

Accommodating Migration in Climate Change Adaptation

A GBM Delta Bangladesh Perspective

A photograph showing the silhouettes of three people on a red boat, likely a fishing vessel, against a sunset sky. The person on the left is standing and holding a rope. The person in the middle is bent over, handling a large pile of ropes. The person on the right is standing and looking out towards the horizon. The sky is filled with soft, colorful clouds, and the water reflects the light from the setting sun.

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Acronyms

BBS	Bangladesh Bureau of Statistics
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BIDS	Bangladesh Institute of Development Studies
BUET	Bangladesh University of Engineering and Technology
CARIAA	Collaborative Adaptation Research Initiative in Africa and Asia
CDMP	Comprehensive Disaster Management Programme
CEGIS	Center for Environmental and Geographic Information Services
DC	Deputy Commissioner
DECCMA	DEltas, vulnerability and Climate Change: Migration and Adaptation
DFID	Department for International Development
EA	Enumeration area
GBM	Ganges-Brahmaputra-Meghna
HH	Household
HHH	Household Head
IWFM	Institute of Water and Flood Management
IDRC	International Development Research Centre
INGO	International Non-Government Organisation
IPCC	Intergovernmental Panel on Climate Change
JJS	Jagrata Juba Shangha
NAPA	National Adaptation Programmes of Action
NGO	Non-Government Organisation

NSMDCIID	National Strategy on the Management of Disaster and Climate Induced Internal Displacement
RMMRU	Refugee and Migratory Movements Research Unit
SANEM	South Asian Network for Economic Modelling
SCMR	Susses Centre for Migration Research
SOD	Standing Order on Disaster
SPARRSO	Space Research and Remote Sensing Organization- Bangladesh
SPSS	Statistical Package for the Social Science
Sq.ft	Square feet
UNDP	United Nations Development Programme
UP	<i>Union Parishad</i>
WARPO	Water Resources Planning Organization

Foreword

I am pleased to write this foreword to the publication *Accommodating Migration in Climate Change Adaptation: A GBM Delta Bangladesh Perspective* prepared by the team of Refugee and Migratory Movements Research Unit (RMMRU), University of Dhaka. This book is part of a five-year multi-country inter-disciplinary research project entitled DELtas, vulnerabilities and Climate Change: Migration and Adaptation (DEECMA) under the research programme Collaborative Adaption Research Initiative in Africa and Asia (CARIAA) jointly funded by IDRC and UK Aid, where the Institute of Water and Flood Management (IWFM), Bangladesh University of Engineering and Technology (BUET) is leading the Bangladesh consortium.

Bangladesh is predominantly a floodplain country where water is key to socio-economic development and sustainability of the eco-system. The Institute of Flood Control and Drainage Research was established in 1974 and later renamed as the Institute of Water and Flood Management (IWFM) in 2002 to conduct original research, innovate advanced technology and enhance capacity to deal with flood and water management. For quite some times IWFM is working on environmental degradation and climate change. It is partner of many global research projects such as 'ESPA Deltas' in Eco-system Services for Poverty Alleviation (ESPA) programme, 'Research on Disaster Mitigation against Floods and Storm Surges in Bangladesh' under Science and Technology Research Partnership for Sustainable Development (SATREPS) programme, along with DECCMA under CARIAA programme. University of Southampton, UK is leading the DECCMA consortium and other lead partners are the University of Ghana and Jadavpur University, India. In this inter-disciplinary research, the local collaborating partners are BIDS, CEGIS, SANEM, SPARRSO, WARPO, JJS and RMMRU.

DECCMA project had six work packages with multiple outputs. Receiving and sending area surveys on Climate Change Adaptation and Migration is one of the important research components of a work package. RMMRU led the execution of Bangladesh part of the surveys. Both the origin and destination area surveys are unique endeavours as those followed identical

methodology and pursued same research questions (developed by the entire DECCMA team) in all four deltas where the surveys took place. This book, *Accommodating Migration in Climate Change Adaptation: A GBM Delta Bangladesh Perspective* is prepared by RMMRU on the basis of basic data captured from the origin area survey in Bangladesh.

On behalf of the IWMF, we would like to thank Dr. Tasneem Siddiqui and her team for their efforts in preparing this important document. We hope this research will support the Government of Bangladesh to devise evidence-based policies and strategies to minimize the negative outcome of climate change on life and livelihood of coastal population and help the affected households to be benefitted from the planned interventions to adapt with the climate change in Bangladesh. We further hope that this publication will not only serve as reference for interested readers and practitioners in Bangladesh, it will also serve as basic information for global researchers to continue future research work in the field of climate change adaptation .

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November 10, 2018

Preface

The mainstream climate change literature in Bangladesh has generally treated migration with fear. Through initiation of national and sectoral policies and community level adaptation programmes successive governments of Bangladesh, civil society bodies and development partners have focused on creating local level opportunities for adaptation and reducing the scope of migration of the affected people. They mostly treated migration as a consequence of failure to adapt. Since 2011, once IPCC expressed its interest in understanding the link between climate change and migration, different studies have been conducted on this issue at the global level. The government of Bangladesh would also like to see relationship between the migration and climate change, to further sharpen its adaptation measures.

In 2014, a 5-year multi-country research has been initiated by the University of Southampton, Institute of Water and Flood Management (IWFM) of Bangladesh University of Engineering and Technology (BUET), Jadavpur University and University of Ghana. The aim of this initiative is to conduct applied research on the adaptation options, limits and potential in deltaic environments to current weather variability and extremes, as well as climate change. The study is conducted in four deltas. These are the Ganges-Brahmaputra-Meghna delta of Bangladesh, Ganges-Brahmaputra delta of India, Mahanadi delta of India and Volta delta of Ghana. The research is supported by the UK Government's Department for International Development (DFID) and the International Development Research Centre (IDRC), Canada.

Among many other activities pursued under this collaborative research a survey has been conducted in all four deltas following same research questions and methodology. This survey particularly focused on the issues of impacts of climate change and other environmental drivers on migration and autonomous adaptation. RMMRU as co-partner of IWFM has been in charge of operationalising the survey in Bangladesh. This book has come out of the findings of the survey. The survey covered fifty very high, high, medium, low and very low climate hotspots of forty-one *pazilas* of fourteen districts of Bangladesh.

We are deeply grateful to IWFM for providing us with the opportunity to participate in such an important research. We are especially indebted to Principal Investigator of Bangladesh team, Prof. Md. Munsur Rahman for steering the challenging research with deft. We received both intellectual and administrative support from Prof. Mashfiquis Salehin and Prof. Rezaur Rahman since the inception of the research. We also secured great support from Prof. Anisul Haque in developing the hazard map. Our heartiest thanks to the BUET team for their continuous inspiration and support. Prof. Robert Nicholls has created a rare opportunity of intellectual interaction among the scholars of the North and the South through holding rigorous meetings and workshops biannually. We thank Prof. Robert Nicholls and his team of the University of Southampton.

It has indeed been a great honour to work with Prof. Neil Adger. He along with Prof. Samuel Nii Ardey Codjoe led the migration research group. Under their leadership all country team members have jointly designed the research, framed the questionnaire, and charted a common methodology. Our deep gratitude to Prof. Neil Adger and Samuel Nii Ardey Codjoe I thank both of them for their deep commitment and effort. Dr. Fiifi Amoako Johnson led the challenging process of developing a common survey household listing framework and gave his utmost effort in maintaining the representativeness of data. We thank him as well. On behalf of the Southampton team, Dr. Attila Lazar was our main contact point for developing the common data server. Members of RMMRU drew on his skills a lot. He showed great patience in fixing all the problems that we encountered and developed an effective data management system where the data that our field enumerators generated directly went into the server. Our deep appreciation goes to Dr. Lazar, Dr. Ricardo Safra de Campos, Dr. Colette Mortreux and Dr. Helen Adams, Dr. Tuhin Ghosh, Dr. Sugata Hazra, Mr. Shouvik Das, Dr. Adelina Mensah and Dr. Mumuni Abu who participated in different stages of research design and implementation. Dr. Ricardo Safra de Campos was ever accommodating to our queries and concerns. RMMRU team has deeply benefited from the knowledge sharing exercise that Dr. Emma Tompkins initiated through regular coordination meeting of adaptation group. We thank her for that.

It has been a great delight to work with Dr. Anwara Begum and Dr. Nabiul Islam of Bangladesh Institute of Development Studies (BIDS). They commented on questionnaire, participated in training of the enumerators, more importantly developed population projection which was used by the BUET team in identifying hazard areas. The Center for Environmental and

Geographic Information Services (CEGIS) is an important partner of this research group. Members of CEGIS prepared maps of enumeration areas under the survey. We are grateful to CEGIS and particularly Mr. Mohammad Shahidul Islam and Dr. Dilruba Ahmed. Jagrata Juba Shangha (JJS) was the local partner in Khulna region. They identified the research area, convinced the local people to participate in the survey. Before embarking on field work RMMRU communicated with local Deputy Commissioner and police authorities, local UP chairman and members. We acknowledge their contribution in making our field work safe.

Thirty-one enumerators including five supervisors worked on this project. Without their hard work we could not have generated information that we used in this book. Conducting survey through tablet was a challenging task for all of them. Yet, they have done an excellent job. Through photography they also helped us by capturing moments of lives of respondents, their children, their conditions of work and living. We acknowledge their contribution. We are deeply indebted to the households of all the areas who agreed to give us interviews. The questionnaire was complicated but they responded with patience. We also thank the migrants from Bhola working in Chattogram whose photo has been used in the cover of the book. We must thank Md. Anisur Rahman Majumdar, coordinator of DECCMA, Bangladesh team for continuously looking after the financial and other needs of the survey. Our thanks also go to the anonymous reviewer for his insightful comments.

RMMRU is indebted to Exeter University and its DECCMA research team for providing financial support to publish and distribute the book. Without their prompt and quick support, it would have been difficult to bring out the book within the timeframe of DECCMA project.

Finally, we would like to express our deep appreciation to the Dr. Michele Leone of IDRC for supporting this research. A special thanks to Dr. Michele Leone who expressed his wish to receive the first signed copy of the book. He has been a continuous source of inspiration to us. His perceptive comments guided us to look into important dimensions of the study.

Tasneem Siddiqui
January 2019

CHAPTER I

INTRODUCTION

This book attempts to understand the link between migration and climate change in Ganga-Brahmaputra-Meghna (GBM) delta of Bangladesh. It aims to empirically study to what extent climate change is inducing migration in the country. More explicitly it tries to understand if the influence of climate change on migration decision of individual households or communities can be differentiated from other types of influences that drive migration. The other equally important aim of this book is to explore if livelihood migration of one or a few members have the potential to increase the adaptive capacity of the affected households.

Bangladesh is a deltaic country of South Asia which is in the forefront of the list of countries that are adversely affected by climate change. During the initial years of independence, Bangladesh was referred to as a ‘test case’ of development. Over the years through the hard work of its people, Bangladesh has experienced significant economic and social progress. By 2015 it has achieved lower-middle income country status (World Bank, 2015). The 7th Five Year Plan of Bangladesh targets to ensure the transition of the country to a high-middle income country by 2021. However, Global climate change can compromise Bangladesh’s hard earned economic and social gains.

Sea level rise, flood, drought, cyclone, storm surge, saline intrusion in coastal farmlands, water logging, river and coastal erosion are some of the major environmental challenges that Bangladesh face due to global climate change. Considering the climatic characteristics of the country the assessment report of the *International Strategy for Disaster Risk Reduction* placed Bangladesh first with regard to vulnerability to floods; third with respect to Tsunami; and sixth with respect to cyclone in the list of the countries vulnerable to natural disasters (Ali, 2010).

Over the years the successive governments of Bangladesh have undertaken a series of sectoral policy, action plans and programmes to reduce vulnerabilities to climate change. Important, among them, are National Conservation Strategy (NCS), National Environment Action Plan (NEMAP), National Adaptation Programme of Action (2005), the Bangladesh Climate Change Strategy and Action Plan (BCCSAP, 2009) and National Disaster Management Policy (2015). Although these policies and programmes are important interventions in respect to reducing risks of climate change, these documents have hardly analysed link between climate change and migration. More importantly mainstream policies treated migration as a threat. It is only recently that studies are being conducted which attempts to understand the extent of climate change related migration and its impact on the national economy. Still there remains a large gap in knowledge on this area. This book aims to fill this gap.

The policymakers of Bangladesh are interested to know what would be the extent of climate induced migration. It is a major challenge to migration researchers to counter the popular notion that conceives migration as the sole outcome of climate change. It is well established in migration research that migration is multi-causal (Castles and Miller, 1998; Foresight, 2011). Therefore how is it possible to differentiate migration induced by climate change from migration induced through a combination of other variables such as social, economic, political or demographic forces; presence and/or absence of network; as well as the characteristics of individuals and their households? Another puzzle related to this is given similar climatic stresses why do some people move and some others do not? Are there any barriers to migration of those who are affected by climate change? It is also pertinent to know whether all types of migration flows could be equally affected by climate change or some flows have more direct correlation compared to others.

The second objective of the research is to understand whether migration can be used as an adaptation tool in the context of climate change which has unveiled new set of questions. Do all types of migration contribute to adaptation or some of them create conditions of mal-adaptation? Do demographic or economic characteristics of the households play any role in determining whether migration will increase the adaptive capacity or not? Does migration of a few members of the households ensure better adaptation of the family in origin at the cost of human insecurity of those who migrate? In other words, do migrants compromise their subjective

wellbeing to attain certain material wellbeing for their families? Does adaptation outcome vary on the basis of gender?

1.1 Literature Review and Conceptual Issues

Two strands of debate currently dominate the migration and climate change discourse. The first one is environmental determinism versus multi-causality. The other strand is migration as one of the adaptation tools versus migration as the failure of local level adaptation. In the following a review of literature is provided on drivers of migration and adaptation and the state of wellbeing in the context of climate change.

Drivers of Migration: Environmental Determinism versus Multi-causality

In this study migration is defined as the process by which an individual, household, group and/or community leaves their usual place of residence for another location voluntarily or involuntarily in order to be nearer to opportunities, resources or people within or beyond their national boundaries. Migration is triggered by a change in the relative attractiveness, be it real or perceived, of the usual place of residence with respect to the destination. Migrants may stay back permanently in the destination area or return after a period of time; circulate between locations; reside in two or more locations or keep moving in an itinerant manner (DECCMA, 2015).

Perhaps the most controversial issue in the global climate change literature is migration. In climate change discourse migration was treated as a threat during the 1990s and early 2000s. Studies conducted during this period perceived climate change as an independent variable driving migration from ecologically vulnerable areas. People who moved from their own places to other destinations were termed as a new group of forced migrants or environmental refugees. However, subsequent studies underscored that migration is a complex and multi-causal phenomenon. Along with the influence of climate change, migratory behaviour is also shaped by other macro issues such as social, political, economic and demographic influences. Micro-level realities like household characteristics and meso-level facilitating or intervening factors play a role in inducing or restricting migration of individuals, households, and/or communities (Foresight, 2011).

Kniveton *et al* (2009) demonstrate that the relationship between migration and climate change is not linear as it affects different groups of people

in diverse ways. A particular environmental event may increase migration in one context while the same event in another context or at a different time can decrease migration. For instance, the deterioration of rainfall in sub-Saharan Africa increased rural to urban migration (Kniveton, 2008) whereas the drought-affected people of Mali could not migrate to cities for their inability to finance it (Foresight, 2011). Arongo (2004), Massey *et al.* (1998) and others have shown that push-pull factors along with intervening variables operate at the level of human agency and create conditions that led some to migrate and restrict migration of others. Martin *et al.* (2014) further elaborate push-pull and intermediary determinants of migration and argued that each have economic, social, political, demographic and environmental influences. In other words, environment is one of the many stimuli that work within push-pull and intermediary factors. For such complexity Foresight (2011) uses 'migration influenced by environmental change' instead of using the term 'environmental migrants'. The Foresight report highlights that environmental change would influence different drivers of migration and thus play a pivotal role in effecting migration as well as trapping a section of poor people in vulnerable areas.

Considering the climatic characteristics of Bangladesh and the trend of exacerbation of climate related hazards in coming years, Martin *et al.* (2013) inform that the volume of certain types of population movements are likely to increase in Bangladesh. It is important to note that all types of population movements are not equally sensitive to climate change. The findings of sensitivity test conducted by RMMRU and SCMR (Sussex Centre for Migration Research) in 2014 reveal that both internal displacement and internal rural to urban livelihood migration are highly sensitive to climate change; cross border population movement and short term international contract migration has mixed sensitivity to climate change; and long term permanent migration to the West has extreme low sensitivity.

On climate hazard related displacement some estimates have already begun to surface. Global estimate of Brown (2008) suggests that by 2050 one in every 45 people of the world will be displaced by climate change and in case of Bangladesh one in every seven people will be displaced. The Internal Displacement Monitoring Centre (IDMC) estimates that more than 4.7 million people were displaced due to disasters in Bangladesh from 2008 to 2014 (IDMC 2015). A UNDP (2013) study identifies that population growth in environmentally fragile areas, especially in the coastal regions, experienced low population growth over the last two decades compared to national average. Again a RMMRU and SCMR study (2014) on the basis

of historical analysis of Bangladesh *paz ila*¹ level census data of 2001 and 2011, predictions of global climate models and World Bank studies of 2010 and 2011 estimates that as many as 16 to 26 million Bangladeshis will migrate from places of origin which experience floods, storm surges, riverbank erosion and sea level rise in the period 2011 to 2050. Of this 2 to 5 million will migrate from riverbank erosion affected areas, 3 to 6 million from areas where inland flooding is higher, 5 to 7 million from the areas of coastal storm surges and 6 to 8 million from areas which are facing sea level rise. Nonetheless, what portion of these migration experiences are linked directly linked with climate change events and what portion is for other reasons, cannot be differentiated. The study can only say propensity of migration is much higher in those *paz ilas* which experience different climate hazards, compared to those who do not.

Comprehensive Disaster Management Programme (CDMP II) of the Bangladesh Government conducted a nationally representative baseline survey in 2014 to assess the magnitude and patterns of climate induced displacement in Bangladesh. It looked into four types of environmental hazards: flood, riverbank erosion, salinity and water logging. It found that 12 percent of the population was permanently displaced due to climate change, 46 percent of the population experienced temporary displacement, while another 29 percent move back and forth between temporary and permanent displacement. Only 13 percent of the households had never experienced any form of displacement. In other words, more than 85 percent of the survey population in environmentally fragile areas had experienced some form of displacement.

Abrar and Azad (2003) show that those who are initially displaced do try to resettle themselves in nearby areas and if they fail, only then they migrate to nearby districts and later on, gradually to mega-cities like Dhaka and Chattogram. Siddiqui *et. al.* (2017) find that the majority of people of Lakshmipur, Patuakhali and Bagerhat who were displaced by either riverbank or coastal erosion have resettled themselves by the side of the embankments while a section of them have moved to different urban locations. Health, hygiene and sanitation facilities in both embankments and urban slums are extremely poor. Young and adolescent girls and children are particularly vulnerable to different forms of harassment. In all these areas government has developed some resettlement sites such as *Ashrayon*

1 *Upazila* is the second last tier of administrative boundary in Bangladesh.

and *Ga hhogram*². In the resettlement sites the living arrangement is much better compared to that of the embankment. Security concerns are also less for the family members. A major problem of these resettlement sites is the residents' access to work. This has led to situations in which those resettled had sold their allocated land and moved to locations close to their work (Siddiqui *et. al.*, 2017). In September 2015 the Ministry of Disaster Management drafted a national strategy on the management of disaster and climate induced displacement. The draft is a rights-based document and it tries to ensure protection of the displacees at all the stages. It consists of four strategic responses: prevention, preparation, management and address. Prevention is aimed at reducing displacement by undertaking all kinds of infrastructure development interventions. There will be situations where people will have to relocate themselves. Preparation informs people of likelihood of relocation, and steps required for doing so. Management entails the activities that governments and civil society need to undertake to help those on the move during displacement. Address, the last component, refers to durable solutions such as return, local integration and resettlement of those who have already moved. The document was prepared under CDMPII of the Ministry of Disaster Management. However, the government is yet to transform the draft into a national strategy.

Most of the literature reviewed above highlight the displacement aspect of population movement due to environmental and climate change related hazards. But displacement is only one form of population movement. There are many other forms of migration which will also be influenced by climate change. Rural to urban temporary labour migration is the most dominant among them.

This book espouses the Foresight model in explaining drivers of migration. This framework allows us to either accommodate or negate traditional labour market demand supply approach towards analyzing migration decision (Lewis, 1954). It also includes aspect of Sjaastad's macro-economic model that respects heterogeneity of individual choice in explaining migration as individuals' investment decision to increase productivity (Sjaastad, 1962). Bloom and Noor (1995), Katz, (1986) and Lucas, Rosenzweig and Taylor's works (1984) on the collective role of households in facilitating migration of one of its members is also accommodated in the Foresight model. Massey's (1994) institutional theory and Stark and Bloom's network theory have been aptly incorporated in this framework.

2 *Ga hhogram* and *Ashrayon* are some of govt. programmes for rehabilitation of the displaced in state owned land.

Migration as One of the Climate Change Adaptation Tools

Working Group II and III of IPCC Fifth Assessment Report define adaptation as “The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects. According to DECCMA (2015), adaptation refers to adjustments that reduce vulnerability to climate variability and change. These adjustments may be in response to, or in anticipation of, real or perceived climate stressors. These stressors may be exposure to sudden onset shocks, such as floods; and/or to slow-onset incremental stresses, for example in temperature and rainfall patterns, or sea level rise. Various types of adaptation can be distinguished, including anticipatory, autonomous, and planned adaptation.

Anticipatory adaptations refer to those situations where the affected individuals, households and groups make a move anticipating a future threat. Autonomous adaptations are adaptation that occur spontaneously in a system as a matter of course, while planned adaptation are those that require or result from deliberate policy decisions. Suckall and Vincent (2015) further elaborate that adaptation can occur at different scales with different actors: local (individual, community), regional (private sector, NGO), and national (government). For measuring the performance or success they categorized *in-situ* changes or adjustments into five categories: adaptation, coping strategy, mal-adaptation, development and serendipitous adaptation.

Recent empirical case studies demonstrate a more nuanced understanding of the relationship between migration and adaptation, highlighting that migration is an important tool for environment and climate change adaptation (Hunter *et al.*, 2015; McLeman and Smit, 2006; Tacoli, 2009). Barnett and Webber (2010) demonstrate that by migrating from climate-stressed areas people can reduce their vulnerability. People can also ensure access to income sources that are unlikely to be affected by a disaster. They further note that the post-disaster remittances from relatives help households to recover from losses. Tacoli (2009) shows that remittances from migrants facilitate agricultural adaptation in vulnerable communities in Bolivia, Senegal and Tanzania, while Ezra (2001) demonstrates that families with access to remittances better adapt to livelihood crises than those with no access to remittances. Moreover, Kothari (2003) notes that migration often helps reduce pressures on local ecology and natural resource dependence. Black *et al.* (Foresight, 2011) note that migration may lead to reduction

in vulnerability through enhancement of livelihoods. In some contexts, migration may offer the most direct form of adaptation as it provides opportunity to affected people to move from hazardous locations. Siddiqui and Billah (2014) find that affected households in Bangladesh which combined local level strategies (such as switching cultivation practices and constructing dyke, among others) with migration were more successful in adapting to climate and environment related stresses. Larger family units which remained in origin areas, availed health, education and nutrition services of local government and NGOs, and diversified their income sources through labour migration of one or more household members to urban areas.

Warner *et al* (2014) further investigate the complexity of the relationship between migration and adaptation, concluding that it is best expressed in terms of a continuum. They argue that depending on the household context mobility and immobility can be both positive and negative forms of adaptation to climate change at the individual and household levels. They came up with four types of migration categories based on a continuum ranging from resilience to vulnerability: adaptive migration, survival migration, last resort migration and trapped population. 'Adaptive migration', the most resilient category, involves diversification of livelihoods and increased access to education, health and political resources. 'Survival migration' ensures that a household survives but does not flourish. Even more vulnerable are those who participate in 'last-resort migration', which is based around 'erosive coping strategies' driven by hunger and desperation. 'Trapped population' who are without any opportunity to migrate constitutes the fourth, and they are the most vulnerable category on the continuum. Households which have access to livelihood options and social, economic and political assets; whose children have 3 to 5 years more education than their parents; and have one or more young members with the ability to migrate and send remittances back to their families, belong to the 'adaptive' category. On the other extreme, landless households that suffer from chronic food insecurity and are unable to migrate or provide education to their children, fall under the 'trapped' category.

In the context of Bangladesh, Siddiqui *et al.* (2018) find that those families have adapted better to different stresses of climate change which combined local level livelihoods with livelihood migration of a few members of the household. Migration of household members provided better income and financial situation to migrants compared to non-migrant households. They further find that economic status of 6.1 percent of migrant households before

migration was sufficient. But after migration of a few family members, it has increased to 10 percent. Five percent of non-migrant households belonged to 'always sufficient' category. They attempted to adapt locally. Their percentage share in the 'always sufficient' category has dropped to 2.5 percent. The number of persons in the category of 'just sufficient' has also increased in case of migrant households. But it has decreased in case of non-migrant households. The number of households in 'occasional' and 'chronic deficit' has reduced in case of migrant households whereas it increased in case of non-migrant households. The study also found that a section of households that are trying to adapt only locally might have trapped themselves into 'occasional' or 'chronic poverty'. This means that people of climate change affected areas autonomously used livelihood migration as one of the adaptation tools.

We can sum up the literature on migration as one of the adaptation tools by stating that migration can be one of many adaptation tools employed by affected families. All forms of migration may not lead to adaptation. Some may lead to mal-adaptation. However, transforming migration into an adaptation tool requires policy support both at the local and national levels.

Assessing Potential of Migration as Adaptation Tool on the Basis of Wellbeing

The potential of migration as an adaptation tool can also be assessed on the basis of level of wellbeing of those who migrate and those who do not. Both material and subjective wellbeing are important in this respect. Wellbeing is defined as 'better quality of life'. Stiglitz et al. (2009), Hall *et al.* (2010) and OECD report (2013) however define wellbeing as better quality of life with increased income and wealth. Others brought subjective measurements such as happiness of individuals, households or community (Kahn and Juster, 2003; Pollard and Lee, 2003). The term subjective wellbeing indicates happiness which entails individual's perceptions on wealth. However, quality of life to them includes both material and subjective dimensions.

Material wellbeing is described in this study as the objective factors which contribute to people's wealth and happiness. This includes the type of housing, their level of wealth, access to health and education services etc. Subjective wellbeing describes how people experience the quality of their lives based on their personal perceptions (Eckersley, 2000). It incorporates measures of cognition (satisfaction) and affects (positive affect) (Cummins, 2000b). In turn, the cognitive component can be described either as the

aggregate of satisfaction across a number of life domains or as a single gestalt response to a question regarding 'life as a whole' (Cummins, 2000). Subjective element of wellbeing depends on characteristic of individuals as well as his/her own perception and evaluation of his/her outside environment and reality. It includes individuals' satisfaction concerning interpersonal relations, family life, employment, health and finances, but also in terms of relations to different aspects of the physical and living environment (Moser, 2009). People can have a high level of material wellbeing but be unhappy, just as people with low material wellbeing can be very happy.

Rollero and Piccoli (2010) observe that place attachment is one of the criteria of wellbeing of the people. Place attachment is a multifaceted and complex phenomenon that incorporates different aspects of people-place bonding and involves the interplay of affect and emotions, knowledge and beliefs, and behaviours and actions in reference to a place. In understanding potential of livelihood migration as adaptation tool, we plan to compare the state of material and subjective wellbeing of those who migrate and those who do not. This comparison will show us whether migration can help households to maintain certain material standard such as better housing quality, ownership of land and larger quantity of land, access to drinking water, better sanitation etc. which they otherwise could not. Our next area of investigation is how satisfied are the migrant households with their current status of material well being? This will ultimately inform us about the subjective wellbeing status of the migrants and we can make comparison between migrant and non-migrant households. Finally, we can draw conclusion if there is any big difference at the level of material and subjective wellbeing among them.

1.2 Research Methods

This research draws from the origin area survey data generated by CARIAA³ under its DECCMA consortium in the Ganges-Brahmaputra-Meghna (GBM) Delta of Bangladesh. Based on the needs of the research the study has used six research instruments. These are literature review, focus group discussion, multi-hazard mappings, migration residual mapping, census and household survey.

Literature Review

Designing any study usually requires a comprehensive review of existing literature. A thorough review of literature allows the researcher to benefit from existing knowledge and identify the research gaps. Our literature review covered issues like drivers of migration, use of migration as adaptation tool, and material and subjective wellbeing.

3 <http://www.cariaa.net/about>

Focus Group Discussion (FGD)

Before conducting the household survey, focus group discussions in selected areas is an effective method for generation of qualitative information and to gain local knowledge. For this research, 12 FGDs in six villages in three districts (Patuakhali, Bagerhat and Lakshmipur) have been conducted. One FGD each of men and women in each village has been conducted with 20 to 25 persons participating.

Stakeholder Mapping

Stakeholder mapping has been conducted in three steps. In the first step, a list of stakeholders was prepared based on secondary literature and brainstorming exercise among the team members of Bangladesh under DECCMA consortium. In the second step, stakeholders were delineated in terms of types/categories, relevance to the project, and their perceived ability to influence the project. Finally, in the third step, stakeholders were profiled in terms of their relative levels of interest and power or capacity to influence, thus leading to the development of a power-interest matrix. Power and influence are scored by a group of Bangladesh researchers involved in the project or each stakeholder on a scale from 0 to 10, with zero referring to the lowest power or interest and 10 referring to the highest power or capacity to influence on the part of the stakeholders.

Hotspot Mapping

The hotspot mapping process has started with an exercise considering four hazard parameters (storm surge, fluvio-tidal flood, soil salinity and river erosion), three social parameters (population density, literacy rate and male-female ratio) and two economic parameters (poverty and GDP). A combination of multi-hazard index, social vulnerability index and economic vulnerability index led to a very preliminary hotspot map for the study area. A risk definition has been accepted, in which risk is treated as a function of hazard (H), exposure (E), sensitivity (S) and adaptive capacity (AC). Accordingly, a list of hazards together with exposure, sensitivity and adaptive capacity components was prepared for considered for baseline assessment of hotspots.

Migration Residual Mapping

GBM is defined as 19 districts with 153 *paz ilas*. An estimate of net migration from these areas has been calculated from 2001 and 2011 national censuses. Residual mapping has been prepared by using GIS tool both at districts and *paz ila* levels on the basis of demographic analysis.

Census

Moz a has been considered to be the lowest unit for conducting the survey. In order to select methodologically robust data a census/household listing of enumeration areas was conducted.

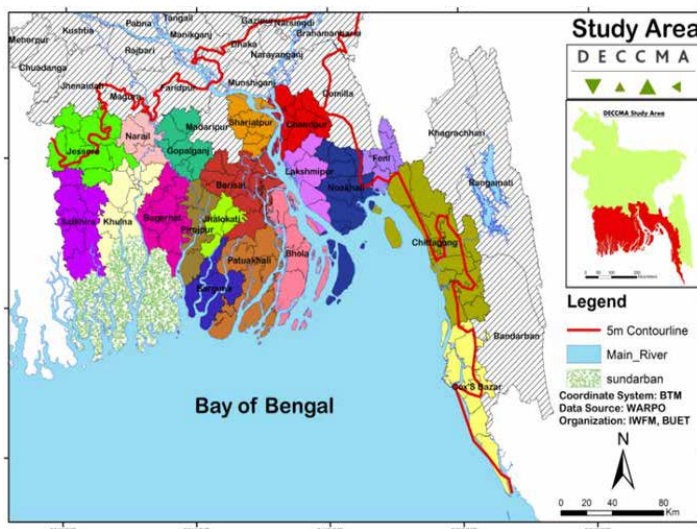
Household Survey

Household survey is the most important instrument used in the research. It is based on a detailed questionnaire. The detailed questionnaire has several rosters which include household information, state of material and subjective wellbeing, migration experience, experience of climate change and environmental degradation, adaptation experience, assets, income and expenditure roster.

1.3 Data Source

The study areas selected, as shown in Figure 1.3.1, are low-lying areas which are situated at less than of 5 metres contour line. However, it excluded the northeast part of Bangladesh and the low-lying greater Sylhet region. The study areas mostly composed of southwest and southeast coastal region of Bangladesh.

Figure 1.3.1: Delineation of study area in GBM delta



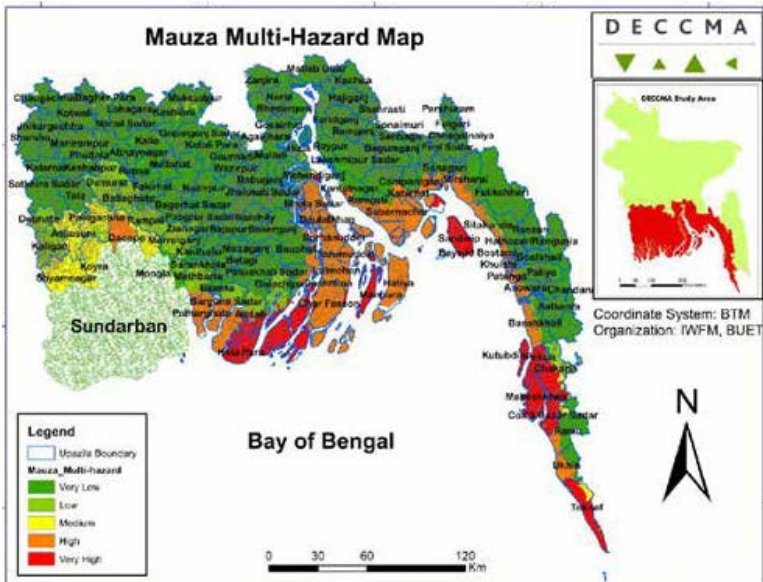
Source: Country update at 5th DECCMA consortium workshop⁴

4 5th DECCMA consortium workshop 30 Aug – 2 Sept 2016, The Ffort Raichak, Sarisa, 24 Parganas (S), West Bengal, India.

Sampling

The total study area is composed of 14,771 *moza*⁵ in 153 *pazilas* of the 19 coastal districts. Stratified random sampling is finally done from these *moza*. A total of 50 *moza* are selected for the household survey on the basis of their risk exposure which is calculated through exposure to multi-hazard, settlement, household numbers, population size and sex ratio etc. (locations are shown in Figure 1.3.3). Four types of hazard are considered. These are storm surge, river erosion, salinity and fluvio-tidal flood. These *moza* are divided into five categories based on the extent of risk of climatic hazards. These are very high (8 *moza*), high (9 *moza*), medium (10 *moza*), low (11 *moza*) and very low (12 *moza*). The 50 *moza* selected above do not include all 19 delta districts. They fall under 14 delta districts. These are: Bagerhat, Barguna, Bhola, Chandpur, Chattogram, Cox's Bazar, Gopalganj, Jessore, Khulna, Lakshmipur, Noakhali, Patuakhali, Pirojpur and Satkhira.

Figure 1.3.2: Mouza level multi-hazard map of GBM delta



Source: WP2 country update at 5th DECCMA consortium workshop 30 August – 2 September 2016, The Ffort Raichak, Sarisa, 24 Parganas (S), West Bengal, India

5 Mouza or mauza is a type of administrative district, corresponding to a specific land area within which there may be one or more settlements.

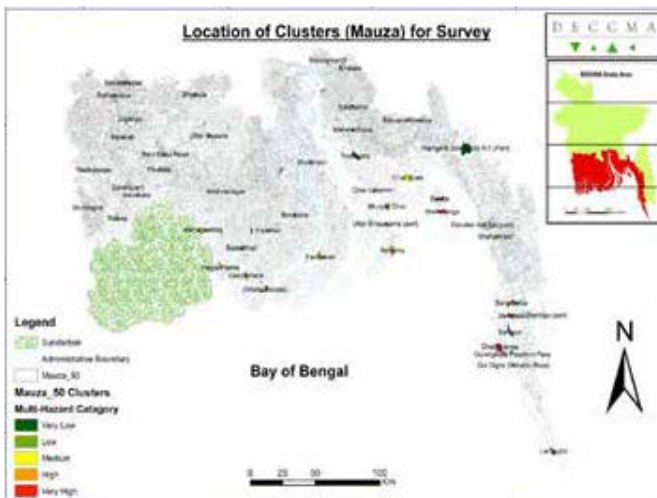
Census

Since *mouza* itself is too large (up to 10,000 households for some of the *mouzas*), each *mouza* is later manually divided into smaller units (cluster) for stratified random sampling. From each *mouza* more or less 200 households are listed by using serpentine method. Every house is marked by marker pen for future identification. Thus a total of 8,713 households are listed. A team of 31 researchers have conducted household listing exercise. Among them 11 have been female.

Household Survey

Stratified and systematic random sampling techniques have been applied for the selection of required number of households for the survey from the household listing sample. Thirty households are selected from each *mouza*, resulting in a total of 1,500 household to be surveyed. A total of 1,386 have been interviewed as others were either unavailable or did not want to participate. The household survey is conducted by using tablet and online application and data hosting site developed by the World Bank. The survey designed an in-built monitoring system and maintained a policy of data privacy, anonymity, confidentiality and gender sensitivity.

Figure 1.3.3: Locations of 50 Mouzas sampled for HH survey



Source: WP2 country update at 5th DECCMA consortium workshop 30 August – 2 September 2016

1.4 Data Analysis

A common data hosting programme has been prepared⁶. Both census and household survey data have been processed by using SPSS programme, preceded by the preparation of detailed set of dummy tables.

