

**BASELINE  
STUDY** ON  
THE SOCIO-  
ECONOMIC  
CONDITIONS  
OF **WOMEN**  
IN THREE  
ECO-ZONES  
OF BANGLADESH



NORWEGIAN EMBASSY



United Nations Entity for Gender Equality  
and the Empowerment of Women



#### The Study Team

Md. Golam Rabbani,  
Khandaker Mainuddin,  
Lubna Seal, Dewan Ali Emran,  
Mahmud Hassan Tuhin,  
Zoheb Mahmud Khan

#### Review Team

Christine Hunter,  
Dilruba Haider, Amy Reggers & Kausik Das

#### Edited by

Suzette Mitchell

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*Bangladesh Centre for Advanced Studies (BCAS) is a partner of a UN Women project funded by the Royal Norwegian Embassy titled "Reducing Vulnerability of Women Affected by Climate Change through Viable Livelihood Options". BCAS has conducted this baseline study in 10 vulnerable districts in three climate prone areas of Bangladesh as a part of this project.*

#### BCAS

BCAS is an independent, non-profit, non-government, policy, research and implementation institute working on Sustainable Development (SD) at local, national, regional and global levels. It was established in 1986 and over 28 years and has grown to become a leading research institute in the non-government sector in Bangladesh and South Asia.

#### UN Women

UN Women is the UN organization dedicated to gender equality and the empowerment of women. A global champion for women and girls, UN Women was established to accelerate progress on meeting their needs worldwide. Among other issues, UN Women works for: The elimination of discrimination against women and girls; The empowerment of women and The achievement of equality between women and men as partners and beneficiaries of development, human rights, humanitarian action and peace and security. See more at: <http://asiapacific.unwomen.org>

#### Norwegian Embassy

Norway enjoys very good bilateral relations with Bangladesh. Norway's engagement has traditionally been focused on development cooperation, with Bangladesh being the 4th largest recipient of Norwegian bilateral aid in history with a total of more than NOK 12 billion. Development cooperation is now mainly focused on climate change/disaster preparedness and women's rights issues. In line with Bangladesh's rapid development and high economic growth, Norway is also focusing more on business cooperation.

The views expressed in this report are not necessarily those of UN Women or the Royal Norwegian Embassy.

#### Published by

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December 2014

## Foreword from Norway



The Royal Norwegian Embassy in Dhaka is proud to work closely together with UN Women to bring the rights of women into the climate change debate. We are glad to support the important project 'Reducing Vulnerability of Women Affected by Climate Change through Viable Livelihood Options' here in Bangladesh.

The baseline study that has been conducted in the different eco-zones of the country that are prone to adversities of nature, document well particular vulnerabilities of women in the face of climate change, and will help us measure progress in reducing vulnerability. The study indeed confirms many of our theories about the complex relationship between climate change and women's vulnerability on one hand, and on the other hand, women's important contributions to climate change adaptation. It provides us with clear and operational recommendations to guide our further efforts in this important area.

I look forward to the next steps in this exciting and innovative cooperation. It is my hope that it will really strengthen the hand of women in exposed areas. That way, they can contribute even more to safeguarding their local communities by adapting well to new climatic conditions.

A handwritten signature in cursive script, which appears to read 'Merete Lundemo'.

Merete Lundemo  
Ambassador of Norway  
Dhaka

## Foreword from UN Women



Bangladesh has achieved enormous development gains over the last two decades and is set to achieve most of the millennium development goals. The country has been particularly recognized for halving the number of people living in poverty and for advances in gender equality. Since signing the Millennium Declaration Bangladesh has achieved gender parity in primary and secondary school enrollment, improved completion rates for girls, significantly reduced maternal mortality, and continued to enact laws and policies that provide a framework for protecting and promoting women's rights.

Despite being one of the countries most affected by climate change, and most vulnerable to disasters, Bangladesh is a leader in disaster management and has been a pioneer in community-based adaptation to climate change.

Even with these remarkable achievements, there are many development challenges remaining. In 2014, more than 40 million people remain poor and climatic changes are threatening the livelihoods and living conditions for many of these households. Poverty and other deprivations generally affect women more. On the one hand women have less access to resources, limited opportunities for decent work and lower social status. On the other hand they carry the main responsibilities for the well-being of children and households. Supported by the Norwegian Embassy in Bangladesh, UN Women is pioneering a rights-based approach to addressing the gender equality dimensions of climate change through the project Reducing Vulnerability of Women Affected by Climate Change through Livelihood Options.

This baseline study is the first of its kind to use both qualitative and quantitative data to document the differentiated impacts of climate change and disasters on women and men in Bangladesh. The results of this research echo studies from around the region that women are more vulnerable to the effects of climate change than men, and that gender inequalities within the household contribute to this increased vulnerability. Recommendations from the report call on policy and programme interventions to address these gendered vulnerabilities and highlight how much women have to contribute to managing the effects of climate change and preparing for natural disasters.

Finally, to say a few words about UN Women; globally we support inter-governmental bodies such as the Commission on the Status of Women to develop norms and standards that will further gender equality. In Bangladesh, UN Women supports the government to implement their commitments to gender equality through technical assistance and resources, and works in close partnership with civil society on the issues of women's economic empowerment, political empowerment, gender in humanitarian programmes, violence against women, migration, and climate change.

A handwritten signature in black ink, appearing to read 'CS Hunter'.

Ms Christine Hunter  
Country Representative  
UN Women Bangladesh

# **BASELINE STUDY**

**ON THE SOCIO-  
ECONOMIC  
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OF WOMEN IN  
THREE  
ECO-ZONES OF  
BANGLADESH**

# TABLE OF CONTENTS

	Executive Summary	1
1.	Introduction and Global Context	2
2.	Reducing Vulnerability of Women Affected by Climate Change through Viable Livelihoods: A Conceptual Framework	7
3.	Approach of the Baseline Study	10
	3.1. Collection and Review of Secondary Data/Information	11
	3.2. Development of Data Collection Tools	11
	3.3. Sampling Design	11
	3.4. Field Staff Recruitment and Training	12
	3.5. Pilot Test of Data Collection Tools	13
	3.6. Field Data Collection	13
	3.7. Ensuring Quality of Data	14
	3.8. Data Processing	14
	3.9. Data Analysis	14
4.	Findings of the Study Conducted in Three Climate Prone Areas (Coastal, Flood and Drought Prone Areas)	15
	4.1. Key Issues and Indicators of the Baseline Study	15
	4.2. Households’ Profile Including Socio-Demographic Characteristics, Income, Expenditure, Assets, Health, Education and Awareness Level, Access to Essential Services	20
	4.2.1. Socio-Demographic Characteristics of the Study Population	20
	4.2.2. Demographic Information	20
	4.2.3. Types of Households	21
	4.2.4. Household Land Ownership	21
	4.2.5. Household Income Distribution	22
	4.2.6. Household Expenditure	23
	4.3. Access to Key Basic Services	24
	4.3.1. Usage of Water	24
	4.3.2. Access to Sanitation Facilities	25

4.3.3.	Fuel Collection and Cooking	26
4.3.4.	Access to Education	26
4.3.5.	Electrification Facilities	27
4.3.6.	Diseases and Health-Care Services	28
4.4.	Knowledge and Understanding of the Respondents on Climate Change	29
4.5.	Climate Change Scenario of the Study Area: Overviews and Trends on Key Primary and Secondary Elements	31
4.6.	Impacts of Climate Change at House Hold Level in the Study Areas	35
4.6.1.	The Exposure of Households to Various Climatic Hazards	35
4.6.2.	Impact of Climatic Hazards on Household's Properties	36
4.6.3.	Impact of Climate Change on Education Sector	37
4.7.	Gendered Issues in Disaster Preparedness and management in study areas	38
4.7.1.	Poor Access to Essential Services	40
4.7.2.	Poor Access to Markets	41
4.7.3.	Lack of Women Participation in Decision Making:	42
4.7.4.	Lack of Access to Social Network and Capacity Building Activities	43
4.7.5.	Difference in Income and Expenditure of Male and Female Headed Households	45
4.7.6.	Education expenditure	46
4.7.7.	Food Expenditure and Calorie Intake	46
4.7.8.	Health Expenditure	47
4.7.9.	Access to Medical Facilities	47
4.7.10.	Poor Land Ownership	48
4.7.11.	Poor Access to Natural Resources	48
5.	Adaptation/Disaster Management Practices to Address Climate Change in the Study Areas	49
5.1.	Rural-Urban Migration	50
5.2.	Disaster Preparedness by the Women in the Study Areas	50

5.3.	Involvement of Women in Increasing Household Income	51
5.4.	Training for women on income generating activities (IGA) in the study areas	51
5.5.	Diversification of Livelihood Options of Women in the Study Areas	51
5.6.	Need for Gender Oriented Adaptation Measures	54
5.7.	Potential Adaptation Options for the Women in the Study Areas	54
6.	Conclusion	55
7.	List of Recommendations	59
	References	63
	Annex	65

## NAMES OF TABLES

Table 1 :	Survey Coverage and Sample Size	12
Table 2 :	Detailed Coverage of FGDs and In-depth Interviews	13
Table 3 :	Key Issues and Indicators of the Baseline Study	16
Table 4 :	Average Household Annual Income with Demographic Information	20
Table 5 :	Sources of Drinking Water in Three Study Zones	24
Table 6 :	Average Frequency of Diseases Per Household in the Last One Year	28
Table 7 :	Trend of Annual Average Temperature (maximum and minimum) and Total Rainfall from 1981 to 2010 in Different Districts of the Coastal Zone, Drought Prone and Flood Prone Areas	32
Table 8 :	The Exposure Category of Households to Different Climatic Hazards by Zone	36
Table 9 :	Reasons for Women not getting Actual Price for their Products	42
Table 10 :	Loss of Working Days Per Year by Gender	47
Table 11 :	Current Livelihood Options for Females in the Project Area	53
Table 12 :	Percentage Distribution of Respondents on Potential Adaptation Measures for Women	54

## NAMES OF FIGURES

Figure 1:	Concept Mapping – Where the Project Started	8
Figure 2:	Project Timeline	8
Figure 3:	Conceptual Framework Towards Transformational Change- Gender Equality in the Context of Climate Change	9
Figure 4:	Household Members in the Study Areas	20
Figure 5:	Economic status of the HHs in the study area based on their own perception	21
Figure 6:	Land Ownership Patterns at Household Level	21
Figure 7:	Sources of Household Annual Income	22
Figure 8:	Average Household Incomes by Male and Female Headed Households	22
Figure 9:	Household Income Distribution (%)	22
Figure 10:	Item-wise Annual Household Expenditure in the Study Area	23
Figure 11:	Sources of Drinking Water (HH in %)	24
Figure 12:	Sources of Domestic Water Usage	25
Figure 13:	Overall Sanitation Practices in the Study Area	25
Figure 14:	Different Types of Sanitation Practices in Coastal, Drought and Flood-Prone Areas	26
Figure 15:	Comparison between Male and Female Education in the Study Area	27
Figure 16:	Female Educational Status of Three Study Zones	27
Figure 17:	Electrification Facilities	27
Figure 18:	Sources of Power for Electrification	27
Figure 19:	Knowledge of the Respondents on Climate Change	29
Figure 20:	Sources of Learning about Climate Change Related Issues	29
Figure 21:	Trend of Annual Average Maximum Temperatures in Cox's Bazar during 1981-2010	31
Figure 22:	Trend of Annual Average Minimum Temperatures in Sylhet during 1981-2010	31
Figure 23:	Trend of Total Rainfall in Chapainawabganj (1981-2010)	31
Figure 24:	Exposure of Households to Climatic Hazards in the Study Areas	36
Figure 25:	Overall Loss and Damage of Households' Property	36
Figure 26:	Climate Change Impacts on Education in the Last Five Years	37
Figure 27:	How Climate Change Impacts Education sector ?	37
Figure 28:	The Involvement of Dropped Out Children	37
Figure 29:	Barriers for Women in Disaster Preparedness	38
Figure 30:	Are Women Disproportionately Affected During Disaster?	38

Figure 31:	Why Females are Disproportionately Affected During Disaster?	38
Figure 32:	Problems Faced by Women in Disaster Periods by Zone	39
Figure 33:	Access to Medical Services during Normal and Disaster Periods	39
Figure 34:	Problems Faced by Women during Normal, Disaster and Post Disaster Periods	40
Figure 35:	Women's roles in Selling their Products	41
Figure 36:	Market Access for Women in the Study Area	41
Figure 37:	Market Access for Women by Zone	41
Figure 38:	Do Women get the Actual Price for their Goods?	42
Figure 39:	Role of Men and Women in Household Decision Making	43
Figure 40:	Female Members of Households Involved with Income Generation or Livelihood Activities	43
Figure 41:	Training Received by Females for Income Generation and Livelihood Activities	44
Figure 42:	Types of Training the Females Received	44
Figure 43:	Types of Organizations Providing Training to Females	44
Figure 44:	Average Annual Household Income by Male and Female Headed Households in some Hard to Reach Areas in Bangladesh	45
Figure 45:	Household Expenditure Per Month by Gender of Household Head	46
Figure 46:	Maternal Health Facilities in the Study Areas	48
Figure 47:	Did any of Your Household Members Migrate in the Last Five Years?	50
Figure 48:	Percentage Distribution of the Respondents on the Main Reasons of Migration	50
Figure 49:	Female Involvement in Household Income	51
Figure 50:	IGA Training Received by Household Females	51
Figure 51:	Is there a Need for Gender Oriented Strategies to Adapt with the Impacts of Climate Change Related Disasters?	54

# ACRONYMS

BBS	Bangladesh Bureau of Statistics
BCAS	Bangladesh Centre for Advanced Studies
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BWDB	Bangladesh Water Development Board
CBM	Community Based Management
CCC	Climate Change Cell
CEGIS	Center for Environment and Geographic Information Services
DAE	Department of Agricultural Extension
DRMA	Disaster Risk Management in Agriculture Sector
DRR	Disaster Risk Reduction
FAO	Food and Agriculture Organization
FFWC	Flood Forecasting and Warning Centre
FGD	Focus Group Discussion
GBM	Ganges-Brahmaputra-Meghna
GCM	Global Circulation Model
HFA	Hyogo Framework of Action
IDS	Institute of Development Studies
IPCC	Inter governmental panel on Climate Change
KII	Key Informants Interview
LACC	Livelihood Adaptation to Climate Change
LECZ	Low Elevation Coastal Zone
NGO	Non Government Organization
PRA	Participatory Rural Appraisal
SLR	Sea Level Rise
SSDP	Support to the Strengthening for Disaster Preparedness
UNISDR	UN International Strategy for Disaster Reduction

# EXECUTIVE SUMMARY

**W**omen are more vulnerable to the impacts of climate change and disasters than men.

This has been documented in various studies, but there has not been a specific quantitative and qualitative study in Bangladesh to look at this specific issue. This baseline study looks at issues for women and men in households from coastal, flood prone and drought prone zones, with two sites in each zone.

The results reinforce studies from other countries that women face more difficulties when exposed to climate change and disasters. This ranges from basic indicators where women and women headed households have more poverty, less access to decision making and less ownership and control over assets. In the context of these study sites women have received very little training on economic livelihood activities and have a low awareness of climate change and/or disasters. There is very little diversification in the main areas of their productive work which focuses on poultry, livestock and household gardening. Women and girls also have lower rates of education and are more likely to be pulled from school in times of disaster.

Women practice various forms of self-sacrifice which they see as in the family interest, such as taking less quality and quantity of food. They are less likely to go to a medical centre for their health issues. This creates a vicious cycle as women remain the most vulnerable when they are not as well and continue to carry an unequal

burden of household tasks and the care of family members.

The recommendations for this report point to the need for disaster risk reduction and climate change to address the inequalities in the household and the community to lessen women's vulnerability. It is only when women have more equality in access to execution, income, assets and resources, health, education and decision making that their roles in disasters and climate change can move from those of victim of that of active leaders and changemakers.

Women have much to contribute to the discussions and the practical solutions for climate change adaptation, and they are well placed to take on these roles, but they face many barriers that lead to their vulnerability. This report looks at some practical measures included in disasters and climate change training interventions which will provide resources and knowledge to make this shift. This ranges from diversification of livelihood training; household and community education on the need for education and health equity; increased awareness of disaster preparedness and how to develop a plan that addresses gender equity in household responses and recovery; improved early warning system information channels to women; and various other mechanisms that address individual, household and community responses.



1.

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## Introduction AND GLOBAL CONTEXT

**O**n the International Day for Disaster Risk Reduction 13 October, 2012, the UN Secretary General stressed that women's leadership in disaster risk reduction is increasingly valuable as climate change intensifies and the world struggles to cope with extreme weather. "In Bangladesh, women organized themselves to prepare for and respond to floods by teaching other women how to build portable clay ovens and elevate houses,<sup>1</sup>" Mr. Ban emphasised, illustrating the resilience of Bangladeshi women and putting them forward as role models on the

global stage. This is the resilience that this baseline study aims to explore and to develop recommendations to address a more widespread and comprehensive approach to dealing with vulnerability addressing its needs, and bringing women through to a process of leadership.

Most often development projects look at a problem and develop a solution, but it is necessary to do more empirical and qualitative research into what we are seeing and hone our responses with those of the needs of local women. In the area of gender and climate change there is not a great

<sup>1</sup>UN News Center, 2012. "For International Day for Disaster Reduction, UN highlights key role of women and girls"

deal of action research and this baseline study in ten sites in three environmental zones (coastal, drought and flood prone) addresses this need. It looks firstly at climatic indicators in these areas, then at the basic indicators of health, poverty, education and other development indicators and finally brings these together in an approach to look at the specific impacts that the climate is having on the basic indicators, to reveal the gender disparities. It is from these ultimate disparities that result that we see the very real disadvantages and vulnerabilities that women face. From here, recommendations are developed to guide change which works not just for an increase in women's decision making, but through a human rights approach, also sees the opportunity to work toward greater gender equality.

Reducing women's vulnerability to climate change is to increase their role as active citizens in the decision making roles from disaster risk preparedness, reduction, management and post disaster recovery, to all facets of climate change adaptation and mitigation. Women need to have agency over their lives to overcome vulnerabilities they may face and harness their abilities in practical solutions. This involves a move away from women's marginalization in access and control of information, resources, assets, services, and decision making in the household and community. This baseline report looks at the situation on the ground for women in areas vulnerable to climate change in Bangladesh and the forms of vulnerabilities they face, documenting this as a baseline to uncover

where building women's resilience needs to begin. It then works towards building some concrete recommendations for women's increase in decision making and viable income management to enable their capacity development and move from victim statushood.

The aims of this study are in line with international standards on women's rights, as such they echo the findings of the 44th session of the Committee for the Elimination of All Forms of Discrimination Against Women (CEDAW) which stated in a committee on gender and climate change July-August 2009:

*From CEDAW's examination of State Parties reports, it is apparent that climate change does not affect women and men in the same way and has a gender-differentiated impact. However, women are not just helpless victims of climate change – they are powerful agents of change and their leadership is critical. All stakeholders should ensure that climate change and disaster risk reduction measures are gender responsive, sensitive to indigenous knowledge systems and respect human rights. Women's right to participate at all levels of decision-making must be guaranteed in climate change policies and programmes.*

This statement reflects the approach of this baseline study- to identify the issues that are barriers to women's role as powerful agents of change and to implement gender responsive disaster risk reduction (DRR) approaches to support this. This is also in line with the

resolution adopted by the General Assembly for International Strategy for Disaster Reduction March 2013, A/RES/67/209

*Stressing the importance of stronger interlinkages among disaster risk reduction, recovery and long-term development planning, calling for more coordinated and comprehensive strategies that integrate disaster risk reduction and climate change adaptation considerations into public and private investment, decision-making and the planning of humanitarian and development actions in order to reduce risk, increase resilience and provide a smoother transition between relief, recovery and development, and in this regard recognizing the need to integrate a gender perspective into the design and implementation of all phases of disaster risk management.*

This baseline study provides a much needed first step in an evidence based approach to building knowledge on women's current context in facing DRR and climate change issues in three climate vulnerable areas of Bangladesh. As such, the study will begin with a brief outline of climate change as it relates to Bangladesh and then as this relates to women. The approach taken by UN Women Bangladesh and its partners in the project "Reducing Vulnerability of Women Affected by Climate change through Viable Livelihoods" will be outlined followed by the methodology and approach to the data collection in the study sites. The results of the data will be documented and analysed with specific recommendations. Ultimately the report will be concluded with a final analysis and list the recommendations.

## CLIMATE CHANGE IN BANGLADESH

Bangladesh is one of the most populated and least developed countries in the world, and is experiencing adverse impacts of climate change and climate variability. Variations in temperature, erratic rainfall, increased intensity of floods, droughts, cyclones and storm surges, salinity intrusion and sea level rise are already affecting the communities, ecosystems and infrastructure of the country (Huq and Rabbani, 2011). Rahman et al (2008) state that the geophysical location, hydrological influence by monsoon rainfall, regional water flow patterns and low level resilience have made the people of Bangladesh more vulnerable. According to the World Bank, the sea level will rise by 30 cm and 50 cm in 2030 and 2050 respectively (World Bank, 2000). Hare (2003) highlights that a 25 cm sea level rise would cause loss of 40 percent of the Sundarbans (UNESCO World Heritage Site) in the southern belt, while a 60 cm sea level rise may engulf the whole of the Sundarbans (Hare, 2003).

A number of districts, especially in coastal, drought and flood prone zones are very vulnerable to the above mentioned climate related impacts and vulnerabilities. For example, saline water intrusion to fresh water resources in many coastal districts in the south including Patuakhali, Pirojpur, Satkhira, Bhola, Khulna, Feni and Noakhali has affected both agriculture practices and water supplies (Islam: 2004). Drought has often reduced the crop production

in the north-western districts of the country. It has been predicted that severity of droughts may increase in future under changing climatic conditions (BCAS: 2008). Floods in 1998, 2004 and 2007 affected many of the low lying districts. Sea Level Rise (SLR) due to increased snow melts from the Himalayan permafrost and other factors e.g. sedimentation and cyclonic events may also force saline water to intrude upon low lying areas along the coast.

It is reported that repeated natural calamities reduce the ability of households to cope with the economic and environmental shocks. Bangladesh ranks poorly on the Gender Inequality Index at 116th out of 137 countries (UNDP Human Development Report: 2010). The Government of Bangladesh identifies, Realising Gender Equality and Empowerment as one of the seven priority areas in Perspective Plan and the Sixth Five-Year Plan for the Government of Bangladesh.

Bangladesh has developed climate change strategies, strengthened institutional arrangements and allocated budget to addressing climate change in the country. These strategies and policy decisions reflect some gender specific climate change impacts but still need further attention to be comprehensive. There is a need for an assessment of how the trends of climate change are affecting men and women differently. This study is addressing this need and has chosen three climate prone areas (coastal, drought and flood) as baseline sites to investigate these issues.

