

ASSESSMENT OF
**WOMEN'S
LIVELIHOOD**
NEEDS IN THREE ECO-ZONES OF
BANGLADESH



NORWEGIAN EMBASSY



United Nations Entity for Gender Equality
and the Empowerment of Women



MESSAGE

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 women's livelihood needs assessment report will help people select the appropriate livelihood adaptation modalities needed in different adverse climatic situations. I am pleased that the report provides concrete and applicable suggestions that will, I hope, prove helpful to people who need this expert advice now.

Gender is a critical and overlooked dimension in climate policy deliberations. I hope the knowledge provided in this report will inspire a deeper appreciation for the vital significance of gender as an essential dimension in dealing with the social aspects of climate change.

A handwritten signature in black ink, appearing to read 'Merete Lundemo'.

Merete Lundemo
Ambassador of Norway
Dhaka



MESSAGE

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 needs assessment was conducted to investigate viable recommendations for livelihood interventions, which can be carried out in an attempt to give women affected by climate change and its impacts alternative livelihood options. In the process, the study investigates through participatory methods the current situation women face and women's views on their needs. Recommendations include location-specific actions to address existing gender inequalities as well as targeted skill development for women in different eco zones of Bangladesh.

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.

Ms Christine Hunter
Country Representative
UN Women Bangladesh



EXECUTIVE SUMMARY

Evidently women are more severely affected by climate change and natural disasters because of their social roles, discrimination and poverty. In rural Bangladesh they are specially vulnerable since they are highly dependent on local natural resources for their livelihood. A needs assessment survey was conducted between May and July of 2013, to identify viable livelihoods of women affected by climate change in ten climate vulnerable Upazilas of three eco-zones (flood prone, drought prone and cyclone prone) in Bangladesh.

The research was conducted to investigate viable recommendations for livelihood intervention activities, which can be carried out by other organizations, in an attempt to give women, who are most vulnerable to climate change and its impacts, solid and more resilient livelihood options. In the process, the study investigates the current situation women face and women's views on their needs.

The research has been divided into four thematic areas, which are interlinked: climate change impacts and their gender implications, current livelihood practices, the impacts of climate change on current livelihoods, current adaptation strategies for livelihoods and future viable livelihood options. As a whole, this report highlights the approach of combining climate change adaptation and viable livelihoods to reduce the poverty and vulnerabilities of women in climate change affected areas.

This needs assessment is based on primary data, secondary data, needs assessment tools (seasonal community hazard mapping, mobility chart for women, seasonal livelihood calendar for women, hazards and livelihood index) and impacts of natural hazards or climate change on women livelihoods. A number of multi-stakeholder community meetings were held in all the study Unions, at which stakeholders

were invited to provide necessary information on the climate conditions they face and the types of livelihoods they engage in and how they are affected by the climate extremes.



The study reveals that climate is wreaking havoc with the livelihood of vulnerable women. From floods, to droughts, cyclones, increased salinity, erosion and water logging, women's days are dictated by their access to natural resources and they rely on these to care for their families and communities. Almost all climatic changes lead to women's increased labour, especially as it relates to access to clean and safe water, fuel and food. Access to resources becomes critical during disasters as it is not simply more time that this required, but women's very safety and security is at risk in travelling further afield to obtain them. Many more women than men are killed during floods and storms due to a variety of reasons including women's lack of mobility, inability to swim, need to care for children and elderly and their reluctance to use shelters. Lack of safe access to water and latrines and safe spaces for women in shelters have

led to increased harassment and in some cases rape, deterring women from seeking safety in the very spaces they are supposed to be safe.

Disasters and climate changes affect children's education (especially girls), maternal and neo-natal child health, women's health, nutrition and overall wellbeing, including mental health. In disaster periods, health problems arise among women and sources of income are obstructed. It has thus become increasingly important that appropriate 'climate resilient' livelihoods options are investigated for specific eco-zones. Also important in a climate justice approach is the consideration that human and institutionalized barriers need removed from women's advancement. This entails men assisting with a more equal division of labour so women are not overburdened and weakened by the additional demands climate hazards put on them. There also needs to be a change in attitudes to pull back discrimination against women to encourage women's increased role in decision making and leadership in farming, business roles and community decision making roles.

