Microcredit Regulatory Authority

CLIMATE CHANGE
MICROFINANCE IN BANGLADESH

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Climate Change:
Microfinance in Bangladesh

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Executive Summary

Microfinance has been instrumental in empowering grassroots communities in Bangladesh, particularly in sectors vulnerable to climate change such as agriculture, fisheries, and small businesses. However, the increasing severity and frequency of natural disasters due to climate change pose substantial challenges to the resilience of microcredit systems. Vulnerable communities, particularly women who are often the primary borrowers, face recurrent losses and damages from climate-induced disasters like floods, cyclones, river erosion, and droughts. Existing policy frameworks in Bangladesh primarily focus on climate change adaptation and disaster risk management but lack specific strategies for climate-resilient microfinance. Despite significant progress in various sectors, the microcredit sector lacks comprehensive strategies to address climate risks and ensure long-term sustainability.

The study focused on climate change-induced vulnerabilities in six climate hotspots of Bangladesh out of eleven identified in the National Adaptation Plan (NAP 2023). The hotspots are—*charlands* (river islands), coastal areas, haor basins, hill regions, riverbank erosion-prone areas, and the Barind tract (northwestern *Varendra* regions)—each experiencing different climate-related impacts. This study examines the differential impacts of climate change across these regions, focusing on hazards, occupational damage, agricultural activities, microfinance utilization, and financial resilience.

In coastal areas, severe hazards such as cyclones, storm surges, and flooding significantly affect primary occupations like agriculture and shrimp farming. The infrastructural damage is substantial, with two-thirds of the coastal population reporting house damage. Microfinance loans are primarily used for house repairs and agricultural work, though repayment challenges peak during disaster-prone months. Despite improved financial conditions due to microcredits, many residents resort to borrowing additional funds to manage loan repayments during disasters. The haor region, characterized by seasonal submersion and significant flash floods, experiences extensive damage to standing crops, houses, and infrastructure. Paddy cultivation dominates agricultural practices, and high poverty levels are reported from January to April due to reduced agricultural labor demand. Microfinance institutions (MFIs) play a crucial role in providing small loans for repairing houses and haatis (raised homesteads). To mitigate flood impacts, respondents suggest collaboration between MFIs and the Bangladesh Water Development Board (BWDB) for embankment construction and maintenance. In the southeastern hilly regions, intense monsoon rainfall and landslides pose major hazards. The steep slopes, deforestation, and land vibrations

from thunderstorms exacerbate these risks. Agricultural activities, particularly Jhum crops, vegetables, and rice, face disruptions due to rainfall and landslides. Microfinance loans are profitable for over 90% of respondents, yet high vulnerability persists due to the risk of landslides and excessive rainfall. During natural disasters, most respondents borrow money to repay loans, highlighting the economic challenges in these regions. River island and riparian environments are predominantly affected by floods and riverbank erosion, causing significant agricultural losses and infrastructure damage. The fertile lands attract agricultural activities despite the high risks. Microfinance loans are beneficial for managing livelihoods, though disasters impact repayment abilities, with July being the most challenging month due to floods. Loan defaults and recovery strategies often involve borrowing money from MFIs. The Barind tract is highly prone to drought and heatwaves, severely affecting crop yields, particularly sugarcane and paddy. Drought conditions lead to significant agricultural losses, and residents rely heavily on microfinance institutions for financial support. Loan repayment challenges peak during the drought months, coinciding with high irrigation costs and reduced agricultural productivity. Adaptation strategies include irrigating lands and selling cattle, though inadequate water systems and machinery remain significant challenges.

Across all regions, climate-induced disasters lead to substantial direct and indirect financial losses. The coastal and hilly areas face the highest damages to infrastructure and housing. Agriculture and livestock suffer the most in the hilly areas, while the haor basin experiences significant livestock losses. Crop loss significantly affects income across all regions. Microfinance loan defaults are primarily due to crop and house losses, financial deterioration, and non-profitable investments. Action plans should focus on improving infrastructure resilience, enhancing agricultural practices, and strengthening microfinance support systems to mitigate the impacts of climate change in Bangladesh.

Based on the research findings, thirteen recommendations are proposed to make the microcredit system of Bangladesh climate resilient. These recommendations are categorized into short-term and long-term strategies to address the complex challenges posed by climate change on the microfinance systems in Bangladesh.

Short-term Action Plans

Action Plan 1: Assessing the cumulative impact conditions of borrowers to make informed loan disbursement decisions, particularly focusing on vulnerable communities living in disaster-prone areas.

Action Plan 2: Facilitating market integration of borrowers to improve economic opportunities and returns from their produce.

Action Plan 3: Introducing indicator-based loan disbursement processes to ensure loans are used effectively for intended purposes.

Action Plan 4: Establishing a "Climate Impact Fund" to support borrowers and microfinance institutions (MFIs) during disaster events, ensuring financial stability.

Action Plan 5: Prioritizing investments in climate-resilient infrastructure, especially focusing on repairing house infrastructure and sanitation facilities.

Action Plan 6: Enhancing borrowers' awareness about microfinance terms and conditions to foster transparency and informed decision-making.

Action Plan 7: Providing accessible disaster early warning to help borrowers mitigate risks and protect their investments.

Long-term Action Plans

Action Plan 8: Establishing a dedicated department within the Microcredit Regulatory Authority (MRA) to gather climate change impact data and share it with relevant agencies for informed decision-making.

Action Plan 9: Developing a poverty graduation policy based on indicators to assist vulnerable borrowers in managing loan repayment pressures.

Action Plan 10: Designing new loan products to enhance asset holding and financial progress of borrowers.

Action Plan 11: Adopting climate risk insurance to protect borrowers from disaster impacts, drawing insights from successful models in other countries like India.

Action Plan 12: Pursuing accreditation from global funding agencies like the Green Climate Fund (GCF) to access funding for climate-resilient microfinance initiatives.

Action Plan 13: MRA should integrate climate-related expenditures with the Climate Fiscal Framework for precise tracking and reporting

The study has few shortcomings such as it focuses on six out of eleven climate hotspots, potentially missing insights from other regions. It generalizes climate change impacts on microfinance without exploring diverse community experiences deeply. Lack of longitudinal data limits assessing long-

term microfinance resilience trends. Non-financial factors like social dynamics and gender roles are underrepresented. The absence of regression analysis suggests future research opportunities. Action plans may not fully address implementation challenges, such as resource constraints and infrastructure limitations, critical for effective strategy execution in vulnerable regions.

The study highlights the existing gaps in the microfinance sector's response to climate change and emphasizes the importance of bridging these gaps to establish a resilient system. Implementing the proposed action plans is crucial for achieving poverty alleviation, sustainable development goals and developed country status by 2041.

Chapter One

Microfinance in Bangladesh in the Contexts of Climate Change

1.1 Introduction

This study examines the impacts of climate change on primary production processes and associated economic activities to know the degree of challenges people face who invest microcredit loans received from Micro Finance Institutions (MFI). It is aimed that the results of the study will help to measure the degree of vulnerability of the sector and the same time develop an action plan to protect the interests of the borrowers and the NGO-MFIs. The results of the study may guide the Microcredit Regulatory Authority (MRA) to devise necessary strategies to ensure climate resilient microcredit ecosystem in Bangladesh. The results will also help the government to achieve poverty eradication objectives through risk-free, effective use of microfinance by the local communities. It is expected that the exercise will contribute in achieving the upcoming milestones such as graduation from LDC club in 2026, Upper Middle Income Country status by 2031 and a prosperous, developed country status by the year 2041 (which is only 20 years far from now).

1.2. Climate change impacts and Bangladesh

Climate change is considered as the existential threat in contemporary times, and this is one of the major challenges that the world is facing since World War II. Global reports (IPCC 2022) inform that climate change devastations are inevitable, and the coming years will encounter even more dire conditions since the world is still in the course of 4-degree Celsius temperature-increase track and legally binding global agreements to combat climate change by the parties, especially in the UNFCCC processes, is still far from the sight. In such circumstances, actions to tackle climate change threats through mitigation or adaptation by government agencies or non-government agencies (Khan et al., 2011; Munira et al., 2021) are inadequate compared to the scale of the problem. Even accessing to available funds (e.g., LDCF supported by GEF, GEF governed by GCF Board etc.) to reduce climate change induced vulnerabilities is complicated and technically difficult for the climate vulnerable states and grassroots agencies. These conditions left the climate change induced vulnerability conditions mostly unaddressed and leave the people and communities to endure with life-long vulnerabilities which make them easy prey to the upcoming disasters. The communities suffering from the climate change impacts are not responsible for emission of GHG that caused the crises, but they are the people who suffer

from the burnt – this is highly injustice and immoral situation. Besides, the rights of the people to

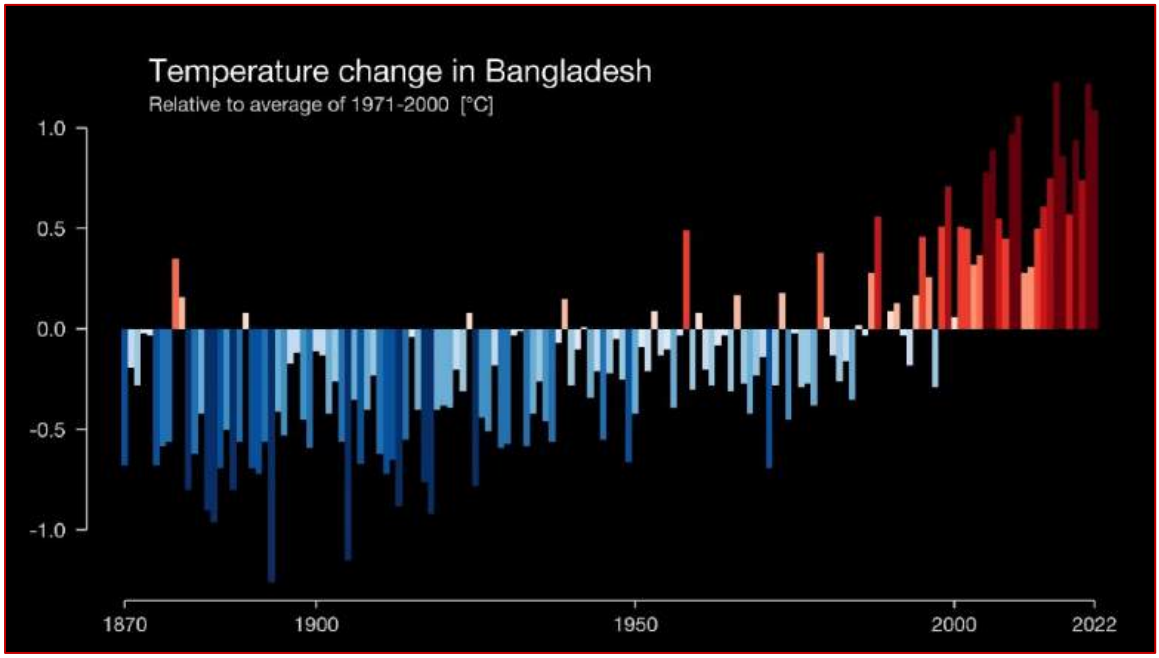


Figure 1.1: Change of temperature in Bangladesh from 1870 to 2022. Source: University of Reading; https://showyourstripes.info/c/asia/bangladesh/all , accessed on 28 February 2024.

decent shelter, food, safe water, decent jobs, health services are undermined for a number of climate change induced reasons that make the adaptation processes of people ineffective.

The CO2 emissions are increasing to accomplish an ever-increasing global demand, while climate change-related disasters disproportionately affect those who are least to blame for it (Malak, 2022). Although some development programs have implemented under the national and international climate finance, however, in some cases, this development programs are creating cumulative vulnerability rather building resilience (Malak, 2022). So, inequality, climate loss and damage are increasing in global south and the lion's share of advantages from this 'progress' are plainly accruing to a smaller section of the population, while the majority, notably impoverished and disadvantaged populations, bear the cost of environmental degradation. This comprises rural regions on the periphery of expanding

urban and industrial centres, as well as places undergoing transition to satisfy the needs of growth.

Over the last few decades, Bangladesh has incorporated climate change into its national legislative and policy framework, placing a greater priority on environmental conservation, biodiversity preservation, and human protection (Johnson et al., 2021). Bangladesh government is trying to get funding from national and international sources including public and private sector to build resilience to climate change. As per the National Adaptation Plan (2023), in order to enhance climate resilience, it will be necessary to increase current expenditures by sevenfold. This transformation will require an annual expenditure of $8.5 billion, with $6.0 billion sourced from external entities such as international climate funds and development partners. Therefore, the vulnerable communities at different level struggle to get adequate funding to cope with disaster which lead them to spend their own money. The Government of Bangladesh is trying to increase not only their allocation but also seeking more allocation from rich and developed countries who are mostly responsible to CO2 emission that causes global warming. But, due to a lack of conceptual clarity, different interpretations, overlapping and fragmented sources, distribution methods, governance mechanisms, and practical obstacles impede the proper and effective allocation of climate funding as well as create difficulties in distinguishing between adaptation and development exacerbates the issue (Munira et al., 2021; Nakhooda et al., 2014). Moreover, the accountability of the implemented projects is not out of questions. Furthermore, the question raised that how natural resource dependent marginalized community be resilient to climate change? It can be said that it is still a long way to compensating for the losses and damages incurred by (USD 3.5 billion/year) those living at the climate hot spot of Bangladesh. In addition, the Government of Bangladesh recommends climate change programs should be inclusive, integrated and be mainstreamed through regular development programs of the government. In line with this conceptual change (from stand-alone, time-bound projects to mainstreamed projects), the Government of Bangladesh has adopted the Mujib Climate Prosperity Plan – Decade 2030 that advocates for climate resilience through the enhancement of economic growth, by creating more jobs, expanding opportunities using the action on climate change as the catalyst. All these endeavors and historical experiences

contributed to put Bangladesh in a leadership position at global scale which is evidenced by securing the Chair Position for the second term by the Prime Minister Sheikh Hasina in the Climate Vulnerable Forum (CVF). This short narrative is given here to inform about the change happened in Bangladesh in conceptual and operational approaches in dealing with climate change. This may provide necessary strategic suggestions to develop climate change strategic plan for microfinance systems in Bangladesh that is appropriate for the time and contexts.

1.3 Policies to Achieve Climate Resiliency in Bangladesh to Foster Development

The Bangladesh Government has been trying to address natural and man-made disasters through a range of programs aiming to reduce the spawning grounds of poverty and to make systems and communities resilient to shocks and uncertainties. Even the development plans for different sectors such as education, health, agriculture are aligned, as far as possible, with disaster risk reduction objectives. These disaster risk reduction programs in Bangladesh during the last fifty years (1971-2020) have contributed in creating a strong foundation in disaster and climate risk management (DRM) within the constraints of a developing nation posture. As a result, disaster-related deaths of people have significantly been reduced over the years in Bangladesh and people have enhanced their capacity to prevent recurring impacts of disasters. But the damage and loss of physical assets and infrastructure caused by disasters have increased manifold, which made adaptation efforts highly challenging for state agencies and communities. It is imperative to cite here that the Asian Development Bank (2016[1]) estimated the disaster-related economic loss from 2000 to 2013 was 10.7 billion USD, where floods caused 7.1 billion USD (66%), tropical cyclones 3.2 billion USD (30%), earthquakes 14 million USD (0.13%) and severe storms 374 million USD (3.5%). As indicated before that Bangladesh is moving towards graduation from a least developed country (LDC) status, and in terms of progress achieved in human development the country is already in the middle tier of the scale. The graduation will add various kinds of new challenges to the pre-existing set of challenges and hence will cause the risk environment to become highly complicated in the upcoming

[1] Disaster Risk Financing in Bangladesh (2016), ADB SOUTH ASIA Working Paper Series (No. 46), https://www.adb.org/sites/default/files/publication/198561/sawp-046.pdf

years. The major challenges of LDC graduation include loss of exports, loss of special and differential treatment under WTO that may affect the tariff protection, export subsidies for the agriculture, pharmaceuticals and the service sectors. The recent Planning Commission report (2020[2]) noted that *the LDC graduation is coming at a time when the global environment for trade is becoming more constrained due to deglobalization trends from economic nationalism and protectionist policies in the USA and some OECD countries, while the onset of the Fourth Industrial Revolution (4IR) is posing a major challenge for employment owing to technology-driven capital intensity of production and automation.* Bangladesh is currently at the stage of formulating long-term and macro policy frameworks towards addressing these challenges for ensuring (green) economic growth and at the same time building systems resilience to shocks of various kinds. The Perspective Plan 2021-2041, Mujib Climate Prosperity Plan, the Bangladesh Delta Plan 2100 are some of the examples of macro planning documents that have laid the foundations to reap the benefits of the current achievements and also provided strategies to address the challenges. The Perspective Plan 2041 called for institutional reforms (e.g., reform the *rules of business* of the organizations) and called for actions towards disaster and climate resilient green growth. Lessons learnt from the domestic actions that have so far been implemented and also from the external processes/factors may help to produce a long-term risk sensitive, resilience framework for Bangladesh.

1.4 Microfinance systems in Bangladesh in a climate change context

Bangladesh has made commendable success in a range of development indicators where grassroots communities played significant roles. Microcredit[3] loans distributed by NGOs-MFIs in Bangladesh to small entrepreneurs, especially the women[4] used it in various innovative means to bring change in their lives and at the same time contributed in making the local economy thriving. The borrowers receive microfinance loans primarily in six categories. These are loans for small-scale self-employment, microenterprise development, loans for ultra-poor, agricultural loans, seasonal loans

[2] Impact of LDC Graduation, 2020. Planning Commission, Bangladesh.
[3] Loan amount <50000 BDT.
[4] 93% of the total 25.4 million borrowers are women.

and loans for disaster risk management. It is imperative to mention that the recipients of microfinance suffer from a range of climate change induced challenges which undermine the progress already been made by them. But impact-dynamics are still inadequately understood, even policy frameworks in this connection remained to be unclear. In this context, it is important to examine the impacts of climate change on various sectors where loan-recipients invested microfinance and this assessment will be done at various scales (everyday, weekly, fortnightly, seasonally and annually). The results may guide MRA vis-à-vis the government to take necessary measures so that appropriate policies can be made towards giving safeguards to climate-victim microcredit borrowers at different stages.

The borrowers of the microcredit are the most vulnerable communities of the country who live in disaster affected, climate hot-spots and suffer from different forms of direct, indirect, short- and long-term impacts as results of the disasters that, in recent times, happen in close intervals with high intensity and magnitude. Loss of crops, damage of assets are observed happening as results of rapid-onset disasters like flooding, river bank erosion, cyclones, landslide in the hilly terrains and slow-onset challenges such as temperature increase, sea level rise, salinity intrusion and drought conditions. These challenges cause repeated disturbances in the production processes and regular functioning of the communities and undermine the gains which the communities have achieved using microfinance support. Disaster impacts also cause to breakdown of local infrastructure, social institutions, and disrupt service delivery processes of different agencies. Thus, the disaster impacts on the efforts of the individuals and the disruptions to the supportive business/working environment collectively make the situations difficult for the microcredit beneficiaries to secure/sustain the benefits.

This suggests that the communities who receive microfinance loans from NGOs-MFIs generally live in chronic vulnerable conditions that are caused from past and present disaster impacts and at the same time the locations where they perform their activities[5]

[5] e.g., crop cultivation, poultry/livestock rearing etc.

remain at risk of a range of disasters. This multimodal challenge put both the borrowers and also the loan distributing agencies (NOG-MFIs) at risk. The existing challenged conditions will be more challenging in the upcoming years, as scientists suggest, under the looming threats of climate change such as the increase in temperature, sea level rise and related inundation, salinity intrusion in the soil and water etc.

1.5 Conclusion

Micro finance supports the people who works and the bottom tiers of development. The majority of the borrowers of loans taken from MFIs work in the primary economic activities such as agriculture, fisheries, livestock rearing, some of the work as daily wage laborers in agricultural fields and other places and a few people do small business. All these sectors are highly sensitive to the change in the climatic variables like temperature, rainfall, humidity. These changes in the climate variables trigger changes in a number of dependent systems and processes like fluvial and hydrological systems, cause change to land morphological conditions, sometimes floods, cyclones, water surge, strong winds cause damage to the primary productive environment. The grassroots people of Bangladesh take loans from the MFIs and invest in these sectors aiming to generate income towards their livelihoods security and well being. This study in this background contexts investigated the impact conditions so that the results can help to develop necessary strategies to ensure climate resilient microfinance systems in Bangladesh.

Chapter Two

Study Methods

2.1 Introduction

This research was undertaken using both quantitative and qualitative methods. Data was collected from six climate hot spots of Bangladesh, i.e., coastal areas, Barind Tract (locally known as Varendra region), haor (low lysing wetland) regions, hills areas, riverine island (locally called charlands) and river bank erosion prone areas. At the onset of the study, degree of local vulnerability was examined to identify the areas or unions those are more vulnerable than the other areas. Climate change vulnerability is associated with natural hazards and the hazards are locationally attributed. This location specific, climate change induced vulnerabilities of people and their occupation were examined in this research exercise. This chapter illustrates how the sampling, both statistical and spatial, procedure was undertaken and the research was carried.

2.2 Objectives of the study

The objectives and the key activities of the research are given in the following sections. Sections above provides a brief description on the problem contexts; this background narratives and glimpse on the conditions may justify the objectives set in this research and activities proposed to assess the vulnerabilities of the microcredit borrowers and credit distributing agencies. However, the major objectives of the research are as follows.

1. Explore the disaster and climate change induced risks and challenges that impact on microfinance sector (especially on the beneficiaries and small-scale entrepreneurs).
2. Assess the impacts of climate change on microfinance systems (especially the impacts on Microfinance Institutions, MFIs) in Bangladesh.
3. Make recommendations that may help to make microfinance sector climate resilience.

It is indicated in the sections above that communities who live in disaster and climate hot-spots have been suffering from a number of shocks and uncertainties. In general, these

people are the borrowers of microfinance from the NGOs-MFIs. That means the functions and processes of microfinance in Bangladesh are under the threats of climate change impacts. The impacts may make the borrowers as loan defaulters due their inability to repay loans on time as results of the disaster impacts on the interventions in which people invested loan amounts. In this connection, this study thoroughly investigated the impact areas in order to make a 'climate adaptive and disaster resilient microfinance systems in Bangladesh'. Three objectives were conceived in the research to attain the aim of the research which are given in Table 2.

Table 2.1: Objectives of the research and key activities.

Research Objective	*Key activities*
1. Explore the disaster and climate change induced risks and challenges that impact on microfinance sector (especially on the beneficiaries and small-scale entrepreneurs).	1. Assess the trends (past-present-future) of climate change (i.e., temperature and rainfall variable, primarily based on secondary literature) at local scales and their impacts on local productive systems. 2. Identify the associated challenges (e.g., water shortage, change in the land topography, land degradation/erosion etc.) might co-evolve with climate change that put small-scale production processes challenging. 3. Assess the local level progress in achieving SDG targets (especially Goal 1 to 7) and assess how acceleration in achieving development targets will help communities to be better prepared to cope with more challenging/hazardous future.
2. Assess the impacts of climate change on microfinance systems (especially the impacts on Microfinance Institutions, MFIs) in Bangladesh.	1. Assess the impacts climate change on local MFIs, NGOs, SMEs. 3. Assess the residual impacts of families/communities and identify micro-level risks that cause people making loan settlements difficult with the MFIs/NGOs.. 4. Examine the current roles of local microfinance service providers and to assess how they might overcome up-coming multi-challenge conditions (e.g., disaster induced damages, climate change impacts coupled with the consequences spawned from LDC graduation in 2026 etc.).
3. Make recommendations that may help to make microfinance sector climate resilience	Microcredit ecosystems climate resilient with making necessary alignments with relevant policy guidelines.

2.3 Research methodology

This research project is multidisciplinary in nature where quantitative, qualitative exercises were adopted. The objectives indicated that the problems are diverse in nature (e.g., water, food, health issues), where different professional groups/communities are involved. The methodology has been carefully developed so that it can cater the need of the research in recommending community specific climate change adaption plans towards making the systems resilience. However, the following section highlights the methods adopted in this research work.

