace for cooking during flood.

Photograph 6.14: Condition of cooking place

Photograph 6.15: Stock of fuel with extra earthen furnace

6.10 Stock of Fuel

The following table shows the pattern of fuel stock of the respondents. Most of the respondents being farmer, they used to stock Jute stick, paddy husk and cow dung. Since all of those are easily available and cheap, both the capable beneficiary and non-beneficiary tend to stock those. But it should be noted that 48% non-beneficiaries do not stock fuel for disaster period.

Table 6.12: Distribution of HH by stock of fuel

Type of fuel	Membership of MFI's				Total	
	Beneficiary		Non- beneficiary			
	f	%	*f*	%	*f*	%
Jute Stick	14	28	6	12	20	20
Paddy Husk	14	28	10	20	24	24
Cow dung	11	22	7	14	18	18
All	6	12	3	6	9	9
No stock	5	10	24	48	29	29
Total	50	100	50	100	100	100

Source: Field Survey, Dec, 2006- Jul, 2007

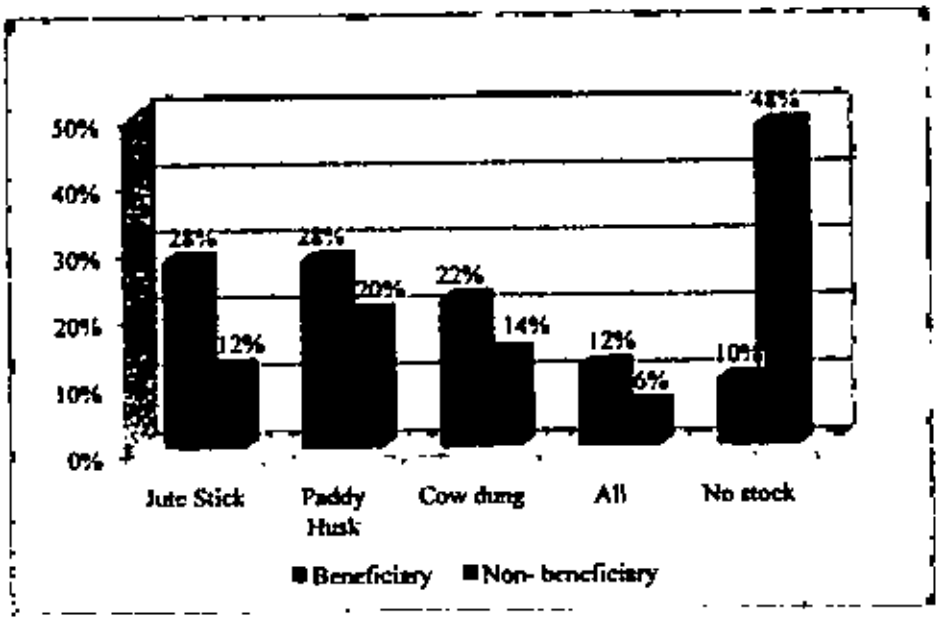


Figure 6.7: Distribution of beneficiary and non-beneficiary depending on stock of fuel

Table 6.13 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in the arrangement of fuel

Variables		Sum of Squares	df	Mean Square	F	Sig.
Arrangement of Fuel by the respondent	Between Groups	30.250	1	30.250	14.922	0.000
	Within Groups	198.660	98	2.027		
	Total	228.910	99			

The ANOVA table shows that the beneficiaries are significantly in a better condition to have stock of fuel during disaster. The MFI members are aware about stocking fuel for disaster period. Since fuel is not a usual item to be distributed as relief by MFIs, Government organizations, INGOs etc.; it is vey much important to stock fuel for disaster period. Thus the MFI staff and volunteers are very keen to aware their members to stock fuel for disaster period.

6.11 Conclusion

From the above discussion it is quite clear that the members of the local MFIs have been able to improve educational status, condition of the main dwelling house, plinth and ceiling height, sanitation condition, condition of bathing place and stock of fuel after they have become the members of the MFIs. Majority of the beneficiaries think that the MFIs have played a great role to change their social condition.

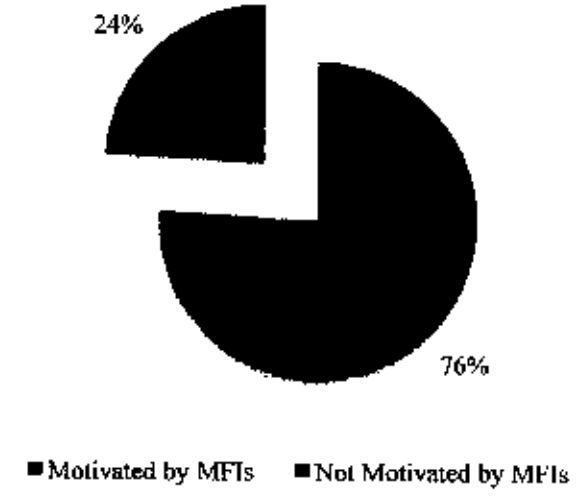


Figure 6.8: Role of MFIs to motivate people to improve social condition

Figure 6.8 shows that 76% respondents were motivated by MFIs to improve their educational status, source of drinking water, condition of the main dwelling house, plinth and ceiling height, sanitation condition, condition of bathing place and stock of fuel.

CHAPTER 07

ECONOMIC AND HEALTH INDICATORS RELATED TO VULNERABILITY TO FLOOD

7.1 Introduction

Comparative analysis on some selected economic and health indicators have been made in this chapter. The analysis will reveal the comparative advantages of the beneficiaries in coping with flood disaster.

7.2 Economic Indicators Related to Vulnerability to Flood

Analysis on economic indicators such as occupation, monthly income, land ownership pattern, stock of food, savings, extent of damage to properties due to flood, source of money or credit during disaster, ease of payment of credit etc have been discussed below:

7.2.1 Occupation

The occupational status of the beneficiary and non-beneficiary population has been provided in table 7.1. It is observed from the table that there exist some differences between the beneficiary and non-beneficiary group in respect of occupational distribution.

Table 7.1: Distribution of beneficiary and non-beneficiary HHs by occupation

Occupation	Membership of MFI's				Total	
	Beneficiary		Non- beneficiary			
	f	%	*f*	%	*f*	%
Farmer	30	60	24	48	54	**54**
Day laborer	2	4	4	8	6	**6**
Rickshaw puller	4	8	6	12	10	**10**
Businessman	14	28	16	32	30	**30**
Total	**50**	**100**	**50**	**100**	**100**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

Among the total beneficiary population as high as 60% are engaged in agriculture and 28% are engaged in business. Similarly 48% non-beneficiaries are farmer and 32% are business

man. This situation prevails due to the programs implemented by BRAC, Proshika, Padakkhep and PDBF to provide support in agriculture and micro-entrepreneurship.

Photograph 7.1: Farming, the main occupation in Char Algi Union

Photograph 7.2: Business in Char Algi Union

7.2.2 Land ownership pattern

Land ownership pattern is another important indicator to reveal the social status of the community people. Land ownership pattern of the respondents has been presented in table 7.2.

Table 7.2: Landownership pattern of the beneficiary and non-beneficiary HHs

Landownership pattern of the HH	Membership of MFI's				Total	
	Beneficiary		Non- beneficiary			
	f	%	*f*	%	*f*	%
Owned	32	64	24	48	56	56
Rented	8	16	8	16	16	16
Leased	6	12	8	16	14	14
Government property	4	8	6	12	10	10
Waqf property	0	0	4	8	4	4
Total	50	100	50	100	100	100

Source: Field Survey, Dec, 2006- Jul, 2007

It is observed from the Table 7.2 that 64% beneficiary has his own house-hold or cultivable land and 56% non-beneficiary has land ownership. During survey it was found that the day laborers and rickshaw pullers are not capable to own cultivable and homesteaded land. In most cases they live in rented house. Some ultra poor non-beneficiaries live in government land or waqf property.

7.2.3 Monthly income

Total monthly income of the beneficiary and non-beneficiary house-holds has been presented in table 7.3. It is observed from the table that 52% beneficiary earn more than Tk . 5000 per month and only 38% non-beneficiary earn more than Tk.. 5000 per month.

Table 7.3: Distribution of beneficiary and non-beneficiary HHs by monthly income

Total monthly income (Tk.)	Membership of MFI's					
	Beneficiary		Non-beneficiary		Total	
	f	%	*f*	%	*f*	%
1001-3000	5	10	14	28	19	**19**
3001-5000	19	38	17	34	36	**36**
5001-10000	16	32	14	28	30	**30**
10001-15000	4	8	2	4	6	**6**
15000-20000	5	10	3	6	8	**8**
>20000	1	2	0	0	1	**1**
Total	**50**	**100**	**50**	**100**	**100**	**100**
Mean=7270, Mode=4000. Median=7500, Std. dev=4818.343. Min=2000, Max=20000, Skewness=1.25, Kurtosis=0.66			Mean=5570, Mode=4000, Median=4000, Std. dev=4029.234. Min=2000, Max=17500, Skewness=1.67, Kurtosis=2.75			

Source: Field Survey, Dec, 2006- Jul. 2007

Since majority of the beneficiaries are farmer and businessman; they have regular cash flow and they earn more than Tk. 5000 per month on an average. On the other hand people engaged in day laboring and rickshaw pulling usually earn below Tk.. 5000 per month.

Table 7.4 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in monthly income of the HH

Variables		Sum of Squares	df	Mean Square	F	Sig.
Monthly Income of beneficiary and non-beneficiary	Between Groups	6.250	1	6.250	4.758	0.032
	Within Groups	128.740	98	1.314		
	Total	134.990	99			

Table 7.4 shows that the difference in monthly income between beneficiary and non-beneficiary is statistically significant. It proves that the monthly income structure of the beneficiaries is better than non-beneficiaries

7.2.4 Stock of food

Agriculture and horticulture encounter serious losses during flood. These losses seriously affect the most important primary product like food production and vegetable production. The cumulative effect of these activities simultaneously result in food shortage and increase in food prices. It's a matter of great regret that the local MFIs in Char Algi Union do not provide financial support to stock food for disaster. During the flood of 2007 BRAC and Proshika distributed bread, rice and pulses to flood affected families. But distribution of food relief is not enough to mitigate the need of the affected families. To abate this problem, pre-disaster food stock is essential. The following table shows the arrangement of food stock of the beneficiary and non-beneficiary.

Table 7.5: Distribution of respondents by food stock

Arrangement of Food Stock	Membership of MFI's				Total	
	Beneficiary		Non- beneficiary			
	f	%	*f*	%	*f*	%
Dry Food: Flattened rice, Parched paddy, Molasses	14	28	22	44	36	**36**
Agricultural food: Rice, Wheat, Pulse, Potato, Dry fish	22	44	7	14	29	**29**
Fruits: Coconut, Jackfruit seed, Sesame	2	4	11	22	13	**13**
All types of food	12	24	0	0	12	**12**
No food stock	0	0	10	20	10	**10**
Total	**50**	**100**	**50**	**100**	**100**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

Table 7.6 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in food stock

Variables		Sum of Squares	df	Mean Square	F	Sig.
Arrangement of food stock by the beneficiary and non-beneficiary	Between Groups	0.490	1	0.490	0.271	0.604
	Within Groups	176.900	98	1.805		
	Total	177.390	99			

Table 7.6 shows that arrangement of food stock does not differ significantly between beneficiary and-non-beneficiary. In the study area, the MFIs distribute food as relief item during flood and prior disaster they do not conduct any program in this regard. That is why, there is no significant difference between beneficiary and non-beneficiary in stock of food motivational campaign to stock food.

7.2.5 Savings

Since poverty alleviation is the major target of MFIs, they always encourage their members to save money for various purposes such as purchase of livestock, purchase of agriculture inputs, marriage of daughter, medical treatment of the family members etc. The MFIs have

also demonstrated the other implication of savings to their members. This activity eventually grows an urgency of savings among the members of MFIs for disaster period and the result is given below.

Table 7.7: Distribution of beneficiary and non-beneficiary depending on savings

Savings	Membership of MFI's				Total	
	Beneficiary		Non- beneficiary			
	f	%	*f*	%	*f*	%
Save money for emergency	28	56	11	22	39	**39**
No Savings	22	44	39	78	61	**61**
Total	**50**	**100**	**50**	**100**	**100**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

Table 7.8 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in emergency savings

Variables		Sum of Squares	df	Mean Square	F	Sig.
Emergency savings of the beneficiary and non-beneficiary	Between Groups	2.890	1	2.890	13.551	0.000
	Within Groups	20.900	98	0.213		
	Total	23.790	99			

Table 7.8 shows that the difference in savings between the beneficiary and non-beneficiary is statistically significant. It means that the beneficiaries are in an advantageous position in saving money than the non-beneficiaries.

It was observed during survey that a significant change has occurred in savings generation of the beneficiaries per month after being the member of MFIs. It is presented in figure 7.1.