## WOMEN'S VULNERABILITY TO CLIMATE CHANGE AND DISASTERS

Vulnerabilities to natural disasters are different for women and men. In general, women have less access to resources that are essential in disaster preparedness, mitigation and rehabilitation. Lack of energy sources, clean water, safe sanitation and health challenges, often put extra burden on women's shoulders, adding to their reproductive and care-giving tasks (Enarson, 2000). As disasters like floods and storms increase in number and severity, women are confronting crisis in their daily lives. According to a report from the Women's Environment and Development Organization (Araujo and Quesada 2007), women and children are 14 times more likely to die than men during disasters.

Following the cyclone and flood of 1991 in Bangladesh, out of the 140,000 people that died 90% were women (Ikeda, 1995). Gender mainstreaming in disaster risk reduction is gradually but inevitably becoming an emerging issues. In rural areas, the difference between men and women's daily lives is huge. The poverty rate of women headed households is higher than that of men in the agricultural districts. Also, there is a difference between the sexes over the completion rate of primary and secondary education. In spite of such limitations women are actively taking care of the entire household chores and child care responsibilities. They also take part in education and capacity building and adaptation by rearing livestock and homestead gardens (Yoshitani et al. 2007).

Women's preferences of access to, and types of, information are not taken into account in many societies. Women are expected to absorb information from men (UNISDR, 2009) in the community. The access of women to public places and to public information is also poor in the study areas of this report. To better prepare women to reduce disaster impact, their access to public information has to be enhanced. This need has already been recognized by the Hyogo Framework of Action 2005-2015 which stated that a gender perspective should be integrated into all DRR policies, plans and decision making processes, including those related to risk assessment, early warnings, information management, education and training.

Women have some participation in the local government. The Union Parishad consists of a chairperson, nine members, and three women members. The Local Government (Union Parishad) Second Amendment Act, 1997 is a milestone in the history of political empowerment of women in Bangladesh. The government of Bangladesh enacted this law for direct elections to reserve three seats for women in the Union Parishad where women members are directly elected from each of the three wards. Apart from the reserved seats women can also contest for any of the general seats. However, even with these quotas, participation of women has to be enhanced in other local institutions as well, for example: disaster management committees. UP (Union Parishad) women members are automatically the

members of disaster management committees. However, the proportion of males and females in disaster management committees is at present 6:1. Women participation at the grassroots level in disaster management committees has to be strengthened.

Women's access to assets (physical, financial, human, and social and natural capital), largely determine their level of exposure to climate induced disasters and their response to it. The more assets people have, the less vulnerable they are (Moser and Satterthwaite, 2008). Therefore, the study has tried to measure assets of women that can influence their economic state and compared them with that of their male counterparts.

“Women's participation in local institutions, such as Union Parishad along with disaster management committees should be enhanced.”



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## REDUCING VULNERABILITY OF WOMEN AFFECTED BY CLIMATE CHANGE THROUGH VIABLE LIVELIHOODS: A CONCEPTUAL FRAMEWORK

This baseline study is one of the activities for a wider project titled “Reducing vulnerability of women affected by climate change through viable livelihood options”, and as such it is important to outline this process as it illustrates the underlying conceptual framework from which this report has been developed.

Figure 1 and 2 illustrate a concept map outlining the project rationale and response in the context of the project’s goals, objectives and the intended timeline. In order to have the intended outcomes and to work towards a rights-based goal, there is a need for a guiding conceptual framework that identified issues, criteria, standards and strategies that enhance project quality and effectiveness .

Figure 1: Concept Mapping – where the project started

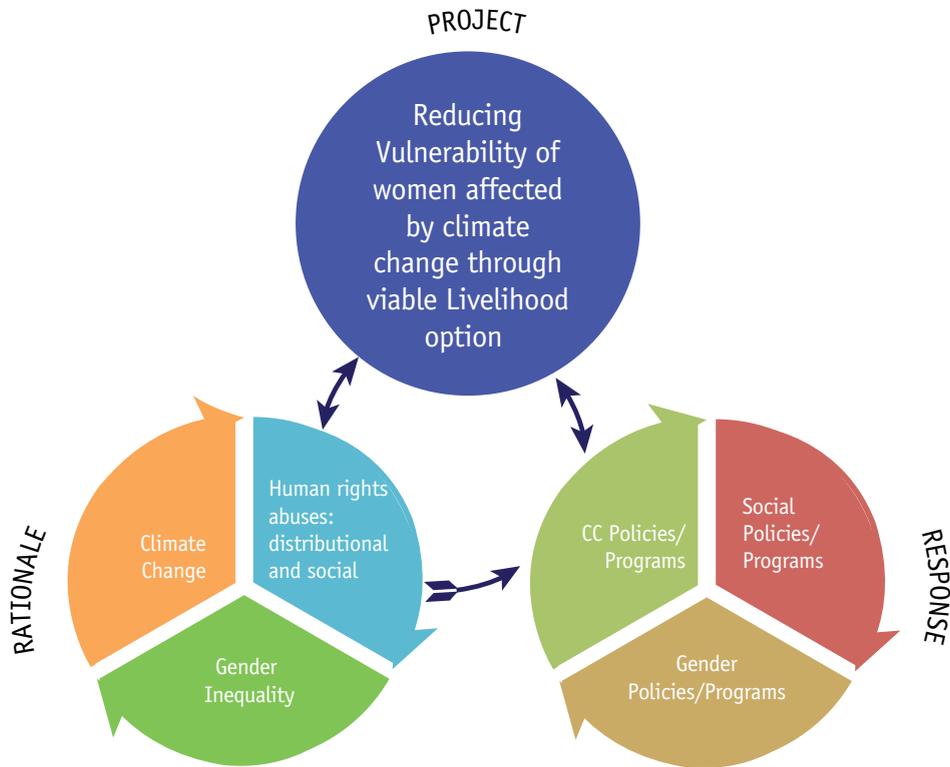
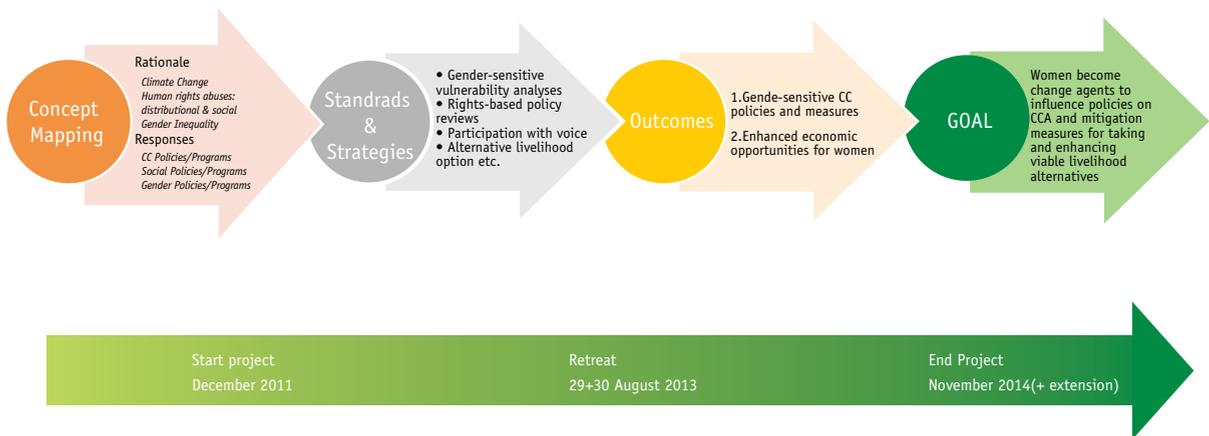


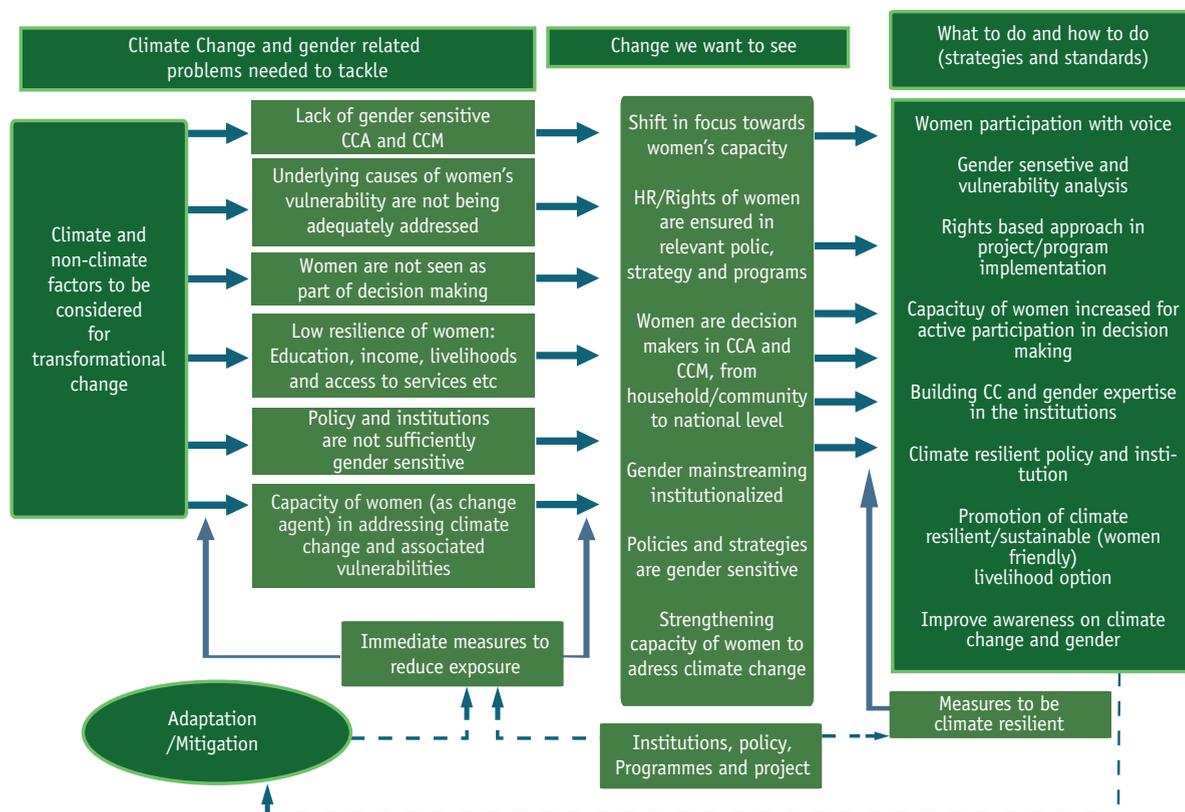
Figure 2: Project Timeline



These diagrams illustrate that the goal of this project is for women to become change agents to influence policies on climate change adaptation (CCA) and mitigation measures for taking and enhancing viable livelihood alternatives. This entails a shift in focus towards women’s capacity where human rights of women are ensured in the process of capacity building. This takes programming in gender and DRR/CCA to an opportunity to increase gender equity in the household and community as a part of the development process.

In this context it is seen that the recommendations will address not just increasing the practical needs of women such as more education and better health, access to training and assets; but an approach that addresses the strategic needs of women for equity in the household and community (Fig 3). In this human rights context, the recommendations of this baseline report will look at the current situation, and recommend ways forward that go to the heart of gender inequality.

Figure 3: Conceptual Framework towards Transformational Change-Gender Equality in the Context of Climate Change



(Source: Rabbani, 2013)



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## APPROACH OF THE BASELINE STUDY

**T**his baseline survey was conducted through two types of data collection methods: qualitative and quantitative. To collect qualitative data and information regarding climate change vulnerabilities of women and their adaptation practices a number of Focus Group Discussions (FGDs) and in-depth interviews were conducted. The FGD participants include vulnerable female groups and mixed groups of both male and female

members. A range of 10-15 people participated in each FGD. The participants were selected by the field facilitators based on a certain level of knowledge on disaster, livelihood and relevant issues. The groups were formed with vulnerable community women and men, teachers, Disaster Management Committee members, local government representatives and NGO workers. Household surveys were conducted to collect

quantitative data and information on different issues and variables related to climate change impacts on women and their existing livelihoods and adaptation practices. The checklist covered the areas of the socio-economic status of the respondents, their water, sanitation and health practices, knowledge on climate change, asset damage, capacity building, women vulnerability, decision making, asset ownership, electrification facilities, women mobility etc. A pilot testing of questionnaires was conducted prior to the survey.

### 3.1. COLLECTION AND REVIEW OF SECONDARY DATA/INFORMATION

A number of relevant peer reviewed journal published articles, international and national publications on climate change and gender, some books and relevant reports were also collected and reviewed to improve the conceptual understanding and identification of the issues, and the development of data collection tools.

### 3.2. DEVELOPMENT OF DATA COLLECTION TOOLS

At the outset, the BCAS research team initially had a series of meetings and discussions with the BRAC team (the other implementing partner on this UN Women led project) and senior experts on climate change and gender on the data collections tools. The draft data collection tools were then shared with a number of senior experts and academicians from the Department of Women and gender Studies of the University of Dhaka, Jahangirnagar University and other development agencies. The additional inputs and suggestions from BRAC and UN Women

were used to finalize the data collection tools, especially the interview schedule for household surveys. Finally, a semi-structured questionnaire with a set of questions was developed for household data collection. It was designed to collect detailed household information on demographic, socioeconomic, food security, water and sanitation, climate change knowledge and awareness, climatic hazards and associated impacts on women and their livelihoods. This survey questionnaire (Annex-1) was then finalized after the field testing with inputs from the feedback session. The BCAS research team also developed the check-lists for Focus Group Discussions (Annex-2) and in-depth interviews to collect qualitative data and information.

### 3.3. SAMPLING DESIGN

In order to ensure a wide geographical coverage and representation of the project area the total number of districts covered under this base line study was ten. The ten districts were from three climate prone eco-zones: coastal, drought and flood zones. The five coastal districts in the south were: Satkhira, Bagerhat, Patuakhali, Khulna and Cox's Bazar. The three flood prone districts were Sirajgonj (North West), Sunamganj (North East) and Shariatpur (Central). In the drought prone areas, two North Western districts: Nawabganj and Natore were selected. The 10 upazillas under the 10 districts were selected through a vulnerability mapping, which was conducted by BCAS Geographic Information System experts focusing on the impact of climate variability and poverty status of all the upazillas under these districts. A vulnerable upazilla list was formed ranking the upazillas in high, moderate and low vulnerable areas and from the list the top

most vulnerable upazillas were selected. From each upazilla, two Unions were selected based on the worst level of vulnerability and poverty. From each selected Union, two villages were identified again with highest level of poverty and vulnerability in consultation with the respective UP chairperson and local BRAC staff. Finally, from each selected sample village, a pre-defined number of households were randomly selected. The sampling process led to the selection of 1851 households.

The minimum sample size for each eco-zone was estimated through the following formula.

$$n = p \cdot q \cdot (z/e)^2 \cdot de$$

Where,

p= Probability of a certain/ expected attribute in the study population

q= (1-p)

z= Value of standard Normal Variable

e= Maximum allowable error

de= Design effect

For the baseline survey the value of these parameters were assumed as,

$$p= 0.5$$

$$q= 0.5$$

$$z= 1.96 \text{ (at 95\% confidence level)}$$

$$e= 0.05$$

$$de= 1.25$$

Putting the values of the parameters into the formula shows that an optimum sample size for each eco-zone stood at approximately 480 households (HHs).

$$n = (0.5) \cdot (0.5) \cdot (1.96/0.05)^2$$

$$2 \cdot (1.25) \approx 480$$

So, the target sample size for each eco-zone was set to be 500 HHs at minimum. However,

to make the sample distribution more consistent with the area and population under the survey under each zone, more weight was given to the coastal and flood-prone areas compared to the Drought-prone areas. Hence, the target sample sizes for the Coastal and Flood-prone areas were set to be 750 and 600 HHs, respectively. This resulted in a total of 1,850 HHs planned to be selected for survey.

Following this sampling plan a total of 1,851 HHs were interviewed. The distribution of the sample HHs interviewed is shown in Table 1.

Table 1: Survey Coverage and Sample Size

Study Area	No. of District	No. of Upazillas	No. of Upazillas	No. of Sample Villages	No. of Sample HHs
Coastal	5	5	10	20	750
Flood	3	3	6	12	601
Drought	2	2	4	8	500
Total	10	10	20	40	1851

### 3.4. FIELD STAFF RECRUITMENT AND TRAINING

A field team comprising of 40 members including 10 field supervisors were recruited to collect the field data/information under the study. However, smaller teams consisting of four members were deployed to conduct the study in each of the districts. It was ensured that at least one member of the field team was female.

A two-day long training programme was organized for the field investigators in Dhaka during 16-17th September 2012. The training was conducted by the team leader and experts of the study team to explain the objectives and

field research methodologies including surveys, interviews and FGDs. The survey questionnaires, checklists and related issues for FGDs were discussed in detail during the training. The field investigators were encouraged to take proactive roles and ask questions for a clear understanding of their tasks. The experts explained all the issues, and all questions that were raised by the field staff during the training were answered. The field staff also participated in role-plays on field data collection methods which were carefully observed by the participants. The training exercise was especially fruitful in gathering field data/information by the field staff. The supervisors were trained separately to ensure the quality of data collection.

### 3.5. PILOT TEST OF DATA COLLECTION TOOLS

A two day long training was conducted for 25 field staff prior to pilot testing. The area of pilot testing was Taota Union under Shibalaya Upazilla, Manikgonj District. This was selected for the pilot test as BRAC (one of the implementing partners of the project) runs a program in this area and assisted in facilitating the logistics for the field process. A total of 6 groups (4 field enumerators in each group) under a group leader conducted the household surveys. For selection of respondents, team leaders discussed with the local people and followed the national level poverty guideline to identify the possible ultra-poor and poor respondents. A change in the final questionnaire was brought after the pilot test with the lessons learnt from the field.

### 3.6. FIELD DATA COLLECTION

Household surveys were carried out by interviewing teams and the enumerators and facilitators were supervised and monitored by the senior researchers for quality assurance.

FGDs and in-depth interviews were conducted to collect qualitative data/information from the study communities. The check lists for FGDs and in-depth interviews were developed by the BCAS research team. The FGD participants include vulnerable female groups, mixed groups i.e. both male and female and local government representatives. Forty FGDs and forty in-depth interviews were conducted in different unions of the study area to collect qualitative data and information. The detailed coverage of FGDs and in-depth interviews are presented in Table 2.

Table 2: Detailed Coverage of FGDs and In-depth interviews

Study Area	No. of District	FGD	In-depth Inter-view
Coastal	5	4x5 =20	4x5 =20
Flood	3	4x3 =12	4x3 =12
Drought	2	4x2 =8	4x2 =8
Total	10	40	40

### 3.7. ENSURING QUALITY OF DATA

To maintain the data quality, the following actions were taken:

- The district supervisor went through the data and asked the field investigators to go back to the households for clarification, when and if needed.
- The supervisor visited a few households to cross-check the data collected by the investigators.
- When the data arrived at BCAS headquarters, it was checked by an editing team.

### 3.8. DATA PROCESSING

All the field notes and tape recorded information were transcribed by the research assistants in Bangla to ensure quality, avoiding any misinterpretation. In the analytical process and main thematic areas, the check list was followed. Themes were identified for content analysis and coding transcripts into sub-themes. Finally, the coded transcripts were transformed into

information and categorized. This procedure was adopted for ensuring consistency, minimizing errors and omissions and cultural interpretation differences. All data was coded manually. The interpretation of data was conducted based on a combination of coding summaries, contextual field notes, and descriptions provided by direct quotes from participants.

Survey data was inputted using MS Access package program. The entered data was checked through logical and range checks. A number of tests were developed for checking the internal consistency and quality of the data.

### 3.9. DATA ANALYSIS

Different types of tables were constructed for analysis, including frequency tables, one-way tables, two-way tables and cross-tables. Some data is represented graphically through bar-diagrams and pi-charts. Analysis is through simple mean and percentages for the relevant variables. Tables were generated using Statistical Package for Social Science 15.0.





4.

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## FINDINGS OF THE STUDY CONDUCTED IN THREE CLIMATE PRONE AREAS (COASTAL, FLOOD AND DROUGHT PRONE AREAS)

### 4.1. KEY ISSUES AND INDICATORS OF THE BASELINE STUDY

The situation of women's vulnerabilities affected by climate change in coastal, drought and flood-prone

areas in Bangladesh and viable livelihood options were assessed through some key issues and indicators which are presented in Table 3 and analyzed in the next sections accordingly.