New livelihoods for women are proposed and discussed though qualitative and quantitative data from the field work. In many cases further training and new skills, additional resources and support from NGOs and government are advocated. Women have the ability to be innovators and change makers and case studies at the conclusion of discussion of each eco zone illustrate how women are changing their lives and those of their communities in hazardous climatic areas through new or altered livelihoods.

The study concludes with a set of recommendations on both the need to consider clear gender issues within the climatic extremes of drought prone, flood prone and coastal zones for women's wellbeing, as well as practical suggestions on how to address current and new viable livelihoods as adaptations to climate.



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ACRONYMS

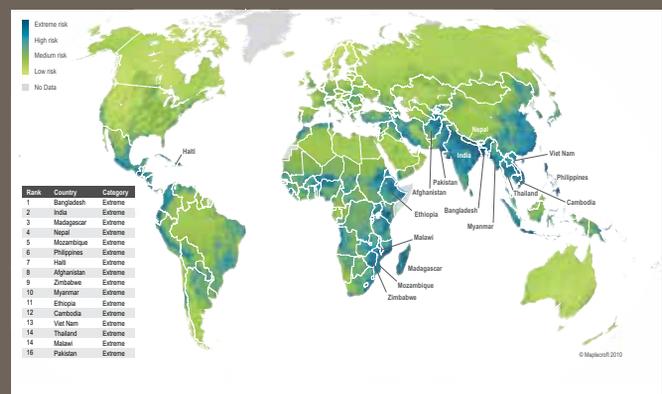
BBS	Bangladesh Bureau of Statistics
BCAS	Bangladesh Centre for Advanced Studies
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
CBM	Community Based Management
CEGIS	Center for Environment and Geographic Information Services
DAE	Department of Agricultural Extension
DRMA	Disaster Risk Management in Agriculture Sector
DRR	Disaster Risk Reduction
FAO	Food and Agriculture Organization
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
NGO	Non-Government Organization
PRA	Participatory Rural Appraisal
SLR	Sea Level Rise
UNISDR	UN International Strategy for Disaster Reduction

1 INTRODUCTION

1.1 BACKGROUND

Bangladesh is recognized worldwide as one of the countries that is most vulnerable to the impacts of global warming and climate change (reported by climate change vulnerability index, Maple Croft, UK, 2011). This is due to its unique geographic location, dominance of floodplains, low elevation, high population density, high levels of poverty, and overwhelming dependence on nature, its resources and services. Climate change is eroding assets, investment and the future of Bangladesh for the lives of families, communities and the state. Global warming and climate change threatens settlements, and the number of people displaced from their lands due to riverbank erosion, permanent inundation and sea level rise which are increasing rapidly every year (CCC, 2007). In the future, Bangladesh will likely face more frequent, larger scale and intensified floods, cyclones and droughts. Sea-level rise could inundate 17% of coastal lands unless appropriate action is taken (BCCSAP, 2009).

Figure 1: Climate Change vulnerability index 2011



Source: Maple croft, 2011. www.preventionwave.net

In recent times, natural hazards have become more frequent and intense compared to the similar kinds of events that occurred one or two decades ago. It is now accepted by the Intergovernmental Panel on Climate Change (IPCC) scientists, that these climatic hazards are undoubtedly the results of climate change at global and regional levels. In Bangladesh, scientists consider the floods of 1987, 1988, 1998, 2004, 2007 and cyclones of 1991, 2007 and 2009 consequences of global warming and its associated problems. Threats from landslides due to excessive rainfall can also be attributed to recent climatic variance (Islam and Neelim, 2010).

When ecosystems become more fragile and natural resources are reduced or are out of reach, poor communities that depend on them for their survival are the most affected, particularly women, the elderly and children. In 1991, during the cyclone disasters in Bangladesh, of the 140,000 people who died, 90% were women (Ikeda, 1995).

Both men and women experience increased workloads during disasters, but women are primarily responsible for food supply and water collection. Furthermore, women face social, economic and political barriers that limit their coping capacity. Secondly, when coupled with unequal access to resources and to decision-making processes women in rural areas are disproportionately affected by climate change.