Figure 7.1: Changes in savings generation after being member of MFIs

7.2.6 Role of savings in disaster management for the respondents

Among the respondents the household who save money usually invest those in different sectors. These are as follows:

Table 7.9: Sector wise investment of savings

Sector of investment	Percentage
Used in food consumption	27
Safeguarding & food for livestock	30
Improvement of housing condition	19
Purchase of boat/coracle/plastic sheet etc	24
Total	**100**

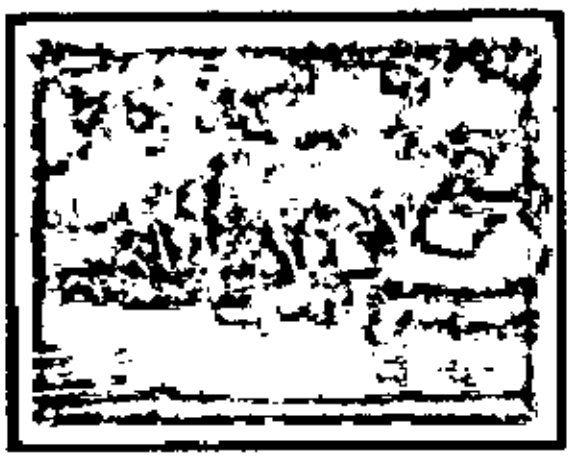
Source: Field Survey, Dec, 2006- Jul, 2007

Photograph 7.3: Utilization of savings- Purchase of boat/ coracle

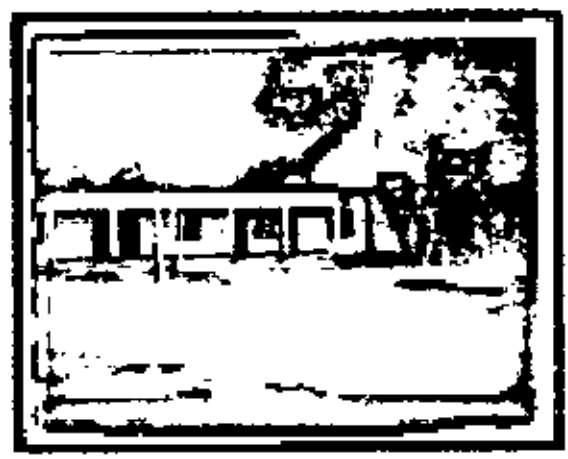
Photograph 7.4: Utilization of savings- Safeguarding for livestock

7.2.7 Extent of damage

The greatest impact of flood is of course on poor households. Flood disaster causes damage to household, source of drinking water, sanitation, food stock and crop. For the purpose of analysis, the extent of damage has been categorized into three groups: *(a). Severe damage, (b). Moderate damage, (c). No damage*. The following table shows the extent of damage to properties.



Photograph 7.5: Flooding in Char Algi Union



Photograph 7.6: Local primary school used as shelter

Table 7.10: Distribution of respondents depending on extent of damage to properties

Extent of damage	Membership of MFI's																			
	Beneficiary										Non- beneficiary									
	Housing		Source of safe drinking water		Sanitation		Food stock		Crop & Livestock		Housing		Source of safe drinking water		Sanitation		Food stock		Crop & Livestock	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%
Severe damage	0	0	0	0	0	0	0	0	0	0	24	48	40	80	28	56	38	76	40	80
Moderate damage	12	24	8	16	24	48	22	44	10	20	6	12	10	20	22	44	12	24	10	20
No damage	38	76	42	84	26	52	28	56	40	80	20	40	0	0	0	0	0	0	0	0
Total	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100

Source: Field Survey, Dec, 2006- Jul, 2007

Note: *Severe damage denotes 100% damaged/demolished/lost, nothing remains left. Moderate damage denotes up to 50% damaged/demolished/lost, the remaining can be reconstructed, regained or recovered. No damage denotes 0% damaged/demolished/lost*

From table 7.10 it is clear that the non-beneficiaries are encountered with severe damage to properties. During survey it was found that the *'Water Supply and Sanitation'*, *'Health And Family Planning'*, *'Housing Loan Scheme'*, *'Raised Homestead and Tube-Wells'* and *'Participatory Livestock Development'* program conducted by MFIs have enabled its members to safeguard their properties during flood.

Table 7.11 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in the extent of damage to properties

Variables		Sum of Squares	df	Mean Square	F	Sig.
Extent of damage to Housing	Between Groups	17.640	1	17.640	32.741	0.000
	Within Groups	52.800	98	0.539		
	Total	70.440	99			
Extent of damage to the source of safe drinking water	Between Groups	67.240	1	67.240	447.658	0.000
	Within Groups	14.720	98	0.150		
	Total	81.960	99			
Extent of damage to the sanitation	Between Groups	29.160	1	29.160	115.229	0.000
	Within Groups	24.800	98	0.253		
	Total	53.960	99			
Extent of damage to the food	Between Groups	43.560	1	43.560	199.108	0.000
	Within Groups	21.440	98	0.219		
	Total	65.000	99			
Extent of damage to the crop & livestock	Between Groups	64.000	1	64.000	392.000	0.000
	Within Groups	16.000	98	0.163		
	Total	80.000	99			

From table 7.11 it is found that the difference in extent of damage to household, source of safe drinking water, sanitation, food stock, crop and live stock between beneficiary and non-beneficiary is statistically significant. It means that the beneficiaries are in an advantageous position and they encounter less damage than the non-beneficiaries. It cannot be ignored that the MFIs conduct awareness and motivational campaign on how to save properties during flood. But only motivational campaign is not enough to abate the damage. In most of the cases it requires financial support to ensure safety of properties.

7.2.8 Time requires to repair existing house or to construct new house

The members of BRAC in Char Algi Union got a huge opportunity to repair the existing house or construct new house only for the 'Interest Free Loan for House Rebuilding' program of BRAC. The members of BRAC who have lost their houses or have severely damaged house, got interest free loan of Tk.. 5000-10000 to construct new house or to repair the damaged house. The loan amount varies depending on duration of membership. This program has resulted quick recovery from being homeless.

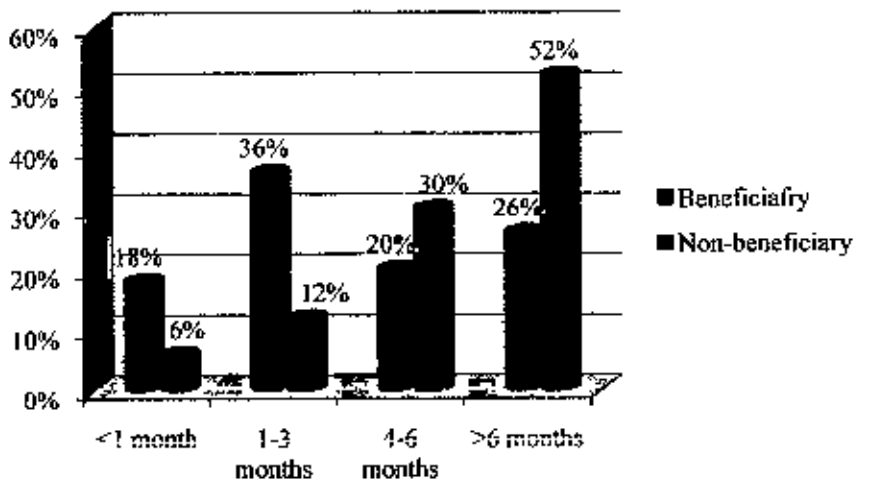


Figure 7.2: Time requires to repair existing house or to construct new house

7.2.9 Source of money/credit during disaster period

The MFIs in Bangladesh are rather reactive than pro-active. They disburse a lot of money during disaster period whereas they can take a number of preventive measures with that amount of money prior disaster. Many national NGOs, MFIs, INGOs and Government Organizations provide money/credit to the disaster affected people. The following table shows the sources of credit during disaster.

Table 7.12: Distribution of beneficiary and non-beneficiary depending on source of money/credit during disaster period

Source of loan	Membership of MFI's				Total	
	Beneficiary		Non- beneficiary			
	f	%	*f*	%	*f*	%
MFIs	18	60	8	18	26	**35**
Government agency/ organizations	0	0	18	41	18	**24**
Co-operative society	0	0	6	14	6	**8**
Money lender	4	13	6	14	10	**14**
MFIs + Money lender	8	27	6	14	14	**19**
Total	**30**	**100**	**44**	**100**	**74**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

It should be noted that among 50 beneficiaries 30 took loan from various sources and among 50 non-beneficiaries 44 took loan from different sources. It reveals that dependency of the non-beneficiaries on credit during disaster is higher than those of beneficiaries.

In table 7.12, the major difference is that 60% beneficiaries receive credit from their MFIs and 41% non-beneficiaries receive credit from Government Organizations. During survey it was found that the MFIs are not interested enough to disburse loan to an unknown loan seeker and that is why only 18% non-beneficiary received loan from MFIs during flood. As a result, most of the non-beneficiaries took loans from Bangladesh Krishi Bank during the flood of 2007.

7.2.10 Credit ceiling

All the MFIs, Cooperative Society, Government Sources provide credit during disaster. But the credit ceiling varies depending on source and membership status. The variation of credit

ceiling depending on credit source and membership status is presented in table 7.13 and table 7.14.

Table 7.13: Distribution of beneficiary and non-beneficiary depending on credit ceiling

Amount of loan	Membership of MFI's				Total	
	Beneficiary		Non- beneficiary			
	f	%	*f*	%	*f*	%
<Tk..5000	0	0	4	9	4	**5**
Tk.. 5000-10000	14	47	14	32	28	**38**
Tk..10001-15000	12	40	14	32	26	**35**
Tk..15001-20000	2	6.5	12	27	14	**19**
Tk..20001-25000	2	6.5	0	0	2	**3**
Total	**30**	**100**	**44**	**100**	**74**	**100**
Mean=11166.67, Mode=7500, Median=12500, Std. dev=4341.72, Min=5000, Max=25000, Skewness=1.24, Kurtosis=1.29			Mean=11250, Mode=12500, Median=12500, Std. dev=4715.76, Min=2500, Max=17500, Skewness= - 0.16, Kurtosis= - 0.89			

Source: Field Survey, Dec, 2006- Jul, 2007

From table 7.13 it is observed that only 13% beneficiary received loan above Tk.. 15000 whereas 27% non-beneficiary received same amount of loan. Since the non-beneficiaries are not prepared enough to cope with disaster, they are in need of credit to recover

Table 7.14: Distribution of credit sources depending on credit ceiling

Credit Ceiling (In Tk.)	Source of credit				
	MFIs	Government agency/ organizations	Co-operative society	Money lender	Community people
1000-5000	45%	12%	22%	28%	86%
5001-10000	25%	23%	38%	58%	9%
10001-15000	23%	55%	20%	10%	5%
>15000	7%	10%	20%	4%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Source: Field Survey, Dec, 2006- Jul, 2007

It is found from table 7.14 that MFIs disburse small scale loan between 1000-5000 Tk., during disaster period so that they can bring in most of the affected people under their credit program. The other reason of disbursing small amount of loan is to reduce the risk of recovery. The Government Organization (Bangladesh Krishi Bank) can provide large scale loan due to Governmental subsidy in flood affected agricultural sector. But this loan is only for agricultural purpose. Cooperative society issues loan only to its members during disaster period.

7.2.11 Sector wise utilization of credit

During survey it was found that the credit received during disaster period is mostly used to reconstruct house, purchase of boat or vela or plastic sheet, arrange food stock, preservation of safe drinking water, improvement of sanitation and food of livestock.

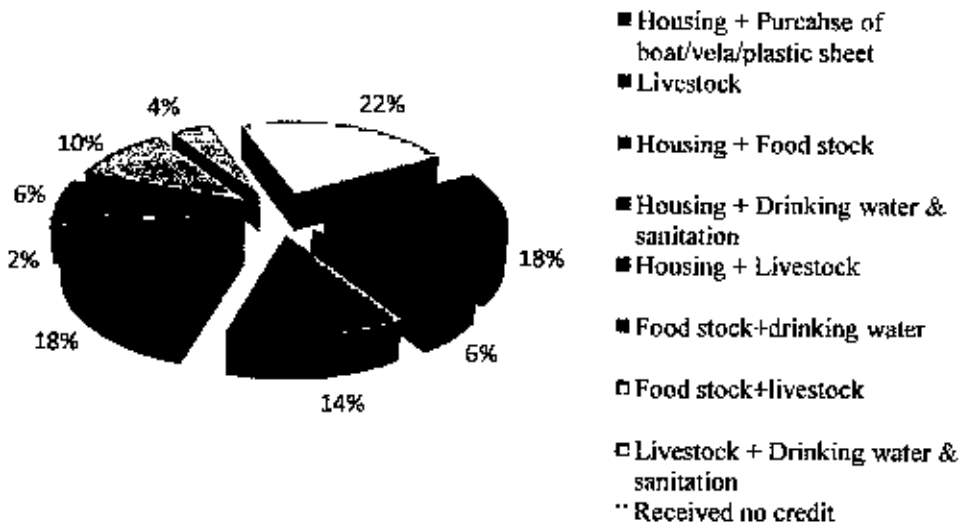


Figure 7.3: Sector wise utilization of credit

7.2.12 Ease of payment with respect to credit sources

Number of installment and recovery strategy of various sources of credit differ to a great extent. During survey it was found that the respondents who have received loan from MFIs and money lenders, experienced extreme hardship to recover the loan because, the MFIs and money lenders do not reschedule the installment during disaster. The credit receivers of MFIs and money lenders are bound to pay the installment in time otherwise they will have

to compensate for that delay. Such situation poses further pressure on the disaster affected people. Some large nation-wide NGOs used to reschedule the installment for 3 to 6 months but this attempt is not enough to abate the sufferings of the disaster affected people.