1.5 Definition of Terms

Terms and definitions used in this book have been shaped by DECCMA research team.⁷

Permanent Migration: Permanent migration describes the movement of one or more members of a household from the sending area to a new place of residence with the intention of remaining there for at least 6 months.

Seasonal Migration: Seasonal migration describes the movement of one or more members of a household from the origin area based on seasonal conditions⁸. This movement is temporary (less than 6 month duration) and carried out once or twice within a 12 month period.

Circular Migration: Circular migration describes of one or more members of a household that is temporary and frequently repeated⁹. Circular migration is distinct from seasonal migration as the migrant moves three or more times between origin and destination areas within a 12 month period and often irrespective of seasonal conditions.

Current Migrants: Current migrants are those who used to live with the household but who have migrated away in the last 10 years. This could include each of the migration types (permanent, circular, seasonal).

Returned Migrants: Returned migrants are those who have migrated in the last 10 years but who have since returned and are living with the household.

Household: For the purposes of the survey, we use the UN¹⁰ definition of household as: (a) A one-person household, defined as an arrangement in which one person makes provision for his or her own food or other essentials for living without combining with any other person to form part of a multi-person household or (b) A multi-person household, defined as a group of two or more persons living together who make common provision for food or other essentials for living.

6 The programme was developed by researchers from the University of Southampton in collaboration with the World Bank.

7 DECCMA research team is constituted of researchers from Bangladesh, Ghana, India and UK.

8 Adapted from World Migration Report 2015.

9 Adapted from World Migration Report 2015.

10 <http://unstats.un.org/unsd/demographic>

1.6 Structure of the Book

This book is divided into ten chapters. Chapter I begins with stating the research problem; it also spells out the aim of the study and the major research questions. It has developed a conceptual framework to pursue the research and also details the methodology used in generating data. Chapter II presents the basic socio-economic characteristics of the survey households. Chapter III makes an analysis of drivers and barriers of migration. Chapter IV presents experience of environmental change and stresses as explained by the respondents. Chapter V presents the autonomous adaptation practices used by the internal, international and non-migrant households. Chapter VI presents characteristics of the migrants themselves. It also gives an idea about their migration dynamics i.e. types of migration, nature of movements etc. Chapter VII presents the contribution of migration as well as perception of its utility to the households. Chapter VIII makes a comparison of the state of wellbeing of migrant and non-migrant households. Chapter IX attempts to identify the extent of empowerment or disempowerment of left behind female members of the migrant households. Chapter X summarizes the major findings and provides some recommendations.

Chapter Conclusion

This chapter presents two research areas that this book looks into: (i) the role of climate change in inducing migration and (ii) the use of migration in climate change adaptation. It reviews existing literature on drivers of migration, climate change adaptation and material and subjective wellbeing and draws a conceptual framework of the research. It also gives a detailed account of the methodology and defines the terms that have been used in this book. The next chapter introduces socio-economic profile of the interviewee households.

CHAPTER II

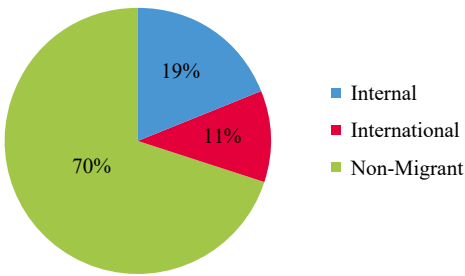
SOCIO-ECONOMIC PROFILE OF HOUSEHOLDS

This chapter presents the basic socio-economic characteristics of the survey households. The households are divided into three major categories: internal migrant, international migrant and non-migrant households. Information presented here includes household composition such as number of male and female members, age of household members, marital status, years of schooling of household members, main livelihood activities of all members who are above the age of 18, status of employment, income and expenditure and so on. The aim of this chapter is to introduce the households to the readers.

2.1 Distribution of Households by Migration Experience

The household listing survey gives a clear idea about the extent of livelihood migration from the study areas. It has listed 8,713 households in fifty very high, high, medium, low and very low climate hotspots of Bangladesh. It was found that 30 percent of these households are labour migrant households. This means that at least one member of these households have migrated either internally or internationally for their livelihood. Of these 30 percent migrants, i.e., almost two-thirds are internal migrant and one-third is international migrant households. Later through representative sampling techniques 16 percent (1,386 in number) of these households is proportionately chosen for in-depth household survey. The following section presents the response of in-depth household survey. Figure 2.1.1 shows the distribution of households by their migration status. Seventy percent of the interviewee households are non-migrant households. Nineteen percent of the households have at least one internal migrant and another 11 percent households have at least one international migrant.

Figure 2.1.1: Distribution of internal, international and non-migrant HHs



Source: DECCMA origin area survey in Bangladesh, 2016

2.2 Sex of Household Heads

Table 2.2.1 shows that 80 percent of the households are male-headed and 20 percent are female-headed. Female-headed households are found more in case of internal and international migrant households. Thirty-six percent of internal migrant households and 40 percent of international migrant households are female headed. On the other hand, only 13 percent of non-migrant households are female headed. Higher percentage of female headed households in migrant families does not indicate that these households do not have male household heads. Rather they are female headed households by proxy. In majority cases male heads of the households have migrated for work. In the absence of male heads the female adults are treated as the household heads. The actual number of female headed households should be closer to the ratio of non-migrant households. In case of Bangladesh, the national average of female headed household is 11.2 percent (BBS, 2014).

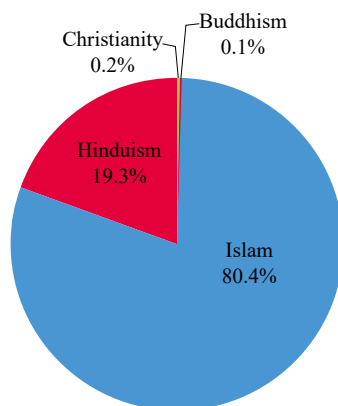
Table 2.2.1: Sex of household head by HH type

Household head	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Male	166	64.1	89	60.1	851	86.9	1106	79.8
Female	93	35.9	59	39.9	128	13.1	280	20.2
Total	259	100.0	148	100.0	979	100.0	1386	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

2.3 Religion

Figure 2.3 shows that among the total population (1,386 households) of the 50 enumeration areas, 80.4 percent are Muslims, 19.3 percent Hindu, and 0.2 percent and 0.1 percent Christian and Buddhists. Percentage of

Figure 2.3: Religion

Source: DECCMA origin area survey in Bangladesh, 2016

Hindu population in this survey is higher in comparison to overall national data. In 2016, according to BBS, 86 percent of Bangladeshis are Muslims which is followed by Hindus (12%), Buddhists (1%) and Christians (0.5%) and others (0.5%).

Table 2.3.1 Religion

Religion by District	Islam		Hinduism		Christianity		Buddhism		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Bagerhat	39	66.1	20	33.9	0	0.0	0	0.0	59	100.0
Barguna	50	56.8	38	43.2	0	0.0	0	0.0	88	100.0
Bhola	57	100.0	0	0.0	0	0.0	0	0.0	57	100.0
Chandpur	40	66.7	20	33.3	0	0.0	0	0.0	60	100.0
Chattogram	126	75.0	42	25.0	0	0.0	0	0.0	168	100.0
Cox's Bazar	205	96.7	7	3.3	0	0.0	0	0.0	212	100.0
Gopalganj	33	63.5	18	34.6	1	1.9	0	0.0	52	100.0
Jessore	71	73.2	25	25.8	1	1.0	0	0.0	97	100.0
Khulna	23	23.5	74	75.5	0	0.0	1	1.0	98	100.0
Lakshmipur	113	99.1	1	0.9	0	0.0	0	0.0	114	100.0
Noakhali	141	95.9	6	4.1	0	0.0	0	0.0	147	100.0
Pirojpur	29	100.0	0	0.0	0	0.0	0	0.0	29	100.0
Patuakhali	106	92.2	8	7.0	1	0.9	0	0.0	115	100.0
Satkhira	81	90.0	9	10.0	0	0.0	0	0.0	90	100.0
Total	1114	80.4	268	19.3	3	0.2	1	0.8	1386	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Each cell represents percentage of total number of responses

If we divide the data on religious faith by district, interesting scenario emerges. Almost 100 percent of the respondents from Bhola, Pirojpur and Lakshmipur are Muslims whereas 76 percent of the respondents of Khulna belong to the Hindu community. Percentage of Hindu respondents is also quite significant in Barguna (43%), Gopalganj (35%) and Bagerhat (34%) (Table 2.3.1). This indicates that people of all religious faiths are not equally distributed in different districts. Minority population are concentrated in different pockets.

2.4 Household Size

1,386 households have 6,844 members. The figure includes migrants who are currently working outside. The average household size is 4.9 members.

Table 2.4.1 Average HH size

Household family size	Internal	International	Non-migrant	Total
Average HH size	5.4	5.6	4.7	4.9
Total family members	1389	821	4634	6844
Total Households	259	148	979	1386
Maximum HH members	10	10	14	
Minimum HH members	1	1	1	

Source: DECCMA origin area survey in Bangladesh, 2016

From the table 2.4.1 it is seen that the propensity to migrate is comparably high among the larger households. The average household size of internal migrants is 5.36 and for international migrant household it is 5.55, whereas for non-migrant household it is 4.7. These findings tally with other studies on drivers of migration that make the point that demographic characteristics play an important role in migration decision making. Those households can participate in migration that has additional members.

2.5 Number of Household Members

Table 2.5.1 shows the number of household members. It divides those households into 5 groups. It shows that overall 46 percent of the households had 4 to 5 family members. Twenty-seven percent of the households have 1 to 3 members whereas 21 percent have 6 to 7 members. Interestingly, a household which has 1 to 3 members is lower in case non-migrant households.

Table 2.5.1 Number of HH members by HH type¹¹

HH member	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
1-3	99	38.2	49	33.1	231	23.6	379	27.3
4-5	105	40.5	60	40.5	477	48.8	642	46.4
6-7	48	18.5	30	20.3	206	21.0	284	20.5
8-10	7	2.8	9	6.1	55	5.6	71	5.1
10+	0	0.0	0	0.0	10	1.0	10	.7
Total	259	100.0	148	100.0	979	100.0	1386	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

2.6 Male Female Distribution of Household Members

Table 2.6.1 shows the distribution of male and female members in these households. The number of male members is much higher in case of international (55%) and internal (54%) migrant households. But in non-migrant households the gap between number of male and female member is less, 49 percent of them are female and 51 percent are male members. Employment opportunities that are explored through migration by delta population are mostly for men. Therefore it is natural that those households are more likely to participate in labour migration who have more male members compared to female members as most of the labour markets of Bangladesh is for the males to participate.

Table 2.6.1: Number and percentage of household members by HH type and gender

Gender of the Households	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Male members	744	53.6	455	55.4	2375	51.2	3574	52.2
Female members	645	46.4	366	44.6	2259	48.8	3270	47.8
Total	1389	100.0	821	100.0	4634	100	6,844	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

2.7 Relationship with Household Head

Table 2.7.1 shows that in case of internal migrant households 19 percent of total family members are the household heads. In case of the international migrant households it is 18 percent and in case of the non-migrant households the figure stands at 21 percent.

¹¹ Households have been divided into three types- internal, international and non-migrant households.

Table 2.7.1: Relationship of members with the HH head

Household relationship	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Household head	259	18.7	148	18.0	978	21.1	1385	20.2
Partner of household head	241	17.4	129	15.7	890	19.2	1260	18.4
Married child	112	8.1	69	8.4	181	3.9	362	5.3
Unmarried child	481	34.6	288	35.1	1829	39.5	2598	38.0
Partner of married child	72	5.2	54	6.6	150	3.2	276	4.0
Grandchild	80	5.8	51	6.2	207	4.5	338	4.9
Parent	49	3.5	15	1.8	227	4.9	291	4.3
Parent-in-law	14	1.0	12	1.5	11	0.2	37	0.5
Brother/sister	52	3.9	21	2.6	94	2.0	167	2.4
Brother-in-law/sister-in-law	12	0.9	15	1.8	22	0.5	49	0.7
Niece/nephews	13	0.9	16	2.0	31	0.7	60	0.9
Uncle/aunt	1	0.1	0	0.0	1	0.0	2	0.0
Other relatives	2	0.1	3	0.4	10	0.2	15	0.2
Non-relatives	1	0.1	0	0.0	3	0.1	4	0.1
Total	1389	100.0	821	100.0	4634	100.0	6844	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

In case of internal migrant households, 17 percent members are spouses of the household heads while it is 16 percent in case of the international migrant households and 19 percent in case of non-migrant households. The percentage of married children of internal and international migrant households is 8 percent. In case of non-migrant households only 4 percent of the members are married children. This also supports findings of previous studies (Siddiqui, 2001). When male member of a married household migrates, he tries to ensure protection of the left behind family members by keeping them with extended family. That is why the number of married members are more in case of internal and international migrant households. Thirty-five percent of the household members are unmarried children both in internal and international migrant households. The percentage of unmarried children is slightly higher in case of non-migrant households (39%).

2.8 Age Group

Table 2.8.1 shows that as many as 36 percent of household members are below the age of 17 years irrespective of their migration status. Around 30 percent international and internal migrant households have members between 18 to 30 years old. In case of non-migrant households 25 percent household members belong to this age group. An interesting observation

is that working age population is more in case of internal migrant and international migrant households compared to non-migrant households. This means participation in migration is not only contingent upon if the households have more members to spare from household chores, it is also dependent on their age. Those households possess more opportunity to migrate who have more members in the working age group compared to those who have more children and elderly.

Table 2.8.1 Age group of HH members by HH type

Age group	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
0-17	451	32.5	251	30.6	1776	38.3	2478	36.2
18-25	270	19.5	151	18.4	719	15.5	1140	16.7
26-30	132	9.5	99	12.1	431	9.3	662	9.7
31-40	205	14.8	115	14.0	661	14.3	981	14.3
41-50	136	9.8	80	9.7	441	9.5	657	9.6
51-60	105	7.6	70	8.5	306	6.6	481	7.0
60+	88	6.3	55	6.7	300	6.5	443	6.5
Total	1387	100.0	821	100.0	4634	100.0	6842	100.0
Missing	2		0		0		2	

Source: DECCMA origin area survey in Bangladesh, 2016

2.9 Marital Status

There are no significant variations among all three groups of households with respect to their marital status. Of the total cohort 49 percent of the household members are married, 46 percent are unmarried, 4 percent are widowed and another 1 percent is divorced and abandoned/separated.

Table 2.9.1 Marital status of the members of the households

Marital status	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Never married	607	43.7	369	45.0	2158	46.6	3134	45.7
Currently married	718	51.7	416	50.6	2254	48.6	3388	49.5
Widowed	53	3.8	31	3.8	186	4.0	270	4.0
Divorced	3	0.2	0	0.0	16	0.4	19	0.3
Abandoned / separated	8	0.6	5	0.6	20	0.4	33	0.5
Total	1389	100.0	821	100.0	4634	100.0	6844	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

2.10 History of Residence in the Origin Area

Table 2.10.1 shows that more than 74 percent of all three types of households is living in the village from their birth, irrespective of migration

status. Around 10 percent members of all three types of households have arrived in these villages from other locations less than 10 years ago and another 16 percent arrived more than 10 years ago. The rate of in-migration is quite significant. A majority of the members who has migrated to villages 10 years before or after is women. In all likelihood their migration was triggered by marriage.

Table 2.10.1: History of residence in the origin area by HH type

Duration of living in this village	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Lived here all their life	769	70.0	476	73.0	3484	75.0	4729	74.1
Migrated here more than 10 years ago	210	19.0	103	16.0	694	15.0	1007	15.8
Migrated here less than 10 years ago	118	11.0	69	11.0	455	10.0	642	10.1
Don't know	0	0.0	0	0.0	1	0.0	1	0.0
Total	1097	100.0	648	100.0	4634	100.0	6379	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

2.11 Education

Around 20 percent household members of the all categories of interviewee households do not have any schooling. Experience of secondary schooling is higher in case of international migrant households if compared with other two groups of households. However, it is a little lower in case of higher education.

Table 2.11.1 Experience of schooling of HH members who are 5 or more than 5 years of age by HH type

Schooling of the households	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No schooling	236	18.6	136	17.7	887	21.1	1259	20.2
1-3 years primary school	250	19.7	129	16.8	904	21.5	1283	20.6
4-6 years primary school	307	24.2	154	20.1	932	22.2	1393	22.3
1-3 years secondary school	187	14.7	150	19.6	674	16.0	1011	16.2
4-6 years secondary school	182	14.3	160	20.8	572	13.6	914	14.6
Higher Education	109	8.5	38	5.0	236	5.6	383	6.1
Total	1271	100.0	767	100.0	4205	100.0	6243	100.0
Less than 5 years	118		54		429		601	

Source: DECCMA origin area survey in Bangladesh, 2016

2.12 Livelihood

Altogether 21 types of professions have been identified by the household members. These include crop and fish farming, livestock, salaried

employment, construction work, factory work, domestic work, hawker, small business and transport work. The main engagement of 44 percent of the household members is non-paid homecare. Almost all are women. Their percentage is much higher in both types of migrant households (50% for internal and 55% for international migrant households) compared to non-migrant households (41%). This is obvious as in the migrant household male migrant member remains absent.

Table 2.12.1 Main livelihood activities of HH members aged 18 and above

Main livelihood activities	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Crop farmer	46	7.2	26	6.8	180	6.3	252	6.6
Livestock farmer	9	1.4	0	0.0	16	0.6	25	0.7
Fish / shrimp farmer	6	0.9	1	0.3	24	0.9	31	0.8
Fishing	13	2.0	4	1.0	100	3.5	117	3.1
Regular salaried employee	24	3.8	8	2.1	210	7.5	242	6.3
Small business owner	39	6.1	18	4.7	287	10.1	344	9.0
Construction worker	18	2.8	2	0.5	60	2.1	80	2.1
Factory worker	9	1.4	2	0.5	40	1.4	51	1.3
Domestic employee	1	0.2	2	0.5	17	0.6	20	0.5
Trader, dressmaker / tailor	10	1.6	5	1.3	25	0.9	40	1.1
Transport worker	12	1.9	11	2.9	104	3.6	127	3.3
Hawker	2	0.3	0	0.0	3	0.1	5	0.1
Guard / gardener	0	0.0	1	0.3	5	0.8	6	0.2
Money lender	0	0.0	0	0.0	0	0.0	0	0.0
Unpaid home care	322	50.4	210	54.8	1147	40.8	1679	43.9
Unemployed	7	1.1	16	4.2	58	2.1	81	2.1
Student	29	4.5	23	6.0	136	4.8	188	4.9
Retired	35	5.5	36	9.4	125	4.5	196	5.1
Day labourer	10	1.6	3	0.8	52	1.8	65	1.7
Others	47	7.3	15	3.9	213	7.6	275	7.2
Total	639	100.0	383	100.0	2802	100.0	3824	100.0
Less than 18 years old	458		265		1832		2555	

Source: DECCMA origin area survey in Bangladesh, 2016

2.13 Employment Status

The percentage of household members with permanent job are lower in case of internal migrant households (41%) compared to international (51%) and non-migrant (52%) households. Thirty-one percent of internal, 36 percent of international and 25 percent of these non-migrant household members are either employed as seasonal or temporary workers. However, it is understood that seasonal jobs are not available in international destinations. Therefore, they should be involved in temporary jobs and internal migrants should be involved both in temporary and seasonal jobs.

Table 2.13.1: Nature of employment of the members by HH type

Employment status	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Working permanent job	88	41.0	46	51.0	634	52.0	768	50.0
Working seasonal/ temporary job	67	31.0	32	36.0	305	25.0	404	26.3
Working short term job	44	21.0	8	9.0	222	18.0	274	17.8
Don't know	0	0.0	0	0.0	1	0.0	1	0.1
Not applicable	16	7.0	4	4.0	69	5.0	89	5.8
Total	215	100.0	90	100.0	1231	100.0	1536	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Students, retired, unemployed and unpaid home care are not considered here.

Chapter Conclusion

This chapter provides socio-demographic information on different households. Household size of internal and international migrant households is higher than that of non-migrant households. This may indicate that those households have more chances to send a member outside the village for work that have higher number of members. From the areas under the study it is the males who mostly migrate. Therefore it is more likely that those households that have more male migrants will have more scope to participate in migration. Here as well the percentage of male members is higher in migrant households compared to non-migrant. Another interesting finding is in case of migrant households, working age population is higher compared to non-migrant household. In contrast to the national average the Hindu population is over represented in this survey. This is due to the fact that some geographical pockets of Hindu population were included in a few of the study sites. Interestingly, more than 50 percent of migrant household members are currently married. The percentage of household members with permanent job is higher in cases of international (51%) and non-migrant (52%) households compared to internal migrants (41%).

Three-quarters of the households is living in these villages since birth. Sixteen percent migrated to these villages more than 10 years ago and another 10 percent less than 10 years ago. It is not known how many through marriage and how many for other reasons.

CHAPTER III

ENVIRONMENTAL DETERMINISM VS. MULTICAUSALITY: DRIVERS OF AND BARRIERS TO MIGRATION

This chapter deals with the drivers of migration. It attempts to understand why some people decide to migrate and some others do not with the same socio-economic or environmental characteristics. It draws information from two groups of respondents. One group is from migrant households while another group is from non-migrant households. Migrant household implies that one or a few members of a household have migrated either internally or internationally on short term contracts. Non-migrant households are those households whose members have not migrated ever or have returned more than ten years ago. Therefore, the major area of investigation in this chapter is to figure out what drives some households to send one or a few members to migrate and what keeps others from sending migrants in the context of climate and environmental stresses.

Earlier in the theoretical section we have seen that the most controversial issue in the global climate change literature is migration. During the 1990s and early 2000s, in climate change discourse, migration was presented as a threat. Studies pursued during that period perceived climate change as an independent variable driving migration from ecologically vulnerable areas. Those who moved were termed as a new group of either forced migrants or environmental refugees. Subsequent studies underscored that migration is a complex and multi-causal phenomenon. Along with the influence of climate change, migratory behaviour is also shaped by other macro influences such as social, political, economic and demographic. Micro-level realities like household characteristics and meso-level facilitating or intervening factors play a role in inducing or restricting migration of individuals, households, or communities. Findings of this survey presented in the following also validate that migration is multi-causal. More importantly, affected people hardly thought climate change plays a major role in their migration decisions.

3.1 Major Drivers

In order to understand the drivers of migration internal and short-term contractual international migrants are given with multiple options. The options are seeking employment, accessing education, marriage, family obligations, health situation, income loss, environmental degradation, extreme climatic events, social–political problems etc. The respondents are asked to provide multiple responses. Besides, they are also given the option of identifying the most important reason. The table shows that 440 migrants have given 1048 responses.

The highest number of both internal and international migrant household heads identifies seeking employment as one of the reasons behind their family member's migration decision. Eighty-one percent of internal and 82 percent of international migrant households say so. The second highest response is family obligation. Here as well there is hardly any difference between the responses of internal (32%) and international short term contractual migrants (31%).

Table 3.1.1 Drivers of migration

Drivers [multiple responses]	Internal		International		Total	
	No.	%	No.	%	No.	%
Seeking employment	242	80.9	115	81.6	357	81.1
Family obligations	96	32.1	43	30.5	139	31.6
Debt	32	10.7	23	16.3	55	12.5
Environmental degradation	40	13.4	15	10.6	55	12.5
Extreme event	76	25.4	35	24.8	111	25.2
Social/political problems	4	1.3	2	1.4	6	1.4
Loss of income in one season	32	10.7	19	13.5	51	11.6
Loss of income in multiple seasons	42	14.0	28	19.9	70	15.9
Seeking education	113	37.8	34	24.1	147	33.4
To join spouse/ marriage	11	3.7	7	5.0	18	4.1
Health care	5	1.7	3	2.1	8	1.8
Housing problems	15	5.0	13	9.2	28	6.4
Other	2	0.7	1	0.7	3	0.7
Total	710 (184 male and 115 female respondents)		338 (84 male and 57 female respondents)		1048 (268 male and 172 female respondents)	

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Each cell represents the percentage of total response

Four options provided to the respondents are linked to environmental and climate related events. These are: loss of income of one season; loss of income of multiple seasons; environmental degradation (i.e. drought, riverbank erosion) and extreme event (i.e. flooding, cyclone). When we combine these four options, 65 percent of the responses identify climate

change and environment as one of the multiple drivers behind migration decision of their household members. Among these, 38 percent responses directly identify environmental degradation and extreme events as one of the drivers that have influenced migration decisions. Twenty-five percent responses identify extreme events as a reason and 28 percent identifies income losses due to crop loss. It is well understood that many economic reasons (such as seeking employment) are created due to environmental reasons.

3.2 Gendered Perception on Drivers of Migration

There is hardly much of a difference between male and female household heads with respect to reason behind migration. Seeking employment is the predominant reason identified by both males and females. The response, however, varies significantly when it comes to marriage as one of the reasons. Twenty-one percent of the female headed households have identified marriage as one of the reasons behind migration whereas only 2 percent of the responses of male headed households indicated this as a reason. Education is another area in which male and female headed households' perception differs.

Table 3.2.1: Gendered perception on drivers of migration

Drivers [multiple responses]	Male		Female		Total	
	No.	%	No.	%	No.	%
Loss of income multiple seasons	44	4.4	1	2.3	45	4.3
Environmental degradation	77	7.8	2	4.7	79	7.6
Extreme event	18	1.8	0	0.0	18	1.7
Social/political problems	10	1.0	0	0.0	10	1.0
Seeking employment	377	38.0	15	34.9	392	37.8
Family obligations	164	16.5	5	11.6	169	16.3
Loss of income one season	88	8.9	1	2.3	89	8.6
Education	44	4.4	6	14.0	50	4.8
To join spouse/ marriage	15	1.5	9	20.9	24	2.3
Family problems	8	0.8	0	0.0	8	0.8
Health care	34	3.4	1	2.3	35	3.4
Housing problems	35	3.5	3	7.0	38	3.7
Debt	76	7.7	0	0.0	76	7.3
Others	3	0.3	0	0.0	3	0.3
Total responses	993		43		1036	

Source: DECCMA origin area survey in Bangladesh, 2016

Only 4 percent of male-headed households have identified education as one of the reasons whereas 14 percent female-headed households have considered this as one of the important reasons. On health issues 3 percent of male headed households

have mentioned that they have migrated to ensure better health facilities for their families, while 2 percent of female headed households have identified this reason. If the responses are segregated on the basis of gender then it is the male household heads (10% of male responses) of the migrant households who have identified environmental issues more compared to female (5% of female responses).

3.3 Reasons for Choosing a Particular Destination

This table shows the reasons for migrants choosing particular destinations. Both internal and short-term contractual international migrants have identified job opportunity as one of the major reasons for choosing particular destinations. This confirms neo-classical argument that growth centers pull migrants. There is hardly any difference among internal and international migrants in this respect. Another 39 percent of both types of migrants has identified presence of family members and friends as important reasons. This indicates the role of social network in facilitating migration decision. Compared to internal migrants, larger number of international short-term migrants identify role of middlemen behind choosing the location. This suggests that reasons for choosing a particular destination vary between internal and international migrants. A large number of international migrants receive their work permit and visa through the local intermediaries. They require migrating to those destinations from where work visas are procured. In other cases family members also send visa, however their number is less (16%). Siddiqui et al. (2018) also found that inability to access resources to finance migration deters many households to send members outside the village for work.

Table 3.3.1 Reasons for choosing a particular destination

Reasons for choosing particular destination	Internal		International		Total	
	No.	%	No.	%	No.	%
Family members there	86	19.4	71	25.1	157	21.6
Friends there	88	19.8	36	12.7	124	17.1
Middlemen there to help setup work/shelter	32	7.2	41	14.5	73	10.0
Employment opportunity there	191	43.0	110	38.9	301	41.3
Health services available there	11	2.5	13	4.6	24	3.3
Education opportunities available there	28	6.3	8	2.8	36	5.0
Other	8	1.8	4	1.4	12	1.7
Total	444	100.0	283	100.0	727	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

3.4 Reasons for Not Migrating

In understanding the drivers of migration it is immensely important to know why some people of the locality did not migrate. Again why does

the household head or any other member of the migrants' family have not migrated? Fourteen options have been given to the respondents and they are asked to identify top three reasons. Let us try to understand why non-migrant households have not sent any household members outside the village for work. It is seen that the highest response for not migrating is the lack of resource to finance migration. Family commitment is the second most mentioned reason. When people migrate for work, they require networks facilitate their stay in destination and also find work. Twelve percent of the responses identifies that the lack of access to accommodation initially deters their family members to migrate. Homesickness refrains 15 percent to migrate from origin area and another 35 percent feels that their family members will be insecured if the adult member migrates.

Table 3.4.1: Reasons for not migrating by gender of HH head

Reasons behind not migrating	MHHH and FM		FHHH and MM		Total	
	No.	%	No.	%	No.	%
Not being able to attend family commitments at home	933	42.5	121	42.9	1054	42.5
Too crowded in destination	10	0.5	2	0.7	12	0.5
Too expensive in destination	383	17.4	64	22.7	447	18.0
Too dangerous in destination	69	3.1	6	2.1	75	3.0
Policy restrictions	52	2.4	7	2.5	59	2.4
Lack of resources to leave	1423	64.8	174	61.7	1597	64.4
No place to stay in destination	249	11.3	51	18.1	300	12.1
Fear of going alone	263	12.0	49	17.4	312	12.6
Fear of leaving property/ animals/ land uncared for	212	9.6	24	8.5	236	9.5
Fear of leaving family unprotected	777	35.4	94	33.3	871	35.1
Would miss home/neighbors/family	310	14.1	50	17.7	360	14.5
Don't have the social networks in destination	335	15.2	50	17.7	385	15.5
Haven't got the skills to make a better income in destination	364	16.6	53	18.8	417	16.8
Other	219	10.0	22	7.8	241	9.7
Total Responses	5599 (1103 male and 1094 female respondents)		767 (279 male and 3 female respondents)		6366 (1382 male and 1097 female respondents)	

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Each cell represents percentage of total number of response

Note: MHHH and FM= Male household head and another Female adult member, FHHH and MM= Female household head and another male adult member

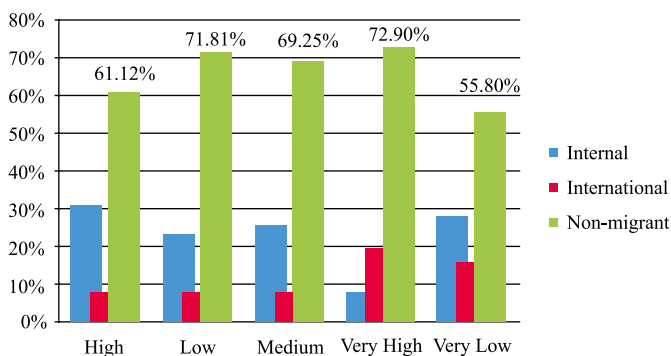
Now let us find out if the reasons for not migrating are similar for male and female household heads. The table above shows that there are some differences in male and female perceptions. Twenty-seven percent of the male headed households identify lack of resources as the most important reason for not migrating. Only 4 percent female household heads feels that way. The most cited reason (26%) for female household heads is the lack of information on safe accommodation at the destination. The second

most important reason for not migrating or sending one or more family member is similar to both male and female household heads. It is around 16 percent. The third most important reason for male household heads is the fear of leaving family unprotected. This however is not a big issue for female household heads. The third most cited reason for female household heads for not sending a family member outside the village for work is homesickness. This may indicate that place attachment is higher in case of female household heads compared to male household heads. It is important to note that both male and female household heads feel that lack of skills works as a barrier to migration decision. This leads us to argue, not sending family members for work do not always mean that these families do not want to participate in migration. In many cases it is the lack of financial resources and other inabilities that deters these families.

There are some demographic realities of households that may allow some families to migrate and others not to. Demographic profile of the internal, international and non-migrant households indicates that characteristics of household members influence migration decision to a great extent. Table 2.8.1 of Chapter II shows that families with young members have better opportunities to migrate. A majority of the internal migrants belongs to the age group 18-25 years while more international migrants belong to the age group of 31-40 years.

Table 6.11.1 of Chapter VI also shows that type of jobs available at destination are mainly for males. Household listing data also amply demonstrate that the number of female migrants is rather low. Some districts have a long history of internal migration while other districts have a long history of international migration.

Figure 3.4.1: Migration status of 50 enumeration areas (listing survey)



Source: DECCMA origin area survey in Bangladesh, 2016

Experience of hazards does not automatically result in migration decision. Data from Household Listing Survey show (Figure 3.4.1) that migration does not have linear relationship with hazards. The very high hazard areas under the study have experienced low level of migration. Similarly very low hazard areas have very high migration rate. It so happens that the low hazard areas have long migration history which may have facilitated further migration.

This indicates that migration decision is extremely complex. Demographic, economic, social, and environmental events influence migration decisions. However, participation in migration depends on individual household characteristics such as age, sex and education of the household members along with access to resources, social network and information as well as labour markets needs of destination areas.

3.5 Intention of Future Migration

Plan or intention to migrate in future is an indicator of people's attitude towards migration. How do these families feel about migration? Table 3.5.1 shows that instead of seeing livelihood migration negatively it is seen as a natural process. Seventy-one percent of internal migrant and 57 percent of international migrant households expressed their interest to send an additional member to migrate.

Table 3.5.1 Intention of all types of households for future migration

Intention to migrate in the future	Internal		International		Non-Migrant		Total	
	No	%	No	%	No	%	No	%
Yes	184	71.0	84	56.8	645	66.2	913	66.1
No	75	29.0	63	42.5	324	33.2	462	33.4
Don't know	0	0.0	1	0.7	6	0.6	7	0.5
Total	259	100.0	148	100.0	975	100.0	1382	100.0
Missing	0		0		2		2	

Source: DECCMA origin area survey in Bangladesh, 2016

Sixty-six percent of non-migrant households have also expressed their wish to send one of their household members to migrate in future. It is observed that those who have migrant members will look at livelihood migration positively. But we can see that as high as 66 percent of non-migrant households also intends to send one of their family members outside the village for work.

3.6 Reasons behind Future Migration Intention

We have received 453 responses from 259 internal migrant households on reason behind their intention to migrate in future. Fifty-nine percent of them want to send their family members outside the village for seeking employment. Another 24 percent would like to send their member to work outside the village to meet family obligations. Family obligation mostly entails the need for income for sustenance of the family. For internal migrants, seeking education is an important driver of future migration. Twenty-seven percent intends to send their family members outside the village for pursuing education.

Table 3.6.1 Reasons behind future migration intention

Reasons (multiple responses)	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Seeking employment	152	58.7	70	35.0	568	36.9	790	57.0
Environmental degradation	27	10.4	10	5.0	47	3.1	84	6.1
Extreme event	49	18.9	20	10.0	152	9.9	221	16.0
Seeking education	69	26.6	22	11.0	262	17.0	353	25.5
Family obligations/problem	61	23.6	26	13.0	154	10.0	241	17.4
Housing problems	11	4.3	7	3.5	60	3.9	78	5.6
Debt	22	8.5	14	7.0	81	5.7	117	8.4
Loss of income on season	25	9.7	11	5.5	104	6.8	140	10.1
Loss of income multiple seasons	22	8.5	13	6.5	69	4.5	104	7.5
Health care	5	1.9	2	1.0	8	0.5	15	1.1
Join spouse/marriage	8	3.1	4	2.0	2	0.1	14	1.0
Social/political problems	1	0.4	1	0.5	14	0.9	16	1.2
Forced due to land acquisition or development project	0	0.0	0	0.0	9	0.6	9	0.7
Other	1	0.4	0	0.0	10	0.7	11	0.8
Total responses	453		200		1540		2193	
Total Households	259		148		979		1386	

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Each cell represents percentage of total numbers of response

As high as 22 percent responses directly links to environmental degradation and climate change events as reasons for future intention of migration. If the loss of income in one season and in multiple seasons are added then the percentage of environmental reason will rise up to 40 percent. When we look into the responses of international migrant households, the number of responses that identify seeking employment is still in the highest position. Yet it is much lower in comparison to internal migrant households. In case of non-migrant households, seeking education is also high (17%). Twenty-four percent of internal migrant, 13 percent of international migrant and 10 percent of non-migrant households mention that they might be migrating in future due to family obligations or problems. The burden of debt is

another reason for future migration stated by all three types of households. Eight percent of internal migrant, 7 percent of international migrant and 5 percent of non-migrant households mention that they might send a member outside the village for work in future to address family obligations or problems. However, it is clear that the majority wants to migrate for seeking employment in all three categories of households. Environment and climate change are embedded in this response. A large number of them lost employment for many reasons; climate change is one of them.

3.7 Relocation of Homestead

Relocation of Homestead during Last Five Years

This research considered the households who are currently residing in the enumeration areas as static and if any member of such household goes for work outside the village then those households are considered as migrant households. However, transfer of homestead from original site is also a kind of migration. A significant finding of the study is that 9 percent of the interviewee households have moved their homestead to new locations over the last five years. For all practical purpose these movements are migration. Ten percent of the non-migrant households, 7 percent of the internal migrant households and 5 percent of the international migrant households have shifted their homestead during the last five years.