Table 3: Key issues and indicators of the baseline study

	Indicators	Coastal	Drought	Flood	Total
Household Demography	No. of households	750	500	601	1851
	Total male members	1687	1004	1453	4144
	Total female members	1721	954	1375	4050
	Total population	3408	1958	2828	8194
	Average household size	4.54	3.94	4.71	4.43
	Average earning members	1.81	1.91	1.8	1.84
Household Income	Male headed HH income in BDT	77,741	70,197	77,835	75,673
	Female headed HH income in BDT	52,577	35,339	46,037	46,985
	Household annual income in BDT	73,569	66,409	74,189	71,833
	Annual HH income from agricultural sector (%)	32.91	65.44	27.16	39.12
	Annual HH income from wage labour (%)	27.46	13.48	29.88	24.77
	Annual HH income from business sector (%)	18.60	12.93	16.63	16.52
	Annual HH income from service sector (%)	11.13	1.64	8.03	7.72
	Annual HH income from other sector (%)	9.90	6.51	18.30	11.86
Household Expenditure	Monthly expenditure for Food (%)	59.27	65.83	64.02	62.25
	Monthly expenditure for health (%)	4.86	4.60	5.54	5.02
	Monthly expenditure for education (%)	7.76	6.33	7.09	7.23
	Monthly expenditure for dress purchase (%)	4.34	4.72	4.35	4.43
	Monthly expenditure for social & religious festival (%)	2.83	2.52	2.74	2.73
	Monthly expenditure for house repair & maintenance (%)	3.72	2.47	2.60	3.08
	Monthly expenditure for others (%)	17.21	13.53	13.66	15.26
Sanitation practices	Usage of safe latrine (No.of HH in %)	29.2	28.2	26	27.9
	Usage of unsafe latrine (No.of HH in %)	65.9	56.1	70.8	64.9
	No latrine at all (No.of HH in %)	4.9	15.7	3.2	7.2

	Indicators	Coastal	Drought	Flood	Total
Land ownership in decimal	Homestead land	14.48	8.12	8.12	10.70
	Agricultural land	18.84	13.79	21.10	18.21
	Pond/ditch	7.76	0.46	0.47	3.42
	Fallow Land	2.51	0.12	0.35	1.16
	Others	0.55	0.01	0.19	0.29
	Total land ownership	44.14	22.50	30.23	33.78
Access to drinking water (HH in %)	Access to deep tube-well (shared)	46.53	32.80	64.23	48.6
	Access to shallow tube-well	14.53	68.00	35.27	41.1
	Access to surface water	39.90	1.40	1.99	17.2
	Access to rain water harvest	21.33	0.00	0.50	8.8
Domestic water usage (HH in %)	Access to ground water	34.13	88	50.25	53.9
	Access to river and pond water	78	95.6	63.89	78.17
	Access to other sources	16.27	3	10.82	10.91
Educational status	Illiterate members (%)	17.23	17.82	16.38	17.08
	Illiterate female members (%)	20.00	17.45	16.29	18.16
	Total members completed primary education (%)	13.87	13.45	13.91	13.79
	Female members completed primary education (%)	12.98	14.08	13.35	13.36
	Average year of schooling of HH head	2.64	2.37	2.42	2.49
Household asset	Movable asset in BDT	33,308	23469	40104	33769
	Immovable asset in BDT	261,307	193887	162748	216955
	Total household asset value in BDT	294,615	217356	202852	250724
Electrification facility	Household having electrification facilities (%)	33.47	44.65	38.61	38.19
	Electricity from Power grid	41.48	99.52	40.37	59.67
	Electricity from Solar Home System	58.08	0.48	21.56	27.55
	Electricity from other sources	0.44	0.00	38.07	12.79
Knowledge & awareness	Awareness about social safety	81.82	90.78	90.83	87.17
	Knowledge about climate change	86.06	86.14	96.49	89.47
Women access to market	Women themselves	37.08	43.26	31.89	37.83
	Through male family members	58.37	51.81	71.76	59.73
	Through relatives	15.07	11.14	2.66	10.32
	Through a middle man	22.01	33.42	15.28	24.16
	Others	0.72	1.04	0.66	0.81

	Indicators	Coastal	Drought	Flood	Total
Capacity building of women	Females involved in household IGA and livelihoods	63.71	87.00	60.97	69.15
	IGA training received by female members	24.45	5.42	8.49	14.05
	Demanded non-traditional/technical training	25.44	28.97	18.06	23.99
Climate change impact on Education (HH responses in %)	Education of children affected in the last 5 years	44.55	31.26	37.80	38.76
	Damage to Educational infrastructure	48.34	9.62	41.36	37.62
	Increase in drop out of school children	28.70	16.03	10.45	20.23
	Damage to school communication systems	63.44	72.44	75.91	69.31
	Other education related damages	4.53	14.74	5.00	6.93
Problems facing due to climatic disaster (HH responses in %)	Social insecurity	87.32	38.80	73.04	69.57
	Domestic violence	37.65	41.00	35.77	37.95
	Increased work load	71.56	67.40	56.24	65.46
	Increased school drop out	28.04	8.60	6.66	15.84
	Restriction of mobility	82.11	17.80	66.72	59.73
	Water and sanitation	94.66	99.20	97.17	96.70
	Health care problems	86.25	79.40	87.35	84.76
	Others	1.20	0	0.17	0.54
Women vulnerability due to climate change	Assets or sources of income affected by climate disaster	96.00	97.31	97.37	97.17
	Are women and men disproportionately affected during disaster?				93
Severe damage by climate disasters	HH physical structures	80.13	33.00	77.54	66.56
	Poultry and livestock	59.33	35.20	34.44	44.73
	Trees	61.07	20.40	45.09	44.89
	Agricultural crops	19.20	22.40	20.13	20.37

	Indicators	In %
Role of women in decision making	Food related (Meal preparation, distribution etc.)	86.78
	Meet up food deficit	33.58
	Selling assets (land, house, livestock, seeds)	9.40
	Selling agricultural production (crops, seeds)	6.88
	Buying household assets (livestock, ornament, trees..)	11.10
	Buying agricultural production (crops, seeds etc.)	7.35
	Receive credit from mohajon/relatives/bank/NGO/GO	14.50
	Agricultural work (crop cultivation, land mortgage etc)	5.84
	Household work (Collection of Water, Collection of natural resource etc.)	47.91
	Household decision making (Engage in new income generating activity, Conceiving a baby, Using savings, ownership of VGD/ VG	11.59
	Female and children healthcare decision making	16.32
	Decision making about communication (Female going outside the homestead, going for work, education for children)	11.06
	Decision making on disaster preparedness/coping/adaptation (Going to a shelter, Engaging in alternative livelihood activity	11.48
	Other	14.29



## 4.2. HOUSEHOLD PROFILES INCLUDING SOCIO-DEMOGRAPHIC CHARACTERISTICS, INCOME, EXPENDITURE, ASSETS, HEALTH, EDUCATION AND AWARENESS LEVEL, ACCESS TO ESSENTIAL SERVICES:

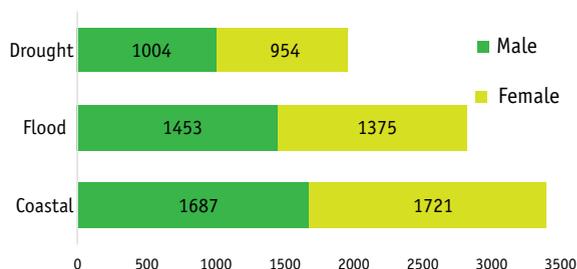
### 4.2.1. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE STUDY POPULATION

The study zone is located in a multi hazard-prone area where human–nature interaction is highly significant. The people living in the coastal, flood and drought prone environments have a distinct style of rural life. This distinction is noticeable because of the tough and uncertain life they lead and the high risks involved in residing in the continuously multi-hazard-prone areas in Bangladesh.

### 4.2.2. DEMOGRAPHIC INFORMATION

The profile households give information about the demographic status of climate vulnerable households. The results from the household survey have been categorized into coastal, flood and drought prone areas and look specifically at demography, education, age, household size and labor force of the surveyed households. At the time of the socioeconomic survey, a total of 8194 members were found in 1851 households in three climate vulnerable zones in Bangladesh, with 4144 males and 4050 female. The overall sex ratio of the study area was 102.3 males per 100 females in 2012; the Bangladesh national sex ratio is 100.3 males per 100 females (BBS, 2012).

Figure 4: Household members in the study areas



Among the surveyed households, 750 households having 3408 members were from coastal areas, 500 households having 1958 members from drought-prone areas and 601 households having 2828 members from flood-prone areas. Table 4 presents some relationships between demography and household annual incomes. The overall mean household size was 4.43 persons while the national household size was 4.4 (BBS 2012). The mean household size in coastal areas was 4.54 persons, in drought-prone areas was 3.91 and flood-prone areas was 4.70 persons. Compared to other study areas the years of schooling of the household head (2.37 classes) and the annual household income (66,409 BDT) was the lowest in the drought-prone area though the average household earning of members (1.9 persons) was quite good.

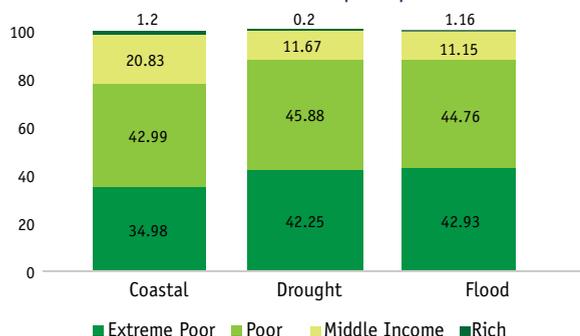
Table 4: Average Household Annual Income with Demographic Information

Types of the Study area	Average household size	Average earning members	Average HH head year of schooling	Household annual income in BDT
Coastal	4.54	1.81	2.64	73,569
Drought	3.94	1.91	2.37	66,409
Flood	4.71	1.80	2.42	74,189
Overall	4.43	1.84	2.49	71,833

### 4.2.3. TYPES OF HOUSEHOLDS

To get a comprehensive idea of the different household groups and their characteristics, all surveyed households were classified according to their own perception based on household assets that supported their livelihood. In the study areas, the households were classified into four categories: extreme poor, poor, middle, and rich groups. The overall situation of the different types of households in the study areas are presented in Figure 5.

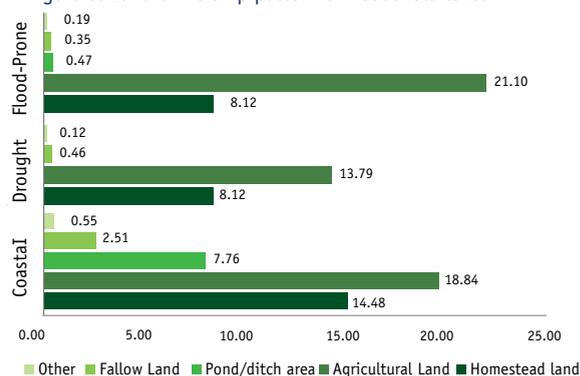
Figure 5: Economic status of HHs in the study area based on their own perception



### 4.2.4. HOUSEHOLD LAND OWNERSHIP

Figure 6 presents the holding status of the homestead area, farmland, ponds/ditches and fallow land in the study villages. The overall homestead land was 10.7 decimal, agricultural lands were 18.2 decimal, pond/ditch area was 3.4 decimal and fallow lands area was 1.16 decimals in the study area. Among the three types of study zones, the lowest homestead area (8.12 decimal) was found in the drought and flood-prone zone, the lowest agricultural land (13.8 decimal) was found in the coastal area and the lowest pond or ditch area (less than 1 decimal) was also found in the drought and flood-prone areas.

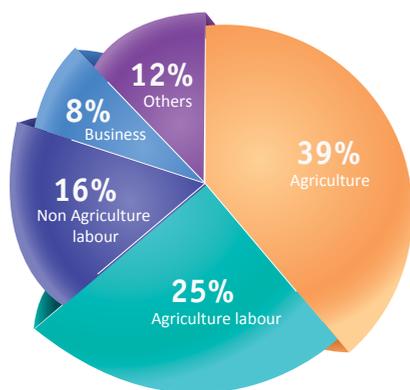
Figure 6: Land ownership pattern of household level



### 4.2.5. HOUSEHOLD INCOME DISTRIBUTION

One of the most important determinants of livelihood in a society is a household’s annual income. The average household income in climate vulnerable areas is 71,833 BDT. About 39 percent of household annual income was earned by the

Figure 7: Sources of household annual income  
Sectorwise sources of household income

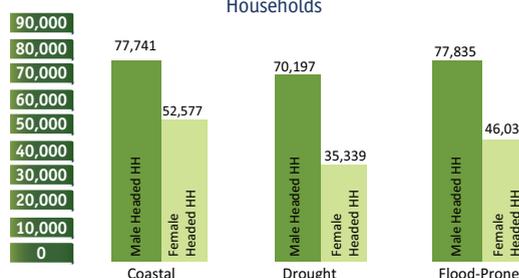


agricultural sector, 25 percent from agricultural-labour sources, 16 percent from non-agricultural-labor sources and 8 percent from businesses in the overall study area (Figure 7). Due to inadequate farmland, and natural hazards, the rural households depend on multiple sources of income including wage labour according to the seasonality and their ability. The major sources of household incomes are agriculture, livestock rearing, fishing, services, small trading, petty business, foreign remittance, farm and non-farm wage labor, which was identified during the FGDs and in-depth interviews.

Rural income-generating activities include post-harvest activities, cow fattening and milking, goat farming, backyard poultry rearing, pisciculture, agriculture, horticulture,

food processing, cane and bamboo work, silk reeling, handloom, garment making, fishnet and coir production and other handicrafts. A good number of rural women are also involved in rural construction work.

Figure 8: Average Households income by Male and Female headed Households



The study also revealed that the female headed household income was lower than the male headed household incomes in every climate vulnerable zone. In the drought-prone areas, the male headed household income was 70,197 BDT whereas the female headed annual household income was 35,339 BDT which is almost half of male headed household income (Figure 8).

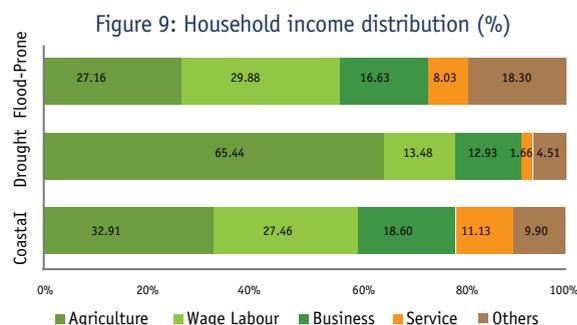


Figure 9 presents the sources of household annual income of coastal, drought and flood-prone zones. The highest annual income was enjoyed by households of coastal area (74,189 BDT) and the lowest income by drought-prone area (66,409 BDT). The lowest income from the agricultural sector was observed in flood-prone

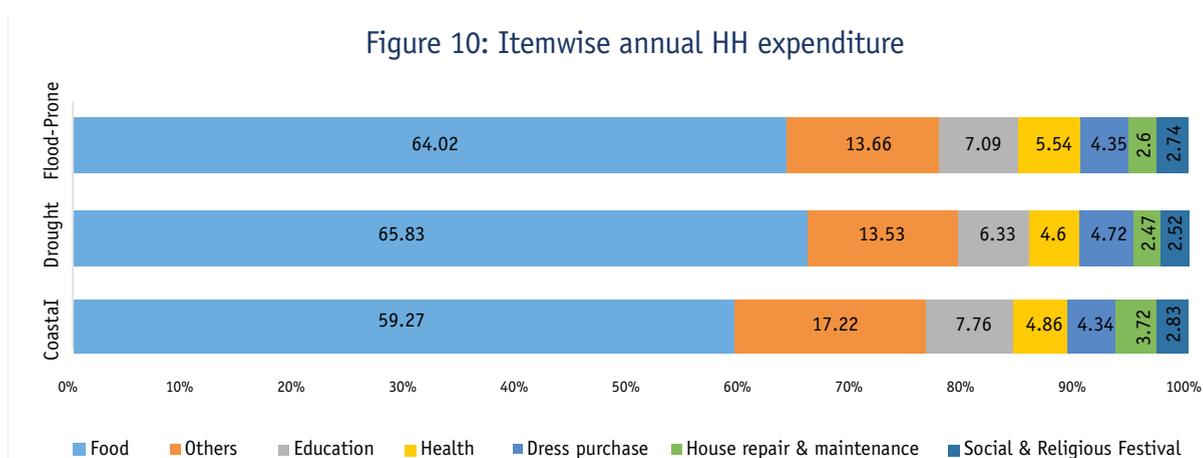
areas (27.20 percent) due to monsoon flooding and long inundation periods. The highest income from agricultural production was observed in drought-prone areas (65.61), because they can utilize their agricultural land all the year round, and also because the risk of drought ensures that no land is left fallow.

The sources of household income that are available in the study areas can be divided into five types: agricultural production, agricultural labour, non-agricultural labour, business and others. In the case of business, the main household labour forces were usually involved in this activity and the rest of the family members were involved in livestock rearing and fishing. Two types of business groups were observed. The first group conducted business throughout the year at the local village markets or in the urban vegetable and fish markets and the second group migrated from the village during the monsoon season for a few months when they had no income in the village and engaged in petty business, selling plastic toys, vegetables, etc. in different place.

#### 4.2.6. HOUSEHOLD EXPENDITURE

This section has analyzed the monthly household expenditure in the study areas. The item-wise expenditure for different climate vulnerable zones has revealed that the households from flood and drought vulnerable areas spend higher for food consumption. Figure 10 presents the item-wise monthly household expenditure of the study area where 64.02 percent of the monthly budget of a rural household is used for food, 4.6 percent for health, 6.33 percent for education in the study households of flood-prone areas which is the most economic risk-prone zone among the study areas. The coastal households are paying the highest cost (3.72 percent of monthly income) amongst the areas for house repairs and maintenance due to cyclone and storm-surge hazards in the coastal areas. Fuel oil purchase, clothing for family members, communication costs are classified as 'other' expenditures.

Health costs are considerably higher (at 5.54 percent of monthly income) in the flood-prone areas due to an increased occurrence of water borne diseases caused by prolonged inundation from floods.



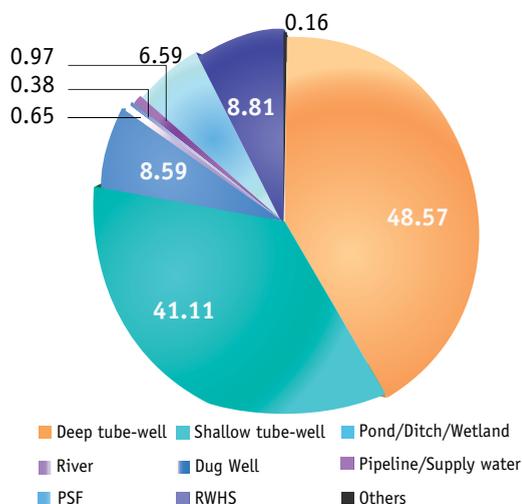
### 4.3.ACCESS TO KEY BASIC SERVICES

#### 4.3.1. USAGE OF WATER

Hand tube-wells provide the largest source of drinking water in the study area. Severe flood causes the houses to go under water with hand tube-wells and other safe water sources becoming submerged; as a result, the dwellers of flood-prone areas face an acute scarcity of drinking water. Shallow tube-wells are also vulnerable to salinity and arsenic contamination.

In normal situations, nearly 49 percent of the households in the study villages used deep tube-wells and 41 percent used shallow tube well as sources of drinking water, which are safe and hygienic. The households not having their own tube-wells mentioned financial problems as the predominant reason for their inability to install tube-wells. Those who did not have tube well faced difficulties in clean well water supply, though they brought it from other places. 64 percent of flood prone households are using deep tube wells for drinking purposes which was the highest percentage.

Figure 11: Sources of drinking water (HH in %)



Very few respondents from coastal zone (8.8 percent) preserve rain water to use for drinking (Figure 11). Different sources of drinking water in three study zones have presented in Table 5.

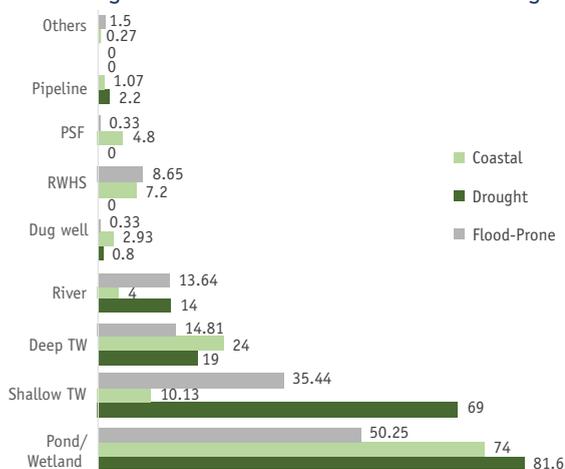
Table 5: Sources of drinking water in three study zones

Sources of drinking water	Zone						Total	
	Coastal		Drought		Flood Prone		HHs	%
	HHs	%	HHs	%	HHs	%		
Deep tube-well	349	46.53	164	32.80	386	64.23	899	48.57
Shallow tube-well	109	14.53	440	68.00	212	35.27	761	41.11
Pond/Ditch/Wetland	147	19.60	2	0.40	10	1.66	159	8.59
River	10	1.33	0	0.00	2	0.33	12	0.65
Dug well	7	0.93	0	0.00	0	0.00	7	0.38
Pipe line/Supply water	13	1.73	5	1.00	0	0.00	18	0.97
PSF	122	16.27	0	0.00	0	0.00	122	6.59
RWHS	160	21.33	0	0.00	3	0.50	163	8.81
Others	3	0.40	0	0.00	0	0.00	3	0.16

Water from open sources such as rivers, ponds or ditches were the major alternatives to tube well water used for different purposes by household, as mentioned by the respondents. In the dry season (winter), some village ponds dry up. The villagers then turn to river water as source for their water requirements. It is predominantly used for bathing, washing utensils, cleaning after defecation and cooking in the study areas. For household purposes (washing, cooking, cleaning etc.) 81.6 percent households were still using pond and ditch water in drought areas which is risky to health and hygiene since stagnant water

can very often be pools for pathogens spreading water borne diseases (Figure 12).

Figure 12: Sources of domestic water usage

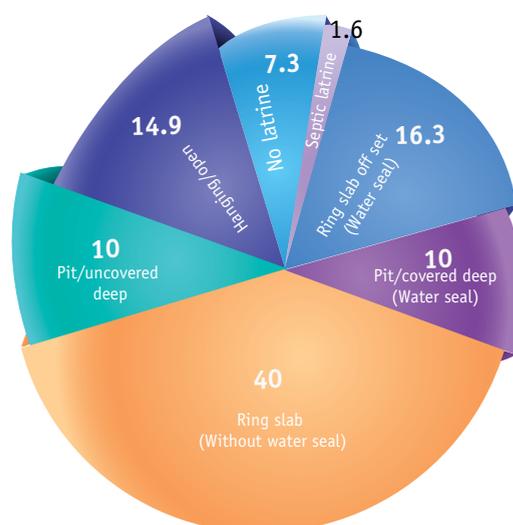


According to the FGDs and in-depth interviews conducted in the study areas, the communities sometimes raise the tube well heights during floods thus having to purchase extra pipes and the necessary tools. Most of the households lack the financial and technical capacity to raise the tube-well heads during floods, so they then collect drinking water from other houses which have raised tube wells. In coastal areas, storm surges affect the regions frequently and suddenly and mostly they do not get adequate time to reserve water and sudden storm attacks can wash away all their belongings including water jars and cooking utensils. Such events can force people to drink unsafe water and often they become sick from water borne diseases. Focus group discussions and interviews informed that at these times women were most vulnerable and needed to spend extra labour, time and attention towards caring for their family members and to collect pure drinking water from distant places. These data sources also informed that women did not use tube well water for cooking because the iron that is present in tube well water can turn curry and rice black in color.

### 4.3.2. ACCESS TO SANITATION FACILITIES

Water supply and sanitation facilities are always vulnerable to natural hazards. The study areas in question are vulnerable to cyclones, tidal surges, salinity intrusion, floods, riverbank erosion, droughts etc. In these rural households, the toilet is usually located in a corner below the level of the homestead. Hence, during a flood, the toilet gets submerged. As the water level rises during the flood, toilets become more exposed. According to Figure 13, the people of study area suffer a great deal due to lack of safe latrine facilities. Among the types of latrines, septic latrines, ring slab off set (water seal) and pit/covered water seals are considered to be safe latrine facilities. The survey revealed that only 28 percent households were using safe latrine facilities. Though a large number of households (40 percent) were using ring-slab latrines, they were not offset and water sealed and that poses the main concern for water safety net. About 14.9 percent households were using hanging latrines and 7.3 percent households had no latrines at all.