Table 7.15: Ease of payment of loan according to source

Extent of easement	Source of loan received by the beneficiary during flood				
	MFIs	Government agency/ organizations	Co-operative society	Money lender	MFIs + Money lender
Easy payment	4	6	0	0	0
Moderate hardship	10	12	6	0	2
Extreme hardship	12	0	0	10	12

Source: Field Survey, Dec, 2006- Jul, 2007

7.3 Health Indicators Related to Vulnerability to Flood

Analysis on health indicators like storage of safe drinking water, stock of emergency medicine, types of water borne diseases and the ability of the respondent to cope with those diseases have been included below:

7.3.1 Storage of safe drinking-water

Since Char Algi Union is affected regularly by recurring flood, the local NGOs and MFIs have conducted motivational campaign to store safe drinking water for disaster period. They have instructed the community people to store water in several ways. Most of the people store water in gallon and keep those in a safe elevated place. Some people store water in pitcher, seal the aperture with water tight elements and then conceal it beneath the ground at an elevated place which will not be inundated during flood. During field survey it was found that 30% respondents say that they have been motivated by MFIs to store safe drinking water.

Table 7.16: Distribution of HHs depending on storage of safe drinking water

Storage of safe drinking water of the respondent	Membership of MFI's				Total	
	Beneficiary		Non- beneficiary			
	f	%	*f*	%	*f*	%
Water storage	36	72	20	40	56	**56**
No water storage	14	28	30	60	44	**44**
Total	**50**	**100**	**50**	**100**	**100**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

Table 7.17 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in the storage of safe drinking water of the HH

Variables		Sum of Squares	df	Mean Square	F	Sig.
Storage of safe drinking water by the beneficiary and non-beneficiary	Between Groups	2.560	1	2.560	11.362	0.001
	Within Groups	22.080	98	0.225		
	Total	24.640	99			

Table 7.17 shows that the difference in storage of safe drinking water between beneficiary and non- beneficiary is statistically significant which means that majority of the beneficiaries have their own safe water storage for disaster period.

Table 7.18: Distribution of beneficiary HHs according to storage of safe drinking water

Storage of safe drinking water	Beneficiary			
	Before		After	
	f	%	*f*	%
Water storage	12	24	36	72
No storage	38	76	14	28
Total	**50**	**100**	**50**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

Table 7.18 shows the change in storage of safe drinking water of the beneficiary households. The table shows that the awareness to store safe drinking water by the beneficiary has increased to a great extent after they have become the member of MFIs.

Table 7.19 (One-Way ANOVA): Difference between the beneficiaries before and after being member of MFI in the drinking water storage pattern

Variables		Sum of Squares	df	Mean Square	F	Sig.
Storage of safe drinking water by the beneficiary before and after being member of MFIs	Between Groups	1.120	1	1.120	6.720	0.013
	Within Groups	8.000	48	0.167		
	Total	9.120	49			

Table 7.19 shows that the difference in storage of safe drinking water between the beneficiaries before and after being member of MFIs is statistically significant. This eventually reveals the advantageous position of beneficiaries in storage of safe drinking water.

7.3.2 Stock of medicine

First aid and emergency medicine are two most important elements for disaster period. The demand of saline and water purification tablets increase rapidly during flood. That is why the local MFIs aware their members to stock emergency medicine before the commencement of disaster.

Table 7.20: Distribution of beneficiary and non-beneficiary depending on stock of medicine

Stock of Emergency Medicine	Membership of MFI's				Total	
	Beneficiary		Non-beneficiary			
	f	%	*f*	%	*f*	%
Saline, First Aid, Water Purification Tablet, Carbolic Acid	40	80	12	24	52	**52**
No Stock	10	20	38	76	48	**48**
Total	**50**	**100**	**50**	**100**	**100**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

Table 7.21 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in the stock of medicine of the HFI

Variables		Sum of Squares	df	Mean Square	F	Sig.
Stock of medicine by the beneficiary and non-beneficiary	Between Groups	7.840	1	7.840	44.879	0.000
	Within Groups	17.120	98	0.175		
	Total	24.960	99			

Table 7.21 shows that the difference in stock of medicine between beneficiary and non-beneficiary is statistically significant. This eventually reveals the advantageous position of beneficiaries in stock of medicine.

7.3.3 Types of water borne diseases that affect during flood

Among the beneficiaries the rate of storing emergency medicine and safe drinking water for disaster period is quite high than the non-beneficiaries which have been presented earlier. So it is quite evident that the tendency of being affected by water borne diseases mainly diarrhea is most eventual for non-beneficiary. From table 7.22 it is found that 20% beneficiary do not suffer from any type of water borne diseases. In case of non-beneficiary,

the situation of diarrhea slowly aggravates and thus results into cholera. Both beneficiary and non-beneficiary are also affected by typhoid and skin disease.

Table 7.22: Distribution of beneficiary and non-beneficiary affected by water borne diseases

Type of water borne diseases	Membership of MFI's				Total	
	Beneficiary		Non- beneficiary			
	f	%	*f*	%	*f*	%
Diarrhoea	22	44	34	68	56	56
Cholera	0	0	6	12	6	6
Typhoid	10	20	8	16	18	18
Skin diseases	8	16	2	4	10	10
None	10	20	0	0	10	10
Total	**50**	**100**	**50**	**100**	**100**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

Table 7.23 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in the type of water borne diseases affecting the respondents

Variables		Sum of Squares	df	Mean Square	F	Sig.
Types of Water borne diseases that affect the beneficiary and non-beneficiary	Between Groups	31.360	1	31.360	17.951	0.000
	Within Groups	171.200	98	1.747		
	Total	202.560	99			

Table 7.23 shows that the difference of types of diseases that affect the beneficiaries and non-beneficiaries is statistically significant. It means that the beneficiaries are less vulnerable to be affected by water borne diseases than the non-beneficiaries.

During survey it was found that the trend of being affected by water borne diseases of the beneficiaries has changed after being member of MFIs. The trend of being affected by

cholera has been eliminated from beneficiaries. The following table shows the comparison between before and after being member of MFIs.

Table 7.24: Distribution of beneficiary HHs depending on trend of being affected by water borne diseases

Type of water borne diseases	Membership of MFI's (Beneficiary)			
	Before		After	
	f	%	*f*	%
Diarrhoea	24	48	22	44
Cholera	22	44	0	0
Typhoid	2	4	10	20
Skin diseases	2	4	8	16
None	0	0	10	20
Total	**50**	**100**	**50**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

Table 7.25 (One-Way ANOVA): Difference between the beneficiaries before and after being member of MFIs in the type of water borne diseases

Variables		Sum of Squares	df	Mean Square	F	Sig.
Type of water borne diseases affecting the beneficiaries before and after being member of MFIs	Between Groups	5.147	3	1.716	3.528	0.022
	Within Groups	22.373	46	0.486		
	Total	27.520	49			

Table 7.25 shows that the difference of types of diseases that affect the beneficiaries before and after being member of MFIs is statistically significant. It means that the beneficiaries become less vulnerable to be affected by water borne diseases after being member of MFIs.

7.3.4 Extent of ability of the respondents to cope with diseases

It is quite evident that stock of medicine and safe drinking water poses a great impact in coping with diseases. Eventually the beneficiaries are in a better condition to cope the water

borne diseases during flood. Although the ability of beneficiaries and non-beneficiaries to cope with the diseases has increased simultaneously due to the awareness and motivational campaign conducted by local MFIs, the beneficiaries can better cope the diseases due to easy access to credit.

Table 7.26: Distribution of beneficiary and non-beneficiary depending on extent of ability to cope with diseases

Extent of ability of the respondent to fight against diseases	Membership of MFI's				Total	
	Beneficiary		Non- beneficiary			
	f	%	*f*	%	*f*	%
Highly improved	12	24	10	20	22	22
Moderately improved	28	56	24	48	52	52
Not improved	10	20	16	32	26	26
Total	**50**	**100**	**50**	**100**	**100**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

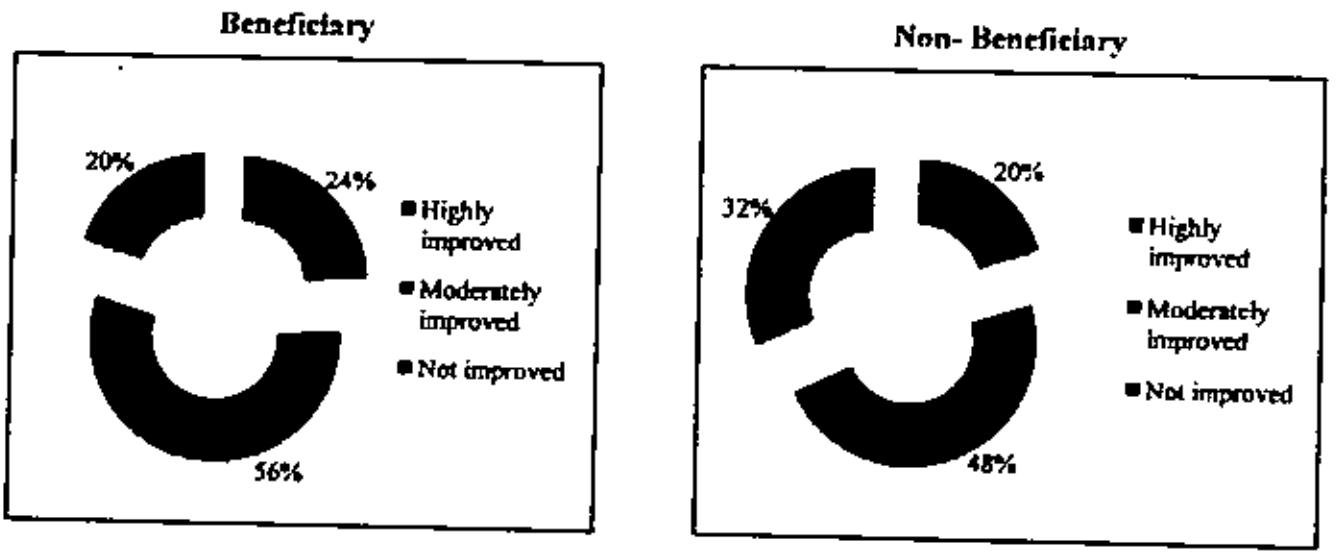


Figure 7.4: Extent of ability of the respondents to cope with diseases

7.4 Conclusion

From the above discussion it is quite clear that the beneficiaries are in a better condition in case of land ownership pattern, storage of safe drinking water, stock of medicine, savings, and damage to property due to disaster. But in case of stock of food, there is no significant difference between the beneficiary and non- beneficiary. From the analysis it is also found that the non- beneficiaries suffer from water borne diseases more badly than the beneficiaries during flood. Since the beneficiaries are in a better condition in case of stock of medicine eventually their ability to cope with diseases is higher than the non-beneficiary. The comparative analysis on the aforementioned indicators shows that the extent of ability of the beneficiaries to cope with flood disaster is significantly higher than the non- beneficiaries. From this section of analysis it is also found that the storage of safe drinking water and extent of ability to cope with diseases of the beneficiaries have been increased very significantly after being the member of MFIs.

CHAPTER 08

SOCIAL INDICATORS RELATED TO VULNERABILITY TO RIVER EROSION

8.1 Introduction

The findings on educational status, land ownership pattern, condition of the main dwelling house, category of land eroded, source of safe drinking water, condition of toilet and shelter during erosion period has been discussed in this chapter.

8.2 Educational Status

Educational status is the most important social indicator to differentiate the group of people in a community. The educational status of the beneficiary and non-beneficiary house-holds have been presented in table 8.1.

Table 8.1: Distribution of beneficiary and non-beneficiary HHs by educational status

Educational Qualification of the Respondent	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
Illiterate	10	40	10	40	20	**40**
Primary (Class I-V)	12	48	9	36	21	**42**
Secondary (Class VI-X)	2	8	5	20	7	**14**
S.S.C	1	4	0	0	1	**2**
H.S.C	0	0	1	4	1	**2**
Total	**25**	**100**	**25**	**100**	**50**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

It is revealed from the table that there is no major difference between beneficiary and non-beneficiary households by educational status. Selected 5 villages have the opportunity to get them admitted into the inclusive pre-schools run by BRAC and ASA under the Non-formal Education Program. It was found during survey that educated peoples are motivated to be the member of MFIs where as illiterate people are not interested enough to be the

member of MFIs. In most of the cases, it was found that the illiterate beneficiaries of MFIs cannot utilize the credit properly

8.3 Condition of Main Dwelling House

In Mohonpur Union, majority of the respondents have constructed their houses with tin (Corrugated Iron). There are very few houses constructed with tin roof and brick wall. From table 8.2 it is clear that both the beneficiary and non-beneficiary are quite similar in case of housing construction material.