2.3.1 Literature review

A thorough literature review was conducted to know the gaps and opportunities to make the microfinance systems in Bangladesh climate resilient. Policies, guidelines, rules, government directives relating to microfinance regulations, relevant sector policies of the government such as poverty eradication (e.g., social safety supports), financial regulations pertinent to SME development and microcredits, disaster and climate change, water resources and agriculture was reviewed. The review work has taken into account the sustainable development policies, the Smart Bangladesh Concepts and the forthcoming challenges that may emerge from LDC Graduation in 2026. The review of these literature helped to locate the niche of the climate change policy for microfinance systems in Bangladesh within the broad policy-institutional framework. It results of the review also provided necessary guidelines to assess related issues on ground.

2.3.2 Reconnaissance survey towards developing data collection instruments

A reconnaissance survey was conducted at the beginning of the research. In doing that field visits for careful observation, interview with government officials, a number of NGO/MFI officials and community leaders was conducted. They informed how systems such as physical, hydrological, fluvial, ecological, economic and social processes create a complex web of impacts in the local areas and finally make the whole productive systems including the borrowing and repayments of microfinance challenging. Identification of the actors/agents, their networks at different scales (both spatial and temporal) has been examined so that contextual settings of the problems can be read in comprehensive manner and this understanding helped to identify necessary ingredients to develop effective strategic plans to make microfinance systems climate resilient.

2.3.3 Qualitative data collection

Community consultation was conducted using qualitative methods such as KII (Key Informant Interview) and FGD (Focus Group Discussion, please see Annex II). The discussion checklist contained elements so that climate change impact conditions can better be understood. The consultation process helped to know about the existing coping strategies of communities for different impacts in different sectors (e.g., crop productions, fishery etc.) using the resources available. Data gathered from the qualitative research also found to be useful to triangulate the data/results generated from other data collection methods.

2.3.4 Quantitative data collection

A structured questionnaire survey (please see Annex I) was conducted among the sample households to understand the need for borrowing money by the borrowers from the lending agencies, how do they use it and to examine the associated risks. The number of samples that have been drawn from the study population is given in Table 2.2. The quantitative data collection instrument was aligned with the objectives and research questions of the study.

Table 2.2: Spatial differentiation of vulnerabilities of climate hot spots.

Climate Hot Spot	Study Sites	At Risk Unions/Ward Numbers			
		More Vulnerable Areas		Less Vulnerable Areas	
Kurigram District. Floods	Kurigram Sadar Upazila	Bhogdanga, Ghogadaha, Halokhana, Jatrapur, Mugholbasa, Panchagachi, Ward No. 1, 2, and 6	137	Belgacha, Kanthalbari Ward No. 3, 4, 5, 7, 8 and 9	90
Sunamgonj Upazia. haorFlash flood	Tahirpur Upazila	Balijuri, Dakkhin Baradaal, Dakkhin Sreepur, Uttar Sreepur and Tahirpur	137	Badaghat, Uttar Baradaal	90
Natore. Barind Tract, drought prone	Lalpur Upazila	Arbap, Beel Maria, Durduria, Ishardi and Lalpur	137	Anjunpur, Baramohati, Chongdhopail, Duaria, Kadim Silan, Walia Ward No 1-9	90
Rangamati. Hill	Rangamati Sadar	Magbon, sapchari Ward No. 1, 2, 3, 6, 9	137	Balukhali, Bandukbhanga, Ziptali, Kutuk Chari Ward No. 4, 5, 7, 8	90
Munshigonj District. River Bank Erosion	Tongibari Upazila	Panchgaon, Kamarkhara, Hasail, Banari, Dighirpar, Jashalong	137	Betka, Abdullahpur, Sonarong, Tongibari, Outshahi, Arial, Dhipurkathadia, Shimilia and Baligaon	90

Satkhira. Coast	Shyamnagar Upazila	Burigoalini, Koikhali, Gabura, Ishwaripur, Munshigonj, Padmapukur, Satkhira Range, Ramjannagar	137	Atulia, Bhurulia, Kashimari, Nurnagar, Shyamnagar	90

2.4 Institutional assessment

An institutional assessment was done to gather information about the challenges the microfinance agencies have been facing in connection to disaster and climate change induced impacts on the beneficiary's efforts and enterprises. Their inputs played important roles in providing recommendations to make climate resilient microfinance in Bangladesh. Both local agencies, head offices and professionals working in microfinance agencies like MRA, PKSF were consulted in this connection.

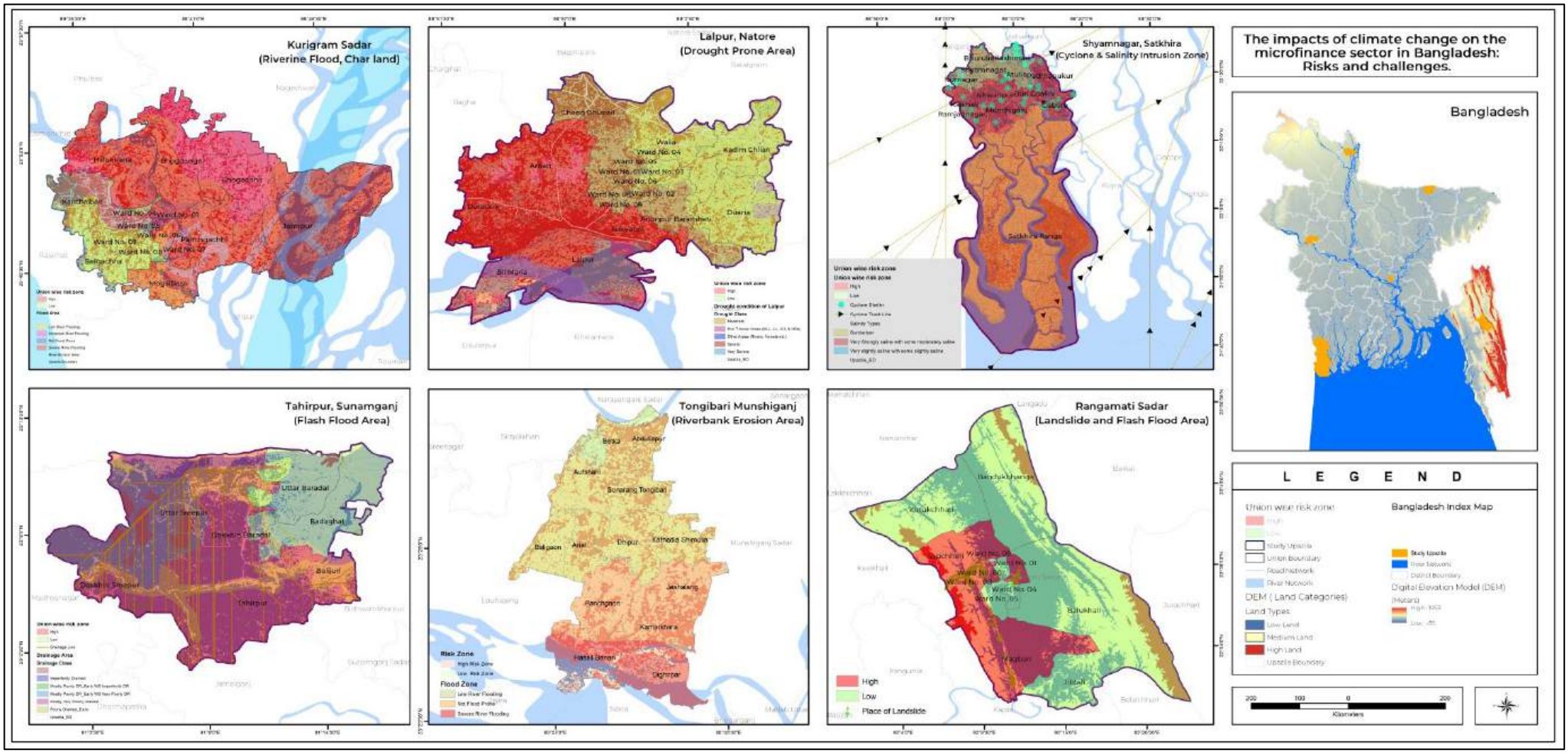


Figure 2.1: Six climate hot spots where the study was carried out. The maps represent Kurigram Sadar (upper left), Lalpur, Natore (upper middle), Shyamnagar, Satkhira (upper right), Tahirpur, Sunamgonj (lower left), Tongibari, Munshigonj (lower middle), Rangamati Sadar (lower right). The Bangladesh map is given in the right-hand side that shows distributions of all the study areas in Bangladesh map.

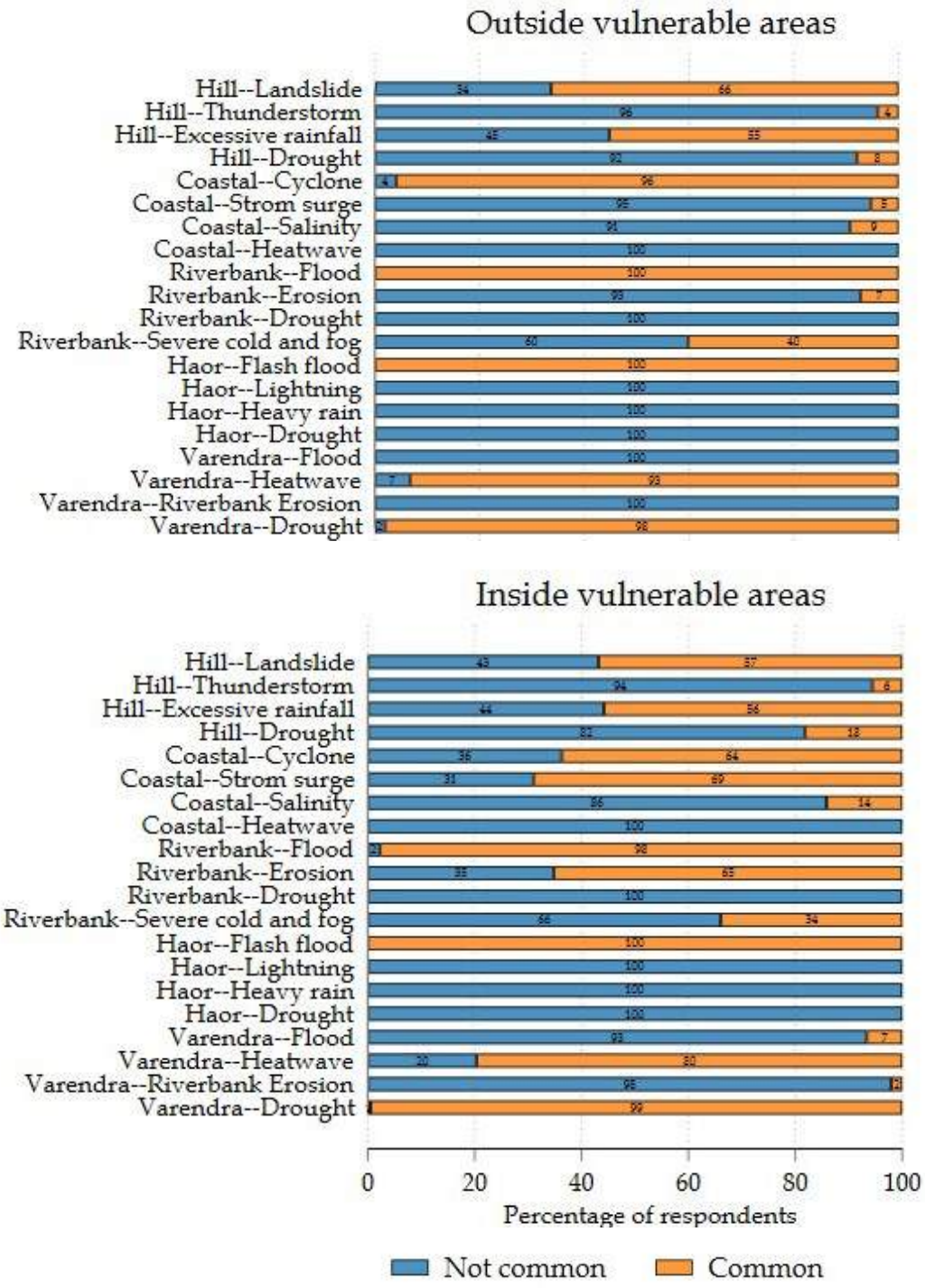


Figure 2.2: Prevalence of natural disasters happened in different climate hot spots as indicated by the respondents. The Figure above shows the occurrences of disasters outside vulnerable areas and Figure in the bottom shows disaster occurrence inside the vulnerable areas.

2.5 Determination of sample size

Determining representative sample size is one of the crucial parts in conducting study on climate change impacts of the people in concern. In Bangladesh, the climate change vulnerable areas distributed in different physiographic regions. These vulnerable regions are termed as climate hot spots where people and communities engage in primary economic activities such as agricultural crop cultivation, fishing in open waters and culture fisheries, manage house level cottage (and SME) industries. The major climate hot spots of Bangladesh are (i) coastal areas suffering from salinity intrusion, cyclonic disturbances including storm surge, (ii) the Barind tract areas impacted by drought conditions, (iii) river islands and floodplains suffering from seasonal flooding and river bank erosion, (iv) low-lying areas like haor regions and Gopalgonj beel areas with water submergence risks from seasonal floods, flash floods and intense rainfall, (v) Hill Tract regions with risks of intense rainfall and thunderstorms leading to landslides and local flooding. These five climate hotspots were investigated thoroughly for deeper understanding of the vulnerabilities of climate change happening in these regions. These knowledge/understanding then suggested appropriate adaptation strategies for respective regions. Therefore, samples have been drawn from all these five climate hot spots separately and the total number of sample households was 1335 (5 hot spots * 267 numbers). The sample size was calculated at 5% margin of error at 90% significance level and 50% response distribution. These 267-sample number of households was drawn stratified random method from each geographical region (i.e., climate hot spots) so that micro differences for specific hot spots are reflected in the response distributions. Geospatial applications (especially GIS tools) were used to distinguish geographical attributes for getting representative samples from the study population. Finally, the selection of sample households was done in consultation with the local NGOs from whom the beneficiary households received microcredits to ameliorate the conditions vis-à-vis to better cope with climate change impacts.

2.6 Data collection procedure

Once the sample households were identified from the field, data were gathered by using online based application called ArcGIS Survey 123. People generally use Kobo Toolbox for online based data collection process. But experience suggests that ArcGIS Survey 123 has

a number of benefits over other similar application packages since data received from this application could directly be transferred into other GIS database and facilitate more efficient analytical exercise afterwards. An application package (digital questionnaire) was developed for AcrGIS Survey 123 App based on the agreed variables against which data were gathered and a training was provided to the field data collection enumerators so that they can use the application without hassle. Moreover, a field manager was engaged to provide solutions if field enumerators face any challenge during the data collection process.

2.7 Conclusion

Two types of data were gathered from the fields – these were quantitative data and qualitative data. The quantitative data gathered from the field was cleaned to make sure that the data are error free and ready for performing analysis. Once the data are ready, Microsoft Excel was used for tabulation of the data and STATA software was used for making visual charts and graphs using single/multiple variables. In addition, these tabular data were integrated with GIS software (based on a common identifier), especially with ArcGIS so that analytical results could be presented through map database as well. Presenting the analytical results on maps facilitated overlay operation of relevant other geospatial database by which climate change induced vulnerabilities for specific climate hot spot regions and specific communities could be ascertained. On the other hand, proper records were maintained for qualitative data gathered from different sessions (e.g., Focus Group Discussions, Key Informant Interviews etc.). These qualitative data supported in writing critical/analytical narratives about the climate induced vulnerabilities of communities. It also helped triangulation of data gathered by using different methods.

Chapter Three

Climate Change Impacts on Microfinance in Climate Hot Spots

3.1 Introduction

The people living in the six-climate change hot spots are mainly the primary producers of a range of agricultural crops. Livestock rearing, managing poultry, catching fish in the rivers, canals and local ponds are also common in the areas. It was found while conducting field investigations that people pursue all these activities in juxtaposition, at once and these engagements collectively help them to make their living. The activities result in producing two main outcomes. Firstly, people receive necessary food such as cereals, protein, vegetables, fruits, oil towards ensuring their food and nutritional security. This food and nutrition protect them from ill heal and disease and also provide people required energy to participate in a range of economic activities available in the areas. Secondly, they can earn money by selling crops like paddy, jute, sugarcane, fruits. Field investigations found that about 42 percent people are engaged in agricultural activities in the climate change hot spots of Bangladesh. Some people are engaged in share cropping activities (4 percent) and selling labors in other's agricultural fields (18 percent mentioned that). In aggregate, 64 percent are engaged in agricultural crop cultivation in these areas (Table 3.1). These agricultural activities are dependent on local fluvial systems and hydrology for water supply, weather and climatic conditions for receiving necessary sunshine for photosynthesis process, temperature and precipitation for green biomass production.

Table 3.1: Occupation of people (in percentage).

List of occupations	Hills	Coastal areas	River bank erosion prone areas	Haor regions (wetland areas)	Varendra (northwestern table lands)	Charlands (river islands)	Total
Agriculture in own land	25.47	23.40	13.67	54.55	85.71	49.34	42.43
Share cropping	0.00	7.45	7.00	8.13	0.00	4.28	4.00
Selling laborer (in agriculture)	6.52	11.17	34.33	34.45	2.66	20.07	17.61
Day laborer	5.90	21.81	20.00	16.75	0.00	2.63	10.04
Fish farming	1.24	13.30	1.33	7.66	0.00	1.64	3.33
Shrimp hatchery	0.00	2.13	0.00	0.00	0.00	0.00	0.25
Small business	48.14	9.57	15.00	5.74	21.59	14.47	20.87
Rikshaw/van puller/Pump operator	4.04	5.85	8.67	2.39	1.99	5.26	4.74

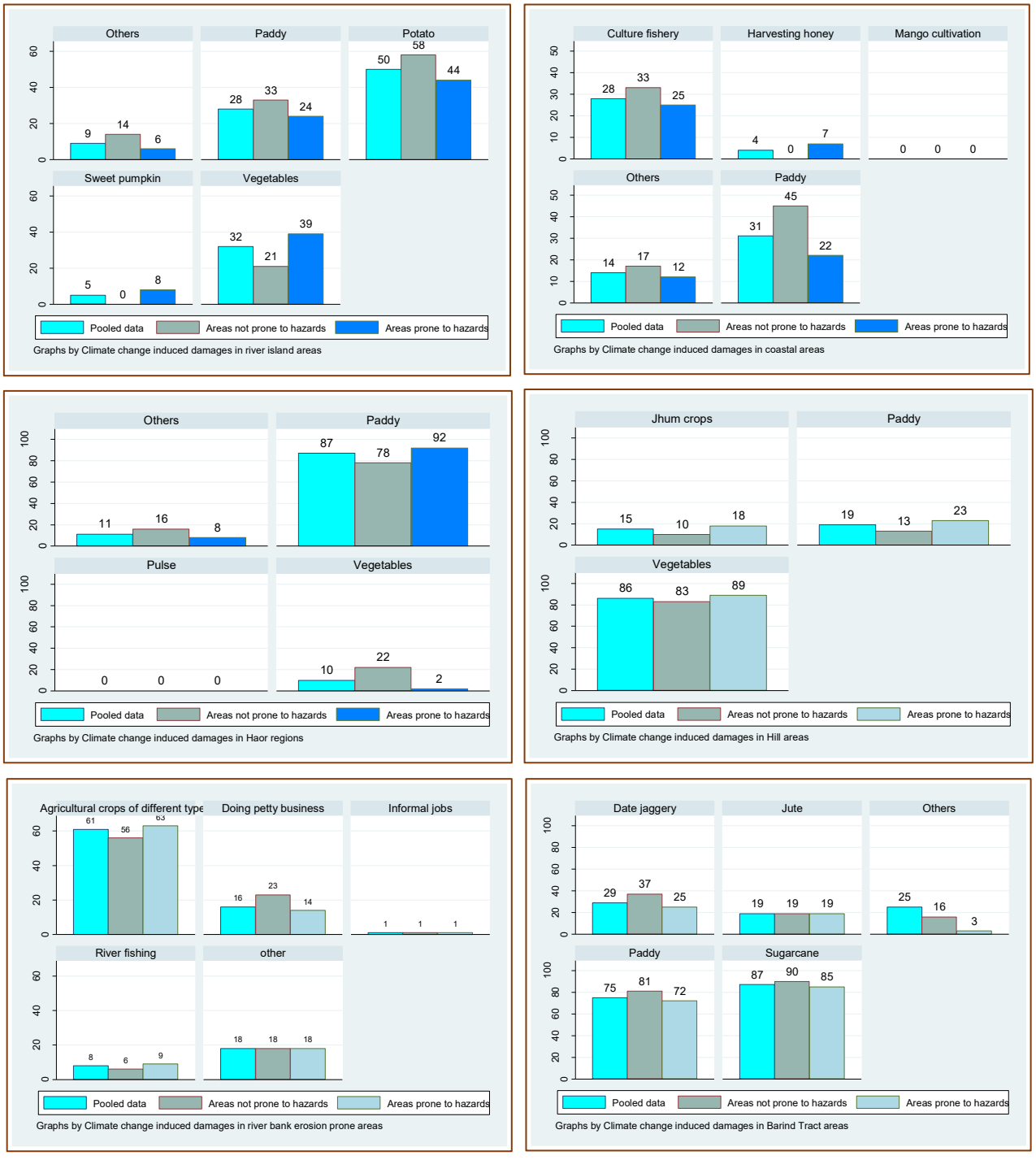
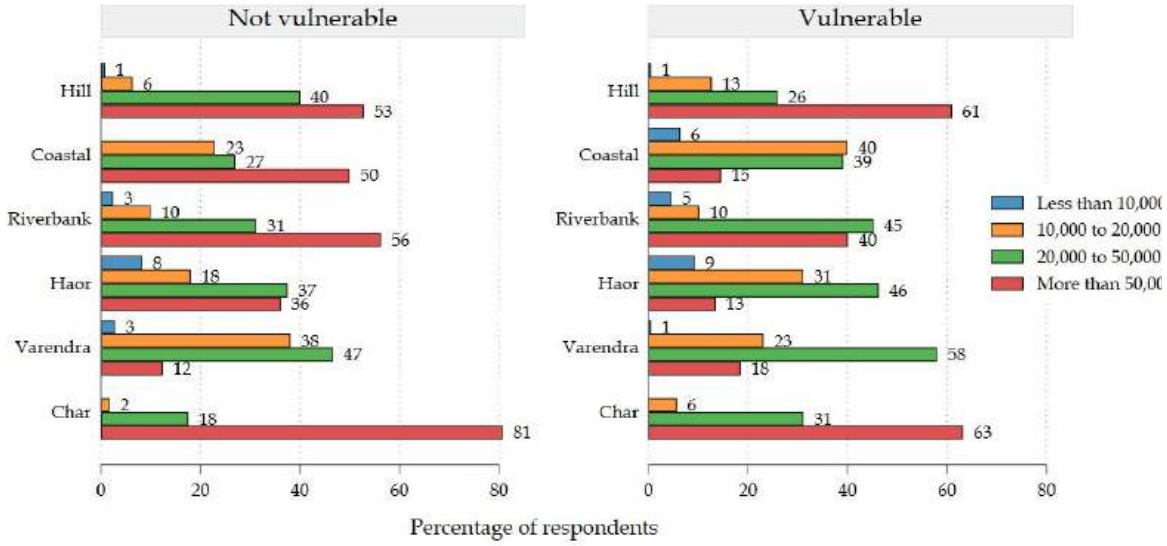
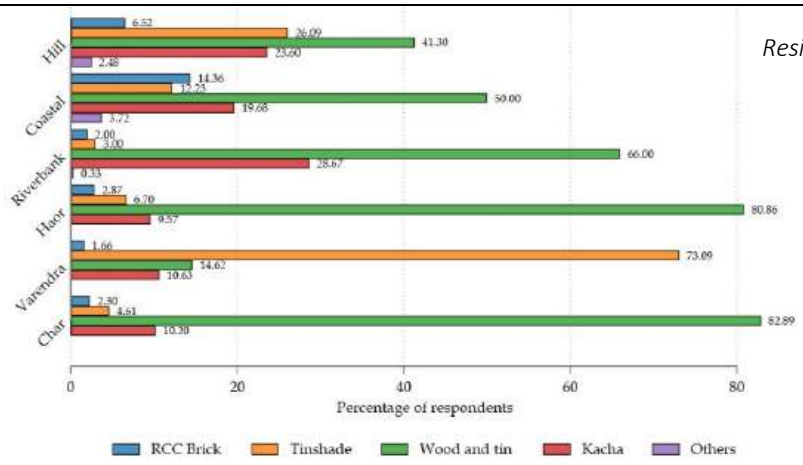
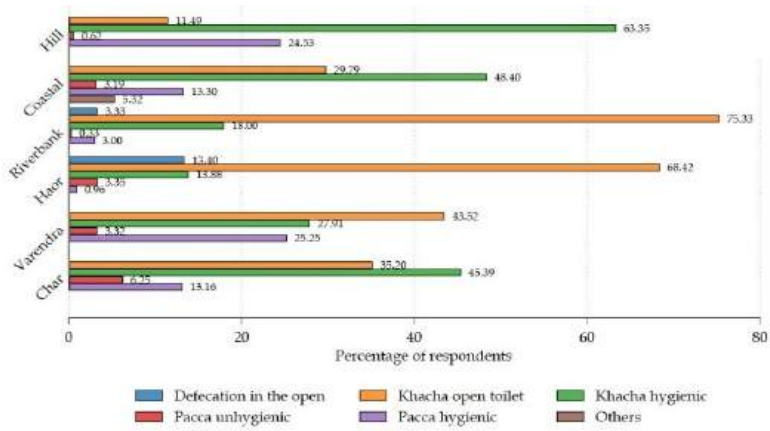


Figure 3.1: The Figure shows the means of livelihoods, e.g., crop cultivation, business etc. of the respondents living in different disasters shot spots.