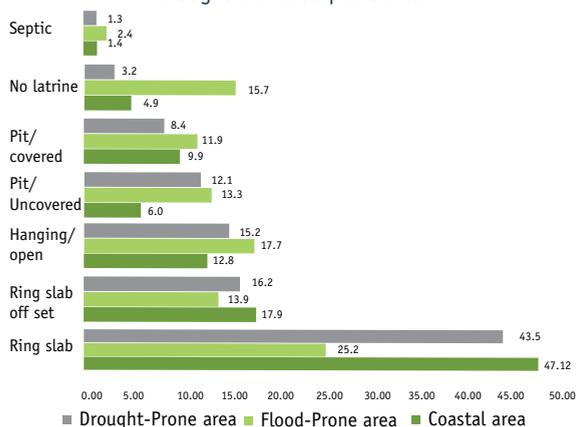
Figure 13: Overall sanitation practices in the study area



The findings from FGDs and interviews with knowledgeable people of the study areas indicate that sanitary systems mostly collapse during natural disasters such as floods, storms and river bank erosion. When toilets are submerged during floods or storms, the male members usually go to concealed places along embankments or road sides, behind a tree or near the river. Yet this is extremely difficult for a woman, especially if she is pregnant or elderly, due to physical, cultural and religious constraints. Sometimes the women are left with no choice but to defecate in the water or inside their house sheds.

Figure 14 presents the actual scenario of sanitation practices followed by the surveyed households in coastal, flood and drought-prone areas in Bangladesh. According to Figure 14, the people of flood-prone areas suffer a great deal due to the low-quality open toilets and 15.7 percent of households had no latrine at all.

Figure 14: Different type of sanitation practices in coastal, drought and flood-prone area



### 4.3.3. FUEL COLLECTION AND COOKING

A woman's main role is considered to be doing household chores like gathering fire wood and

cooking meals for the family. According to the FGDs and in-depth interviews, the communities were used to confronting crisis on a daily basis since disasters like floods and storms occurred frequently. Thus houses went under water regularly, but women still needed to cook and look after their families. They clearly mentioned during the discussion that they fully depend on chopped wood, dry branches of trees, jute stick, dry cow dung and straw as fuel for cooking. However, during disasters it becomes very difficult to collect these items due to inaccessibility and sometimes unavailability. That is why some of the women store fire wood in the ceiling of houses. However, most of the dwellings do not have enough space or extra room to store fuel for up to 4-5 months in preparation for monsoon or floods. As a result the women suffer due to this fuel crisis during these periods of disaster. Also during floods and storm surges, the cooking place or kitchen can get submerged or damaged, then temporary platforms made of bamboo, rope and wood and Chouki (sleeping cot made of wood) are used as cooking places in the flood-prone areas. Sometimes the women cook food on boats using corrugated iron sheets and portable earthen ovens. They cook food once a day and eat it three times as their meals as they have no way to preserve the food for more than 12 hours in temperatures ranging from around 30-40°C .

### 4.3.4. ACCESS TO EDUCATION

The levels of education of the male and female members of households is presented in Figure 15. The comparison graph shows that the levels of male and female education are almost the same though both categories need to improve a lot. Though 35.27 percent females completed

primary education, only 2.57 percent actually completed their SSC/Dakhil education level. More than 18 percent females have no education at all.

Figure 15: Comparison between male and female education in the study area

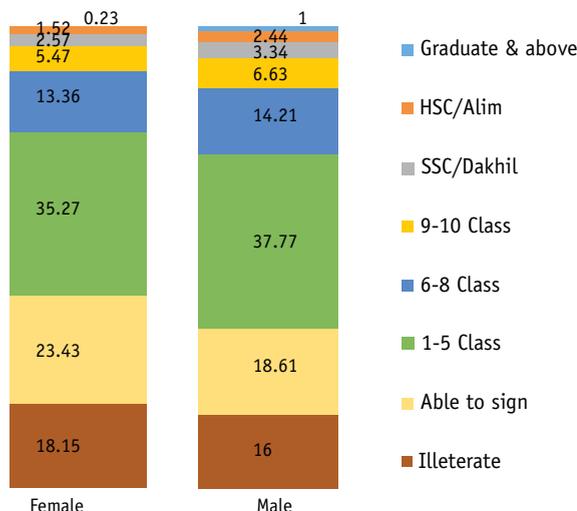
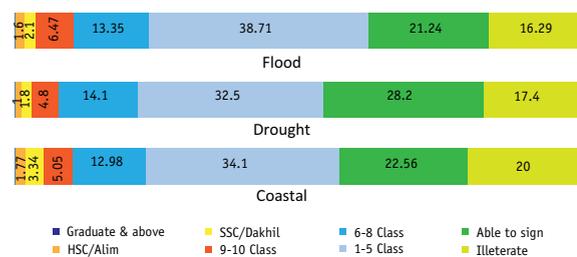


Figure 16 presents the female education status of the three study areas in Bangladesh. The study reveals that compared to other areas, the primary enrolment in flood-prone areas is quite good (38.71 percent).

Figure 16: Female education status of three study zones



After the primary education level though, dropout rates are quite high in all the study sites. Due to the lack of infrastructure, it is difficult to reach the nearest educational institutions. During the monsoon seasons, children cannot go to school for three to five months in flood-prone areas due to the roads and paths becoming too muddy or inundated. The classroom facilities and types of schools also differ from place to place.

### 4.3.5. ELECTRIFICATION FACILITIES

The electrification facilities are very poor in the climate vulnerable study areas. The majority of the areas have no electricity at all, with an overall of only 38 percent households with access to electricity. Among the three study areas, electrification facilities are the poorest (33 percent) in flood prone areas (Figure 17).

Figure 17: Electrification facilities

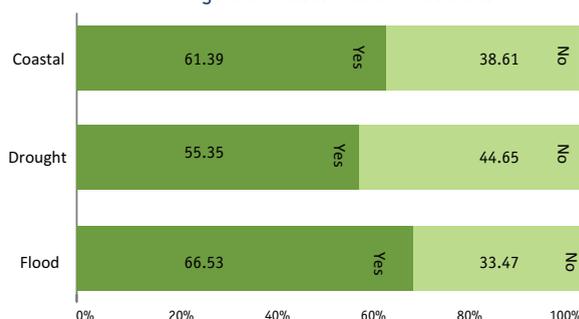
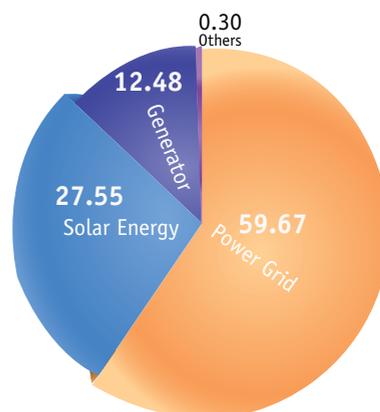


Figure 18 presents different sources of electricity in the study areas. As there is no electrification facility in many households, kerosene lanterns (hurricane lamps) are the only source of lighting but paraffin is also used.

Figure 18: Sources of power for electrification



However, the costs of using such sources for household lighting can be a burden and usually adds to the expenses. Recently, an NGO (Grameen Shakti) introduced Solar Home Systems (SHSs) to provide solar

electricity for homes and shops to charge cellular phones and run televisions, radios and cassette players. SHS technology is suitable for remote areas that have no access to conventional electricity and has made expenses more bearable, though the initial installment costs of these systems can be quite high.

Amongst the 38 percent of households who are getting electrification facilities, 27.55 percent of these households are using SHSs, which increased their household working hours and the study hours for students. Still, access to SHSs is limited for low-income rural peoples in the study areas. It was one of the major discussion points from the study communities during FGDs and interviews that SHSs have become increasingly popular among char-dwellers because they present a better alternative to conventional electricity, with no monthly bills, no fuel cost, very little repair and maintenance costs and are easy to install.

#### 4.3.6. DISEASES AND HEALTH-CARE SERVICES

Many households of the study areas are vulnerable to diseases and sickness. Low-quality living environments, poor communication systems and housing conditions mean that they are more exposed to the elements of nature. Flood water is responsible for water-borne and other diseases such as diarrhea, dysentery, fever, jaundice, eye infections, and skin infections. The major causes of poor health-care service for rural women are the inability to afford treatment due to unemployment and low income, absence of physicians, and communication difficulties. Due to a lack of awareness and access opportunities

most of the households do not store any type of emergency medicine, not even saline, in the coastal and flood-prone areas.

The study finds that the average frequency of female members getting infected by different diseases is higher than the male members per household, with the exception of kidney diseases with calculations of 3.39 times for female members and 4.78 times per male members per household. The male and female gap is the highest in the cases of respiratory problems where the frequency of females is more than double that of males.

Table 6: Average Frequency of Diseases Per Households in the Last One Year

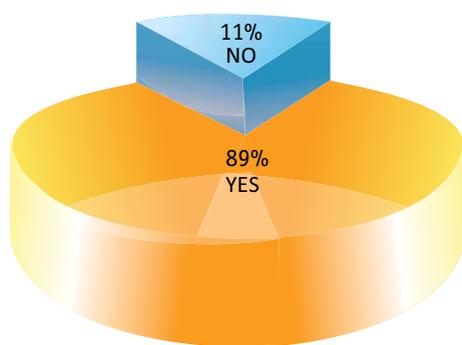
Disease	Male	Female
Diarrhoea	1.63	1.90
Cholera	1.21	1.80
Dysentery	2.98	3.21
Jaundice	1.26	1.51
Skin disease	2.69	2.80
Typhoid	1.28	1.41
Respiratory problem	1.48	3.58
Fever/Cold-cough	2.38	2.45
Malaria	0.83	1.43
Kidney Diseases	4.78	3.39

The FGD findings also revealed that most of the women were more affected from different types of diseases than men. They were affected by pregnancy related problems, menstrual problems, problems related to the ovum, breast pain, and abdominal pain. However, in spite of these problems and sickness, they were continuing their daily livelihood activities since regardless of disease and sickness they have no option to avoid their duties and responsibilities.

#### 4.4. KNOWLEDGE AND UNDERSTANDING OF THE RESPONDENTS ON CLIMATE CHANGE

A significant percent of the respondents have a level of understanding on climate change and related issues. The study finds that 89% of total respondents have some sort of knowledge on the issue (Figure 19)

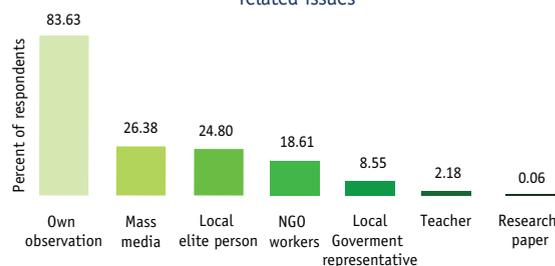
Figure 19: Knowledge of the respondents on climate change



Multiple responses have been recorded as an answer to the question regarding the sources of their knowledge on climate change issues. The

study finds that more than 80% respondents can understand climate change based on their personal observations and experience. However, more than 26% amongst them got the knowledge from mass media. A significant percent of respondents stated that they received knowledge related to climate change/seasonal variation from local elite (24.8%) and NGO workers (18.6%). The following figure (Figure 20) shows the findings.

Figure 20: Sources of learning about climate change related issues



During FGDs and interviews, it was clear that male participants have a better understanding than women on climate change and related issues in the study areas. This may be because of better access to education, training, and social networking.



## RECOMMENDATION

Women's knowledge on DRR/climate change issues should be increased through specific women focused training and information, education and communication materials.

## SUMMARY OF DATA

There is a need to have different strategies for the three zones when it comes to designing projects and each of these will have gender implications. The drought prone areas are the poorest with the least income for men and women, especially women headed households, they also have the highest reliance on the agricultural sector and following this the greatest damage to crops from climatic impacts. People in this area have the least wage labour and labour from business and the service sector, providing them with very little diversification, thus when disasters strike, there is little resilience. In keeping with the statistics for poverty, they spend the most on food as a percentage of their income and the least for education and house repair/maintenance. They have the least land ownership and access to deep tube wells. In terms of income generating activities (IGA) they have the least training and greatest demand, and the highest reported increase in domestic violence from climate change.

The needs for women in drought areas focus on a need for increased reliance in livelihoods with a diversification of incomes and greater access to services. The coastal areas on the other hand have the least access to electricity and the highest damage to dwellings- both household and school. The greatest damage is often to the poultry and livestock and this entails an

increase in workload for women. Interestingly the respondents in this area claimed to have the lowest level of awareness of climate change, thus the need for coastal intervention to focus on preparedness planning and post disaster recovery strategies to lessen the impact of more frequent and damaging disasters.

Lastly the flood prone areas had the least access to safe toilets and consequently the greatest health care problems. They also suffered the lowest education and had the least assets. Gender specific responses for each of these factors will be discussed in the next section.

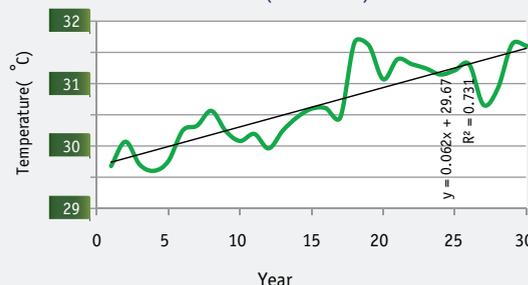
“When it comes to designing projects, keeping in mind gender implications; different strategies should carry out for drought prone areas, coastal areas and flood prone areas. The drought prone areas are the poorest with the least income for men and women, especially women headed households, they also have the highest reliance on the agricultural sector and following this the greatest damage to crops from climatic impacts. In coastal areas, greatest damage is often to the poultry and livestock and this entails an increase in workload for women. On the other hand, flood prone areas have the least access to safe toilets and consequently the greatest health care problems.”

## 4.5. CLIMATE CHANGE SCENARIO OF THE STUDY AREA: OVERVIEWS AND TRENDS ON KEY PRIMARY AND SECONDARY ELEMENTS

The available climatic data (temperature and rainfall) for the project districts over the period of 1981-2010 was collected from the Bangladesh Meteorological Department (BMD). BMD does not have stations to record meteorological data in all the districts of the country, so both temperature and rainfall data were analyzed (simple average) for some districts including Chapainawabganj (Rajshahi), Shariatpur (Madaripur) and Sunamganj (Sylhet) from the nearest available station (bracketed) to see the trend of the 30 years long-period. Table 7 shows the simple annual average maximum and minimum temperatures and total rainfall pattern over the period of 1981-2010 in the project districts. The trends of both temperature and rainfall show variations within and among the geo-hydrological areas.

It appears that the annual average maximum temperature in Patuakhali (central coast) has followed an increasing trend between 1981 and 2010, while annual average minimum temperature has shown a slightly declining trend. In Cox's Bazar, both the maximum and minimum temperatures have been on an increasing trend. The minimum temperature in Satkhira has shown increase although the maximum temperature is has generally declined. Regarding the rainfall pattern in the areas, both Patuakhali and Satkhira have been showing a declining trend while Cox's Bazar has shown a slightly increasing pattern.

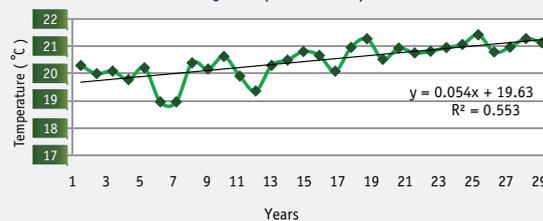
Figure 21: Trend of annual average maximum temperature in Cox's Bazar(1981-2010)



Source: BCAS Research team based on data from BMD

According to BMD data, the people of Shariatpur and Sunamganj have faced an increasing pattern in regards to both maximum and minimum temperatures. Both the districts also show declining trends in regards to annual rainfall.

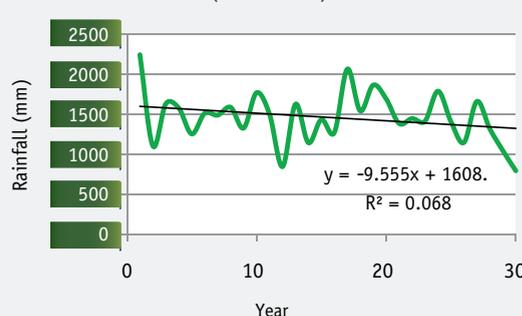
Figure 22: Trend of annual average minimum temperature in Sylhet (1981-2010)



Source: BCAS Research team based on data from BMD

In the drought prone areas, both maximum and minimum temperatures have shown an increasing trend while rainfall has shown a decreasing pattern.

Figure 23: Trend of total rainfall in Chapainawabganj (1981-2010)



Source: BCAS Research team based on data from BMD

The overall trend of maximum and minimum temperatures in most of the study areas seems to have increased while the annual rainfall pattern declined. The figures 21, 22 and 23 and table 7 show the graphs of these trends.

Table 7: Trends of annual average temperature (maximum and minimum) and total rainfall during 1981-2010 in different districts of the coastal zone, drought prone and flood prone areas.

SL	Geo-hydrological Area	Long-term trend of key Climate Change Element		
		Annual average Temperature (1981-2010)		Annual Rainfall (1981-2010)
		Max Temp	Mini Temp	
Coastal Zone				
1	Central Coast (Patuakhali)	Increasing	Decreasing	Decreasing
2	South East Coast (Cox's Bazar)	Increasing	Increasing	Slightly increasing
3	South West Coast (Satkhira)	Decreasing	Increasing	Slightly increasing
Flood Prone				
4	Shariatpur	Increasing	Increasing	Decreasing
5	Sunamganj	Increasing	Increasing	Decreasing
Drought Prone				
6	Chapaina wabganj	Increasing	Increasing	Decreasing

All the projects areas are more or less exposed to adverse impacts and vulnerabilities. The coastal zone is also more vulnerable to recurrent cyclones and storm surges. Most of the coastal districts have been affected by at least two super cyclones (wind speeds greater than 220 km/hour). Nineteen very severe cyclones (wind speeds of 119-220 km/hour) have also struck these areas within the last 40 years (Huq and Rabbani, 2012).

Islam (2004) states that many of the coastal districts including Patuakhali, Satkhira, Khulna, Cox's Bazar and Bagerhut, are also facing increased levels of salinity. At least 6000 ponds, on which the local communities, especially women, depend for small vegetable farming and domestic water requirements, were contaminated with saline water along the coastal zone in 2007 by Cyclone Sidr (Rabbani et al., 2010). A recent report shows that more than 1 million hectares of arable land is being affected by salinity intrusion caused by slow and rapid onset events (SRDI, 2010).

It may be safe to say that climate change and its associated hazards and impacts are not only affecting the livelihoods of the people of the coastal zone but that of the whole country. The lack of fresh water (caused by increasingly frequent droughts and salinity intrusion) for irrigation during pre-monsoon is already limiting the production of high yielding varieties of rice which accounts for up to 36 % of the total rice production (Ahmed & Roy, 2007). A recent estimation claims that the country may lose 0.2 Million tons of crops for saline intrusion in a moderate climate scenario but this may rise to be more than double in a severe climate scenario (Huq and Ayers, 2008).

Safe drinking water, proper sanitation and hygiene practices remain a challenge for many people especially in the coastal zones. Human health, especially of women may be severely affected (direct and indirect pathways) under these changing conditions. Not only are affected communities around the country suffering in their daily lives, with women and children bearing the brunt of the blow, but this

is a developing country facing huge economic stress from failures to meet required production amounts in terms of agricultural products and other amenities. It is perhaps justly stated thus, that climate change will affect all people in Bangladesh, whether that comes as a direct or indirect impact.

The coastal communities believe that the impacts of salinity intrusion and other climatic adversities will affect men and women differently. It may be mainly because of the level of exposure and different roles of men and women in the household activities. This is made clearer from separate statements made by affected men and women in another study conducted in Satkhira (Rabbani et al., 2012). Most men say “We are losing rice and vegetable production due to salinity intrusion on the agricultural fields which is directly affecting my income levels,” whilst most women say “We have to walk at least 1.5 Km everyday especially during pre-monsoon and winter season to collect water for drinking from the nearest pond/ PSF which have not yet been contaminated with salt water”. Most women also complained that sometimes it takes more time due to poor communication systems (affected by other climatic hazards like floods) which tends to affect domestic work and taking care of small children. Many women complained of waist-pain after carrying large amounts of water (16-20 litres) from long distances in adverse conditions. The situation becomes even more difficult when the women get sick, according to discussions in the FGDs. Moreover, concerns related to water borne diseases and security of women were also raised in the community discussions.

The north-western districts, including Chapainawabganj, usually face droughts every year during (March-May). Some of the coastal districts also sometimes suffer from drought problems. The severity of droughts may increase in future under changing climatic conditions.

The major floods in 1998, 2004, 2007 and 2010 have affected many of the districts of the country. The increased snow melt from the Himalayan permafrost due to rising temperatures may force more water down through the Ganges, Meghna, and Brahmaputra river systems in the future. This will almost inevitably result in increased inundation of the country’s flood plains (Rahman et al., 2007). The districts including Shariatpur, Sunamganj and Sirajganj have been affected by flood inundation many times. It is quite visible that the women and children are the most affected during flood situations. The incidences of waterborne diseases amongst women were much higher than men throughout these natural calamities (BCAS, 2004).





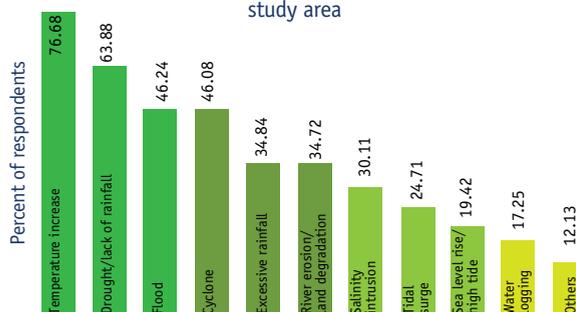
## 4.6. IMPACTS OF CLIMATE CHANGE AT HOUSEHOLD LEVEL IN THE STUDY AREAS

Climate change has multifaceted impacts on the households in the study areas. This section takes the information from the first section and analyses it further and relates it specifically to the project site areas to elicit some key findings applicable to gender and women specifically and DRR/climate change issues. The information is based on the research findings of the teams from the study areas.

### 4.6.1. THE EXPOSURE OF HOUSEHOLDS TO VARIOUS CLIMATIC HAZARDS

The study findings show that each of the study areas is exposed to multiple climatic hazards. Based on the frequency of the responses, the exposure has been categorized from high, to moderate and low. According to this categorization, the coastal area is the most highly exposed to four different hazards: extreme temperatures, cyclones, salinity and tidal surges. On the other hand, both drought and flood prone areas are highly exposed to two different hazards each. Drought prone areas are mostly exposed to drought (lack of adequate rainfall) and extreme temperatures; whilst flood prone areas are mostly exposed to floods and extreme temperatures. Following Table 8 shows the exposure category of households to different hazards by zone and Figure 24 shows the exposure of households to different climatic hazards in the overall study areas.