Table 8.2: Distribution of beneficiary and non-beneficiary HHs by physical condition of the main dwelling house

Housing construction material	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
Thatch roof with mud wall	2	8	2	8	4	**8**
All thatch	3	12	2	8	5	**10**
Tin roof with thatch wall	7	28	9	36	16	**32**
All tin	12	48	11	44	23	**46**
Tin roof with brick wall	1	4	1	4	2	**4**
Total	**25**	**100**	**25**	**100**	**50**	**100**

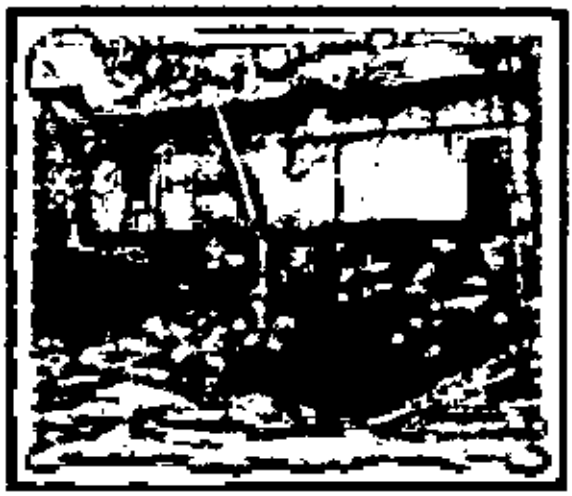
Source: Field Survey, Dec, 2006- Jul, 2007

Table 8.3 (One-Way ANOVA): Difference between the beneficiaries and non-beneficiary in housing construction materials

Variables		Sum of Squares	df	Mean Square	F	Sig.
Housing construction material of beneficiary and non-beneficiary	Between Groups	0.500	1	0.500	1.357	0.250
	Within Groups	17.680	48	0.368		
	Total	18.180	49			

From table 8.3 it is found that there is no significant difference in housing construction materials between beneficiary and non beneficiary but the beneficiaries should have better construction materials than non-beneficiaries and the MFIs should also concentrate on housing construction materials so that their extent of damage due to disaster reduce to a great extent.

Photograph 8.1: Houses made of tin roof and thatch wall



Photograph 8.2: Houses made of all tin

8.4 Category of Land Eroded During Erosion Period

Riverbank erosion is a perennial problem caused by dynamic channel shifting of the rivers flowing through the unconsolidated sediments of the floodplain. Selected five villages of Mohonpur Union which are on the bank of lower Meghna are extremely vulnerable to river erosion and this year homestead and cultivable land of 120 families of those villages have been totally destroyed. During survey it was found that the one and only Shigir Char Government Primary School is going to be eroded soon by the lower Meghna.

Table 8.4: Distribution of beneficiary and non-beneficiary HHs by category of land eroded

Category of land eroded during erosion period	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
Homestead	7	28	8	32	15	30
Cultivable	7	28	4	16	11	22
Both	11	44	13	52	24	48
Total	**25**	**100**	**25**	**100**	**50**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

From table 8.4 it is clear that there is nothing to differentiate between the beneficiary and non- beneficiary by the category of land eroded. Both the beneficiary and non beneficiary are equally vulnerable to erosion of homestead and cultivable land.

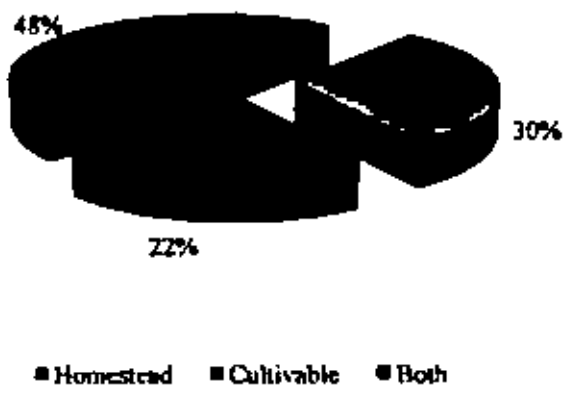


Figure 8.1: Category of land eroded during erosion period

The above chart express that in most cases the respondents lose both the homestead and cultivable land simultaneously.

Photograph 8.3: Erosion site at Mohonpur Union

Photograph 8.4: Erosion affected people at Mohonpur Union

8.5 Sources of Safe Drinking Water

In the study area majority of respondents have access to safe drinking water through community tubewell. Moreover, Water supply and sanitation program conducted by Proshika and Grameen Bank has successfully motivated the community people to install deep tube well. But unfortunately arsenic contamination is a major problem in Mohonpur Union that is why some non- beneficiaries are bound to drink water from river or pond.

Table 8.5: Distribution of beneficiary and non-beneficiary HHs by source of drinking water

Source of drinking water	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
Tube-well	25	100	13	52	38	76
Pond	0	0	10	40	10	20
River	0	0	2	8	2	4
Total	25	100	25	100	50	100

Source: Field Survey, Dec, 2006- Jul, 2007

ASA conducting a project named 'Arsenic Free Water' and has identified the Arsenic free and Arsenic contaminated tube wells. This project has also demonstrated arsenic removal

techniques to the members of ASA and this has provide access to safe drinking water to the members of ASA. And only this activity of ASA has created a significant difference of access to safe drinking water between the beneficiary and non-beneficiary.

Photograph 8.5: Source of drinking water

Table 8.6 (One-Way ANOVA): Difference between the beneficiaries and non-beneficiary in source of drinking water

Variables		Sum of Squares	df	Mean Square	F	Sig.
Source of drinking water of the respondent	Between Groups	3.920	1	3.920	18.520	0.000
	Within Groups	10.160	48	0.212		
	Total	14.080	49			

8.6 Shelter During Erosion Period

Erosion is the disaster that takes away everything at an instant and makes people shelter less. The following table shows the variety of shelter that the respondents take after erosion. From the following table it is quite clear that there is nothing to differentiate between beneficiary and non-beneficiary by shelter during erosion period.

Table 8.7: Distribution of beneficiary and non-beneficiary by shelter during erosion

Shelter during erosion period	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
Shelter less	3	12	7	28	10	**20**
Taking shelter in relative house	8	32	8	32	16	**32**
Taking shelter in local school	11	44	7	28	18	**36**
Taking shelter in mosque	2	8	2	8	4	**8**
Others	1	4	1	4	2	**4**
Total	**25**	**100**	**25**	**100**	**50**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

Table 8.8 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in shelter during erosion period

Variables		Sum of Squares	df	Mean Square	F	Sig.
Shelter during erosion period of the respondent	Between Groups	1.280	1	1.280	1.204	0.278
	Within Groups	51.040	48	1.063		
	Total	52.320	49			

Table 8.8 shows that there is no significant difference between beneficiary and non-beneficiary by shelter during erosion period. But the beneficiaries can take loan from their MFIs and can construct a temporary shelter for survival.

8.7 Conclusion

From the above discussion it is quite clear that there is no significant difference between the beneficiary and non-beneficiary by educational status, condition of the main dwelling house, category of land eroded, condition of toilet and shelter during erosion period. The beneficiary and non-beneficiary significantly differ in source of safe drinking water and majority of the beneficiaries believe that ASA have played a great role to ensure safe drinking water for them. But the most important factor during erosion period is the shelter and most of the MFIs remain inactive to provide shelter to its members.

CHAPTER 09

ECONOMIC INDICATORS RELATED TO VULNERABILITY TO RIVER EROSION

9.1 Introduction

Comparative analysis on some selected economic indicators such as occupation, land ownership pattern, monthly income, amount of land eroded, emergency food stock, food consumption pattern, loss of agricultural stock, source of money or credit, amount of money or credit, extent of damage to property, source of support for drinking water, medicine, housing material, livestock, agricultural input and time requires to construct a temporary shelter has been made in this chapter. The analysis will reveal the comparative advantages of the beneficiaries in coping with river erosion after being member of MFI.

9.2 Occupation

The occupational status of the beneficiary and non-beneficiary population has been provided in table 9.1. It is observed from the table that there exists some difference between the beneficiary and non-beneficiary group in respect of occupational distribution.

Table 9.1: Distribution of beneficiary and non-beneficiary HHs by occupation

Occupation of the respondent	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
Farmer	18	72	14	56	32	**64**
Day laborer	3	12	0	0	3	**6**
Rickshaw puller	1	4	4	16	5	**10**
Businessman	3	12	7	28	10	**20**
Total	**25**	**100**	**25**	**100**	**50**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

From table 9.1 it is revealed that most of the beneficiaries and non-beneficiaries are engaged in farming even though the beneficiaries are more engaged in farming than the

non-beneficiaries. The Businessmen who are in better economic condition are not interested to be a member of MFIs and thus 28% businessmen are non-beneficiaries. The trend of being member of MFIs in day laborer and rickshaw puller occupational group is very low.

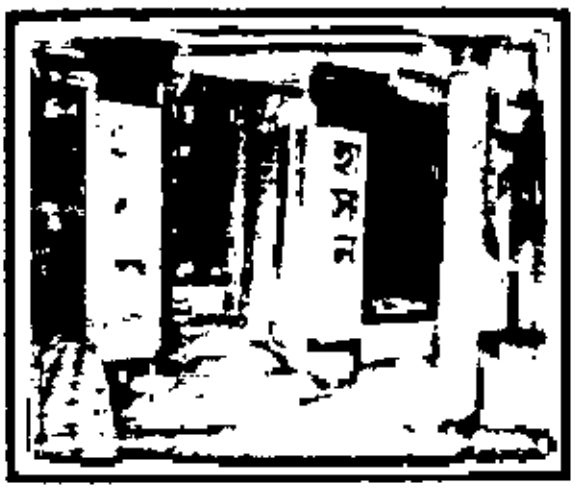
Table 9.2 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in occupation of the HHs

Variables		Sum of Squares	df	Mean Square	F	Sig.
Occupation of the respondent	Between Groups	4.500	1	4.500	3.020	0.089
	Within Groups	71.520	48	1.490		
	Total	76.020	49			

Table 9.2 shows that the difference in occupational status between beneficiary and non-beneficiary is statistically not significant.

Photograph 9.1: Farming in Mohonpur Union

Photograph 9.2: Rickshaw pulling in Mohonpur Union



Photograph 9.3: Business in Mohonpur union

9.3 Land Ownership Pattern

Land ownership pattern is another important indicator to reveal the social status of the community people. Land ownership pattern of the respondents has been presented in table 9.3.

Table 9.3: Landownership pattern of the beneficiary and non-beneficiary HHs

Landownership pattern of the Household	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
Owned	15	60	18	72	33	66
Rented	5	20	3	12	8	16
Leased	2	8	3	12	5	10
Government property	1	4	1	4	2	4
Waqf property	2	8	0	0	2	4
Total	**25**	**100**	**25**	**100**	**50**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

It is observed from the Table 9.3 that 60% beneficiary has his own house-hold or cultivable land and 72% non-beneficiary has land ownership. During survey it was found that the day laborers and rickshaw pullers are not capable to own cultivable and homesteaded land. In

most cases they live in rented house. Some ultra poor beneficiaries live in Government land or waqf property.

9.4 Monthly Income

Total monthly income of the beneficiary and non-beneficiary house-holds have been presented in table 9.4. It is observed from the table that in case of monthly return the beneficiaries are quite well-off than the non-beneficiaries. 40% beneficiary earns more than Tk. 5000 per month whereas 24% non-beneficiary earns more than Tk. 5000 per month.

Table 9.4: Distribution of beneficiary and non-beneficiary HHs by monthly income

Total Monthly Income of HH (in Tk.)	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
1001-3000	4	16	9	32	9	**18**
3001-5000	11	44	9	32	19	**38**
5001-10000	9	36	7	24	17	**34**
10001-15000	1	4	0	0	4	**8**
>20000	0	0	0	0	0	**0**
Total	**25**	**100**	**25**	**100**	**50**	**100**
Mean=5280, Mode=4000, Median=4000, Std. dev=2562.063, Min=2000, Max=12500, Skewness=0.836, Kurtosis=0.843			Mean=4260, Mode=4000, Median=4000, Std. dev=2236.63, Min=2000, Max=7500, Skewness=0.54, Kurtosis= - 1.26			

Source: Field Survey, Dec, 2006- Jul, 2007

9.5 Amount of Land (In Decimal) Eroded During Erosion Period

In case of river erosion, beneficiary and non-beneficiary both are equally vulnerable. But amount of land eroded is subject to the geographical location of land and river. The land which is vulnerable to erosion is cheap and mostly the poor people can afford those low cost vulnerable lands for their homestead and income generating activities.

Table 9.5: Distribution of beneficiary and non-beneficiary by amount of land eroded during erosion period

Amount of land eroded	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
<10 decimal	5	20	5	20	10	**20**
11-50 decimal	15	60	4	16	19	**38**
51-100 decimal	4	16	14	56	18	**36**
>100 decimal	1	4	2	8	3	**6**
Total	**25**	**100**	**25**	**100**	**50**	**100**
	Mean=37.6, Mode=40, Median=40. Std. dev=23.09, Min=10, Max=100, Skewness=0.943, Kurtosis=0.941		Mean=53.8, Mode=60, Median=60, Std. dev=29.41, Min=10, Max=120, Skewness=0.15, Kurtosis=0.10			

Source: Field Survey, Dec. 2006- Jul, 2007

From the above table, it is found that non- beneficiaries are affected badly than beneficiaries during erosion period. About 64% non-beneficiaries lose more than 50 decimal lands. On the other hand only 20% beneficiaries lose more than 50 decimal of land.

Table 9.6 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in amount of land erode

Variables		Sum of Squares	df	Mean Square	F	Sig.
Eroded amount of land of the respondent	Between Groups	2.880	1	2.880	4.164	0.047
	Within Groups	33.200	48	0.692		
	Total	36.080	49			

From the above table it is found that the difference in amount of land eroded between beneficiary and non-beneficiary is statistically significant which eventually shows that the beneficiaries lose small amount of land than the non-beneficiaries.