Table 3.7.1 Relocation to a new house

Moved to a new house	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	17	6.6	8	5.4	100	10.3	125	9.0
No	242	93.4	140	94.6	875	89.7	1257	91.0
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

The reasons why these 9 percent households have shifted their homestead are multiple (5.1.8.2). Out of them, 38 percent identify marriage, education, increase in number of family members etc. as one of the reasons behind migration. Fifty-eight percent on the other hand identify slow changes in environment, weather shocks, unpredictable weather that adversely affect their lives and livelihood as reasons behind migration. Six percent of them moved due to decline in income and 8 percent moved due to disruption in family. This finding leads us to argue that at least 5 percent of the total respondent households have moved their homestead due to environmental reasons.

Desire to Relocate Homestead but Cannot

A section of interviewee households would like to move their homestead from the current locations but cannot due to various reasons (5.1.8.4). Their share is 9 percent of the total interviewee households of the enumeration areas. If we segregate the data on the basis of type of migration it appears that households who would like to shift their homesteads from the current location are the lowest in case of international migrants. Four percent of the international migrant households fall into this category whereas 9 percent of non-migrant households and 10 percent of migrant households are in this group.

If we combine these two groups who have shifted during the last five years due to environmental reasons and who would like to shift, but could not, their share will be 18 percent. An important gap in this analysis is the percentage of people who used to reside in these areas but have left during the last five years to locations outside the enumeration areas could not be accounted for. If they could be included in the count then the percentage will definitely be a little higher. Therefore, this book has only captured the drivers of migration of those households who are located in the village and have sent one or a few members of the households for work. A significant portion of those who may have moved from the localities particularly due to environmental and climate change related reasons are not captured here.

Chapter Conclusion

This chapter provides us ample evidence to argue that migration is multi-causal. While understanding the major drivers of migration for those who have already sent one or a few household members, we find that seeking employment has been the major reason. Moreover, there are other important social reasons such as marriage and family obligation. Environmental degradation and extreme climatic events also play its role in migration decision. Again, loss of income for a season or multiple seasons has been identified by some as the reason behind migration. This is also linked with environmental stresses.

The reasons assigned by non-migrant households for not migrating throw new light on the drivers of migration. Many of them did not migrate not because they did not want to; rather they could not migrate because of lack of resources and the concern of leaving the family members unprotected. We would like to refer to these reasons as barriers to migration. It is also

important to recognize that the barriers are not same for male and female. Along with internal and international migrant households a large number of non-migrant household members would like to migrate in future. Compared to the responses received from those who have currently migrated, the role of climate and environment and climatic reasons are mentioned more when the households are asked about future migration plan (intention). More than one-third of all types of households have identified threats of environmental hazards as one of the reasons for their future intention to migrate.

This research mostly looked at livelihood migration experience of the households which are located in the enumeration areas. Another type of movement which involves shifting of the entire homestead is also important in terms of understanding the drivers of migration. The study finds 9 percent of the interviewee households have moved their homestead into these villages over the last five years. For all practical purpose some of these movements are migration and some others are movements within the village. Another 9 percent would like to move their homestead but cannot due to different types of barriers. On the whole their responses indicate that at least half of them have moved due to climatic events.

CHAPTER IV

EXPOSURE TO ENVIRONMENTAL HAZARDS AND PERCEPTIONS OF ENVIRONMENTAL CHANGE

The previous chapter has provided an answer to our first research question i.e. whether climate change induces migration or not. We have found that climate change is one of the many influencing factors that ultimately shape migration decision. In the following chapters, we want to understand whether people autonomously use migration as one of the many adaptation tools in the context of climate change or not. This chapter begins by developing an understanding of different environmental and climate change related hazards that are faced by the households. In doing so, it is important to bear in mind that the data is drawn from 18 percent very high, 18 percent high, 20 percent medium, 22 percent low and 22 percent very low hazard areas. This is done to keep the representativeness of the data. Maintaining representativeness is important as it allows the research to generalize. Since low or very low hazard areas will experience fewer disasters it is natural that the overall percentage of households who have experienced hazard events will be low. Then in the next chapter we will examine the adaptation tools that affected households are autonomously resorting to address climate change related and environmental stresses.

4.1 Exposure to Environmental Hazards

Environmental stresses usually include flood, cyclone, drought, erosion, salinity, and storm surges. This chapter has two major sections; one is on real experience, impact and losses from environmental stresses and the other on perception on environmental change and stresses. First we attempt to understand if the households have experienced the concerned hazards and if so how it has impacted on their housing, economic security, food security, health and livestock.

Table 4.1.1 shows that 33 percent households experience cyclone, 24 percent experience flood, 16 percent experience salinity, 12 percent experience drought and 10 percent experience storm surges. Among all types of hazards, a majority of respondents from Chandpur, Jessore, Pirojpur and Patuakhali have placed cyclone at the top-most position. People from Pirojpur, Bhola and Lakshmipur have emphasized more on floods compared to people from other districts. This does not mean that people of other districts do not face flood. It only entails that they face it a little less than the areas. Households of Chandpur and Pirojpur have not faced drought, erosion, salinity and storm surge to a great extent. People from Jessore have not reported erosion, salinity and storm surge while people from Bagerhat, Barguna and Pirojpur have not reported riverbank erosion either. The percentage of households who have reported salinity is the highest in Satkhira. Among all the districts, respondents of Chattogram and Cox's Bazar have reported storm surge as the most dominant hazard. Respondents of Gopalganj, however, have informed about all types of hazards. It is understood that not all districts are affected by all the hazards equally.

Table 4.1.1 Overall environmental exposures by districts

District	Flood		Drought		Erosion		Salinity		Storm Surge		Cyclone		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Bagerhat	44	20.1	52	23.7	0	0.0	54	24.7	13	5.9	56	25.6	219	100.0
Barguna	68	26.5	38	14.8	0	0.0	52	20.2	26	10.1	73	28.4	257	100.0
Bhola	52	32.1	4	2.5	21	13.1	2	1.2	27	16.7	56	34.6	162	100.0
Chandpur	21	24.7	7	8.2	0	0.0	0	0.0	4	4.7	53	62.4	85	100.0
Chattogram	52	14.7	42	11.9	26	7.4	49	13.9	65	18.4	119	33.7	353	100.0
Cox's Bazar	70	18.5	11	2.9	16	4.2	48	12.7	83	21.9	151	39.8	379	100.0
Gopalganj	13	25.0	12	23.1	3	5.8	5	9.6	2	3.9	17	32.7	52	100.0
Jessore	18	23.7	19	25.0	0	0.0	0	0.0	0	0.0	39	51.3	76	100.0
Khulna	37	18.1	42	20.5	4	2.0	50	24.4	15	7.3	57	27.8	205	100.0
Lakshmipur	79	31.0	20	7.8	29	11.4	25	9.8	21	8.2	81	31.8	255	100.0
Noakhali	113	28.2	41	10.2	30	7.5	96	23.9	8	2.0	113	28.2	401	100.0
Pirojpur	21	48.8	0	0.0	0	0.0	1	2.3	0	0.0	21	48.8	43	100.0
Patuakhali	71	26.9	30	11.4	4	1.5	24	9.1	25	9.5	110	41.7	264	100.0
Satkhira	62	21.6	37	12.9	27	9.4	76	26.5	27	9.4	58	20.2	287	100.0
Total	721	23.7	355	11.7	160	5.3	482	15.9	316	10.4	1004	33.1	3038	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Each cell represents percentage of total number of responses

As seen in the methodology section, the survey is conducted in different hazards prone *mouzas*/enumeration areas. The survey areas are composed of five categories of *mouzas*. These are 'Very High' hazard prone (8 *mouzas*),

‘High’ (9 *mozas*), ‘Medium’ (10 *mozas*), ‘Low’ (11 *mozas*) and ‘Very Low’ (12 *mozas*). These *mozas* covered geographically 14 coastal delta districts of Bangladesh. It is, therefore, important to see if experiences of hazards vary according to our hazard classification. It shows that hazards are reported more by the people from very high and high hazard locations. However, floods and cyclones are experienced by all categories of hazard areas.

Table 4.1.2: Hazard intensity by environmental exposures (percentage of positive responses)

Hazards	Very High		High		Medium		Low		Very Low		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Flood	59	27.6	208	80.3	176	61.8	106	36.9	172	51.0	721	52.2
Drought	23	10.7	93	35.9	91	31.9	89	31.0	59	17.5	355	25.7
Erosion	28	13.1	41	15.8	84	29.5	1	0.3	6	1.8	160	11.6
Salinity	28	13.1	41	15.8	84	29.5	1	0.3	6	1.8	160	11.6
Drought	23	10.7	93	35.9	91	31.9	89	31.0	59	17.5	355	25.7
Storm surge	110	51.4	79	30.5	89	31.2	18	6.3	20	5.9	316	22.9
Cyclone	168	78.5	249	96.1	206	72.3	172	59.9	209	62.0	1004	72.6

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Each cell represents percentage of total number of responses

4.2 Experience, Impact and Losses

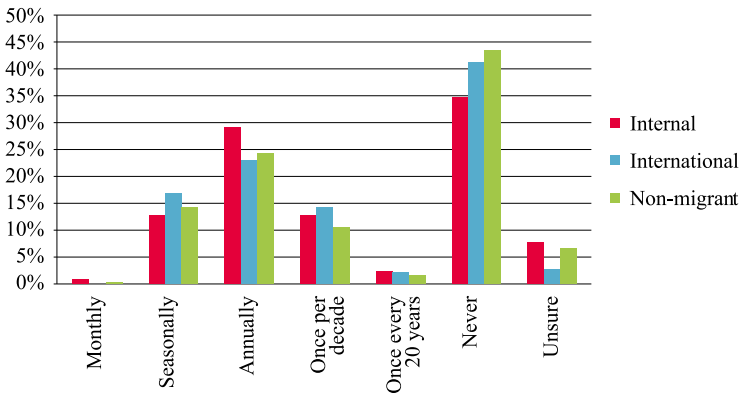
This section looks into impact and losses of the environmental hazards experienced by the households. Impact is judged on the basis of damage to housing; economic insecurities such as damage to crops, livestock and equipment; drinking water, salt water intrusion; food security; health; crop/livestock disease and loss of life. Losses from environmental hazards are calculated in monetary terms.

4.2.1 Flood

Experience

Figure 4.2.1.1 shows that as high as 43 percent of non-migrant, and 41 percent of international migrant households have never experienced flood. Internal migrant households who have never experienced flood are the lowest among the three categories (35%). Twenty-nine percent of internal migrant, 23 percent of international migrant and 24 percent of non-migrant households state that they have experienced flood annually. Around 14 percent of all three groups state that they have experienced flood seasonally. Interestingly, around 11 percent state that they have experienced flood once a decade. It can therefore be inferred that those who live close to cities or reside in elevated regions have not experienced flood at all.

Figure 4.2.1.1 Experience of flood



Source: DECCMA origin area survey in Bangladesh, 2016

Note: Y axis represents the percentage of respondents.

Impact of Flood

Floods impact households in many ways. Forty percent of internal migrant households have faced severe negative impact on housing whereas only 17 percent of international migrant households have faced major impact of flood. Thirty-seven percent of all three types of respondents state that floods have no negative impact on their economic security. However, the highest among them are international migrants. Economic security has not been affected by flood in almost 50 percent of international migrant households. The rest 63 percent has faced some form of negative effect on their economic security from flood. Fifty-eight percent of all three types of households have faced problem with drinking water during flood. Almost 70 percent of all three types of households have faced problem of food security. Food insecurity is the lowest among the international migrant households. As high as 65 percent households have faced some form of health problem due to flood. Almost 70 percent respondents of all three types of households have not faced problem of livestock or crop disease due to flood (Annex 3).

Loss and Damage Due to Flood

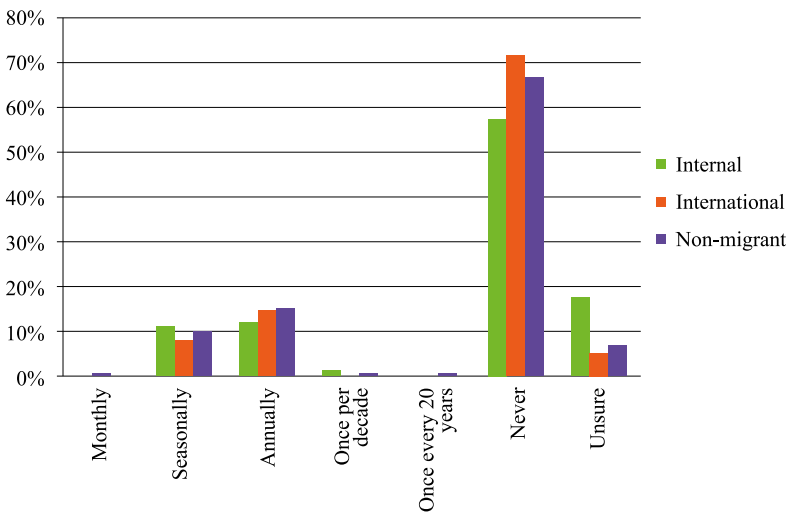
202 respondents have suffered from crop losses due to flood. On an average they have lost around Taka 27,000. Non-migrant households have experienced greater losses compared to the other two groups of households. This is perhaps because non-migrant households own land and they are more involved in agricultural activities. The average monetary loss and loss of livestock due to flood is Taka 22,400 and loss for equipment and other assets is around Taka 15,000 (Annex 9).

4.2.2 Drought

Experience of Drought

A majority of the areas where the field work for this study have been undertaken are not affected by drought; only a few areas are. Figure 4.2.2.1 shows that on average 66 percent households have never experienced drought. Twelve percent of internal migrant and 15 percent of both international and non-migrant households have experienced drought annually. Another 10 percent of all three categories of households have experienced drought seasonally.

Figure 4.2.2.1: Experience of drought



Source: DECCMA origin area survey in Bangladesh, 2016

Note: Y axis represents the percentage of respondents.

Impact of Drought

Impact of drought on households is judged on the basis of its impact on housing, income, access to drinking water and health. Eighty-three percent households who have faced drought have not experienced any changes in their housing. However, drought has affected the economic security of 58 percent of the households. The negative impact in economic security is felt the most by the internal migrant households (69%) whereas economic security of 65 percent of international migrant households is not affected at all by drought. Drought has not have any effect in drinking water situation of 58 percent households and food security of 60 percent households.

Majority of the households has not reported any health problems (67%) and crop/livestock disease (70%) due to drought (Annex 4).

Loss and Damage Due to Drought

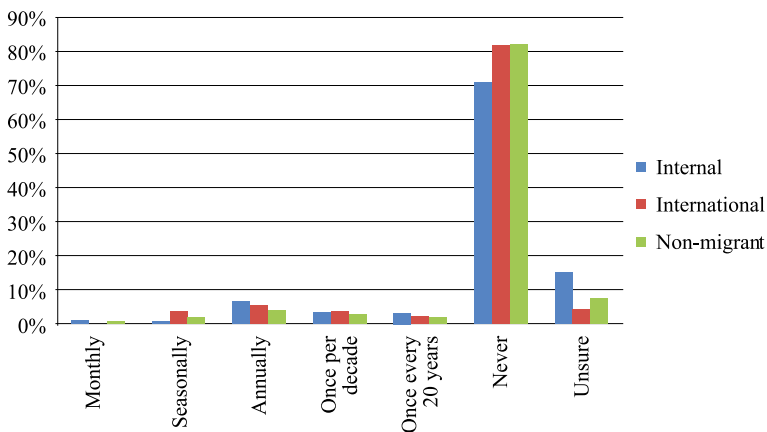
Drought has caused harm to the affected households in many ways which include crop loss, livestock loss, equipment loss and so on. 167 respondents have suffered from crop losses due to drought. Non-migrant households have suffered the most. They have lost Taka 54,300. International migrant households have lost Taka 18,800 while internal migrant households have lost Taka 12,900. On an average three groups of households have lost Taka 6,800 on livestock and Taka 11,300 worth of equipment and other material assets (Annex 9).

4.2.3 Erosion

Experience of Erosion

Figure 4.2.3.1 shows how the households have experienced erosion. Erosion has mostly been reported by the people of Bhola and Lakshmipur. Eighty percent households have never experienced erosion but the rest 20 percent has. Four percent households state that erosion is an annual environmental occurrence while 3 percent households have treated erosion as a ‘once per decade’ environmental calamity. Only 8 percent households are not sure about the experience of its occurrence. However, riverbank erosion is very common in almost every part of the coastal regions. Perhaps members of the households have perceived the term erosion only in the context of coastal erosion.

Figure 4.2.3.1 Experience of erosion



Source: DECCMA origin area survey in Bangladesh, 2016
Note: Y axis represents the percentage of respondents.

Impact of Erosion

Fifty percent of the 160 respondents who have experienced erosion have faced a lot of negative impact with respect to housing. When we compare it in terms of type of households, the highest number in this group belongs to non-migrant households and the lowest belongs to international migrant households. Sixty-three percent respondents who have faced erosion experienced some form of economic insecurities. The lowest economic insecurity has again been reported by international migrant households (33%). Sixty-six percent respondents have not faced any drinking water problem due to erosion. Fifty-three percent respondents have faced negative impact of erosion on food security. However, it is not experienced by all categories of households. Seventy-one percent of international migrant households have not experienced negative impact on food security (Annex 5).

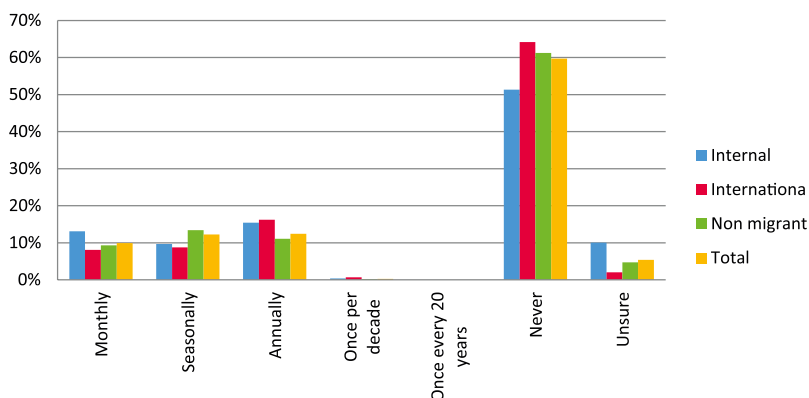
Loss and Damage Due to Erosion

Sixty-six respondents have suffered from crop losses due to erosion rest 35 did not. The highest amount of average losses has been borne by non-migrant households. On an average they have lost Taka 72,300. Losses of internal migrant households are also quite high (Taka 58,100). International migrant households have lost Taka 25,000 on an average. The average loss of livestock is similar in all three groups of households. On an average they lost Taka 32,700. Material assets and equipment loss is very high in case of non-migrant households. They have lost on an average Taka 309,000. International migrant households have lost around Taka 264,000 and internal migrant households have lost Taka 92,600. Material assets include agricultural land, homestead land and homestead. Perhaps this is the reason for such high average loss (Annex 9).

4.2.4 Salinity

Experience of Salinity

Saline water intrusion is a problem in a few districts of Bangladesh. Therefore, households of the areas that are not affected by salinity will have no experience of this. Figure 4.2.4.1 shows that 60 percent of all types of households have not experienced salinity and 40 percent did. Twelve percent households which belongs to all three groups internal, international and non-migrants state that saline water intrusion is an annual event. Another 12 percent households think that saline intrusion is a seasonal event and 16 percent are unsure about it.

Figure 4.2.4.1 Experience of salinity

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Y axis represents the percentage of respondents.

Impact of Salinity

No negative impact has been felt by 61 percent of all types of households on housing. Fifty-four percent households have not experienced any negative impact on economic security due to salinity. However, 71 percent of all types of households have faced drinking water problem due to salinity. Food security of 58 percent households of all categories has not been affected by salinity. Around 48 percent households have complained about health problem which is linked to salinity. No negative impact has been reported in respect to crop/livestock disease by 74 percent of all types of households (Annex 6).

Loss and Damage Due to Salinity

168 respondents have suffered from crop loss and damage due to salinity rest 55 did not. On an average they have lost Taka 13,600. There is hardly any difference in this respect. On an average all three groups of households have lost around Taka 3,300 in livestock. The average equipment loss for all three groups of households is Taka 8,400 (Annex 9).

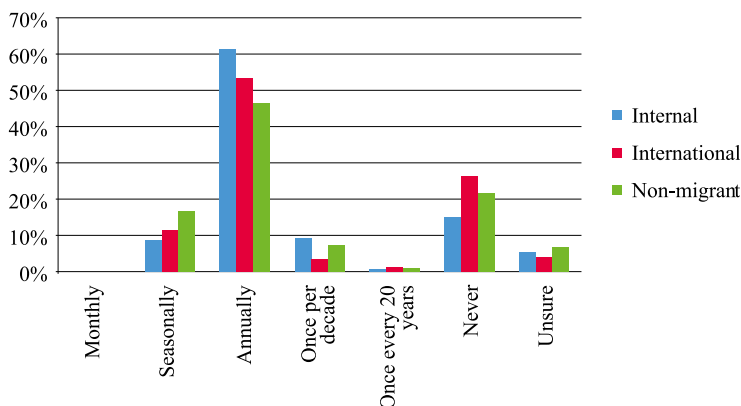
4.2.5 Cyclone

Experience of Cyclone

The highest number of responses in respect to environmental stresses have been received with regard to cyclone. Figure 4.2.5.1 shows that cyclone is a common experience for majority of the respondents of all types of households. Sixty-one percent of internal migrant, 53 percent of international migrant and 46 percent of non-migrant households have

experienced cyclone annually. Another 15 percent of the households have faced cyclone seasonally. Only around 5 percent is unsure about it.

Figure 4.2.5.1 Experience of cyclone



Source: DECCMA origin area survey in Bangladesh, 2016

Note: Y axis represents the percentage of respondents.

Impact of Cyclone

Eighty-eight percent of all types of households who have experienced cyclone have faced negative impact on housing. Internal migrant households (40%) have faced negative impact the most in this respect. Forty-nine percent of the all types of households has been affected in terms of economic security due to cyclone. Eighty-two percent households have not faced any drinking water crisis due to cyclone. This finding indicates that awareness campaign on storage of water is worthy as an adaptation strategy. Forty-six percent of all types of households have experienced food insecurity. Eighty-two percent of all types of respondents have not faced any negative impact on health due to cyclone. However, the percentage of respondents does vary among the three groups of households. Percentage is the highest for international migrant households (89%) and the lowest in case of internal migrant households (76%). Eighty-five percent households have not identified any impact on crop/livestock due to cyclone (Annex 7).

Loss and Damage Due to Cyclone

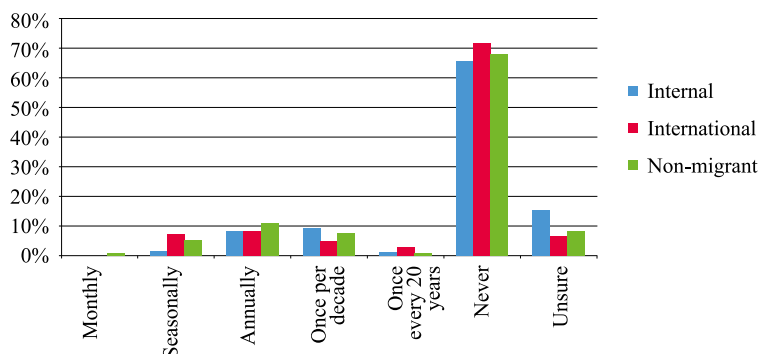
292 respondents have suffered from crop loss and damage due to cyclone rest 199 did not. On an average, crop loss has been of Taka 19,200; livestock loss has been of Taka 16,800; and equipment loss and material assets have been of Taka 16,200 (Annex 9).

4.2.6 Storm Surges

Experience of Storm Surges

There is hardly any difference among internal, international and non-migrant households with respect to their responses on occurrence of storm surges. Sixty-eight percent of household heads of all three groups states that storm surge has never taken place in their areas. Another 14 percent states that they have experienced storm surge annually and seasonally.

Figure 4.2.6.1: Experience of storm surges



Source: DECCMA origin area survey in Bangladesh, 2016

Note: Y axis represents the percentage of respondents.

Impact of Storm Surges

Major impact of storm surge on housing has been reported by 76 percent of all types of households (Annex 8). Economic security of 59 percent of all types of households has been affected by storms surges. Sixty-seven percent of households has faced drinking water problem during and after storm surges. Food security of 70 percent households and health security of 66 percent households have been affected by storm surges. Seventy-four percent households has not faced crop and livestock diseases due to storm surges.

Loss and Damage due to Storm Surges

113 respondents have experienced crop loss due to storm surges rest 72 did not. On an average all three groups of households have lost Taka 26,400 worth of crop due to storm surges. The figure stands at Taka 17,000 loss of livestock and Taka 29,000 of equipment and material assets (Annex 9).

4.3 Household Perception of Environmental Change

This section deals with household heads' perception on environmental change. Environmental change includes rainy season/monsoon onset, rainfall, temperature, river flooding, coastal flooding, coastal/river erosion, salinization and droughts.

Perception of Rainy Season/Monsoon Onset

Table 4.3.1 presents the household heads' perception on change in the rainy season/monsoon onset over the last five years. Forty-one percent of the households perceive that monsoon has been arriving later than its usual pace over the last five years. On the other hand, another 40 percent perceive that it is coming sooner than before while 16 percent households think that rainy season/monsoon onset have stayed the same as before.

Table 4.3.1 HH perception of rainy season/monsoon onset

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Stayed the same	46	17.8	18	12.2	154	15.8	218	15.8
Arrived earlier	101	39.0	60	40.5	399	40.9	560	40.5
Arrived later	104	40.2	69	46.6	396	40.6	569	41.2
Don't know	8	3.1	1	0.7	26	2.7	35	2.5
Total	259	100.0	148	100	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Perception of Rainfall

Table 4.3.2 presents how the households in the coastal areas of Bangladesh perceive rainfall in the last five years. Forty-nine percent of the households perceive that the rainfall has decreased while 47 percent think that the rainfall has increased in the last five years. Responses do not vary significantly on the basis of migration status.

Table 4.3.2 HH perception of rainfall

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Stayed the same	10	3.9	5	3.4	39	4.0	54	3.9
Increased	115	44.3	73	49.3	455	46.7	643	46.6
Decreased	132	51.0	69	46.6	474	48.6	675	48.8
Changed in another way	0	0.0	0	0.0	4	0.4	4	0.3
Don't know	2	0.8	1	0.7	3	0.3	6	0.4
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Perception of Temperature

Table 4.3.3 presents households' perception on the state of temperature in the last five years. Overwhelming majority of respondents (98%) irrespective of their household migration status (internal, international and non-migrant) perceive that the temperature has increased.

Table 4.3.3 HH perception of temperature

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Stayed the same	2	0.7	1	0.7	12	1.2	15	1.1
Increased	255	98.6	146	98.6	953	97.8	1354	98.0
Decreased	2	0.7	1	0.7	9	0.9	12	0.8
Changed in another way	0	0.0	0	0.0	0	0.0	0	0.0
Don't know	0	0.0	0	0.0	1	0.1	1	0.1
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Perception of River Flooding

Fifty-three percent of all types of respondents think that river flooding has remained the same. Thirty-four percent of the households opine that river flooding has increased over the last five years. The number of internal migrant households is higher in case of those who perceive that river flooding has increased. Perhaps they have faced the impact of flood more.

Table 4.3.4 HH perception of river flooding

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Stayed the same	111	42.9	98	66.2	524	53.7	733	53.0
Increased	111	42.9	36	24.3	325	33.3	472	34.2
Decreased	10	3.9	4	2.7	37	3.9	51	3.7
Changed in another way	0	0.0	0	0.0	2	.2	2	.1
Don't know	27	10.3	10	6.8	87	8.9	124	9.0
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Perception of Coastal Flooding

Table 4.3.5 shows the perception of respondents with regard to coastal flooding. It is pertinent to mention that many respondents have not experienced coastal flooding. As high as 65 percent perceive that the scale of coastal flooding has remained the same. Another 19 percent households think that coastal flooding has increased.

Table 4.3.5 HH perception of coastal flooding

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Stayed the same	160	61.8	104	70.2	627	64.3	891	64.5
Increased	49	18.9	25	16.9	186	19.1	260	18.8
Decreased	7	2.7	6	4.1	27	2.8	40	2.9
Changed in another way	0	0.0	0	0.0	1	.1	1	.1
Don't know	43	16.6	13	8.8	134	13.7	190	13.7
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Perception of Coastal/Riverbank Erosion

Table 4.3.6 shows the perception about coastal/riverbank erosion of households of all categories. Sixty-two percent of the households perceive that the extent of coastal/river erosion has remained the same over the last five years while 24 percent of households think that coastal/river erosion has increased.

Table 4.3.6 HH perception of coastal/riverbank erosion

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Stayed the same	141	54.4	97	65.5	619	63.5	857	62.0
Increased	81	31.3	32	21.6	223	22.9	336	24.3
Decreased	6	2.3	9	6.1	34	3.5	49	3.6
Changed in another way	0	0.0	0	0.0	3	.3	3	.2
Don't know	31	12.0	10	6.8	96	9.8	137	9.9
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

4.3.7 Perception of Salinization

Table 4.3.7 offers the perception about salinization. Fifty-three percent of the households think that the extent of salinization has stayed the same. But 37 percent of the households opine that salinization has increased over the last five years.

Table 4.3.7 HH perception of salinization

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Stayed the same	108	41.7	94	63.5	531	54.5	733	53.0
Increased	115	44.4	44	29.7	358	36.7	517	37.4
Decreased	12	4.6	2	1.4	21	2.1	35	2.6
Changed in another way	0	0.0	0	0.0	1	.1	1	.1
Don't know	24	9.3	8	5.4	64	6.6	96	6.9
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Perception of Drought

A good number of respondents (45%) feel that drought in the coastal areas of Bangladesh has increased. A majority of them (51%), however, thinks that drought has stayed the same over the last five years (Table 4.3.8).

Table 4.3.8: HH perception of drought

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Stayed the same	104	40.2	95	64.2	504	51.7	703	50.9
Increased	140	54.0	49	33.1	434	44.5	623	45.0
Decreased	3	1.2	0	0.0	13	1.3	16	1.2
Changed in another way	0	0.0	0	0.0	0	0.0	0	0.0
Don't know	12	4.6	4	2.7	24	2.5	40	2.9
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Chapter Conclusion

This chapter gives a detailed description of respondents' experiences of different types of environmental stresses. Not all the stresses are equally felt by all the respondents. Around 40 percent have not experienced flood. Flood has impacted the internal migrant households the most. Only a few areas under this study are affected by drought. Around two-thirds of the households have not experienced drought. Nonetheless, drought has affected the economic security of those who have faced it. Again internal migrants are the worst sufferers.

Non-migrant households are the worst sufferers with regard to crop damage due to drought. Around 12 percent households have experienced saline water intrusion that resulted in crop loss, loss of livestock and equipment. Around three-fourths of the respondents have experienced cyclone. Eighty-eight percent households who have experienced cyclone have either lost homestead or sustained damages.

This chapter has also presented household heads' perception about environmental change. A little less than half notes late arrival of monsoon. Perception about rainfall is divided equally among the respondents. Half of them think rainfall is increasing and other half states the opposite. There is, however, uniformity of opinion among all three types of households with respect to the rise in temperature. Almost all believe that temperature is rising. A little more than a half thinks that river flooding has remained

the same. Two-thirds of the respondents also think that coastal flooding was there in the past and is a common natural phenomenon. Only one-fourth thinks that riverbank erosion has increased. More than one-third of the respondents note that salinity has increased.

This chapter, therefore, confirms the arguments and findings of earlier studies that climate change is no longer a future threat. Rather people are already facing climatic and environmental stresses.

CHAPTER V

AUTONOMOUS ADAPTATION PRACTICES

In the previous chapter we have found a detailed and clear account of two important areas: households' exposure to different forms of environmental and climate change related hazards and perception of environmental change. In this chapter we will try to find out various measures undertaken by the households to adapt with the changes that environmental and climate change related hazards have brought on their lives and livelihoods. The government and NGOs have undertaken a number of initiatives such as infrastructure development, house modification, diversification of agricultural crop production, awareness campaign on disasters and so on. These measures are commonly known as planned adaptation programmes or initiatives. Major researches are available on planned adaptation programmes. This study does not look into those planned adaptation initiatives. Rather it explores adaptation practices that are autonomously undertaken by local people and communities in the GBM delta districts. A question remains here as to why we are not looking into planned adaptation strategies. There is a specific reason behind this. It is well recognized that planned adaptation programmes are mostly local and they target interventions that would reduce the scope of migration of the affected households or communities. Therefore, by concentrating on autonomous adaptation strategies, we want to find out if the affected households on their own are using migration as one of the many adaptation tools.

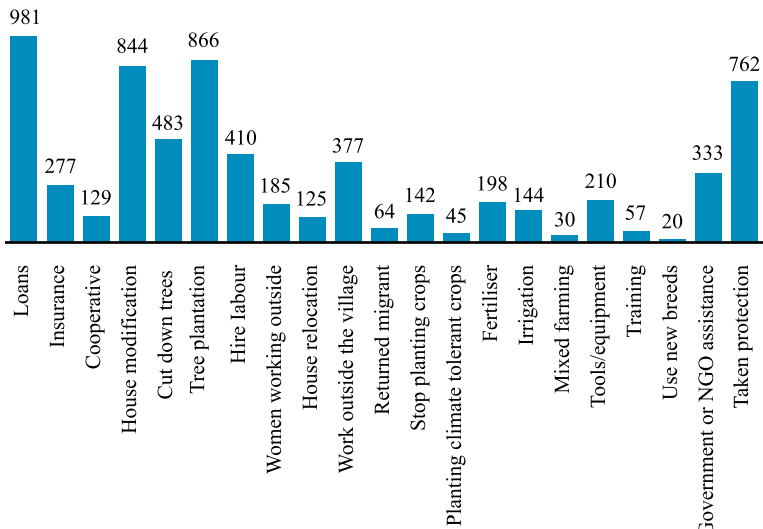
This chapter first deals with different types of autonomous adaptation practices undertaken by the affected households. Then it presents the perception of the households about the effectiveness of those adaptation tools. It may very well be that people would like to pursue some adaptation options which they currently cannot. This research treats them as barriers to adaptation. Finally, the section locates some barriers that the households have identified. This section is

based on data extracted from 1,386 households located in different GBM delta districts in Bangladesh. Responses of four non-migrant households are missing in the tables and graphs of this section of the chapter.

5.1 Adaptation Practices

The respondents have narrated twenty-one types of autonomous adaptation practices. These are loan, insurance, cooperatives, modification of house, moving to a new house, cutting down trees, tree plantation, women working outside home, use of hired labour, household members working outside the village, returned to village, diversification of crops, cultivation of climate tolerant crop, increased use of fertilizer, change in land use, buying and selling of fishing tools, training, cultivation of new breeds of fish, government or NGO assistance and use of community shelter. Figure 5.1.1 shows the extent of adaptation practices. Loan, house modification and tree plantation are most commonly used as autonomous adaptation tools. These tools are followed by self-organisation of accessing protection during environmental and climate change related hazards.

Figure 5.1.1 Adaptation practices



Source: DECCMA origin area survey in Bangladesh, 2016

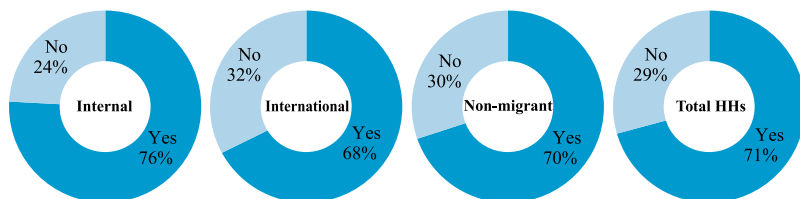
5.1.1 Loan

Use of Loan as One of the Adaptation Tools

Use of loan is one of the most important adaptation tools among different adaptation measures used by the households to adapt to climate change. A large number of households have taken loan in the last five years. The survey finds that 71 percent of the households have taken loan and another 29 percent have not.

Now let us look into the issue from the perspective of migration status. In this study we have divided the households into three categories: internal migrant, short-term contractual international migrant and non-migrant households. In this case as well, a majority of the households irrespective of their migration status has taken loan. The percentage of households who have taken loan is the highest in case of internal migrants (76%). It is the lowest in case of international migrant households. Even then, it is as high as 68 percent (Figure 5.1.1.1).

Figure 5.1.1.1 Status of loan by HH type



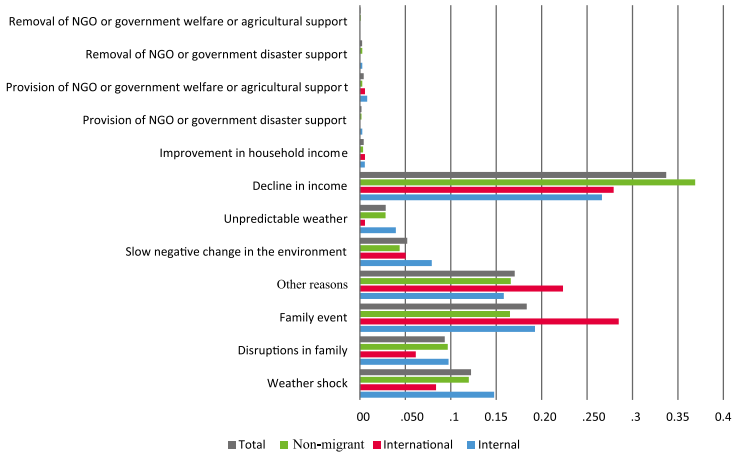
Source: DECCMA origin area survey in Bangladesh, 2016

Reason for Taking out a Loan

It will be good to see why the households have taken loan and if there is any difference in this respect according to migration status. A majority of households has provided multiple responses for taking loan. The highest number (59%) has identified declining income as one of the reasons for taking loan. Figure 5.1.1.2 it is followed by family events such as marriage, completion of household members' education, child birth and so on (32%). The third most important reason for taking loan is to address the problems arising out of weather shock. The weather shocks are cyclone, flood and water logging (22%). Another 9 percent have stated that they have taken loan to meet the adverse impact of slow negative changes in weather such as drought, salinization and erosion. Again another 5 percent have identified unpredictable weather such as erratic rainfall, unusual arrival of monsoon as one of the reasons for which they have taken loan. This

indicates that altogether around 36 percent have identified sudden and slow onset environmental events for taking loan.