Figure 24: Exposure of households to climate hazards in the study area



Temperature rise appears to be the strongest and recurring adversity from the impacts of climate change. Although other hazards have also had measurable impacts on the lives and livelihoods of people in the study areas (including salinity and river and land erosion) a total of 76.7% of respondents, irrespective of eco-zone, consider temperature rise as the major climatic hazard they experience, followed by drought/lack of rainfall (63.9%) and cyclones (46.8%).

Table 8: The exposure category of households to different climatic hazards by zone

Hazards	Coastal			Drought			Flood		
	L	M	H	L	M	H	L	M	H
Flood		✓							✓
Cyclone			✓						
Salinity			✓						
Tidal Surge			✓						
Drought/Lack of rainfall		✓				✓			✓
Excessive rainfall									✓
Erosion	✓			✓					✓
Water logging	✓								
Extreme Temperature			✓			✓			✓

L= below 40%, M=40%-59%, H=60% and above based on frequency of households responses

### 4.6.2. IMPACT OF CLIMATIC HAZARDS ON HOUSEHOLD'S PROPERTIES

The study identified some of the sectors which are exposed to deadly impacts of different hazards resulting from climate change. Multiple responses were received regarding the experiences of the households in terms of the loss and damage of their properties. The most widespread damage experienced by most of the households is that of impairment to structures and frameworks of their homes and other setups. The study found that more than 60% of the households interviewed suffered from the same problem. More than 40% of respondents also said they bore the loss of livestock/poultry and trees.

Figure 25: Overall loss and damage of households' property

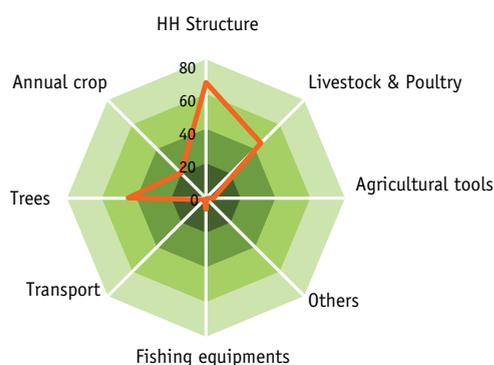


Figure 25 indicates the overall loss and damage to households' properties. Similar findings were accumulated during FGDs and in-depth interviews. Usually, it is the women who have to deal with the large task of maintenance of housing structures, home gardening and rearing the poultry and livestock in the households in rural areas. So the adverse effects of climatic hazards are deeply felt by the women of the households. Some women in the flood prone areas specifically mentioned during the FGDs

that the damage to livestock is what really affects their alternate income sources at the household level.

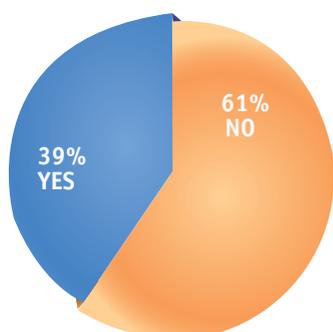
## RECOMMENDATION

Gender issues need to be addressed in issues of loss and damage as the perceptions of loss and damage are different from women to men. There is also an additional burden on women from loss and damage as women are especially vulnerable to housing and livestock loss and damage. Pre disaster and capacity building training need to address safety issues to protect housing and livestock and disaster management and recovery needs to liaise with women on their immediate needs regarding these issues. Further research of gender differentials in loss and damage are needed.

### 4.6.3. IMPACTS OF CLIMATE CHANGE ON THE EDUCATION SECTOR

The study found that 39% of households had at least one member of the household whose education had been impacted by climate change associated disasters and impacts (Figure 26).

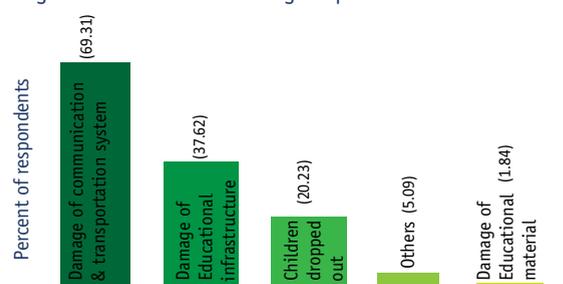
Figure 26: Climate change impact on education sector



Damaged communication and transport systems have been found to be the main impacts which

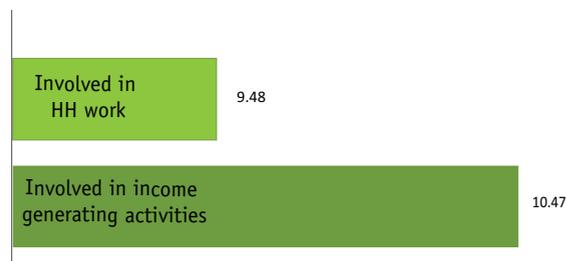
have been climatically induced as stated by 69.3% of the households interviewed. Furthermore, 37.6% of these affected families discontinued schooling followed by damage of the educational institute.

Figure 27: How climate change impacts education sector?



On the other hand, a considerable percent (20.2%) of respondents argued that the children withdrew themselves from going to school due to various onsets from climatic adversities. From FGDs, it was claimed that children with weak health or sickness could not continue schooling. They also reported that the burden of increased household or livelihood work, sometimes borne by the children, also restricted them from going to school. The study found that more than 10% of dropout school children somehow got themselves involved (Figure 28) in income generation activities.

Figure 28: The involtment of dropped out children



## RECOMMENDATION

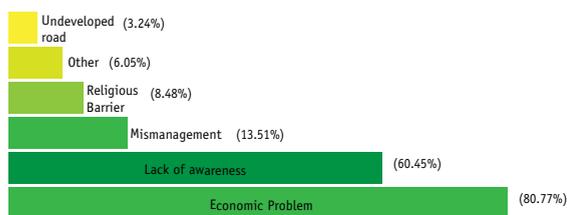
Ensure wherever possible that systems are put in place to enable children, especially girls, to return to school as soon as possible after climate disasters to prevent possible drop out.

Girls should not have to bear unequal burden of responsibility for disasters, both male and female members of the household should share in the responsibility for all recovery in all plans and this should be mandated in assistance packages.

### 4.7. GENDERED ISSUES IN DISASTER PREPAREDNESS AND MANAGEMENT IN STUDY AREAS

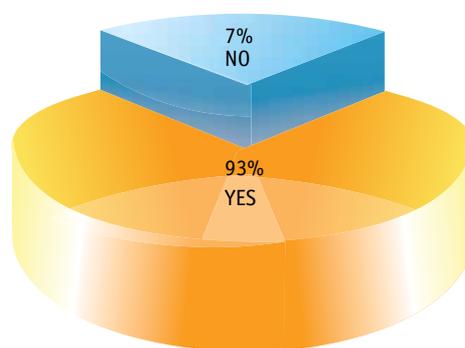
The respondents specified some barriers that have played a role in reducing the capacity of their disaster preparedness. Among them, the most frequent problem was stated was the financial problems of the households. They argued that lack of proper financial stability prevents them from saving up to buy food in times of crisis, and food to store for times of crisis. The lack of awareness about disasters and how to prepare for them prior to the disasters occurring was the second prevalent cause, reported by 60.4% respondents (Figure 29).

Figure 29: Barriers of women in disaster preparedness



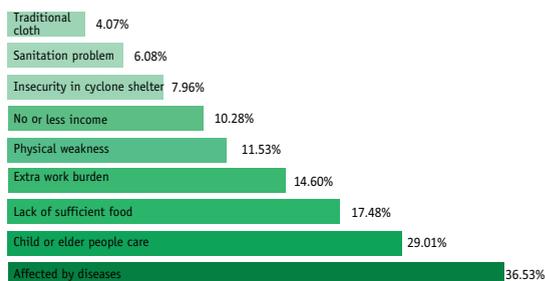
Research data revealed that women were disproportionately being affected by disasters. Overall, 93% of the respondents argued that a disparity between men and women existed in terms of bearing the burdens of disasters (Figure 30). They pointed to several issues that they claim acted as potential barriers for women to cope with disaster.

Figure 30: Are women disproportionately affected during disaster?



Some obstacles stated include: Less mobility due to diseases derived from hazards, responsibility of taking care of children or elderly family members, social insecurity, sanitation problems, traditional clothing restricting mobility, little or no income, extra work, and a lack of food security. Among these, the most frequent responses was diseases derived from disasters (stated by 36.5% of respondents) followed by the responsibility of taking care of children and elderly people (Figure 31).

Figure 31: Why female are disproportionately affected during disaster?



The health conditions of women deteriorate quickly during or post disaster period. The FGDs found that women generally suffered from diseases like: diarrhea, dysentery, skin diseases, weakness, fever and coughing, swelling of feet and rheumatism. Women also claimed health services available or accessible during disaster periods were insufficient.

## RECOMMENDATION

It is essential that all disaster responses address the adequate needs of all females and males, paying attention to specific needs of women and girls due to their differentiated roles and responsibilities in caring for the family. The care of children, the elderly and disabled are the responsibility all family members and disaster preparedness training should provide information to all family members and address how they will help each other in times of disaster.

The inaccessibility to shelter or relief centers exacerbated the women’s vulnerability to disasters. The mobility of women is constrained by various social norms in the rural areas of Bangladesh. Moreover, the responsibility towards household and child care, pregnancy and traditional clothing of women also seemed to hamper their mobility during the disasters. The study found that almost 18% of total respondents did not take part in evacuation drills or did not go to the relief centers in the study areas.

Figure 32: Problem faced by women in disaster by zone

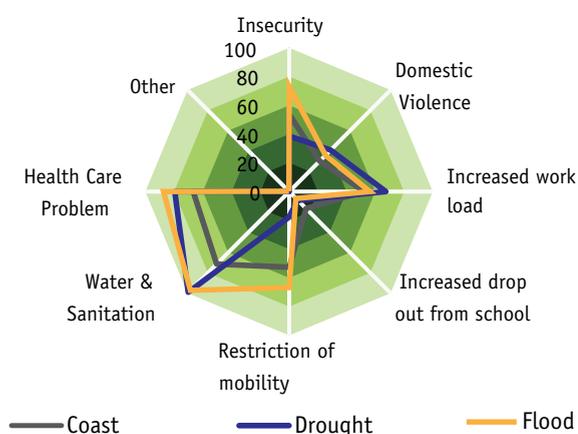
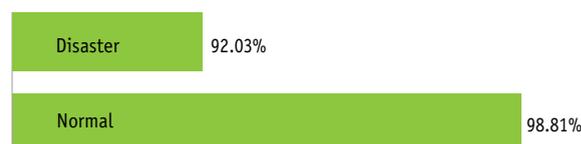


Figure 32 represents the problems of women in disaster periods by study zone. Zone wise fluctuations are observed, as shown in the chart. Water and sanitation problems were mostly prevalent in the drought prone areas (99.2%) followed by flood prone areas (97.1%). Increased household workloads were also borne mostly by the women in drought prone areas (67.4%) due to the challenge of having to collect water for domestic use. On the other hand, problems in getting healthcare were experienced by a majority of the respondents in flood prone areas (87.3%) followed by drought prone areas (79.4%). Evacuation practices were least drilled by the women of flood prone areas (66.7%).

Figure 33: Access to medical services during normal and disaster periods



Access to different medical services for women tends to decline during disaster periods as compared to normal periods. The study found that the access to medical services fell to around 92.0% from near about 98.8%.

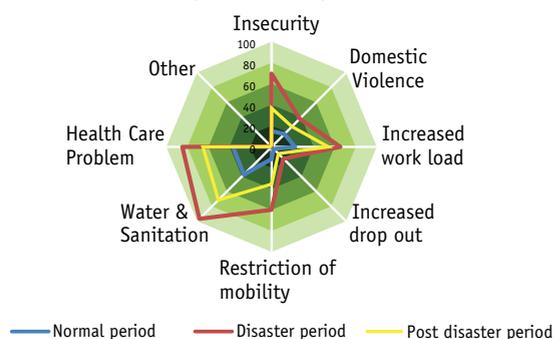
### 4.7.1. POOR ACCESS TO ESSENTIAL SERVICES

Women's access to essential services like water and sanitation is largely hampered during and post disaster periods. The study identified some specific problems in these regards faced by the women in the study area which tend to get acute during disaster or post disaster period.



Water and sanitation problems were found to be the most common problem faced by the women during disaster periods as reported by almost 100% of respondents (Figure 34).

Figure 34: Problem faced by women during normal, disaster and post disaster period



It was found from the qualitative survey (FGD) that the privacy of women is also largely compromised during floods and cyclones. The acute sanitary and water problems also led to the practice of open defecation which increases largely in flood and coastal areas during or post-disaster periods. Women, with no means of privacy in times of crisis and confusion, are often forced to restrict themselves from excretory processes. This is of most danger to pregnant women, and as a result, they very often develop different health problems including urinary tract infections. In such conditions acute water crisis becomes another large burden for the women in the study areas. Women are generally responsible for carrying water for household consumption and use. The qualitative survey (FGD) found that they spend more time during disaster periods carrying water which is an additional burden for them not only because they have to travel long distances but also because they have to move through adverse conditions with poor road conditions or inundated roads and paths. This increased time for water collection definitely reduces time for other household activities such as child care, income generation activities, leisure or recreational facilities.

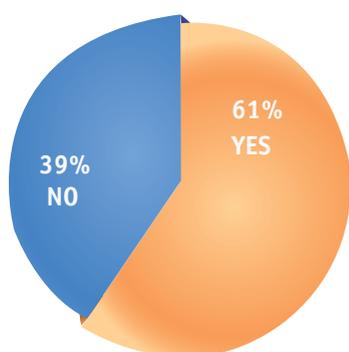
## RECOMMENDATION

Access to clean water and hygienic and safe toilets during disasters (in shelters or other facilities) is a priority for community health. Without privacy and access women’s disadvantage becomes a household and community health issue affecting all villagers. Access to safe and hygienic toilets for women must be prioritized and additional time for water collection for women must be offset by other family members taking on other household tasks to prevent women being overburdened.

### 4.7.2. Poor Access to Markets

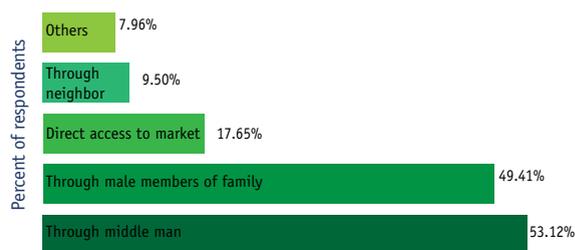
The major livelihood activity for women that was found from the study was poultry breeding (64.0%), with livestock, homestead gardening and some others. Unfortunately, those women who were small entrepreneurs or solely raise their poultry or livestock or other products, had very poor access to the markets. The study finds that 39% of the women engaged in livelihood activities, could not sell their products directly in the market as they had restricted access to it (Figure 35). This controlled access to market seems to have not only reduced the return of their investments, but has also discouraged other women to become new entrepreneurs.

Figure 35: Women’s role in selling their product



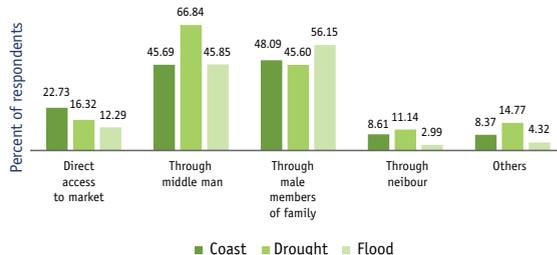
Those who did sell their products, had to do so through another person. Middle people were mainly used for this purpose, and in other cases the male members of the family helped out. Only a mere 17.6% of women had real time access to the markets. Figure 36 reflects the market access of women in the study area.

Figure 36: Market access for women in the study area



Interestingly enough, a considerable gap was found between the accessibility to markets for women living in the coastal areas and flood prone areas. The accessibility of women was found to be 22.7% in coastal zones whilst only 12.2% of women in flood prone areas had it. Figure 37 illustrates this.

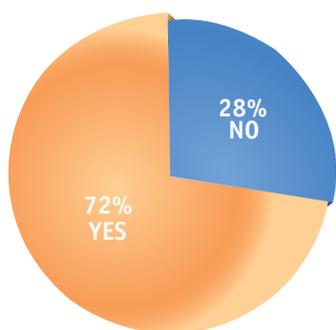
Figure 37: Market access of women by zone



The restriction more often than not influenced their return of investment. The study found that 72% of the respondents, who were involved in income generation activities got the real price of their products.

Figure 38 shows the percent of women who got the actual price determined through the current market price during the study time. In some instances, the enumerator referred the market price to the interviewee.

Figure 38: Do women get actual price for their goods ?



Some reasons why they were not getting the actual price of their products they identified the most frequent answer (75.2%) as poor knowledge on market prices, followed by interference of middle people (55.6%). Poor return of investment in the study areas has turned into a potential obstacle for women to support livelihoods, initiate small businesses or become financially independent and empowered. Table 9 illustrates the data for this issue.

Table 9: Reasons for women not getting the actual price for their products

Reasons	Coast (%)	Drought (%)	Flood (%)	Overall (%)
Middle people	66.27	35.19	73.33	55.64
Transportation & communication	18.07	37.04	40.00	31.95
Lack of idea about the market price	57.83	91.67	70.67	75.19
Others	3.61	2.78	0.00	2.26
Lack of education	1.20	0.00	0.00	0.38

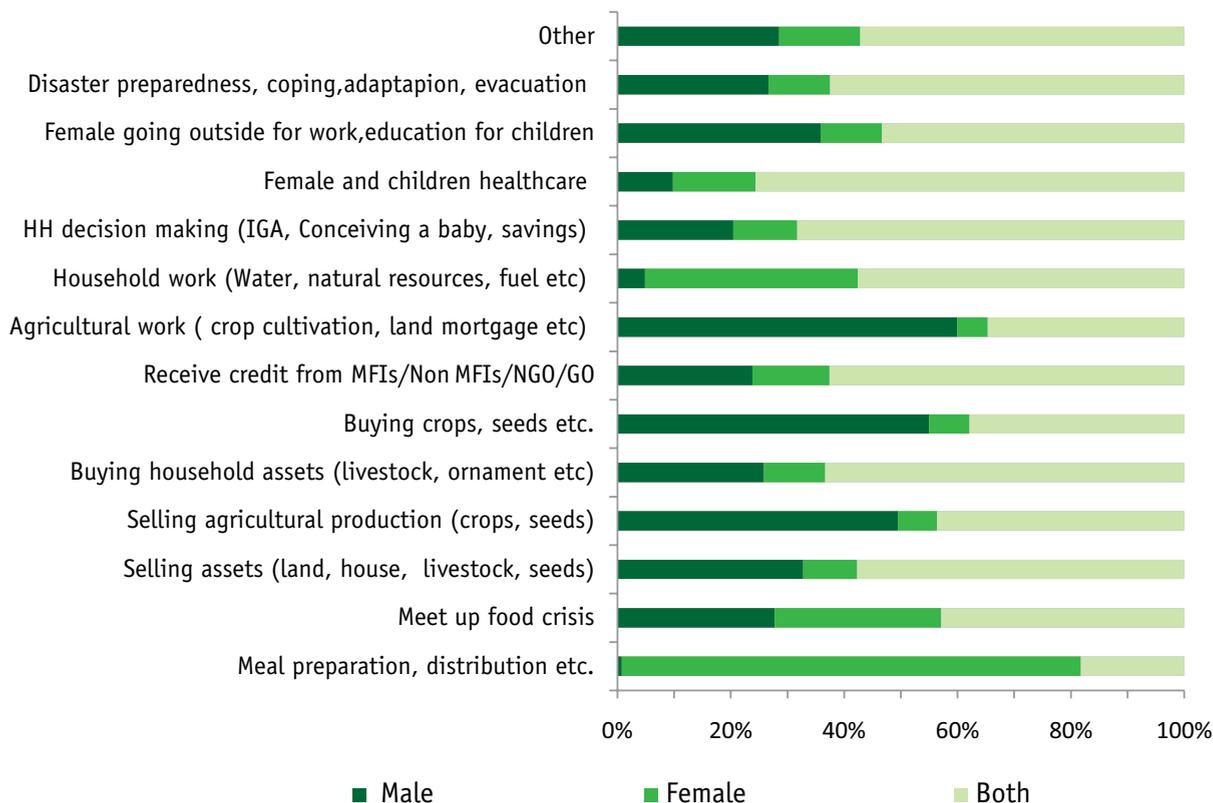
## RECOMMENDATION

Women need to access training on the production and sale of market goods in climate prone areas. This needs to include information on production, transportation, sale, using sellers other than themselves and market prices. Local women need more awareness and ownership of the different stages of sale to ensure they get adequate prices for their goods.

### 4.7.3.LACK OF WOMEN PARTICIPATION IN DECISION MAKING

Women’s participation in the decision making process in some areas was found to be vastly poorer than their male counterparts. The areas of women’s decision making were found to be: household livelihood activities, asset buying or selling, conceiving babies, saving, receiving credit or Vulnerable Group Development Card card etc. The highest disproportional difference was male (60%) and female (5%) agricultural work. In fact, in all productive and income generating sectors men were playing the major role in decision making. On the other hand, in terms of household work (food preparation, water and fuel collection) women were taking the lead as most of the household work burdens are borne by them. Figure 39 reflects the women participation in household’s decision making. This lack of influence on the decision making process inevitably has its toll on disaster preparedness and coping for the women of the study areas.

Figure 39: Role of man and women in household decision making



### RECOMMENDATION

Women should be included in all levels of decision making in DRR and climate change. Meetings should be held in places and times when women can attend and household and childcare tasks should be shared to enable this to happen or childcare could be provided for meetings.