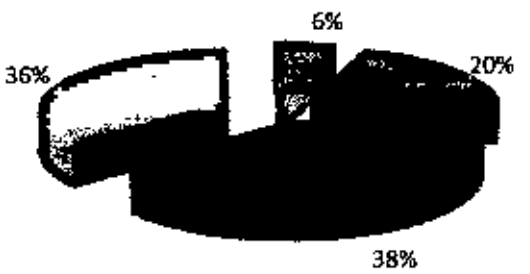


Figure 9.1: Distribution of respondent by amount of land eroded

From the above chart, 38% respondents have lost 11-50 decimal of land. The people who live in close proximity to the river shall have to lose a greater amount of land. They lose their homestead and cultivable both types of land.

9.6 Emergency Food Stock

Agriculture and horticulture encounter serious losses during flood. These losses badly affect the most important primary product like food production and vegetable production. The cumulative effect of these activities simultaneously result in food shortage and increase in food prices. It's a matter of great regret that the local MFIs in Mohonpur Union do not provide financial support for food stock. They conduct awareness and motivational campaign for that particular purpose. During the erosion of 2007 ASA and Proshika distributed bread, molasses, rice and pulses to the affected families. But distribution of food relief is not enough to mitigate the need of the affected families. To abate this problem, pre-disaster food stock is essential. It is realistic that the extremely marginalized people live in river side areas which are most vulnerable to erosion and to improve their disaster coping ability, comprehensive improvement of socio-economic condition is essential. The following table shows that 88% beneficiary keep food stock for emergency whereas only 40% non-beneficiary used to do so.

Table 9.7: Distribution of respondents by emergency food stock

Emergency Food Stock	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
Yes	22	88	10	40	32	**64**
No	3	12	15	60	18	**36**
Total	**25**	**100**	**25**	**100**	**50**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

The beneficiaries become more aware due to the campaign of MFIs. They try to store dry foods according to their capacity. Normally flattened rice, molasses, parched paddy, jackfruit seed, sesame, dry fish, pulse etc. are stored by all income groups. Well-off families store biscuit, canned food, paddy, pulse etc. Some non beneficiary families also try to store food for the emergency situation. Only the ultra poor families cannot store foods

9.7 Savings

Monthly savings play a crucial role during disaster period. The MFIs have made their members very conscious about saving an amount to cope with disaster. The following table shows that 76% beneficiary save an amount per month for disaster period whereas 52% non-beneficiary does not save any amount for emergency.

Table 9.8: Distribution of respondents depending on savings

Savings	Membership Status of the Respondent				Total	
	Beneficiary		Non-beneficiary			
	f	%	*f*	%	*f*	%
No savings	4	16	13	52	17	**34**
<Tk. 500	2	8	8	32	10	**20**
Tk. 500-1000	8	32	4	16	12	**24**
Tk. 1001-1500	11	44	0	0	11	**22**
Total	**25**	**100**	**25**	**100**	**50**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

9.8 Food Consumption Pattern

Food consumption pattern is directly proportional to savings and stock of food. Since the percentage of beneficiaries in stocking food is higher than those of non-beneficiaries, the food consumption pattern will eventually differ between them.

Table 9.9: Food consumption pattern of the respondents during erosion period

Food Consumption During Erosion Period	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
Starving	3	12	11	44	14	**28**
One meal in a day	8	32	9	36	17	**34**
Two meals in a day	9	36	5	20	14	**28**
Three meals in a day	5	20	0	0	5	**10**
Total	**25**	**100**	**25**	**100**	**50**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

From the above table it is found that the rate of starving is very high among non-beneficiaries where most of the beneficiaries used to take two meals a day during erosion period. Beneficiaries who stock very small amount of food for the emergency situation usually have one meal a day.

Table 9.10 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in the food consumption pattern

Variables		Sum of Squares	df	Mean Square	F	Sig.
Food consumption pattern	Between Groups	9.680	1	9.680	12.793	0.001
	Within Groups	36.320	48	0.757		
	Total	46.000	49			

The above table shows that the difference in food consumption pattern between beneficiary and non-beneficiary is statistically significant. It also means that the beneficiaries are in a far better condition than the non-beneficiaries in food consumption pattern.

Hypothesis: Food consumption pattern during erosion period depends on savings and emergency food stock

Table 9.11: Relationship among food consumption during erosion period, monthly income, savings and emergency food stock

Variables	Statistics	Food Consumption During Erosion Period
Savings	Spearman Correlation	0.604(**)
	Sig. (2-tailed)	0.000
	N	50
Emergency food stock	Spearman Correlation	0.504(**)
	Sig. (2-tailed)	0.000
	N	50

**** Correlation is significant at the 0.01 level (2-tailed).**

*** Correlation is significant at the 0.05 level (2-tailed).**

From the above table it is quite clear that the correlation among food consumption pattern, savings and emergency food stock is statistically significant. Therefore, it can be said that food consumption pattern during erosion period is dependent on savings and emergency food stock Hence, from table 9.7 and 9.8, it is found that the beneficiaries are in a better condition in case of emergency food stock and savings, therefore, it can be concluded that the beneficiaries will have a better food consumption pattern than the non-beneficiaries. So, the hypothesis can be accepted.

9.9 Loss of Agricultural Stock and Inputs of the People During Erosion Period

The beneficiary and non-beneficiary are equally damaged in case of loss of agricultural stock and inputs. Because the MFIs do not have any separate program to prevent the loss of agricultural stock and inputs. ASA and Proshika conduct awareness campaign to take the agricultural stock and inputs to a safer place. Bangladesh Krishi Bank and Bangladesh Rural Development Board provide seed, fertilizer, insecticide, pesticide to the affected people.

Table 9.12: Loss of agricultural stock and inputs of the respondents during erosion period

Loss of agricultural stock and inputs during erosion period	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
Paddy	2	8	0	0	2	**4**
Rice	6	24	7	28	13	**26**
Jute	0	0	1	4	1	**2**
Seeds	3	12	1	4	4	**8**
Fertilizer	5	20	4	16	9	**18**
Paddy + Jute + Seeds	5	20	7	28	12	**24**
Paddy + Jute	2	8	2	8	4	**8**
Seed +Fertilizer	2	8	3	12	5	**10**
Total	**25**	**100**	**25**	**100**	**50**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

Table 9.13 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in the loss of agricultural stock and inputs

Variable		Sum of Squares	df	Mean Square	F	Sig.
Loss of agricultural stock and inputs	Between Groups	2.000	1	2.000	0.433	0.513
	Within Groups	221.520	48	4.615		
	Total	223.520	49			

The above table shows that there is no significant difference between beneficiary and non-beneficiary in case of loss of agricultural stock and input. Both the groups are equally affected by loss of agricultural stock and input due to river erosion.

It's a matter of great regret that there is no attempt to take any structural measure to prevent erosion and especially the MPIs are not interested in taking structural mitigation measure for disaster management. When the erosion affected people get some agricultural inputs

from various sources, they can not utilize those due to loss of land. And only relief is not enough to recover the damage due to erosion.

9.10 Source of Loan or Credit for the Recovery of Erosion Affected People

The beneficiary and non-beneficiary do not get equal opportunity in case of taking loan from MFIs. The non-beneficiaries have to face a lot of hindering for their loan appeal. Relief support is equal for both of the respondent groups but credit or loan support significantly varies between them. However, many national NGOs, MFIs, INGOs and Government Organizations provide money/credit to the disaster affected people. The following table shows the sources of credit during disaster.

Table 9.14: Source of loan of the respondent during erosion period

Source of Loan During Erosion Period	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
MFIs	24	96	4	22	28	**65**
Government agency/ organizations	0	0	5	28	5	**12**
Co-operative society	0	0	2	11	2	**5**
Money lender	1	4	7	39	8	**18**
Total	**25**	**100**	**18**	**100**	**43**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

From the above table it is clear that, for the beneficiaries, MFIs are the most potential source of loan for the recovery of losses. In some exceptional cases they receive loan from money lenders when they need a huge amount of money to recover. But for non-beneficiaries, getting loan from MFIs is very much difficult than the beneficiaries. During survey it was found that 72% (i.e. 18 out of 25) non-beneficiaries have access to credit whereas 100% (i.e. 25 out of 25) beneficiaries have an easy access to credit. It was also found that 39% non-beneficiaries took loan from the money lenders and 28% and 22% received loan from Government agency and MFIs respectively.

9.11 Amount of Loan/Credit Received

During survey it was observed that there is a number of potential sources like MFIs, Government agency, cooperative society, money lender, community people who disburse loan to the disaster affected people but the credit ceiling is not the same in case of all the sources. The credit ceiling varies depending on source and membership status. The variation of credit ceiling depending on credit source and membership status is presented in table 9.15 and table 9.16

Table 9.15: Distribution of respondent by amount of loan received during erosion period

Amount of loan received during erosion period	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
<Tk.5000	7	28	3	17	10	**23**
Tk. 5000-10000	12	48	11	61	23	**54**
Tk.10001-15000	6	24	3	17	9	**21**
Tk.15001-20000	0	0	1	6	1	**2**
Total	**25**	**100**	**18**	**100**	**43**	**100**
Mean=8300, Mode=7500, Median=7500, Std. dev=3178.71, Min=3000, Max=15000. Skewness=0.375, Kurtosis= - 0.633			Mean=9055.56, Mode=7500, Median=8000, Std dev=3693.75, Min=5000, Max=20000, Skewness=1.674, Kurtosis=3.619			

Source: Field Survey, Dec, 2006- Jul, 2007

From table 9.14 it is observed that the beneficiary and non-beneficiary both are in need of money during disaster period and both of them receive credit of various amounts. Since a very few poor non-beneficiaries who are not prepared enough to cope with disaster, received loan above tk. 15000 which is only 2% of the total respondents.

Table 9.16 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in credit ceiling

Variable		Sum of Squares	df	Mean Square	F	Sig.
Amount of Loan	Between Groups	0.239	1	0.239	0.431	0.515
	Within Groups	22.738	41	0.555		
	Total	22.977	42			

The above table shows that the difference between beneficiary and non-beneficiary in ease of credit ceiling is not statistically significant. It means that the distribution of beneficiary and non-beneficiary by credit ceiling does not differ to a great extent.

9.12 Ease of Loan Recovery

Number of installment and recovery strategy of various sources of credit differ to a great extent. During survey it was found that the respondents who have received loan from MFIs and money lenders, experienced extreme hardship to recover the loan because, the MFIs and money lenders do not reschedule the installment during disaster. The credit receivers of MFIs and money lenders are bound to pay the installment in time otherwise they will have to compensate for that delay. Such situation poses further pressure on the disaster affected people. Some large nation-wide NGOs used to reschedule the installment for 3 to 6 months but this attempt is not enough to abate the sufferings of the disaster affected people.

Table 9.17: Ease of payment

Ease of Payment	Membership Status of the Respondent				Total	
	Beneficiary		Non- Beneficiary			
	f	%	*f*	%	*f*	%
Easy payment	2	8	0	0	2	**5**
Moderate hardship	10	40	8	44	18	**42**
Extreme hardship	13	52	10	56	23	**53**
Total	**25**	**100**	**18**	**100**	**43**	**100**

Source: Field Survey, Dec, 2006- Jul, 2007

Table 9.18 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in ease of recovery of loan

Variables		Sum of Squares	df	Mean Square	F	Sig.
Ease of recovery of loan	Between Groups	0.140	1	0.140	0.392	0.535
	Within Groups	14.604	41	0.356		
	Total	14.744	42			

From the above table it is quite clear that the ease of recovery of loan does not differs significantly between beneficiary and non-beneficiary. It means that both beneficiary and non- beneficiary has to face equal hardship in the loan recovery process.

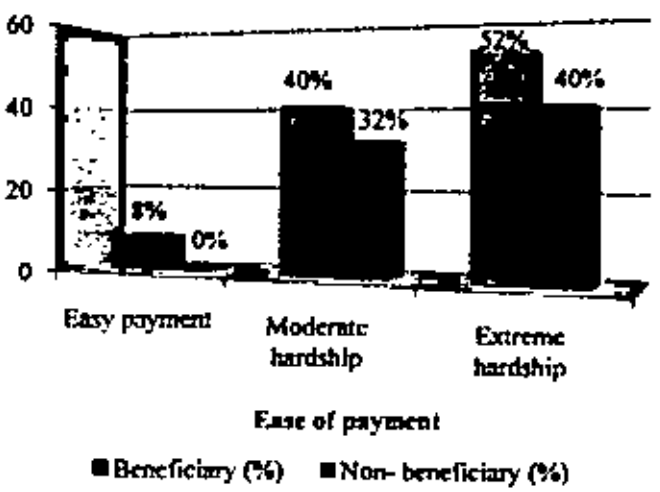


Figure 9.2: Ease of payment of loan of the respondent

9.13 Extent of Damage or Scarcity

In case of river erosion, all the affected people have to encounter damage or loss during erosion period. There is no such case where the affected people have not faced some extent of loss or damage. But the level of scarcity or loss varies between beneficiary and non-beneficiary. From the above table it is evident that the beneficiaries have to come across severe damage of shelter and safe drinking water. But the non-beneficiaries have to stumble

upon severe damage to shelter, money, food, source of safe drinking water, medicine and livestock.