Figure 5.1.1.2: Reason for taking a loan by HH type



Source: DECCMA origin area survey in Bangladesh, 2016

Now let us see if there is any difference in internal, international and non-migrant households with regard to reasons behind taking loan. Figure 5.1.1.2 shows that decline in income is the dominant reason for all three groups. However, percentage of households who have identified this reason is much higher in case of non-migrant households (63%). Fifty-two percent of internal migrant and 50 percent of international migrant households identify the same. On the other hand, 51 percent of international migrant households have taken loan for family event such as birth, marriage, higher education and so on. Only 28 percent of non-migrant and 37 percent of internal migrant households have taken such loans. It may be inferred that environmental reason is one of the important reasons for taking loan. However, reason for taking loan varies according to migration status (Annex 10).

Effectiveness of Loan as an Adaptation Strategy

Irrespective of migration status, a substantial majority of households who has used loan as an adaptation tool states that their households are better off as a result of taking loan. Seventy-eight percent of internal migrant, 79 percent of international migrant and 83 percent of non-migrant households

are in agreement with the above statement. Only 8 percent state that even after taking loan nothing has changed in their families and another 10 percent opines that the situation of their households have become worse off (Table 5.1.1.1).

Table 5.1.1.1 Effectiveness of loan as adaptation measure

Effectiveness	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Our household is better off	153	78.1	79	79.0	571	83.4	803	81.8
Nothing has changed for my household	23	11.7	8	8.0	50	7.3	81	8.3
Our household is worse off	20	10.2	13	13.0	64	9.3	97	9.9
Total	196	100.0	100	100.0	685	100.0	981	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Reason for Not Taking a Loan

Earlier we have seen that 29 percent of total households have not taken any loan. Ninety-one percent of those who have not taken loan state that they are not interested to take loan. Only 7 percent would like to take loan but do not have the access. There is hardly any difference among them according to their migration status. However, the percentage of households among internal migrants who would like to take loan but could not do so is double than the other two groups (Table 5.1.1.2).

Table 5.1.1.2 Reason for not taking a loan by HH type

Reason	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Would like a loan but do not have one	8	12.7	2	4.2	18	6.2	28	7.0
Not interested in taking out a loan	55	87.3	46	95.8	265	91.4	366	91.3
Not relevant	0	0.0	0	0.0	7	2.4	7	1.7
Total	63	100.0	48	100.0	290	100.0	401	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

5.1.2 Insurance

Use and Effectiveness of Insurance as One of the Adaptation Tools

Table 5.1.2.1 shows that 80 percent of households have not taken insurance as an adaptation tool. There is hardly any difference among the internal, international and non-migrant households in this respect. Twenty percent households have taken insurance. Again there is hardly any difference among the household categories.

Table 5.1.2.1 Use of insurance by HH type

Use of insurance	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	59	22.8	29	19.6	189	19.4	277	20.0
No	200	77.2	119	80.4	786	80.6	1105	80.0
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Only a small percentage of those who subscribed insurance has linked that initiative with climate change adaptation (Annex 10). However, 67 percent of those households who have taken insurance think that their households have become better off because of use of insurance as an adaptation tool (Table 5.1.2.2).

Table 5.1.2.2 Effectiveness of insurance in adaptation

Effectiveness	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Our household is better off	34	57.6	20	69.0	131	69.3	185	66.8
Nothing has changed for my HH	17	28.8	2	6.9	39	20.6	58	20.9
Our household is worse off	8	13.6	7	24.1	19	10.1	34	12.3
Total	59	100.0	29	100.0	189	100.0	277	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Reason for Not Taking Insurance

It was seen earlier that as many as 1,105 (80%) have not availed insurance. Sixty-four percent of them are not interested in insurance. Another 36 percent are interested but do not have the basic resources required for taking insurance package. This indicates that the households did not think insurance is an avenue for adaptation (5.1.2.3).

Table 5.1.2.3 Reason for not taking insurance

Reason	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Would like insurance but do not have it	76	38.0	38	31.9	281	35.7	395	35.8
Not interested in insurance	123	61.5	81	68.1	498	63.4	702	63.5
Not relevant	1	.5	0	0.0	7	.9	8	.7
Total	200	100.0	119	100.0	786	100.0	1105	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

5.1.3 House Modification or Improvement

Use and Effectiveness

Modification or improvement of house is one of the most important adaptation tools used by the respondents. Sixty-one percent households have modified their homestead (5.1.3.1). There is hardly any difference among the three groups' (internal, international and non-migrant households) in this respect. Seventy-one percent of those who improvised their homestead have done so for avoiding environmental stresses (Annex 10). Ninety-five percent of those who modified or improved their homestead thought that they are better off than before after making such modification/improvement (5.1.3.2)

Table 5.1.3.1 Modification or improvement of house by type of HH

Modification or improvement of house	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	163	62.9	93	62.8	588	60.3	844	61.1
No	96	37.1	55	37.2	387	39.7	538	38.9
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Each cell represents percentage of total number of response

Table 5.1.3.2 Effectiveness of house modification in adaptation

Effectiveness	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Our household is better off	155	95.1	86	92.5	564	95.9	805	95.4
Nothing has changed for my household	7	4.3	7	7.5	18	3.1	32	3.8
Our household is worse off	1	0.6	0	0.0	6	1.0	7	.8
Total	163	100.0	93	100.0	588	100.0	844	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Reason for Not Modifying House

538 households have not modified their homestead. It is not that they did not want to rather they could not afford to. Fifty-seven percent would like to modify but could not due to reasons beyond their control. It is obvious that lack of finance is a major setback. Thirty-six percent of those who have not invested in improvement stated that they are not interested. Another 8 percent think it is not relevant. Perhaps these homesteads are located in low and very low hazard areas and thus those do not require improvement (5.1.3.3).

Table 5.1.3.3 Reason for not modifying house

Reason	Internal		International		Non-Migrant		Total	
	No	%	No	%	No	%	No	%
Would like to have modified/ improved the house but have not	59	61.5	34	61.8	211	54.5	304	56.5
Not interested in modifying / improving the house	28	29.1	18	32.7	147	38.0	193	35.9
Not relevant	9	9.4	3	5.5	29	7.5	41	7.6
Total	96	100.0	55	100.0	387	100.0	538	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

5.1.4 Plantation of Trees

Plantation of Trees as One of the Adaptation Tools

Tree plantation is an important autonomous adaptation tool used all over Bangladesh. Sixty-three percent of the respondents, who participated in this survey use tree plantation as a measure for adaptation (5.1.4.1). A majority of the respondents who planted trees clearly identify it as a way of adapting to weather shock and slow negative changes. There are some differences among internal, international and non-migrants households in respect to weather shock. It is the internal migrant households who plant trees the most. Surprisingly participation of the non-migrant households is a little lower. Around 25 percent of all types of households identify tree plantation as one of the avenues to adapt to slow negative impacts on environment (Annex 10).

Table 5.1.4.1 Plantation of trees by type of HH

Plantation of trees	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	178	68.7	94	63.5	594	60.9	866	62.7
No	81	31.3	54	36.5	381	39.1	516	37.3
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Effectiveness of Tree Plantation in Adaptation

Irrespective of migration status, a substantial majority of those who have planted trees as an adaptation tool state that as a result of tree plantation their households are better off. Ninety-nine percent of the internal migrants, 95 percent of the international migrant and 98 percent of the non-migrant households are in conformity with the above statement. Only 2 percent has stated that even after planting trees nothing has changed in their families and another less than 1 percent thinks that the situation of their households have worsened (5.1.4.2).

Table 5.1.4.2 Effectiveness of tree plantation by type of HH

Effectiveness	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Our household is better off	177	99.4	89	94.7	579	97.5	845	97.6
Nothing has changed for my household	1	.6	5	5.3	12	2.0	18	2.1
Our household is worse off	0	0.0	0	0.0	3	.5	3	.3
Total	178	100.0	94	100.0	594	100.0	866	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Reason for Not Planting Trees

Earlier we have seen that 516 (37%) of the total number of households have not planted any tree. Twenty-seven percent of those who have not planted trees state that they are not interested. For 7 percent, the question is not relevant. Sixty-six percent of the respondents would have liked to plant trees but could not. One of the major reasons for not being able to plant tree is lack of land where trees can be planted (5.1.4.3).

Table 5.1.4.3 Reason for not planting trees by HH type

Reason for not planting tree	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Would like to plant trees but have not done it	61	75.3	42	77.7	236	61.9	339	65.7
Not interested in planting trees	15	18.5	9	16.7	115	30.2	139	26.9
Not relevant	5	6.2	3	5.6	30	7.9	38	7.4
Total	81	100.0	54	100.0	381	100.0	516	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Cutting Down Trees as Part of Adaptation

Table 5.1.4.4 shows 65 percent of the total respondents have not used cutting down trees as one of the adaptation tools and 35 percent of the respondents have. Internal migrant households are more in that category who cut trees as part of adaptation. Less than 1 percent mentions that they have stopped cutting down trees. A majority of the households identifies decline in income as one of the major reasons for cutting down trees. Twenty-two percent cut trees for using logs in addressing environmental shock (Annex 10). For example, when they raise their homestead they need tree trunks to do that. When they shift homes they also cut trees and use them in making new homes. Ninety-one percent of those who have cut trees state that it helps them to adapt. In other words they are better off after doing that (5.1.4.5).

Table 5.1.4.4 Cutting down trees by type of HH

Cutting down trees	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	104	40.2	51	34.5	328	33.6	483	34.9
No	155	59.8	97	65.5	647	66.4	899	65.1
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Table 5.1.4.5 Effectiveness of cutting down trees by type of HH

Effectiveness	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Our household is better off	95	91.3	45	88.2	297	90.5	437	90.5
Nothing has changed for my household	3	2.9	3	5.9	6	1.8	12	2.5
Our household is worse off	6	5.8	3	5.9	25	7.7	34	7.0
Total	104	100.0	51	100.0	328	100.0	483	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Reason for Not Cutting down Trees

899 households (65%) have not cut trees. Seventeen percent would have cut trees but could not do so (5.1.4.6), perhaps because they do not own trees. Having grown up trees would have helped them in raising homes, constructing new rooms etc. Seventy-two percent are not interested to cut trees as they do not need to do so. It is not relevant for another 7 percent. There is no significant difference among three types of households.

Table 5.1.4.6 Reason for not cutting trees by type of HHs

Reason	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Would like to cut trees but have not done it	35	22.6	16	16.5	103	15.9	154	17.1
would like to stop cutting down trees but have not done it	9	5.8	8	8.2	25	3.9	42	4.7
Not interested in cutting down trees / stopping cutting down trees	104	67.1	70	72.2	469	72.5	643	71.5
Not relevant	7	4.5	3	3.1	50	7.7	60	6.7
Total	155	100.0	97	100.0	647	100.0	899	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

5.1.5 Hired Labour

Use and Effectiveness of Hired Labour as Adaptation Tool

Thirty percent of the respondents employ hired labour in adapting to environmental challenges. Two percent used to hire labour but stopped (5.1.5.1). Another 70 percent never used hired labour¹². Now let us focus

12 The table presents combine result of those who have hired labour and those who stopped doing so. In the text the separated these two groups.

on 30 percent who have employed hired labour over the last five years. Of this group 34 percent have used that for economic activities (Annex 10). Nineteen percent have done so to adapt with the weather shock. Ninety-seven percent of the cohort that hired labour think it to be an effective adaptation measure (5.1.5.2).

Table 5.1.5.1 Employing hired labour by type of HH

Hired labor	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	80	30.9	43	29.1	287	29.4	410	29.7
No	179	69.1	105	70.9	688	70.6	972	70.3
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Table 5.1.5.2 Effectiveness of hiring labour by type of HH

Effectiveness	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Our household is better off	76	95.0	41	95.3	280	97.6	397	96.8
Nothing has changed for my household	3	3.7	2	4.7	4	1.4	9	2.2
Our household is worse off	1	1.3	0	0.0	3	1.0	4	1.0
Total	80	100.0	43	100.0	287	100.0	410	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

5.1.6 Women's Work Outside the House

Use and Effectiveness

Thirteen percent of the households send or stopped sending their women to work outside the homestead (5.1.6.1). There are some major variations among different types of households in this respect. The number of women working outside the homestead is more in case of internal migrants. Twenty-two percent of the internal migrant households at least have one woman who works outside the home. It is the lowest in case of international migrant households. Among them 87 percent has started working and 13 percent has stopped working outside the home. Ninety-six percent of those who either started or stopped sending women to work outside home consider their decision to be a good one (Table 5.1.6.2).

Table 5.1.6.1 Use of HH women in labour force by HH type

Women started or stopped working out	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	56	21.6	6	4.1	123	12.6	185	13.4
No	203	78.4	142	95.9	852	87.4	1197	86.6
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Table 5.1.6.2: Effectiveness of women working outside by type of HH

Effectiveness	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Our household is better off	54	96.4	6	100.0	118	95.9	178	96.2
Nothing has changed for my household	1	1.8	0	0.0	2	1.7	3	1.6
Our household is worse off	1	1.8	0	0.0	3	2.4	4	2.2
Total	56	100.0	6	100.0	123	100.0	185	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Reason for Women not Working Outside

Eighty-six percent of the households who do not allow their women to work outside the homestead do so as they are not interested about it. Only 12 percent state they would like their women to work outside home but have not done so yet (5.1.6.3).

Table 5.1.6.3: Reason for women not working outside

Reason	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Would like women to work outside the house but have not	29	14.3	17	12.0	96	11.3	142	11.9
Not interested in women working outside the house	168	82.7	125	88.0	735	86.2	1028	85.8
Not relevant	6	3.0	0	0.0	21	2.5	27	2.3
Total	203	100.0	142	100.0	852	100.0	1197	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

5.1.7 Migration of HH Members

Sending Member of HHs Outside the Village for Work

Twenty-seven percent of the households send one or a few members of their households to work outside the village and another 73 percent do not (5.1.7.1). Multiple reasons are assigned by the respondents for letting household members work outside the village. Economic reason is on top. Forty-nine percent of the households who have members working outside have identified this as the major reason (Annex 10). This is followed by weather shock. Around 18 percent identify weather shock as reason behind members working outside the village. Ten percent of the same group also think slow negative change in environment as the third most important reason. Ninety-two percent of the households who employ this strategy consider it to be an effective one (5.1.7.2).

Table 5.1.7.1 Sending member of HHs outside the village for work by type of HH

HHs member working outside the village	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	199	76.8	102	68.9	76	7.8	377	27.3
No	60	23.2	46	31.1	899	92.2	1005	72.7
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Table 5.1.7.2 Effectiveness of HH member working outside the village by type of HH

Effectiveness	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Our household is better off	182	91.5	94	92.2	70	92.2	346	91.7
Nothing has changed for my household	13	6.5	5	4.9	3	3.9	21	5.6
Our household is worse off	4	2.0	3	2.9	3	3.9	10	2.7
Total	199	100.0	102	100.0	76	100.0	377	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Reason for Not Working outside the Village

One thousand five households (73%) have not sent any household member to work outside the village. Sixty-two percent of the households are not interested to pursue labour migration and 34 percent would have liked to send a member outside the village for work but failed to do so (5.1.7.3). This study have not pursued the question what barred them from sending a family member outside the village for work. Other studies however, highlighted (Siddiqui and Billah 2014) that lack of information, lack of social network in destination and lack of resources hinder the opportunity of sending family member outside for work.

Table 5.1.7.3 Reason for HH member not working outside the village by type of HH

Reason	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Would like a household member to work outside of the village but they do not	14	23.3	12	26.1	314	34.9	340	33.8
Not interested in household members working outside the village	34	56.7	33	71.7	552	61.4	619	61.6
Not relevant	12	20.0	1	2.2	33	3.7	46	4.6
Total	60	100.0	46	100.0	899	100.0	1005	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

5.1.8 Relocation to a New House

Use of Movement to a New House as One of the Adaptation Tools

Over the last five years 9 percent of the interviewee households have moved to new houses. The percentage of households who have moved to new houses is the highest (10%) in case of non-migrant households (Table 5.1.8.1). Seven percent of the internal migrants and 5 percent of the international migrant households have shifted their homestead. The figure is quite substantive. Moving homestead is also a kind of migration. However we do not know what percentage move within the village and what percentage move to one village from another. We also do not know the percentages of households who have moved out of this village and resettled themselves in a different village or other urban areas. This is because we could only interview those who are still staying in the study villages.

Table 5.1.8.1 Relocation to a new house

Moved to a new house	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	17	6.6	8	5.4	100	10.3	125	9.0
No	242	93.4	140	94.6	875	89.7	1257	91.0
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Reason for Relocating to a New House

It is important to know why the households have moved to new homesteads. We are keen to learn if any of them have moved due to climate and environment related factors. A majority of households have provided multiple responses for moving to a new house. The highest number (38%) identify family events such as marriage, household members' education, increase in the number of household members etc. as the major reason (5.1.8.2). However, a good number of them moved for slow negative change in the environment, unpredictable weather and weather shocks. If we combine these three climate related reasons (weather shock, slow negative change in the environment and unpredictable weather) then the figure stands at 58 percent. Therefore it may be deduced that environment or climate change has deep correlation with shifting of locations of households. In this case migration of the entire household has to be the only adaptation tool. The nature of such migration is different. Only 6 percent have moved their homestead due to decline in income and 8 percent due to disruptions in family.

Table 5.1.8.2 Reason for moving to a new house by HH type

Reason for moving (multiple response)	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Weather shock	6	35.3	3	37.5	37	37.0	46	36.8
Disruptions in family	1	5.9	0	0.0	9	9.0	10	8.0
Family events	8	47.1	5	62.5	35	35.0	48	38.4
Other reason	4	23.5	2	25.0	14	14.0	20	16.0
Slow negative change in the environment	2	11.8	1	12.5	16	16.0	19	15.2
Unpredictable weather	0	0.0	0	0.0	8	8.0	8	6.4
Decline in income	1	5.9	0	0.0	7	7.0	8	6.4
Improvement in household income	3	17.6	1	12.5	13	13.0	17	13.6
Provision of NGO or government disaster support	0	0.0	1	12.	7	7.0	8	6.4
Total (% of total HHs)	17	13.6	8	6.4	100	80.0	125	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Effectiveness of Moving to a New House in Adaptation

Irrespective of migration status, a substantial majority of those who have moved to a new house state that as a result of moving to a new house their households are better off. Eighty-eight percent of the internal migrant, 100 percent of the international migrant and 89 percent of the non-migrant households are in conformity with the above statement (5.1.8.3). Only 2 percent of the total respondents have state that even after moving to a new house no positive change has occurred and another 8 percent think that the situation of their households have worsened.

Table 5.1.8.3 Effectiveness of moving to a new house

Effectiveness	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Our household is better off	15	88.2	8	100.0	89	89.0	112	89.6
Nothing has changed for my household	1	5.9	0	0.0	2	2.0	3	2.4
Our household is worse off	1	5.9	0	0.0	9	9.0	10	8.0
Total	17	100.0	8	100.0	100	100.0	125	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Reason for Not Moving to a New House

1,257 households have remained in their traditional homestead. Ninety percent of them do not require moving their homestead. However, 9 percent of these households would have moved but could not for various reasons, perhaps due to financial or other unavoidable circumstances. This may indicate that 9 percent of these respondents are somehow trapped in their origin area (Table 5.1.8.4). What is more important in this respect is if we combine this 9 percent who want to move but can not with those who have already moved then the total figure who needed to relocate over the last five years stands at 18 percent.

Table 5.1.8.4 Reason for not moving to a new house

Reason for not moving	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Would like to move but have not	25	10.3	5	3.6	82	9.4	112	8.9
Not interested in moving house	211	87.2	132	94.3	785	89.7	1128	89.7
Not relevant	6	2.5	3	2.1	8	.9	17	1.4
Total	242	100.0	140	100.0	875	100.0	1257	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

5.1.9 Government and NGO Assistance

Use and Effectiveness of Government and NGO Assistance

Twenty-three percent of the households receive government and NGO assistance in their adaptation practices. One percent has stopped receiving such assistance. The rest 76 percent neither have received nor stopped receiving assistance from government or NGOs over the last five years. This indicates that a large group of population is still outside the coverage of government assistance (5.1.9.1).

Table 5.1.9.1 Use of Government and NGO assistance

Government and NGO assistance	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	61	23.6	25	16.9	247	25.3	333	24.1
No	198	76.4	123	83.1	728	74.7	1049	75.9
Total	259	100.0	148	100.0	975	100.0	1382	100.0
Missing	0		0		4		1386	

Source: DECCMA origin area survey in Bangladesh, 2016

Now let us focus on the 23 percent who have received government and NGO assistance. Twenty-six percent of those who received assistance identify weather shock as the most important reason. Ninety-five of those who have secured such assistance state that they are better off by accessing the resource (Annex 10).

Table 5.1.9.2 Effectiveness of receiving Government and NGO assistance by type of HH

Effectiveness	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Our household is better off	57	93.4	24	96.0	236	95.6	317	95.2
Nothing has changed for my household	3	4.9	1	4.0	9	3.6	13	3.9
Our household is worse off	1	1.7	0	0.0	2	.8	3	.9
Total	61	100.0	25	100.0	247	100.0	333	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Reason for Not Receiving NGO and Government Assistance

1,049 households (76%) have not received any assistance from the government or the NGOs. Sixty-nine percent state that they would have liked to receive such assistance but have not. Another 30 percent are not interested to receive such assistance (5.1.9.3).

Table 5.1.9.3 Reason for not receiving GO and NGO assistance by type of HH

Reason	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Would like to receive government or NGO assistance but have not	139	70.2	73	59.4	517	71.0	729	69.5
Not interested in receiving government or NGO assistance	57	28.8	49	39.8	203	27.9	309	29.5
Not relevant	2	1.0	1	.8	8	1.1	11	1.0
Total	198	100.0	123	100.0	728	100.0	1049	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

5.1.10 Own Protection/Common Shelter

Use and Effectiveness of Own Protection/Common Shelter

Table 5.1.10.1 shows 55 percent of the households have used common shelter or organised their own protection during disaster as one of the adaptation tools. Out of them, 48 percent have organised their own protection and 52 percent have used a community shelter.

The majority of households have provided multiple responses for having own protection/common shelters. The highest number (65%) identify weather shock such as cyclone, flood, water logging, pest infestation and so on for having own protection/common shelters. It is followed by provision of government or NGO disaster supports (10%). The third most important reason for having own protection/common shelters is slow negative changes such as drought, salinization, erosion etc. (Annex 10). Eighty-three percent of the households who have used protection or common shelter thought that they are better off after taking any of the above measures for protecting themselves from disaster. A large group of population do not go to cyclone shelters. There should be several reasons for that. Perhaps cyclones occur but effect of cyclone is much less in some of these areas. So they do not feel the necessity to take shelter elsewhere. It may also be that some of their houses are well protected (5.1.10.2).

Table 5.1.10.1 Use of own protection/common shelter

Use of own protection/ community shelters	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	140	54.1	96	64.9	526	53.9	762	55.1
No	119	45.9	52	35.1	449	46.1	620	44.9
Total	259	100.0	148	100.0	975	100.0	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing

Table 5.1.10.2 Effectiveness of having own protection/common shelters by type of HH

Effectiveness	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Our household is better off	110	78.6	82	85.4	438	83.2	630	82.7
Nothing has changed for my household	26	18.5	10	10.4	74	14.1	110	14.4
Our household is worse off	4	2.9	4	4.2	14	2.7	22	2.9
Total	140	100.0	96	100.0	526	100.0	762	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Reason for not Having Own Protection/Common Shelters

Forty-five percent who have not organised protection on their own or through shelter homes assigned their reasons for not doing so. Eight percent want to but an not. Forty-two percent are not interested and for 50 percent it is not relevant (Table 5.1.10.3). It may very well be, their houses are well protected and there is no need to stay outside.

Table 5.1.10.3 Reason for not having own protection / common shelters by type of HH

Reason	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Would like to organise own protection but have not	17	14.3	6	11.5	29	6.5	52	8.4
Not interested in organising own protection	44	37.0	17	32.7	197	43.8	258	41.6
Not relevant	58	48.7	29	55.8	223	49.7	310	50.0
Total	119	100.0	52	100.0	449	100.0	620	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

5.2 Effectiveness of Adaptation Practices

We have seen earlier that the highest number of the respondents have taken loan as adaptation measure, followed by plantation of trees and modification of homestead. Now the question is how they feel about the effectiveness of the measures that they have mentioned earlier. Table 5.2.1 presents their evaluation on this.

Table 5.2.1 Effectiveness of adaptation measures

Effectiveness of adaptation measures	Number of responses	Percentage of total HHs (1382)	Became better off after taking the adaptation measure
Taken loan	981	70.98	82%
Planted trees	866	62.66	98%
Modification of house	844	61.07	95%
Went to safe place on their own during disasters	762	55.14	83%
Cutting down trees	483	34.95	91%
Hired labour	410	29.67	97%
HH member working outside the village	377	27.28	92%
Received Govt. or NGO assistant	333	24.10	95%
Taken insurance	277	20.04	67%
Buying and selling of fishing tools	210	15.20	89%
Increased use of fertilizer	198	14.33	79%
Women working outside home	185	13.39	96%
Irrigation	144	10.42	93%
Diversified crops	142	10.27	73%
Joined cooperatives	129	9.33	90%
Moving to a new house	125	9.04	90%
Returned to village	64	4.63	62%
Receiving training on new fishing method	57	4.12	97%
Cultivate climate tolerant crop	45	3.26	87%
Cultivating a new breeding of fish	20	1.45	85%
Mixed farming/fish production	30	2.17	93%

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Each cell represents percentage of total number of response

Seventy-one percent have used loan as adaptation tool. Substantial majority of them (82%) think their households are better off as they have access to loan. Sixty-three percent of the total respondents use tree plantation as one of the measures to adapt. Ninety-eight percent of them think that it has been a useful tool in adaptation. Sixty-one percent have modified their homestead. Modification included sturdy walls, stronger roof, raised and stronger floor. Fifty-five percent of the respondents be it of internal, international or non-migrant households, have taken initiative on their own to use community shelter or own protection during disasters. In rural areas trees are also planted as cash income source. This is true for the respondent of this study as well. Around 35 percent have sold their trees for earning income. Some also have used trees in building new homes. Ninety-one percent of those who have cut trees state that it is a good option for adaptation.

Now let us look into effectiveness of migration as adaptation tool. The same table shows, taking up new employment outside the village is used by members of 27 percent households. Ninety-two percent of them are of the opinion that their families are better off after taking up work outside the

village. At least one woman from 13 percent of the households now works outside their home. Ninety-six percent of these households think it to be a good decision and it has made their households better off than before.

5.3 Success Criteria of Adaptation Options

Table 5.3.1 identifies the criteria following which the households judge the success of their adaptation interventions.

Table 5.3.1 Success criteria of adaptation options

Success criteria (Multiple responses)	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
HH finance	226	87.3	129	87.2	793	81.3	1148	83.1
HH Unity	20	7.7	15	10.1	266	27.3	301	21.8
HH Health	101	39.0	63	42.6	329	33.7	493	35.7
HH education	107	41.3	58	39.2	306	31.4	471	34.1
Healthy natural environment	42	16.2	22	14.9	164	16.8	228	16.5
Quality of house	110	42.5	76	51.4	462	47.4	648	46.9
All of the above	7	2.7	10	6.8	47	4.8	64	4.6
None of the above	3	1.2	3	2.0	21	2.2	27	2.0
Other	3	1.2	2	1.4	5	.5	10	.7
Total (% of total HHs)	259	18.7	148	10.7	975	70.5	1382	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Each cell represents percentage of total number of response

Note: Response of 4 non-migrants is missing.

An overwhelming majority of all three categories of households have used financial support as the criteria for treating their adaptation measure as successful. Eighty-seven percent of both internal and international and 81 percent of non-migrant households have used this. The second most important criteria used is the ability to modify house (47%). Thirty-six percent of the total respondents have identified support in health of household members as the success criteria, followed by education (34%). As many as 22 percent highlight the maintenance of the unity of the household as the most important criterion.

5.4 Barriers to Adaptation

Sometimes people cannot avail certain adaptation measures due to all kinds of barriers. Barriers are the conditions or factors that render adaptation difficult as a response to climate change (Kasperson and Turner; 1995:142). Adger et al. (2007) identify five key barriers i.e. financial, technological, cognitive, cultural and institutional. For Jones (2010) barriers include ecological and physical, human and informational as well as social barriers

to adaptation. This research mostly considers barriers to autonomous adaptation. More importantly, it does not enquire about barriers to all 21 adaptation measures discussed above. Rather it combines all the 21 measures of adaptation and asks what works as barrier to adaptation when they want to pursue the intended ones. Therefore it focuses on responses such as lack of time, non-availability of labour, lack of support of household or community, lack of information/support on implementation, uncertainty of the measure, potential damage to the households, lack of resource and lack of field level demonstration.

Table 5.4.1 shows that lack of affordability of certain measures is identified as the most important barrier by 83 percent of the respondents. Sixty-three percent of the total respondents note that lack of information on certain measures works as barrier. Thirty-five percent are worried about uncertainty of the result of a particular measure. This indicates that to be successful access to resources, information and demonstration of the measures are important in any adaptation measure.

Table 5.4.1 Barriers to the adaptation practices (multiple responses)

Barriers of adaptation option	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No time	56	24.3	39	33.3	222	26.5	317	26.8
Not enough labour available to do this	40	17.4	15	12.8	138	16.5	193	16.3
Household or community is not supportive	28	12.2	16	13.7	135	16.1	179	15.1
No information/support on how to do this	144	62.6	84	71.8	521	62.2	749	63.3
Worried that this may go wrong, and household may be worse off	86	37.4	71	60.7	262	31.3	419	35.4
Could not afford to do this	195	84.8	82	70.1	704	84.1	981	82.9
No one has done this before	20	8.7	9	7.7	90	10.8	119	10.1
Others	2	.9	3	2.6	15	1.8	20	1.7
Total (% of total HHs)	230	19.4	117	9.9	837	70.7	1184	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Each cell represents percentage of total number of response

Chapter Conclusion

This chapter shows that the households which have been surveyed autonomously use many types of adaptation tools. The highest number of households have used loan in adapting to climate change events. This is followed by tree plantation, modification of homestead, organise protection during disasters on their own, cutting down trees, employment of hired labour, working outside the village, assistance from NGOs, insurance,

fishing and farming and so on. What is significant for this research is that out of 21 options, the seventh most used measure for adaptation is livelihood migration. Around 27 percent of the households have used migration as one of the adaptation tools. Another 13 percent of the households allow their women to work outside their home. A section of them who are working outside the houses may also be migrants. Nine-tenths of the households who send their family members to work outside the village consider this very effective. This indicates that these households have not perceived migration as a threat rather they think of it as one of the adaptation tools among many others. In the context of adaptation discourse an important finding of this chapter is one-tenth of the respondents have moved their residence during the last five years. This has major ramifications. Around 60 percent of them have directly linked climate and environmental issues as their main reason behind migration. Another 9 percent would have liked to move but could not. This leads us to argue that almost all of these 9 percent who moved have used the movement as a successful adaptation tool. The trapped 9 percent may require assistance to move. This assistance could be access to homestead land, government *khas* land or information or access to credit for rebuilding homestead.

The respondents expressed high level of satisfaction of the effectiveness of the measures they have taken autonomously to adapt with the situation that have arisen due to environmental degradation and climate stresses. As high as 82 percent of those who have taken loan, 98 percent who planted or stopped planting trees and 95 percent of those modified their houses thought that their families have become better off after taking these adaptation measures.

The respondents judge the success of the adaptation measures based on seven criteria. More than 80 percent of the households consider financial support as the criteria of success of their adaptation measures. The second most used criterion is the quality of house and third is family members' health. This chapter also highlights the barriers of adaptation practices. The highest number of respondents from all three types of households identify lack of finance to afford certain measures as the most important barrier.

The principal question pursued in this chapter is whether a section of the climate affected households used migration as one of the adaptation tools. It is now established that one-third of the households have used livelihood migration as one of the adaptation tools and 9 percent of the households moved their homestead to adapt. The last group may not have gone to

another village but might have come to current location from another village. What is important is that they have used movement in other words migration as an adaptation tool. Another 9 percent could not move from the survey area although they wanted to take their homestead to another area. Perhaps they are part of the trapped population. Future investigation is required to ascertain this.

CHAPTER VI

CHARACTERISTICS OF MIGRANTS

In the previous chapter we have seen that at least one-third of the households has been using livelihood migration as one of the adaptation tools. Now the question remains whether we want to suggest the policy makers to incorporate livelihood migration of one or a few members of the households as one of the adaptation tools or not. If we want to pursue this line then the economic potential of migration has to be understood thoroughly. In the next few chapters we will look at different aspects of livelihood migration and collect evidence in favour of our argument. The major focus of the following chapters would be to make a comparison of migrant and non-migrant households in respect to socio-economic conditions, their income and expenditure pattern, and the state of material and subjective wellbeing. We will also try to dissect this through gendered lens. In order to understand the background we will start our discussion with profiling who the migrants are. It gives an idea about gender identity of the migrants, age group, marital status and educational attainment, livelihoods in destination, employment status and income and so on.

6.1 Gender of Migrants

Migrants are predominantly men. Ninety-two percent of internal migrants and 97 percent of international migrants are male. Only 8 percent of the internal migrants and 3 percent of the international migrants are women.

Table 6.1.1 Number of migrant by gender

Gender of the migrant	Internal		International		Total	
	No.	%	No.	%	No.	%
Male	270	92.5	168	97.1	438	94.2
Female	22	7.5	5	2.9	27	5.8
Total	292	100.0	173	100.0	465	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Female migration, be it in internal or international, takes place from certain pockets of the country. A majority of the low lying coastal areas do not belong to those pockets. This has major policy ramifications. It shows that from these locations migration is gender specific and mostly men have access to this. If the policymakers are convinced that women should also have access to livelihood migration then providing training and information about safe and regular migration opportunities has to be disseminated in these areas.

6.2 Relationship with Household Head

For this research household head has been defined slightly differently. Absent migrants are not considered household heads even if in reality they are. Household heads have been considered only from the members who are current residents of the households. Table 6.2.1 shows that around 29 percent of internal and international migrants are unmarried sons and daughters of the left behind household head. Twenty-eight percent of the migrants are married sons and daughters of the left behind household head. Twenty-seven percent of them are partners of the left behind household head. In these cases they are wife of the migrants.

Table 6.2.1 Relationship with household head

Relationship	Internal		International		Total	
	No.	%	No.	%	No.	%
Household head	0	0	0	0	0	0
Partner of household head	78	26.7	46	26.6	125	26.9
Married child	79	27.1	51	29.5	131	28.2
Unmarried child	81	27.7	52	30.1	133	28.7
Partner of married child	6	2.1	3	1.7	8	1.7
Grandchild	2	0.7	1	0.6	2	0.4
Parent	3	1.0	0	0.0	2	0.4
Parent-in-law	2	0.7	0	0.0	1	0.2
Brother / sister	40	13.7	17	9.7	58	12.5
Brother-in-law / sister-in-law	0	0.0	2	1.2	2	0.4
Niece / nephews	0	0.0	1	0.6	2	0.4
Uncle / aunt	0	0.0	0	0.0	0	0.0
Other relatives	1	0.3	0	0.0	1	0.2
Non-relatives	0	0.0	0	0.0	0	0.0
Don't know	0	0.0	0	0.0	0	0.0
Total	292	100.0	173	100.0	465	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

6.3 Age Group of Migrants

Different studies have shown people move for work when they are young (Ahn Pong-Sul, 2004). Here as well, more than 83 percent of internal and international migrants are less than 40 years of age (Table 6.3.1). A majority of internal migrants (37%) belongs to the age group of 18 to 25. Thirty-one percent of international migrant belongs to the age group of 31 to 40 years old. This indicates that demography plays an important role in migration. Relatively younger members of the households have more access to both types of migration. However, those who migrate internationally are little older than internal migrants. It is perhaps international migration entails accumulation of large sums of money. It takes time to gather such resource. In contrast, internal migration can be pursued at any time with access to low financial commitments.

Table 6.3.1 Age group of migrants

Age group of the migrant	Internal		International		Total	
	No.	%	No.	%	No.	%
0-17	7	2.4	0	0.0	7	1.5
18-25	107	36.9	42	24.3	148	32.0
26-30	68	23.5	49	28.3	116	25.1
31-40	70	24.1	54	31.2	124	26.7
41-50	27	9.3	26	15.0	53	11.5
51-60	9	3.1	2	1.2	13	2.8
60+	2	0.7	0	0.0	2	0.4
Total	290	100.0	173	100.0	463	100.0
Missing	2		0		2	

Source: DECCMA origin area survey in Bangladesh, 2016

6.4 Marital Status

More than 60 percent of the migrants are currently married. Internal and international migrants have similar marital status. Earlier studies have found that the majority of the male migrants used to be young unmarried men. It is no longer true in recent years. This indicates that these migrants have to earn a living not only for his or her parental home but also for their own selves.