Residence type



Toilet type

Figure 3.2: Income of people in different climate hot spots (top), building materials of residence (middle) and types of toilets (bottom) of the people.

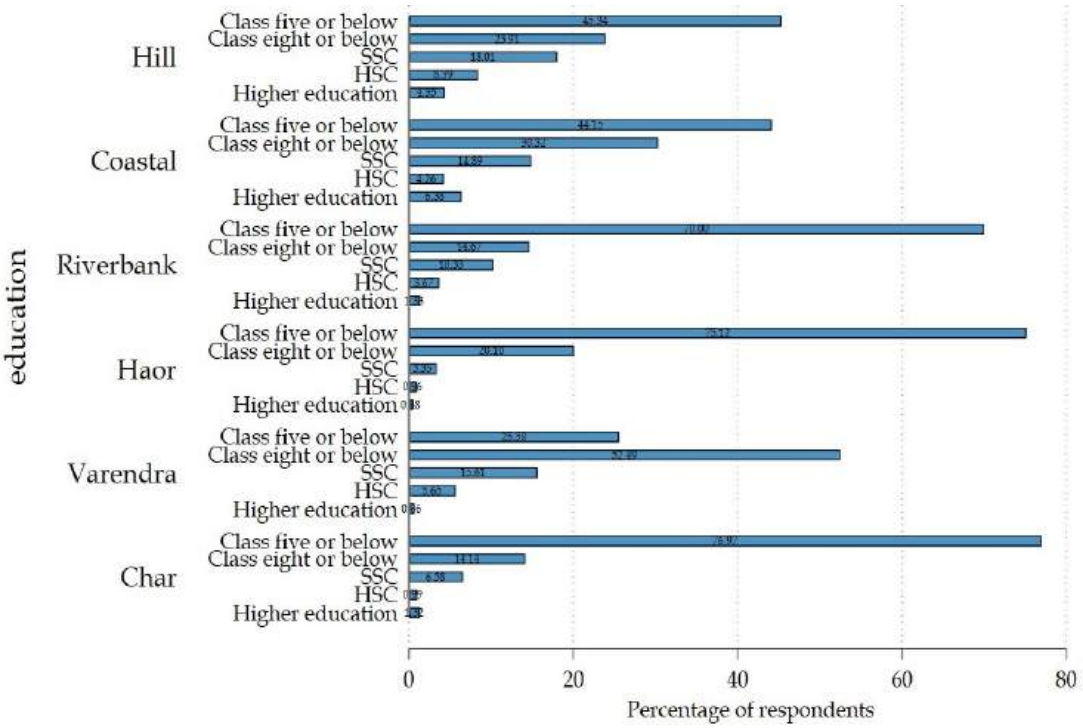


Figure ??: Status of education of the respondents.

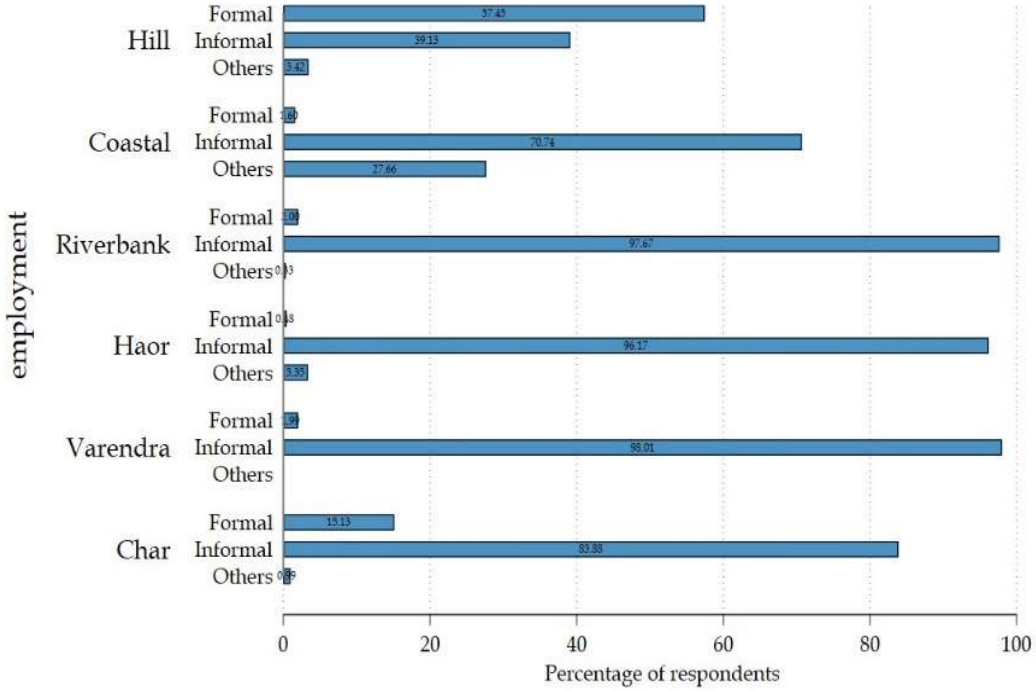


Figure 3.3: The Figure above show the state of education of the respondents and employment status of people depicted in the bottom.

The physical conditions in the study areas contribute in developing soil fertility, foster ecosystem, habitat, species and genetic diversity of plants and animals. All these, in a collective fashion, contribute in making the agricultural activities to happen. But change in the climate pattern impact on these processes resulting to the destabilization of the interconnected productive systems. People take microcredit loans from microfinance agencies working in the areas to support their farming activities such as purchasing agricultural inputs (e.g., seeds, fertilizer, diesel for operating tractors etc.), buying labors for field preparation, weeding the fields and crop harvesting.

Table 3.2: Damage from disaster impacts.

Damage from disaster impacts	Hills	Coastal areas	River bank erosion prone areas	Haor regions (wetland areas)	Varendra (northwestern table lands)	Charlands (river islands)	Total
Damage to infrastructure – houses	42.47	54.17	13.78	80.65	2.04	33.33	29.39
Sanitation facilities	0	12.5	13.27	13.98	0	3.57	6.02
Damage to water sources	0.54	9.03	2.04	5.38	22.45	2.38	9.13
Loss of wages	5.91	14.58	11.22	38.71	11.56	8.33	13.14
Loss of working hours due to extreme heat/cyclone/heavy rainfall and other natural hazards	3.76	4.17	1.02	1.08	23.81	5.95	9.13
Loss of livestock	2.15	2.08	25.51	10.75	63.61	1.19	25.58
Damage to poultry	1.61	6.94	49.49	11.83	61.22	11.9	31.19
Damages to agricultural crops	17.74	11.81	20.41	22.58	83.67	17.86	37.31
Damage to fishing/aquaculture	4.84	22.22	4.59	0	12.93	0	8.83
Secondary damage due to crop loss	13.44	15.28	28.57	17.2	60.2	28.57	32.1
Loss or increase of cost due to loss of natural feed of livestock	1.61	1.39	2.04	3.23	12.59	4.76	5.32
Loss or increase of cost due to loss of vegetation and fruit trees	5.91	11.11	12.76	0	8.16	7.14	8.22

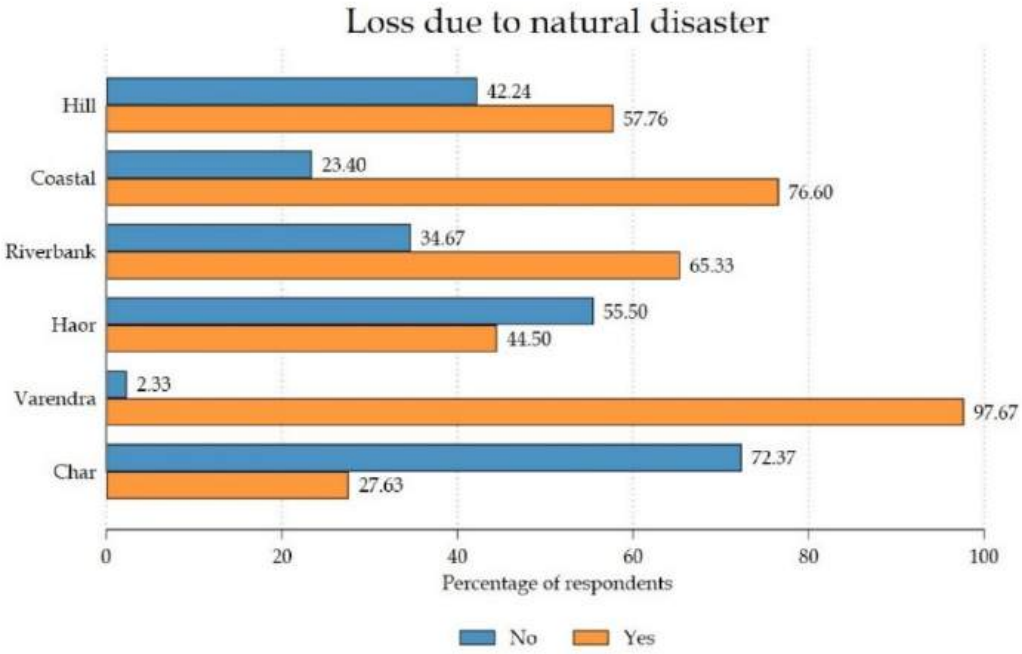


Figure 3.4: Loss incurred due to climate induced disasters.

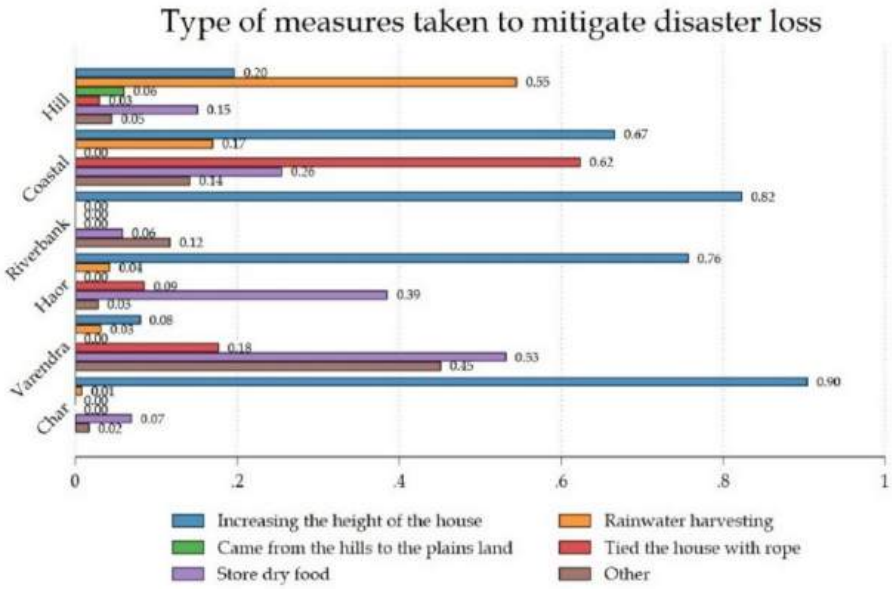


Figure 3.5: Measures taken by the disaster vulnerable communities to reduce disaster loss.

They take loans in a hope that they will be able to repay the loans once receiving expected harvests from the agricultural crops. The loan borrowers are mainly the women of the families and with these loans they support their husbands/families to perform agriculture. The women also physically participate in a number of agricultural activities like seed management, harvesting, drying, post-harvest processing, storing, preserving and also

Climate hot spots	Natural disasters	Boishakh April	Joistha May	Asharh June	Srabon July	Bhadro August	Ashwin September	Kartik October	Agrahayon November	Poush December	Magh January	Falgun February	Choitra March
		Summer season (hot and moist)			Rainy (wet monsoon) season				Winter season (cold, foggy, less sunshine)				Summer season (hot and moist)
Coasts	Storms, strong winds												
	Tidal surge												
	Floods												
	Salinity												
River islands	River bank erosion												
	Flooding												
Haor regions	Floods												
	Flash floods												
Hills	Heavy, intense rainfall												
	Landslides												
	Thunderstorms and lightening												
Barind Tracts (Varendra region)	Drought and water stress conditions												
	Extreme heat												

Figure 3.6: Calander of disaster occurrence in climate hot spots.

marketing of the crops. Thus, the women support to the overall welfare of the families by taking micro credit loans they take from MFIs. The women informed during field discussions that sometimes climate change impacts on agricultural activities make it difficult for them to pay the loan installments and they become loan defaulters. But they do not runaway to avoid repaying the loans, although their husbands sometimes migrate to other places. They mentioned that they finally settle the microcredit loans since they know that it is the MFIs to which they will be able to go for taking loans in times of need in future.

The major hazards caused from climate change in the climate hot spots in Bangladesh are flooding, flood induced river bank erosion, drought proneness, heavy rainfall associated

with thunderstorms and lightening, cyclones, water surge and inundation in the coastal areas, threats from sea level rise, salinity intrusion, landslides in the hill regions happening under the influence of extensive rainfall and vibration of thunderbolt, cold bites and the foggy conditions in the winter months (Table 3.3). In present times these hazards occur in

Table 3.3: Types of natural hazards faced by the communities

Types of natural hazards faced by the communities	Hills	Coastal areas	River bank erosion prone areas	Haor regions (wetland areas)	Varendra (northwestern table lands)	Charlands (river islands)	Total
Landslide	49.69	0.00	0.00	0.00	0.00	0.00	9.85
Thunderstorm	0.31	0.00	0.00	0.00	0.00	0.00	0.06
Excessive rainfall	27.64	19.68	3.33	1.91	1.99	27.96	14.22
Heavy (torrential) rain	47.20	4.79	1.00	1.44	0.00	3.62	10.96
Drought	0.00	0.00	0.00	0.00	99.67	0.33	18.53
Cyclone	0.00	61.70	0.00	0.00	0.00	0.00	7.14
Strom surge	0.00	10.64	0.00	0.00	0.00	0.33	1.29
Salinity	0.00	4.79	0.00	0.00	0.00	0.00	0.55
Heatwave	0.00	0.00	0.00	0.00	74.75	0.00	13.85
Flood	0.00	18.62	91.67	98.56	1.33	14.47	34.73
Riverbank erosion	0.00	29.79	25.00	2.39	2.33	53.95	18.90
Severe cold and fog	0.00	0.00	2.33	0.00	4.98	1.32	1.60

close return periods and take place in higher magnitude with high intensity. Floods generally start in the month of June (Ashar) and lasts up to the month of August (Vadra), river bank erosion comes as associate with it and extends up to September (Ashin) and October (Kartik). Dry weather condition starts from the end of February (Falgun) and reign up to the month of May (Jaistha). Winter season, sometimes characterized by extreme cold condition, spreads from the end of November (Agrahayan) to January (Magh). Cyclonic disturbances in the coastal regions happen in two times of the year, one during end of winter. i.e., in November and the second spell happen immediate before monsoon, i.e., in the months of April and May. These disasters cause total damage to crops and sometimes cause partial damage of the yield (Table 3.2). In many cases, microfinance borrowers cannot repay the loans due to this yield loss. On top of that they, sometimes, have to make unintended investments in repairing damaged infrastructure such as house, water

facilities. These unproductive investments and loss of agricultural yield collectively make the borrowers of MFIs loan defaulters and compel them to borrow more from other sources like from multiple MFIs and also from local money lenders at high interest rates. However, it is important to mention that the climate change induced challenges are different in different climate hot spots and problems associated with MFI loans are also different in these regions. These regional different are described in this chapter based on the data gathered from the fields.

3.2 Climate change impacts in river island areas (charlands)

The river islands or charlands are highly dynamic landform of Bangladesh. The physical processes such as fluvial and hydrological systems of these islands influence the primary production processes, create impacts on the economic activities, also influence the demographic and health conditions of the people and the social systems. The physical systems and process are highly sensitive to disaster impacts induced from climate change. Flooding is the major hazard in the charlands, river bank erosion is also a significant hazard in the region. Field investigation was carried out in Kurigram district (Kurigram Sadar upazila) which is highly vulnerable from the impacts of these hazards. People informed that they face flood and bank erosion more than once every year. People borrow loans from MFIs mainly for two purposes in the areas, firstly, to support agricultural production processes and secondly to repaid homestead infrastructure like house, sanitation facilities, water facilities etc. The field data suggests that people living in these islands face a number of challenges that undermine their efforts leading to live an impoverished life. People also informed that high temperature has become an issue especially when people need to walk long distances in remote areas over sands during summer times. These natural hazards like river bank erosion, flooding, stress from high temperature generally take place in June and July (Table 3.4). People responded that the locations those are more vulnerable (e.g., situated closer to rivers) are more sensitive to disaster impacts. This suggests that identification of location of the borrowers is important to determine the state of vulnerability of them. This understanding may lead to develop necessary strategy for this group of people. People also indicated that June and July are the months when they face

difficulty in paying loan installments. About 70 percent people reported that they lost their house in river due to river bank erosion, 78 percent people living near the rivers reported

Table 3.4: Climate change and impacts conditions in the river island areas.

Months when river bank erosion strikes	Response from more vulnerable areas (N=183; 60%)	Response from less vulnerable areas (N=121; 40%)	Total (pooled data) (100%)
June to July	78	61	71
August to September	03	02	3
October to November	19	20	19
Other	0	17	07
What damage is caused in your area due to riverbank erosion (multiple respons count)			
Houses were lost in the river	78	55	69
Communications system broke down	17	21	19
Lands were lost in the river	52	26	41
Others	0	2	01
No damages	2	30	13
What is your main cash crop			
Potato	44	58	50
Paddy	24	33	28
Vegetables	39	21	32
Sweet pumpkin	8	0	5
Others, write the name	6	14	9
Is the sector in which the loan money is spent or invested profitable			
Yes	57	59	58
No	17	8	13
No response			
At what time of the year do you have problem paying the loan instalments			
August to October	16	26	20
January to May	18	18	18
June to July	49	33	42
Others, write the month	17	23	20
What are the personal reasons for loan default			
Running away from home by taking	02	01	01
Investments not been successful	45	27	38
Deterioration of financial condi	16	07	13
Loss of crops and houses due to	29	18	25
Business are closed during disas	08	12	1
Taking loans from many instituti	02	05	03
Other	01	01	
Is your financial situation improving by taking microcredits			
Yes	56	64	59
No	17	03	12
Other	27	33	29
How many institutions/NGOs do you take loan from at once			
One	50.27	49.59	50

Two	16.94	14.88	16.12
Three	4.37	2.48	3.62
Four or more	1.09	-	0.66
No loan	27.32	33.06	29.61
How many years have you been involved in microfinance			
1-2 Years	14.21	6.61	11.18
4-5 Years	13.11	25.62	18.09
3-4 Years	15.85	9.92	13.49
5-6Years	8.20	10.74	9.21
6-7 Years	4.92	9.92	6.91
More than 10 Years	16.94	5.79	12.50
No loan	26.78	31.40	28.62
How do you make loan instalments during a natural disaster			
Borrow money	45.36	43.80	44.74
With loans from other institutions	2.19	0.83	1.64
Sells immovable assets	3.83	2.48	3.29
Stop paying instalments	0.55	0.83	0.66
From money saved for the future	19.67	19.01	19.41
works in the city	1.64	-	0.99
No loan	26.78	33.06	29.28

this while 55 percent people living far from the rivers claimed house lost. Potato, paddy and vegetables are the main crops produced by the people living in charlands. These are cash crops where farmers need investments for purchasing agricultural inputs (i.e., seed, fertilizers, insecticides, herbicides, fuel), labor for filed preparation and irrigation. Fifty percent people indicated that their investments is profitable meaning investments did not yield profit for the remaining fifty percent. This factor forces them to borrow money from multiple sources (more than 50 percent people indicated that) and they become entangled to the cycle of loans.

People reported that they invest money received from MFIs in repairing house and other damaged infrastructure at homesteads. These unintended investments make it difficult to repay the loans as scheduled. Sometimes people pay the loan installments by breaking the savings they make with MFIs. People also informed that they face most difficulty in repaying loans three/four months during summer and monsoon seasons (Figure 3.1).

3.3 Climate change impacts in coastal regions

Coastal regions of Bangladesh face onslaughts of strong hazards like cyclones, water surge, flooding and at the same time suffer from slow, progressive hazards like sea level rise, salinity intrusion. Agriculture, fishery especially shrimp cultivation, harvest forest resources from the Sundarban mangrove forests, selling labors in agricultural fields and other sectors are the major occupational categories in which people are engaged in coastal regions. Alike charlands, two-thirds of people from the coastal areas mentioned that they get their houses damaged due to disaster impacts (Table 3.5); more people experience this type of damage who live in more disaster vulnerable areas than the people living in less vulnerable areas. Shrimp farming was the second category of damage they encountered but this was claimed by the people who live in less vulnerable areas. This has happened due to the fact that that shrimp farmers generally live in less vulnerable areas where they can practice shrimp farming. A majority of the people (41 percent) mentioned that they use money they borrow from MFIs are mostly used for repairing damaged houses. Paddy cultivation (31 percent) is the main occupation in the area. However, it is important to note that people living in less vulnerable areas are engaged more in paddy (45 percent reported this) cultivation than the people (22 percent) living in more vulnerable areas.

Table 3.5: Climate change and impacts conditions in coastal areas.