Table 9.19: Extent of damage or scarcity of the respondent

Extent Of Damage	Beneficiary						Non- Beneficiary					
	Scarcity Of Or Damage To						Scarcity Of Or Damage To					
	Money	*Food*	*Safe Drinking Water*	*Medicine*	*Shelter*	*Livestock*	*Money*	*Food*	*Safe Drinking Water*	*Medicine*	*Shelter*	*Livestock*
No loss	3	2	0	0	3	0	1	1	0	0	0	0
Moderate loss	11	19	9	20	6	20	6	9	6	8	7	8
Severe loss	11	4	16	5	16	5	18	15	19	17	18	17
Total	25	25	25	25	25	25	25	25	25	25	25	25

Source: Field Survey, Dec, 2006- Jul, 2007

Table 9.20 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in the level or extent of scarcity or damage

Variables		Sum of Squares	df	Mean Square	F	Sig.
Level of scarcity of money	Between Groups	1.620	1	1.620	4.119	0.048
	Within Groups	18.880	48	0.393		
	Total	20.500	49			
Extent of scarcity of food	Between Groups	2.880	1	2.880	9.874	0.003
	Within Groups	14.000	48	0.292		
	Total	16.880	49			
Extent of damage to source of drinking water	Between Groups	0.180	1	0.180	0.837	0.365
	Within Groups	10.320	48	0.215		
	Total	10.500	49			
Level of scarcity of medicine	Between Groups	2.880	1	2.880	14.644	0.000
	Within Groups	9.440	48	0.197		
	Total	12.320	49			
Extent of damage to shelter	Between Groups	0.500	1	0.500	1.389	0.244
	Within Groups	17.280	48	0.360		
	Total	17.780	49			
Extent of damage to livestock	Between Groups	2.880	1	2.880	14.644	0.000
	Within Groups	9.440	48	0.197		
	Total	12.320	48			

From the above table it found that the level of scarcity of money, food and medicine and damage to livestock significantly differs between beneficiary and non-beneficiary. It means that the beneficiaries encounter less damage or scarcity of money, food, medicine and livestock than the non-beneficiary. On the other hand both the beneficiary and non-beneficiary encounter similar type of loss or damage to source of drinking water and shelter

9.14 Source of Support for Erosion Affected People

Response to disasters has conventionally been conceived with a division between immediate relief and post disaster rehabilitation. Usually the Government organizations like National Disaster Management Council, Disaster Management Bureau, The Directorate of Relief and Rehabilitation, Disaster Management Training and Public Awareness Building Taskforce, NGO Coordination Committee on Disaster Management and Committee for Speedy Dissemination of Disaster Related Warnings are directly involved in GOB's approach to natural disaster response. These organizations are mainly responsible for preparation of disaster action plan at local level, orgapizing public awareness campaign and training on disaster preparedness, promoting local level risk reduction measures, developing post disaster assistance strategy and distribution of relief and rehabilitation materials to affected areas. Local NGOs and MFIs have developed and experimented with a varied approach in response to natural disasters, mostly with flood and river erosion. These include flood and erosion shelter, raised homestead and tube-well, provision of basic food and medical services during emergencies, provision of agricultural input and credit for post disaster rehabilitation. INGOs mainly provide disaster relief fund and exclusive medical support to the affected people. Cooperative society and community people also come forward to share the sufferings of the disaster affected people. So, the aforementioned Government organizations, NGOs and MFIs, INGOs, Cooperative Society and Community people are the most potential sources of support for erosion affected people. But in many cases, the access to those supports is not equal to all the erosion affected people in all respect. During survey, it was found that the beneficiaries of MFIs usually get support for money, emergency food, source of drinking water, medicine, housing material, livestock and agricultural inputs from their respective MFIs. In most cases, the non-beneficiaries or experimental group get those support from Government organizations, INGOs, Cooperative Society, community people, money lender and MFIs as well.

Table 9.21 (One-Way ANOVA): Difference between beneficiary and non-beneficiary in source of support on various aspects

Variables		Sum of Squares	df	Mean Square	F	Sig.
Source of financial support	Between Groups	93.683	1	93.683	35.818	0.000
	Within Groups	120.317	46	2.616		
	Total	214.000	47			
Source of emergency food	Between Groups	46.080	1	46.080	23.059	0.000
	Within Groups	95.920	48	1.998		
	Total	142.000	49			
Source of support for drinking water	Between Groups	2.420	1	2.420	0.991	0.324
	Within Groups	117.200	48	2.442		
	Total	119.620	49			
Source of medicine	Between Groups	6.480	1	6.480	10.151	0.003
	Within Groups	30.640	48	0.638		
	Total	37.120	49			
Source of shelter or housing material	Between Groups	67.280	1	67.280	15.216	0.000
	Within Groups	212.240	48	4.422		
	Total	279.520	49			
Source of livestock	Between Groups	81.920	1	81.920	19.466	0.000
	Within Groups	202.000	48	4.208		
	Total	283.920	49			
Source of agricultural inputs (seeds, fertilizer, insecticides etc)	Between Groups	32.000	1	32.000	19.200	0.000
	Within Groups	80.000	48	1.667		
	Total	112.000	49			

The above table shows that the difference in source of support for money, emergency food, medicine, housing material, livestock and agricultural inputs between beneficiary and non-

beneficiary is statistically significant. It means that the beneficiaries have easy access to financial support, emergency food, housing material, livestock and agricultural inputs than the non-beneficiaries.

9.15 Time Require To Construct a Temporary Shelter

At the initial stage of just being affected by erosion, all the affected people remain shelter less for 2-3 weeks. In some exceptional case very few families do get shelter immediately but majority of the affected people suffers a lot. BRAC and Proshika distributed interest free credit to its members to purchase emergency materials like tripol, bamboo, rope to construct a temporary shelter. Thus the members of MFIs remain shelter less for a very short period of time.

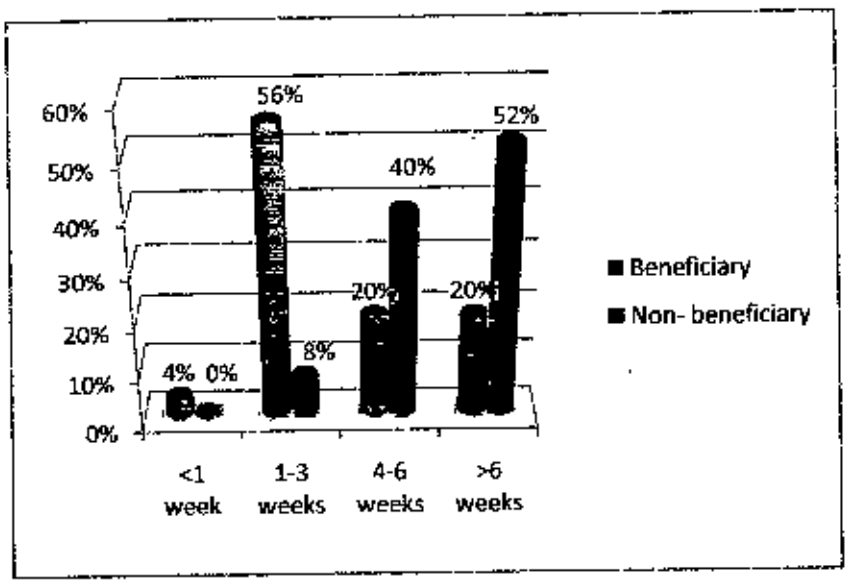


Figure 9.3: Time requires to construct a temporary shelter

9.16 Conclusion

During field survey, an open discussion with Mr. Babul Chowdhury, the Union Parishad Chairman of Mohonpur Union was conducted. In the discussion he said that a number of NGOs or MFIs are working in the community and they are implementing various projects for the community people. But river erosion is such type of disaster that takes away everything at an instant and posses severe damage to the MFI's programs. Moreover, there is a lack of coordination among the NGOs. Even some times they do not cooperate with Local Government Organizations So. the MFIs should think of their project sustainability. If the NGOs can segregate their programs and concentrate on need oriented issue based activities, then they will be able to meet the maximum needs of the people. Many times it is found that the MFIs are implementing project not considering the crying need of the community.

CHAPTER 10

SUMMARY FINDINGS

10.1 Introduction

This study has been conducted to assess the comparative advantages of the Micro-finance program beneficiaries in river erosion and flood prone areas and to examine the change in the disaster coping ability of the beneficiaries before and after being member of MFIs. It was assumed that the beneficiaries are less vulnerable to flood and erosion than the non-beneficiaries and the vulnerability of the beneficiaries have been reduced after they have become the member of MFIs. This assumption has been examined on the basis of a number of indicators under social, economic and health perspective of vulnerability. Evaluation has been conducted using analysis of variance and bivariate correlation. The outcomes of evaluation of both of the methods denote the difference in the ability of coping with disaster between beneficiaries and non-beneficiaries.

10.2 Findings from Social Perspective

In order to assess the comparative advantages of MFI members in coping with flood and erosion, the level of difference in some social indicators between the beneficiary and non-beneficiary have been examined. Similarly, to assess the impact of MFI activities on its members, the extent of change in housing condition, sanitation condition, source of drinking water, condition of bathing and cooking place have also been examined. The findings on social indicator related to vulnerability to flood and river erosion have been demonstrated in chapter 06 and 08 respectively.

10.2.1 Summary of findings on social indicators related to vulnerability to flood

In chapter 06, the difference of beneficiary and non-beneficiary in educational status, condition of main dwelling house, source of drinking water, plinth height, ceiling height, condition of toilet, bathing place and cooking place has been evaluated.

Source of drinking water: From the analysis it is found that both the beneficiary and non-beneficiary have common source of drinking water. The extensive tube

well installation program by Proshika and Padakkhep has made this possible in Char Algi Union

Housing construction materials: In case of housing construction material, it is found that there is no significant difference between beneficiary and non-beneficiary (table 6.3). But in case of impact analysis of MFI's programs on their members, it is found that the housing construction materials have significantly improved after the implementation of Housing Loan Scheme of ASA and Padakkhep (table 6.5)

Plinth and ceiling height: In case of plinth height and ceiling height it is found that the beneficiaries have elevated their plinth up to 4 Ft and ceiling up to 10 Ft which significantly differs from non-beneficiaries (table 6.7 and 6.9). Due to the implementation of 'Raised Homestead and tube Well' program of BRAC the beneficiaries have been able to bring in necessary adaptation of their household after being member of that particular MFI. (Table 6.6 and 6.8).

Condition of toilet and bathing place: From table 6.10 and 6.11 it is found that the beneficiaries have higher access to sanitary and slab latrine than the non-beneficiaries. In case of condition of bathing place, the beneficiaries are in a better position than the non-beneficiaries (figure 6.6) and the condition of bathing place of the beneficiaries have improved after they have become the member of MFIs. It is also found that the beneficiaries are aware to stock fuel and earthen furnace for disaster period (table 6.15).

So it can be summarized that the members of MFIs can better cope with flood due to the necessary adaptation and improvement of dwelling unit, sanitation condition, condition of bathing place and stock of fuel and furnace for disaster period.

10.2.2 Summary of findings on social indicators related to vulnerability to river erosion

In chapter 08, educational status, condition of the main dwelling house, category of land eroded, source of safe drinking water and shelter during erosion period has been evaluated.

- ***Housing construction materials:*** From table 8.2 and 8.3 it is found that the housing construction materials of both the beneficiary and non beneficiary are same. As there is no 'Housing Improvement Project' or 'Housing Loan Scheme' implemented by MFIs in Mohonpur Union, the housing condition of the members of MFIs has not improved to a great extent. Since the area is erosion affected, the MFIs are not interested to invest in housing construction because they are afraid of recovery of the investment.

- ***Category of land eroded:*** In Mohonpur Union, both cultivable and homestead land are equally vulnerable to erosion. Since the selected villages are outside the embankment, they are affected by erosion very badly.

- ***Sources of safe drinking water:*** In case of source of safe drinking water it is found that the beneficiaries have better access to safe drinking water whereas the non-beneficiaries still use river or pond water for household use (table 8.5). The 'Arsenic Free Water' program of ASA has created a significant difference of access to safe drinking water between the beneficiary and non-beneficiary (table 8.6)

- ***Shelter during erosion period:*** During survey it was found that both the beneficiaries and non-beneficiaries remain shelter less at the first instance of erosion hit. So there is nothing to differentiate between the beneficiary and non-beneficiary (table 8.8). But the beneficiaries can take loan from their MFIs and can construct a temporary shelter for survival

So it can be summarized that the improvement of overall social condition can not play an important role to prevent erosion. But if primary shelter and pure drinking water is

provided at an earliest opportunity, the impact of erosion on the affected people will be considerably lessen. Therefore it can be concluded that the beneficiaries of MFIs have access to safe drinking water and primary shelter, they can better cope the erosion than the non-beneficiary.

10.3 Findings from Economic and Health Perspective

In order to assess the comparative advantages of MFI members in coping with flood and erosion, the level of difference in some economic and health indicators between the beneficiary and non-beneficiary have been examined. Similarly, to assess the impact of MFI activities on its members, the extent of change in disaster coping ability have also been examined. The findings on economic and health indicator related to vulnerability to flood and river erosion have been demonstrated in chapter 07 and 09 respectively.

10.3.1 Summary of findings on economic and health indicators related to vulnerability to flood

- ***Occupation:*** In case of occupation there is nothing to differentiate between beneficiaries and non- beneficiaries (table 7.1). Most of the inhabitants, both the beneficiaries and non- beneficiaries are engaged in farming, then comes livestock rearing and agro based business. This situation prevails due to the programs implemented by BRAC, Proshika, Padakkhep and PDBF to provide support in agriculture and micro-entrepreneurship.