In Bangladesh men tend to control income distribution, property, access to credit, decision-making processes, and sources of food. Women have limited access to and control over natural resources, or money and more importantly are less mobile and have limited access to information. On the other hand, women virtually shoulder the whole responsibility of looking after the children and protecting their families. Even in normal times, women lack social power and their condition is being aggravated by the increased demands on them. Women's welfare and involvement in economic activities is essential to ensure the sustainable development of a country.

The social positioning of women in many situations means that the roles they are expected to take on are often supportive and reproductive centered on the home and local community rather than the public sphere. This does not mean that women do not play crucial roles in agricultural production or other activities crucial to sustainable livelihoods and national economies, but the roles they play are generally less



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visible and attract less public recognition than the work men engage in (IDS, 2008). This needs assessment report tries to investigate some of these less visible aspects of women's livelihoods and the viable options for women affected by climate change induced disasters in different eco-zones of Bangladesh.

1.2 OBJECTIVES

The overall aim of this study is to form a comprehensive picture of the needs of vulnerable women in maintaining sustainable livelihoods in the face of climate change, and recommending how their livelihoods can be improved and sustained in the long term by developing viable livelihood options.

The specific objectives of the study are:

- To get better understanding of women's livelihood practices in the present situation
- To identify the impacts of climate change on climatic hazard-prone rural livelihoods
- To assess climate resilient viable livelihood options for women

2

METHODOLOGY

2.1 STUDY SITES

The study sites are selected based on vulnerability to climate change induced disasters which are frequently faced in Bangladesh. Three specific sites were selected during the baseline study. Considering the climatic hazards and other vulnerabilities such as economic, geophysical and social contexts the study areas have been divided into three different eco-zones: exposed coastal areas, drought-prone areas and flood-prone areas. Ten Upazilas (sub-districts) were also pre-selected. The most vulnerable Unions were selected through consultation with key informants from the baseline study. (Table 1) shows the name of selected Unions for the study.

2.2 TARGET GROUPS

The key stakeholders, whose needs were assessed, fall under the ultra-poor and poor females categories. A range of groups were targeted, including female house hold heads, female farmers and those in situations particularly vulnerable to climate induced natural disasters, thus ensuring a good number representing the whole union. Other important stakeholders were local government officials, from the Upazila level, respective union chairmen, members (local government officials), female members, social change makers including representatives of non-government organizations (NGOs) and women's associations.

2.3 DATA COLLECTION

To assess the community needs of climate vulnerable women in different climate hot spots, a wide range of Participatory Rapid Appraisal (PRA) tools were used including in-depth interviews, focus group discussions (FGDs) (*Annex I*) and key informant interviews (KII) (*Annex II*) which all target data collection from local people. For conducting needs assessment surveys, the participatory needs assessment (PNA) tool was developed by adapting existing formats, available on the Food and Agriculture Organization (FAO) and CARE websites (*Annex III*). A comprehensive needs assessment tool has been developed which comprises of a seasonal community hazard mapping, a mobility chart for women, seasonal livelihood calendar for men and women, a hazard and livelihoods index and a viable livelihood options index which are explained in the next section.

Hazard mapping is a participatory tool which enables researchers to become familiar with the community, and to see how the community is perceived by different groups within it. It is also used to identify important livelihood sources, and who has access and control over them. Furthermore, it identifies areas and resources at risk from climate hazards and analyses changes in them.

Mobility mapping is a visual representation of the movement of people within and outside their community. The tool can identify issues and problems related to socially differentiated mobility and access to resources (such as land, water, health, and education services; information; capital; and decision making).