	Response from more vulnerable areas (N=113; 60%)	Response from less vulnerable areas (N=75; 40%)	Total (pooled data) (188, 100%)
What is your loss due to natural disasters			
The shell of the shrimp sinks	02	32	25
Houses are destroyed	81	64	74
Nothing can be cultivated due to	07	11	09
If you can't go to the forest, t	01	0	06
No damages	0	21	13
What is your main source of income			
Fish farming in the enclosure	25	33	28
Paddy cultivation	22	45	31
Mango cultivation	0	0	0
Harvesting honey, fishing in Sun	07	0	04
Business	12	17	14
What time of year are natural disasters more common in your area			
May	35	27	31
June	82	83	82
July	81	79	80

August	43	72	55
September	26	29	27
What is the purpose of taking microcredit			
Small business	19	28	23
Fish farming in the enclosure	27	36	31
Purchase of land	0	03	01
House repair	50	28	41
Land mortgage	0	01	01
Reading and writing of boys and	10	12	11
Agricultural work	25	51	35
Rearing of cows	04	17	09
Buy food	03	03	03
Buying rickshaws/vans	04	12	07
Build house	01	12	05
Is the sector in which the loan money is spent or invested profitable			
Yes	96	95	99
They face challenges throughout the year to repay loan installments			
At what time of the year do you have trouble paying the loan instalments			
Running away from home	01	0	01
Investments have not been succes	32	40	35
Deterioration of financial condi	42	16	31
Loss of crops and houses due to	41	49	44
Business are closed due to disas	09	13	11
Due to taking loans from many in	03	04	03
Is your financial situation improving by taking microcredits			
Yes	90	93	91
What areas have you been successful			
Small business	17	30	22
Fish farming in the enclosure	28	33	30
Purchase of land	01	01	01
House repair	53	31	44
Land mortgage	0	06	02
Reading and writing of boys and	12	09	10
Agricultural work	24	57	37
Rearing of cows	09	20	13
Buy food	03	01	02
Buying rickshaws/vans	05	13	08
Build house	0	07	03
How many institutions/NGOs do you take loan from at once			
One	75.22	66.67	71.81
Two	21.24	18.67	20.21
Three	0.88	10.67	4.79
Four or more	0.88	4.00	2.13
How do you repay the loan during a natural disaster			
Borrow money	59	63	61
Sells immovable assets	0	0	0
From your deposit money	35	85	55

Move out of the area so don't pa	02	0	01
With loans from other institutio	11	08	10
Default Instalments	60	40	52
Have to reschedule	26	45	34
Stopped contact with MFIs	06	01	04

June, July are the most disaster-prone months in the areas (more than eighty percent people reported that). People also experience disasters in the month August. The highest number of respondents (overall 44 percent) mentioned that paying loan installments is difficult when they experience house and agricultural crop damage from disaster impacts. More than ninety percent of respondents mentioned that financial support received from MFIs contributed in improving their overall conditions. People provided a list of activities they do in order to repay the loan installments when they are in jeopardy. Sixty percent said they borrow money, 55 percent indicated that they break their savings, while about half of the people (52%) mentioned that they become loan defaulters.

3.4 Climate change impacts in Haor regions

Haor region is naturally occurring low lying wetlands distributed in six north eastern districts of Bangladesh. This region has strong seasonal dimension – occurrence of early rainfall in the Meghalaya hills cause flash floods in the month of March-April. The areas remain under water for about six months and water free for the remaining six months. Agriculture, especially paddy cultivation and fishing during rainy season are the main

Table 3.6: Climate change and impacts conditions in Haor regions.

	Response from more vulnerable areas (N=133; 60%)	Response from less vulnerable areas (N=76; 40%)	Total (pooled data) (209, 100%)
Damage type			
Haor crops get submerged in wate	76	71	74
Silt and sand fall on the land a	01	0	0
Houses are submerged in water	75	86	79
Roads are submerged in water	47	66	54
No damage	0	01	0
main crop			
Paddy	92	78	87
Vegetables	02	22	10
Pulse	0	0	0
Others	08	16	11

What is the source of water irrigation in your land			
Water accumulated in the haor	65	79	70
Shallow tubewell	02	0	01
Deep well	0	0	0
No irrigation system	01	07	03
Rain water	44	28	38
Others	07	13	09
What time of year is your area most in poverty			
June to August	17	34	23
September to December	02	11	05
January to April	81	55	72
What time of year are natural disasters more common in your area			
March to May	90.98	96.05	92.82
June to August	7.52	3.95	6.22
September to December	1.50	-	0.96
Is the sector in which the loan money is spent or invested profitable			
Yes	99	86	94
At what time of the year do you have problem paying the loan instalments			
August to December	14	26	18
January to May	82	61	74
June to July	05	14	09
Other	0	0	0
More than 90% mentioned that they were benefitted by taking small loans from MFIs.			
How many institutions/NGOs do you take loan from from at once			
One	91.73	68.42	83.25
Two	8.27	31.58	16.75

occupations of people in the haor regions. Flash floods cause huge damage to the standing crops (87 percent people mentioned this) and also cause damage of house infrastructure. People also face river bank erosion in the area. The conditions are also reflected in the response pattern of the communities living in the Haor regions. More than 70 percent people mentioned about crop loss (74 percent), house damage (79 percent) and also communication infrastructure damage (Table 3.6). People mentioned that these disastrous situations generally continue until the month of May of the year. It is also revealed that poverty conditions persist in these months and extend upto April which started at the beginning of January. With the termination of sowing of paddy in the fields, the

requirements of agricultural labor become diminished and people become jobless. In addition, they invest loans taken MFIs to repair house and the *haati* (i.e., the raised homesteads) and almost every year they need to make these unintended expenditures. The respondents indicated that they live in poverty-ridden conditions during this time, i.e., January to April (72 percent overall response and 81 percent from more disaster vulnerable areas) due to the unavailability of work opportunities for income generation. People said that (more than 90 percent) that loans borrowed from MFIs provides significant contributions in this time of need. People also indicated that they face difficulty of pay loan installments from January to May of the year. The mentioned that microfinance agencies should work in partnership with Bangladesh Water Development Board (BWDB) so that embankments can be built and restored where needed to protect the farmers from flooding. They made requests not to take installments during hazard times.

3.5 Climate change impacts in Hill regions

The hilly terrain of Bangladesh is located in the south eastern parts of Bangladesh which experience the onset of monsoon rainfall in the month of June. This monsoon wind from the Indian Ocean and Bay of Bengal causes rainfall that lasts up to the month of September. The rainfall is strongly influenced by the global scale ENSO phenomenon and in current times under the changing conditions of climate more convection process (i.e., the genesis of cumulonimbus, convective clouds) function resulting to the occurrence of intense rainfall and associated thunderstorms and lightening. The occurrence of intense rainfall (sometimes cloud bursts) in the hills with steep slope conditions, sometime denuded due to human induced deforestation, make the landmass soft and loose. In such conditions land vibrations caused from thunderbolts trigger landslides. Sixty-one- and fifty-six percent respondents reported landslides and excessive rainfall respectively as the major disasters in the region (Table 3.7). Damage to house infrastructure (50 mentioned that), disruptions in the road communication and local movements (46 percent responded) and 32 percent reported crop loss including Jhum cultivation due to these disasters. People indicated that the June to September is the time when they face disasters and major damages happened during this time. The consequence of these disasters on the investments the people made

Table 3.7: Climate change and impacts conditions in the Hill areas.

	Response from more vulnerable areas (N=125; 61%)	Response from less vulnerable areas (N=197; 39%)	Total (pooled data) (322, 100%)
Common disaster			
Landslide	57	66	61
Thunderstorm	06	04	05
Excessive rainfall	56	55	56
Drought	18	08	14
Damages			
Houses collapsed under the groun	48	54	50
The communication system was clo	45	49	46
Jhum was stopped	12	22	16
Crop loss	37	24	32
Main cash crop			
Jhum crops	39	31	36
vegetables	34	35	35
Rice	42	34	39
How vulnerable are you to natural disasters where you spend your loan money			
Not too risky	01	04	02
Always risky	43	28	37
Damaged by landslides	40	68	51
If it rains excessively, it sink	51	51	51
What is the source of irrigation water on your land			
Hills spring water	0	05	02
Shallow tubewell	01	01	01
Deep well	07	08	07
There is no water for irrigation	02	03	02
Dependent on rain water	93	84	89
What is the damage caused by landslides in your area			
Communications are cut off	54	50	53
The Jhum crop is destroyed	35	31	33
Sources of food and water are cu	11	06	09
Houses collapsed	36	38	37
What time of year are natural disasters more common in your area			
January to May	9.64	0.80	6.21
June to September	90.36	99.20	93.79
Taking loans from MFIs is profitable >90 said.			
What are the personal level reasons for loan defaults			
Running away from home	0	0	0
Investments have not been succes	57	66	61
Deterioration of financial condi	01	02	01
Loss of crops and houses due to	25	13	20
Business are closed due to disas	34	29	32

Due to taking loans from many in	0	0	0
How many institutions do you take loan from at once			
One	62.94	62.94	61.49
Two	29.95	92.89	30.75
Three	4.57	97.46	5.59
Four or more	2.54	100.00	2.17
How do you repay the loan during a natural disaster			
By borrowing money	96.95	95.20	96.27
With loans from other institutions	0.51	3.20	1.55
By selling movable assets	2.54	0.80	1.86
From money saved for the future		0.80	0.31

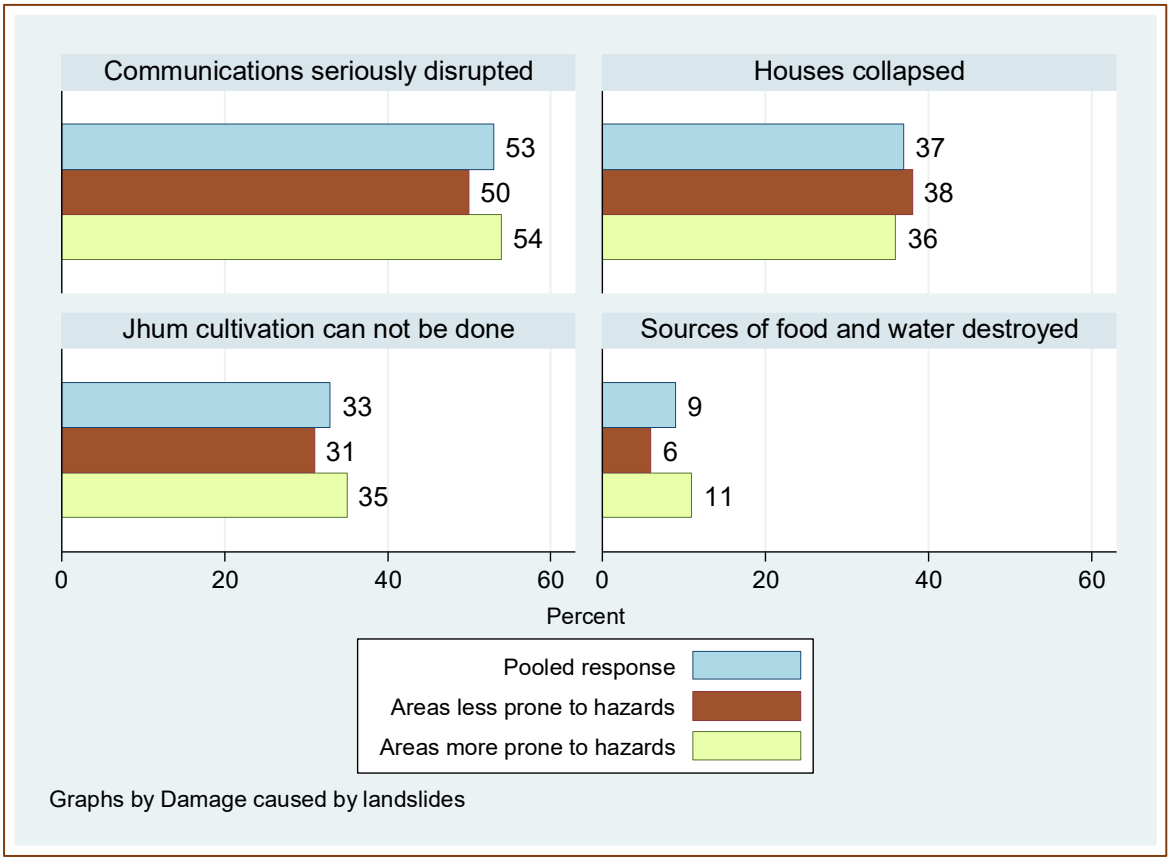


Figure 3.7: Damage of assets resulting from the impacts of landslides in hill tracts.

by borrowing money from the MFIs in sectors like agriculture or small business get lost, 61 percent people mentioned about that. Although sixty one percent people indicated that taking loans from MFIs is still beneficial for them. But sometimes they are forced to take loans from multiple MFIs and at some points aggregate size of the loans become unmanageable in terms of repaying the installments on time.

3.6 Climate change impacts in river bank erosion prone areas

Currently more than 10 million people live inside the rivers, i.e. the river island areas and riparian environments along the river banks in the floodplains, and in offshore islands in the coastal areas. People living in these areas are primarily farmers (61 percent), few of them do river fishing (8 percent). Floods (98 percent claimed that) and river bank erosion (49 percent opinioned) in these regions are the major disasters happen in the month of July (91 percent mentioned that) and August (83 percent mentioned) cause inundation and

Table 3.8 Climate change and impacts conditions in the river bank erosion prone areas.

	Response from more vulnerable areas (N=218; 73%)	Response from less vulnerable areas (N=82; 27%)	Total (pooled data) (300, 100%)
common disaster (multiple response)			
Flood	98	100	98
Riverbank erosion	65	-	49
Drought	0	-	0
Severe cold and fog	34	-	36
What damages do you suffer due to floods and Riverbank erosion			
Crops get lost in water	63	57	62
Houses are destroyed	47	18	39
Houses were lost in the river	32	09	25
Roads are submerged in water	61	77	66
No damages	01	04	02
What is your source of income			
Agricultural activities	63	56	61
River fishing	09	06	08
Business	14	23	16
Job	01	01	01
other	18	18	18
What time of year are natural disasters more common in your area			
June	49	59	51
July	88	98	91
August	83	84	83
September	28	09	23
How many times a year do floods and riverbank erosion occur in your area			
Riverbank erosion and flooding once	29	21	27
Riverbank erosion and flooding twice	30	0	22
Riverbank erosion once a year	17	01	12
Riverbank erosion is more and	0	0	0
Floods are more and riverbank	33	77	45
Is the sector in which the loan money is spent or invested profitable			
Yes	88.99	95.12	90.67

At what time of the year do you have problem paying the loan instalments			
June			
July	48	55	50
August	86	95	88
September	80	84	81
	25	13	22
What are the personal reasons for loan default			
Running away from home	19	22	20
Investments made with borrowed m	29	41	32
Deterioration of financial condi	35	37	35
Loss of crops and houses due to	50	51	50
Business are closed during disas	17	32	21
Due to taking loans from many in	08	13	09
What are the community-level causes of loan defaults			
Longer flood	99	98	99
Drought	0	0	0
Riverbank erosion	46	02	34
Cold and foggy	06	16	08
Heatwave	0	0	0
Others	0	05	02
Is your financial situation improving by taking small loans			
Yes	88.07	91.46	89
How many institutions/NGOs do you take loan from at once			
One	72.43	67.07	70.95
Two	24.30	26.83	25
Three	2.80	4.88	3.38
Four or more	-	1.22	0.34
How do you repay the loan during a natural disaster			
Borrow money	80	87	82
Sells immovable assets	21	15	19
From your deposit money	39	29	36
Move out of the area so don't pa	04	04	04
With loans from other institutio	03	07	04
Default Instalments	34	33	34
Have to reschedule	03	12	05
Stopped contact with MFIs	0	01	01
What do you do to bounce back after a disaster			
Borrowed from MFI	86	98	89
Men drive rickshaws in Dhaka	10	04	08
All boys and girls join in the w	13	01	10
Leave the house and go elsewhere	0	0	0
Others	0	02	01

sometimes devour thousands of hectares of agricultural lands, standing crops (62 mentioned) settlements/houses (39 percent) and other valuable assets at community level like road networks (66 percent indicated that) every year (Table 3.8). The lands in the river island and floodplains along the river banks are highly fertile because of continuous supply of sediments enriched with plant nutrients. This is why people live in the river island areas and do agricultural activities despite living under the risks of flooding and river bank erosion. People informed that they take necessary loans from MFIs and claimed this has been beneficial (more that 90 percent indicated that) for them. The damage of standing crops (50 percent mentioned that) made it difficult for them to pay loan installments regularly and in the month of July (88 percent indicated that) they find this difficulty the most.

3.7 Climate change impacts in Varendra regions

The Barind Tract areas located in the north western parts of Bangladesh are the elevated table lands dissected by entrenched rivers like Atrai, Bangali, Karotoa. These rivers receive water mainly from the southern hills of Himalayan Mountain range. Local rainfall is comparatively low in the regions compared to the other parts of Bangladesh. Temperature records show high values especially in the summer times (i.e., March, April, May) and people feel unbearable heat during these times (84 percent people mentioned that). The soil is oxidized and drainage condition is poor in the region. The area is characterized as drought prone in Bangladesh (99 percent people indicated that; Table 3.9). Heat wave is also a major hazard there. People mentioned that June and July are the months when they face more difficulty to pay loan installments. It is important to note that people in Barind Tract or Varendra regions are more familiar with microcredit functions, more than fifty

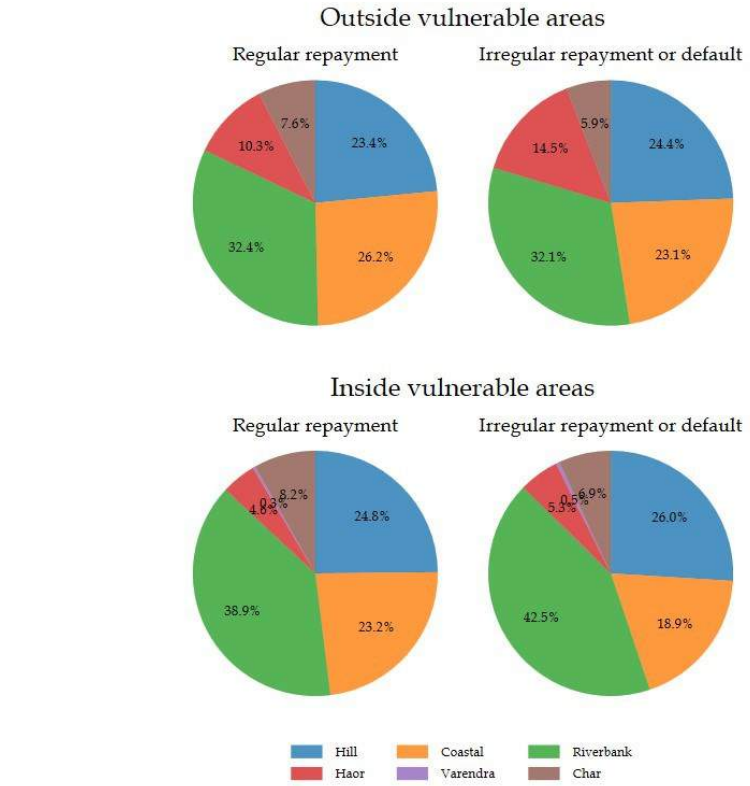


Figure 3.8: Loan repayment status of microcredit borrowers.

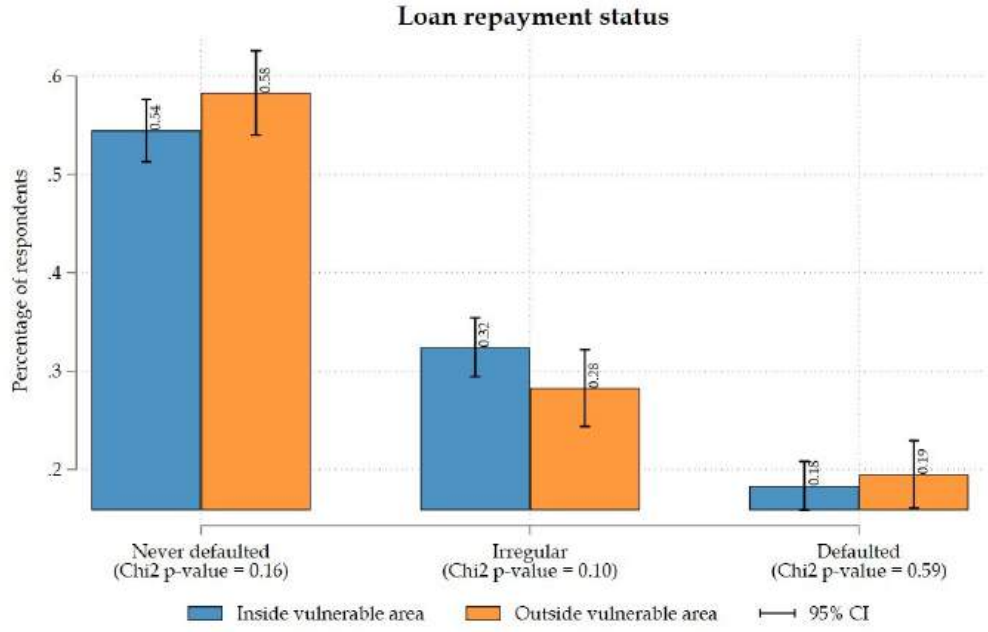


Figure 3.9: Results of significant tests of loan repayment status of microcredit borrowers.

percent mentioned that they have been partnering with MFIs for the last three to five years and seventeen percent more than ten years. More than eighty percent people suggested that they take loans from more than one MFIs and the loans have been useful in improving their conditions (97 percent mentioned that).

Table 3.9: Climate change and impacts conditions in Varendra regions.

	Response from more vulnerable areas (N=196; 65%)	Response from less vulnerable areas (N=105; 35%)	Total (pooled data) (301, 100%)
common disaster			
Drought	99	98	99
Heatwave	80	93	84
Riverbank Erosion	02	0	01
Flood in Charland	07	0	04
What damage do you have due to drought			
Crops get burnt	97	95	97
A lot of irrigation	62	58	60
Cattle cannot be reared	22	11	18
Crop yields are low	32	18	27
No damages	0	03	01
What are your main cash crops			
Sugarcane	85	90	87
Date jaggery	25	37	29
Paddy	72	81	75
Jute	19	19	19
Others	30	16	25
What time of year is the drought more severe in your area			
March	88	92	89
April	50	48	49
May	12	06	10
June	02	02	02
July	03	02	02
Do you take small loans for any purpose			
Sugarcane cultivation	71	79	74
Date garden	09	24	14
Paddy cultivation	68	73	70
Vegetable cultivation	22	12	19
Land mortgage	0	0	0
Rearing of cows	11	01	07
Buying rickshaws/vans	02	01	01
Building house	02	01	01
Is the sector in which the loan money is spent or invested profitable? YES, >99%.			
At what time of the year do you have problem paying the loan instalments			
March	06	04	05

April	06	05	05
May	02	04	03
June	89	91	90
July	89	90	90
August	03	05	04
September	08	03	06
What do you do to protect crops and livestock in severe drought			
Irrigate the land with water	88	86	87
Sell cattle	09	04	07
No water system	58	56	57
No water system - no Machine	35	30	33
Stop raising cattle	08	05	07
Is your financial situation improving by taking small loans? YES, >97% Is your financial situation improving by taking small loans? YES, 85%			
How many institutions/NGOs do you take loan from at once			
One	18.88	18.10	18.60
Two	59.69	57.14	58.80
Three	18.88	20.95	19.60
Four or more	2.55	3.81	2.99
How many years have you been taking microloans			
One year	0.51	2.86	1.33
Two to Three Years	29.59	29.52	29.57
Three to Five years	52.55	48.57	51.16
Five to Ten Years	15.82	19.05	16.94
More than ten years	1.53	-	1.00

The high temperature causes burning of crops (90 percent people mentioned this) and 60 percent people mentioned that this crop damage happen due to the fact that they cannot irrigate their lands with adequate amount of water because of water shortage in the area. The month March is the most disadvantageous months for them when drought conditions appear to be serious. The main cash crop sugarcane (87 percent cultivate it) and paddy (75 percent cultivate) face serious impacts due to this drought conditions. In addition, people cultivate lentils, peanuts, mustard, tomato, eggplant, potato, cotton in the fields. Almost all the households have cow, goats and some families have water buffaloes.