- ***Monthly income:*** Total monthly income of the beneficiary and non-beneficiary house-holds have been varied among tk. 3,000- 10,000. It is observed from the survey that most of the beneficiaries earn more than Tk. 5000 per month and most of the non-beneficiaries earn less than Tk. 5000 per month (table 7.3). People engaged in day laboring and rickshaw pulling usually earn below tk. 5000 per month.

- ***Storage of safe drinking water:*** From table 7.16 and 7.18, it is found that the beneficiaries are in an advantageous position in stocking safe drinking water than the non-beneficiaries and the ability to stock safe drinking water of the beneficiaries

has increased after being member of MFIs. Local NGOs and MFIs have conducted strong motivational campaign to store safe drinking water for disaster period. They have instructed the community people to store water in several ways: Remaining of Water filled plastic gallon and pitcher under safe elevated place, Stock of water purification tablet for long term flood. That is why the awareness to store safe drinking water by the beneficiary has increased to a great extent after they have become the member of MFIs.

Stock of food, medicine and money: In case of stock of food there is nothing to differentiate between the beneficiary and non-beneficiary (Table 7.6). But it should be noted that the beneficiaries are in a better condition in stock of medicine (table 7.20) and savings of money (Table 7.7) for disaster period. From figure 7.1 it is found that according to 72% beneficiaries, their ability to save money has increased after being member of MFIs.

Extent of damage: Flood causes huge damage to household, source of drinking water, sanitation, food stock, crop and livestock. In case of extent of damage to those properties the beneficiaries are in an advantageous position than the non-beneficiaries (Table 7.10 and 7.11).

Time requires repairing damaged house: From figure 7.2 it is found that most of the beneficiaries can construct new house or repair the damaged house within 2-3 months whereas most of the non-beneficiaries take more than 6 months to construct or repair the house.

Source of credit: Table 7.12 shows that the beneficiaries have easy access to credit from MFIs whereas majority of the non-beneficiaries receive credit from Government Organizations. The credit ceiling also varies depending on sources. In most of the cases, the MFIs provide credit between tk. 1000-5000 and Government Organizations (Bangladesh Krishi Bank) provide credit between tk. 10000-15000.

The community people usually opt for small scale credit ranging between tk. 1000-5000.

Ease of recovery of loan: In the process of evaluating the MFIs impact on its members, the most important thing comes first is the credit recovery process. If the MFIs pose enormous pressure on its clients to repay the loan according to their installment schedule during disaster period, it will more aggravate his sufferings. From table 7.15 it is found that the respondents who have received loan from MFIs and money lenders, experienced extreme hardship to recover the loan because, the MFIs and money lenders do not reschedule the installment during disaster. Although some large nation-wide NGOs used to reschedule the installment for 3 to 6 months but this attempt is not enough to abate the sufferings of the disaster affected people.

Types of water borne diseases: From table 7.22 it is found that the beneficiaries are less vulnerable to water borne diseases than the non-beneficiaries and table 7.24shows that the trend of being affected by water borne diseases of the beneficiaries has reduced to a great extent after being member of MFIs.

10.3.2 Summary of findings on economic indicators related to vulnerability to river erosion

In case of occupation, land ownership pattern and monthly income, the difference between beneficiary and non-beneficiary is not significant. But in case of amount of land erosion, the beneficiaries lose small amount of land than the non-beneficiary (table 9.5).

Ease of recovery of loan: During survey it was found that the beneficiary and non-beneficiary both group have to face extreme hardship in the process of loan repayment (table 9.17). As the MFIs are not interested to reschedule the installment during erosion period, the beneficiaries also become sufferer If the MFIs become reluctant in loan recovery, then the members will be able to better cope with disaster.

- ***Emergency food stock and food consumption pattern:*** In case of emergency food stock (table 9.7) and food consumption pattern (table 9.9), the beneficiary and non-beneficiary differs significantly. In both cases, the beneficiaries are in an advantageous position than the non-beneficiaries.

- ***Loss of agricultural stock and inputs:*** Both the beneficiary and non-beneficiary encounter loss of agricultural stock and inputs and there is no significant difference between them (table 9.12).

- ***Source and amount of credit:*** Table 9.14 shows that the beneficiaries have easy access to credit from MFIs whereas majority of the non-beneficiaries receive credit from money lender and Government Organizations. But the credit ceiling does not vary depending on membership status. Majority of the beneficiary and non-beneficiary take loan between tk. 5000-10000 (Table 9.15).

- ***Extent of damage and source of support:*** From table 9.20 it is found that the beneficiaries encounter less damage or scarcity of money, food, medicine and livestock than the non-beneficiary. Similarly the beneficiaries have easier access to financial support, emergency food, medicine, housing material, livestock and agricultural inputs than the non-beneficiary (Table 9.21). Since the members of MFIs have easy access to credit, they can construct temporary shelter earlier than the non-beneficiary (Figure 9.3).

10.4 Correlation Analysis

From the following table it is quite clear that the correlation among membership of MFIs with arrangement of fuel, stock of money for emergency, protection of food grains, seeds and live stock , preservation of pure drinking water, arrangement of first aid and stock of emergency medicine is statistically significant Since it was found from the study that the beneficiaries are in a better condition in the aforementioned indicators, therefore, it can be concluded that the MFIs play a significant role in better arrangement of fuel, having stock of money for emergency, better protection of food grain, seed and live stock, stocking of pure drinking water, better arrangement of first aid and stocking of emergency medicine. So, it is obvious that the member of MFIs will better cope with disaster than the non-beneficiaries.

Table 10.1: Correlation analysis

Variables	Statistics	Membership of MFI's
Arrangement of fuel	Spearman Correlation	.364(**)
	Sig. (2-tailed)	0.000
	N	100
Stock of money for emergency	Spearman Correlation	0.349(**)
	Sig. (2-tailed)	0.000
	N	100
Protection of food grains, seeds and live stock	Spearman Correlation	0.305(**)
	Sig. (2-tailed)	0.002
	N	100
Preservation of pure drinking water	Spearman Correlation	655(**)
	Sig. (2-tailed)	0.000
	N	100
Arrangement of first aid	Spearman Correlation	0.453(**)
	Sig. (2-tailed)	0.000
	N	100
Stock of emergency medicine	Spearman Correlation	0.560(**)
	Sig. (2-tailed)	0.000
	N	100

*** Correlation is significant at the 0.01 level (2-tailed).*

CHAPTER 11

RECOMMENDATIONS AND CONCLUSION

11.1 Summary

This study has shown the over all activities along with disaster related activities of the MFIs in Char Algi and Mohonpur Union From the study it was found that the members of MFIs are in a better condition in those sectors where the MFIs have direct intervention. It has already been discussed that

- Housing Loan Scheme
- Water Supply and Sanitation Project
- Raised Homestead and Tube well and
- Char Lander Group Project

projects by the local MFIs have posed a positive impact on its members. It was found that due to implementation of these aforementioned programs, the members of MFIs now have the ability to cope with disaster. The remarkable changes are as follows:

1. The MFI's members have their housing material which can withstand against long lasting flood.
2. They have their plinth height raised above highest flood level which has saved their house-hold properties from inundation.
3. They have their heavily constructed false ceiling to preserve food, crop, agricultural inputs and crockery.
4. They have stock of safe drinking water and emergency medicine.
5. They have stock of extra earthen furnace and fuel for emergency.
6. They can construct temporary emergency shelter just after erosion.
7. And most importantly they have easy access to loan for emergency period.

All of these combined together have enabled the MFI's members to better cope with disaster. So, the MFIs should identify the vulnerability indicators and they should reform or reorganize their programs to make those more disaster oriented.

But there are some major flaws in MFI's activities. Those are as follows:

1. The MFI's at local level do not have any cooperation and coordination among them.
2. The MFIs are mostly interested to invest in those sectors where investment flows in a cyclic order. That is why majority of MFIs opt for micro-credit. But to prevent disaster like flood and erosion, structural mitigation measure is a must. Unfortunately, not a single MFI in the study area have involved themselves in structural mitigation measures like
    a. Construction of embankment
    b. Construction of elevated road
    c. Tree Plantation can greatly reduce the impact of flood and erosion.

But the MFIs do not involve themselves in those measures.

3. In the study areas, the local MFIs do not provide any support to its members to stock food.
4. During disaster period, the MFIs do not reschedule the installment of loan and thus pose great impact on its members.

11.2 Recommendations

The aim of this study was to examine the role of MFIs in reducing vulnerability of flood and river erosion affected people. During the study it was found that the vulnerability of MFI's members to be affected by disaster has reduced to some extent and the MFIs have become more capable to cope with disaster than before. But the in-depth analysis on some social, economic and health indicators related to vulnerability to disaster has shown some drawbacks of MFI's activities and programs which should be addressed and removed. For this reason, the following recommendations have been made which will establish a linkage between the MFI's activities and disaster victims

- From social perspective of flood affected people it was found that in case of construction materials, plinth height, ceiling height, condition of toilet, bathing place and cooking place, the members of MFIs are in a better condition than the non-beneficiaries. It should be noted that according to 76% beneficiaries, the comprehensive social improvement has occurred due to the motivational campaign and on going projects of MFIs. So, the MFIs should incorporate the non-

beneficiaries in their programs as well as disseminate their activities in the whole community.

- From the survey analysis it was found that the beneficiaries stock safe drinking water at an elevated place but 60% non-beneficiaries do not stock safe drinking water and thus they face extreme hardship to collect safe drinking water during disaster. The MFIs should supply plastic gallon, pitcher to the community people to ensure stock of safe drinking water during disaster.
- The MFIs should implement a separate program to ensure stock of dry food for community people as a whole. Since no significant difference was found between beneficiary and non-beneficiary in food stock, the MFIs should take the matter seriously and take necessary steps/programs during pre-disaster period.
- In Mohonpur Union it was observed that both the beneficiary and non-beneficiary remain shelterless just after being affected by erosion. Being member of MFIs the beneficiaries can arrange a temporary shelter within 1-3 weeks whereas the non-beneficiaries remain shelterless for more than 6 weeks. Therefore, the MFIs should take necessary steps
    - Arrange temporary shelters for their members.
    - Keep emergency fund for community people.
    - Aware the people to take necessary measures who are vulnerable to erosion and
    - Provide loan to the non-beneficiary during emergency period.

- It's a matter of great regret that no disaster oriented preparedness program was found in both Char Algi and Mohonpur Union. Majority of MFIs were found to implement post disaster relief and rehabilitation program including interest free loan disbursement for reconstruction. But to minimize the impact of disaster, necessary preparedness is essential prior disaster hit. Since the MFIs have regular programs on housing improvement, water supply and sanitation, savings and other socio-economic indicators that have multiplier effects on disaster coping, the beneficiaries eventually encounter less damage to properties. Despite all these, the MFIs in Char Algi and Mohonpur Union should have disaster oriented preparedness plan to abate

the impact of disaster. But the issues to be addressed in disaster prepared plan are subject to further study.

- Discrimination was found to disburse credit between beneficiary and non-beneficiary. The non-beneficiary does not have easy access to credit in MFIs. This discrimination should be minimized and the MFIs should create separate soft loan window for the community people as a whole.
- The MFIs should also reschedule the loan installment during disaster period. They should not put extra burden of loan recovery on their members.
- The MFIs can form a medical team to provide medical support to the community people during disaster period. Since prevention is better that cure, the MFIs should take preventive measures and distribute medicine, first aid to the community people.
- The MFIs should have sound knowledge on their projects. The MFIs should conduct need assessment study to identify the needs of the community on priority basis. Then they should select their programs for implementation.
- The MFIs should involve the non-beneficiary into their on going programs and they should spread out their activities all over the community.
- Most importantly the MFIs should develop early warning systems and projections for disaster situations.

. 11.3 Conclusion

This research has explored the impact of MFI's programs on its members in coping with disaster and has assessed the disaster management potentials of MFIs at the community level. This study has covered the identification of MFI's over all activities along with disaster management activities in Char Algi and Mohonpur Union. This research has examined the comparative advantage and disadvantage of the Micro-credit program beneficiaries in coping with disaster through conducting field survey. Most importantly, the change in disaster fighting ability of the beneficiaries after being member of MFIs has been investigated through this particular study. While conducting the research some important facts and findings have come out and some recommendations have been made accordingly. But the important thing is this research has not included the environmental and institutional issues with their effects on disaster fighting. The sustainability of the micro

credit programs implemented by the MFIs in flood and erosion prone areas has not been investigated. Moreover, the study has not included the need assessment of the respondents in order to sort out the basic and urgent needs of the community people in the study area. Finally this study could not suggest what types of structural mitigation measures are required in the study areas to prevent flood and river erosion. These are subject to further study.

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Appendix A

QUESTIONNAIRE

(For the beneficiaries and non-beneficiaries of micro-finance programs)

Information would be used only for academic purpose

Impact of Micro-finance on Reducing Vulnerability of River Erosion and Flood Affected People in Bangladesh

MURP Thesis

By Shah Mohammad Ashraful Amin.

Department of Urban and Regional Planning,

Bangladesh University of Engineering and Technology, Dhaka.

Interview No.....

Address of the Respondent

Head of the House-hold.....	Interviewer:.....
Village/Area/Road:.....	Date:.....
Union/Ward.....	
Upazilla:...	
District:.	