Table 6.4.1: Marital status of migrants by HH type

Marital status	Internal		International		Total	
	No.	%	No.	%	No.	%
Never married	104	35.6	61	35.3	165	35.6
Currently married	180	61.7	108	62.4	288	61.9
Widowed	1	0.3	1	0.6	2	0.4
Divorced	2	0.7	0	0.0	2	0.4
Abandoned/ separated	5	1.7	3	1.7	8	1.7
Total	292	100.0	173	100.0	465	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

6.5 Education

On average 11 percent of both internal and international migrants do not have any schooling. Percentages of international migrants are higher in the group who studied up to grades 4 to 6 in the secondary school. However, percentages of internal migrants are higher in that group who has up to 4-6 years of primary schooling. Only 18 percent of internal migrants have received higher education such as university education whereas only 10 percent of international migrants have such education. An important question remains here whether access to some level of education does play a role in stemming migration or not. Low skilled jobs may not require education but those who are educated may have better opportunity for upward mobility.

Table 6.5.1 Level of schooling of migrants

Level of Schooling	Internal		International		Total	
	No.	%	No.	%	No.	%
No schooling	33	11.3	18	10.4	51	11.0
1-3 years in primary school	38	13.0	11	6.4	49	10.5
4-6 years in primary school	68	23.3	37	21.4	105	22.6
1-3 years in secondary school	45	15.4	36	20.8	81	17.4
4-6 years in secondary school	55	18.8	53	30.6	108	23.2
Higher education	53	18.2	18	10.4	71	15.3
Total	292	100.0	173	100.0	465	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

6.6 Nature of Migration

Earlier we have divided migration into two types: internal and international. On the basis of timeframe both types of migration can also be further classified into different sub-groups. We have divided internal migrants into permanent, seasonal and circular sub groups¹³. International migrants are divided into long-term and short-term contract migrants¹⁴. Table 6.6.1 shows

13 In our study permanent migration is defined as the movement of a person from his origin area to a new place with the intention of remaining there for at least 6 months. Seasonal migration refers to migrating once or twice a year depending on the season of work such as the period of cultivation of crops, period of harvesting, work of brick kiln particularly at non-rainy season etc. Circular movement means frequent move between areas of origin and destinations for short period of time. This can be for rickshaw pulling, vendoring and wage labour. At least four movements in a year between origin and destinations are recorded as circular migrants.

14 Longer term migrants is defined here loosely as those who have taken citizenship or permanent residency of a country and more or less settled there. Short term international contract migrants are those who move from one country to another for a stipulated period of time under a specific contract. Short term contract worker is bound to return once the contract is over.

that as many as 46 percent of internal migrants have moved permanently. Another 41 percent are circular migrants and the rest 13 percent are seasonal migrants.

Table 6.6.1 Nature and type of migration

Nature of migration	Internal		Nature	International		Total	
	No.	%		No.	%	No.	%
Migrated permanently	134	45.9	Longer term and Short-term contract Migrant	172	99.4	306	65.8
Migrates once or twice a year depending on the season	39	13.4	Migrates once or twice a year depending on the season	0	0.0	39	8.4
Migrates often for short periods (circular migration)	119	40.7	Migrates often for short periods(circular migration)	1	0.6	120	25.8
Total	292	100.0	Total	173	100.0	465	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

As per the definition of this research anyone staying more than six months in his or her place of destination is considered a permanent migrant. A section of people who are termed as permanent internal migrants may not be so in reality. For example, people who work in brick kilns, migrate there for six to seven months. But they come back to their areas of origin when the particular migration stint is over. This definition does not also fit with our international short-term contract migrants. Except cross-border migrants, almost all types of international migrants usually stay more than six months but their migration cannot be treated as permanent as most of them return after a stipulated period of time when their contract is over. Their destination countries demonstrate that they are all short-term contract migrants to the Gulf, other Arab and South East Asian countries. Ninety-nine percent of them are stating that they have moved for more than six months. But we will not term them as permanent. Only 1 individual of the total international migrants terms his/her movement as circular. This individual is, in fact, moving back and forth between Bangladesh and India. There is no legal labour migration regime between India and Bangladesh. However, most of this sort of migration is irregular in nature. It also throws light on the level of cross-border population movements from the climate change affected areas of the GBM delta districts. As this research is based on census of the enumeration area, one can argue cross border movements from climate affected areas are not that high as is claimed by many climate change experts (Panda, 2010).

6.7 Frequency of Movement of Circular or Seasonal Migrants

Table 6.7.1 shows the number of times internal migrants move in a year. Forty-five percent of internal migrants move either five times or more between their areas of origin to destination. Thirty percent moves three to four times while 25 percent moves one to two times.

Table 6.7.1 Number of movement of circular or seasonal internal migrants

Number of movement	Internal	
	No.	%
1-2 times	33	25.2
3-4 times	39	29.8
5 or more times	59	45.0
Total	131	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

6.8 Duration of Stay of Seasonal and Circular Internal Migrants

Table 6.8.1 shows that almost 58 percent of internal migrants have stayed away from their area of origin for one to two months when they have last migrated. Twenty-three percent of seasonal and circular migrants has stayed away from their homes for three to four months.

Table 6.8.1 Duration of stay of seasonal and circular internal migrants

Duration of stay	Internal	
	No.	%
1-2 months	72	58.1
3-4 months	28	22.6
5-6 months	14	11.3
More than 6 months	10	8.0
Total	124	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 7 internal migrant is missing.

6.9 Duration of Migration

Table 6.9.1 shows the scenario of those migrants who have stayed in their destination for more than six months. Thirty-eight percent of internal migrants left their origin areas more than five years ago. Thirty-three percent of them migrated from their origin areas for around three to five years.

Now let us look into the case of short-term international migrants. Again 43 percent of these migrants left their areas of origin area more than five years ago. Twenty-six percent migrants were away from their homes for three to five years and 26 percent left their homestead one to two years ago.

Table 6.9.1 Years of permanent migration since they leave the household

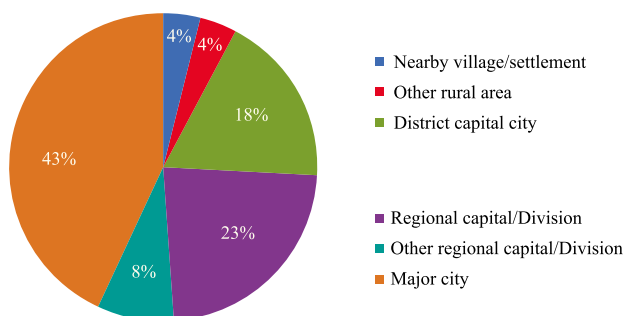
Years of permanent migration	Internal		International		Total	
	No.	%	No.	%	No.	%
6-11 months	14	10.9	8	5.0	22	7.7
1-2 years	23	18.0	41	25.8	64	22.3
3-5 years	42	32.8	42	26.4	84	29.2
More than 5 years	49	38.3	68	42.8	117	40.8
Total	128	100.0	159	100.0	287	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

6.10 Destination

This section gives an idea about the destinations of internal and international migrants. Figure 6.10.1 shows that internal migrants are mostly migrating to urban areas. Rural to rural migration is only around 8 percent. Major megacities such as Dhaka and Chattogram are the main destinations of almost 43 percent of migrants. This is followed by divisional capitals.

Figure 6.10.1 Destinations of internal migrants



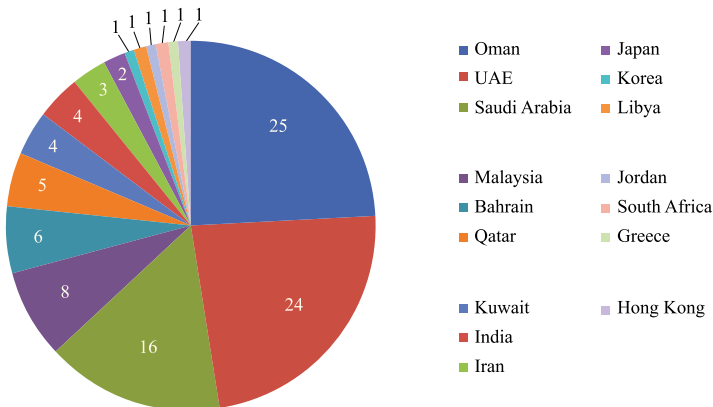
Source: DECCMA origin area survey in Bangladesh, 2016

The destinations of international migrants show that they are migrating mostly to the Gulf, other Arab countries and South East Asian countries. The highest number of them has migrated to Oman (25%) which is followed by UAE (24%), and Saudi Arabia (16%). Other major destination countries include Malaysia (8%), Bahrain (6%), Qatar (5%) and Kuwait (4%). Interestingly, 4 percent of them have migrated to India. Some literature on climate change related migration highlight India as a major destination.

This data, however, does not support such a contention. If we want to understand the extent of migration to India, we have to combine internal and international short-term contract migration together and then judge the percentage share of migration to India. In such calculation, only 2 percent of total internal and international migrants went to India. This finding also matches with another recent study of Siddiqui et.al (2018). They also found lower level of migration to India compared to the popular notion.

It will be interesting to see the destination of migrants according to their districts of origin. It is found that they migrate within their own districts, inter-district and beyond border. It is not unusual that people from all fourteen districts internally migrate to two mega-cities: Dhaka and Chattogram. They also migrate within their own districts. Each individual district has its own typical destination which may be different from the other. Perhaps this is because in many instances migration takes place through pre-existing social network. From the Household Survey we have found that Bagerhat and Pirojpur districts have no international migrants. International migration is also low from Khulna, Satkhira and Gopalganj.

Figure 6.10.2 Destinations of international migrants



Source: DECCMA origin area survey in Bangladesh, 2016

From Gopalganj, people only migrate to Libya and people from Khulna migrate only to India. Five districts are mentioned by the internal migrants of Bagerhat. Along with two mega-cities, other three districts mentioned by them are situated in close vicinity of Bagerhat. People from Pirojpur mostly migrate within their own district and to Dhaka. People from Barguna are internally migrating to six districts of Bangladesh and two other countries

namely, Bahrain and Jordan. People of Bhola are migrating to seven districts and their international destinations are Oman, Qatar and India. The highest number of inter-district destination is recorded in case of Satkhira. People from this area migrate to Dhaka, Chattogram, Khulna, Sylhet, Gopalganj, Barisal, Rangamati, Rajshahi and Bagerhat.

People of Chandpur do migrate to Oman, UAE, Malaysia and Qatar. International destination is quite diverse. Many respondents of Chattogram, Lakshmipur and Noakhali are also migrating to Bahrain, Kuwait, Saudi Arabia, Oman, Malaysia, Hong Kong, and Korea (Annex 11).

6.11 Livelihood in Destination

In destination, both internal and international migrants are mostly working as wage employee (38%), small business (8%), construction workers (12%), factory workers (7%) and transport workers (6%). Besides, some of them are also working as guard, gardener and hawker. Not much of a difference is visible in livelihood in case of internal and international

Table 6.11.1: Main livelihood activities of migrants in destination

Livelihoods at destination	Internal		International		Total	
	No.	%	No.	%	No.	%
Crop farmer	8	2.9	2	1.2	10	2.2
Livestock farmer	0	0.0	1	0.6	1	0.2
Fish / shrimp farmer	0	0.0	0	0.0	0	0.0
Fishing	8	2.9	6	3.5	14	3.1
Regular salaried employee	103	36.7	68	39.1	171	37.8
Small business owner	25	8.9	9	5.2	34	7.5
Construction worker	21	7.5	35	20.2	56	12.4
Factory worker	21	7.5	9	5.2	30	6.6
Domestic employee	2	0.7	5	2.9	6	1.3
Trader, dressmaker / tailor	5	1.8	5	2.9	11	2.4
Transport worker (i.e. rickshaw puller, taxi driver)	19	6.8	6	3.5	25	5.5
Hawker	2	0.7	1	0.6	3	0.7
Guard / gardener	4	1.4	6	3.5	10	2.2
Money lender	1	0.4	0	0.0	1	0.2
Unpaid home care	3	1.1	3	1.7	6	1.3
Unemployed	6	2.1	2	1.2	8	1.8
Student	11	3.9	3	1.7	14	3.1
Retired	0	0.0	0	0.0	0	0.0
Others	40	14.3	10	5.8	50	11.0
Don't know	1	0.4	2	1.2	3	0.7
Total	280	100.0	173	100.0	453	100.0
Missing	12		0		12	

Source: DECCMA origin area survey in Bangladesh, 2016

migrants. However, the percentage of construction worker is way more in case of international migrants if compared to internal migrants. A small percentage has worked as domestic workers. Almost all of them are female international migrants. Three percent of the migrants' main purpose of migration is to pursue study; few of them are studying overseas. The student international migrants mainly went to Malaysia.

6.12 Employment Status

Percentage of members with permanent job (59%) is lower in case of internal migrants compared to international migrants (84%). A section of internal migrants are employed in seasonal (14%) and temporary (26%) jobs. However jobs of international migrants are for specific period, usually on three year contract. The definition used in this study treats a person as a permanent migrant who has been staying in a location outside his/her place of origin for more than six months. Use of such definition has placed international migrants in the category of permanent migrants. This definitional problem has increased the number of permanent migrants in case of international migrants.

Table 6.12.1 Employment status of migrants

Employment status	Internal		International		Total	
	No.	%	No.	%	No.	%
Working permanent job	152	59.4	141	84.4	293	69.3
Working seasonal job	37	14.5	10	6.0	47	11.1
Working short term job (i.e. day labourer)	67	26.1	16	9.6	83	19.6
Don't know	0	0.0	0	0.0	0	0.0
Total	256	100.0	167	100.0	423	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 migrants is missing and in case of another 40 it is not applicable.

6.13 Income of Migrants

Table 6.13.1 shows that international migrants have better monthly average income than internal migrants. For internal migrants it is Taka 13,315 and for international migrant it is Taka 30,184. Table 6.13.2 shows that the monthly average income of 43 percent internal migrants are between Taka 5,000 to Taka 10,000. Thirty-three percent of international migrants earns between Taka 20,001 to 40,000. Only 12 percent of internal migrants are in this group. Fourteen percent of international migrants have more than Taka 45,000 income per month. The number of responses under internal and international migrants is higher than the total number of migrant households. This is because a section of the households has more than

1 migrant. There is a big difference between income of male and female migrants. Male migrants' monthly income is more than double of that of female migrants. Male migrants earn Taka 17,800 per month whereas female migrant income is Taka 8,500.

Table 6.13.1 Average Income of internal and international migrants in Taka

Total income of the migrants	Internal			International			Total		
	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min
	13315	80000	1000	30184	230000	7000	19658	230000	1000

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Max= Maximum Min=Minimum

Table 6.13.2 Range of income of internal and international migrants in Taka

Income	Internal		International		Total	
	No.	%	No.	%	No.	%
Less than 5000	13	5.5	0	0.0	13	3.5
5000-10000	110	46.8	9	6.4	119	31.6
10001-15000	58	24.7	26	18.4	84	22.3
15001-20000	24	10.2	35	24.8	59	15.7
20001-25000	10	4.3	12	8.5	22	5.9
25001-30000	10	4.3	15	10.6	25	6.6
30001-35000	5	2.1	8	5.7	13	3.5
35001-40000	2	0.9	12	8.5	14	3.7
40001-45000	1	0.4	5	3.5	6	1.6
More than 45000	2	0.9	19	13.5	21	5.6
Total	235	100.0	141	100.0	376	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Chapter Conclusion

Migrants' profile shows that not all members of survey households have equal access to migration. Males are extremely privileged in accessing migration whereas females of climate affected areas hardly have any access. Age is another determining factor of migration. Older population does not have access to migration, whereas education may have some correlation.

Among the internal migrants, 44 percent are termed as permanent migrants as they have left for destinations for more than six months ago. Forty-five percent are circular migrants who have moved between origin and destination for many times in a year. There are multiple patterns of internal movements. Some are frequent movers; some others even stay up to six months or more.

International migrants are in reality short term contract migrants. This is because of the definition that they fall under the category of permanent

migrant. The majority of both internal and international migrants work as wage employees. Percentage of construction workers are more in case of international migrants. Migrants move within their districts, inter-districts and also internationally. Dhaka and Chattogram are common destinations for migrating people of almost all the districts. Internal migrants of specific districts have some specific destinations along with Dhaka and Chattogram. Destination countries also vary in case of international migrants and people of different districts have different choices to migrate internationally. Incomes of international migrants are much higher compared to internal migrants.

CHAPTER VII

PERCEPTION ON MIGRATION OUTCOME AND ROLE OF REMITTANCES

The aim of this chapter and the following ones is to understand the potentials of livelihood migration as one of the climate change adaptation tools of the affected households in the GBM delta districts. In order to do that we need to find out what migration adds extra to the affected households. Remittances flow is perceived as a major added value to the migrant households. Of course, option of feeding one less mouth is also a gain in economic terms¹⁵. Therefore, this section begins with an understanding of remittances flow and their utilities to the households. A comparison of monthly income and expenditure of the migrant and non-migrant households will also throw some light on this issue. If migrant households are doing comparatively better than non-migrants households, it will help us to argue that livelihood migration can add extra value to migrant households in adapting to climate change stresses. Along with the above analysis, it is also important to understand how internal, international and non-migrant households perceive the utility of migration in their day to day life. If the migrant and non-migrant households look at livelihood migration positively, we need to incorporate it into mainstream adaptation agenda in order to respect the opinion of affected population of the GBM delta districts.

7.1 Nature of Remittances

The data shows that 84 percent of internal migrants send remittances. Among them, 50 percent send money as remittances, 31 percent send both money and goods as remittances and 3 percent send goods as remittances. However, 16 percent of current internal migrants do not send any remittances to their rural households.

15 Interview of Mr. Ghulam Mostafa, CEO, Prantik Recruiting Agency, Bangladesh, 2017

On the other hand, 86 percent of international migrants send remittances; 66 percent of them send money and 19 percent send both money and goods. Only 1 percent send goods only. The remaining 14 percent do not send any remittances either in the form of cash or in kind. This research does not explore reasons of not remitting but some other studies did. For instance, regarding short term international contract migration, Siddiqui (2004) finds that some of the migrants did not remit for many reasons that include not receiving wages on regular basis, loss of job, unforeseen expenditure in food, over spending in destination and so on.

Table 7.1.1 Nature of remittances by HH type

Remittance in cash and kind	Internal		International		Total	
	No.	%	No.	%	No.	%
In cash	146	50.0	114	65.8	260	55.9
In kind	8	2.7	2	1.2	10	2.2
Both cash and kind	90	30.9	32	18.5	122	26.2
Have not sent	47	16.1	25	14.5	72	15.5
Don't know	1	0.3	0	0.0	1	0.2
Total	292	100.0	173	100.0	465	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

7.2 Frequency of Remittance Transfer in a Year

Table 7.2.1 shows the frequency of remittances transferred by the migrants during the last one year. Seventy-three percent of internal migrants regularly remit or transfer their remittances on a monthly basis to their left behind households. Again 61 percent of international migrants remit at the same frequency. Another 31 percent of international migrants send remittances every two to three months compared to 10 percent of internal migrants. Eight percent of internal migrants send remittances to their households once a week.

Table 7.2.1 Frequency of remittance transfer by HH type

Frequency	Internal		International		Total	
	No.	%	No.	%	No.	%
Weekly	19	8.0	0	0.0	19	4.9
Monthly	174	73.0	94	61.0	268	68.3
Every 2-3 months	23	9.7	48	31.1	71	18.1
Every 4-5 months	8	3.4	6	3.9	14	3.6
Once or twice a year	10	4.2	5	3.3	15	3.8
Other	4	1.7	1	0.7	5	1.3
Total	238	100.0	154	100.0	392	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

7.3 Flow of Remittances

Table 7.3.1 shows the average monthly remittance received by internal and international migrant households. On an average, international migrants remit around two and a half times more than internal migrants. International migrants remit Taka 13,533 per month and internal migrants remit Taka 5,944. The highest amount of remittance Taka 50,000 per month is received by an international migrant household.

Sixty-one percent of internal migrant households receive less than Taka 5,000 per month. Almost 20 percent of international migrant households also receive less than Taka 5,000 per month. Close to 30 percent of both internal and international migrant households receive between Taka 5,000 to Taka 10,000 per month. The number of internal migrant households who receives more than Taka 10,000 is relatively low. Only 10 percent of internal migrant households belong to this category. But almost 52 percent of international migrant households receive more than Taka 10,000.

Table 7.3.1 Average monthly remittance flow in Taka

Monthly remittance	Internal	International	Total
Mean	5944	13533	8825
Maximum	35000	50000	50000
Minimum	89	278	89

Source: DECCMA origin area survey in Bangladesh, 2016

Table 7.3.2 Range of monthly remittance flow in Taka

Remittance	Internal		International		Total	
	No.	%	No.	%	No.	%
Less than 5000	102	45.7	2	1.5	104	29.1
5000-10000	95	42.6	43	31.8	138	38.6
10001-15000	15	6.7	26	19.3	41	11.5
15001-20000	5	2.2	22	16.3	27	7.5
20001-30000	4	1.8	28	20.7	32	8.8
More than 30000	2	0.9	14	10.4	16	4.5
Total	223	100.0	135	100.0	358	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

7.4 Use of Remittances

Information is gathered on the top three avenues of expenditure of remittances. Altogether 407 internal and international migrant households provided information on the use of remittance. Around 15 percent of them do not remit. Therefore, they have not responded to this question. Response

on each type of use represents 100 percent. This section only provides information of one migrant from each household.

For 78 percent of both internal and international migrant households', consumption is one of the three major areas where they utilize remittances. Except in cases of household items and education there is hardly any difference among internal and international migrant households in respect to top three avenues where they spend remittances. The number of international migrant households who use a portion of the remittance in purchase of household equipments such as furniture, television and other electronics is 15 percent higher than internal migrant households. Remittance comes in handy during sickness. Around 30 percent of both internal and international migrant households use remittance in health care.

Table 7.4.1 Top three areas of use of remittance by HH type

Use of remittance	Internal		International		Total	
	No.	%	No.	%	No.	%
Daily consumption (food, bills)	201	77.6	116	78.4	317	77.9
Loan repayments	70	27.0	37	25.0	107	26.3
Saved money	12	4.6	3	2.0	15	3.7
Buying land	1	0.4	1	0.7	2	0.5
Other	1	0.4	1	0.7	2	0.5
Household items (furniture, TV)	92	35.5	74	50.0	166	40.8
Education	67	25.9	52	35.1	119	29.2
Marriage, funerals and others	2	0.8	4	2.7	6	1.5
Health care	81	31.3	39	26.4	120	29.5
House construction or repair	22	8.5	11	7.4	33	8.1
Livestock	4	1.5	1	0.7	5	1.2
Equipment for livelihood (farm and non-farm)	10	3.9	3	2.0	13	3.2
Setting up new business activity	2	0.8	1	0.7	3	0.7
Total HHs Number	259	100.0	148	100.0	407	100.0
Total Responses	565		343		908	

Source: DECCMA origin area survey in Bangladesh, 2016

The number of international migrant households who treat expenditure in education as one of the three most important avenues is almost 10 percent higher in comparison to internal migrant households. Loan repayment is one of the top three areas of use of remittances for 26 percent of both internal and international migrant households. Around 8 percent of both internal and international migrant households spend a section of their remittances in construction, repair and relocation of homestead. Asset formation such as buying land, setting up new business and in savings is rarely among the top three priorities of these households. That of course does not mean that they do not spend on those areas. It is only that they do not constitute the top three priorities.

7.5 Household Income

Monthly household income includes income of all members who reside in the households and remittances received by the households from their migrant members. The highest average income of international migrant households is Taka 19,100. The average monthly income of internal and non-migrant households is quite similar. For internal households, it is Taka 14,300 and for non-migrant households, it is Taka 14,400 (Table 7.5.1).

Households whose monthly income is less than Taka 5,000 is the highest in case of internal migrant households and it is the lowest in case of international migrant households. Around 18 percent of internal migrant households and only 5 percent of international migrant households belong to this category. Twelve percent of non-migrant households earn less than Taka 5,000. Income of one-fourth of internal and international migrant households is between Taka 5,000 to Taka 10,000. Thirty-seven percent of non-migrant households earn such income. Twenty-two percent of international migrant households earn between Taka 20,001 to Taka 30,000. Only 8 percent of internal migrant households and 10 percent of non-migrant households belong to this income group. The number of households who has monthly income of more than Taka 30,000 is quite low. Nine percent of international migrant, 9 percent of internal migrant and 6 percent of non-migrant households enjoy such income.

Table 7.5.1 Average monthly income by HH type in Taka

Income including remittance	Internal	International	Non-migrant	Total
Mean	14374	19107	14441	14931
Maximum	80000	105000	390000	390000
Minimum	800	2000	600	600

Source: DECCMA origin area survey in Bangladesh, 2016

The above discussion indicates that if internal migrant households had not received remittances, their income would fall up to 34 percent. We have seen in the section on drivers of migration that 39 percent of them had migrated to be employed and earn an income. This indicates that internal migrant households can retain similar income as non-migrant households because of remittances sent by their migrant household members. Therefore, these households have adapted to loss of income through receiving remittances from their migrant family members. Income of international migrant households is at least 30 percent higher than other two groups of households. This further indicates that international migration has higher potential in helping families to adapt to income losses due to climate change or any other reasons.

Table 7.5.2 Income per month of those employed in monetized sectors in Taka

Income of HHs	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Less than 5000	46	17.9	8	5.4	111	11.6	165	12.1
5000-10000	69	26.9	37	25.2	353	36.8	459	33.7
10001-15000	60	23.3	31	21.1	226	23.6	317	23.3
15001-20000	38	14.8	25	17.0	110	11.5	173	12.7
20001-25000	14	5.5	16	10.9	58	6.0	88	6.5
25001-30000	7	2.7	16	10.9	40	4.2	63	4.6
30001-35000	7	2.7	3	2.0	22	2.3	32	2.3
35001-40000	5	1.9	1	0.7	10	1.0	16	1.2
40001-45000	4	1.6	2	1.4	6	0.6	12	0.9
More than 45000	7	2.7	8	5.4	23	2.4	38	2.8
Total	257	100.0	147	100.0	959	100.0	1363	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: 23 HHs have no income-staying in mosque/income not recorded if the age is not

7.6 Expenditure

On an average, international migrant households spend the most. They spend Taka 22,100 per month. Internal migrant households spend Taka 17,600 and non-migrant households spend Taka 18,800. Table 7.6.1 shows that expenditure of all three types of households is higher than their stated income. In the rural context of Bangladesh family income is derived from multiple sources both in cash and kind. It is therefore difficult for the respondents to report their income from all the sources. It is relatively easy for them to account for their monthly and, even to an extent, their annual expenditure. That perhaps explains recording of higher expenditure than income.

The amount of maximum expenditure recorded in internal migrant households is Taka 168,250 while the same recorded among international migrant households is Taka 139,750. On the other hand, the maximum amount of expenditure is recorded Taka 514,167 in non-migrant households. This excessive expenditure actually reflects unique situations. These households have incurred such huge expenditure as they have either been constructing houses, investing in transportation or purchased household equipment in one last month prior to the field-work.

Table 7.6.1 Average monthly expenditure of the HH in Taka

Average expenditure	Internal	International	Non-migrant	Total
Average	17620	22128	18844	18968
Minimum	650	2217	300	300
Maximum	168250	139750	514167	514167

Source: DECCMA origin area survey in Bangladesh, 2016

Table 7.6.2 shows that 28 percent of internal migrant households have spent between Taka 5,000 to Taka 10,000 per month while 26 percent non-migrant and 20 percent international migrant households have spent between Taka 10,001 to Taka 15,000 per month. Eight percent of international migrant households have spent more than Taka 45,000 per month. In case of other two groups it is comparatively lower.

Table 7.6.2 Household expenditure by HH type in Taka

Expenditure	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Less than 5000	18	7.0	4	2.7	49	5.0	71	5.1
5000-10000	73	28.3	28	18.9	236	24.3	337	24.4
10001-15000	62	24.0	30	20.2	257	26.4	349	25.3
15001-20000	41	15.9	22	14.9	166	17.0	229	16.7
20001-25000	26	10.1	20	13.5	89	9.1	135	9.8
25001-30000	11	4.3	13	8.8	48	4.9	72	5.2
30001-35000	5	1.9	6	4.1	39	4.0	50	3.6
35001-40000	6	2.3	9	6.1	29	3.0	44	3.2
40001-45000	1	0.4	4	2.7	20	2.1	25	1.8
Above 45000	15	5.8	12	8.1	41	4.2	68	4.9
Total	258	100.0	148	100.0	974	100.0	1380	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

7.7 Perception about Utility of Migration*

This section gives an idea about the perception of male and female household heads and adults of internal, international and non-migrant households with respect to the utility of migration. It is interesting to note that along with household heads and adult male and female members of migrant households, the non-migrant households also consider migration as helpful. Eighty-five percent of male adults and 89 percent of female adults of non-migrant households consider migration helpful. Around 95 percent of male and female household heads and adults of internal migrant households and more than 90 percent of male and female household heads and adults of international migrant households consider migration positively.

* In all the tables of section 7.7, 'Male' means male household head and a male adult member and 'Female' means Female household head and a female adult member.

Table 7.7.1 Gendered perception of utility of migration by HH type

Perception		Internal		International		Non-Migrant		Total	
		Male	Female	Male	Female	Male	Female	Male	Female
Helpful	No.	247	153	134	84	824	753	1205	990
	%	95.3	94.4	90.5	93.3	84.5	89.1	87.2	90.2
Unhelpful	No.	2	3	4	1	58	35	64	39
	%	0.8	1.9	2.7	1.1	5.9	4.1	4.6	3.6
Neither helpful nor unhelpful	No.	10	4	10	5	79	48	99	57
	%	3.9	2.5	6.8	5.6	8.1	5.7	7.2	5.2
Not sure	No.	0	2	0	0	14	9	14	11
	%	0.0	1.2	0.0	0.0	1.4	1.1	1.0	1.0
Total	No.	259	162	148	90	975	845	1382	1097
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing.

Perception about the Role of Migration in Improving Social Status

There is hardly any difference among the perception of male and female adults of internal, international and non-migrant households with respect to the role of migration in increasing social status of households. As high as 93 percent of male respondents and 91 percent of female respondents of internal migrant households feel that migration increases social status. Male and female members of international migrant households also feel the same way. But the number of female members who shares this view is higher compared to that of males who perceive migration as symbol of increased social status (7.7.2).

Table 7.7.2 Gendered perception about role of migration in improving social status

Perception		Internal		International		Non-Migrant		Total	
		Male	Female	Male	Female	Male	Female	Male	Female
Agree	No.	240	147	132	87	821	758	1193	992
	%	92.7	90.7	89.2	96.7	84.2	89.7	86.4	90.5
Neither agree/ disagree	No.	15	11	10	2	104	62	129	75
	%	5.8	6.8	6.8	2.2	10.7	7.3	9.3	6.8
Disagree	No.	4	4	6	1	50	25	60	30
	%	1.5	2.5	4.0	1.1	5.1	3.0	4.3	2.7
Total	No.	259	162	148	90	975	845	1382	1097
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing.

Impact of Migration on Migrant's Ability to Learn and Opportunity to Work

More than 90 percent of both male and female household heads and adult members of all three types of internal, international and non-migrant households feel that migration increases migrants' ability to learn as well as enhance future opportunity of work. In case of international and non-migrant households, the number of female members who responded positively is a little higher than male members. Almost 99 percent of female respondents of international migrant households feel in this way (7.7.3).

Table 7.7.3 Gendered perception of impact of migration on migrant's ability to learn and opportunity to work

Perception		Internal		International		Non-Migrant		Total	
		Male	Female	Male	Female	Male	Female	Male	Female
Agree	No.	246	155	138	89	902	792	1286	1036
	%	95.0	95.7	93.2	98.9	92.5	93.7	93.1	94.4
Neither agree/ disagree	No.	9	6	8	0	55	40	72	46
	%	3.5	3.7	5.4	0.0	5.7	4.8	5.2	4.2
Disagree	No.	4	1	2	1	18	13	24	15
	%	1.5	.6	1.4	1.1	1.8	1.5	1.7	1.4
Total	No.	259	162	148	90	975	845	1382	1097
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing.

Perception about Level of Economic Security

In the preceding chapter we have seen that majority of both internal and international migrant households identify economic reasons as the most important consideration for migration.

Table 7.7.4 Gendered perception about level of economic security

Perception		Internal		International		Non-Migrant		Total	
		Male	Female	Male	Female	Male	Female	Male	Female
Agree	No.	241	148	134	83	865	722	1240	953
	%	93.0	91.4	90.5	92.3	88.7	85.5	89.7	86.9
Neither agree/ disagree	No.	15	10	10	4	73	94	98	108
	%	5.8	6.1	6.8	4.4	7.5	11.1	7.1	9.8
Disagree	No.	3	4	4	3	37	29	44	36
	%	1.2	2.5	2.7	3.3	3.8	3.4	3.2	3.3
Total	No.	259	162	148	90	975	845	1382	1097
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing.

It is, therefore, natural that migrant households will treat migration as a

tool for augmenting economic security. This survey also validates this perception. Ninety-three percent of male and 91 percent of female from internal migrant households perceive that migrant households enjoy greater economic security. Ninety-one percent of male respondents and 92 percent of female respondents from international migrant households feel the same way. Interestingly, more than 85 percent of both male and female adults from non-migrant households also share the view (7.7.4).

Perception about Propensity of Sickness and Danger among Migrant Households

A large number of male and female members from internal, international and non-migrant households disagree with the statement that migrants are more likely to get sick or be in danger in the destination. Forty-five percent of males and 43 percent of females from internal migrant households disagree. Figures are similar in case of international migrant households as well. The percentage of male members of non-migrant households is the highest in this respect. As high as 58 percent disagree that migrants are more likely to get sick or be in danger. This response, among other things, also entails that household members do not have enough information about hardship and sickness of the migrants in destinations. Around 35 percent female and 28 percent male neither agree nor disagree with this statement. In other words, they are not aware of this (7.7.5).

Table 7.7.5 Gendered perception about sickness and danger by HH type

Perception		Internal		International		Non-Migrant		Total	
		Male	Female	Male	Female	Male	Female	Male	Female
Agree	No.	55	30	24	12	156	148	235	190
	%	21.2	18.5	16.2	13.3	16.0	17.5	17.0	17.3
Neither agree/ disagree	No.	87	62	51	41	253	284	391	387
	%	33.6	38.3	34.5	45.6	25.9	33.6	28.3	35.3
Disagree	No.	117	70	73	37	566	413	756	520
	%	45.2	43.2	49.3	41.1	58.1	48.9	54.7	47.4
Total	No.	259	162	148	90	975	845	1382	1097
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Level of Respect of Migrants in Destination

Around 50 percent of male and female household heads and adult respondents feel that migrants are respected in their destination. Close to 30 percent of all types of respondents, however, disagree. There is hardly any difference among the male and female respondents in this respect. Around 25 percent of the respondents of course state that they do not know about this that is why they cannot give their opinion on the matter (7.7.6).

Table 7.7.6: Gendered perception on level of respect of migrants in destination

Perception		Internal		International		Non-Migrant		Total	
		Male	Female	Male	Female	Male	Female	Male	Female
Agree	No.	147	86	77	43	475	434	699	563
	%	56.8	53.1	52.0	47.8	48.7	51.4	50.6	51.3
Neither agree/ disagree	No.	49	43	32	23	220	204	301	270
	%	18.9	26.5	21.6	25.5	22.6	24.1	21.8	24.6
Disagree	No.	63	33	39	24	280	207	382	264
	%	24.3	20.4	26.4	26.7	28.7	24.5	27.6	24.1
Total	No.	259	162	148	90	975	845	1382	1097
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing.

Perception about Migrants' Sense of Belonging to Destination

More than 50 percent of male and female members of all three categories of households perceive that their migrant household members often do not feel any sense of belonging to their destination. In case of female respondents the percentage of those who agree is a little higher. Around 26 percent of male members and 20 percent of female members of all types of households disagree with this (7.7.7). They think that there is no problem in their sense of belonging to the destination. They feel migrants are well adjusted and accommodated there. Twenty-two percent of the male and 25 percent of the female however, do not have any clue about belongingness.

Table 7.7.7 Gendered perception about migrants' sense of belonging to destination

Perception		Internal		International		Non-Migrant		Total	
		Male	Female	Male	Female	Male	Female	Male	Female
Agree	No.	135	90	73	48	499	445	707	583
	%	52.1	55.6	49.3	53.3	51.2	52.7	51.2	53.2
Neither agree/ disagree	No.	60	37	38	25	217	230	315	292
	%	23.2	22.8	25.7	27.8	22.3	27.2	22.8	26.6
Disagree	No.	64	35	37	17	259	170	360	222
	%	24.7	21.6	25.0	18.9	26.5	20.1	26.0	20.2
Total	No.	259	162	148	90	975	845	1382	1097
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Perception about Education and Work Opportunities of Children

Ninety-three percent of male respondents of all three groups perceive that migration brings in better education and work opportunity for the children of households. Female respondents of all three categories also feel the same

way. It is due to access to better flow of income the migrant households can invest more on children and thus ensure better work opportunity for their children (7.7.8).