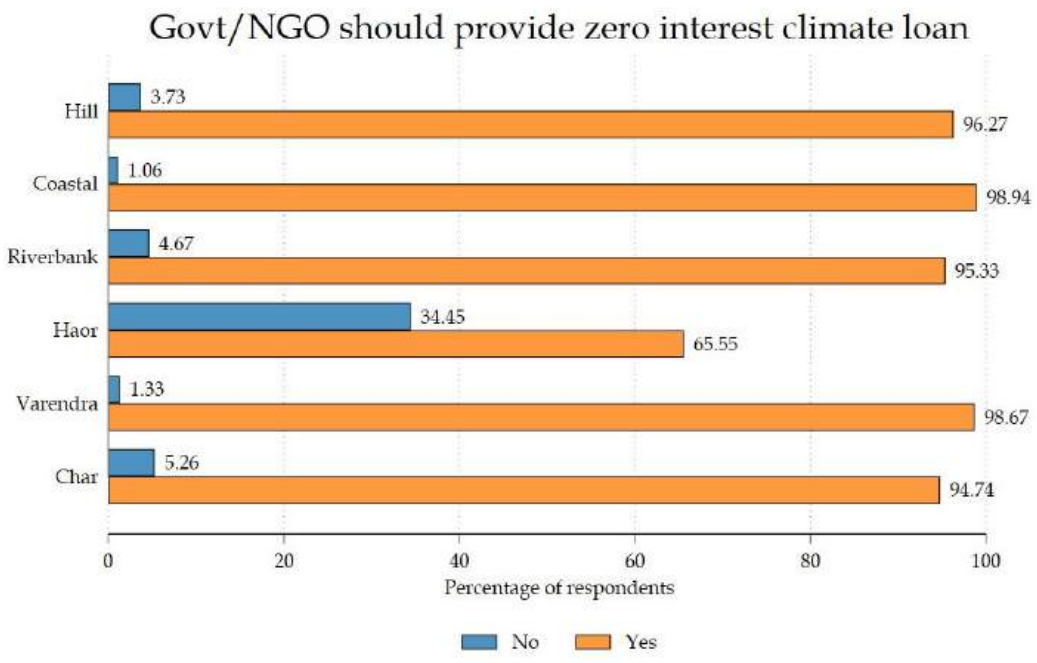


Figure 3.10: People's response on climate loans taken from micro finance institutions.

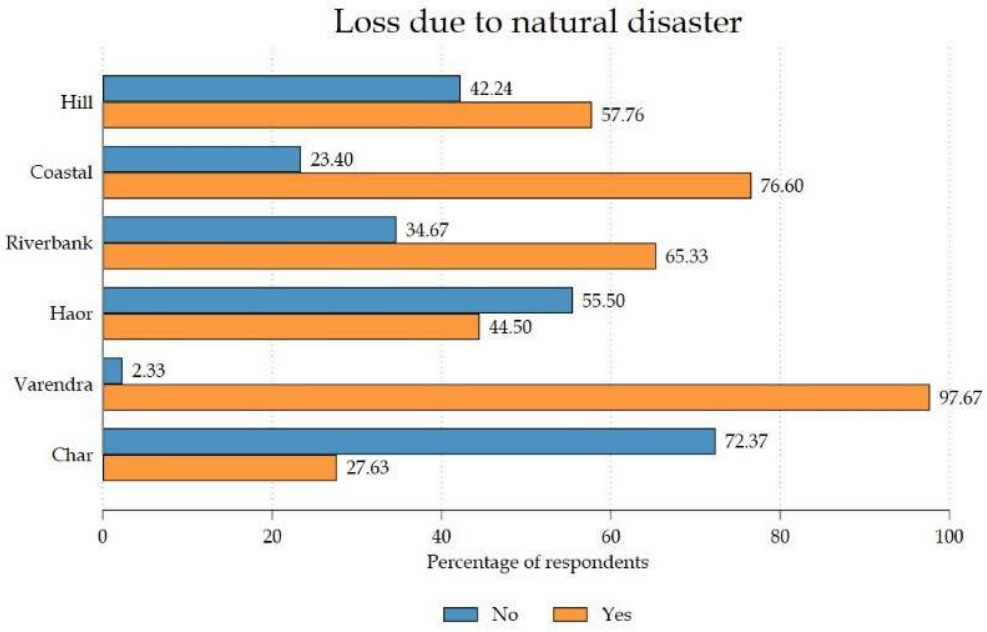


Figure 3.11: Loss happened due to climate induced natural disasters in different climate hot spots.

Table 3.9: Loss and damage of households (mean in Bangladesh Taka).

Sectors		Climatic Hotspot				
		Barind Tract	Coastal Area	Haor Basin	Hilly Area	Riverine Char and river bank erosion prone areas
Infrastructure – Damage in house	Direct	11030.6	54919.35	19537.41	74482.76	47782.1
	Indirect	6364.44	31581.5	10802.97	32428.6	29460.51
Sanitation	Direct	4831.481	14192.91	3819.04	13576.92	10006.59
	Indirect	3562.5	8959.65	1752.1	14884.62	3588.89
Water source	Direct	3458.33	6559.524	2555.56	14000	1347.22
	Indirect	666.67	3605.71	616.667	4366.67	4310.8
Wages loss due to natural hazard	Direct	9454.6	17937.5	9949.15	16714.29	14775.86
	Indirect	5066.67	11026.32	4875	11384.62	11700
Working hour loss due to exposure of extreme heat/cyclone, Heavy rain and other hazard events	Direct	7329.412	13681.27	11750	22300	8900
	Indirect	5583.33	17124.1	0	18909.1	9970
Income loss due to deforestation	Direct	0	9117.7	0	10000	3846.2
	Indirect	0	9833.3	0	22600	2500
Income loss due to biodiversity loss	Direct	7500	13046.34	7214.3	20600	16666.7
	Indirect	3000	7846.34	3600	16000	10066.67
Income loss due to reduced access to natural resources	Direct	14000	15333.33	11500	30500	7692.31
	Indirect	16500	12833.3	6000	20500	2692.31
Loss of/from livestock	Direct	19848	7673.913	42750	29090.91	34609.8
	Indirect	14543	6569.23	29000	14000	22743.6
Loss of/from poultry	Direct	3220	5333.333	6432	10727.27	3833.3
	Indirect	1383.33	3696.43	1959.18	5800	3020.7
Loss of infrastructure	Direct	9545.5	18611.11	10739.13	12384.62	20652.17
	Indirect	3735.29	18780	8090.91	8076.92	13454.55
Loss of/from agriculture	Direct	23432.43	19017.86	14880	135875	30866.67
	Indirect	27909.36	13089.5	10000	23411.11	33285.7
Loss of/from fishing/aquaculture	Direct	55000	45793.1	24000	0	7857.14
	Indirect	15000	19882.4	7666.67	0	8214.3
Income loss due to crop loss	Direct	15647.06	10044.12	7227.3	34727.27	24416.67
	Indirect	6307.69	8655.2	3000	37090.9	21485.7
Loss/expenditure increases due to loss of natural cattle food	Direct	0	1250	5500	13333.3	8333.3
	Indirect	0	4200	0	25555.6	0
Loss/expenditure increased due to loss of homestead vegetation and fruit trees	Direct	15000	125	0	43444.4	0
	Indirect	2000	800	2000	17777.8	0
Needs house repairing due to the impacts of natural hazards	Direct	1925	21403.01	2454.6	635625	19230.77
	Indirect	450	831.4	16444.44	385625	9230.8
Expenditure incurred due to the increase of height of water level	Direct	7444.44	10939.39	20000	6000	22843.75
	Indirect	1600	9620.69	0	1500	29640.6

Conflict of using common pool of natural resource	Direct	200	12250	0	0	2142.86
	Indirect	300	6388.9	0	0	1428.6
GBV (cc induced) based loss	Direct	0	866.67	0	0	769.23
	Indirect	0	300	0	0	384.62
CC induced health hazard	Direct	3833.33	384.62	0	0	833.33
	Indirect	600	2000	5000	0	833.33
Loos of service-related occupation	Direct	0	0	10000	0	416.67
	Indirect	17818.18	0	15000	0	250
Land loss	Direct	52500	6785.71	20000	4111.11	55333.3
	Indirect	0	81000	0	1888.9	41300
Change of waterbodies /surface water/ground water pollution	Direct	0	153.82	0	0	166.67
	Indirect	4000	40000	0	0	166.67
Total	Direct	11050.01	12725.82	9596.19	46978.87	14305.11
	Indirect	6819.6	15629.6	7969.1	26471.9	11529.1

Women are highly active in the agricultural production processes, males are engaged. The males also go to the nearby urban and industrial centers in search for works. This temporary migration helps the families to generate money that they send to their wives

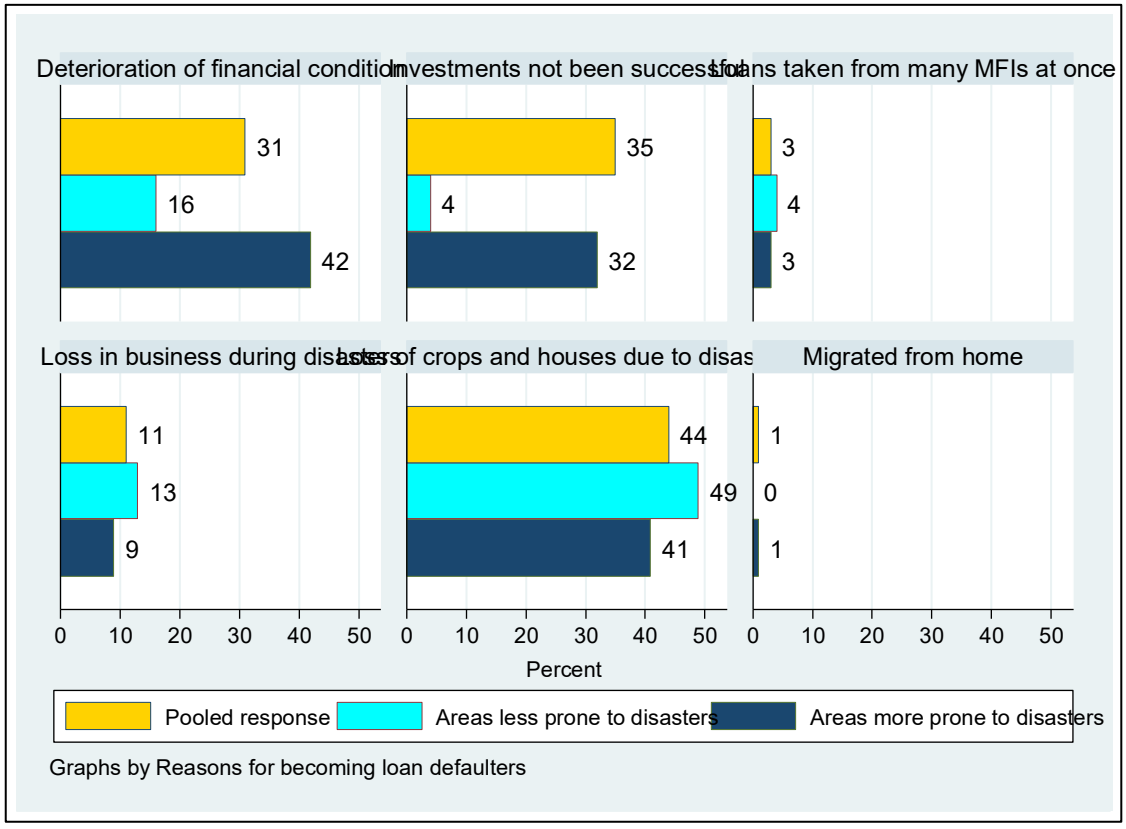


Figure 3.12: Reasons for becoming loan defaulters (response in percentage in all regions).

staying back home and this is the women who manages MFIs loans. A woman named Akhi aged 23 years mentioned that she took 20000 Taka from local MFI Disha and another 50000 Taka loan from Grameen bank as seasonal loans. They pay 1900 Taka per week (600 plus 1300 Taka) as loan installments to both the MFIs. She mentioned that she purchased a cow by using some money taken as loan but the cow died (the reason was extreme heat related issues). She is paying off the loans but no dividends are received from the investments since she had no livestock insurance.

The consequences of climate change are far from linear; instead, they propagate through multiple impact levels, creating cascading and interconnected effects. Understanding these complex impact chains—ranging from immediate, direct (first-order) impacts to secondary, tertiary, and even quaternary effects—requires a systems-thinking approach which has been used in this research exercise. This approach helps in comprehending the broader vulnerability contexts of communities. For instance, microfinance borrowers rely on loans from microfinance institutions (MFIs) to sustain their livelihoods within intricate, interdependent systems. However, the actual use of these loans often diverges from declared intentions, influenced by hidden priorities determined by borrowers. Figures 3.13 and 3.14 highlight how climate change affects the livelihoods of these microcredit borrowers, illustrating the systemic nature of these impacts and the hidden dynamics at play.

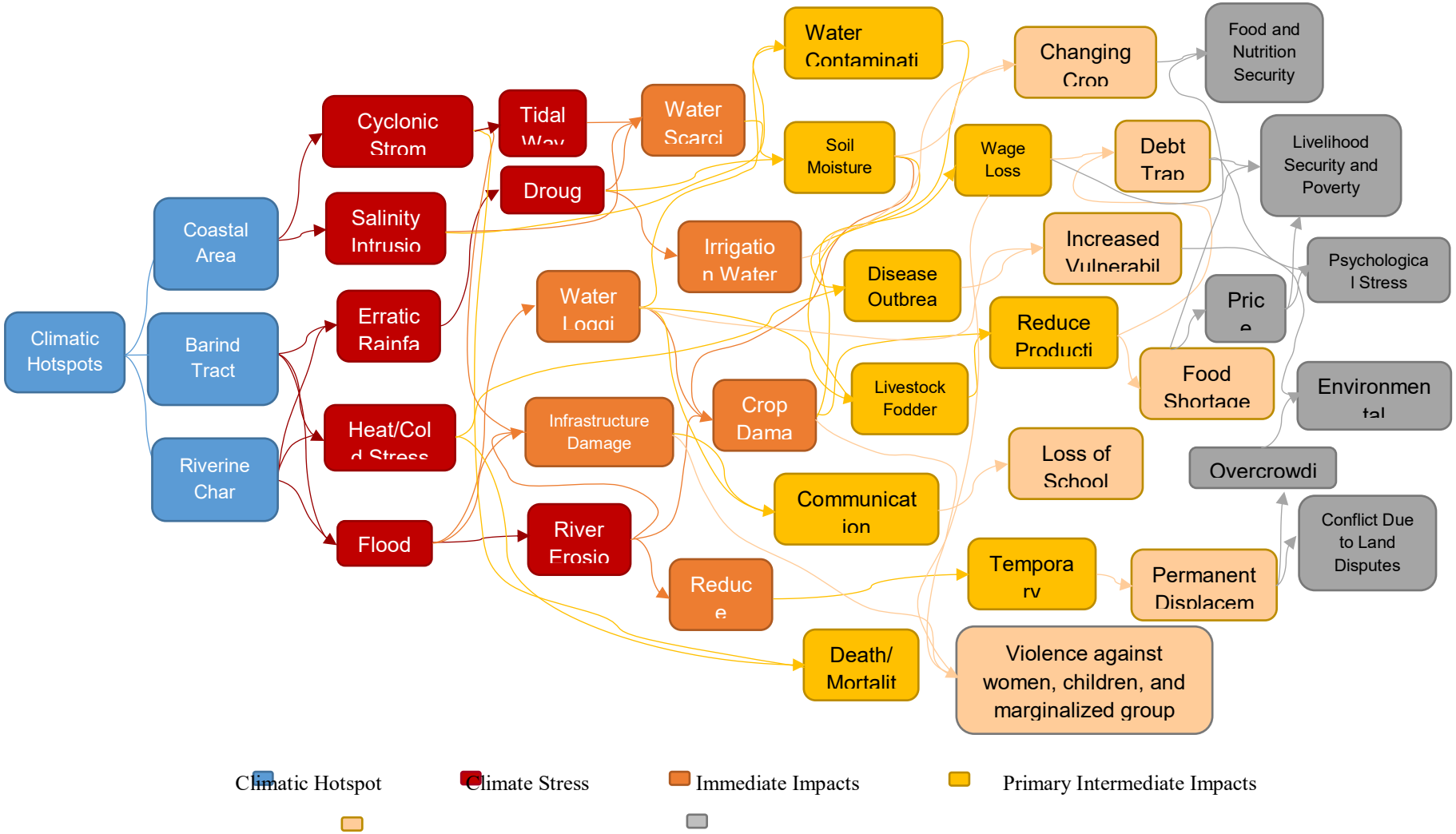


Figure 3.13: A multi-layered impact of climate induced stressors in coastal areas, Varendra regions and charlands.

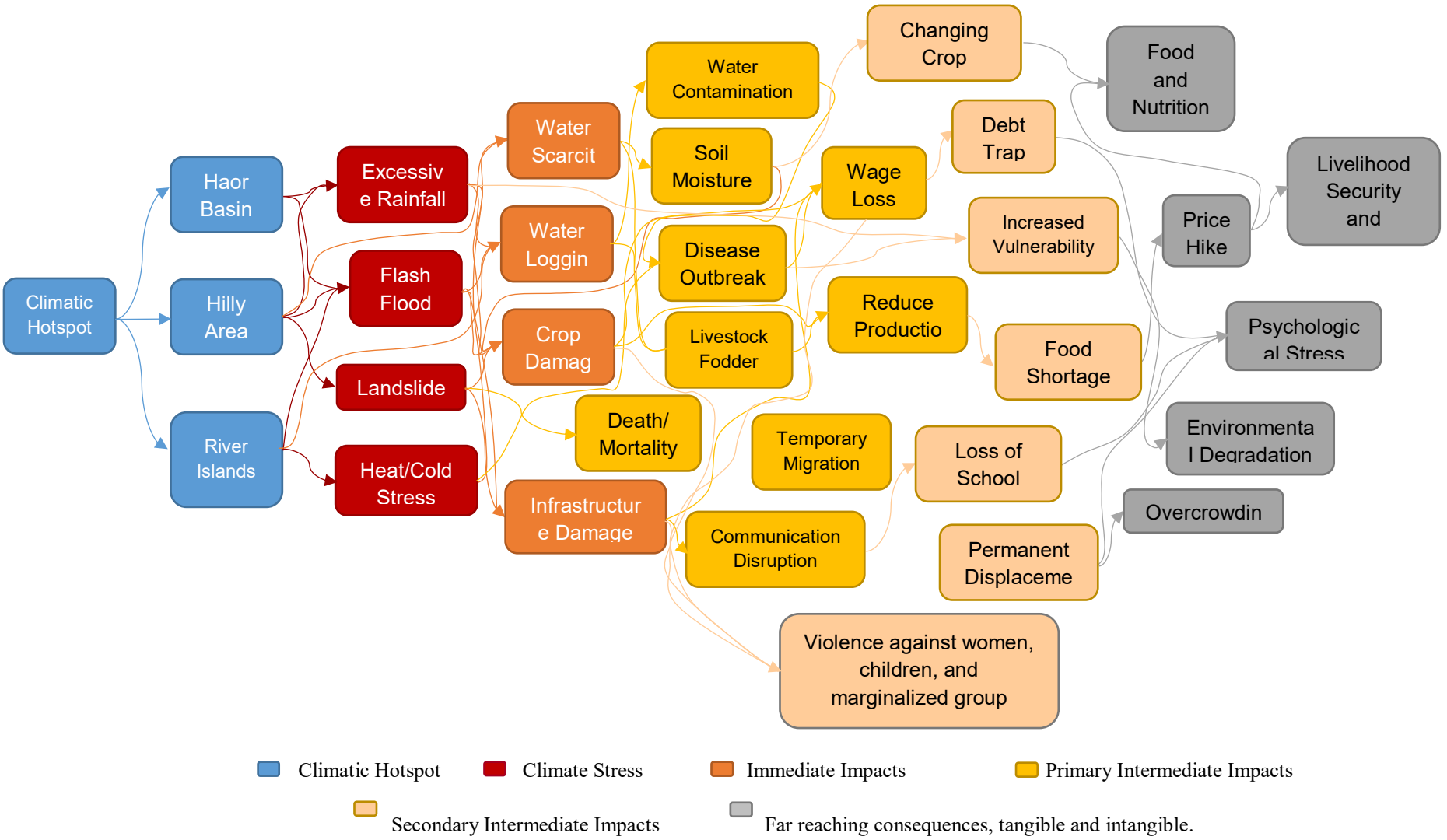


Figure 3.14: A multi-layered impact of climate induced stressors for Haor, hill and river bank erosion prone areas.

3.8 Conclusions

The chapter highlights the profound impact of natural disasters across climate hot spots of Bangladesh, where distinct climate change induced challenges such as cyclones, flooding, landslides, droughts, and riverbank erosion severely disrupt livelihoods and infrastructure. These hazards significantly affect agriculture, the primary occupation in these regions, leading to crop losses, economic instability, and financial distress. Despite the widespread use of microfinance as a coping mechanism, many individuals face difficulties in repaying loans, particularly during disaster-prone periods, which further exacerbates their vulnerability. The reliance on climate-sensitive activities and the precarious financial resilience in these regions underscore the urgent need for more robust disaster management and adaptation strategies.

Chapter Four

Inter and Intra Regional Variations of Climate Change Impacts on Microcredit Ecosystems

4.1 Introduction

The discussions on climate change induced vulnerabilities in different climate hot spots provided in the earlier chapters show that the types of hazards are different in different locations. The dissimilarities in the occurrence of hazards and the difference in people's engagements in economic activities suggest that critical appraisal of climate change impacts on microfinance systems for specific hot spots are necessary so that the regional differences in the patterns of problems are known leading to develop appropriate to make microfinance system climate resilient. This chapters shows both the inter and intra-regional differences of climate change related vulnerabilities. It is expected that the results will inform the MRA, MFIs and relevant policy makers to develop location specific action plans in this connection.

4.2 Inter and Intra-regional comparison of damages caused by climate change induced hazards

It is shown in the earlier chapters that damage of homestead infrastructure such as house, water supply facilities is one of the impacts happened as result of physical hazards in all the regions. People also reported loss of valuable agricultural lands and agricultural crops. The highest percentage of people (79 percent) from Haor regions reported damage of house from cyclonic and water surge disasters. The second highest, 74 percent, reported the same from the coastal regions. The third highest group who claimed house damage (69 percent) is the river island areas. People living in more disaster vulnerable areas in coastal regions (81 percent) and river island (78 percent) reported more damages of house infrastructure than those who live comparatively less vulnerable areas. In the similar fashion, crop damage is highest reported by the people from Haor regions (74 percent) and among the respondents more vulnerable regions experience more crop loss (76 percent) that less vulnerable regions (71 percent).

Figure 4.1: Damage cause by hazards induced from climate change.

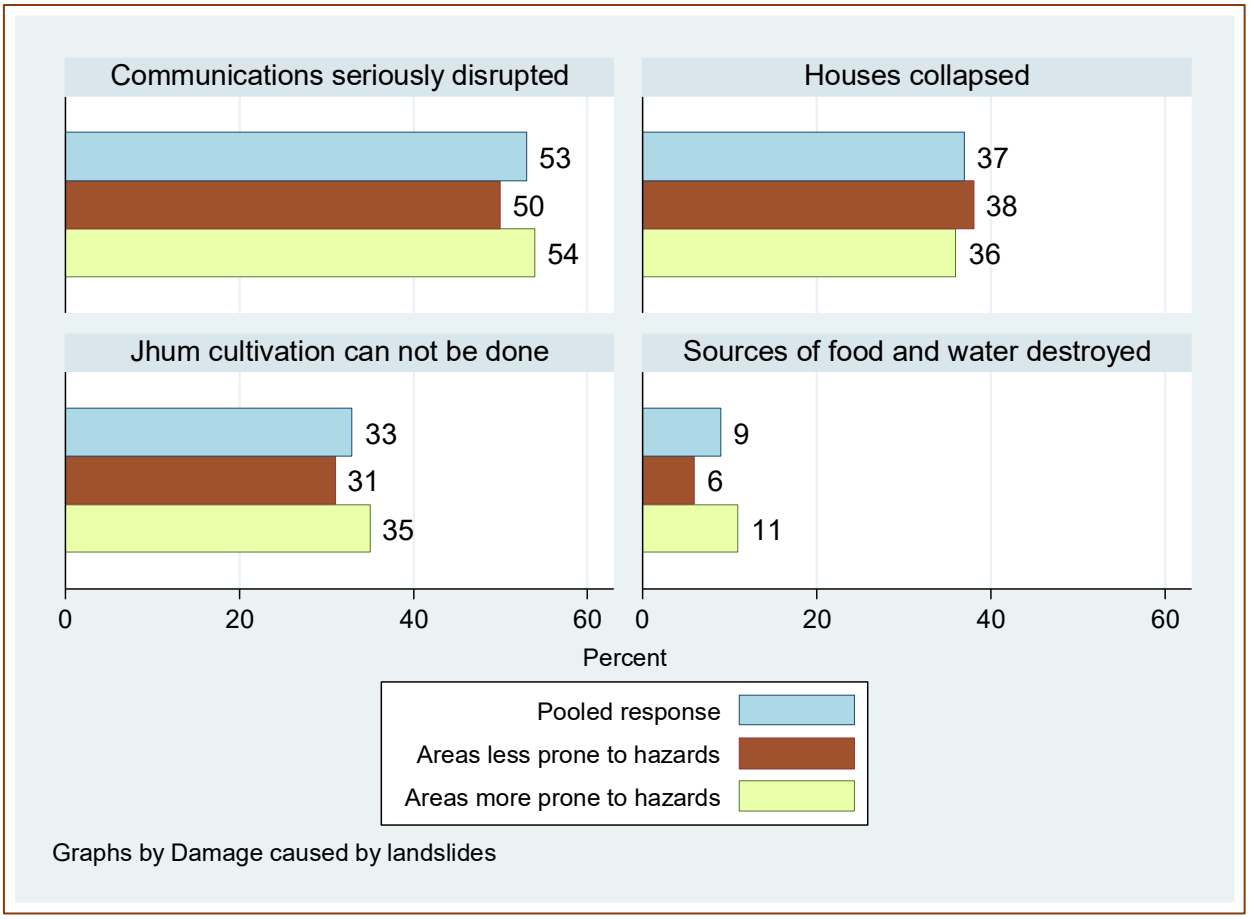


Figure 4.2: Impacts of landslides in hill tracts.