#### 4.7.4. LACK OF ACCESS TO SOCIAL NETWORK AND CAPACITY BUILDING ACTIVITIES

Overall, although 69% of total respondents reported that the women of their households were involved in income generation activities (Figure 40), only 14% reported to have received any sort of training on income generation and livelihood

activities. Increased involvement of women in capacity building trainings would increase their disaster resilience. Facilitation and capacity building of women’s groups and committees play a vital role of psychosocial work (Fisher, 2009). Many organizations throughout the world have initiated capacity building trainings for rural

Figure 40: Female member of household involved with income generation or livelihood activities

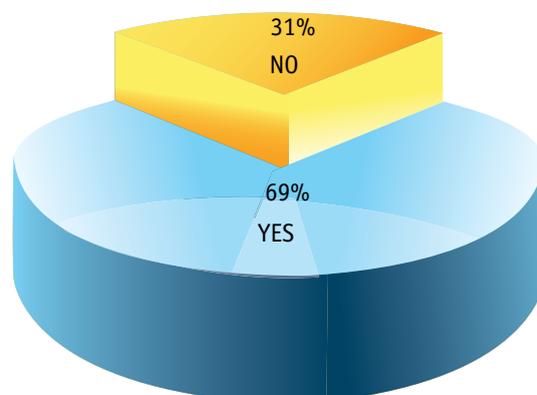
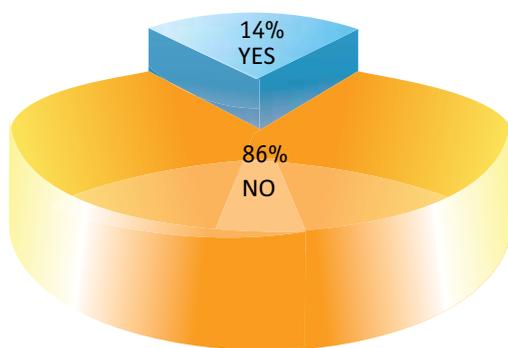


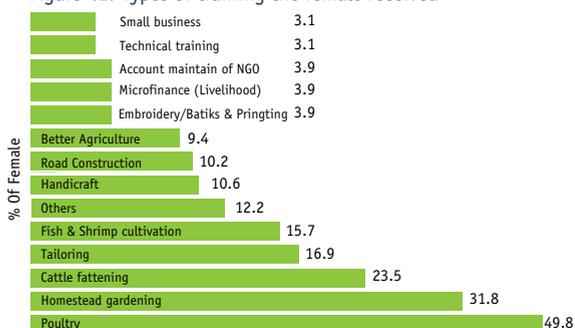
Figure 41: Training received by females for income generation and livelihood activity



women which also provides women with a forum to share their grievances and extend support to each other. It enhances women’s abilities to deal with violence, disaster, and provides social networking. Lack of access to social networks often limits women’s knowledge and awareness on hazards resulting from climate change, climate change adaptation, early warning systems and disaster preparedness. Figure 41 represents the percentage of females who received training on income generation and livelihood activity.

Most trainings that are available for women are about poultry rearing. Overall, 49.8% of respondents who received training stated that they have been provided training on poultry rearing followed by homestead gardening as reported by 31.8% of respondents. 23.5% of respondents have been provided training on cattle fattening which appears as the third most frequent response.

Figure 42: Types of training the female received



Most of the female respondents (63.5%), who received some sort of training on income generation and livelihood activities, said that they received the trainings from Non-Government Organizations (NGOs). The role of Government Organization (GO) was found to be low. Figure 43 provides the types of organizations involved in providing training to females in the study.

Figure 43: Types of organization provided training to the female



## RECOMMENDATION

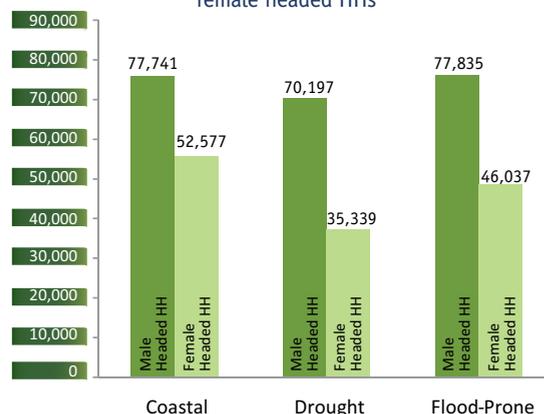
Income generation training for women in poverty and climate vulnerable areas is an effective strategy to build women’s economic resilience, as well as provide a space for increased education and psychosocial support around disaster preparedness, management and recovery. It is within these groups that preparedness plans can be discussed, and women can freely discuss the gender barriers that need to be overcome to lessen the load they currently carry for family care and household tasks. Targeting income generating women’s groups with appropriate gender and disaster training is a strong recommendation as long as it is linked into wider actions in the community and does not further isolate women. There is a great deal of space for more government training to be provided in this area, and for it to be expanded beyond poultry and livestock training into more small business and technical training.

#### 4.7.5. DIFFERENCE IN INCOME AND EXPENDITURE OF MALE AND FEMALE HEADED HOUSEHOLDS

Among the financial indicators, the study identifies that the income of male and female headed households was highly disproportionate. Women have limited control over capital in terms of financial, natural, social and physical resources. Generally, women do not own productive assets such as land or ponds. In the agricultural sample survey of 2005, female-headed holdings only constituted 2.83% of the total (Ahmad 2012).

In this study, the disproportion in income levels of male and female headed households was found to be quite visible, falling to half the amount in certain cases and areas. Alarmingly, the per capita income of the female headed households in the study area was found to be, in some cases (drought prone area), lower than the half of the national level (Figure 44).

Figure 44: Average annual HH income by male and female headed HHs



The disparity in income level largely impacted the household's expenditure and influenced the wellbeing sectors of households.

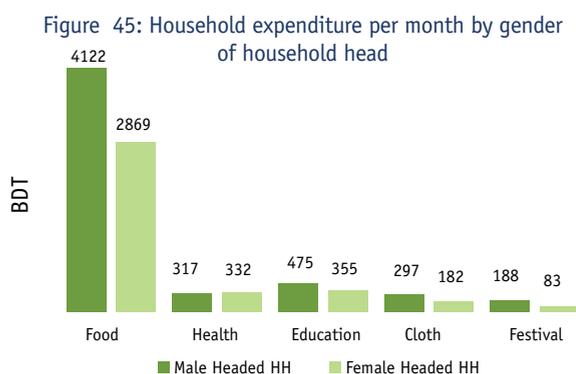
The study identified five sectors for expenditure including food, health, education, clothing and festivals, all of which experience an inequality between male and female headed households. The monthly expenditure for males was found to be much higher than females in all the cases except health services.



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#### 4.7.6. EDUCATION EXPENDITURE

As per the distribution of household's expenditure to different social wellbeing sectors between male and female headed households, the male headed households were visibly higher in terms of education expenditure. The study found that male headed households spend 475 BDT per month for education in the study areas in contrast to 355 BDT by female headed households for the same purpose (Figure 45).



#### 4.7.7. FOOD EXPENDITURE AND CALORIE INTAKE

Expenditure in food consumption reflects the household's food security to some extent. Poor food expenditure definitely exposes a household to lower intake of food which ultimately can lead to poor health and malnutrition. A population with poor health is more likely to have poor disaster preparedness capacity and coping strategies to the impacts of disaster (Adger, 2004). The study found (Figure 45) that the expenditure of male headed households towards food consumption was higher than that of female headed households. The expenditure of male headed households was found to be close to 4122 BDT per household per month including value of

quantity consumed from own production. On the other hand, it was found to be only about 2869 BDT per household per month in case of female headed households. Report of the Households Income and Expenditure Survey (2010) found that on average households spend 6031 BDT at the national level and 5543 BDT at the rural level on food. However, food expenditure of the study area was found to be lower than the rural level and much lower than the national level. If we assume the national level expenditure to be the standard of household's food expenditure we can justly conclude that the households in the study area have much lower level than the national standard in terms of food expenditure or food consumption which might lead them to low physical resilience and ultimately increased vulnerability to disaster.

Women are prone to nutritional deficiencies because they have unique nutritional needs and in some cultures are lower in the household's food hierarchy (UNISDR, 2009). In the study areas, food intake seemed to fluctuate between males to females within the same households. From the FGDs in the flood prone areas, it was found that the intake of food by the female members of the households was less than the male members of the family or other families. In these areas, women seemed to take food 2 or fewer times during disaster periods and may be twice during normal periods. On the other hand, male or children took food 3 times during normal periods, though it fluctuated from 3 to 1 times during disaster periods. However, in the remaining two zones (drought and coastal), uneven food distribution within a household had not been observed.

## RECOMMENDATION

Training in disaster risk reduction and management needs to highlight gender equity within households as well as the community. It is imperative that all family members receive adequate calorie intake, as well as ensuring the amount and quality of food is equitable per person per physical needs. The practice of women taking less quality and quantity of food is an ineffective development strategy for household coping as women become weaker and more prone to illness and when they are sick the household suffers even more as they are in charge of an unequal load. Disaster preparedness and management needs to stress the importance of women and vulnerable groups getting adequate nutrition and rest to build their health and physical resilience.

### 4.7.8. HEALTH EXPENDITURE

Health expenditure per capita is a reasonable proxy for the extent of illness (Adger, 2004). Increased household medical or health expenditures do not necessarily reflect the economic state or capacity of the household to offset health problems, rather it implies that the frequency of diseases might be high or the expenditure from any of the other well-being sectors or savings might be low. Ill health can separate individuals from the economically active population and reduce the number of working days for that person. The study found that the monthly health expenditure per household was a little higher in case of female headed households than that of male headed households (Figure 45). The report of the Households Income

and Expenditure Survey (2010) found that the monthly medical expenditure per patient was 400 BDT in rural areas. However, if we consider that at least one person got affected by disease per household per month we can conclude that the health expenditure per patient per household per month should be 317 BDT in case of male headed households and 332 BDT in case of female headed households.

Although it was found that the frequency of illnesses was higher amongst females in the households of the study areas compared to their male counterparts, in most cases it was also found that the number of working days lost by the females during the last one year was lower (Table 10).

Table 10: Loss in Working Days Per Year

	Loss in working days per year
Males employed	11.66
Females employed	4.51

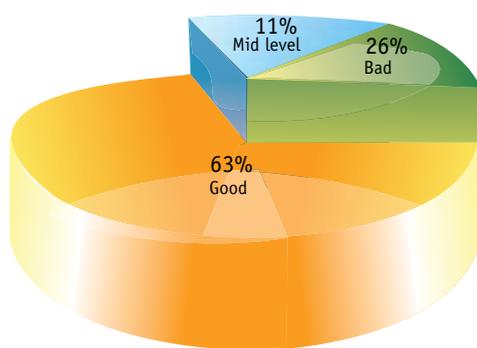
The reason for this, as stated in the FGDs was that the female headed households had lower means for survival in terms of provisions or savings and thus did not have the option of missing working days in spite of illnesses. This implies female headed households also have very poor capacity of fighting emergencies and disasters, as they may not have enough savings or stored food to meet the household's purpose in emergencies.

### 4.7.9. ACCESS TO MEDICAL FACILITIES

The people in the study areas usually take medical facilities from community clinics run by the

Government. However, these community clinics cannot or do not supply medicine. In addition, the on duty doctors/medical assistants do not give services on a regular basis. Maternal health services were also found to be insufficient. Only 11% of the total respondents were satisfied with the maternal health services. Figure 46 shows the condition of maternal health services in the study area.

Figure 46: Maternal health facilities in the study area



## RECOMMENDATION

As with the recommendation on calorie intake above, the issues of health illustrate that women are sick more often but take less days off work illustrating possible lower social, protection and higher levels of self sacrifice. Again it should be noted that the self sacrifice of women in not attending health clinics, leads to poorer health and wellbeing in the long term. District and local healthcare providers should use targeted outreach measures to specifically access to women and girls during disasters.

### 4.7.10. POOR LAND OWNERSHIP

From the FGD findings, it was recorded that the land ownership of women in the study areas

were very low. In the flood prone areas, women were mostly found to be landless, however, in drought and coastal areas a few women were found owning some land. The sources of land ownership among women in these areas were found to be either inheritance from their fathers or from husband ownership. In Islamic inheritance laws a male always inherits a share that is twice that of a female from the father's property.

The women also reported during the FGDs that they do not get the land tenureship/user rights. Usually, the male members of the family, either husband, father or brother get the rights.

### 4.7.11. POOR ACCESS TO NATURAL RESOURCES

The access of women to natural resources was found to be very low in the study areas. The household survey indicated that only 42% of women enjoy access or utilize the natural resources. In most cases (87% of those who had the access to natural resources) used natural resources for household consumption. Only 22% of those who were found to have access to natural resources were recorded as earning money by selling natural resources.

## RECOMMENDATION

There is a need for women to gain access to assets, without this their ability to earn, borrow money, inherit and divorce, and be proactive in other decisions that affect their lives are compromised. Women's control and access to resources needs to be addressed in all disaster risk and management activities and worked towards.



5.

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## ADAPTATION/DISASTER MANAGEMENT PRACTICES TO ADDRESS CLIMATE CHANGE IN THE STUDY AREAS

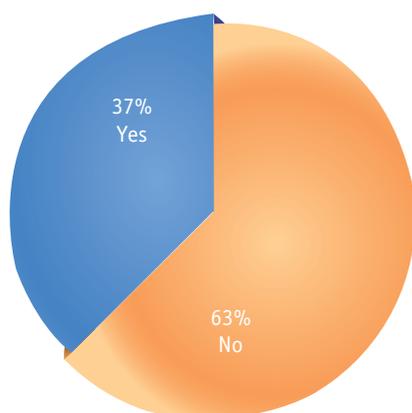
A number of questions were included on adaptation measures practiced by both men and women in the study locations. This illustrated there were a small number of women who were

found to be acting as change makers and making -positive changes in their lives with some interventions (as evident in the Ban Ki Moon quote in the introduction).

## 5.1. RURAL-URBAN MIGRATION

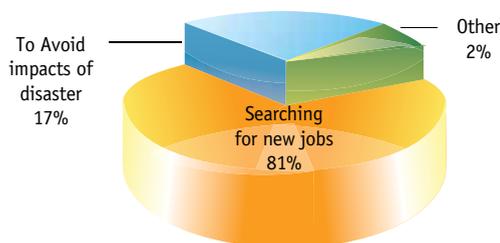
Migration is an adaptation to climate change. This study found that one or more than one person from 37% of the households had migrated as an adaptation to the changes brought about by climate change (Figure 47).

Figure 47: Did any of your HH member migrate in last five year?



Most of the respondents (81%), from the households from which at least one person had migrated, stated that the members of their households migrated with intentions of searching for better jobs. On the other hand, 17% of respondents reported that the members of their households migrated specifically to avoid the impacts of disaster (Figure 48).

Figure 48: Percentage distribution of the respondents on the main reasons of migration



During disasters though, women whose husbands migrated were the main victims to face various types of problems, difficulties and challenges.

Their sufferings were found to be twofold; first, they had to work hard to save their families from the disasters and second, when men left for the urban areas for to find better jobs, after disasters, women were left alone to care the for the children and elderly family members. Gender inequality, social insecurity and low access to vital necessities were found to be major factors contributing to the increased vulnerability for women and girls in disaster situations.

## 5.2. DISASTER PREPAREDNESS BY THE WOMEN IN THE STUDY AREAS

It was found that women (46%) had a higher involvement in disaster preparedness than men (34%). From field observations, this was recorded as they conserved food and water for emergency periods and also kept their valuable assets (for example: gold and silver jewelry, electronics) in a safe place. Some of them stated in the FGDs that the early warning systems if given at the right time could enhance their disaster preparedness far more effectively.

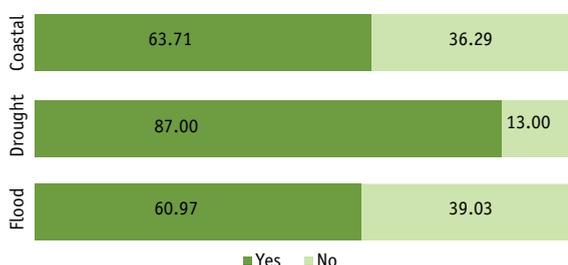
The respondents specified some barriers that might reduce the capacity of disaster preparedness. Among them, the most frequent problem stated was that they did not have enough money to save or store food. An acute lack of awareness on disaster and how to prepare for them ahead stood as the second most prevalent cause for them as reported by 60.4% respondents (Figure 29).

As stated earlier in recommendations 3 and 7 it is essential that men share in these household tasks of preparedness, and that women gain access to the training that is provided in preparedness.

### 5.3. INVOLVEMENT OF WOMEN TO INCREASE HOUSEHOLD INCOME

The participation and support of rural women in the maintenance of households was found to be very high. They played a vital role in household income generation activities in different sectors. Figure 49 presents female involvement in household income in different climate vulnerable areas. The study revealed that the highest numbers of females (87%) were involved in household income generation in drought-prone areas and the lowest in flood-prone areas (60.97%).

Figure 49 : Female involvement in household income (HHs in %)

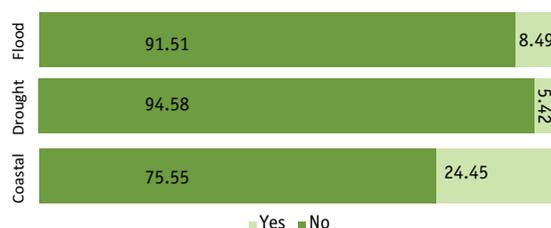


### 5.4. TRAINING FOR WOMEN ON INCOME GENERATING ACTIVITIES (IGA) IN THE STUDY AREAS

Figure 50 represents the status of household female members who received Income Generating Activities (IGA) training from different GOs and NGOs at the local levels. In the coastal areas only 24.45% households informed that their household female members had received IGA training for improving their livelihoods, and the flood and drought prone areas reported to have received even lower levels of trainings (IGA). Therefore, it can be asserted that the

capacity building training for women in income generation should be enhanced in all these areas to address climate threats.

Figure 50: IGA training received by household females



### 5.5. DIVERSIFICATION OF LIVELIHOOD OPTIONS OF THE WOMEN IN THE STUDY AREAS

The primary livelihood options of the women are mainly agriculture related such as poultry (65%), livestock rearing (31%) and homestead gardening (18%). Some women were also found to be involved in fish and shrimp cultivation, handicrafts, small business and others. This shows that poultry, livestock rearing (highest in drought prone area) and home gardening (highest in coastal area) are the most common income sources of the women in the study areas. The reliance on these limited livelihoods (as discussed earlier) limits women's resilience as they are susceptible to death or injury from storms and other climate related disasters, and post disaster water borne diseases etc.

Diversification of livelihood is a clear adaptation strategy, hence identifying new areas decreases risk and increases resilience.



**BOX-1**  
**THE STORY OF A REAL CHANGE MAKER**

© UNWOMEN

Zaheda Begum of Natore District, a woman of 38 and mother of two has turned her burden into blessing. Her husband was in prison in some country in the Middle East and was not able to contribute to his family. She had received microcredit from an NGO and started a small entrepreneurship with 600 ducklings a couple of years ago. Now, on an average she sells 250-300 eggs per day and earns 60-70 thousand taka per month.

Table 11: Current livelihood option of female in the project area

	Coastal Zone	Drought	Flood	All
Homestead gardening	23.63	21.38	5.77	17.75
Horticulture	1.05	0.00	0.00	0.39
Poultry	56.96	74.48	64.01	64.96
Fish/Shrimp cultivation	5.06	0.00	0.00	1.89
Livestock	14.77	49.20	31.04	31.19
Tailoring	5.06	2.30	4.12	3.85
Embroidery/ Batiks & printing	0.42	0.00	0.00	0.16
Handicraft	2.95	3.45	1.92	2.83
Small business	5.27	0.46	1.65	2.59
Begging	0.00	0.23	0.00	0.08
Daily Labor	8.23	6.21	4.67	6.52
Crab farming	4.01	0.00	0.00	1.49
Job (GO/NGOs)	1.05	0.23	0.82	0.71
others	15.82	6.67	3.85	9.27

The coastal zone has the greatest diversification, although clearly poultry, homestead gardening and livestock are the major sources of livelihood. It appears that there could be further diversifications to be made.

“Livelihoods are our human right. This concept is in our heart, it is our culture, it is our land and it is the environment. It is the basis of our human existence.”

Tran Thi Lanh.  
Social Policy Ecology  
Research institute, Vietnam.



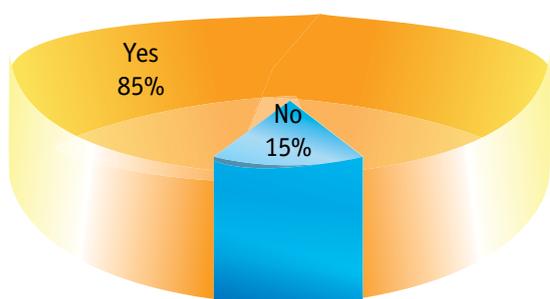
## RECOMMENDATION

A study should be made into the study areas to gauge what the best livelihoods for diversification of income would be. Training on these areas should be developed and within these training sessions other elements of resilience to disasters should be incorporated, leading to women's and household/community increased adaptation capacities to climate change.

### 5.6. NEED FOR GENDER ORIENTED ADAPTATION MEASURES

The households perceived that gender oriented strategies in climate change adaptation are required in the study areas. This was emphasized by 85% of total respondents (Figure 51). They ranked a set of adaptation options which might help them to reduce their vulnerability to climate change.

Figure 51: Is there a need of gender oriented strategy to adapt with impacts of climate change related disaster?



### 5.7. Potential adaptation options for the women in the study areas

The most frequent response for adaptation options for women was in favor of increasing awareness on climate change impacts as

reported by 65.9% of respondents. Running new income generating projects had been identified as the second most frequent answer followed by managing new livelihood options for women as reported by 59.3% and 41.7% of the respondents respectively. Table 12 shows the adaptation measures as recommended by the households in the study areas.

Table 12: Percentage distribution of respondents on potential adaptation measures for women

Potential adaptation measures for women	%
Increasing awareness of women about climate change impacts	65.94
Ensuring participation of women in climate risk management planning	26.94
Forming new small entrepreneurs for alternate income generation	34.56
Ensuring participation of women in local government activities	10.95
Managing new livelihood options for women	41.79
Running new income generating projects for women	59.31
Forming local people based organizations (C.B.O) in participation of women.	7.56
Others	3.18

Most of the women participants in the group discussions and interviews indicated that the successful livelihood options (Table 12) may be identified as excellent adaptation options for both current and future vulnerable conditions. It was also informed that early warning systems needed to be upgraded in such a way so that the information was transmitted to women right from the beginning. The current warning information is transmitted by men to men in public places, which means that women do not receive the information directly.



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## 6. Conclusions

The rural livelihoods of the study areas are specifically prone to salinity intrusion, water-logging, sea level rise, tidal surges, floods, droughts, and cyclones. Vulnerability within the coast and flood-prone areas is spatially and temporally different. The annual income of most of the households depends on farming and farm-based labour sources (especially drought prone areas) which are most vulnerable to climate hazards. The study revealed that the female headed household incomes were lower than the male headed households in every climate vulnerable zone. Additionally, only a few women had received some sort of training on income

generation and livelihood activities. The poor representation of women in capacity building training reduces their ability to build disaster resilience.

The studies revealed that only 11% of the total respondents were satisfied with maternal health facilities. It also found that there is a 48% female student drop-out from school during disaster due to lack of adequate communication systems and social insecurity. The feminization of poverty, maternal health and girls education, must also be critical aspects of a pre disaster planning, climate change adaptation, disaster management and disaster recovery.

## RECOMMENDATION

As women are more at risk of disasters there is a need to have women specific pre disaster planning and disaster and post programming interventions that address the clear needs of women and their sources of vulnerability- lack of income, information, training, education (including school access) and maternal health.

The female members of the family usually do all the household activities. Women traditionally are responsible for preparation and management of food for the household members. Female members are also responsible for collecting and preserving potable water for the households. As a part of this responsibility they make preparations long ahead of floods, storm surges and cyclone disasters not only for the family members but also for household emergency; this includes making arrangements for cooking and storing kerosene, matches, lighters and hurricane lamps for emergency lighting. Preparation is also taken by them for post disaster rehabilitation by preserving seeds for field crops and preparing seedlings for homestead gardening.