Table 7.7.8 Gendered perception about education and work opportunities of children

Perception		Internal		International		Non-Migrant		Total	
		Male	Female	Male	Female	Male	Female	Male	Female
Agree	No.	245	155	141	87	899	775	1285	1017
	%	94.6	95.7	95.3	96.7	92.2	91.7	93.0	92.8
Neither agree/ disagree	No.	13	6	6	3	52	54	71	63
	%	5.0	3.7	4.0	3.3	5.3	6.4	5.1	5.7
Disagree	No.	1	1	1	0	24	16	26	17
	%	.4	.6	.7	0.0	2.5	1.9	1.9	1.5
Total	No.	259	162	148	90	975	845	1382	1097
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing.

Introduction of New Ideas and Practices to Village

There is a strong consensus among male and female members of internal, international and non-migrant households about the positive role of migration in introducing new ideas to the village. Seventy-eight percent of male members and 72 percent of female members belonging to all three groups feel in this way. Only 5 percent of male respondents and 7 percent of female respondents of internal, international and non-migrants households do not agree with such proposition (7.7.9).

Table 7.7.9 Gendered perception about ability of migration to introduce new ideas in village

Perception		Internal		International		Non-Migrant		Total	
		Male	Female	Male	Female	Male	Female	Male	Female
Agree	No.	211	121	116	65	756	603	1083	789
	%	81.5	74.7	78.4	72.2	77.6	71.4	78.5	71.9
Neither agree/ disagree	No.	36	29	29	24	164	180	229	233
	%	13.9	17.9	19.6	26.7	16.8	21.3	16.6	21.3
Disagree	No.	12	12	3	1	55	62	70	75
	%	4.6	7.4	2.0	1.1	5.6	7.3	5.1	6.8
Total	No.	259	162	148	90	975	845	1382	1097
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Impact of Migration on Availability of Young People in Villages

Different studies have shown that migration of working age male and female may create labour shortage in a village. Wage workers for farm and off-

farm agricultural activities will not be available due to migration. This may increase the wage at local level. Seventy-six percent of male respondents from non-migrant households and 77 percent of male respondents from internal migrant households consider this situation as fact (7.7.10). The majority of male from international migrant households also has similar view, yet this percentage is 10 percent lower than the other two groups. The percentage of female respondents of all three groups is almost 20 percent lower than their male counterparts. A recent study has found that migration of adult males from the village creates a vacuum in the wage labour market but it does not increase the wage abnormally as internal migrants from the other parts of the country come and perform those jobs (Siddiqui and Mahmood 2015).

Table 7.7.10 Gendered perception about impact of migration on availability of young people in village

Perception		Internal		International		Non-Migrant		Total	
		Male	Female	Male	Female	Male	Female	Male	Female
Agree	No.	200	94	97	50	739	27	1036	171
	%	77.2	58.0	65.5	55.6	75.8	55.1	75.0	56.8
Neither agree/disagree	No.	38	60	28	33	115	14	181	107
	%	14.7	37.0	18.9	36.6	11.8	28.6	13.1	35.5
Disagree	No.	21	8	23	7	121	8	165	23
	%	8.1	5.0	15.6	7.8	12.4	16.3	11.9	7.7
Total	No.	259	162	148	90	975	49	1382	301
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing.

Chapter Conclusion

A major aim of this chapter has been to examine the economic outcomes of livelihood migration and its potential to be used as one of the *in-situ* adaptation tools for left behind families in the context of climate change. It also attempts to unravel the perception of households in the study areas about the utility of migration. It finds that 85 percent of both migrant and non-migrant households receive benefit from migration in cash and kind in the form of remittance. More than two-thirds of internal and international migrant households receive remittance on a monthly basis. Most of these migrant families treat remittance as part of their household income. It brings to light that income of internal migrant households will be less than Taka 9,000 per month if they do not receive remittances. This chapter leads us to argue that one-third of the rural families are using livelihood migration

of one or a few members of their households as an income adaptation tool for those who remain in the areas of origin. The potential of greater income is of course higher in case of international short term contract migrants. It is the international migrants who are sending more as their household expenditure is high. An analysis of top three areas where remittances are used demonstrates that it helps consumption, purchase of house hold equipment and accessing health care.

This chapter also presents the perception of internal, international and non-migrant households with respect to contribution of migration. A general perception of policy makers as well as NGOs is that people do not want to move from their areas of origin. Whenever they migrate, they do so under duress. It is perhaps true when it comes to forced displacement of population. This chapter demonstrates that livelihood migration of one or a few members of the households is seen very positively and described as a natural process. There is hardly any difference among left behind male and female household heads and adult members' perspective on this issue. Nine-tenths of internal, international and non-migrant households perceive migration as helpful for the left behind members of their households. It is natural that migrant households will think of migration positively. But an interesting finding is that non-migrants also think of migration with equal importance. More than nine-tenths of all types of households perceive that migration increases social status. Ninety-nine percent respondents think that migration increases opportunity of work and scope for learning. They also think that migration increases economic security of household members who are left behind. Fifty-five percent male and 47 percent female respondents think that migration does not increase the risk of sickness or danger of their migrant family members. Rather they perceive that migration increases respect of their migrant family members in the destination as well. Nonetheless, half of internal and international migrant households think that migrants have not developed any sense of belonging in their destinations. Migrant as well as non-migrant households are of the opinion that migration contributes to the villages and communities as well. Around 78 percent of male and 72 percent of female respondents think that migrants bring back new ideas in their areas of origin. Nonetheless, 77 percent of them also think that migration creates a vacuum in young working age population in the village.

We can, therefore, conclude that policy makers, development partners and NGOs who design adaptation programmes need to change their mindset that migrant households or their communities do not want to migrate for work. People may not like when they are forced to move their homestead due to displacement. However livelihood migration is perceived very positively. Policy makers and practitioners who are involved in climate change adaptation interventions need to think as to how to reduce displacement through planned infrastructural interventions. But it does not mean that households having working age population will not try to send household members outside the village where income opportunities are higher. Therefore, adaptation interventions should target to reduce displacement. In cases where displacement is inevitable, the government needs to have a plan for resettling the displacees, create economically gainful local employment and at the same time should not disrespect the choice of those who would like to use livelihood migration of a few of their family members in ensuring better adaptation along with espousing other local level adaptation measures.

CHAPTER VIII

ADAPTATION POTENTIAL OF MIGRATION IN THE CONTEXT OF WELLBEING

In the previous chapter we have tried to understand potential of migration in increasing adaptive capacity of households through comparison of income differences between those who migrate and those who do not. We have found that international migrant households enjoy higher income and internal migrant households can keep their household income close to non-migrant households with the support of remittances sent by their migrant family members. In this chapter we will go further deep and try to see if migration impacts on the wellbeing of the households who participate in migration in comparison to those who do not.

Wellbeing is assessed at two levels: material wellbeing and subjective wellbeing. In the theoretical section, we have seen that material wellbeing includes state of housing, access to safe drinking water, hygienic sanitation, ownership and size of house as well as agricultural/farming land, access to health and education and so on. Subjective wellbeing of the households is assessed on the basis of level of satisfaction in respect to economic security, food security, health, children's education, interactions with family, interactions with the community and environment. Subjective wellbeing is also assessed on the basis of personality trait, place attachment and access to social network.

8.1 Material Wellbeing

Possession of Homestead

The figure below shows the status of ownership of homestead. Eighty-five percent of all respondents, irrespective of their migration status, possess a homestead. There is not much of a difference in ownership of homestead. However, the percentage of international migrant households who own home is higher compared to other two categories. Seven percent of internal and 10

percent of non-migrant households are squatting compared to 3 percent of international migrant households. A total of 6 percent of households are living in rented houses. Among these three types, percentage of households who live in rented premises is slightly higher in case of non-migrant households.

Table 8.1.1 Ownership of homestead by HH type

Ownership	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Own house	231	89.2	140	94.6	808	82.8	1179	85.2
Do not own house	0	0.0	0	0.0	5	0.5	5	0.4
Rented	10	3.9	4	2.7	62	6.4	76	5.5
Squatting	18	6.9	4	2.7	101	10.3	123	8.9
Total	259	100.0	148	100.0	976	100.0	1383	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

Size of Homestead Land

More than four-fifths of the households' homestead size is within 20 square meters (8.1.2). Eighty-eight percent international migrant, 81 percent internal migrant and 84 percent of non-migrant households live in homesteads which is up to 20 square meters. Homestead size of 6 to 7 percent of the households of all three categories ranges between 21 to 30 square meters. Homestead size of few of them are 100 square meters and above. Two percent of the internal migrant, 1 percent of the international migrant and 1 percent of the non-migrant households belong to this category.

Table 8.1.2 Size of homestead land by HH type

House size (in Sq m)	Internal (%)	International (%)	Non-Migrant (%)	Total (%)
Up to 20	81.1	87.8	83.9	83.8
21-30	7.3	6.1	6.8	6.8
31-40	3.5	2.0	4.1	3.8
41-50	3.5	0.7	1.1	1.5
51-60	0.8	1.4	1.5	1.4
61-80	1.5	0.7	1.4	1.4
81-100	0.8	0.0	0.4	0.4
101-200	1.2	1.4	0.0	0.4
Above 200	0.4	0.0	0.7	0.6
Total	100.0	100.0	100.0	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Ownership and Size of Agricultural Land

Table 8.1.3 shows the percentages of households who own agricultural land and their land size. Sixty percent of internal and international migrant households and 58 percent of non-migrant households do not possess any agricultural land. The average land size of the households shows that non-migrant households own comparatively larger land than other two types of households. On an average, they own 66 decimals which is 14 decimals more than internal and 27 decimal more than international migrant households. It is obvious that farm or agriculture related adaptation interventions will not be able to directly touch 60 percent of respondent households. Some of those who work as share croppers will get benefit indirectly. This has implications for adaptation interventions of government and NGOs. Changes that are being brought in through agricultural innovations will mostly benefit the landed class. Therefore, along with mainstream agricultural innovation, other programmes are required which will particularly touch the landless. Those include programmes that respect natural fishing rights of the people, off-farm income generating programmes etc. More importantly return from the economic activity should generate sizeable income.

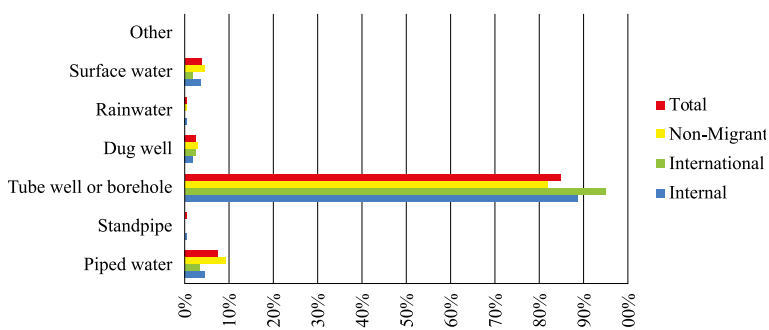
Table: 8.1.3 Ownership and size of agricultural land (in decimal)

Size of agricultural land (decimal)	Internal	International	Non-migrant
No Agricultural Land (0)	60.23%	60.81%	58.43%
Average land size possessed	52.2	39.4	66.4
Minimum land size owned	2	3	1
Maximum	900	800	3210

Source: DECCMA origin area survey in Bangladesh, 2016

Access to Drinking Water

The figure below shows that the prime source of drinking water for all types of households is tube well. Other sources are piped water and surface water. The percentage of households that use tube well as the major source of drinking water is the highest among the international migrant households. Ninety-four percent of them have access to tube well water compared to other two groups. Eighty seven percent of internal and 81 percent of non-migrant households have such access. On the other hand, households that have access to piped water is greater in number in case of non-migrant households. Around 10 percent of non-migrant households have access to piped water whereas only 6 percent of internal and 3 percent of international migrant households have access to the same (Figure 8.1.1).

Figure 8.1.1 Access to drinking water by type of HH

Source: DECCMA origin area survey in Bangladesh, 2016

Materials Used on Roof

In this study the quality of the house has been assessed by the materials used in the roof. Table 8.1.4 shows that vast majority of the internal, international and non-migrant households (79%) use corrugated iron sheet as their roof. Relatively, richer households have concrete roof. Houses which have concrete roof is higher among international migrant households (17%) compared to non-migrant (15%) and internal migrant (11%) households. Roof of around 7 percent of the households are made of hay, leaves or plastic polythene sheets. These are the poorest type of households among all others.

Table 8.1.4 Main material of roof by HH type

Nature of the roof	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Wood	1	0.4	0	0.0	3	0.3	4	0.3
Concrete	28	10.8	25	16.9	144	14.7	197	14.3
Tin / corrugate	214	82.6	115	77.7	758	77.6	1087	78.5
Hay/leaves/branches/jute bags	16	6.2	8	5.4	72	7.3	96	6.9
Total	259	100	148	100	977	100	1384	100

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

Type of Toilets

All types of households mostly use pit latrine. The use of pit latrine is higher among international migrant households (91%). It is followed by internal migrant (90%) and non-migrant (87%) households respectively (8.1.5). Use of flushing toilet is again higher in case of international

migrant households. Nine percent of them uses flush toilet. Six percent of non-migrant and 5 percent of internal migrant households use flush toilets. All the international migrant households have access to latrine whereas 5 percent of internal and 6 percent of non-migrant households do not have such access.

Table 8.1.5 Nature of latrine by HH type

Nature of latrine	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Flushing toilet	12	4.6	13	8.8	59	6.0	84	6.1
Pit latrine	234	90.4	135	91.2	853	87.4	1222	88.3
No facility /bush/field	12	4.6	0	0.0	62	6.3	74	5.3
Other	1	0.4	0	0.0	3	0.3	4	0.3
Total	259	100	148	100	977	100	1384	100
Missing	0		0		2		2	

Source: DECCMA origin area survey in Bangladesh, 2016

Number of Meals per Day

Table 8.1.6 shows that 83 percent of international migrant households can afford more than one meal a day. The number of households among the internal migrants who can afford more than one meal a day is 16 percent lower than the international migrants. In case of non-migrant households, it is 18 percent less.

Close to 30 percent of internal and non-migrant households sometimes experience such food insecurity whereas it is only 16 percent of international migrant households. A very few of all three types of households frequently experiences one or less than one meal per day. Three percent of internal and 6 percent of non-migrant households belong to this group whereas it is less than 1 percent in case of international migrant households.

Table 8.1.6 Instances of having 1 meal or less than 1 meal per day over the year

Instances of having 1 meal or less than 1 meal per day over the year	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Frequently eat one or less than one meal	8	3.1	1	.7	55	5.6	64	4.6
Occasionally eat one or less than one meal	76	29.5	24	16.2	279	28.7	379	27.5
Have more than one meal a day	174	67.4	123	83.1	639	65.6	936	67.8
Don't know	0	0.0	0	0.0	1	.1	1	.1
Total	258	100	148	100	974	100	1380	100

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 1 internal and 5 non-migrant is missing.

Identity of Household Members Who Go Without Food First

Female adults of the surveyed households are the respondents of this query. Male adults are asked this question only when female adults are absent. 443 responses have been elicited. Table 8.1.7 shows that when there is food shortage, it is the female adult of the households who go without food first. Eighty-five percent of internal migrant respondents and 81 percent of non-migrant respondents concur. Seventy-six percent of international migrant households identify adult women as the first person to go without food. It is noteworthy that both adult males and children never go without food first. This demonstrates that priority in food intake in Bangladesh is influenced by patriarchal social norms. The dominant social norm upholds that adult women will go hungry first.

Table 8.1.7 Identity of household members who go without food first

First household member who goes without food	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Female adult	72	84.7	19	76.0	269	80.5	360	81.1
Male adult	0	0.0	0	0.0	1	.3	1	.2
Children	0	0.0	0	0.0	1	.3	1	.2
Other	13	15.3	6	24.0	62	18.9	81	18.5
Total	85	100	25	100	333	100	443	100

Source: DECCMA origin area survey in Bangladesh, 2016

Health Status

Table 8.1.8 shows that during the preceding year, 86 percent households have suffered ill health or sustained injury while 14 percent households have not. There are hardly any differences among the three groups. Table 8.1.9 gives an idea about the type of medical care they avail. All three types of households' avail services from different sources. They avail the doctors' services the most. Seventy-three percent of the internal migrants, 83 percent of the international migrants and 80 percent of the non-migrant households have reported this.

Table 8.1.8 Household members with ill health or injury

Ill health, injury or disability	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	221	85.7	125	84.5	838	86.0	1184	85.8
No	37	14.3	23	15.5	136	14.0	196	14.2
Total	258	100	148	100	974	100	1380	100

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 1 internal and 5 non-migrant is missing.

Table 8.1.9 Type of medical care availed

Received medical care by Households	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
They did not receive medical care	6	2.70	0	0.00	11	1.30	17	1.44
Doctor	162	73.30	104	83.20	674	80.40	940	79.39
Medical centre	49	22.20	36	28.80	154	18.40	239	20.19
Hospital	114	51.60	52	41.60	400	47.70	566	47.80
Midwife	0	0.00	0	0.00	4	0.50	4	0.34
Other	5	2.30	1	0.80	6	0.70	12	1.01
Total	221		125		838		1184	

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Each cell represents percentage of total number of response

Around 50 percent of all types of households go to hospitals. They also use the services of medical centres. The distance of the hospitals, doctors or medical centres where they avail health services is between one to five kilometers from their home.

8.2 Subjective Wellbeing

So far we have compared the state of material wellbeing of migrant and non-migrant households. In the remaining section of the chapter we will compare the state of subjective wellbeing among these same groups. Elements of subjective wellbeing include individuals' satisfaction concerning interpersonal relations, family life, employment and health and finances. Subjective wellbeing also includes different aspects of physical and living environment. The level of happiness has been classified in five scales.

8.2.1 Satisfaction Level

Satisfaction about Life in General

Table 8.2.1.1 shows that more than 50 percent of households of each category are moderately happy with life in general. Nineteen percent of internal, 24 percent of international and 14 percent of non-migrant household heads consider themselves very happy with life in general. Insignificant number of household heads is very unhappy with their current status of life. Percentage of household heads who consider themselves moderately unhappy is less in case of international migrant household heads.

Table 8.2.1.1 Household head's perception about life satisfaction by HH type

Happiness with life in general	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Very happy	48	18.5	36	24.3	133	13.5	217	15.7
Moderately happy	133	51.4	81	54.8	576	59.0	790	57.1
Neither happy/unhappy	21	8.1	12	8.1	72	7.4	105	7.6
Moderately unhappy	48	18.5	16	10.8	156	16.0	220	15.8
Very unhappy	9	3.5	3	2.0	40	4.1	52	3.8
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

Housing

Table 8.2.1.2 shows the level of satisfaction of household heads of three groups about housing. A majority of all three categories states that they are moderately happy with their housing. Forty-four percent of internal, 43 percent of international and 47 percent of non-migrant household heads consider themselves moderately happy with their housing. When we compare the percentage of household heads that belong to the scale of very happy group, it is the heads of international migrant household. Again percentage of moderately unhappy about housing is higher among non-migrant group.

Table 8.2.1.2 Level of Satisfaction: housing condition

Housing condition	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Very happy	57	22.0	49	33.1	193	19.8	299	21.6
Moderately happy	113	43.6	63	42.6	454	46.5	630	45.5
Neither happy/unhappy	18	6.9	7	4.7	41	4.2	66	4.8
Moderately unhappy	56	21.7	26	17.6	235	24.0	317	22.9
Very unhappy	15	5.8	3	2.0	54	5.5	72	5.2
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

Economic Security

Table 8.2.1.3 shows the level of satisfaction of household heads about economic wellbeing. On question of level of satisfaction, 'moderately happy' attracts the majority of responses. Forty-one percent of internal, 40 percent of international and 44 percent of non-migrant household heads consider themselves moderately happy with their current level of economic wellbeing. When we compare the percentage of household heads that belong to the scale of very happy group it shows that international migrant

household heads are ahead of the other two groups. Twenty-five percent of international migrant household heads consider themselves very happy whereas 12 percent internal and 11 percent of non-migrant household heads feel in the same way.

Table 8.2.1.3 Level of Satisfaction: economic security

Economic security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Very happy	32	12.4	37	25.0	109	11.2	178	12.9
Moderately happy	106	40.9	59	39.9	426	43.6	591	42.7
Neither happy/unhappy	26	10.0	10	6.8	64	6.6	100	7.2
Moderately unhappy	72	27.8	33	22.3	306	31.3	411	29.7
Very unhappy	23	8.9	9	6.0	72	7.3	104	7.5
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

Drinking Water

Half of all three types of household heads is very happy when it comes to access to safe drinking water. Of course, the percentage of international migrants (5%) is higher compared to other two groups. It is interesting to observe that the group who feel that they are neither happy nor unhappy is very low in all categories of households (8.2.1.4).

Table 8.2.1.4 Level of Satisfaction: drinking water

Drinking water	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Very happy	121	46.7	79	53.4	456	46.7	656	47.4
Moderately happy	84	32.4	45	30.4	291	29.8	420	30.3
Neither happy/unhappy	7	2.7	2	1.4	34	3.5	43	3.1
Moderately unhappy	32	12.4	16	10.8	140	14.3	188	13.6
Very unhappy	15	5.8	6	4.0	56	5.7	77	5.6
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

Food Security

The majority of all three types of respondents feel that they are moderately happy with their current level of food security. The percentage of moderately happy is higher in case of non-migrant households. Forty-nine percent of internal migrant, 47 percent of international migrant and 53 percent of non-migrant households consider themselves moderately happy with their current level of food security. Nonetheless, the percentage of international migrant households who consider themselves very happy is almost 13 percent higher from than other two groups (8.2.1.5).

Table 8.2.1.5 Level of Satisfaction: food security

Food security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Very happy	68	26.3	58	39.2	249	25.5	375	27.1
Moderately happy	127	49.0	70	47.2	522	53.4	719	52.0
Neither happy/unhappy	22	8.5	9	6.1	82	8.4	113	8.2
Moderately unhappy	37	14.3	10	6.8	113	11.6	160	11.5
Very unhappy	5	1.9	1	.7	11	1.1	17	1.2
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

Health

The level of happiness among all three groups is comparatively much lower when it comes to health. Thirty-eight percent of internal migrant, 36 percent of international migrant and 32 percent of non-migrant households are moderately unhappy about the availability of health services. Almost 10 percent of internal and international migrant households are very unhappy with health care. Only 12 percent of all types of households are very happy about their access to health services (8.2.1.6).

Table 8.2.1.6 Level of Satisfaction: HH members' health

Health	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Very happy	25	9.6	18	12.2	118	12.1	161	11.6
Moderately happy	97	37.5	52	35.1	405	41.5	554	40.0
Neither happy/unhappy	16	6.2	10	6.8	62	6.3	88	6.4
Moderately unhappy	97	37.5	53	35.8	310	31.7	460	33.3
Very unhappy	24	9.2	15	10.1	82	8.4	121	8.7
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

Children's Education

Table 8.2.1.7 presents the level of happiness of household heads regarding children's education. Around 30 percent of all types of interviewees are very happy in this respect. Another 30 percent are moderately happy. A large percentage of respondents belong to the group who are undecided. Thirty percent of all three categories are neither happy nor unhappy. Among the three groups, the number of household heads who are neither happy nor unhappy is a little less among the international migrants and the percentage of very happy household heads is also a little more in case of international migrants.

Table 8.2.1.7 Level of Satisfaction: children's education

Children's education	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Very happy	58	22.4	49	33.1	294	30.1	401	29.0
Moderately happy	87	33.6	51	34.5	287	29.4	425	30.7
Neither happy/unhappy	82	31.7	40	27.0	288	29.5	410	29.6
Moderately unhappy	24	9.2	5	3.4	92	9.4	121	8.7
Very unhappy	8	3.1	3	2.0	16	1.6	27	2.0
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

Interactions with Family

A substantial majority of the household heads feel that they are very happy when it comes to level of satisfaction in terms of interactions with the family. As high as 76 percent of the surveyed households, is very happy in this regard. Again there are no significant differences among the three categories of respondents (8.2.1.8).

Table 8.2.1.8 Level of Satisfaction: family interactions

Interactions with family	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Very happy	186	71.8	115	77.7	754	77.2	1055	76.2
Moderately happy	61	23.5	27	18.2	196	20.1	284	20.6
Neither happy/unhappy	3	1.2	4	2.7	7	.7	14	1.0
Moderately unhappy	9	3.5	1	.7	18	1.8	28	2.0
Very unhappy	0	0.0	1	.7	2	.2	3	.2
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

Interactions with the Community

Two-thirds of the respondents belonging to all three categories feel that they are very happy in terms of interactions with the community. A quarter of the respondents are moderately happy. Less than 1 percent of households

Table 8.2.1.9 Satisfaction with the level of community interactions

Interactions with the community	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Very happy	171	66.0	112	75.7	689	70.6	972	70.2
Moderately happy	82	31.7	31	20.9	271	27.7	384	27.7
Neither happy/unhappy	4	1.5	4	2.7	8	.8	16	1.2
Moderately unhappy	2	.8	1	.7	9	.9	12	.9
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

have been moderately unhappy. The percentage of very happy with respect to interaction with the community of international migrant household heads is 10 percent higher than internal and 5 percent higher than non-migrant household heads (8.2.1.9).

Environment

Table 8.2.1.10 shows that no significant difference is observed across the households regarding the satisfaction level of surrounding environment. Again it is the international migrant household heads who report better environmental conditions surrounding them compared to other two groups. Thirty-one percent of all categories of respondents say report as 'very happy', 42 percent report as 'moderately happy', 17 percent report 'moderately unhappy' and 5 percent report 'very unhappy' with their surrounding environmental.

Table 8.2.1.10 Level of Satisfaction: surrounding environment

Environment	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Very happy	78	30.1	56	37.8	295	30.2	429	31.0
Moderately happy	105	40.5	64	43.3	410	42.0	579	41.8
Neither happy/unhappy	15	5.9	6	4.1	56	5.7	77	5.6
Moderately unhappy	49	18.9	19	12.8	166	17.0	234	16.9
Very unhappy	12	4.6	3	2.0	50	5.1	65	4.7
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

8.2.2 Personality

This section presents information on household heads' personality. Personality is the combination of characteristics or qualities that form an individual's distinctive character. Household heads' personality has been measured in five scales. These are: disagree strongly, disagree a little, neither agree nor disagree, agree a little and agree strongly.

Cheerful and Outgoing

Two-third of the household heads irrespective of types strongly agree that they are cheerful and outgoing (74%). Another 18 percent agree a little with this. Percentage of non-migrant household is the highest who strongly agree that they are cheerful and outgoing.

Table 8.2.2.1 Cheerful and outgoing

Cheerful and outgoing	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Disagree strongly	5	1.9	0	0.0	23	2.3	28	2.0
Disagree a little	5	1.9	7	4.7	37	3.8	49	3.6
Neither agree nor disagree	6	2.4	1	.7	23	2.3	30	2.2
Agree a little	62	23.9	35	23.7	150	15.4	247	17.8
Agree strongly	181	69.9	105	70.9	744	76.2	1030	74.4
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

Easy to Get Along With

Three-fourths of respondents from all types of households strongly agree that they are easy to get along with. There is no significant difference among internal, international and non-migrant households in this respect. As high as 70 percent of the internal migrant household heads, 71 percent of international migrant household heads and 77 percent non-migrant household heads strongly agree that they are easy to get along with (8.2.2.2).

Table 8.2.2.2: Easy to get along with

Easy to get along with	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Disagree strongly	5	1.9	0	0.0	20	2.0	25	1.8
Disagree a little	4	1.5	6	4.1	36	3.7	46	3.3
Neither agree nor disagree	7	2.7	1	.7	27	2.8	35	2.6
Agree a little	61	23.6	36	24.3	143	14.6	240	17.3
Agree strongly	182	70.3	105	70.9	751	76.9	1038	75.0
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

Reliability

Sixty-three percent of the households irrespective of their type strongly agree that they are reliable as a person. There are no significant differences

Table 8.2.2.3: Reliability

Reliability	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Disagree strongly	6	2.3	2	1.4	22	2.3	30	2.2
Disagree a little	8	3.1	5	3.4	34	3.5	47	3.3
Neither agree nor disagree	10	3.9	7	4.7	46	4.6	63	4.6
Agree a little	81	31.2	32	21.6	255	26.1	368	26.6
Agree strongly	154	59.5	102	68.9	620	63.5	876	63.3
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

observed across the households regarding the status of reliability. Among all the three groups, the percentage of international migrant household heads who feels that they are more reliable is the highest (69%).

Relaxed and Handle Stress Well

Fifty-two percent of international, 44 percent of internal and 46 percent of non-migrant household heads think that they are relaxed as a person and can handle stress well. Another 34 percent of all categories agree to some extent with the statement while only 16 percent of total respondents disagree strongly and disagree a little with this (8.2.2.4).

Table 8.2.2.4: Relaxed personality and ability to handle stress

Relaxed and handle stress well	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Disagree strongly	17	6.6	4	2.7	64	6.6	85	6.1
Disagree a little	22	8.5	12	8.1	101	10.3	135	9.7
Neither agree nor disagree	12	4.6	14	9.5	29	3.0	55	4.0
Agree a little	95	36.7	41	27.7	337	34.5	473	34.2
Agree strongly	113	43.6	77	52.0	446	45.6	636	46.0
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing.

Open to New Experiences

Altogether 82 percent of respondents either strongly agree, or agree to some extent that they are open to new experiences. There is hardly any difference of opinion among the three groups of interviewees (8.2.2.5).

Table 8.2.2.5 Open to new experiences

Open to new experiences	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Disagree strongly	7	2.7	2	1.4	33	3.4	42	3.0
Disagree a little	21	8.1	13	8.8	59	6.0	93	6.7
Neither agree nor disagree	28	10.8	14	9.5	76	7.8	118	8.6
Agree a little	87	33.6	61	41.1	421	43.1	569	41.1
Agree strongly	116	44.8	58	39.2	388	39.7	562	40.6
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing

Like to Look for Better Ways of Doing Things

Forty-four percent of all types of respondents strongly agree with the statement that they are looking for better ways of doing things. Another 39 percent also agree with this statement to some extent.

Table 8.2.2.6: Like exploring better way of doing things

Like exploring better way of doing things	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Disagree strongly	5	1.9	2	1.4	28	2.9	35	2.5
Disagree a little	17	6.6	6	4.1	55	5.6	78	5.6
Neither agree nor disagree	27	10.4	14	9.5	83	8.5	124	9.0
Agree a little	87	33.6	72	48.5	379	38.8	538	38.9
Agree strongly	123	47.5	54	36.5	432	44.2	609	44.0
Total	259	100.0	148	100.0	977	100.0	1384	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 2 non-migrants is missing

Comfortable with Making Big Decisions

Almost 50 percent of respondents of all categories strongly agree that they feel comfortable in making big decisions. Another 32 percent agree with this to some extent.

Table 8.2.2.7: Feel comfortable with making big decisions

Feel comfortable with making big decisions	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Disagree strongly	7	2.7	5	3.4	34	3.5	46	3.3
Disagree a little	23	8.9	17	11.5	83	8.5	123	8.9
Neither agree nor disagree	18	6.9	8	5.4	89	9.1	115	8.3
Agree a little	81	31.3	46	31.1	309	31.7	436	31.6
Agree strongly	130	50.2	72	48.6	461	47.2	663	47.9
Total	259	100.0	148	100.0	976	100.0	1383	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 3 non-migrants is missing.

An analysis of personality traits of the household heads and the female adults show that a majority of them are cheerful, outgoing, easy to get alone, reliable, relaxed and can handle stress. In face of disruption they are open to new ideas; and do not mind exploring new ways. These aspects of subjective wellbeing demonstrate that the people of affected areas have high capacity to be resilient to climate and environmental disruptions.

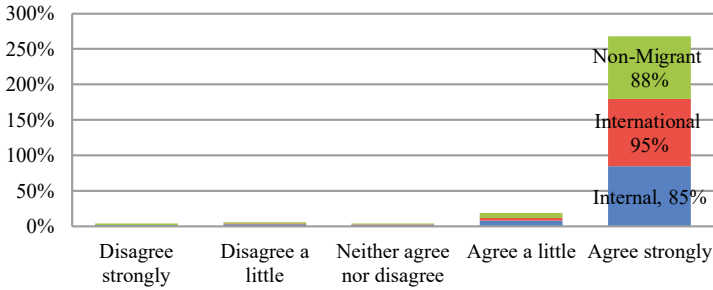
8.2.3 Place Attachment and Social Networks

This section tries to understand the respondents' attachment to the place where they are staying. Place attachment is one of the criteria of wellbeing of the people. It is a multifaceted and complex phenomenon. It incorporates different aspects of people-place bonding. People develop effective bonds with places that are in part to do with satisfaction. Place attachment is measured on the basis of belongingness to family and village.

Belongingness to Village

Nine out of ten respondents irrespective of household types strongly agree that their village is part of their life (Figure 8.2.3.1).

Figure 8.2.3.1 Village is part of life



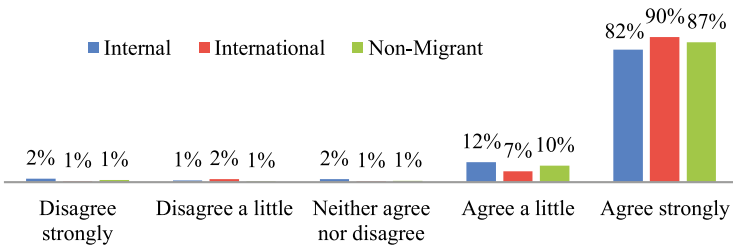
Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing

Prospect of living here with Family/Friends in Future

Eighty-six percent of all three groups strongly agree that they want their family and friends to live in the current locations. The highest among the three groups who would like to live with their family and friends is the international migrant household. Very insignificant number of all three groups of respondents, internal, international and non-migrants disagree with this statement (8.2.3.2).

Figure 8.2.3.2 Family/friends to live here in future

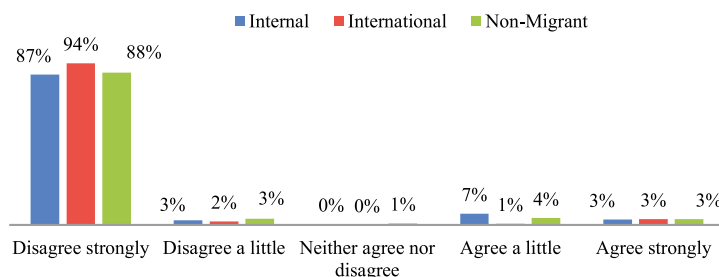


Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing.

Feel like an Outsider in the Village

Eighty-nine percent of all three types of household heads strongly disagree that they feel like outsider in the current place. There are no significant differences across the households in terms of this statement. This means that they are emotionally attached to the location and would like to see their future in there.

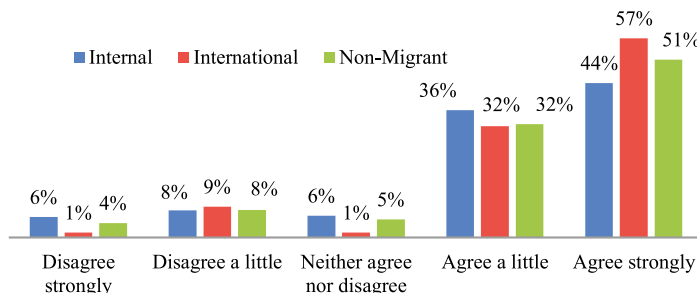
Figure 8.2.3.3: Feel like an outsider

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing.

Live here because it is Practical

Fifty percent of household heads irrespective of types strongly agree that they live in the current location as it is practical. Another 32 percent of all types of household heads agree to this to some extent. Around 11 percent of them strongly disagree or to some extent disagree with to the statement (8.2.3.4).

Figure 8.2.3.4 Live here because it is practical

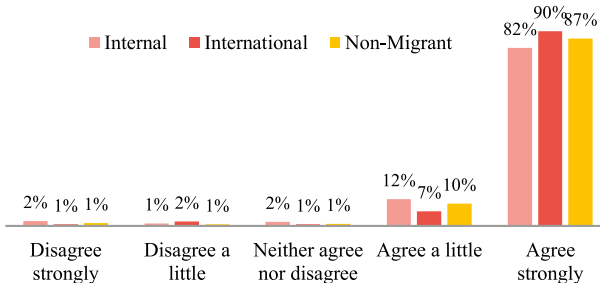
Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing.

Miss the Place When Not Here

Eighty-six percent of the households irrespective of types strongly agree that they miss the place of current residence when they are not here. It is obvious that their place attachment is very strong.

Figure 8.2.3.5: Miss the place when I am not here



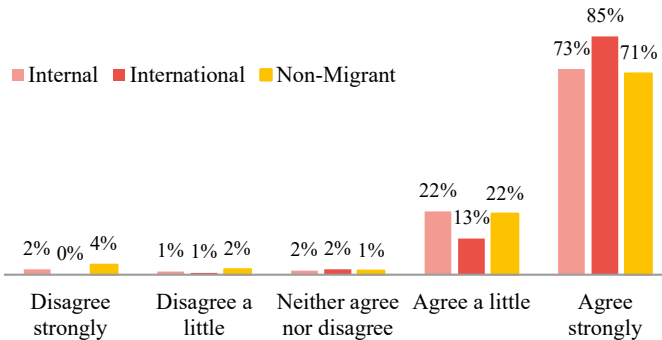
Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing

Friends and Family are Good Support

Seventy-three percent of all types of households strongly agree that their friends and families are good support for them. Another 21 percent of household heads agree to some extent with this statement. Less than 5 percent of them think otherwise (8.2.3.6).