4.3. Usefulness of microcredit loans taken

The grassroots people are familiar with microcredit loans because this is the most easily accessible, collateral free loans that are available at their door steps. The staffs of the MFIs generally visits the household premises and make personal relationships while disbursing loans and collecting loan installments. The borrowers indicated that they have a number of observations on microfinance systems where improvements can be made. Even though they are happy to be connected with MFIs and they consider that MFIs are the sources for receiving loans when there is a need. In contrast, the other options like Bank of informal money lenders are not good options for them due to many reasons such as complicated paper works, necessity of collaterals and high interest rates. The borrowers generally try to avoid to be loan defaulters mainly due mainly to the fear that they may lose provisions of obtaining loans. People from all the regions, i.e. Haor, river bank erosion prone areas, coastal regions, hill tracts, Barind tract areas, mentioned that the microcredit loans has been useful (more than 90 percent people mentioned that) for them to cope with climate

change induced challenges. Only the people from river island areas provided less response (58 percent) indicated that the loans were useful for them. The reasons for less response happended due to the fact people in this region suffer disaster impacts the most and they can not utilize the loan amounts effectively.

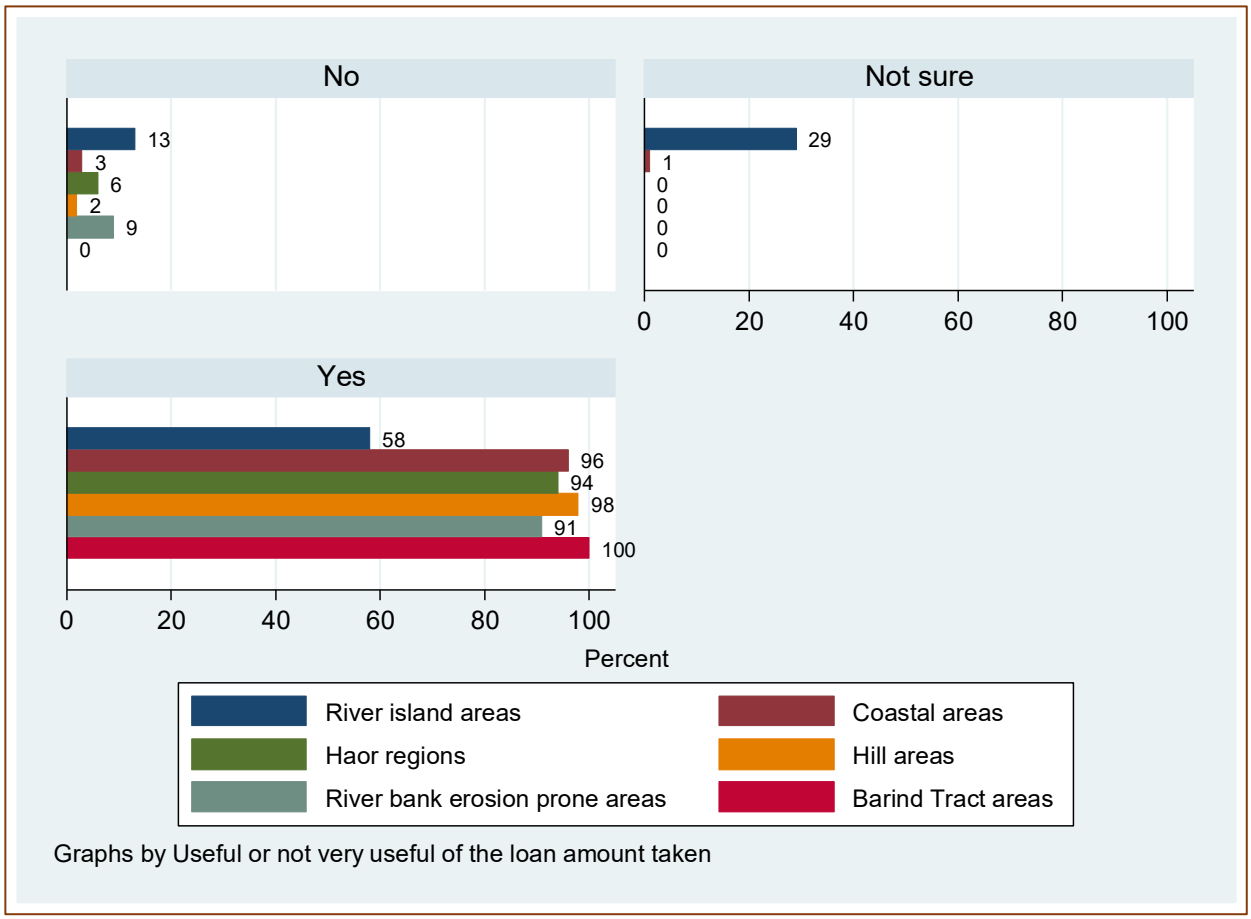


Figure 4.3: Degree of usefulness of loans taken from MFIs by people located in different climate hot spot areas.

4.4 Contingent settings of the work and recommendations

Bangladesh was born through a set of complex and multiple natural and man-made disasters within 24 years of compulsive economic deprivation and socio-cultural oppression by the then Pakistan Government. The War of Liberation in 1971 which caused deaths of 30 million people and destruction of vital infrastructure, the impacts of Super Cyclone Gorki in 1970 that caused deaths of half a million people in coastal areas led the Government of newly born Bangladesh to take massive actions relating to humanitarian response, emergency management and disaster mitigation. In doing

that Bangladesh had to make appropriate policy-institutional architecture in such a way so that humanitarian response, economic development, social protection issues are addressed simultaneously and progress can be made.

The development of Cyclone Preparedness Program (CPP), construction of thousands of cyclone and flood shelters, erection of more than ten thousand kilometers of embankments for protecting the communities from fluvial and hydrological hazards, development of strong disaster early warning systems and dissemination process, aligning poverty eradication through more than two hundred social safety net programs with disaster risk reduction programs were the important pillars that Bangladesh developed to address the vulnerability of the society. Climate change related threats and impacts on primary production processes, infrastructure, natural resources like soil, water, biodiversity, domestic animals, impacts on human health had come into notice in the late nineties in Bangladesh. The submission of First National Communication Report of Bangladesh to the UNFCCC in 2002, then the Second National Report in 2012 and then Third National Report in 2018 described the climate change related threats and vulnerabilities. It was gradually recognized that strengthening disaster management capacity of the government, community and business/private sectors is important to ensure climate resilience of the society and systems (Islam *et* al. 2021). As a result, disaster management, climate change, environment and development policies and actions gradually become convergent in the country. Later multi-party, multi-agency programs were designed and implemented in Bangladesh by acknowledging the fact that disaster management and tackling climate change aspects are mutually reinforcing and these are 'everyone's business'. The Comprehensive Disaster Management Program (CDMP, Phase I from 2003 to 2009; CDMP, Phase II from 2010 to 2014) followed by National Resilience Program (NRP, 2018) were some of the major examples where both disaster management and climate change issues were fused.

Currently, the Government of Bangladesh recommends climate change programs should be inclusive, integrated and be mainstreamed through regular development programs of the government. In line with this conceptual change (from stand-alone,

time-bound projects to mainstreamed projects), the Government of Bangladesh has adopted the Mujib Climate Prosperity Plan – Decade 2030 that advocates for climate resilience through the enhancement of economic growth, by creating more jobs, expanding opportunities using the action on climate change as the catalyst. All these endeavors and historical experiences contributed to put Bangladesh in a leadership position at global scale which is evidenced by securing the Chair Position for the second term by the Prime Minister Sheikh Hasina in the Climate Vulnerable Forum (CVF). This short narrative is given here to inform about the change happened in Bangladesh in conceptual and operational approaches in dealing with climate change. This may provide necessary strategic suggestions to develop climate change strategic plan for microfinance systems in Bangladesh that is appropriate for the time and contexts.

4.5 Conclusions

Bangladesh's approach to disaster management and climate resilience evolved from its early challenges following the 1971 War of Liberation and the devastating 1970 cyclone. The government responded by building a robust disaster management framework, including cyclone preparedness, shelters, and embankments, while integrating disaster risk reduction with poverty alleviation. As climate change threats became more evident in the late 1990s, Bangladesh aligned its disaster management strategies with climate resilience, leading to programs like the Comprehensive Disaster Management Program and the National Resilience Program.

Chapter Five

Recommendations for Resilient Microfinance in Bangladesh

5.1 Introduction

The grassroots people of Bangladesh made significant contributions in development through their engagements in primary production processes. The earlier chapters have shown that the processes such as agriculture, fishery or small business suffer repeatedly from natural disasters like flooding, cyclones, river bank erosion that are becoming more severe in current times under the influence of climate change. The study also demonstrated that people try to recover from damages to continue their engagements in these sectors where microcredit loans taken from MFIs contribute important roles. It is revealed that the microcredit[6] loans distributed by NGOs-MFIs in Bangladesh to small entrepreneurs, especially the women[7] used it in various innovative means including disaster damage recovery to bring change in their lives and at the same time contributed in making the local economy thriving. The borrowers receive microfinance loans primarily in six categories. These are loans for small-scale self-employment, microenterprise development, loans for ultra-poor, agricultural loans, seasonal loans and loans for disaster risk management.

The results reveal, the borrowers of microcredit are the most vulnerable communities because of their repetitive sufferings from disaster induced impacts. Loss of crops, damage of assets are observed happening as results of rapid-onset disasters like flooding, river bank erosion, cyclones, landslide in the hilly terrains and slow-onset challenges such as temperature increase, sea level rise, salinity intrusion and drought conditions. Results show that the challenges like losing lands into rivers, matured crops burned by heatwaves, water shortage for irrigation due to drought conditions, inundation by floods cause people to experience repeated disturbances in the production processes. These disruptions undermine the gains which the communities have achieved using microfinance support. Disaster impacts also cause to breakdown of local infrastructure like roads, bridges, flood protection embankments, social institutions, and disrupt service delivery processes of different government agencies. Thus, the disaster impacts on the efforts of the individuals and the disruptions to the supportive business/working environment collectively make the

[6] Loan amount <50000 BDT.
[7] 93% of the total 25.4 million borrowers are women.

situations difficult for the microcredit beneficiaries to secure/sustain the benefits. Tables 5.1 and 5.2 show that impacts of climate change in different climate hot spots are diverse in terms of severity of damage and at the same time similar on thematic considerations (e.g., infrastructure, crop loss, damage to sanitation facilities etc.). A number of Action Plans are proposed based on the findings of this research. It is imperative to mention that the people living in climate hot spots needs liberty to take adaptation decisions on their own so that they can prioritize investment plans to cope with climate change induced adversities and uncertainties. Implementation of the proposed Action Plans may provide the communities such opportunities.

Findings suggest that the communities who receive microfinance loans from NGOs-MFIs generally live in chronic vulnerable conditions that are caused from past and present disaster impacts and at the same time the locations where they perform their activities[8] remain at risk of a range of disasters. This multimodal challenge put both the borrowers and also the loan distributing agencies (MFIs) at risk. The existing challenged conditions will be more challenging in the upcoming years, as scientists suggest, under the looming threats of climate change such as the increase in temperature, sea level rise and related inundation, salinity intrusion in the soil and water etc.

The Government of Bangladesh has developed a number of policy documents to address climate change induced threats such as Bangladesh Climate Change Strategy and Action Plan (BCCSAP 2009), National Adaptation Plan (NAP, 2023), Mujib Climate Prosperity Plan – Decade 2030 (2023), Climate Change Gender Action Plan (ccGAP). But comprehensive assessment on the impacts of climate change on microfinance is still lacking and also no climate change action plan for this sector has been produced in Bangladesh. In this background context, this study paid necessary attention to fill-in the knowledge gaps and also to develop an action plan to secure the interests of the borrowers and the NGO-MFIs in this connection. Number of recommendations are made based on the results of the study which may guide the Microcredit Regulatory Authority (MRA) to devise necessary strategies to ensure climate resilient microcredit ecosystem in Bangladesh. The results

[8] e.g., crop cultivation, poultry/livestock rearing etc.

might also help the government to achieve poverty eradication objectives through the use of climate smart microfinance by the local communities. This might contribute in achieving the upcoming milestones such as graduation from LDC club in 2026, Upper Middle Income Country status by 2031 and a prosperous, developed country status with 12500 USD per capita income by the year 2041 (which is only 20 years far from now).

Table 5.1: Comparison of impacts among different climate hotspots of Bangladesh.

Charlands	Haor	Hill Regions	River Island Areas	Barind Tract Areas
1. **Hazard Impact on Coastal Regions**: Coastal areas of Bangladesh are subjected to severe hazards such as cyclones, storm surges, and flooding, alongside progressive threats like sea level rise and salinity intrusion. These hazards significantly affect the primary occupations, including agriculture, shrimp farming, and forest resource harvesting. 2. **Occupational and Infrastructure Damage**: Similar to charlands, two-thirds of the coastal population report house damage due to disasters, with a higher incidence in more vulnerable areas. Shrimp farming, mainly practiced in less vulnerable areas, is the second most reported damage. The majority of borrowed funds (41%) are used for house repairs, indicating substantial infrastructural impact from natural hazards. 3. **Agricultural and Economic Activities**: Paddy cultivation is the primary occupation, with a higher engagement	1. **Seasonal Vulnerability and Flood Impact**: The Haor region, consisting of low-lying wetlands in northeastern Bangladesh, experiences significant seasonal variation with six months of submersion and six months of being water-free. Early rainfall from the Meghalaya hills triggers flash floods in March-April, causing extensive damage to standing crops (87%), houses (79%), and communication infrastructure (54%). 2. **Agricultural Practices and Irrigation Sources**: Paddy cultivation is the predominant agricultural activity (87%), followed by vegetable farming (10%). The primary source of irrigation is water accumulated in the haors (70%), with rainwater also contributing significantly (38%). 3. **Poverty and Employment Challenges**: The period from January to April is marked by high poverty levels (72%), exacerbated by reduced agricultural labor demand post-harvest. This seasonal unemployment leads to financial instability and difficulty in loan repayment during these months (74%). 4. **Microfinance Utilization and Benefits**: Over 90% of respondents report benefiting from small loans provided by	1. **Climate and Rainfall Dynamics**: The southeastern hilly regions of Bangladesh experience monsoon rainfall from June to September, influenced by the ENSO phenomenon. The changing climate has increased convective processes, resulting in more intense rainfall, thunderstorms, and lightning, which contribute to the region's vulnerability to natural disasters. 2. **Landslide and Rainfall Hazards**: Landslides (61%) and excessive rainfall (56%) are the major hazards in these hilly areas. The combination of steep slopes, deforestation, and land vibrations from thunderstorms often trigger landslides, leading to significant damage to houses (50%), road communication systems (46%), and crop losses (32%). 3. **Agricultural Impact**: The primary cash crops in the region include Jhum crops (36%), vegetables (35%), and rice (39%). The intense rainfall and landslides disrupt these agricultural activities, causing substantial economic losses for the local population, who heavily depend on rainwater for irrigation (89%). 4. **Microfinance Utilization and**	1. **Major Disasters and Their Timing**: The primary disasters affecting the river island and riparian environments in Bangladesh are floods (98%) and riverbank erosion (49%). These disasters predominantly occur in July (91%) and August (83%), causing significant inundation and erosion. 2. **Impacts of Disasters**: Floods and riverbank erosion lead to substantial losses in agriculture, with 62% reporting crop losses, 39% reporting house destruction, and 66% reporting road submersion. These damages disrupt livelihoods and infrastructure, making recovery challenging. 3. **Primary Occupations**: The majority of the population in these regions engage in agricultural activities (61%), while a smaller percentage is involved in river fishing (8%) and business (16%). The fertile lands due to sediment deposits attract agricultural activities despite the high risk of flooding and erosion. 4. **Microfinance Utilization**: Over 90% of respondents find microfinance loans beneficial for managing their	1. **Prevalence of Drought and Heatwaves**: The Barind Tract, located in northwestern Bangladesh, is highly prone to drought (99%) and heatwaves (84%). These extreme weather conditions are exacerbated by poor drainage and high summer temperatures, particularly in March, April, and May. 2. **Impact on Agriculture**: Drought significantly affects crop yields, with 97% reporting crop burning due to insufficient irrigation. Sugarcane (87%) and paddy (75%) are the main cash crops, which face severe impacts from drought. Additionally, the high temperatures and lack of water result in lower crop yields (27%) and difficulty in rearing cattle (18%). 3. **Microfinance Utilization**: The majority of residents (more than 50%) have been using microfinance institutions (MFIs) for 3 to 5 years, with 97% indicating that the loans have improved their conditions. Over 80% of people take loans from more than one MFI, primarily for agricultural purposes such as sugarcane

in less vulnerable areas (45%) compared to more vulnerable regions (22%). Fish farming, particularly shrimp farming, is also a significant income source, highlighting the economic reliance on climate-sensitive activities. 4. **Microfinance Utilization and Repayment Challenges**: Microfinance loans are primarily used for house repairs (41%) and agricultural work (35%). Repayment difficulties peak during June and July, aligning with the most disaster-prone months. Financial distress from crop and house damage is the primary challenge in meeting loan obligations. 5. **Financial Resilience and Coping Mechanisms**: Over 90% of respondents report improved financial conditions due to microcredits. However, to manage loan repayments during disasters, 61% borrow additional money, 55% break savings, and 52% become loan defaulters. This highlights the precarious financial resilience and the cyclical nature of debt in disaster-prone coastal regions.	microfinance institutions (MFIs), using them primarily for repairing houses and haatis (raised homesteads). Despite the benefits, 83% of respondents rely on single loans, while 17% borrow from multiple institutions. 5. **Recommendations for Disaster Management**: To mitigate flood impacts, respondents suggest collaboration between MFIs and the Bangladesh Water Development Board (BWDB) for constructing and maintaining embankments. Additionally, they recommend suspending loan installments during hazard periods to alleviate financial pressure on affected households.	**Vulnerability**: Over 90% of respondents find microfinance loans profitable. However, 51% of respondents reported that their investments are at risk due to landslides and excessive rainfall, indicating high vulnerability. Most borrowers take loans from one or two institutions, highlighting the reliance on microfinance for economic stability. 5. **Disaster Recovery and Loan Repayment**: During natural disasters, 96% of respondents resort to borrowing money to repay loans, with a minority selling movable assets (1.86%) or using saved money (0.31%). The period from June to September is particularly challenging for loan repayments due to the high incidence of natural disasters during this time.	livelihoods. However, disasters impact their ability to repay loans, with July (88%) being the most challenging month for loan repayments due to the high incidence of floods and crop damage. 5. **Loan Default and Recovery Strategies**: During natural disasters, 82% borrow money to repay loans, and 89% rely on microfinance institutions (MFIs) for recovery. Personal reasons for loan defaults include crop loss (50%) and financial deterioration (35%), while community-level causes include prolonged floods (99%) and riverbank erosion (34%).	and paddy cultivation. 4. **Loan Repayment Challenges**: The most challenging months for loan repayment are June and July (90%), coinciding with the peak of drought and heatwave conditions. This is due to the high costs of irrigation (60%) and reduced agricultural productivity. 5. **Adaptation Strategies**: To cope with severe drought, 87% of respondents irrigate their lands, while others (7%) resort to selling cattle. However, many face challenges due to a lack of adequate water systems and machinery (57%). Despite these hardships, microloans have been crucial in helping improve financial situations for more than 97% of the population.

Table 5.2: Direct and indirect losses happened as results of climate change proxied by natural disasters.

The average financial losses and damages in various sectors across different climatic hotspots in Bangladesh. The data is divided into direct and indirect impacts, measured in Bangladesh Taka (BDT)	The reasons for loan defaults across various regions	Summary of Key Points Against Which The Action Plans are Devised
Barind Tract • **Infrastructure Damage**: Moderate direct (11,030.6 BDT) and indirect (6,364.44 BDT) losses. • **Sanitation and Water Source**: Moderate direct losses, with indirect impacts also significant. • **Agriculture and Livestock**: High direct losses in agriculture (23,432.43 BDT) and significant losses in livestock (19,848 BDT). • **Crops and Income**: Considerable income loss due to crop loss (15,647.06 BDT direct, 6,307.69 BDT indirect). *Coastal Area* • **Infrastructure Damage**: Very high direct (54,919.35 BDT) and indirect (31,581.5 BDT) losses. • **Sanitation and Water Source**: Significant direct and indirect losses. • **Agriculture and Livestock**: Moderate direct losses in agriculture (19,017.86 BDT) and relatively low losses in livestock (7,673.913 BDT). • **Crops and Income**: Significant income loss due to biodiversity loss and reduced access to natural resources. *Haor Basin* • **Infrastructure Damage**: Moderate direct (19,537.41 BDT) and indirect (10,802.97 BDT) losses. • **Sanitation and Water Source**: Moderate direct losses, with low indirect impacts. • **Agriculture and Livestock**: Moderate direct losses in agriculture (14,880 BDT) and high losses in livestock (42,750 BDT). • **Crops and Income**: Moderate income loss due to crop loss (7,227.3 BDT direct, 3,000 BDT indirect). *Hilly Area* • **Infrastructure Damage**: Extremely high direct (74,482.76 BDT) and indirect (32,428.6 BDT) losses. • **Sanitation and Water Source**: Significant direct and indirect losses. • **Agriculture and Livestock**: Very high direct losses in agriculture (135,875 BDT) and moderate losses in livestock (29,090.91 BDT). • **Crops and Income**: High income loss due to crop loss (34,727.27 BDT direct, 37,090.9 BDT indirect). *Riverine Char and River Bank Erosion Prone Areas* • **Infrastructure Damage**: High direct (47,782.1 BDT) and indirect (29,460.51 BDT) losses. • **Sanitation and Water Source**: Moderate direct losses, with significant indirect impacts.	• **Loss of crops and houses due to disasters**: A significant factor across all regions. • **Deterioration of financial conditions**: Common across most regions. • **Investments not yielding returns**: Notable in some regions. • **Businesses closed during disasters**: Affects loan repayment capacity. • **Taking multiple loans from different institutions**: Less common but still present.	• **Infrastructure and Housing**: Coastal and hilly areas face the highest direct and indirect damages to infrastructure and housing, highlighting their vulnerability to climate impacts. • **Sanitation and Water**: Both sectors incur substantial losses across all regions, with the highest impacts in coastal and hilly areas. • **Agriculture and Livestock**: Hilly areas suffer the most in agriculture losses, while Haor Basin sees significant livestock losses. • **Crops and Income**: Crop loss significantly affects income in all regions, with the hilly area facing the highest income loss due to agricultural impacts. • **Microfinance Loan Defaults**: Defaults are primarily due to crop and house losses, financial deterioration, and non-profitable investments, with significant regional variations.