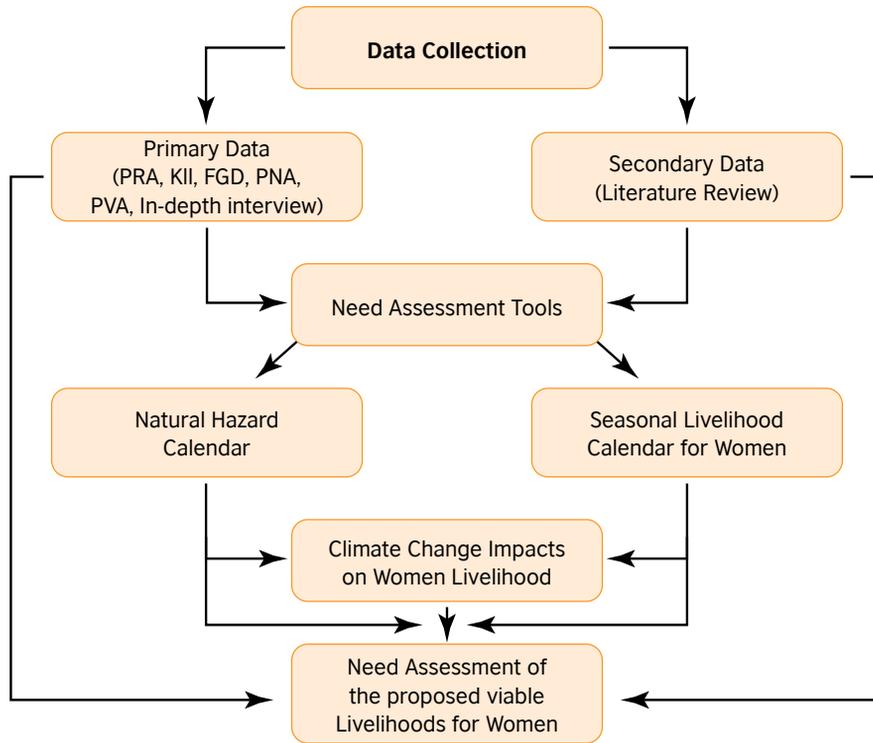
A Seasonal Calendar is a participatory tool to explore seasonal changes (e.g. gender-specific workload, diseases, income and expenditure) to learn about changes in livelihoods over a year and to show the seasonality of agricultural and nonagricultural workload, food availability, human diseases, gender-specific income and expenditure, water, credit and holidays.

Using these needs assessment tools the impacts of natural hazards and climate change on women's livelihood can be measured. A number of multi-stakeholder community meetings were also held in all the study Unions, in which stakeholders were invited to provide information. The needs assessment of viable livelihoods for women is proposed based on primary data (PRA, KII, FGD, PNA, PVA and in-depth interviews), secondary data, needs assessment tools (seasonal community hazard mapping, mobility chart for women, seasonal livelihood calendar for women, hazards and livelihood index) and impacts of natural hazards or climate change on women livelihoods (Figure 2).

Table 1: Name of the study area

Geo-physical Eco-zones	District	Upazila (Sub-district)	Union
Coastal Areas	Satkhira	Shyamnagar	Munshigonj
	Khulna	Koyra	Uttar Betkashi
	Patuakhali	Kalapara	Latachapli
	Cox's Bazar	Teknaf	Sabrang
	Bagerhat	Mongla	Chadpai
Drought-prone Areas	Chaipainawabganj	Nachol	Nachole
	Natore	Singra	Kalam
Flood-prone Areas	Shariatpur	Bhedarganj	Mohishar
	Sunamganj	Jamalganj	Jamalganj
	Sirajgonj	Kazipur	Shuvogacha

Figure 2: Flow Chart of Methodology and Data Collection



The FGDs and the community meetings were held in the villages at schools, community organizations and youth clubs, where participants discussed issues in detail and expressed their views freely and independently. The participants were requested to come together at common and convenient places and the research team (one facilitator and two recorders) clearly explained the purpose of the meetings. It was also informed that participation was voluntary and anyone had the right to refuse to answer questions and if they wished. Participants helped to establish a respectful appreciation for their valuable contributions to the needs assessment. All participants had full freedom and were encouraged to ask questions at any time during the session and accordingly, consent from each of the participants was taken using the pre-developed format. The availability of the livelihood assets and local people's affordability and access were noted in the seasonal livelihoods calendar. The local communities' observations were gathered using several participatory tools such as seasonal hazards calendars, hazards impacts on livelihoods index, mobility charts and Venn diagrams. Rural people provided information related to ongoing changes in the study area's climate and also

the probable future conditions of the livelihood assets.

The PRA team facilitated a guided discussion in such a way so that no single person could dominate the process and everyone got a chance to contribute in the discussion to build a shared understanding of the issues. The participants of multi-stakeholder community meetings were UP representatives (chair/members), UP women members, village level vulnerable women, local school teachers, members of civil society and male and female farmers. The purpose of the meeting was to ensure the outputs of the needs assessment are as relevant and useful as possible.