In terms of household work (food preparation, water and fuel collection) women take the lead. In flood prone areas, women take food 1 or 2 times a day during the disaster periods and maybe twice in normal periods. In contrast, males or children take food 3 times a day in normal periods, and it fluctuates from 1 to 3 times in disaster periods. Disaster often deteriorates the human capital of women. Poor calorie intake and high frequency of diseases influence the working days they can get and thus reduce the capacity of producing money for the household. Many theorists explicitly connect investment in human capital development to education. Disaster can interrupt the education of the people in affected areas and thus negatively impact human capital development.

Women take on an unequal burden in the planning and preparations for floods and climatic extremes, as these are activities that protect and enhance the needs of all family members there is a need to address this imbalance. Men make most of the decisions on income generation, and likewise since many women are engaged in these activities, this also needs to change.

## RECOMMENDATION

Men need to be brought into disaster preparation and climate change adaptation activities for the household. This should focus on critical issues for safety and supply around water, fuel and agricultural assets. This would not take the control and access of resources away from women but should entail the sharing of the productive and reproductive roles with men.

With women taking less food amount and quality for themselves they put their own health, and therefore that of the family in danger due to the fact that they have taken on more chores with less internal resources. Household equity is a pivotal aspect for developing a healthy family. This must be mainstreamed into disaster and climate change training and pre preparedness, programme management and post disaster planning (see recommendation 9).

Water and sanitation problems were found to be the most common problem faced by the women during disaster periods according to respondents. During floods, latrines go under water and people use open space available to defecate. It becomes difficult for women to toilet for privacy reasons. Some of the wealthier households try to construct temporary latrines especially for the female members. Access to safe water and toilets for women is a priority issue and must be incorporated into all disaster management and post recovery plans to ensure women's safety and community health (see recommendation 4).

Despite government support, in post disaster situations the need for water and sanitation facilities is high. Installing more flood proof tube wells and latrines in high public places like schools, mosques, colleges and other high grounds for common use will facilitate collection of drinking water and fulfill the needs for good sanitation and will eventually reduce the vulnerability to diseases during and post disaster situations. Those who do not have tube wells face difficulties in drinking tube well water, though they do sometimes bring it from other places. Most of the households have no financial and technical ability to raise the tube-well heads during floods. Very few respondents from the coastal zones (8.8 percent) have mentioned that during rainy season they preserve rain water and use it for drinking.

Women grow many types of plants and trees around their homesteads which are useful during normal flooding as well as post flood situations. For repairing flood damaged homesteads women collect and stock clay from the field during the dry season and do the repairing work and cleaning of the homestead during post flood periods.

## RECOMMENDATION

Best practice has illustrated the effectiveness of tree planting around homesteads as a flood reduction strategy. Women can share information on the best types of trees/shrubs for this purpose in capacity building sessions.

Despite the above stated challenges, women have become more resilient to disasters and demonstrate ingenuity in overcoming problems by drawing on historical knowledge. They can act towards community mobilization in disaster response and can demonstrate diverse adaptation and coping strategies and mechanisms such as moving to safer places, saving their assets, dietary adaptations, energy-saving techniques,

adapting agricultural practices, and earning income. Given the opportunity and access to information and resources women are capable of being active change agents in the community in climate change adaptation, moving them from “voiceless victims”, to empowered leaders in decision-making in all aspects of disaster management and climate change adaptation. Although this report uses a human rights based approach to development, it is clear that an economic efficiency approach is also obvious in that investment in women and their needs brings results for households and communities in this sector.

The UN International Strategy for Disaster Reduction (UNISDR) has taken steps to include gender in its DRR plans of action under the Hyogo Framework of Action (HFA). In this regard, three main principles in mainstreaming gender issues into DRR were incorporated:

- I. Ensuring equal access to educational opportunities for vulnerable women,
- II. Developing early warning systems which take gender and cultural livelihoods into account and
- III. Utilizing a gender perspective in decision-making processes when implementing risk management policies.

These three principles should be incorporated into all programming to reduce women’s vulnerabilities associated with climate change

## RECOMMENDATION

The principles of gender mainstreaming identified in the Hyogo Framework for Action should be key in all DRR and CCA work, this includes (as well as other issues addressed in other recommendations) developing early warning systems that take gender issues into account in national policy.



7.

# LIST OF RECOMMENDATIONS

## RECOMMENDATION

**01** Women's knowledge on DRR/climate change issues should be increased through specific women focused training and IEC materials.

**02** Gender issues need to be addressed in issues of loss and damage as the perceptions of loss and damage are different from women to men. There is also an additional burden on women from loss and damage as women are especially vulnerable to housing and livestock loss and damage. Pre disaster and capacity building training need to address safety issues to protect housing and livestock and disaster management and recovery needs to liaise with women on their immediate needs regarding these issues. Further research of gender differentials in loss and damage are needed.

**03** Ensure wherever possible that systems are put in place to enable children, especially girls, to return to school as soon as possible after climate disasters to prevent possible drop out. Girls should not have to bear unequal burden of responsibility for disasters, both male and female members of the household should share in the responsibility for all recovery in all plans and this should be mandated in assistance packages.

**04** It is essential that all disaster responses address the adequate needs of all females and males, paying attention to specific needs of women and girls due to their differentiated roles and responsibilities in caring for the family. The care of children, the elderly and disabled

are the responsibility all family members and disaster preparedness training should provide information to all family members and address how they will help each other in times of disaster.

**05** Access to clean water and hygienic and safe toilets during disasters (in shelters or other facilities) is a priority for community health. Without privacy and access women's disadvantage becomes a household and community health issue affecting all villagers. Access to safe and hygienic toilets for women must be prioritized and additional time for water collection for women must be offset by other family members taking on other household tasks to prevent women being overburdened.

**06** Women need to access training on the production and sale of market goods in climate prone areas. This needs to include information on production, transportation, sale, using sellers other than themselves, market prices etc. Local women need more awareness and ownership of the different stages of sale to ensure they get adequate prices for their goods.

**07** Women should be included in all levels of decision making in DRR And climate change. Meetings should be held in places and times when women can attend and household and childcare tasks should be shared to enable this to happen or childcare could be provided for meetings.

**08** Income generation training for women in poverty and climate vulnerable areas is an effective strategy to build women's economic resilience, as well as provide a space for increased education and psychosocial support around disaster preparedness, management and recovery. It is within these groups that preparedness plans can be discussed, and women can freely discuss the gender barriers that need to be overcome to lessen the load they currently carry for family care and household tasks. Targeting income generating women's groups with appropriate gender and disaster training is

a strong recommendation as long as it is linked into wider actions in the community and does not further isolate women. There is a great deal of space for more government training to be provided in this area, and for it to be expanded beyond poultry and livestock training into more small business and technical training.

**09** Training in disaster risk reduction and management needs to highlight gender equity within households as well as the community. It is imperative that all family members receive adequate calorie intake, as well as ensuring the amount and quality of



food is equitable per person per physical needs. The practice of women taking less quality and quantity of food is an ineffective development strategy for household coping as women become weaker and more prone to illness and when they are sick the household suffers even more as they are in charge of an unequal load. Disaster preparedness and management needs to stress the importance of women and vulnerable groups getting adequate nutrition and rest to build their health and physical resilience.

**10** As with the recommendation on calorie intake above, the issues of health illustrate that women are sick more often but take less days off work illustrating possible lower social, protection and higher levels of self sacrifice. Again it should be noted that the self sacrifice of women in not attending health clinics, leads to poorer health and wellbeing in the long term. District and local healthcare providers should use targeted outreach measures to specifically access to women and girls during disasters.

**11** There is a need for women to gain access to assets, without this their ability to earn, borrow money, inherit and divorce, and be proactive in other decisions that affect their lives are compromised. Women's control and access to resources needs to be addressed in all disaster risk and management activities and worked towards.

**12** A study should be made into the study areas to gauge what the best livelihoods for diversification of income would be. Training on these areas should be developed and within these training sessions other elements of

resilience to disasters should be incorporated, leading to women's and household/community increased adaptation to climate change.

**13** As women are more at risk of disasters there is a need to have women specific pre disaster planning and disaster and post programming interventions that address the clear needs of women and their sources of vulnerability- lack of income, information, training, education (including school access) and maternal health.

**14** Men need to be brought into disaster preparation and climate change adaptation activities for the household. This should focus on critical issues for safety and supply around water, fuel and agricultural assets. This would not take the control and access of resources away from women but should entail the sharing of the productive and reproductive roles with men.

**15** Best practice has illustrated the effectiveness of tree planting around homesteads as a flood reduction strategy. Women can share information on their best types of trees/shrubs for this purpose in capacity building sessions.

**16** The principles of gender mainstreaming identified in the Hyogo Framework for Action should be key in all DRR and CCA work, this includes (as well as other issues addressed in other recommendations) developing early warning systems that take gender issues into account in national policy.

# REFERENCES

1. Adger, W.N., Nick Brooks, Graham Bentham, Maureen Agnew and Siri Eriksen, (2004), New Indicators for Vulnerability and Adaptive Capacity.
2. Ahmed, A.M.M. and Roy, Kingshuk. (2007). Utilization and Conservation of Water Resources in Bangladesh. *J. Dev. Sus. Agr.* 2: 35-44
3. Araujo, A. and Quesada-Aguilar, A., (2007), Gender Equality and Adaptation, USA: Women's Environment and Development Organization (WEDO).
4. Bangladesh Centre for Advanced Studies (2008). Challenging Climates: Adapting to Change. A Baseline Study Report prepared by BCAS with support from British Council Bangladesh, Dhaka, Bangladesh.
5. BBS, (2010), "Household Income and Expenditure Survey". Bangladesh Bureau of Statistics, Dhaka
6. Enerson, E., (2000), Gender and Natural Disaster, IPCRR Working Paper no 1, International Labor Organization (ILO), Geneva.
7. Hare, W. (2003). Assessment of Knowledge on Impacts of Climate Change – contribution to the Specification of Art 2. of the UNFCCC, Potsdam, Berlin
8. Huq, S and Rabbani, G (2011). Climate Change and Bangladesh: Policy and Institutional Development to reduce vulnerability. *Journal Of Bangladesh Studies.* Volume 13, no, pp 1-10

9. Huq, S. and Ayers, J., (2008). Climate Change Impacts and Responses in Bangladesh. A note for European Parliament's temporary committee on climate change in view of a delegation visit. DG Internal Policies, European Parliament, Brussels.
10. Ikeda, K. 1995. Gender differences in human loss and vulnerability in natural disasters: A case study from Bangladesh. *Indian Journal of Gender Studies* 2 (2): 171–93.
11. Islam, M. R. (2004). Where land meets the sea. A Profile of the Coastal Zone of Bangladesh. The University Press Limited, Dhaka, Bangladesh.
12. Moser, C., and Satterthwaite, D., (2008), "Towards pro-poor adaptation to climate change in the urban centres of low- and middle-income countries", International Institute for Environment and Development (IIED) <http://www.iied.org/pubs/display.php?o=10564IIED>
13. Neumayer and Plumper, (2007), "The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy, 1981–2002" London School of Economics and Political Science, University of Essex and Max-Planck Institute of Economics, *Annals of the Association of American Geographers*, 97(3), 2007, pp. 551–566
14. Rabbani, G., Rahman, A. Khandaker, M. and Shoef, I.J. (2013). Loss and damage from salinity intrusion in Sathkira District, coastal Bangladesh. *Loss and Damage in vulnerable Countries Initiative, case study report*. Bonn: United Nations University Institute for Environment and Human Security.
15. Rabbani, M.G., Rahman, A.A. and Islam, N. (2010). Climate change and sea level rise: issues and challenges for coastal communities in the Indian Ocean region, in Michel, D. and Pandya, A. (Eds), *Coastal Zone and Climate Change*. The Henry L Stimson Center, Washington, pp 17-29.
16. Rahman, A.A., Alam, M., Alam, S.S., Uzzman, M.R., Rashid, M., Rabbani, M.G., (2008). Risks, Vulnerability and Adaptation in Bangladesh. A Background Paper Prepared for Human Development Report 2007/2008.
17. Soil Resources Development Institute (SRDI), (2010). *Saline Soils of Bangladesh*; SRDI, Ministry of Agriculture: Dhaka, Bangladesh
18. UNISDR, (2009), "Making Disaster Risk Reduction Gender-Sensitive: Policy and Practical Guideline", UNISDR, UNDP and IUCN. Geneva, Switzerland.
19. World Bank (2000). *Bangladesh: Climate Change and Sustainable Development*. Report no 21104-BD. World Bank Dhaka
20. Yoshitani J., N. Takemoto and, T. Merabtene, (2007), *Factor Analysis of Water-related Disaster in Bangladesh*, The International Center for Water Hazard and Risk Management, Ibaraki-Ken, Japan, pp.9.

**ANNEX**

**ANNEX 1**  
**QUESTIONS**  
**FOR FOCUS**  
**GROUP**  
**DISCUSSION**

Title of the project: Reducing vulnerability of women affect by climate change through viable livelihood option

## FGD Checklist

Type of Stakeholders .....Date ..... Time .....  
 Place of FGD ..... Village .....  
 Union .....District .....

## Guideline for the FGD for the women participants

### Socio-economic condition of the village:

1.What are the main occupations of the people including women in this village?

.....  
 .....

2.Does the woman deal with the male economic activities and who own/inherit ate the land and properties of a family?

.....  
 .....

3.Do the female have land or other property ownership in this community? What percentage of women has their own land?

.....  
 .....

4.What seems to be HH appearance for community people, especially woman oriented family?

.....  
 .....

### Economic activities of women:

1. Do the women of your community engage in any economic activities? What types of economic activities are they involved with?

.....  
 .....

2. Are the woman involved in any activities like handicraft, sewing, handloom etc? Did they earn money from these economic activities?

.....  
 .....

3. For which purpose do women spend money? Does this earned money help the economic status of the family? How does it help to develop the family in terms of savings amount?

.....  
.....

### Women’s health and education:

1. What is the educational status of the women of your community? What percentage of women are educated in the community?

.....  
.....

2. Are educational facilities available for women in this community? What is the overall health status of the women?

.....  
.....

3. What types of diseases are common for the women? How many working days are lost due to health risks and diseases?

.....  
.....

4. Do women receive sufficient medical support or treatment for maternal health/disease? Are the medical facilities sufficient?

.....  
.....

5. Do the women get food to eat 3 times a day regularly? Does the woman get safe water and sanitation resources in their own reach?

.....  
.....

### Women’s involvement in decision making in family and society:

1. Do you think that female voice is considered in family or in community for decision making? If yes how and if no why?

.....  
.....

2. Do you think that consideration of female voice is important for decision making in family? Do women have the chance of giving their opinion for social, economic and any other activities of the family?

.....  
 .....

### Women's vulnerability on disaster and climate change:

1. Do you observe any change in weather or climate of your area for last 10-20-30 year? What are the changes you observed (Natural disaster, production loss etc)?

.....  
 .....

2. What are the impacts of natural disasters on your community? Who are the main victims of natural disaster (male female and children)? How many males and females are affected by different climate induced natural disaster?

.....  
 .....

### Women's livelihood activities, viable livelihood options and adaptatio

1. Did the natural disaster or climate change have an impact on women's livelihood? Please explain how and what are the reasons.

.....  
 .....

2. Currently what livelihood activities are you doing to cope with this situation according to short term impact? (indigenous adaptation options)

.....  
 .....

3. Do you think that these new livelihood activities are enough for your adaptation according to long term impact?

.....  
 .....

4. What types of activities are essential for the improvement of livelihood? For a long term livelihood option what types of activities do you want or suggest.

.....  
.....

5. Do you want any knowledge or economic support from any organization? Which organization helps you in such situations?

.....  
.....

6. Do you think better livelihood options will develop your economic status? How it can be effective in future? Do you think any institutional help for women is essential for the adaptation?

.....  
.....

### Women's migration

1. Did any of the female members of the family migrate from here to another location? What is the reason of migration (for example: Climatic disasters/hazards, multidimensional jobs opportunity etc.)? What types of migration did they undertake?

.....  
.....

2. Did the female members feel vulnerable due to migration of her male family member? Do they feel unsafe and insecure? How this situation can be overcome?

.....  
.....

**ANNEX 2**  
**HOUSEHOLD**  
**SURVEY**

## ANNEX 2

### REDUCING VULNERABILITY OF WOMEN AFFECTED BY CLIMATE CHANGE THROUGH VIABLE LIVELIHOOD OPTIONS

Household Identification					
Zone	District	Upazila	Union	Village Sl no.	Household Sl. No.

### Household Questionnaire

#### A. Households information

Name of Household Head: ..... 

1 = Male	= Female
----------	----------

Name of Father/Husband of the Household Head .....  
.....

Name of the Respondent: .....  
.....

Age of the Respondent

Respondent's Marital status:

1	2	3	4	5	6
Single	Married	Widow	Separated	Divorced	Others (Specify)

Relationship of Respondent with the Household Head:

1	2	3	4	5	6	7	8	9	10
Self	Wife	Husband	Son	Daughter	Brother	Sister	Father	Mother	Others

Respondent Address:

Household name	Para
Village/ Mouza	Union
Upazila	District
	Division

Place of birth of house hold head

1	2	3	4
This village	Elsewhere in the District	Elsewhere in the country, (specify District)	Abroad (specify country)

Respondent Phone/Mobile No:

0	1									
---	---	--	--	--	--	--	--	--	--	--

Religion:

1 = Muslim	2 = Hindu	3 =Christian	4 =Buddhist	=Others (please specify)
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Ethnicity

1 Bengali	2 Chakma	3 Tripura	4 Garo	5 Shantal	6 Marma	7 Murong	8 Rakhain	9 Others (specify)
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## A12. Information of household members

100. Member code	100a. Name: HH Head first, then the rest of the members in descending order of age	101. Age in completed years	102. Sex (Male/ Female) 1=Male 2=Female	103. Relationship with the household head (code)*	104. Educational qualification (Code)*	105a. Primary occupation (code)*	105b. Secondary occupation (code)*
01							
02							
03							
04							

**103 Relationship Code:** 1= self, 2= wife, 3=husband, 4=son, 5=daughter, 6=brother, 7=sister, 8=father, 9=mother, 10=Sister in law, 11= nephew/nice, 10=others (specify)

**104 Educational Qualification Code:** 1=illiterate, 2=signatory, 3=class I-V, 4= class VI-VIII, 5=class IX-X, 6=SSC/Dakhil, 7=HSC/Alim, 8=Graduate/Fazil, 9=Masters/Kamil, 10=Engineer/Doctor, 11=Technical/Vocational, 12=others (specify)

**105a&b Occupational Code:** 1=Agricultural crop production/farming, 2= Agriculture wage labor, 3= Non farming day labor, 4= livestock and poultry, 5= Food for work/money (e.g. soil cutting, road maintenance etc.), 6= Fry collection, 7=Crab collection, 8= Fish farming 9=Shrimp culture, 10= Handicraft (swing, hand loom, cottage etc), 11= Transport (Rickshaw/Van/Cart/Boatman),12= Fruit/ timber production, 13= Business, 14=Service, 15=Work abroad, 16= Housewife 17=Housework (paid week), 18= Tailor, 19= Teacher, 20=Student, 22= Forest resource collector (bawali/mouali), 23= Unemployed, 24= Child, 25=Aged, 26= Others (specify)

## B. Household Socio-Economic Information:

### B1. House hold land ownership pattern

Ownership pattern/ Amount of land	Homestead land	Owned agricultural land	Owned Shrimp Gher	Fish Culture in owned pond	Fallow Land	Other
Amount of land (decimals)						
Total Current value of Land						

B1.1 Amount of land owned by the female members of the above mentioned land (in decimal)

.....  
.....

B1.2 Land ownership pattern in respect of partnership

	Rented out	Rented in	Lease out	Lease in
Total land (in decimal)				

B2. Ownership of household assets according to Sex (Male/Female)

Sl no.	Asset	Unit ( )	Quantity	Value of the asset	Sex code 1= Male, 2= Female, 3= Both		
	House						
	Business/Shop structure						
	Radio						
	TV/VCD						
	Mobile Phone						
	Livestock (Cow/ Goat/Lamb/ other)						
	Poultry						
	Boat						
	Fishing Instruments						
	Rickshaw/Van/ related others						
	Others (specify)						

\*Unit: 100 decimal=1 acre; 33 decimal=1 Bigha

B3. Wealth-wise household class (Make circle):

1 = Very poor	2 = Poor	3 = Middle	4 = Rich	5 = Very Rich
---------------	----------	------------	----------	---------------

B4. Sources of drinking water (Make circle):

1 = Deep tube well	2 = Shallow tube well	3 = Pond/Ditch/wetland	4 = River	5 = Dug well	6 = Pipeline/Supply water	7 = Pond Sand Filter (PSF)	8 = Rainwater Harvesting System (RWHS)	9 = Others (Specify)
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B5. Sources of domestic water (Make circle):

1 = Deep tube well	2 = Shallow tube well	3 = Pond/Ditch/wetland	4 = River	5 = Dug well	6 = Pipeline/Supply water	7 = Pond Sand Filter (PSF)	8 = Rainwater Harvesting System (RWHS)	9 = Others (Specify)
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B6. Type of latrine used (Make circle):

1 = Septic latrine	2 = Ring slab/off set latrine (water sealed)	3 = Pit/covered deep latrine	4 = Ring slab/off set latrine (without water sealed)	5 = Peat/un-covered deep latrine	6 = Hanging/open latrine	7 = No latrine
--------------------	--	------------------------------	--	----------------------------------	--------------------------	----------------

B7. Does your house have electricity (Make circle)?

1 = Yes	2 = No	3 = Others (Specify).....
---------	--------	---------------------------

B8. If yes, what type of electricity do you use?

1 = Grid Electricity	2 = Solar energy	3 = Others (Specify).....
----------------------	------------------	---------------------------

B9. How many income earning members in your household (write number)

Male =		Female =	
--------	--	----------	--

## B10. Household's yearly net income and the main sources:

Sources of income	Month of earning	Seasonal wise income				Yearly net income
		Boishakh-Ashar	Srabon-Ashwin	Kartik-Poush	Magh-Chaitra	
1	Agricultural Work					
2	Agriculture wage labor					
3	Non farming day labor					
4	Fishing					
5	Fish cultivation or production					
6	Livestock and poultry					
7	Business					
8	Service					
9	Transport= (Rickshaw/Van/ Cart/Boatman)					
10	Forest resource collector (bawali/mouali)					
11	Remittance (from abroad)					
12	Remittance (elsewhere in the country)					
13	Resources sell					
14	Others (specify)...					