• **Agriculture and Livestock**: High direct losses in agriculture (30,866.67 BDT) and livestock (34,609.8 BDT). • **Crops and Income**: Significant income loss due to crop loss (24,416.67 BDT direct, 21,485.7 BDT indirect).		

5.2 Policy Frameworks for Reducing Loss and Damage and Climate Resilient Microfinance System in Bangladesh

The major policies and programs implemented in Bangladesh in disaster and climate risk management vis-à-vis reducing loss and damage have strong relevance in making a climate resilient microfinance system in Bangladesh. The major programs implemented in Bangladesh were RVCC (Reducing Vulnerability to Climate Change) at the beginning of the twenty first century, CDMP (Comprehensive Disaster Management Programme), Phase I and II from 2003 to 2015, then NRP (National Resilience Programme) from 2018 to 2021. These programs hugely contributed in advancing a range of thematic areas, mentioned in the following sections.

- Institutional restructuring and reform (e.g., emergence of Disaster Management Bureau, and then transformed into Department of Disaster Management, establishing disaster management academic departments in tertiary level institutions, curriculum development, development of disaster contingency plans for a number of agencies).
- Policy formulation took place (e.g., Disaster Management Policy 2015, Disaster Management Act 2012, National Plan for Disaster Management 2021-2025, Standing Orders on Disaster 2019, etc.).
- Development of disaster risk assessment tools (e.g., CRA/RRAP/LDRRF, development of 'D' form).
- Capacity development of professionals (more than one thousand government professionals received training on disaster management and climate change through CDMP I & II).
- Field level interventions (e.g., project implementation in different disaster hotspots using LDRRF).

These government-donor partnership projects successively contributed in professionalizing disaster risk management aspects among the professionals and agencies so that they can deliver their services by recognizing the fact that disaster management is everyone's business and it requires *whole-of-society* participation. All these programs were hosted by the Ministry of Disaster Management and Relief (MoDMR) and activities were primarily performed by DDM (Department of Disaster Management). The latest program, i.e., the NRP (National Resilience Programme), is different from other programs in a number of ways – firstly the program brought a conceptual shift from the previous programs in defining project activities and envisioning the impacts by putting in place 'resilience', in lieu of 'disaster risk reduction'. The program widened the thematic domains aiming to improve policy and institutional setup so that regular development programs become resilient to challenges (whether it is manmade or natural, taking place in rural or urban settings). NRP's actions with LGED for resilient infrastructure (i.e. introduction of Asset Management System), introduction of DIA[9] and DRIP[10] with Programming Division (Ministry of Planning), a range of actions with DWA (Ministry of Women & Children Affairs), piloting digital beneficiary selection process, revising Disaster Management policies (e.g., development of NPDM 2021-2025, SOD 2019), efforts to make product supply chains resilient with DDM are some noteworthy activities that made NRP different from preceding programs.

On the other hand, the government of Bangladesh has made significant progress in a range of sectors and aspires to emerge as a developed nation by 2041. Good achievement in attaining the MDG targets, crossing the lower income country status in 2015, impressive and well-recognized progress in economic, food production and infrastructure development, upcoming graduation from the LDC group in 2026 and upliftment into an upper income country by 2031 – all made the rationale strong why 'resilience' pathways for microfinance systems should be promoted in Bangladesh. Government policy documents such as Perspective Plan 2021-2041, Mujib Climate Prosperity Plan – Decade 2030 (MCPP), the Bangladesh Delta Plan 2100 echoed the similar aspirations and aim to explore possibilities to ensure robust socio-economic development while simultaneously

[9] Disaster Impact Assessment.
[10] Disaster Risk Information Platform.

maximizing the risk resilience and various green opportunities. In this backdrop, it can be said that the study on the impacts of climate change on microfinance systems in Bangladesh could take necessary lessons from the already-implemented and existing disaster management and climate change action programs so that the niche of the potential contributions of MRA and MFIs can be identified that fit appropriately with the broader contextual (policy-institutional-programmatic) settings/frameworks. The following sections summarized the areas where attentions have to be paid in doing that.

(i) Develop deeper understanding on the legacies and good practices of previous disaster management and climate-resilient programs (e.g., RVCC, CDMP, Phase I and II, NRP);
(ii) Review government mid-term and long-term visionary planning and targets (e.g., NPDM 2021-2025, SOD 2019, Perspective Plan 2021-2041, Delta Plan 2100, Mujib Climate Prosperity Plan – Decade 2030, National Adaptation Plan 2023, Bangladesh Climate Change Strategy and Action Plan 2009 etc.); and,
(iii) Assess the international commitments and binding targets of the country (e.g., Paris Agreement, SFDRR, SDGs, CBD targets etc.).

The contributions of MRA in climate and disaster resilient microfinance in Bangladesh might be ensured by developing an appropriate strategy document. This document may combine the overarching objectives of microfinance sector with the national and international development targets including the lessons learnt from evolutionary process of disaster management in a changing climatic context. This strategy document of microfinance sector might provide guidance to,

(i) set more focused, gender-sensitive, equitable, result-oriented microfinance programming,
(ii) adopt actions that will ensure *inclusive-growth* focused economic progress towards resiliency by conducting disaster loss and damage assessment and
(iii) develop capacity of systems and individuals to prevent the relapse of disasters.

It is important to note that examining the impacts of climate change leading to develop a strategy paper (or action plan) will depend on community/stakeholder consultation to receive necessary facts and information about the issues and this exercise has done the first step by conducting a comprehensive disaster and climate change impact assessment. The study results suggests that preventing the relapse of disasters should receive more attention which will help communities to deal with mega-disasters effectively, address residual risks, put in place disaster impact recovery actions successfully and all these in collective fashions will contribute in making microfinance systems in Bangladesh climate resilient. This suggests that working in partnerships with different public agencies with disaster risk reduction and climate resilience mandates (discussed above) is a necessity to provide safeguards to both the microfinance borrowers and the MFIs. This comprehensive and multi-party partnership actions may contribute in minimizing disaster risks if not fully eliminated, foster community efforts where they invest microfinance.

5.3 Recommendations for Developing Climate Resilient Microcredit System in Bangladesh

A number of strategic options, recommended as action plans, have been formulated based on the findings of this research to make the microfinance systems climate resilience. Some of the proposed actions could be implemented now as short term and some needs longer term to implement and hence the recommendations are grouped into two categories and presented below.

5.3.1 Short Term and Immediate Action Plans

- *Action Plan 1 - Assess the cumulative impact conditions of borrowers in taking loan disbursement decisions:* The study reveals that the microfinance borrowers live in chronic poverty conditions where residual impacts conditions add up with new challenges. That means one new problem starts with old set of problems and the regular living conditions of people remain to be in full of challenges. They basically lead a life on lifelong loan cycles and hardly enjoy financial surplus conditions in life. Sometimes loans are taken to repay the loans taken from other MFIs. In such

conditions, imposition of any new challenge like putting them in new burdens of loans may put people in more troublesome state. MFIs should develop the bigger picture of the contextual settings of the potential borrowers while examining the loan application cases. The study findings suggest that people living in more disaster-prone areas like on the bank of rivers, low lying areas that is more susceptible to flood impacts, staying at the bottom of steep slopes of hills where landslides may occur suffer more from climate change induced disaster impacts. In undertaking the contextual assessments, the MFIs could take into consideration the locations attributes of disaster occurrences for making the bigger picture more factual.

- *Action Plan 2 - Market integration of the borrowers for gaining better benefits:* People do their economic activities based on nature dependent primary production processes. They generally engage themselves in subsistence level production processes and only the production surplus is sold. The broad economic systems within which they perform are less governed by market processes and hence bother less about product value chain improvements or to get integrated effectively with larger market systems. In such cases, MFIs could develop a facilitation policy and framework so that the product value chain is improved where producers could align their efforts with it, participate in the process and can enjoy a secured, better returns out of their produce. This will enable them to manage microfinance more efficiently.

- *Action Plan 3 - Introduction of indicator-based loan disbursement process:* Loans are granted for specific purposes but after disbursement loans amounts are spent to meet diverse needs and only a small portion are used in the sector for which loans were granted. People cannot generate good returns to repay the loans due to this mismatch. In such cases, a set of indicators for physical, ecological, economic, demographic, social aspects may be developed based on which decisions about loan sanctions could be made. Introduction of such system will help to reduce the gaps mentioned above.

- *Action Plan 4 - Arrange 'Climate Impact Fund' to support borrowers and MFIs:* Sometimes government provide directives on rescheduling loans and stop collecting installments, when necessary, especially during disaster times. These directives appear to be very

useful by the borrowers of the microcredit loans but the MFIs face troubles as they cannot recover the loans. In such cases, MFIs or branch offices of MFIs those work in disaster and climate change impact areas might be listed and may place appeal to MRA for compensation, reimbursement support (in kind or through other benefits) by providing evidence-based reports. Geospatial applications (maybe web-based) may provide necessary support in this regard. MRA may raise 'Climate Impact Funds', from Bangladesh Bank or from Climate Change Trust Fund (BCCTF) or from Loss and Damage fund of the Green Climate Fund of the World Bank in this regard.

- *Action Plan 5 - Damage of house infrastructure is a major challenge:* Disasters leave impact on house structure and on other household and community assets like trees, water supply, sanitation facilities. Field investigation suggests that after receiving loans from MFIs, the first task people do is to repair these infrastructure if remain damaged. Building of stilt house or climate resilient water, sanitation facilities might play important roles in giving microcredit borrowers financial and psychological relief. MRA could work with other agencies like Housing and Building Research Institute (HBRI), Department of Public Health and Engineering (DPHE), Local Government and Engineering Department (LGED) to influence them for paying attention in these areas. Improvements in this regard will help people to spend the loans in the planned projects and gain benefits as expected.

- *Action Plan 6 - People's awareness about MFI loans should be improved:* People during interviews informed that they do not know the rate of interests of microcredit loans, they rather know the size of weekly installments. In addition, the loans are generally taken in the names of the women members of the households but in reality, loan was taken by the husband and also spent by him. The women are thus become the passive borrowers of MFI loans. All these issues need to be informed to the borrowers and discussed with the beneficiaries so that more transparency regime for the sector can be developed and informed decisions can be made.

- *Action Plan 7 - Accessible disaster early warning:* It was found during field survey that many people do not have smart mobile phones and this is why a majority of them

cannot get access to necessary advisories either on the sectors where they invested money nor on the looming disaster impact conditions. People cannot take necessary decisions to reduce disaster risks and protect their assets and investments due to this lack of early warnings. MFIs can plays roles in courtyard meetings and other means like leaflet distribution to raise awareness of people about obtaining important advisories.

5.3.2 Long Term Actions Plans

- *Action Plan 8 - Establishment of a new department by MRA:* MRA could open a new department, the proposed titled might be 'Climate Resilient Microfinance' – this department will gather information about the climate change impacts on the microcredit system and the risks faced by the borrowers and MFIs in different climate hot spots. The reports furnished with these data might be shared with agencies like Bangladesh Meteorological Department (BMD), Department of Environment (DoE), Department of Disaster Management (DDM), Palli Karma Shohayak Foundation (PKSF), Flood Forecasting warning Center (FFWC), Bangladesh Water Development Board (BWDB), Local Government Engineering Department (LGED), Bangladesh Bank and all national and local MFIs. Information gathered by this new department can be used to triangulate the facts presented by MFIs if they make any reimbursement appeal resulting from implementing any special directives of MRA (see Action Plan 4).

  This department should maintain close relationships with academic institutions like universities and think tanks and relevant agencies for conducting meetings, workshops and conferences so that critical knowledge can be developed and shared towards informed decision making. Publishing periodic newsletters on microfinance like how it is contributing to make borrowers climate resilient may be appreciated by peer agencies. The partner agencies could also develop their own strategies for designing results-based actions so that outcome level impacts of the partnership building process can be ascertained. Geographical Information Systems (GIS), satellite remote sensing as methods and data sources, might play important roles in this connection. This department should work to make sure that the borrowers can receive services provided by other government agencies like the services provided through social safety net

programs, community clinics, attaining the unique identification number for the students.

- *Action Plan 9 – Development of poverty graduation policy:* The borrowers indicated that they feel psychological pressure when the loan installment date is imminent. These traumatic situations are just added with the set of preexisting uncertainties happened as results of past disaster impacts and thus the conditions of the borrowers become complex, multidimensional and unbearable. People informed that in such situations, selling household assets, avoiding nutritious food, borrowing money from friends and relatives are some of the options they pursue to cope with the situation. These cyclic forms of weekly, monthly and yearly pressure put them into a socially humiliated and mentally stressful situation. And at some point, people leave the place to avoid MFIs and migrate other places to cope with the situation. The situations become worse when the borrowers are forced to take loans from the informal money lenders in the regions at high interest rates. Awareness of people about all these issues in a comprehensive manner is missing in microfinance operation in the field. This lack of people's awareness sometimes keeps people in dark to make informed decisions. In this contexts, MRA could develop an indicator based poverty graduation policy based on which MFIs could take appropriate decisions like who qualifies for receiving a certain size of loans, eligible for receiving rebate or concessions or special grants.

- *Action Plan 10 - Designing new loan products:* The MRA could develop policy and instruct the MFIs to design new loan products which may help people to enhance their assets and gradually they can make financial progress. Better asset holding and wellbeing of the borrowers will eventually contribute in thriving microfinance systems in Bangladesh. Loan products for group of people, integrating the borrowers with larger market systems, contributions in the product value chain improvement, invest in areas that will support people to get public services better might some of the potential areas of improvements in this connection.

- *Action Plan 11 - Climate risk insurance should be adopted:* Climate risk insurance provisions (e.g., crop or livestock insurance or insurance for loss of labor wage) are

absent in the climate hot spot areas in Bangladesh. Although pilot projects were implemented during the last ten years by some international and local NGOs, donor agencies and insurance companies. The lessons received from these pilot projects inform that Bangladesh is far from implementing fully operational climate risk insurance because of lack of granular and historical data on the disaster impacts based on which consensus could be developed among the stakeholders on loss and damage

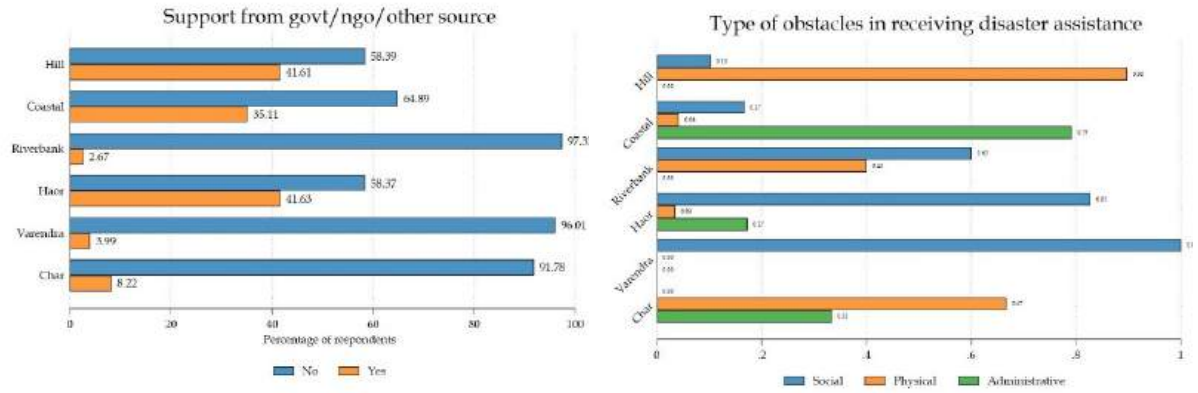


Figure ??: Sources of disaster supports received by the disaster vulnerable communities (left), types of obstacles in receiving the supports (right).

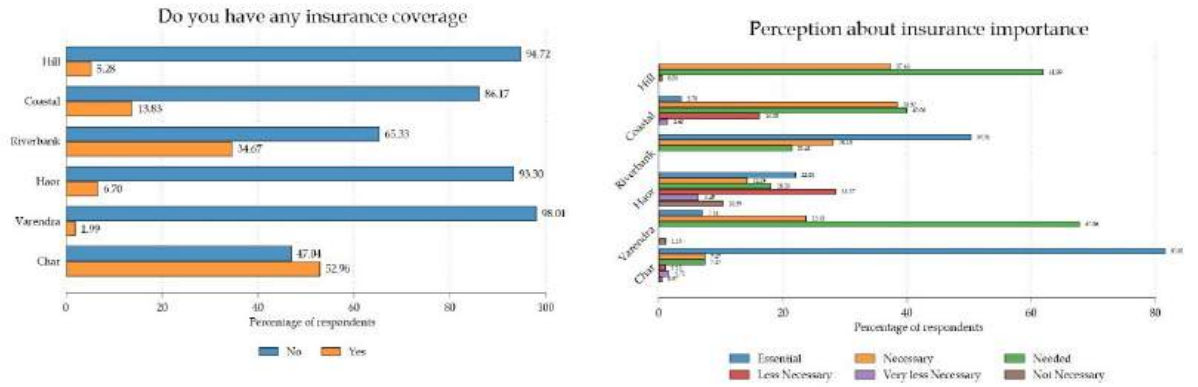


Figure 5.1: People under insurance coverage (left), people's perception about climate risk insurance.

to take decisions on setting insurance premium and payout strategies. Farmers have little choices in hand to cope with the situations when they face disasters. Functioning of climate insurance policies might play good roles in such conditions. Bangladesh could

take lessons from other countries those are successful in implementing climate risk insurance like India. In India, the insurance companies use crop yield loss based climate insurance for the farmers, while many countries adopted weather index based climate insurance. However, undertaking a thorough investigation in this regard is necessary and recommended so that the microcredit borrowers can be protected from disaster impacts and can manage loans efficiently. Reinsurance strategies, exploration of the use of social safety net provisions of the government, green fund options of Bangladesh

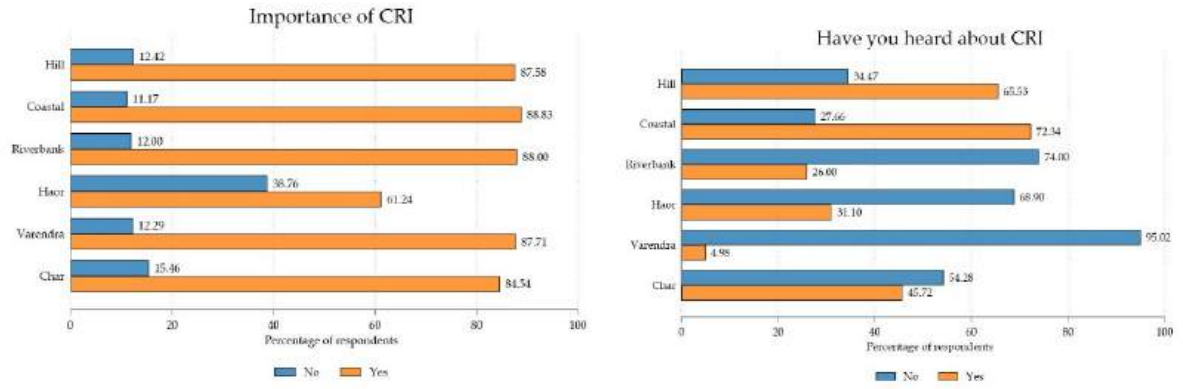


Figure ??: People's response on the importance of climate risk insurance (left), whether they have heard of it (right).

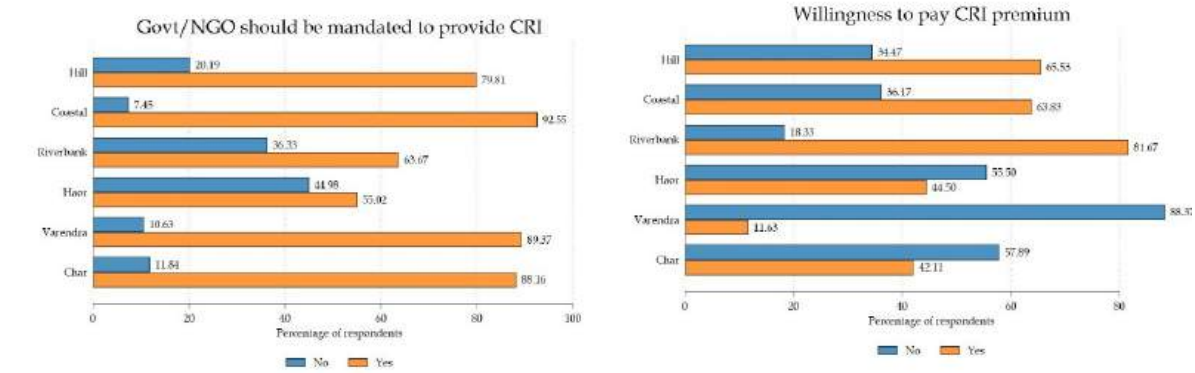


Figure 5.2: People's response about who should pay the insurance premium (left) and willingness to pay of the insurance premium (right).

Bank, Loss and Damage funds of the GCF of World Bank might some potential areas of investigations in this regard. Geospatial applications might play vital roles in introducing climate risk insurance in Bangladesh.

- *Action Plan 12 – MRA should receive GCF accreditation:* MRA should obtain accreditation entity status from GCF of World bank so that the proposals of the MFIs could be submitted to World Bank for funding, especially from Loss and Damage funds. Development in this regard will enable MRA to apply for funding to other funding agencies like Gates Foundation, Wellcome Trust, Horizon and similar other sources aiming to support borrowers and MFIs.

- *Action Plan 13 – MRA should integrate climate-related expenditures with the Climate Fiscal Framework for precise tracking and reporting*: The Bangladesh government has developed several policy documents and established tools to integrate climate change actions and related spending with regular development interventions. Key instruments like the Climate Fiscal Framework (CFF) and the integrated financial management system (iBAS++) provide provisions to track spending on climate change-related actions and mitigate vulnerability. Specifically, national budget codes are assigned to facilitate the use of specific codes during project design to reduce climate change-induced vulnerability. The six theme-based budget codes are as follows: Food security, social protection, and health (Code 01; sub-codes 0101 to 0110); Comprehensive disaster management (Code 02; sub-codes 0201 to 0205); Infrastructure (Code 03; sub-codes 0301 to 0309); Research and knowledge management (Code 04; sub-codes 0401 to 0408); Mitigation and low-carbon development (Code 05; sub-codes 0501 to 0511); Capacity building and institutional strengthening (Code 06; sub-codes 0601 to 0607); Not Climate Relevant (Code 07; sub-code 0701). MRA could adopt the budget codes where relevant so that climate change-related spending can be tracked, monitored, and precisely reported.

5.4 Limitations of the study

The study presents several noteworthy shortcomings. Firstly, it has a limited geographic scope, focusing on only six of the eleven climate hotspots identified in the National

Adaptation Plan (NAP 2023). This selective focus potentially overlooks critical data and insights from the other five regions, which might experience different climate impacts and microfinance challenges. Additionally, the study tends to generalize the impacts of climate change on microfinance utilization across the selected regions. It broadly discusses these impacts without delving into the specific experiences and coping mechanisms of diverse communities within these regions. This lack of granularity can obscure important variations and local nuances. Another limitation is the absence of longitudinal data. Without tracking changes over time, the study struggles to assess long-term trends and the sustained impact of climate change on microfinance systems. Longitudinal data is crucial for understanding how climate change dynamics and microfinance resilience evolve. The study also appears to have an insufficient consideration of non-financial factors. It primarily focuses on financial aspects, potentially neglecting other critical elements such as social dynamics, gender roles, and community resilience. These factors can significantly influence the effectiveness of microfinance initiatives in climate-affected areas. It is important to note that regression analysis would offer valuable insights by quantifying how climate variables impact microfinance outcomes, predicting future risks, and identifying key factors influencing vulnerability and resilience. It could assess the effectiveness of current adaptation measures, inform evidence-based policies, and account for spatial and temporal variability in climate impacts, enhancing understanding and decision-making in climate-resilient microfinance strategies. But regression analysis was not within the scope of this study. This can be done in another efforts.