Figure 8.2.3.6 Friends and family are good support

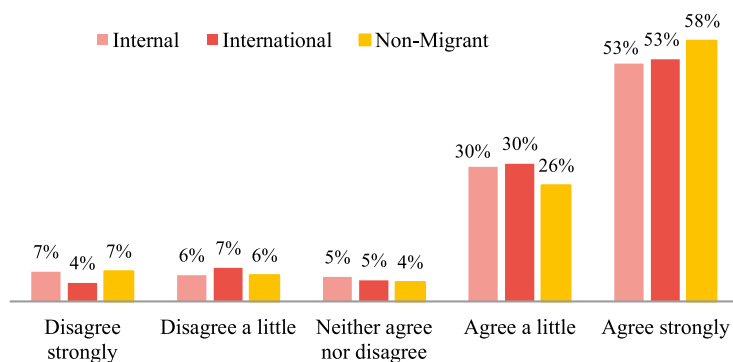


Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing.

Enjoy Being Involved in Village Activities

More than half of the respondents irrespective of household types strongly agree that they enjoy being involved in village activities. Another one fourth of household heads agree to some extent with this.

Figure 8.2.3.7 Enjoy being involved in village activities

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Response of 4 non-migrants is missing.

Chapter Conclusion

This section gives us an idea about the material and subjective wellbeing of the respondents. Regarding material wellbeing we find that a large portion of all types of households own homestead. Among the three groups, international migrant households are better off. Ownership of agricultural land is higher in case of non-migrant households, which means that non-migrant households will benefit the most with agricultural innovations in adapting to climate change. Four-fifths of all types of households use tube well water. However, international migrant households have the highest access in this. Houses with concrete roof are also higher in case of international migrant households. The number of households who eats one meal a day is the lowest in case of international migrant households. Eighty-five percent of all three types of households have access to health care services and they mostly go to doctors, medical centers and hospitals. It is evident that non-migrant households ensure material wellbeing of their families through earning locally; whereas internal migrant households ensure material wellbeing similar to non-migrant households because of their income generated both locally and through remittances. In majority cases, the state of material wellbeing of international migrant households is comparatively better than that of internal and non-migrant households. This means that international migration does have potentials to be used as one of the adaptation tools. Internal migrants also have potentials to be used as adaptation tools. Livelihood migration is allowing these households to maintain an income close to non-migrant households. In the absence

of access to such internal migration, material wellbeing of these families would have suffered significantly.

Ensuring material wellbeing through migration may affect the subjective wellbeing of households. In the absence of adult male or female migrants, the households may feel sad or unhappy about their migrant members' state of wellbeing. But assessment of subjective wellbeing shows that it is not lower than non-migrant households. On the contrary, subjective wellbeing in respect to food security is the highest in case of international migrant households. More than half of all three groups of households are moderately happy with their lives in general. Regarding housing, a little less than half is moderately happy. With respect to economic security international migrant households is almost 12 percent more happy compared to internal and non-migrant households. Around 60 percent of all three groups of respondents are either very happy or moderately happy with respect to children's education. They have similar perception about surrounding environment. Internal, international and non-migrant households feel that their villages are important part of their life. Sixty-seven percent of all categories like to live in their current villages with their family and friends.

Sense of belonging to the origin area is strong for all three groups. Almost 90 percent do not feel themselves as outsiders. Two-thirds of them feel that family and friends are good support for them. More than 80 percent of respondents of all three categories enjoy getting involved in different activities in the village. In almost all respects of personality the household heads are happy and their place attachments are also quite strong. By no means, non-migrant households is more attached with the place and thus do not allow their family member to migrate or vice versa.

This may indicate that livelihood migration of a few members of the family allows some of the internal and international migrant households to stay in their villages as their subsistence can be ensured through income from outside the village. They can continue to be part of their village and community. If access to such income was not available, the whole family may have to leave to different destinations where employment is available. This leads us to argue that livelihood migration helps *in-situ* adaptation of some of the households in the areas of origin.

CHAPTER IX

GENDERED IMPACT OF MIGRATION

This chapter looks into the specific implication of migration on left behind adult women. It also explains the scenario of women's empowerment across the households. The impact of migration on left behind female members is based on responses of female adults of migrant households. Issues dealt here include influence over family decision making, work load on left behind adult female, responsibilities of child rearing and so on (Tables 9.1.1 to 9.7.1). However, data on current decision making process include adult females from all types of households: internal, non-migrant and short-term contractual international migrant households.

9.1 Impact of Migration on Capacity of Female to Influence Household Decisions

Few studies have underscored that in the absence of their male counterparts left behind female household heads exercise greater power in family decision making (Rashid 2015, Akram and Karim 2005). However, exercise of greater power depends on the age of the female household head, place of residence and level of education.

Table 9.1.1 Level of influence of female on household decision-making

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Agree	94	58.1	50	55.6	27	55.1	171	56.8
Neither agree/disagree	60	37.0	33	36.6	14	28.6	107	35.5
Disagree	8	4.9	7	7.8	8	16.3	23	7.7
Total	162	100.0	90	100.0	49	100.0	301	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Table 9.1.1 shows 58 percent of the female members of internal migrant, 56 percent of international and 55 percent of non-migrant households agree that migration creates opportunity for greater influence of female members on household decision making. Thirty-six percent neither agrees nor disagrees with the level of influence of female on the household decision making.

9.2 Impact of Migration on Work Responsibility of Adult Women

Seventy-five percent of the female respondents of internal migrant and 73 percent of international migrant households agree that their work responsibilities at home have increased significantly due to migration of the male member of their households. Siddiqui (2001) in her study on international short term labour migration of women finds that female workload increases when a male member of the household migrate. However, responsibilities of male spouses in the absence of female migrants do not increase in a significant way as the male members manage the household by taking support of their extended family members. A sizeable number (16%) of female respondents of non-migrant households, however, does not think that work load of left behind female members of the migrant households has increased in any significant manner (Table 9.2.1).

Table 9.2.1 Impact of migration on work responsibilities of women

Perception		Types of HHs			Total
		Internal	International	Non-Migrant	
Agree	No.	122	66	32	220
	%	75.3	73.3	65.3	73.1
Neither agree/disagree	No.	37	20	9	66
	%	22.8	22.0	18.4	21.9
Disagree	No.	3	4	8	15
	%	1.9	4.4	16.3	5.0
Total	No.	162	90	49	301
	%	100.0	100.0	100.0	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

9.3 Impact of Migration on Child Care Responsibilities of Women

Thirty-two percent female adults of internal migrant and 36 percent of international migrant households think that their child care responsibility has increased due to migration of male members. Almost half of the

respondents do not think that there is any increase in their workload related to child care. Male members hardly perform any child care related work even when they are present in their areas of origin. Therefore, they contend that the question of increased workload in child rearing does not arise. Only 49 women from non-migrant households respond to this issue. Interestingly 57 percent of them feel that workload of left behind female of the migrant households must have increased (Table 9.3.1).

Table 9.3.1 Migration impact on child care responsibilities of women

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Agree	52	32.1	32	35.6	28	57.1	112	37.2
Neither agree/disagree	84	51.9	46	51.1	18	36.8	148	49.2
Disagree	26	16.0	12	13.3	3	6.1	41	13.6
Total	162	100.0	90	100.0	49	100.0	301	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

9.4 Impact of Migration on Control of Women over Reproductive Choice

Table 9.4.1 shows that migration has very little impact on control over reproductive choices of women. Out of 162 adult women of internal migrant households, only 12 percent feel that they have more control over their reproductive choice compared to during their non-migrant status. Sixteen percent of the 90 women respondents of international migrant households feel the same way whereas 31 percent of the 49 women respondents of non-migrant households say so. It seems that female adults of non-migrants household have more positive perception on impact of male migration on left behind female adults of migrant households.

Table 9.4.1 Migration impact on control over reproductive choices of women

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Agree	20	12.3	14	15.6	15	30.6	49	16.3
Neither agree/disagree	111	68.6	58	64.4	27	55.1	196	65.1
Disagree	31	19.1	18	20.0	7	14.3	56	18.6
Total	162	100.0	90	100.0	49	100.0	301	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

9.5 Overall Stress Level and Unhappiness

Thirty-seven percent female members of internal migrant, 34 percent of international migrant and 47 percent of non-migrant households do not think they are more stressed or unhappy at present compared to their past. This may indicate that a higher number of left behind women of migrant households go through more stresses compared to women of non-migrant households (Table 9.5.1).

Table 9.5.1 Increase in overall stress level and unhappiness in recent time

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Agree	45	27.8	21	23.4	12	24.5	78	25.9
Neither agree/disagree	57	35.2	38	42.2	14	28.6	109	36.2
Disagree	60	37.0	31	34.4	23	46.9	114	37.9
Total	162	100.0	90	100.0	49	100.0	301	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

9.6 Impact of Migration on Safety of Left behind Women in Village

Some earlier studies informed that in the absence of the male members, adolescent girls and adult women may become vulnerable to sexual and other forms of harassment (Rashid, 2018). Vulnerability increases when the household does not have any other male member. A vast majority of the respondents of this study however have not identified it as a big problem. Only 12 percent of the adult women belonging to all three types of households agree that migration has an impact on the safety of women. However, 71 percent female adult respondents of internal, 64 percent of international and 61 percent of non-migrant households disagree with the statement that migration of male member makes left behind female members in the village unsafe (Table 9.6.1). This finding is quite a departure from previous research findings. This may indicate that some forms of security measures have been in place that was not present earlier.

Table 9.6.1 Migration impact on safety of women in village

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Agree	20	12.3	8	8.9	7	14.3	35	11.7
Neither agree/disagree	27	16.7	24	26.7	12	24.5	63	20.9
Disagree	115	71.0	58	64.4	30	61.2	203	67.4
Total	162	100.0	90	100.	49	100.0	301	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

9.7 Access to New Opportunity

As many as 72 percent women of internal migrant and 74 percent of international migrant households feel that migration of their family members have opened up new opportunities for them. Forty-five percent woman of non-migrant households who respond to this question also feels that migration creates opportunity for left behind women. Percentage who disagrees is higher in case of non-migrant households (Table 9.7.1). This again indicates that female members of non-migrant households have high opinion about the potential of migration in respect to its contribution to women's increased access to opportunities.

Table 9.7.1 Migration impact on access to opportunity in life

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Agree	117	72.2	67	74.4	22	44.9	206	68.4
Neither agree/disagree	32	19.8	12	13.4	17	34.7	61	20.3
Disagree	13	8.0	11	12.2	10	20.4	34	11.3
Total	162	100.0	90	100.0	49	100.0	301	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

9.8 Decision on Changes in Livelihood Practices

Table 9.8.1 shows that in more or less 53 percent of all types of households both male and female adults jointly make decisions regarding changes in their livelihood practices. More or less in 40 percent of all types of households male adults make decision on changes in livelihood practices. Only in 6 percent of all types of households, female adults decide on making changes in livelihood practices.

Table 9.8.1 Decision regarding changes to livelihood practices

Perception	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Adult male only	92	35.7	65	43.9	392	40.2	549	39.8
Both male and female adults	148	57.3	70	47.3	518	53.3	736	53.3
Female adult only	16	6.2	13	8.8	49	5.0	78	5.7
Other	0	0.0	0	0.0	3	.3	3	.2
Not applicable	2	.8	0	0.0	12	1.2	14	1.0
Total	258	100.0	148	100.0	974	100.0	1380	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Responses of 1 internal and 5 non migrants HHs is missing

9.9 Decision on Spending Family Savings

In 63 percent among all types of households male and female adults jointly make the decision on how they spend their family savings (Table 9.9.1). Male

adults in 26 percent households and female adults in 8 percent households on their own make decision on spending family savings. Among the three types of households it is among the international migrant households that the female adults are mostly empowered. It is followed by internal migrant households. Female adults make decision on spending family savings in 16 percent of the international migrant households compared to 9 percent of the internal and 7 percent of the non-migrant households. This is a significant departure from earlier research findings. Studies (IOM, 2000, Siddiqui 2001) found that in the absence of male adults, female members of those migrant households have more command on financial decisions such as day-to-day expenditure as well as on family enterprises than non-migrant households. This however was not the case if the family had other adult male members present. The change in control of expenditure in recent time can be explained by the increased use of cell phones. Earlier migrants could not communicate with the households on a regular basis. Now they can do so with the family on a regular basis, often several times a day. Such regular communication allows a migrant to retain a degree of control of the use of remittances.

Table 9.9.1 Decision on spending family savings

Spending family savings	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Adult male only	62	24.0	37	25.0	257	26.3	356	25.8
Both male and female adults	165	64.0	79	53.4	624	64.1	868	62.9
Female adult only	23	8.9	23	15.5	67	6.9	113	8.2
Other	0	0.0	0	0.0	2	.2	2	.1
Not applicable	8	3.1	9	6.1	24	2.5	41	3.0
Total	258	100.0	148	100.0	974	100.0	1380	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Responses of 1 internal and 5 non migrants HHs is missing.

9.10 Decision on Taking Loan

Decision of taking loan for the household is jointly performed by male and female adults in more than 50 percent of all types of households. If we compare decision making scenario among internal, international, and non-migrant households, we can see that male and female adults jointly make decision whether they will take loan or not in 60 percent of internal migrant households. It is followed by 57 percent of non-migrant and 55 percent of international migrant households. On the other hand, female adults on their own decide on taking out a loan in 9 percent of internal migrant, 8 percent of international migrant and 6 percent of non-migrant households (Table 9.10.1).

Table 9.10.1 Decision on taking loan

Decision of taking loan	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Adult male only	65	25.2	39	26.4	278	28.5	382	27.7
Both male and female adults	154	59.7	81	54.7	558	57.4	793	57.5
Female adult only	22	8.5	12	8.1	54	5.5	88	6.4
Other	0	0.0	0	0.0	6	.6	6	.4
Not applicable	17	6.6	16	10.8	78	8.0	111	8.0
Total	258	100.0	148	100.0	974	100.0	1380	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Responses of 1 internal and 5 non migrants HHs is missing.

9.11 Decision on Treatment of Sick Children

Male and female adults jointly decide on the treatment of sick children in 76 percent of internal migrant, 64 percent of international migrant and 75 percent of non-migrant households (Table 9.11.1). Male adults on their own decide on the treatment of sick children in 8 percent of internal migrant households and 10 percent of both international and non-migrant households. On the other hand, female adults decide on treatment of sick children in 14 percent of internal migrant and 24 percent of international migrant households. Unilateral decisions on treatment of sick children are rather low in case of non-migrant households (9%).

Table 9.11.1 Decision on treatment of sick children

Deciding treatment of sick children	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Adult male only	21	8.1	14	9.5	95	9.8	130	9.4
Both male and female adults	195	75.6	94	63.5	731	75.1	1020	73.9
Female adult only	35	13.6	35	23.6	91	9.3	161	11.7
Other	2	.8	0	0.0	3	.3	5	.4
Not applicable	5	1.9	5	3.4	54	5.5	64	4.6
Total	258	100.0	148	100.0	974	100.0	1380	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Responses of 1 internal and 5 non migrants HHs is missing.

9. 12 Decision on Taking up Work outside Home

Table 9.12.1 presents who controls the decision whether household member(s) will work outside the home or not. In 61 percent of internal migrant, 56 percent of international migrant and 54 percent of non-migrant households, it is the male and female adults who jointly make decision on household member(s) taking up work outside the home. Thirty-one percent of internal migrant and 35 percent of both international and non-migrant households it is the male adults alone who decide on taking up work outside the home.

Table 9.12.1 Decision on taking up work outside home

Decision on whether household member(s) work outside the home	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Adult male only	79	30.6	52	35.1	343	35.2	474	34.4
Both male and female adults	157	60.9	83	56.1	530	54.4	770	55.8
Female adult only	21	8.1	11	7.4	57	5.9	89	6.4
Other	0	0.0	0	0.0	5	.5	5	.4
Not applicable	1	.4	2	1.4	39	4.0	42	3.0
Total	258	100.0	148	100.0	974	100.0	1380	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Responses of 1 internal and 5 non migrants HHs is missing.

On the other hand, female adults themselves decide on taking up work outside the home only in 8 percent of internal migrant, 7 percent of international migrant and 6 percent of non-migrant households.

9.13 Migration Decision of Household Member(s)

Among the three migrant groups there is hardly any difference on the question of who decides whether a household member should migrate or not. Male and female adults jointly decide on migration decisions in near about 60 percent of all types of migrant households. However, decision on migration taken by male adults is higher in case of international migration households. On the other hand, in 7 percent of both internal and international migrant households and 4 percent of non-migrant households it is the female adults on their own who make the migration decision of a household member (Table 9.13.1).

Table 9.13.1 Household member's migration decision

HHs migration decision	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Adult male only	68	26.4	52	35.1	274	28.1	394	28.6
Both male and female adults	170	65.9	83	56.1	535	54.9	788	57.1
Female adult only	19	7.3	11	7.4	43	4.4	73	5.2
Other	1	.4	0	0.0	8	.8	9	.7
Not applicable	0	0.0	2	1.4	114	11.8	116	8.4
Total	258	100.0	148	100.0	974	100.	1380	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Responses of 1 internal and 5 non migrants HHs is missing.

9.14 Decision on Education of Children

Male and female adults jointly decide on the education of their children in 69 percent of internal migrant, 64 percent of international migrant and 67

percent of non-migrant households. In 7 percent of all migrant categories of households (internal, international and non-migrant), it is the male members who decide on education of their children. On the other hand, female adults alone decide on education of their children in 11 percent of internal migrant, 13 percent of international migrant and 7 percent of non-migrant households.

Table 9.14.1 Decision on education of children

Deciding education of children	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Adult male only	18	7.0	11	7.4	72	7.4	101	7.3
Both male and female adults	177	68.5	94	63.6	653	67.0	924	67.0
Female adult only	28	10.9	19	12.8	71	7.3	118	8.6
Other	0	0.0	0	0.0	5	.5	5	.4
Not applicable	35	13.6	24	16.2	173	17.8	232	16.7
Total	258	100.0	148	100.0	974	100.0	1380	100.0

Source: DECCMA origin area survey in Bangladesh, 2016

Note: Responses of 1 internal and 5 non migrants HHs is missing.

Chapter Conclusion

Migration has gender specific implications. More than half of the female adult respondents of internal and international migrant households perceive that migration has increased their influence on household decision making. Equal percentage of adult women of non-migrant households also feel that migration of male members increase the influence of left behind women of migrant households in family decision making. Three-fourths of both types of migrants as well as non-migrant women, however, feel that their work responsibilities have increased due to the migration of their male counterparts. Thirty-seven percent of all types think that the responsibility of child rearing has increased. Migration could not make any significant impact on reproductive choice. Contradicting the findings of earlier studies, as high as 70 percent of all types of households think that safety and security of female members have not been affected in a major way. Seventeen percent respondents irrespective of their migration status deem that migration has opened up new opportunities for household members.

Half of the households mention that important decisions within the families are taken jointly by male and female adults. Use of savings and seeking loan are some examples where decisions are jointly taken. Male and female adults take joint decision in respect to treatment of sick children of around 70 percent of the households. Fifty-seven percent of all types of migrant households the migration decisions take jointly.

CHAPTER X

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This book critically analyzes the role of climate change in inducing migration. One of its aims is to understand whether the influence of climate change on migration decision making can be differentiated from other forms of influences. Another equally important aim is to explore whether the livelihood migration of one or a few members of a household has the potential to increase adaptive capacity of other left behind members who are facing different stresses from climate change and environmental hazard.

10.1 Summary and Conclusions

The book begins with introducing the major research questions. It uses three sets of concepts: drivers of migration, adaptation to climate change and material and subjective wellbeing. The research employs five instruments: multi hazard mapping, migration residual mapping, focus group discussion, population census and household survey. Empirical data is generated in 14 Ganges-Brahmaputra-Meghna (GBM) delta districts of Bangladesh. It covers 50 *mouzas* of 41 *upazilas* that represent very high, high, medium, low and very low climate hotspots. This is done to ensure that findings are nationally representative. The 50 *mouzas* are treated as migrant origin areas. Since *mouzas* themselves are too large, they are divided into smaller clusters and each cluster represents 200 households. One cluster from each *mouza* has been randomly selected for population census using serpentine method. Out of the 200 households 30 have been selected for detailed survey following stratified random sampling. To make the findings representative the interviewees have been selected proportionately from migrant and non-migrant households from those 200 households. Altogether the survey has covered 1,386 households; 70 percent of those have represented non-migrant households, 19 percent internal migrant households and 11 percent short-term contract international migrant households.

Findings of the research are presented from Chapter II to Chapter IX. Chapter II begins by presenting the socio-demographic profile of the households. 1,386 of the surveyed households altogether have 6,844 members. The average household size is the largest in case of short-term contract international migrant households while the lowest in case of non-migrant households. This may indicate that larger families have more opportunities to participate in migration. This also may indicate that international migration encourages staying in an extended family structure for many reasons ranging from security of left behind family members to day-to-day management and cost minimization of the household.

Half of the household members are married. Three-fourths of the members are born in their villages while the rest one-fourth has come to the villages under survey from other areas. However, in most cases marriage is the reason behind such movement. Around one-fifth of household members of all groups, migrant and non-migrant, do not have any schooling. In the enumeration areas four-fifths is Muslim and one-fifth is Hindu. We have not found much of difference between the profession of left behind migrant household and non-migrant household members. Major professions are farming, small business, salaried employee, transport workers and day labourers. Five percent of each is either retired persons or students. As high as 44 percent household members is unpaid workers. It includes female members who are mostly married and elderly members who do not work outside the home. Mostly men migrate from these coastal districts.

Let us first summarize the findings on the role of climate change in inducing migration. Findings of this research validate results of many of the previous works (Foresight 2011, Massey et al. 1990) that migration is multi-causal and it is not possible to segment out percentage of migration that is induced by environmental degradation or climate related events. In a small number of cases however, climate and environmental hazards are perhaps the sole determinants of migration. For instance, one-tenth of the households under the survey have moved their homestead over the last five years from another location to the area where the survey has taken place. Sixty percent of those who have moved to the current location have linked climate and environmental concerns as the main reason behind their movement of residence. They identify various slow onset and rapid onset processes as reason behind their migration to the current locality. In most cases, these are the people who have lost their homestead land or their homestead and had to move. Another group, a little less than one-tenth of the population, who have been residents of the villages under the study

would like to relocate their current residence, but they are unable to do so for various barriers. The study does not enquire about those barriers. However, based on the responses of those who have moved into the study villages from other areas during the last five years, it can be deduced that at least half of the group who wanted to migrate but could not may have had environmental and climatic reasons for not being able to do so in the first place. In addition to these two groups, there is another group of population whom the survey could not touch. They are the ones who have already been displaced and left their villages and thus cannot be traced as this is a survey of current residents. A different type of survey needs to be designed that would enquire about the residents of the study area at present, five years before and ten years before, as well as reasons behind shifting of their residence.

Now let us move to our findings on the drivers of migration of those who are currently residing in the study villages and who send one or more members of their household outside the village for work. Our research enquires the six most important reasons of these families for sending their members outside the village. The highest number of households identify seeking employment as the top most reason. This is followed by meeting family obligations. Only one percent of the respondents identify climate related reasons as the foremost reason for migration. However if we look into second, third, fourth, fifth and sixth most important reasons identified then in those cases environment and climate related reasons surface quite prominently. When most important six reasons are considered then climate change and environmental degradation accounts for 65 percent of the responses. This means along with other factors environment and climate also influence migration decision of the households. Therefore drawing from many other previous researches and this study we can reiterate that migration decisions are multi-causal, and environment and climate related hazards are one of them.

So far we have talked about macro level economic, social and environmental drivers of migration. Research findings also allow us to see some meso and micro level realities that allow some households to participate in migration and some others not to. In the theoretical section we have noted that access or lack of access to information is an important meso level determinant of migration decision. It highlights that those households would have more opportunity to participate in migration that have access to migration information, social network at the destination etc. Forty-three percent of

the internal and 39 percent of the short-term contract international migrant households have prior information on job opportunity in the destination areas. As high as 39 percent of both short-term contract international and internal migrant households have extended family members, fellow villagers or friends working in the destination areas. In other words, they had access to strong social network in destination from before. Demography also has its role in migration decisions. We find that migration decisions are predetermined by the needs of the labour market. Our findings show that male members of households are more privileged to access migration. Female members hardly have such access. The elderly persons of the households do not have access to livelihood migration.

Very important insights on the drivers of migration are provided by the non-migrants. Our study focuses on why have they decided not to migrate? Findings inform that not taking part in migration does not indicate that all the non-migrant families do not want to migrate. In fact, 44 percent of the non-migrant households are satisfied with their current work and living arrangement, and they do not want to send any of their family members outside the village for work. It may mean that they are not in need of extra income. It may also mean that their place attachment is very strong. In contrast, 66 percent of the non-migrant households inform that they would have liked to send a family member work outside the village. But in most cases they could not migrate due to lack of access to resources, inability to ensure protection of left behind household members in the absence of male migrant, the lack of skill and the lack of accommodation at the destination areas at the initial stages of migration. The cases of these non-migrants reveal that a majority faces certain barriers to participate in migration due to demographic, economic and social disadvantages.

Popular perception about migration is that individuals, households or groups do not want to move from their areas of origin unless they are forced. This is perhaps true in case of displacement due to natural disasters or development induced evictions. However, livelihood migration of one or a few member is perceived very positively by both male and female respondents of majority migrant households. They see it as a natural process. Interestingly, along with the migrant households, a large number of non-migrant households also perceive migration positively. More than nine-tenths of all types of households agree that migration increases social status. Almost all respondents find migration as an avenue of expanding work opportunity and knowledge building. However, 40 percent of

respondents also deem that migration increases sickness and insecurity. Again one-third of the respondents believe that the absence of adult male in households creates vacuum of working age population in their areas of origin.

In respect to drivers of migration we can therefore sum up that although small, for a number of households, environmental degradation or climate change has been one of the most important influential factors for movement of the entire household. In contrast, households who are staying in their areas of origin and send one or more members outside the village for work have been able to do so due to a combination of multiple macro, meso and micro level reasons. Environmental degradation and climate change is one of them. Along with migrant families, men and women of non-migrant families are also positively disposed to the idea of migration of one or a few members of their households for work. Nonetheless, labour market reality, certain family conditions such as larger family size, presence of more working age men in family compared to women and the elderly, access to information and social network etc. help some households to participate in labour migration. For some other households, lack of access to any or some of the above factors, becomes a barrier in the way of exploring migration opportunity. This is why given similar environmental and climatic situation; some of the households have sent their family members to work outside the village while some others have not.

Chapter IV looks into the experience of different climate change stresses faced by the households. The data is representative of all of coastal delta of Bangladesh as it not only considers the top climate hotspots, it clusters the areas among very high, high, medium, low and very low climate change affected areas. Altogether 3,038 responses have been received from the interviewed 1,386 households. The highest number (33%) of responses is received on experience of cyclone. It is followed by flood (24%), salinity (16%), drought (12%), storm surge (10%) and erosion (5%).

Experience of exposures to different stresses of climate change does vary in the GBM delta districts. Cyclone is mostly experienced in Cox's Bazar followed by Chattogram and Noakhali. Flood is experienced by all the districts. However, it is generally experienced more in Lakshmipur and Patuakhali. Salinity is mostly faced by Noakhali, Satkhira, Bagerhat and Barguna districts. The highest number of responses with respect to drought is received from Bagerhat. It is followed by Khulna, Chattogram and

Noakhali. Around half of the responses have been received from Cox's Bazar and Chattogram with regard to storm surge. Erosion is reported mostly from Noakhali, Lakshmipur, Chattogram and Patuakhali.

Chapter V highlights the changes that have to be brought about to deal with climate change related events and environmental degradation. Many households have autonomously taken multiple measures. Of course, government, NGOs and INGOs have also undertaken different programmes. Government and NGO interventions are termed in this study as planned adaptation programmes. Other studies including one of DECCMA have looked into them. In this study we only examine the initiatives that are undertaken by the household members themselves. In other words, this study looks into autonomous adaptation practices of the households. Its findings inform that when it comes to household initiatives, securing loan as an adaptation tool is used the most. Households have planted trees for protection from soil erosion or flood, or to reduce temperature; modified their homestead; took autonomous protection measures during disasters; employed hired labour; sent family members outside the village for work; took assistance from NGOs; bought insurance policies and so on. A significant finding of this research is that among 21 measures pursued by the households, the seventh most used measure is livelihood migration of one or a few members of the households. In other words, around 27 percent households have resorted to this method. The households have expressed high level of satisfaction with almost all the measures they have espoused on their own which include migration.

Chapter VII to IX further examine the potential of livelihood migration to be used as one of the adaptation tools. This is done on the basis of economic outcome from livelihood migration. It finds that 85 percent of both internal and international migrant households have benefitted in cash and kind from remittances sent by their migrant family members. If remittances in cash are not available then monthly income of internal migrant households would be 14 percent less than their current level. Transfer of remittance is of course higher in case of international short-term contract migrants.

Another important finding is the highest average income of Taka 19,120 (\$230) is earned by international migrant households. The average monthly income of internal and non-migrant households is quite similar to each other. In case of internal migrant households it is Taka 14,300 (\$172) and for non-migrant households it is Taka 14,400 (\$173).

A scrutiny of household expenditure also reveals that international migrant households spend 17 percent more than non-migrant households. Expenditure of internal migrant households is 6 percent lower than non-migrant households. Internal migrant households have been able to keep their expenditure close to non-migrant households as they have access to remittances. Otherwise, it would be much lower.

In order to gauge the potential of migration as one of many adaptation tools, the study not only looks into the flow of remittances, it also makes a comparison of perception of the households in respect to material and subjective states of wellbeing of migrant and non-migrant households. Material wellbeing is judged on the basis of housing, food intake per day, access to drinking water and healthcare. Subjective wellbeing is judged on the basis of happiness and satisfaction with respect to food security, economic security, education and place attachment.

It shows that access to safe drinking water is similar among the migrant and non-migrant households but it is higher among the international migrant households. Houses with concrete roof are also higher among the international migrant households. There is little difference between internal migrant and non-migrant households in this regard. However, 60 percent of internal and international migrant households and 58 percent of non-migrant households do not possess any agricultural land.

One of the hypotheses of this research is that material wellbeing of the migrant households will be similar between migrant and non-migrant households, or it could be a little higher among the migrant households, but subjective wellbeing will be lower in their case compared to the non-migrant households. This is because of the absence of migrant member of household. However, it is found that more than half of all three groups of households, international, internal and non-migrant are moderately happy with their life in general. In respect to housing a little less than half are moderately happy. Happiness of international migrant households is 15 percent more compared to internal and non-migrant households with respect to economic security. More than 60 percent respondents of all three groups are either happy or very happy with respect to education of their children. All three groups feel that villages are important part of their life. More than 80 percent of the respondents of all three groups enjoy being involved in community level activities of their villages. This indicates that subjective wellbeing of the migrant households both internal and international is in no way less than non-migrant households.

Chapter X gives an idea of gender specific implications of migration. This is examined in respect to women's role in family decision making, reproductive choice, level of safety of left behind adult female members and gendered differences of work. More than half of the female adult respondents of internal and international migrant households are of the opinion that migration of their male counterparts has resulted in increase in women's influences over household decision making. Earlier, the major part of decisions may have been taken by males but in the absence of male counterparts many important decisions such as use of savings and seeking loan for treatment of children during sickness are taken jointly through discussion with their absentee male members perhaps over phone or when they come on holidays. Around three-fourths women felt that migration has opened new opportunities for family members. Of course, along with power, responsibilities have also increased. Child rearing is one of them. More than 60 percent respondents do not think that migration has reduced safety and security of adolescent and adult female members who are left behind. Women feel that migration can not make any significant impact over choice on reproductive issues. It is still mostly decided by men.

From the above discussion we can conclude on the efficacy of use of livelihood migration as one of the many tools for adaptation to climate change. The study finds that households are already autonomously using migration as one of the adaptation tools. Among 21 autonomous adaptation options, livelihood migration is the seventh most used tool. Nine-tenths of the households who have sent their family members to work outside the village consider this as a very effective tool. Sending family members to work outside the village do not imply that migrant households have less attachment with their place of origin. A more eye-opening finding is that it is not only the migrant households who perceive livelihood migration of a few members as a positive step towards *in situ* adaptation of the left behind households, the overwhelming majority of non-migrant households also has a high opinion of effectiveness of migration. They would have liked to send one or more members of their households, but could not do so due to various kinds of barriers. Those barriers include access to resources, lack of dispensable working age population in the households, lack of relevant skills and lack of access to social networks. Based on the evidence provided by this book, there is a case for changing the dominant view of looking at migration as failure of local level adaptation. Rather we should aim for a more inclusive approach that accommodates migration as one of the many climate change adaptation tools in Bangladesh.

10.2 Recommendations

Almost all interventions of the government as well as NGOs are designed for local level adaptation. This is very important. However, none of the existing policies and strategies of the government is dealing with the needs of two groups of migrants who are internally displaced and families who stay back in their origin area by ensuring a portion of family income through migration of a household member outside the village for work. Findings of this study highlight that both these groups require assistance from climate change adaptation interventions. The Ministry of Disaster Management and Relief drafted the ‘National Strategy on the Management of Disaster and Climate Induced Internal Displacement’ but that strategy is yet to be adopted by the government. There is a case for this strategy to be urgently adopted. More importantly, the National Adaptation Programme of Action 2005 and its amendments, Bangladesh Climate Change Strategy and Action Plan 2009, Disaster Management Act 2012, Standing Orders on Disaster (SOD) and Disaster Risk Reduction Strategy need to change their perception that migration is the manifestation of failure to adaptation. On the contrary, they need to include the rights and entitlements of livelihood migrants as well as those who have been or are on the verge of displacement and also those who are facing certain barriers to migrate. Adaptation programmes need to be redesigned so that they are inclusive and accommodative of those who migrate for livelihood and also due to displacement.

A major shift in thinking is also required in the policy discourse of urban development. One of the main reasons why the policy makers would like to concentrate on local level adaptation programmes is because the existing urban facilities of water, sanitation, health care, roads and other civic and infrastructural amenities are insufficient to cope with flows of new migrants. The popular perception is unregulated flow of migrants to urban areas lead to slumization. A section of the policy makers however, realize that growth encourages migration and there can be no growth without migration. They also acknowledge that the policy of mega city based growth needs to give way to development of decentralized growth centres in different parts of the country.

Managing climate change adaptation provides us an opportunity to raise the demand for macro changes. We suggest that a major change in current urbanization policy of the country is initiated. Almost all the industrial and other service oriented economic activities are currently concentrated into the two mega cities of Bangladesh, Dhaka and Chattogram. These are the

two major growth centres and constitute important destinations of internal migrants from various parts of the country, be those climate affected or not. We have argued that the flow of migration cannot be stemmed through local level adaptation programmes that are currently being pursued. Rather we need to shift focus from the existing megacity growth model to a sustainable growth model that decentralizes the urban growth hubs to all regions of the country, develop secondary cities and low cost connectivity. This will reduce the scope of unmanageable growth of Dhaka and Chattogram. Such a policy, if implemented, will create conditions for climate induced or other migrants to move for work close to their origin areas. Peri-urban development or development of secondary cities will be able to ensure better civic amenities for the new population migrating to those areas. Investment in low cost transport such as rail services will protect the regional growth centre hosting cities from being over-crowded. Of course all these would necessitate administrative decentralization, share and delegation of power and authority between the capital and other regions, districts and cities. The model we are suggesting is an inclusive model of balanced growth of all the regions of Bangladesh.

We further suggest investment of climate change related funds in such large initiatives which will help the affected families to choose their economic path on their own volition, be it in the origin area or through migration. Along with local level adaptation intervention climate change related funds should also be used in this respect. Annual development budget should have specific allocation on this. Besides, effective decentralization path should be targeted in the upcoming 8th Five Year Plan.

Again, side by side with development of local level infrastructure, income generating programmes and decentralization of urban growth centres, equipping the working age population of affected households through imparting skills should also be seen as integral part of new development pathway. Skills will allow the affected households to create alternative livelihood with sustainable income, or to participate in higher positions in internal as well as international labour market through livelihood migration. An important finding of the study is that, it is the men who migrate from the coastal delta. This means households who only have female working age adults are generally unable to seek employment through migration. In Bangladesh, major formal sector employers of women are readymade garments and a few other manufacturing industries. Through establishing access to information and imparting training it is possible to create scope for households with women adults to earn income through migration.

Adaptation funds as well as other development funds should be allocated for the establishment and management of skills training centers. Bangladesh has framed a National Skills Policy as early as in 2011. Implementation of the skills policy can be an important step towards creating a skilled workforce ready to participate locally as well as internationally.

From certain pockets of Bangladesh women are also migrating as short term contract workers. Women from the coastal delta districts hardly participate in this market. The cost of international migration of women is generally less than half than that of men. Under climate change adaptation programme, skills trainings can be imparted to women to increase their choice of livelihood through international migration. However, recently reported incidents of physical and sexual harassment resulting in untimely return of women migrants suggest that there is a need for securing work opportunities for women in countries and sectors that offer relatively safer conditions for female migrants.

This book amply demonstrates that along with participation in local level adaptation programmes, international contract migration of a member of affected households helps increase their material wellbeing. In other words it helps the households adapt better. Nonetheless, the cost of international migration is very high. Many of the affected households are not capable to bear the cost and thus cannot benefit from migration. In order to include those who cannot afford the cost of international migration, the government has encouraged banks for providing migration loan at low interest. In effect the government has established the Migrants' Welfare Bank in 2013 to reduce financial barriers of those who choose to migrate overseas for work. The ministries which work on climate change issues need to coordinate with the concerned ministry and banks and encourage them to introduce migration loan schemes at low interest rate in ecologically vulnerable areas. The Ministry of Expatriates' Welfare and Overseas Employment who manage international migration, the Ministry of Environment Forest and Climate Change and the Ministry of Disaster Management and Relief can coordinate amongst themselves to provide training and migration loan to people of climate affected areas.