PART I

BACKGROUND INFORMATION

1. Respondent's Personal Data

Name	Age	Sex	Religion	Marital status	No. of Family members	Occupation	Educational status	Migration	Membership of MFIs

Note:

a) Sex: 1= Male, 2= Female
b) Religion: 1= Muslim, 2= Hindu, 3= Buddha, 4= Christian
c) Marital status: 1= Married, 2= Unmarried, 3= Widow, 4= Divorced, 5= Separated
d) Occupation: 1= Farmer, 2= Day laborer, 3= Rickshaw puller, 4= Business man, 5= Unemployed, 6= Student.
e) Education: 1= Illiterate, 2= Class I-V, 3= Class VI-X, 4= S.S.C, 5= H.S.C, 6= Graduate, 7= Above Graduate.
f) Migration status: 1= Migrant, 2= Non- migrant
g) Membership status of on going Micro-finance Programs for river erosion and flood affected people: 1= Beneficiary, 2= Non-beneficiary

3. Economic Status of the House- hold

SL. No.	Total monthly income of the house-hold (in Tk.)	Total monthly expenditure of the house-hold (in Tk.)	Land owner ship pattern	Condition of main dwelling house
1				
2				
3				

Note:

a) Land owner ship pattern: 1= Owned, 2= Rented, 3= Leased, 4= Government property, 5= Waqf property.
b) Condition of main dwelling house: 1= Thatch roof with mud wall, 2= All thatch, 3= Tin roof with thatch wall, 4= All tin, 5= Tin roof with brick wall, 6= Other (specify)

PART II

Indicators to Assess the Comparative Advantages of Micro- Finance Program Beneficiaries in the disaster management.

1. Social Indicator

a) What is the housing condition?

Housing Condition	Beneficiary		Non-beneficiary
	Before	After	
Floor height from ground			
Roof height			
Construction materials			
Safety from snake and other wild animals			

b) Have you been motivated by MFIs to improve your housing condition to safeguard your housing from disaster?

Yes.....or No.... ....

c) Have you been supported by MFI financially to improve your housing condition?

Yes .....or No.....

d) What sources are available for Drinking water?

Source of drinking water	Beneficiary		Non-beneficiary
	Before	After	
Height of suction head of the tube well			
Availability of coconut trees			
Storage of safe drinking water			

e) Have you been instructed to take measure to ensure the supply of drinking water during disaster?

f) Have you been supported financially by MFIs to ensure supply of pure drinking water?

g) Explain your Sanitation condition.

Sanitation Condition	Beneficiary		Non-beneficiary
	Before	After	
Condition of toilet			
Condition of bathing place			
Condition of cooking place			

Note:

1. Condition of toilet- Open / kutcha/ single pit latrine/ twin pit latrine/ small bore sewerage system

2. Condition of bathing place- Open / kutcha / semi- pucca / pucca

3. Condition of cooking place- Earthen furnace/ L. P gas/ kerosene

h) Have you been instructed or supported to improve the condition of toilet, bathing place and cooking place?

i) Do you know

- The maximum height of flood level,
- Frequency,
- Types of losses

during the recent past years?

j) How do you come to know these information? Please specify, whether before or after being member of MFI.

k) What type of preparedness do you take for flood or river erosion

Preparedness	Beneficiary	Non-beneficiary
Arrangement of food stock		
Stock of emergency medicine		
Arrangement of first aid		
Preservation of pure drinking water		
Protection of food grains, seeds and live stock		
Stock of money for emergency		
Arrangement of fuel		
Preservation and safety of cooking place		

l) Do you feel that your ability of taking these initiatives has been improved due to being member of MFIs?

Yes..... or No..... .....

m) If yes, then in which aspect and at what scale your ability has been improved?

Aspects	Improvement scale		
	Highly improved	Moderately improved	Slightly improved
Food stock			
Safety of household			
Supply of pure			

drinking water			
Improvement of sanitation condition			
Safety of cattle			
Savings			

n) Explain the extent of damage of the house hold.

Extent of damage	Beneficiary		Non-beneficiary
	Before	After	
Damage to household			
Damage to the source of safe drinking water			
Damage to sanitation			
Damage to food stock			
Damage to crop			

2. Economic indicator

a) Credit disbursement program by the local MFIs during flood

Credit detail	Beneficiary	Non-beneficiary
Amount of loan received		
Source		
Recovery Period		
No. of Installment		
Ease of Payment		

b) Explain the condition of the live stock property

Condition/criteria	Beneficiary		Non-beneficiary
	Before	After	
Number of cattle and poultry			
Living condition			
Safety during disaster period			

c) What type of economic damage occurred due to flood?

Economic damage	Beneficiary		Non-beneficiary
	Before	After	

Damage to monthly income			
Damage to employment			
Damage to livestock			

d) What changes occurred in savings generation per month after being members of MFIs?

Highly Improved
Moderately Improved
Not Improve

e) Is there any role of this savings in disaster management?

Yes ....or No..... .....

Reason of yes	Reason of No

f) What are the available sectors of credit delivery?

Sectors of credit delivery	Yes/No	Amount in Tk.	Source
Housing improvement			
Ensure pure drinking water supply			
Improvement of toilet			
Income generation			
Emergency food stock			
Arrangement of first aid			
Improvement of livestock			
Others			

j) How the credit is utilized that delivered by MFIs? Please explain.

i. Investment/improvement in housing

ii Investment in education

iii. Investment in productive asset generation

iv. Investment for pure drinking water, sanitation and hygiene

v. Investment for food stock

vi. Investment for security of live stock.

3. Health indicator

a) What type of diseases usually affects you during flood disaster?

Diseases	Beneficiary		Non-beneficiary
	Before	After	

b) Specify your ability/awareness to fight with the diseases before and after being member of MFI.

	Extent of change		
	Highly Improved	Moderately Improved	Not Improved
Ability			
Awareness			

Signature of the respondent:

....

Appendix B

QUESTIONNAIRE

(For the beneficiaries and non-beneficiaries of micro-finance programs)

Information would be used only for academic purpose

Impact of Micro-finance on Reducing Vulnerability of River Erosion and Flood Affected People in Bangladesh

MURP Thesis
By Shah Mohammad Ashraful Amin.
Department of Urban and Regional Planning,
Bangladesh University of Engineering and Technology, Dhaka.

Interview No.....

Address of the Respondent

Head of the House-hold.....	Interviewer.....
Village/Area/Road:.....	Date:.....
Union/Ward:.....	
Upazilla:.....	
District:.....	

PART I

BACKGROUND INFORMATION

1. Respondent's Personal Data

Name	Age	Sex	Religion	Marital status	No. of family members	Occupation	Educational status	Migration Status	Membership status

Note:

a) Sex: 1= Male, 2= Female
b) Religion: 1= Muslim, 2= Hindu, 3= Buddha, 4= Christian
c) Marital status: 1= Married, 2= Unmarried, 3= Widow, 4= Divorced, 5= Separated
d) Occupation: 1= Farmer, 2= Day laborer, 3= Rickshaw puller, 4= Business man, 5= Unemployed, 6= Student.
e) Education: 1= Illiterate, 2= Class I-V, 3= Class VI-X, 4= S.S C, 5= H.S C, 6= Graduate, 7= Above Graduate.
f) Migration status: 1= Migrant, 2= Non- migrant
g) Membership status: 1= Beneficiary of MFI, 2= Non- beneficiary of MFI

2. Economic Status of the House- hold

SL. No.	Total monthly income of the house-hold (in Tk.)	Total monthly expenditure of the house-hold (in Tk.)	Land owner ship pattern	Condition of main dwelling house
1				
2				
3				

Note:

a) Land owner ship pattern: 1= Owned, 2= Rented, 3= Leased, 4= Government property, 5= Waqf property.
b) Condition of main dwelling house: 1= Thatch roof with mud wall, 2= All thatch, 3= Tin roof with thatch wall, 4= All tin, 5= Tin roof with brick wall, 6= Other (specify)

PART II

Indicators to Asse s the Comparative Advantages of Micro- Finance Program Beneficiaries in the disaster management.

a) What is your condition during pre-erosion period?

Condition	Beneficiary		Non-beneficiary
	Before	After	
Housing			
Monthly income			
Source of drinking water			
Sanitation			
Emergency food stock			

Number of livestock and their safety			
Preparedness			

b) What is your condition during erosion period?

- Amount of land(in decimal) eroded: (i) < 10 decimal, (ii) 11-50 decimal, (iii) 51-100 decimal. (iv) >100 decimal

- Category of land eroded: (i) Homestead, (ii) Cultivable

- What is shelter during erosion period:

(i) Shelter less, (ii) Taking shelter in relative's house.
(iii) Taking shelter in local school. (iv) Taking shelter in mosque.
(v) Others

- Food consumption during erosion period.

(i) Starving, (ii) One meal in a day,
(iii) Two meals in a day. (iv) Three meals in a day

- Loss of livestock (please specify in numbers): (i) Cattle, (ii) Poultry, (iii) Fisheries

- Loss of agricultural stock and inputs: (i) Paddy, (ii) Rice, (iii) Jute, (iv) Seeds, (v) Fertilizer. (vi) Others

- Change in income:
(i) Loss of job. (ii) Decrease in income, (iii) No change

c) What is your condition during post-erosion period?

- How long do you remain homeless?
(i) < 1 month. (ii) 1-3 months.
(iii) 3-6 months. (iv) >6 months

- What is the time period of recovery?
(i) < 6 months. (ii) 6-12 months,
(iii) 1-3 years, (iv) >3 years

- What are the means of recovery?
(i) Income/ Occupation, (ii) Debt/ loan,
(iii) Construction of new home. (iv) Regain of livestock,

(v) Others

d) What types and extent of problems or sufferings you face during erosion period?

Sufferings	Beneficiary	Non-beneficiary
Scarcity of money/poverty		
Scarcity of food		
Scarcity of drinking water		
Scarcity of Medicine		
Scarcity of Shelter		
Loss of live stock		
Loss of land		
Loss of employment		

e) What are the supports obtained from different sources by MFIs to the erosion affected people?

Support	Sources for Beneficiary	Sources for Non-beneficiary
Financial support		
Fund/Credit		
Emergency food		
Drinking water		
Medicine		
Shelter/ Housing material		
Live stock		
Agricultural inputs (seeds. fertilizer, insecticides etc)		

f) What is the source of emergency funding during erosion period?

Source of funding	Beneficiary	Non-beneficiary
MFI		
Money lender		
Others		

g) What are the means of recovery of the credit amount disbursed by MFIs/money lender?

.....

.....

.....

h) Does the recovery process put the beneficiaries under hardship?

.....
.....
.....

i) What type of preparedness do you take for river erosion?

j) Do you take these initiatives after being member of MFI?

k) Do you feel that your awareness of taking preparations to face river erosion has been improved due to being member of MFIs?

Yes..... or No.....

l) If yes, then what scale your awareness has been improved?

(i) Highly Improved
(ii) Moderately Improved
(iii) Not Improve

Signature of the respondent:

.....

Appendix C

QUESTIONNAIRE

(For the Micro-finance institutions)

Information would be used only for academic purpose

Impact of Micro-finance on Reducing Vulnerability of River Erosion and Flood Affected People in Bangladesh

MURP Thesis

By Shah Mohammad Ashraful Amin.

Department of Urban and Regional Planning,

Bangladesh University of Engineering and Technology, Dhaka.

Interview No.....

Address of the Respondent

Name:..	Interviewer:..... ....
Designation....	Date:.... ....
Name of Organization.....	
Address.	
Status.....	

Information about the Overall Activities of the MFI as well as its activities for River Erosion and Flood Affected People

1. How many MFIs are in this area?

2. What are their activities/services?

3. Please provide information about your MFI

Name	Address	Year of establishment	Covered area	No. of beneficiaries

4. Please specify and prioritize the activities of your organization

Activity	Priority	No. of beneficiary	Covered area

Note:

a) Type of services:
   i. Education and skill training
   ii. Women development/empowerment
   iii. Relief and disaster management
   iv. Environment, water supply and sanitation, social forestry development
   v. Institutional development
   vi. Vulnerable group development and poverty alleviation
   vii. Health and family planning
   viii. Micro credit
   ix. Livestock, poultry, fisheries development
   x. Income generating activities for the poor, technology and entrepreneurship development.

5. What are the activities of your organization for river erosion and flood affected people?

Major service	Relevant activity	Covered area	Population
Disaster relief			
Mitigation			
Preparedness and management			
River Bank Protection.			
Flood Control & Drainage			

6. Are these facilities confined to the beneficiaries only?

7. What are structural mitigation measures taken by your organization? (specify)

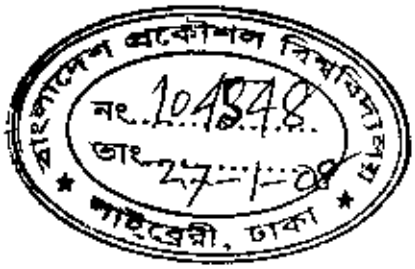
8. Is there any forecasting or warning system of your organization? (if yes, specify)

9. Is there any program of training, workshop, seminar etc for the people of the flood prone areas? (if yes, specify)

10. What is the rate of recovery? (in case of credit disbursement)

11. How the credit is being utilized?

12. Is there any provision of group based insurance, mutual insurance or community based insurance for the people of the flood prone areas? (if yes, specify)



Signature of the respondent:

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