Lastly, while the study provides comprehensive action plans to address the identified challenges, it may not adequately address the practical implementation challenges. The recommendations do not fully consider the resource constraints and infrastructural limitations that might hinder the execution of these plans, particularly in regions with limited institutional capacity and infrastructure. These practical barriers are crucial for the successful implementation of proposed strategies.

5.5 Conclusions

The microfinance in Bangladesh is operating in a contrasting and argumentative juxtaposition meaning paper works for loan approval and disbursement stand differently

from practical operation of microfinance system in the field. Ground investigations inform that the MFIs are interested mainly to generate their income from interests but claims that they are making contributions in socio-economic improvements of the grassroots communities. MFIs do not examine and justify loan application cases appropriately to approve loans. Even they do not check whether the borrowers have spent the loan amount in the sectors for which they received the loans (e.g., loan spent on medical reasons which was taken for turmeric cultivation) or do not undertake contingent challenges like preexisting disaster threats of the region that may jeopardy and put the whole process at risk. In contrast, the borrowers try to get loans to meet their immediate needs without informing the MFIs the correct purpose of taking loans. The MFIs also do not care whether they have used the money in the areas as declared. This mismatch or transparency vacuum, is a generic challenge of microfinance as a sector in all the climate hot spot areas of Bangladesh. Climate and disaster resilient microfinance systems will never be established in Bangladesh if this gap sustains. However, the 12 Action Plans proposed here might help to evolve microcredit system in Bangladesh climate resilient and support in attaining poverty free, prosperous Bangladesh by 2041.

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Annex - I

Microcredit Regulatory Authority

Survey Questionnaire

July 2023

Assessing the Impacts of Climate Change on Microfinance System in Bangladesh

This survey aims to know the impacts of climate change on your asset base, productive systems and livelihoods security. The survey may take maximum 20 minutes. You have the right to refuse to answer any questions at any time. If you do not wish to answer a question you can leave it blank and move on to the next question. Your participation in the survey is purely voluntary. The answers that you provide in the survey will be anonymous, and your identity will remain confidential. We will start the survey once you give positive consent to participate in the survey process. Thanks.

Do you agree to participate in the survey?

Yes		No	

Name of the respondent		Cell No	

Section 1: Involvement with Microfinance Institutions

666. Are you a member of any MFIs/NGOs or government credit programs?

Yes		No	
Codes for 'Yes'	1=I am the member, 2=other member of the family is/are the members of MFIs/NGOs, 3=There are more than one member from our family		

667. If yes, from how many sources you borrowed money during last one year?

Sources	Number
MFIs/NGOs	
Government sources (Banks or credit programs)	
Others	
Codes for sources of MFIs/NGOs	1=I borrowed from one MFI/NGO, 2= I borrowed from two MFI/NGO, 3= I borrowed from more than two MFI/NGO

666. What are the purposes for taking loans during last one year?

Purposes	Number
Small scale self-employment	
Micro-enterprise development	
Loan for ultra poor (for the purpose of poverty reduction)	
Agricultural loans	
Seasonal loans	
Loans for disaster risk management	
Codes for purpose of taking loans	1=I used the loan for initiating the activity, 2=I used loans to improve the preexisting facilities and functions, 3=I used the loans for major extension of the activities I had been doing.

668. What is the loan repayment status with the MFIs/NGOs?

Status	Multiple response accepted
I never became a loan defaulter	
I repay regularly but sometimes irregularly	
Situations put me in difficult conditions and I became a defaulter	
I take loans from other MFIs/NGOs to repay preexisting loans	
Other (please specify)	

669. What is the use of loans taken from MFIs/NGOs

Status	Multiple response accepted
I used the loan amount for the purpose I took the loan for	
I used a portion for the purpose of loan and the other half in other areas	
I was forced to use the full amount in other different purposes	
Other	

670. How much money did you borrow during last one year from MFIs/NGOs/Government credit sources?

Status	Multiple response accepted
Taka > 10,000	
Taka 10,000 – 20,000	
Taka 20,000 – 50,000	
More than 50,000+	

670. Did the staff members of MFIs/NGOs provide information about the disaster or climate change risks and mitigative options while issuing loans or any times later?

Yes		No	
Codes for 'Yes'	1=Yes I received information booklet and they also advised me about potential risks, 2=I know about the risks but they did not talked on risk issues with me		

671. Do you have any suggestion for MFIs/NGOs to improve the credit systems?

Section II: Climate Change Vulnerabilities and Associate Loss and Damage

A. Socio-demographic information

1. Locality information

Village		District	
Union		Climate hotspot	
Upazlila		Latitude/longitude	

2. Democgraphic information of family

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18
	Name	Age (Years)	Gender	Religion	Education stream	Education status	Schooling	Marital Status	Profession	Profession status	Income (monthly	No. working months	Expenditure (monthly)	Inclusion to SSN	Person with Disability (PWD)	Cell Phone
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																

Code

Gender: 1=Female, 2=Male, 3=Others/Trans, 4= Not want to disclose
Religion: 1=Muslim, 2=Hindu, 3=Buddha, 4=Christian, 5=Others (Please mention)
Education Stream: 1= General, 2=Madrasha, 3=Technical, 4=English Version, 5= English medium 6=Others (Please specify) 7= Not applicable
Education Status: 1= School going, 2= Drop out, 3=Completed, 4= Others (Please mention)
Marital Status: 1= Married, 2= Unmarried, 3=Divorced, 4=Widow, 5=Long-life bachelor, 6=Early marriage, 7=N/A (Under age), 8= Not want to disclose, 9= Others (Please mention)
Profession: (Use occupation code)
Profession status: 1= Formal, 2= Informal, 3= Others (Specify please)

SSN: 1=VGD, 2=VGF, 3=Test Relief (TR) Cash, 4=Gratuitous Relief (Food), 5=Food for work, 6=Freedom Fighter allowance, 7=Govt. Housing (Ashrayan Project), 8=One house on farm, 9=Allowances for the financially insolvent disabled, 10=Widow and distressed allowance, 11=Disabled allowance, 12=Allowances for urban lactating mothers, 13=Block allocation for disaster management, 14= Fund for climate change, 15= Open Market sales (OMS), 16=Fund for assistance to the small farmer and poultry farms, 17=Primary school stipend, 18= School feeding programmes, 19=Secondary education stipend, 20= Women's skill based training for livelihood, 21= Fishermen allowance (at the ban period), 22=Others (Specify)
PWD: 1=Autism, 2=Physical, 3=Psychosocial, 4=Visual Impaired, 5=Speech disability, 6=Intellectual disability, 7=Hearing disability, 8=Hearing-visual disability, 9=Cerebral palsy, 10=Down syndrome, 11=Multiple disability
Cell phone: 1=Have no phone, 2=Button phone, 3=Smart phone, 4=Others (Specify)

2.1 Family identity and different resource information

Ethnicity			Sanitation	Housing

	Energy source	Fuel Source	Nature of toilet	Ownership	Nature of housing	Ownership of housing

Ethnicity Code: 1= Bengali, 2=Munda, 3=Santal, 4=Bagdi, 5=Rakhain, 6=Monipuri, 7=Khasia, 8=Garo, 9=Oraon, 10=Rajbongshi, 11=Chakma, 12= Marma, 13=Tanchanga, 14= Mro/Murong, 15=Khumi, 16=Tripura/Tipra, 17=Lusai, 18= Khyang, 19=Pankho, 20=Khumi, 21= Kuki, 22=Chak, 23=Others (Please mention)
Energy code: Electricity, 2=Solar Energy, 3=Kerosin, 4= Others (Please mention)
Fuel code: 1-LPG, 2=LNG, 3=Wood, 4=Cow dung, 5=Dry-leaves, 6= Others (Please mention)
Toilet nature: 1=Open defecation, 2=Kaccha open, 3= Kaccha Hygienic, 4=Pacca unhygienic, 5=Pacca Hyginic, 6= Others (Specify)
Toilet ownership: 1=Own, 1=Shared, 3=Community, 4=Govt., 5=NGO, 6=N/A, 7= Others (Specify)
Housing Nature:1= RCC Bric, 2=Tinshed Pacca, 3=Wood and Tin, 4=Kacha, 5= Others (Specify)
Housing Ownership: 1= Own, 2= Shared, 3=By inheritance, not own, 4=Rental, 5=Govt., 6=Govt. but now own, 7=Others (Specify)

2.2: Water resource and uses of family

Drinking Water (use code)					Cooking and daily use (use code)			
Water source	Ownership	Distance from house (KM)	Taking time (minutes) to pick (Home-source-home)	Monthly Expenditure (If purchase)	Water source	Ownership	Distance from house (KM)	Taking time (minutes) to pick

Code
Water source: 1=STW, 2=DTW, 3=Rain water, 4=Rainwater harvesting, 5=Ring well, 6=Dig-well, 7=Water treatment plant, 8=PSF, 9= Pond/River water, 10=Pond/River water using purification tablet, 11= Beel, 12=Hilly fountain, 13= purchase, 14=Others (Specify)
Ownership: 1=Own, 1=Shared, 3=Community, 4=Natural resource., 5=Local people, 6=N/A, 7= Others (Specify)

3. What sector of the economy do you work in? (Multiple answers/codes acceptable)

Main occupation=	Second occupation=	Third occupation=

Economy/ Occupation code	1=Agriculture(own land), 2=Share cropper, 3=Agri labour, 4=Fish farmer, 5=Shrimp hatchery, 6=Crab hatchery, 7=Fry shrimp collection, 8=Fishing in natural resource, 9=Fish business, 10=Petty business, 11=Poultry farm, 12= Dairy/Livestock rearing/farm, 13=Dairy/poultry shop, 14=Honey collection, 15=Fuel wood collection, 16=*Golpata,* Bamboo, wood collection, 17=Crab collection, 18=Boat/trawler man, 19=Small home-based industry, 20=Rickshaw/Van puller, 21=Motor driver, 22=Motor helper, 23=Service(Govt.), 24=Service (Non-government), 25=Teaching, 26=Remittance, 27= Tailoring/garments, 28=Jhum Cultivation, 29= Tourism business (Motel/tours), 30 Tourist guide, 31=Day labour, 32=Mineral resource (Stone, coil, lime) collection, 33=Seasonal business, 34=Hawker, 35=Professional photography, 36= Govt. Safety-net, (Mention please), 37 =Vegetable oil extraction, 38=Others (Mention please)

B. Loss and Damage

4. Please provide the details of your sources of income. (Multiple answers acceptable)

	Item	**Amount (Kg/No.)**	**Income (monthly BDT) (If selling the product)**	**Expenditure savings (monthly BDT) if consume**
1	Agriculture (own land)			
2	Share cropper			
3	Agri labour			
4	Fish farmer			
5	Shrimp hatchery			
6	Crab hatchery			
7	Fry shrimp collection			
8	Fishing in natural resource			
9	Fish business			
10	Petty business			
11	Poultry farm			
12	Dairy/livestock rearing/farm			
13	Dairy/poultry shop			
14	Honey collection			
15	Fuel wood collection			
16	Goalpata/bamboo/wood collection			
17	Crab collection			
18	Boat/trawler man			
19	Small home-based industry			
20	Rickshaw/Van puller			
21	Motor driver			
22	Motor helper			
23	Service (Govt)			
24	Service(Non-govt.)			
25	Teaching			
26	Remittance			
27	Tailoring/garments			
28	Jhum cultivation			
29	Tourism business (Motel/tours)			
30	Tourist guide			
31	Day labour			
32	Mineral resource (Stone, coil, lime) collection,			
33	Seasonal business			
34	Hawker			
35	Professional Photography			
36	Govt. safety net (Please mention)			
37	Others (Please mention)			

5. Name of the natural hazard(s) you faced in your locality

Name of hazard/disaster	Year	Sectors impacted	Loss in taka	Recovery time (Year)	Thought to avoid the impact

6. Have you experienced any losses or damages to your assets (infrastructure, crops, aquaculture/poultry/livestock, etc.) in the past due to natural hazards, climate and natural resource injustice (considering the last hazard)?

Yes		No	

6.1. If yes, give the detail of the loss and damage involved in the following items impacted by hazards, climate and natural resource injustice. (Multiple answers acceptable)

Item	**Direct yearly loss and damage in BDT**	**Indirect yearly loss and damage (BDT)**	**Preventive measures**	**Who bears the cost?**
Infrastructure -Damage in house				
Sanitation				
Water source				
Wages loss due to natural hazard				
Working hour loss due to exposure of extreme heat/cyclone/heavy rain and other hazard events				
Income loss due to deforestation				
Income loss due to biodiversity loss (i.e-habitat loss, over exploitation etc)				
Income loss due to reduced access to natural resources (e.g., land, water, forest)				
Loss of/from livestock				
Loss of/from poultry				
Loss of infrastructure				
Loss of/from agriculture				
Loss of/from fishing/aquaculture				
Income loss due to crop loss				
Loss/expenditure increases due to loss of natural cattle food				
Loss/expenditure increases due to drinking water scarcity				
Loss/expenditure increased due to loss of homestead vegetation and fruit trees				
Needs house repairing due to the impacts of natural hazards				
Expenditure incurred due to the increase of height of water level				
Conflict of using common pool of natural resource				
GBV (cc induced) based loss				
CC induced health hazard				
Loss of service related occupation				
Land loss				
Change of waterbodies/surface water/ground water pollution				

Others (specify)				

C. Climate action: (Mitigation and Adaptation)

7. Have you received any relief/compensation/support from the government or other organizations for the losses or damages you experienced that you mentioned above due to natural disasters/climate injustice/the denial of natural resource rights

Yes		No	

7.1: If yes, please mention information about received relief in the last hazard

Sl no	Name of relief/safety-net assistance	Origin of disaster/hazard (Code)	Provider (Code)	Amount	Adequacy considering damage or need (Code)
1	Direct cash support				
2	Food assistance (Rice, Dal, flour, Soyabin oil, salt, onion etc)				
3	Baby food (Power milk, sugar, Suzi)				
4	Cloths				
5	Sanitary Napkin				
6	Hygiene kit				
7	Others (please mention)				
Codes	**Origin of disaster/hazards:** 1= Natural disaster/Climate change related hazard/disaster, 2= Violation of natural resource rights due to govt. rules, 3=Violation of natural resource rights due to govt. mega project, 4= Violation of natural resource rights due to man-made intervention, 5= Others (Please mention). **Provider Code:** 1=Govt, 2=NGO, 3=Private organization, 4=Personal/Social worker, 5=Others (Please mention) **Adequacy:** 1= Surplus, 2= Adequate as need, 3=Half of the need, 4=Quarter of the need, 5=Inadequate,, 6= others (Please mention)				

8. Have you ever faced any challenges or obstacles in getting/claiming relief/compensation/ support for losses or damages due to natural disasters/climate injustice/denial of your natural resource rights?

Yes		No	

8.1 If yes, please mention the causes:

No	Sector	Causes
1	Social	
2	Physical	
3	Administrative	

9. Have you taken any steps by yourself to prepare for or mitigate the impact of natural hazards/climate injustice/natural resource rights violation on your assets or livelihood?

Yes		No	

9.1. If yes, what kind of steps you usually take to prepare or mitigate such impacts to save your assets or livelihoods.

Mitigative steps	Processes and outcomes
1. plinth height increase	

2. Tie the house with rope	
3. Store dry foods	
4. Others (Specify)	

Sub-section: Climate Insurance and Climate Credit

22. In case of any disaster, from where do you avail financial support?

a. Institutional sources (Government Assistance (relief)	b. Banks	c. Microfinance	d. Insurance	e. NGO assistance
f. Non-institutional sources (Family loans Loans from neighbour Mahajan/dadan Input sellers Selling asset)				

23. Do you have any idea of Insurance?

Yes		No	

23.1 If yes, at what degree the insurance is essential for human life?

Very essential	Essential	Moderate	Less essential	Very less essential	Not essential at all

23.2 Have you enrolled under any insurance mechanism?
(Code: 1. Life insurance, 2. Motor insurance, 3. Asset insurance, 4. Fire Insurance, 5. Others.)

24. Have you heard about the insurance related to climate risk?

Yes		No	

24.1 Would you be willing to pay for climate insurance to reduce or recover your personal/household damage (e.g., houses, household assets, livestock, agricultural crops etc.)?

Yes		No	

24.2 If yes, what would be the yearly premium that you can afford? …… (BDT)

25. Do you think, the common and social property (eg., infrastructure, social institutions, natural resources) should be under insurance policy?

Yes		No	

26. Do you think that the government and MFI/NGOs should play a role in providing or mandating climate insurance for individual and common property?

Yes		No	

27. Do you think Government, MFIs and NGOs should provide climate credit with a zero or minimum interest rate?

Yes		No	

28. Narrate your idea about the effects of burning fossil fuel, using wood, leaves for cooking and use of solar energy?

S.N	**Items**	**Effect on Environment**
1	Kerosene	
2	Petrol	
3	Octene	
4	Fuel wood	
5	leaves	
6	Solar panel	
7	Others	

Sub Section: Gender, Accessibility, VAWC and discrimination

29.Gender dynamics in access to information and opportunity

Sl no	Issues	Having opportunities	
		Male	Female
1	Access to information		
2	Decision making in HH matter		
3	Source of warning messages		
4	Participation in disaster recovery plan and process		
5	Evacuation decision		
6			

Opportunity code: 1=Sufficient opportunity, 2=Partial opportunities, 3=Rarely/occasionally, 4=No opportunity.

30. Is there any violence incident against women and children in your family or area? (Please √)

	Family	Area
Yes		

	Family	Area
No		

If you have been a victim of any types of violence in the past 12 months, please provide information. (Only for female respondents)

S.N	Type of faced violence	Main accused	Causes/reason	**Place of violence**	**How to reduce it**

Codes	**Types of violence:** 1= Physical, 2- Sexual, 3=Emotional/mental, 4=Economical, 5=N/A **Main accused:** 1=Intimate partner, 2=Family member, 3=Relatives, 4=Neighbor, 5=Terrorist/anti-social persons, 6=Unidentified person. 7= Others (Please mention) **Causes**: 1=Not serve the meal on time, 2= Water shortage due to access issues to safe water sources, 3= Due to health reasons, 4= Not receiving good catch due to lack of access to fish resources, 5= Access to credit issues, 6= For not having income of accused, 6= Due to mentally disturbances because of losing natural resource rights, 7=Income reduced of accused, 8= Dowry 9= I was alone, no man was by my side., 10= Others (Please mention) **Place of violence:** 1= In house, 2=Outside the house, 3=On the way of workplace, 4=Natural resource collecting spot, 5= Flood shelter, 6=Temporary shelter due to disaster. **Reduce code:** 1= Taking safe shelter, 2= Give proper access to forest resources (e.g., wood, honey, leaves), 3= Opportunities to join labour force and earn wages, 4= Safe evacuation from the scene, 5=Securing law and order, 6= Opportunities to join labour force and earn wages. 7= Others (Please mention)

31. How is the trends of violence against women and children (VAWC) in your area in the last one year?

Trend	Types of existed VAWC (Multiple answer)	Causes (Multiple answer)

Codes	**Trend:** 1= Existed and no change, 2= Increasing, 3= Decreasing, 4= It was less before and still less, 5= Others (please mention).

	Types of existed VAWC: 1= Physical, 2- Sexual, 3=Emotional/mental, 4=Economical, 5=N/A **Causes**: 1=Not serve the meal on time, 2= Water shortage due to access issues to safe water sources, 3= Due to health reasons, 4= Not receiving good catch due to lack of access to fish resources, 5= Access to credit issues, 6= For not having income of accused, 6= Due to mentally disturbances because of losing natural resource rights, 7=Income reduced of accused, 8= Dowry 9= Others (Please mention)

E. Energy transition

32. Do you have electricity connection at your home/business/other structure?

Yes		No	

33. Do you need power supply in your agriculture production?

Yes		No	

33.1 If yes, Do you know what are the source of your electricity/power?

Yes		No	

33.2 If yes, what are they?

34. Do you know the difference between fossil-fuel and renewable energy-based power?

Yes		No	

34.1 If yes, could you tell us which one is good for our environment?

1. Fossil fuel		2. Renewable energy based power	

34.2 Why do you think that one is good for our environment?
Ans.

35. Do you see any scope of renewable energy use in your household?

Yes		No	

36.1 If yes, which one?

1. Solar energy	
2. Wind energy	
3. Others (specify)	

37. Do you want to use renewable energy-based power/energy in your business/production?

Yes		No	

37.1 If yes, which one is your preference?
37.2 If no, why not?

Thank you so much for your valuable time and cooperation

Annex - II

Microcredit Regulatory Authority

FGD and KII Checklists and Guidelines

July 2023

Assessing the Impacts of Climate Change on Microfinance System in Bangladesh

This survey aims to know the impacts of climate change on your asset base, productive systems and livelihoods security. The survey may take maximum 20 minutes. You have the right to refuse to answer any questions at any time. If you do not wish to answer a question you can leave it blank and move on to the next question. Your participation in the survey is purely voluntary. The answers that you provide in the survey will be anonymous, and your identity will remain confidential. We will start the survey once you give positive consent to participate in the survey process. Thanks.

A. Socio-demographic information

1. Locality information

Venue		Village	
Union		District	
Upazlila		Climate hotspot	
Start Time		End Time	
Date			

2. Personal information of the respondents

SL	Name	Age	Occupation 1	Occupation 2	Occupation 3
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

B. Loss and damage by hazards, climate and natural resource injustice,

- Factors that influence in loss and damage at individual and community level and that are associated to the loans received from different MFIs/NGOs?
- Direct and indirect income loss and how was that contributed in weakening the resilience of the community that finally make the communities loan defaulters?
- List of loss and damage by sector for overall community.
- How loss and damage impacted men, women, youth and older adults differently?

- Did the community knew about the threats relating to loss and damage and protective strategies from the MFIs so that communities can give safeguards to their asset based and the progress gained? What are the major challenges in this regard for the communities and MFI? What recommendations can be made?

C. Climate action (mitigation and adaptation), gender dynamics, climate finance

- Relief/compensation/support from the government or other organizations and the challenges to receive such support in the face of natural disasters/climate change induced hazards?
- Individual initiatives/activities of marginal people as adaptation and mitigation? Any climate change induced displacements and migration happened? Description of displacement, stages/time, challenges, supports needed in this regard?
- Degree of participation of vulnerable people in decision making processes relating to reduce climate change induced vulnerabilities.
- Actions/Response from government, MFIs and NGOs as adaptation and mitigation towards making the microcredit systems climate resilient.
- Distribution of climate finance (who receives and who are not - fairness, equality, inclusion of vulnerable/victim in distribution); Who involved in the distribution and management (locally decision are made on loan sanctioning/disbursement or involvement of head office needed, the scope for sustaining the purpose for which loans are received)?
- Performance rating of field offices of MFIs/NGOs and their associations with disaster impacts?
- The criteria of disaster management/climate fund distribution and management (e.g., Gender, status, class, need, merit, rights, social identity, religion, culture).
- How effective of microfinance distribution and management in climate hotspots?
- Awareness of vulnerable marginal people in the face of natural disasters/climate change?
- The past and current exemplary activities related to DRR and CCA those contributed in providing safeguards to the activities of the microcredit borrowers.
- Violence against women, child and marginalized group related to climate and disaster impacts. (e.g., types; who basically involved; impact; how to reduce such violence)
- Suggestions or recommendations towards developing a climate resilient microcredit systems in Bangladesh?
- Ask about the idea about insurance in general; climate credit; awareness about climate risk finance/insurance; who provide; what are the mechanism; fairness and transparency of climate risk insurance; how effective it is/it would be.

D. Just Energy Transition as Mitigation Options

- Energy use (electricity, fossil burning (wood, kerosine, diesel, octan, solar)
- Awareness about fossil fuel consumption; awareness about the damage made by burning wood, leaves and other materials as cooking purpose; use of solar energy.

- Difference between fossil-fuel and renewable energy-based power; which one is better for environment.
- Potential and obstacle of renewable energy use in your household/business/production
- Preference to use renewable energy-based power/energy in your household /business/ production.

Thank you so much for your valuable time and cooperation