Processing international migration is an extremely complex task. Potential migrants need to register with the Bureau of Manpower Employment and Training (BMET); go through tiers of sub-agents and recruiting agents to secure work permit; perform medical test; receive clearance; organize travel arrangements and so on. People of environmental degradation and

climate change affected areas mostly do not belong to those pockets from where international migration generally takes place. There is a general lack of information on international migration and this results in many of these families being cheated by unscrupulous agents and in extreme cases end up in risky migration venture through the maritime route of the Bay of Bengal. During 2014, 60 percent of those who have attempted to migrate through irregular maritime route originated from disaster affected areas. Therefore, it is important to take migration processing offices of the vgovernment i.e. DEMO office, Migrant Welfare Bank, medical diagnostic centres close to climate affected areas.

The research findings demonstrate that a little less than half of the non-migrant households did not migrate as they do not wish to migrate. They are satisfied with their current level of income that can be managed within their origin area. However, half of the non-migrant households would like to migrate but cannot do so because of lack of information on the job market and the social network to support during initial stages of migration at the destination.

Ensuring the rights of those who have been displaced again requires a new set of interventions. The draft National Strategy on the Management of Disaster and Climate Induced Internal Displacement (2015) suggested four strategic responses for managing the displaced. Strategic responses are prevention, preparation, management and address. The government has been involved in a major way in the area of prevention. It has been constructing infrastructures to reduce the scope of displacement. In case of large scale displacement it is also involved in managing the migratory flows during displacement. However, major interventions are required in respect to informing and preparing people who are likely to be displaced and may have to be relocated. The plan for durable solutions will also be required for those who have already been displaced. Existing climate change and disaster management programmes have to incorporate the rights and entitlements of the displaced which include right to return, local integration in new locations and formal resettlement of those who have been trapped in their current locations.

Displaced migrants who come to urban areas for work have to stay in unhealthy and insecure slums or roadside pathways. They face new forms of human security challenges in their urban locations. Lack of safety and security, gender based violence and sexual harassment, abuse and exploitation of children, poor sanitation, frequent eviction, and political

violence are experienced by many. Few NGOs are developing low cost housing for these migrants. Their efforts can cover a very limited number of new urban dwellers. Government and development practitioners are realizing that climate change adaptation programmes should be expanded to these urban areas. We suggest future adaptation plans include providing services to the new migrants in urban areas.

To sum up, currently the adaptation interventions in Bangladesh are designed from a tunnel vision that only encourages local level adaptation. It has to incorporate wider issues of development and take an all-inclusive integrated approach in line with the Sustainable Development Goals.

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Annex

Annex 1

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Annex 2

Methodology for climate change hotspot mapping

The following definition of risk has been agreed upon across the consortia:

$$R = f(H, E, S, AC) \quad (1)$$

where H is the single or multi-hazard, E is the exposure, S is the sensitivity and AC is the adaptive capacity. Hazards refer to biophysical or socio-political events likely to cause

By defining the multi-hazard components as SS for Storm Surge, F for Flood, E for Erosion and S for Salinization, and discretizing each of the hazard component on a linear scale from 1 to 10

(i.e. Storm Surge = SS1, SS2SS10; Flood = F1, F2F10; Erosion = Er1, Er2E10; Salination = S1, S2S10), the normalized hazard parameters become:

$$SSN = (SS_i - 1) / (Scale_{max} - 1) \quad (2)$$

$$FN = (F_i - 1) / (Scale_{max} - 1) \quad (3)$$

$$ErN = (Er_i - 1) / (Scale_{max} - 1) \quad (4)$$

$$SN = (S_i - 1) / (Scale_{max} - 1) \quad (5)$$

where Scalemax is the maximum values of the scale selected for each of the hazard parameters.

The multi-hazard Index is computed by using:

$$H_{mult} = SSN * W_{SS} + FN * W_F + ErN * W_{Er} + SN * W_S \quad (6)$$

where Hmult is the multi-hazard component, WWS, WF, WEr and WS are different weightages assigned for the storm surge, flood, erosion and salinization components. These weightages will be determined by expert opinion and will be used as the calibration/ validation parameters of the Hotspot maps.

The normalized vulnerability parameters are computed as:

For Exposure:

$$E1N = (E1_i - 1) / (Scale_{max} - 1)$$

$$E2N = (E2_i - 1) / (Scale_{max} - 1)$$

$$\dots\dots\dots (7)$$

$$EnN = (En_i - 1) / (Scale_{max} - 1)$$

For sensitivity:

$$SN1N = (SN1_i - 1) / (Scale_{max} - 1)$$

$$SN2N = (SN2_i - 1) / (Scale_{max} - 1)$$

$$\dots\dots\dots (8)$$

$$SN_n = (SN_i - 1) / (Scale_{max} - 1)$$

For adaptive capacity

$$AC_1N = (AC_{1i} - 1) / (Scale_{max} - 1)$$

$$AC_2N = (AC_{2i} - 1) / (Scale_{max} - 1)$$

$$\dots\dots\dots (9)$$

$$AC_nN = (AC_{ni} - 1) / (Scale_{max} - 1)$$

where n is the number of variables.

The combined vulnerability Indices are:

$$Emult = E_1N * W_{1E} + E_2N * W_{2E} + \dots\dots\dots + E_nN * W_{nE} \quad (10)$$

$$SN_{mult} = SN_1N * W_{1SN} + SN_2N * W_{2SN} + \dots\dots\dots + SN_nN * W_{nSN} \quad (11)$$

$$AC_{mult} = AC_1N * W_{1AC} + AC_2N * W_{2AC} + \dots\dots\dots + AC_nN * W_{nAC} \quad (12)$$

Where $Emult$, SN_{mult} and AC_{mult} are the combined vulnerability Indices representing exposure, sensitivity and adaptive capacity respectively. $W_{1E} \dots W_{nE}$, $W_{1SN} \dots W_{nSN}$ and $W_{1AC} \dots W_{nAC}$ are the weightages assigned by using expert opinions. These will be used as the calibration/ validation parameters for the final hotspot mapping.

The final hotspot map is prepared by computing the following Hotspot Index:

$$HOTSPOT = H_{mult} * W_H + Emult * W_E + SN_{mult} * W_{SN} + AC_{mult} * W_{AC} \quad (13)$$

Where H_{mult} , $Emult$, SN_{mult} and AC_{mult} are determined from equations (6), (10), (11) and (12).

The final Hotspot map is scaled qualitatively as Very High, High, Medium, Low and Very Low. The Very High zone represents areas those are considered as most likely locations for out migration due to high risk involved generated by adverse impacts of hazards and vulnerabilities.

Annex 3

Table: Impact of flooding on housing

Housing	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	28	18.8	21	25.3	136	27.8	185	25.7
A few negative impacts	38	25.5	31	37.3	122	24.9	191	26.5
Moderate negative impacts	24	16.1	17	20.5	92	18.9	133	18.4
A lot of negative impacts	59	39.6	14	16.9	139	28.4	212	29.4
Total	149	100.0	83	100.0	489	100.0	721	100.0

Table: Impact of flooding on economic security

Economic security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	57	38.3	40	48.2	172	35.2	269	37.3
A few negative impacts	27	18.1	19	22.9	109	22.3	155	21.5
Moderate negative impacts	26	17.4	11	13.3	116	23.7	153	21.2
A lot of negative impacts	39	26.2	13	15.6	92	18.8	144	20.0
Total	149	100.0	83	100.0	489	100.0	721	100.0

Table: Impact of flooding on drinking water

Drinking water	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	52	34.9	32	38.6	215	44.0	299	41.5
A few negative impacts	48	32.3	36	43.3	144	29.4	228	31.6
Moderate negative impacts	23	15.4	11	13.3	75	15.4	109	15.1
A lot of negative impacts	26	17.4	4	4.8	53	10.8	83	11.5
Unsure/don't know	0	0.0	0	0.0	2	.4	2	.3
Total	149	100.0	83	100.0	489	100.0	721	100.0

Table: Impact of flooding on food security

Food security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	34	22.8	37	44.6	152	31.1	223	30.9
A few negative impacts	52	34.9	34	41.0	190	38.8	276	38.3
Moderate negative impacts	40	26.9	9	10.8	110	22.5	159	22.1
A lot of negative impacts	23	15.4	3	3.6	36	7.4	62	8.6
Unsure/don't know	0	0.0	0	0.0	1	.2	1	.1
Total	149	100.0	83	100.0	489	100.0	721	100.0

Table: Impact of flooding on household's health

Household's health	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	46	30.9	28	33.7	180	36.8	254	35.2
A few negative impacts	54	36.2	40	48.3	190	38.9	284	39.4
Moderate negative impacts	25	16.8	10	12.0	76	15.5	111	15.4
A lot of negative impacts	23	15.4	5	6.0	41	8.4	69	9.6
Unsure/don't know	1	.7	0	0.0	2	.4	3	.4
Total	149	100.0	83	100.0	489	100.0	721	100.0

Table: Impact of flooding on crop/livestock disease

Crop/livestock disease	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	97	65.1	61	73.6	334	68.3	492	68.2
A few negative impacts	22	14.8	10	12.0	78	16.0	110	15.3
Moderate negative impacts	12	8.1	7	8.4	29	5.9	48	6.7
A lot of negative impacts	17	11.3	5	6.0	46	9.4	68	9.4
Unsure/don't know	1	.7	0	0.0	2	.4	3	.4
Total	149	100.0	83	100.0	489	100.0	721	100.0

Table: Impact of flooding on loss of life

Loss of life	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	141	97.2	81	98.8	457	96.0	679	96.6
No	1	0.7	1	1.2	15	3.2	17	2.4
Unsure/don't know	3	2.1	0	0.0	4	0.8	7	1.0
Total	145	100.0	82	100.0	476	100.0	703	100.0

Annex 4

Table: Impact of drought on housing

Housing	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	52	81.2	32	94.1	210	81.7	294	82.8
A few negative impacts	8	12.5	2	5.9	38	14.8	48	13.5
Moderate negative impacts	2	3.1	0	0.0	5	1.9	7	2.0
A lot of negative impacts	1	1.6	0	0.0	3	1.2	4	1.1
Unsure/don't know	1	1.6	0	0.0	1	.4	2	.6
Total	64	100.0	34	100.0	257	100.0	355	100.0

Table: Impact of drought on economic security

Economic security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	20	31.2	22	64.7	105	40.9	147	41.4
A few negative impacts	24	37.5	3	8.8	66	25.7	93	26.2
Moderate negative impacts	9	14.1	4	11.8	52	20.2	65	18.3
A lot of negative impacts	11	17.2	5	14.7	33	12.8	49	13.8
Unsure/don't know	0	0.0	0	0.0	1	.4	1	.3
Total	64	100.0	34	100.0	257	100.0	355	100.0

Table: Impact of drought on drinking water

Drinking water	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	47	73.4	14	41.2	144	56.0	205	57.7
A few negative impacts	6	9.4	15	44.1	61	23.8	82	23.1
Moderate negative impacts	6	9.4	4	11.8	35	13.6	45	12.7
A lot of negative impacts	5	7.8	1	2.9	16	6.2	22	6.2
Unsure/don't know	0	0.0	0	0.0	1	.4	1	.3
Total	64	100.0	34	100.0	257	100.0	355	100.0

Table: Impact of drought on food security

Food security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	42	65.6	19	55.9	153	59.5	214	60.3
A few negative impacts	19	29.7	12	35.3	73	28.4	104	29.3
Moderate negative impacts	3	4.7	3	8.8	27	10.5	33	9.3
A lot of negative impacts	0	0.0	0	0.0	4	1.6	4	1.1
Total	64	100.0	34	100.0	257	100.0	355	100.0

Table: Impact of drought on household's health

Household's health	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	45	70.4	27	79.4	167	65.0	239	67.3
A few negative impacts	15	23.4	5	14.7	59	23.0	79	22.3
Moderate negative impacts	2	3.1	2	5.9	23	8.9	27	7.6
A lot of negative impacts	2	3.1	0	0.0	7	2.7	9	2.5
Unsure/don't know	0	0.0	0	0.0	1	.4	1	.3
Total	64	100.0	34	100.0	257	100.0	355	100.0

Table: Impact of drought on crop/livestock disease

Crop/livestock disease	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	38	59.4	31	91.2	180	70.0	249	70.1
A few negative impacts	15	23.4	1	2.9	44	17.1	60	16.9
Moderate negative impacts	5	7.8	2	5.9	10	3.9	17	4.8
A lot of negative impacts	6	9.4	0	0.0	21	8.2	27	7.6
Unsure/don't know	0	0.0	0	0.0	2	.8	2	.6
Total	64	100.0	34	100.0	257	100.0	355	100.0

Table: Impact of drought on loss of life

Loss of life	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	61	95.3	34	100.0	252	98.1	347	97.7
No	3	4.7	0	0.0	5	1.9	8	2.3
Total	64	100.0	34	100.0	257	100.0	355	100.0

Annex 5

Table: Impact of erosion on housing

Housing	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	10	27.8	10	47.6	29	28.2	49	30.6
A few negative impacts	5	13.9	2	9.5	8	7.8	15	9.4
Moderate negative impacts	4	11.1	1	4.8	12	11.7	17	10.6
A lot of negative impacts	17	47.2	8	38.1	54	52.3	79	49.4
Total	36	100.0	21	100.0	103	100.0	160	100.0

Table: Impact of erosion on economic security

Economic security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	8	22.2	14	66.7	37	35.9	59	36.8
A few negative impacts	4	11.1	3	14.3	16	15.5	23	14.4
Moderate negative impacts	7	19.4	2	9.5	22	21.4	31	19.4
A lot of negative impacts	17	47.3	2	9.5	28	27.2	47	29.4
Total	36	100.0	21	100.0	103	100.0	160	100.0

Table: Impact of erosion on drinking water

Drinking water	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	21	58.3	15	71.4	70	68.0	106	66.3
A few negative impacts	9	25.0	6	28.6	22	21.3	37	23.1
Moderate negative impacts	2	5.6	0	0.0	3	2.9	5	3.1
A lot of negative impacts	4	11.1	0	0.0	8	7.8	12	7.5
Total	36	100.0	21	100.0	103	100.0	160	100.0

Table: Impact of erosion on food security

Food security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	12	33.3	15	71.4	49	47.6	76	47.5
A few negative impacts	12	33.3	6	28.6	29	28.2	47	29.3
Moderate negative impacts	4	11.1	0	0.0	11	10.6	15	9.4
A lot of negative impacts	8	22.3	0	0.0	14	13.6	22	13.8
Total	36	100.0	21	100.0	103	100.0	160	100.0

Table: Impact of erosion on household's health

Household's health	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	27	75.0	20	95.2	87	84.5	134	83.7
A few negative impacts	4	11.1	1	4.8	13	12.6	18	11.3
Moderate negative impacts	1	2.8	0	0.0	0	0.0	1	0.6
A lot of negative impacts	4	11.1	0	0.0	3	2.9	7	4.4
Total	36	100.0	21	100.0	103	100.0	160	100.0

Table: Impact of erosion on crop/livestock disease

Crop/livestock disease	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	28	77.8	21	100.0	91	88.3	140	87.5
A few negative impacts	3	8.3	0	0.0	4	3.9	7	4.4
Moderate negative impacts	0	0.0	0	0.0	4	3.9	4	2.5
A lot of negative impacts	4	11.1	0	0.0	4	3.9	8	5.0
Unsure/don't know	1	2.8	0	0.0	0	0.0	1	.6
Total	36	100.0	21	100.0	103	100.0	160	100.0

Table: Impact of erosion on loss of life

Loss of life	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	31	86.1	21	100.0	96	93.2	148	92.5
No	4	11.1	0	0.0	7	6.8	11	6.9
Unsure/don't know	1	2.8	0	0.0	0	0.0	1	.6
Total	36	100.0	21	100.0	103	100.0	160	100.0

Annex 6

Table: Impact of salinity on housing

Housing	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	61	61.0	33	66.0	198	59.7	292	60.6
A few negative impacts	25	25.0	13	26.0	87	26.2	125	25.9
Moderate negative impacts	6	6.0	3	6.0	27	8.1	36	7.5
A lot of negative impacts	8	8.0	1	2.0	19	5.7	28	5.8
Unsure/don't know	0	0.0	0	0.0	1	.3	1	.2
Total	100	100.0	50	100.0	332	100.0	482	100.0

Table: Impact of salinity on economic security

Economic security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	48	48.0	30	60.0	181	54.5	259	53.7
A few negative impacts	22	22.0	9	18.0	65	19.5	96	19.9
Moderate negative impacts	12	12.0	6	12.0	44	13.3	62	12.9
A lot of negative impacts	18	18.0	5	10.0	42	12.7	65	13.5
Total	100	100.0	50	100.0	332	100.0	482	100.0

Table: Impact of salinity on drinking water

Drinking water	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	31	31.0	12	24.0	98	29.5	141	29.3
A few negative impacts	29	29.0	22	44.0	85	25.6	136	28.2
Moderate negative impacts	13	13.0	8	16.0	55	16.6	76	15.8
A lot of negative impacts	27	27.0	8	16.0	93	28.0	128	26.5
Unsure/don't know	0	0.0	0	0.0	1	0.3	1	0.2
Total	100	100.0	50	100.0	332	100.0	482	100.0

Table: Impact of salinity on food security

Food security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	62	62.0	25	50.0	194	58.4	281	58.3
A few negative impacts	21	21.0	23	46.0	97	29.3	141	29.3
Moderate negative impacts	13	13.0	1	2.0	27	8.1	41	8.5
A lot of negative impacts	4	4.0	1	2.0	13	3.9	18	3.7
Unsure/don't know	0	0.0	0	0.0	1	0.3	1	0.2
Total	100	100.0	50	100.0	332	100.0	482	100.0

Table: Impact of salinity on household's health

Household's health	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	49	49.0	27	54.0	175	52.7	251	52.1
A few negative impacts	32	32.0	16	32.0	91	27.4	139	28.8
Moderate negative impacts	13	13.0	6	12.0	37	11.1	56	11.6
A lot of negative impacts	6	6.0	1	2.0	28	8.4	35	7.3
Unsure/don't know	0	0.0	0	0.0	1	0.3	1	0.2
Total	100	100.0	50	100.0	332	100.0	482	100.0

Table: Impact of salinity on crop/livestock disease

Crop/livestock disease	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	73	73.0	43	86.0	240	72.3	356	73.9
A few negative impacts	17	17.0	6	12.0	53	16.0	76	15.8
Moderate negative impacts	4	4.0	1	2.0	21	6.3	26	5.4
A lot of negative impacts	5	5.0	0	0.0	15	4.5	20	4.1
Unsure/don't know	1	1.0	0	0.0	3	.9	4	.8
Total	100	100.0	50	100.0	332	100.0	482	100.0

Table: Impact of salinity on loss of life

Loss of life	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	95	96.0	50	100.0	325	99.4	470	98.7
No	1	1.0	0	0.0	1	0.3	2	0.4
Unsure/don't know	3	3.0	0	0.0	1	0.3	4	0.8
Total	99	100.0	50	100.0	327	100.0	476	100.0

Annex 7

Table: Impact of cyclone on housing

Housing	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	21	10.2	8	7.8	88	12.7	117	11.7
A few negative impacts	47	22.8	34	33.0	196	28.2	277	27.6
Moderate negative impacts	55	26.7	33	32.0	177	25.5	265	26.4
A lot of negative impacts	83	40.3	28	27.2	234	33.7	345	34.4
Total	206	100.0	103	100.0	695	100.0	1004	100.0

Table: Impact of cyclone on economic security

Economic security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	105	51.0	66	64.1	341	49.1	512	51.0
A few negative impacts	29	14.1	22	21.4	167	24.0	218	21.7
Moderate negative impacts	30	14.6	8	7.8	102	14.7	140	13.9
A lot of negative impacts	42	20.4	7	6.8	84	12.1	133	13.2
Unsure/don't know	0	0.0	0	0.0	1	0.1	1	0.1
Total	206	100.0	103	100.0	695	100.0	1004	100.0

Table: Impact of cyclone on drinking water

Drinking water	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	163	79.1	92	89.3	565	81.3	820	81.7
A few negative impacts	27	13.1	9	8.7	85	12.2	121	12.1
Moderate negative impacts	7	3.4	1	1.0	29	4.2	37	3.7
A lot of negative impacts	9	4.4	1	1.0	14	2.0	24	2.4
Unsure/don't know	0	0.0	0	0.0	2	0.3	2	0.2
Total	206	100.0	103	100.0	695	100.0	1004	100.0

Table: Impact of cyclone on food security

Food security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	117	56.8	65	63.1	363	52.2	545	54.3
A few negative impacts	57	27.7	33	32.0	232	33.4	322	32.1
Moderate negative impacts	20	9.7	4	3.9	73	10.5	97	9.7
A lot of negative impacts	12	5.8	1	1.0	26	3.7	39	3.9
Unsure/don't know	0	0.0	0	0.0	1	0.1	1	0.1
Total	206	100.0	103	100.0	695	100.0	1004	100.0

Table: Impact of cyclone on household's health

Household's health	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	156	75.7	92	89.3	574	82.6	822	81.9
A few negative impacts	30	14.6	11	10.7	92	13.2	133	13.2
Moderate negative impacts	17	8.3	0	0.0	24	3.5	41	4.1
A lot of negative impacts	3	1.5	0	0.0	4	0.6	7	0.7
Unsure/don't know	0	0.0	0	0.0	1	0.1	1	0.1
Total	206	100.0	103	100.0	695	100.0	1004	100.0

Table: Impact of cyclone on crop/livestock diseases

Crop/livestock disease	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	162	78.6	96	93.2	591	85.0	849	84.6
A few negative impacts	18	8.7	4	3.9	58	8.3	80	8.0
Moderate negative impacts	8	3.9	1	1.0	22	3.2	31	3.1
A lot of negative impacts	17	8.3	2	1.9	20	2.9	39	3.9
Unsure/don't know	1	0.5	0	0.0	4	0.6	5	0.5
Total	206	100	103	100.0	695	100.0	1004	100.0

Table: Impact of cyclone on lose of life

Loss of life	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	199	96.6	103	100.0	675	97.1	977	97.3
No	5	2.5	0	0.0	19	2.7	24	2.4
Unsure/don't know	2	1.0	0	0.0	1	0.1	3	0.3
Total	206	100.0	103	100.0	695	100.0	1004	100.0

Annex 8

Table: Impact of storm surge on housing

Housing	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	14	28.0	5	15.2	58	24.9	77	24.4
A few negative impacts	14	28.0	10	30.3	58	24.9	82	25.9
Moderate negative impacts	6	12.0	8	24.2	45	19.3	59	18.7
A lot of negative impacts	16	32.0	10	30.3	72	30.9	98	31.0
Total	50	100.0	33	100.0	233	100.0	316	100.0

Table: Impact of storm surge on economic security

Economic security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	18	36.0	17	51.5	96	41.2	131	41.5
A few negative impacts	8	16.0	5	15.2	63	27.0	76	24.1
Moderate negative impacts	11	22.0	4	12.1	41	17.6	56	17.7
A lot of negative impacts	13	26.0	7	21.2	33	14.2	53	16.8
Total	50	100	33	100.0	233	100.0	316	100.0

Table: Impact of storm surge on drinking water

Drinking water	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	21	42.0	9	27.3	76	32.6	106	33.5
A few negative impacts	16	32.0	15	45.5	86	36.9	117	37.0
Moderate negative impacts	5	10.0	7	21.2	41	17.6	53	16.8
A lot of negative impacts	8	16.0	2	6.1	30	12.9	40	12.7
Total	50	100.0	33	100.0	233	100.0	316	100.0

Table: Impact of storm surge on food security

Food security	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	14	28.0	11	33.3	71	30.5	96	30.4
A few negative impacts	20	40.0	17	51.5	105	45.1	142	44.9
Moderate negative impacts	9	18.0	3	9.1	43	18.5	55	17.4
A lot of negative impacts	7	14.0	2	6.1	14	6.0	23	7.3
Total	50	100	33	100.0	233	100.0	316	100.0

Table: Impact of storm surge on household's health

Household's health	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	19	38.0	18	54.5	103	44.2	140	44.3
A few negative impacts	20	40.0	10	30.3	76	32.6	106	33.5
Moderate negative impacts	5	10.0	4	12.1	34	14.6	43	13.6
A lot of negative impacts	6	12.0	1	3.0	20	8.6	27	8.5
Total	50	100	33	100.0	233	100.0	316	100.0

Table: Impact of storm surge on crop/livestock disease

Crop/livestock disease	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
No negative impact	35	70.0	28	84.8	170	73.0	233	73.7
A few negative impacts	10	20.0	2	6.1	42	18.0	54	17.1
Moderate negative impacts	3	6.0	3	9.1	12	5.2	18	5.7
A lot of negative impacts	2	4.0	0	0.0	6	2.6	8	2.5
Unsure/don't know	0	0.0	0	0.0	3	1.3	3	.9
Total	50	100.0	33	100.0	233	100.0	316	100.0

Table: Impact of storm surge on loss of life

Loss of life	Internal		International		Non-Migrant		Total	
	No.	%	No.	%	No.	%	No.	%
Yes	46	92.0	31	93.9	219	94.0	296	93.7
No	4	8.0	2	6.1	14	6	20	6.4
Total	50	100.0	33	100.0	233	100.0	316	100.0

Annex 9

Table: Loss and damage by environmental stresses

Losses/damages by environmental stresses	Internal		International		Non-Migrant		Total	
	Mean	Max	Min	Max	Mean	Max	Mean	Max
Flood								
Crops were lost / damaged	21476	200000	2000	17744	60000	1500	29855	500000
Livestock were killed/injured	23597	200000	1000	21030	150000	1000	22235	500000
Equipment and other material assets were lost/damaged	16073	100000	500	10435	60000	500	15905	250000
Drought								
Crops were lost / damaged	12942	32000	2000	18833	60000	2500	54391	4000000
Livestock were killed/injured	9545	30000	1000				6083	35000
Equipment and other material assets were lost/damaged	3250	5000	1000				12773	60000
Erosion								
Crops were lost / damaged	58134	400000	5000	25000	40000	20000	72352	1000000
Livestock were killed/injured	31250	40000	20000				33208	150000
Equipment and other material assets were lost/damaged	92665	300000	500	264000	1100000	5000	309393	4000000
Salinity								
Crops were lost / damaged	12633	50000	1200	12147	45000	2500	14232	130000
Livestock were killed/injured	4498	25000	200	500	500	500	3060	20000
Equipment and other material assets were lost/damaged	3528	10000	500	100	100	100	10195	200000
Storm Surge								
Crops were lost / damaged	42477	400000	2000	27500	150000	3000	21816	500000
Livestock were killed/injured	20356	70000	1000	17738	50000	1200	16483	100000
Equipment and other material assets were lost/damaged	16433	100000	1500	19250	50000	5000	33326	700000
Cyclone								
Crops were lost / damaged	14176	200000	200	17442	200000	500	20719	300000
Livestock were killed/injured	16150	60000	500	8950	40000	1000	18336	260000
Equipment and other material assets were lost/damaged	17315	100000	500	13558	50000	500	16260	200000

ANNEX 10

Table: Reasons for undertaking concerned adaptation option

Reasons		Internal		International		Non-Migrant		Total	
		No.	%	No.	%	No.	%	No.	%
Taken Loan	Weather shock	56	14.8	15	8.4	140	12.0	211	12.2
	Disruptions in family	37	9.8	11	6.2	113	9.7	161	9.3
	Family events	73	19.3	51	28.5	193	16.5	317	18.4
	Other reason	60	15.8	40	22.4	194	16.6	294	17.0
	Slow negative changes	30	7.9	9	5.0	51	4.4	90	5.2
	Unpredictable weather	15	4.0	1	0.6	33	2.8	49	2.8
	Declining income	101	26.7	50	27.9	431	36.9	582	33.7
	Improvement in household income	2	0.5	1	0.6	4	0.3	7	0.4
	Provision of NGO/Govt. disaster support	1	0.3	0	0.0	2	0.2	3	0.8
	NGO/Govt. welfare or agricultural support	3	0.8	1	0.6	3	0.3	7	0.4
	Removal of NGO/Govt. disaster support	1	0.3	0	0.0	3	0.3	4	0.2
	Removal of NGO/Govt. welfare or agricultural support	0	0.0	0	0.0	1	0.1	1	0.1
Total		379	100.0	179	100.0	1168	100.0	1726	100.0
Insurance	Weather shock	5	6.0	3	7.1	7	2.8	15	4.0
	Disruptions in family	4	4.8	5	11.9	20	8.0	29	7.7
	Family events	28	33.3	12	28.6	95	38.0	135	35.9
	Other reason	14	16.7	5	11.9	23	9.2	42	11.2
	Slow negative changes	4	4.8	2	4.8	6	2.4	12	3.2
	Unpredictable weather	3	3.6	1	2.4	8	3.2	12	3.2
	Declining income	9	10.7	5	11.9	38	15.2	52	13.8
	Improvement in household income	15	17.9	7	16.7	53	21.2	75	20.0
	Removal of NGO/Govt. disaster support	0	0.0	2	4.8	0	0.0	2	0.5
	Removal of NGO/Govt. welfare or agricultural support	2	2.4	0	0.0	0	0.0	2	0.5
Total		84	100.0	42	100.0	250	100.0	376	100.0
Modification of houses	Weather shock	139	51.1	76	52.8	466	56.4	681	54.8
	Disruptions in family	2	0.7	0	0.0	3	0.4	5	0.4
	Family events	49	18.0	23	16.0	109	13.2	181	14.6
	Other reason	20	7.4	7	4.9	53	6.4	80	6.4
	Slow negative changes	32	11.8	16	11.1	75	9.1	123	9.9
	Unpredictable weather	16	5.9	5	3.5	63	7.6	84	6.8
	Declining income	0	0.0	0	0.0	1	0.1	1	0.1
	Improvement in household income	12	4.4	17	11.8	48	5.8	77	6.2
	Provision of NGO/Govt. disaster support	1	0.4	0	0.0	5	0.6	6	0.5
	NGO/Govt. welfare or agricultural support	0	0.0	0	0.0	1	0.1	1	0.1
	Removal of NGO/Govt. disaster support	1	0.4	0	0.0	2	0.2	3	0.2
Total		272	100.0	144	100.0	826	100.0	1242	100.0

Annex 10 - Continued

Reasons		Internal		International		Non-Migrant		Total	
		No.	%	No.	%	No.	%	No.	%
Started to cut down trees	Weather shock	28	16.8	7	9.5	74	15.8	109	15.4
	Disruptions in family	6	3.6	3	4.1	16	3.4	25	3.5
	Family events	38	22.8	12	16.2	86	18.3	136	19.2
	Other reason	40	24.0	22	29.7	125	26.7	187	26.3
	Slow negative changes	5	3.0	6	8.1	15	3.2	26	3.7
	Unpredictable weather	4	2.4	3	4.1	8	1.7	15	2.1
	Declining income	42	25.2	20	27.0	138	29.4	200	28.2
	Improvement in household income	4	2.4	1	1.4	5	1.1	10	1.4
	Removal of NGO/Govt. disaster support	0	0.0	0	0.0	1	0.2	1	0.1
	Removal of NGO/Govt. welfare or agricultural support	0	0.0	0	0.0	1	0.2	1	0.1
Total		167	100.0	74	100.0	469	100.0	710	100.0
planting trees	Weather shock	112	28.9	66	33.0	315	26.3	493	27.6
	Disruptions in family	1	0.3	0	0.0	5	0.4	6	0.3
	Family events	35	9.0	25	12.5	104	8.7	164	9.2
	Other reason	42	10.9	13	6.5	131	10.9	186	10.4
	Slow negative changes	97	25.1	56	28.0	294	24.5	447	25.0
	Unpredictable weather	47	12.1	18	9.0	124	10.3	189	10.6
	Declining income	29	7.5	10	5.0	149	12.4	188	10.5
	Improvement in household income	24	6.2	12	6.0	75	6.3	111	6.2
	Provision of NGO/Govt. disaster support	0	0.0	0	0.0	1	0.1	1	0.1
	NGO/Govt. welfare or agricultural support	0	0.0	0	0.0	1	0.1	1	0.1
	Removal of NGO/Govt. welfare or agricultural support	0	0.0	0	0.0	1	0.1	1	0.1
Total		387	100.0	200	100.0	1200	100.0	1787	100.0
Hired labour or not	Weather shock	26	20.3	10	15.6	84	19.5	120	19.3
	Disruptions in family	1	0.8	0	0.0	2	0.5	3	0.5
	Family events	13	10.2	9	14.1	25	5.8	47	7.6
	Other reason	26	20.3	12	18.8	90	20.9	128	20.6
	Slow negative changes	14	10.9	6	9.4	17	4.0	37	6.0
	Unpredictable weather	17	13.3	7	10.9	51	11.9	75	12.1
	Declining income	8	6.3	5	7.8	56	13.0	69	11.1
	Improvement in household income	23	18.0	15	23.4	104	24.2	142	22.8
	NGO/Govt. welfare or agricultural support	0	0.0	0	0.0	1	0.2	1	0.2
	Total	128	100.0	64	100.0	430	100.0	622	100.0
women start working outside village	Weather shock	10	10.8	1	11.1	11	6.1	22	7.8
	Disruptions in family	8	8.6	1	11.1	21	11.7	30	10.6
	Family events	12	12.9	1	11.1	23	12.8	36	12.8
	Other reason	6	6.5	0	0.0	10	5.6	16	5.7
	Slow negative changes	2	2.2	0	0.0	8	4.4	10	3.6
	Unpredictable weather	1	1.1	0	0.0	1	0.6	2	0.7
	Declining income	51	54.8	6	66.7	100	55.6	157	55.7
	Improvement in household income	1	1.1	0	0.0	5	2.8	6	2.1
	NGO/Govt. welfare or agricultural support	2	2.2	0	0.0	1	0.6	3	1.1
Total		93	100.0	9	100.0	180	100.0	282	100.0

Annex 10 - Continued

Reasons		Internal		International		Non-Migrant		Total	
		No.	%	No.	%	No.	%	No.	%
Moved in a new house in same village	Weather shock	6	24.0	3	23.1	37	25.3	46	25.0
	Disruptions in family	1	4.0	0	0.0	9	6.2	10	5.4
	Family events	8	32.0	5	38.5	35	24.0	48	26.1
	Other reason	4	16.0	2	15.4	14	9.6	20	10.9
	Slow negative changes	2	8.0	1	7.7	16	11.0	19	10.3
	Unpredictable weather	0	0.0	0	0.0	8	5.5	8	4.4
	Declining income	1	4.0	0	0.0	7	4.8	8	4.4
	Improvement in household income	3	12.0	1	7.7	13	8.9	17	9.2
	Provision of NGO/Govt. disaster support	0	0.0	1	7.7	7	4.8	8	4.6
Total		25	100.0	13	100.0	146	100.0	184	100.0
Sent HH members to work outside the village	Weather shock	63	17.2	35	19.4	22	18.8	120	18.1
	Disruption in family	14	3.8	7	3.9	4	3.4	25	3.8
	Family events	53	14.5	22	12.2	5	4.3	80	12.1
	Other reason	13	3.6	7	3.9	3	2.6	23	3.5
	Slow negative changes	40	10.9	17	9.4	7	6.0	64	9.7
	Unpredictable weather	15	4.1	3	1.7	5	4.3	23	3.8
	Declining income	164	44.8	87	48.3	69	59.0	320	48.3
	Improvement in household income	4	1.1	2	1.1	2	1.7	8	1.2
Total		366	100.0	180	100.0	117	100.0	663	100.0
Received govt./NGO assistant	Weather shock	27	25.5	15	34.1	95	24.7	137	25.7
	Disruptions in family	1	0.9	0	0.0	9	2.3	10	1.9
	Family events	2	1.9	0	0.0	5	1.3	7	1.3
	Other reason	9	8.5	3	6.8	17	4.4	29	5.4
	Slow negative changes	19	17.9	5	11.4	28	7.3	52	9.7
	Unpredictable weather	6	5.7	2	4.6	9	2.3	17	3.2
	Declining income	19	17.9	6	13.6	59	15.4	84	15.7
	Provision of NGO/Govt. disaster support	7	6.6	5	11.4	61	15.9	73	13.7
	NGO/Govt. welfare or agricultural support	11	10.4	6	13.6	84	21.9	101	18.9
	Removal of NGO/Govt. disaster support	3	2.8	1	2.3	8	2.1	12	2.3
	Removal of NGO/Govt. welfare or agricultural support	2	1.9	1	2.3	9	2.3	12	2.3
Total		106	100.0	44	100.0	384	100.0	534	100.0
Own protection/ community shelter	Weather shock	127	63.8	89	63.1	496	65.1	712	64.6
	Removal of NGO/Govt. welfare or agricultural support	2	1.0	2	1.4	3	0.4	7	0.6
	Other reason	16	8.0	7	5.0	24	3.2	47	4.3
	Slow negative changes	19	9.6	18	12.8	61	8.0	98	8.9
	Unpredictable weather	15	7.5	6	4.3	74	9.7	95	8.6
	Improvement in household income	3	1.5	6	4.3	6	0.8	15	1.4
	Provision of NGO/Govt. disaster support	16	8.0	12	8.5	84	11.0	112	10.2
Total		1	0.5	1	0.7	14	1.8	16	1.5
Total		199	100.0	141	100.0	762	100.0	1102	100.0

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