## B11: Do you face any difficulty for income earning in a year?

1 = Yes

2 = No

## B11.1 If yes, which month you face difficulty (make circle-multiple code if necessary)

1= Boishakh	2= Jaistha	3= Ashar	4= Srabon	5= Vadra	6= Ashin
7= Kartik	8= Ograhayon	9= Poush	10= Magh	11= Falgun	12= Chaitra

B11.2 If yes, what are the reasons behind the difficulty

1= Low Wage Rate	2= Inadequate Income	3 = Landlessness	4= Unemployment	5= lack of natural resources	6= household head is female
7= Natural Disaster	8= spoil crop banking	9= Market Inaccessibility	10= Only one earning member	11= others (specify)	

B10. Household expenditure

Monthly:

SL	Source of expenditure	Amount (Tk)
01	Food (including value of quantity consumed from own production)	
02	Education	
03	Energy (electricity, fuel)	
04	Transportation (mobile/telephone bill)	
05	Other (Specify).....	

Yearly:

SL	Source of expenditure	Amount (Tk)
01	House repair	
02	Various type of repair	
03	Cloth	
04	Cost for cultivation (seed, fertilizer, irrigation, tractor etc.)	
05	Medical purpose (normal and disaster period)	
06	Festival	
07	Other (Specify).....	

B13. Do you have any savings? (make circle)

1 = Yes	2 = No
---------	--------

B14. Do your household receive amount of credit/loan in last 12 months?

1 = Yes	2 = No
---------	--------



C1.1 If yes, from where you have heard?

1= Observation by oneself	2=Local elite person	3= Teacher	4= NGO workers
5= Local government representative	6= Government worker (block supervisor, health worker)	7= Colleagues	8= Friends
9= Research paper	10= Mass media (Radio, Television, Newspaper, magazine, posture, miking etc. )	11= Not sure	

C2. Do you notice any change in the weather/climate in last 30 years? (Make circle)

1= Yes	2= No
--------	-------

C3. If yes, how do you notice that the weather/climate is changing? Make circle & write code

SL	Name of event (Make circle)	Time Range (Make circle) 1=1-10 years, 2= 11-20 years, 3=21-30 years			Increase/decrease (Make circle) 1= Increase, 2= Decrease	
		1	2	3	1	2
01	Temperature (Increase/decrease)	1	2	3	1	2
02	Rainfall Duration (Increase/decrease)	1	2	3	1	2
03	Drought Duration (Increase/decrease)	1	2	3	1	2
04	Salinity intrusion Duration (Increase/decrease)	1	2	3	1	2
05	Flood Duration (Increase/decrease)	1	2	3	1	2
06	River bank erosion Duration (Increase/decrease)(last duration 1 month and now its duration more or less )	1	2	3	1	2
07	Cyclone Frequency (Increase/decrease)	1	2	3	1	2
08	Tidal surge (Increase/decrease)	1	2	3	1	2
09	Water logging Duration (Increase/decrease)	1	2	3	1	2
10	Other (specify).....	1	2	3	1	2

C4. Are your Household income sources or Household assets affected by any climatic/natural disasters?  
(Make circle)

1= Yes

2= No

C5. Which of your Household assets are being affected by climatic disasters in the last 30 years?

Use damage level code

SL	House Hold main assets/and production sectors	Flood	Increase Temperature	Drought /Lack of Rainfall	Excessive Rainfall	Sea level/ tide level rise	Cyclone	Tidal Surge	Salinity	Water-logging	River bank erosion	Other (specify)
01	HH Structure (pucca, semi-pucca, kancha house)											
02	Livestock and Poultry											
03	Agricultural tools (e.g. Power tiller, deep & shallow tubewell, Paddy husking machine, Rice mill, Spray machine)											
04	Handicraft work (e.g Sewing, loom)											
05	Fishing equipments (e.g. Net, Boat)											
06	Transport (e.g. Push cart, Rickshaw, Van, Auto)											
07	Trees											
08	Annual crop (rice/jute) in mound											
09	Communication equipments (e.g. Mobile, Radio, TV)											
10	Others (specify).....											

Damage level code: Severe damage=1, Moderate damage=2, Less damage=3

C6. Which of your Household income sources are being affected by natural disaster /climatic hazards and what is the level of damage? Write damage level code

Income sources (Member code) Related with A2	Climatic phenomenon										
	Flood	Increase Temperature	Drought / Lack of Rainfall	Excessive Rainfall	Sea level/ tide level rise	Cyclone	Tidal Surge	Salinity	Water-logging	River bank erosion	Other (specify)

Damage level code: Severe damage=1, Moderate damage=2, Less damage=3

Occupation Code: 1=Agricultural crop production/farming, 2= Agriculture wage labor, 3= Non farming day labor, 4= livestock and poultry, 5= Food for work/money (e.g. soil cutting, road maintenance etc.), 6= Fry collection, 7=Crab collection, 8= Fish farming 9=Shrimp culture, 10= Handicraft (swing, hand loom, cottage etc), 11= Transport (Rickshaw/Van/Cart/Boatman),12= Fruit/ timber production, 13= Business, 14=Service, 15=Work abroad, 16= Housewife 17=Housework (paid work), 18= Tailor, 19= Teacher, 20=Student, 22= Forest resource collector (bawali/mouali), 23= Unemployed, 24= Child, 25=Aged, 26= Others (specify)

C7. Which of the following climatic disaster affect your family well-being and at what level? Write Impact level code

Sl.	House Hold well-being sectors	Climatic phenomenon										
		Flood	Increase Temperature	Drought /Lack of Rainfall	Excessive Rainfall	Sea level/ tide level rise	Cyclone	Tidal Surge	Salinity	Water-logging	River bank erosion	Other (specify)
1	Food											
2	Cloth											
3	Shelter											
4	Health											
5	Education											
6	Safe drinking water											
7	Medical facilities/ treatment											
8	Communication/ transportation											
9	Other (specify)											

Impact level code: Severe impact=1, Moderate impact=2, Less impact=3

C8. Do you think Male, Female and Children are differently vulnerable due to natural disaster/ climate change? (Make circle)

1= Yes	2= No	3 = Not sure
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C8.1 If yes, what are the causes behind these differences?

Sl	Female	Children
1		
2		
3		

C9. Are climatic disaster affected your children education in the last 5 years? (Make circle)

1= Yes	2= No
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C9.1. If yes, how they are affected? (Make circle)

1 = Damage of Educational infrastructure	2 = Drop out of children	3 = Damage communication and transportation system	4 = others (Specify).....
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C9.2. What types of child drop out maily?

1 = Male child	2 = Female child
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C 9.3. What happened to the children, If they dropout from the school? (Make circle)

1 = Involved in HH work	2 = Involved in income generating activities	3 = Do Nothing	4 = other (specify).....
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## D. Health & health system

D1: Information on diseases suffered by the HH members in the last 12 months

Name of Disease	HH members above 5				HH members below 5			
	Male		Female		Male		Female	
	How many person	How many times	How many person	How many times	How many person	How many times	How many person	How many times
Diarrhea								
Cholera								
Dysentery								
Jaundice								
Skin disease								
Typhoid								
Pneumonia								
Fever/Cold-cough								
Malaria								
Kidney Diseases								
Others, specify								
<b>Only Female health issues</b>	<b>How many person</b>				<b>How many times</b>			
Pregnancy related								
Menstrual problems								
Problems related to ovum								
Others (specify)								

D2. Have you/ your family received any medical care during Normal Period?

1= Yes

2= No

D3. Have you/ your family received any medical care due to impact on climate change/natural disaster?

1= Yes	2= No
--------	-------

D3.1. If yes, from which source do you receive medical support? (Make circle)

1 = Government health centre/community clinic	2 = NGO health facility	3 = Private health facility	4 = Pharmacy/ dispensary
5 = Quacks	6 = Herbal/homeo treatment	7 = Staying home	8 = Others (Specify)

D4. What is the condition of maternal health facilities in your locality?

1=Bad	2=Fair	3=Good
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D5. How many working days has been wastage due to sickness in last 12 months? (Please Specify Day time)

.....

## E. Migration

(To move from one country or region to another region of the country or outside of the country)

E1. Did any of your Household members migrate due to climate change / disaster in last five years? (Make circle)

1= Yes	2= No
--------	-------

E1.1 If yes, where did they migrate? (Make circle)

1= Elsewhere in the same district	2= Another district	3= Abroad/Outside of the country
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E1.2 What were the reasons behind the migration?

1 = Searching for new jobs	2 = To avoid climatic disasters	3 = Others (specify).....
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E1.3 What types of job they adopt after migration? (Make circle)

1 = Agricultural labour	2 = Non Agric or day laborer	3 = Transport labor	4 = Garments labor
5 = Part time job	6 = House work (paid work)	7 = Handicraft (swing, hand loom, cottage etc)	8 = Others (specify)

E2. Did your family members migrate here due to climate change or natural disaster?

1= Yes	2= No
--------	-------

E3. Which Household members usually migrate? (Make circle)

1= Male	2= Female	3= Both
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E4. What is the nature of migration? (Make circle)

1= Permanent migration	2= Temporary migration
------------------------	------------------------

E5. In the last five years did you want to move from here (temporarily or permanently), but did not?

1= Yes	2= No
--------	-------

D5.1 If yes, what were the barriers?

1 = Already have good job	2 = Family ties	3 = Too expensive	4 = Too dangerous
5 = Age (too old / young)	6 = Does not have any contact person elsewhere	7 = Does not know about job prospects elsewhere	8 = Supervision of family property
09 =For school	10 = Health problems	11 = Needed to stay for households	12 = Others (specify)

E6. Are any women face trafficking in your area due to disaster?

1= Yes	2= No
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E6.1 If yes, How they were trafficked?

1 = Trap/Deception	2 = By Force	3 = Other (Specify).....
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E6.2 If yes, where they were trafficked?

1 =Elsewhere in the District	2 =Elsewhere in the country, (specify District)	3 =Abroad	4 =don't no
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## F. Gender Division of Labor and Decision Making Rights

F1. Which of the following activities is your House Hold members?( Make circle the code)

SL	Activity	Normal Period			Disaster Period			Post-Disaster		
1.	Meal preparation	1	2	3	1	2	3	1	2	3
2.	Collection of water	1	2	3	1	2	3	1	2	3
3.	Livestock rearing	1	2	3	1	2	3	1	2	3
4.	Taking care of Children	1	2	3	1	2	3	1	2	3
5.	Agricultural work	1	2	3	1	2	3	1	2	3
6.	Non-farm labour	1	2	3	1	2	3	1	2	3
7.	Small business	1	2	3	1	2	3	1	2	3
8.	Fuel collection	1	2	3	1	2	3	1	2	3
9.	Fish/Shrimp culture	1	2	3	1	2	3	1	2	3
10.	Shrimp fry collection	1	2	3	1	2	3	1	2	3
11.	Service	1	2	3	1	2	3	1	2	3
12.	Going to market	1	2	3	1	2	3	1	2	3
13.	Going to Health Care centre	1	2	3	1	2	3	1	2	3
14.	Going to the Bank	1	2	3	1	2	3	1	2	3
15.	Receive credit from NGO	1	2	3	1	2	3	1	2	3
16.	Participation in NGO activities	1	2	3	1	2	3	1	2	3
17.	Other (specify)	1	2	3	1	2	3	1	2	3
Gender Code: 1 =Male, 2=Female, 3= Both										

F 2. Describe the decision making process of your family by Sex (Male/Female). Write Sex (Male/Female) code

SL	Decision Making	Normal period	During disaster	Post-disaster
01	Meal			
	1.1 Meal preparation			
	1.2 Meal distribution			
	1.3 Meet up food deficit			

SL	Decision Making	Normal period	During disaster	Post-disaster
02	Selling of House Hold assets			
	2.1 Sell livestock			
	2.2 Sell food crops			
	2.3 Sell seeds			
	2.4 Sell ornament			
	2.5 Sell trees			
	2.6 Sell houses			
	2.7 Sell land			
03	Buying House Hold assets			
	3.1 Buy Livestock			
	3.2 Buy food crops			
	3.3 Buy seeds			
	3.4 Buy jewelry			
	3.5 Buy trees			
	3.6 Buy house			
	Buy land			
04	Receive credit			
	4.1 Receive credit form mohajon			
	4.2 Receive credit from relatives			
	4.3 Receive credit from bank			
	4.4 Receive credit from NGO			
	4.5 Receive Credit from GO			
05	Agricultural work			
	5.1 Type of crop to cultivate			
	5.2 Mortgage out land			
06	Household work			
	6.1 Collection of Water			
	6.2 Collection of natural resource (e.g. fuel wood)			
07	House Hold decision			
	7.1 Engage in new income generating activity			
	7.2 Give marriage			
	7.3 Conceiving a baby			
	7.4 Use saving			
	7.5 VGD/ VGF			

SL	Decision Making	Normal period	During disaster	Post-disaster
08	Communication			
	8.1 Female going outside the homestead (far away)			
	8.2 Female going to work			
	8.3 Male going to work			
	8.4 Education of children			
09	Disaster preparedness/prevention			
	9.1 Going to a shelter place			
	9.2 Engage in alternative livelihood activities			
	9.3 Collection of relief material			
10	Other (Specify)			

Sex (Male/Female) code: Female =1, Male=2, Both=3

F 3. What are the specific problems that women have to face due to Climatic disaster?

(Make Tick)

SL	Problems	Normal period	After disaster	Post disaster
01	Insecurity			
02	Domestic Violence			
03	Increased work load			
04	Increased drop off from school			
05	Restriction of mobility (to shelter, relief collection)			
06	Water & Sanitation Problem			
07	Health Care Problem			
08	Other (specify)			

## G. Coping & Adaptation Strategies

G1. What are the current barriers of disaster preparedness? (Make circle-more that one)

1 = Lack of awareness about disaster	2 = economic problem	3 = Religious Barrier	4 = weakness/ mismanagement of disaster management committee	5 = other.....
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G2. Do you suggest any new options for overcoming the current barriers of adaptation? (Please Write)

.....

G3. Do you think there is any need for special initiatives for women to cope with disaster?

1= Yes	2= No
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G3.1 If yes, describes the special coping options?

.....

G4. Is there any difference between the male and female roles in the local government and NGOs initiatives to cope with a disaster?

1= Yes	2= No
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G4.1 If yes, describe the difference between male and female activities. (Write Code)

G4.1.1	Disaster Preparedness	Male
		Female
G4.1.2	During Disaster Period	Male
		Female
G4.1.3	After Disaster period	Male
		Female

Code of men during disaster preparation: 1=Men less participate in awareness program during climatic disaster preparation time and for that they are uninterested long time, 2 = They can't take necessary action because of less informative training during the climatic disaster preparedness period, 3= Others ( Specify ).....

Code of women during disaster preparation: 1=Women are highly active for the climatic disaster preparation time because they always participate in awareness program, 2 = Women easily take necessary action for disaster pre-preparation easily because they got training from govt./ NGO ( Ex.. firebox, candle light, conserve the dry food kept in polythene bag and place in the mud hole under the long depth, 3= Others ( Specify )...

Code of men during disaster period: 1=Men are much active during disaster period ( Ex. Collected water and food from far distance, raise the platform of house basement height, raise the height of ridge ), 2 = Men are involved different activities with community during disaster period ( Ex. Re excavation of risky road, construct the embankment in high level, help vulnerable population, collection of relief and distribution etc), 3= Others ( Specify ).....

Code of women during disaster period: 1=Women are involved highly family work during disaster period and for that reason they can't participate actively 2 = During disaster period Women are involved the public awareness news to neighbor and ready to help, 3= Others (Specify ).....

Code of men after disaster period: 1=Men are highly involved for the different infrastructure development after climatic disaster, 2 = Men are involved relief distribution and rehabilitation program after climatic disaster. 3= Others (Specify).....

Code of women after disaster period: 1=Women are not get priority in different infrastructure development after climatic disaster period 2 = Women are engaged different repair and reformation by Govt/ NGO activity after climatic disaster period, 3= Others (Specify ).....

G5. Is there any disaster management committee exists in this area? (Write code)

1= Yes	2= No
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G5. 1 If Yes, what initiatives were taken by the disaster management committee of this area? (Make circle-More than one)

1 = Aware every one	2 = Take to the shelter	3 = Financial help	4 = Distribute Relief	5 =other
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G6. Did you or any of your family member receive any training on disaster management? (Make circle)

1= Yes	2= No
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G6.1 If yes, then what types of training did you receive? (Make circle- more than one)

1 = Disaster preparedness	2 = Rescue training	3 = health related	4 = water purification and safe sanitation	5 = other
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G6.2 If yes, then from which organization did you receive the training? (Make circle- more than one)

1 = Govt. Organization	2 = NGO	3 = From any trained person	4 = From old senior	5 = Neighbors	6 = Other
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## H. Livelihood of women / Capacity Building Activity

H1. Are you or any female member of your House Hold involved with income generation or livelihood activities? (Make circle)

H1.1 If yes, what do you suggest?

1 =Homestead gardening	2 =Horticulture	3 =Poultry	4 = Fish & shrimp cultivation	5 =Livestock
6 =Tailoring	7 =Embroidery/ Batiks & printing	8 =Handicraft	9 =Small business	10 =others-indicate

H2. Does any female member of your household have training on income generation or livelihood activity?

1= Yes	2= No
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H2.1. If Yes, what types of training you/they received? (Make circle-answer may be more than 1)

1 = Micro finance for better livelihood.	2 =Account maintain of NGO	3 = Road construction	4 = Better agricultural training	5 = Homestead gardening
6 = Horticulture	7 = Poultry	8 =Fish & shrimp cultivation	9 =cattle fattening	10 = Tailoring
11 =Embroidery/Batiks & printing	12 = Handicraft	13 = Waving of fishing net	14 = Loan management	15 = Small business
16 = Technical training	17 = Sericulture	18 = Pottery	19 =others-indicate	

H2.2 if yes, from which organization did you/they receive the training? (Make circle)

1 = Govt. Organization	2 = NGO	3 = From any trained person	4 = From old senior	5 = Neighbors	6 = Other
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H 2.3. If yes, did the training contribute in better livelihood activities? (Make circle)

1= Yes	2= No
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H2.4. If you don't get any training, what types of trainings do you want or suggest? (Make circle- Answer may be more than one)

1 = Micro finance for better livelihood.	2 =Account maintain of NGO	3 = Road construction	4 = Better agricultural training	5 = Homestead gardening
6 = Horticulture	7 = Poultry	8 =Fish & shrimp cultivation	9 =cattle fattening	10 = Tailoring
11 =Embroidery/ Batiks & printing	12 = Handicraft	13 = Waving of fishing net	14 = Loan management	15 = Small business
16 = Technical training	17 = Sericulture	18 = Pottery	19 =others-indicate	

H3. Do the female members of your HH want any non-traditional/technical training for the development of livelihood activities? (Make circle)

1= Yes	2= No
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H3.1 what types of technical training do you want?

1 = Maintenance of power tiller/ tube-well	2 = Mobile repairing	3 = Masonry	4 = Carpenter	5 = Repairing by cycle/ rickshaw
6 = Solar electricity management	7 = Making bondhu Chula	8 =others		

H4. Do you suggest any other training for women which could be helpful for them to cope with the climate change induced vulnerabilities?  
.....

H5. Do the female of your House Hold/community have access to market for selling goods? (Make circle)

1= Yes	2= No
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H5.1. If Yes, how did they sold their goods? (Make circle)

1 = Bring directly to the market	2 = Brought by middle man	3 = Others family member take to the market	4 = others-indicate
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H5.1.1 If Yes, Where did the women sold their goods? (Make circle)

1 = Local market	2 = Upazila market	3 = District market	4 = others
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H5.1.2 Who helps the women to sell the products in market? (Make circle)

1 =women herself	2 = male member of the family	3 = relatives	4 = Middle men	5 = others
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H5.1.3 Do the women get the actual price of their self-produced commodities? (Make circle)

1= Yes	2= No
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H5.1.4 If not, why they did not get the actual price? (Make circle)

1 = For the middle Man	2 = Communication Problem	3 = Lack of idea about the market price	4 = others
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H5.2 if the women don't have the access to sell the commodities in market, then what are the barriers for it?

1 =social barriers	2 = Communication Problem	3 = Family barriers	4 = others-indicate
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H5.3 What steps should be taken to remove these hindrances?

1 =Social awareness	2 = Ensuring equal rights of men and women	3 = Development of communication system	4 =Encouraging women in small business
5 = tailoring	6 = Embroidery/Batiks & printing	7 = others-indicate	

H6. Generally what do you/your female family member do by the money from selling commodities? (Make circle)

1 = Handed over the earned money to the male member of the family	2 = Investment in same livelihood activities	3 = Investment in other livelihood activities
4 =Deposit in Bank	5 = Investment in NGO	6 = others-indicate

H7. Is that earned money is sufficient to cope with climate change induced disaster? (Make circle)

1= Yes	2= No
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H7.1 If yes, how? (Write down)

1 = Create alternative way of earning	2 = Better livelihood for women	3 = Ensuring safe food and water	4 = others-indicate
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H7.2 if not, why these are not enough? (Write down)

1 = Social problem/ security problem	2 = Crops are damaged	3 = Increase of diseases	4 = Safe water and food crises	5 = Others
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H7.3 Can it be possible to reduce the climate chance/disaster risk through any new kind of livelihoods? (Make circle)

1= Yes	2= No
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H7.3.1 If yes, how? (Write down)

.....

H8. How the capacity of women should be developed to reduce climate induced risks?

1 = Make women aware about the climate change impact	2 = Participation of women in climate risk management	3 = Forming new small entrepreneur	4 = Participation of women in local government activities
5 = Managing new livelihood options for women ( e.g. homestead gardening)	6 = Running new income generating project for women= (Handicraft or others)	7 = Forming local people based organization (C.B.O) in participation of women.	8 = Other

## I. Social safety net of women

I1. Does the women face any social security risk due to climate change impact? (Make Circle)

1= Yes	2= No
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I1.1 Does the women aware about social safety net (V.G.D, V.G.F, food for work etc.) right provided by the government? (Make Circle)

1= Yes	2= No
--------	-------

I1.2 if the women are not provided by the social safety program, did they urged for their requirement? (Make Circle)

1= Yes	2= No
--------	-------

I1.3 For ensuring women's social safety net is there NGO activity beside any government program? (Make Circle)

1= Yes	2= No
--------	-------

I1.4 As your perception, for ensuring women's social safety net what sustainable initiatives should be taken? (Make Circle)

1 = Economic empowerment of women	2 = increase of women's literacy rate	3 = enhance participation of women in social activities	4 = enhance participation of women in local government
5 = Develop women's decision making	6 = Develop women's health system	7 = CBO formation with the contribution of women	8 = Others

## Comments (If any)

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Thanks for your Co-operation.

Name of data collector

Name of Investigator

.....  
Signature

.....  
Signature





**UN Women Bangladesh**

House # CES (A) 11A, Road #113  
Gulshan-2, Dhaka-1212, Bangladesh  
Phone: +88 02 985-8593,  
Fax :+88 02 9883828  
[www.unwomen.org](http://www.unwomen.org)