2.4 DATA ANALYSIS AND INTERPRETATION

Since the methodological approach was PRA, qualitative analysis was thus a core method in analyzing the data collected. In addition, ranking exercises, calendars and timelines generated some quantitative data, which allowed for numerical comparisons between communities and different ecological zones. All the field notes and tape recorded information were transcribed by the research assistants in

Bengali to ensure quality and to avoid any misinterpretation. In the data analysis phase, themes were identified for content analysis and coding transcripts into sub-themes. The interpretation of data conducted was based on a combination of coding summaries, contextual field notes, and descriptions provided by direct quotes from participants.

2.5 INTERNATIONAL STANDARDS FRAMEWORK

Situating this research in an international human rights framework situates it in the realm of disaster risk reduction and climate change from a gender perspective as well as a gender content area from a disaster risk reduction (DRR) and climate change adaptation (CCA) perspective.

DRR/CCA Standards

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:

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

Identifying women's role as powerful agents of change and implementing gender responsive disaster risk reduction is also addressed in the resolution adopted by the General Assembly for International Strategy for Disaster Reduction March 2013, A/RES/67/209:

...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...

Gender and Human Rights Standards

As this research aims to look at issues specifically for women, it is important to refer climate change from an international



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PRA session is operated by the researchers at Koyra Upazila in Khulna

women's human rights perspective. The 44th session of the Committee for the Elimination of All Forms of Discrimination Against Women (CEDAW) 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.

In addition, the Commission on the Status of Women Conclusions in 2014 (E/CN.6/2014/L.7) state:

Agreed Conclusion No. 34. The Commission is deeply concerned that climate change poses challenge to the achievement of sustainable development and that women and girls are disproportionately affected by the impacts of desertification, deforestation and natural disasters, persistent drought, extreme weather events, sea-level rise, coastal erosion and ocean acidification, is also deeply concerned that the adverse impacts of climate change on women and girls, especially those living in poverty, can be exacerbated by gender inequality and discrimination...

Promote the integration of a gender perspective in environmental and climate change policies and strengthen mechanisms and provide adequate resources to ensure women's full and equal participation in decision-making at all levels on environmental issues... on the lives of women and girls, and ensure a comprehensive approach to address the hardships faced by women and girls by integrating their specific needs into humanitarian response to natural disasters and into the planning, delivery and monitoring of disaster risk reduction policies to address natural disasters and climate change, and ensuring sustainable management of natural resources...

2.6 THEORETICAL APPROACH

The approach taken by this needs assessment draws from a human rights and social exclusion analysis for women's empowerment in disaster resilient growth. In this conceptualization Rasid and Shafie, the authors of the Bangladesh Ministry of Food and Disaster Management Guidebook for Gender and Social Inclusion in Disaster Risk Reduction, look at the interlinkage of women's empowerment, with that of equality of opportunity and equity of outcomes.

This approach to empowerment acknowledges that men and women have different needs and interests, and that mostly women's practical needs rather than their strategic interests are looked at in disaster risk reduction (DRR) and climate change adaptation (CCA). Secondly it looks not at preserving the pre-disaster/ adaptation situation, but to move forward with women's strategic interests to a situation of equity of outcomes.



It is clear that women are not a homogenous group. As they comprise approximately half of the population of Bangladesh, and since this needs analysis uses a vulnerabilities lens, we are looking at the most climate resilient and practical livelihood alternatives and practices for the most vulnerable women. In September 2012 the UN Human Rights Council adopted the UN's Guiding Principles on Extreme Poverty and Human Rights that recognizes vulnerability is a structural issue and calls for a transformation of those economic, social and cultural practices that perpetuate it¹. The word 'vulnerable', according to International Panel on Climate Change (IPCC) is a function of the character, magnitude and rate of climate variation to which a system (or individual) is exposed; its sensitivity; and adaptive capacity (IPCC, 2001).

¹ UNISDR (2013) Background Paper on Issues of Vulnerability and Gender, p. 6.

Durjog Shohisnu Dol – Disaster Resilient Group



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This study takes vulnerability further with its gendered characteristics illustrating marginalization and invisibility. In a study of climate hazards in Bangladesh, Terry Cannon looked at five components of vulnerability: the initial conditions of a person, the resilience of their livelihoods (the focus of this study) their opportunities for self-protection, and their access to social protection and social capital. He talks of a strong link of vulnerability in Bangladesh with that of poverty, and this is true in that poor women are more vulnerable than other women and men. Intersectionality illustrates various types of vulnerabilities that may be acting at the same time and women may inhabit all these types of vulnerabilities: the very poor, low class/caste, disabilities, HIV positive, migrant, landless, single headed households etc. In each case women suffer more than men with the same vulnerability. This means that in a vulnerability assessment we need a clear gender lens, whilst looking simultaneously at other specific aspects that increase women's disadvantage.



Empowerment

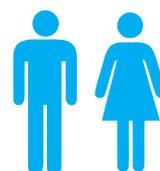
'Individuals acquiring the power to think and act freely, exercise choice, and to fulfill their potential as full and equal members of society.' The following factors may be included:

- Acquiring knowledge and understanding of gender relations and the ways in which these relations may be changed
- Developing a sense of self-worth, a belief in one's ability to secure desired changes and the right to control one's life
- Gaining the ability to generate choices and exercise bargaining power
- Developing the ability to organise and influence the direction of social change to create a more just social and economic order, nationally and internationally.



Equality of Opportunity

Women should have equal rights and entitlements to human, social, economic, and cultural development, and equal voice in civil and political life.



Equity of Outcomes

The exercise of equal rights and entitlements leads to outcomes which are fair and just, and which enable both women and men to have the same power to define the objectives of development.

VULNERABILITIES WOMEN MAY FACE OR MAY BE ACCENTUATED DURING DISASTERS



Elaine Enarson articulates areas where women suffer social, gender and economic vulnerabilities from inequality, making them more at risk in disasters. These characteristics indicate women are more likely to:

- 
- live below the poverty line;
 - rely upon state supported social services;
 - lack savings, credit and insurance;
 - lack inheritance rights, land rights and control;
 - be unemployed or work in the informal economy;
 - be self-employed, home based, contingent workers;
 - reside alone, be rearing children alone;
 - depend on functioning care giving systems;
 - depend on public transportation, travel with dependents;
 - reside in public housing, mobile homes, rental housing, informal settlements;
 - live at risk of assault and abuse;
 - be displaced into domestic violence shelters;
 - be responsible for others (family, kin, neighbors) as paid and unpaid caregivers;
 - physically depend on others due to late pregnancy, recent childbirth, age, chronic illness;
 - be living with disabilities, chronic illness ;
 - be subject to gender norms controlling mobility and use of public space;
 - be subject to male authority in the household regarding use of emergency assistance assets and key decisions about evacuation and relocation.

To look into this multilevel vulnerability, it is important to note that specific vulnerabilities are exactly that, specific for a given place and time and change in different seasons, across climate conditions and their stage of health, pregnancy, and age. The focus on vulnerabilities should not consider all women or vulnerable women as always vulnerable. Again referring back to the principle of empowerment, this links to human rights of women in what this needs assessment report refers to as an approach to gender justice.

A gender justice approach comes back to the issues of equality of opportunity and equity of outcomes, and thus the need for men to be brought into the work on gender equality, especially as this gender construction interacts in the family and community context between men and women, boys and girls every day. In looking at increasing women’s access to sustainable livelihoods, this is not possible unless the multitude of their vulnerabilities is addressed, not merely one.

The Sustainable Livelihoods Framework created by DFID (see below) can also be used to illustrate the logic of decreasing vulnerabilities due to disaster and climate change impacts

leading to sustainable livelihoods. The most vulnerable women that we are addressing in this project are poor (financial capital) women who currently face discrimination in access and control of resources and decision making (human and social capital) in farming areas that are highly at risk of disaster and climate change (natural capital). Investing in women’s skills, decision making capacity and access to resources in an approach to equality and equity, leads to empowered local women with more reliable crops, clean energy and decreased vulnerability. These women can then impact on, and be supported by more gender sensitive policies and institutions.

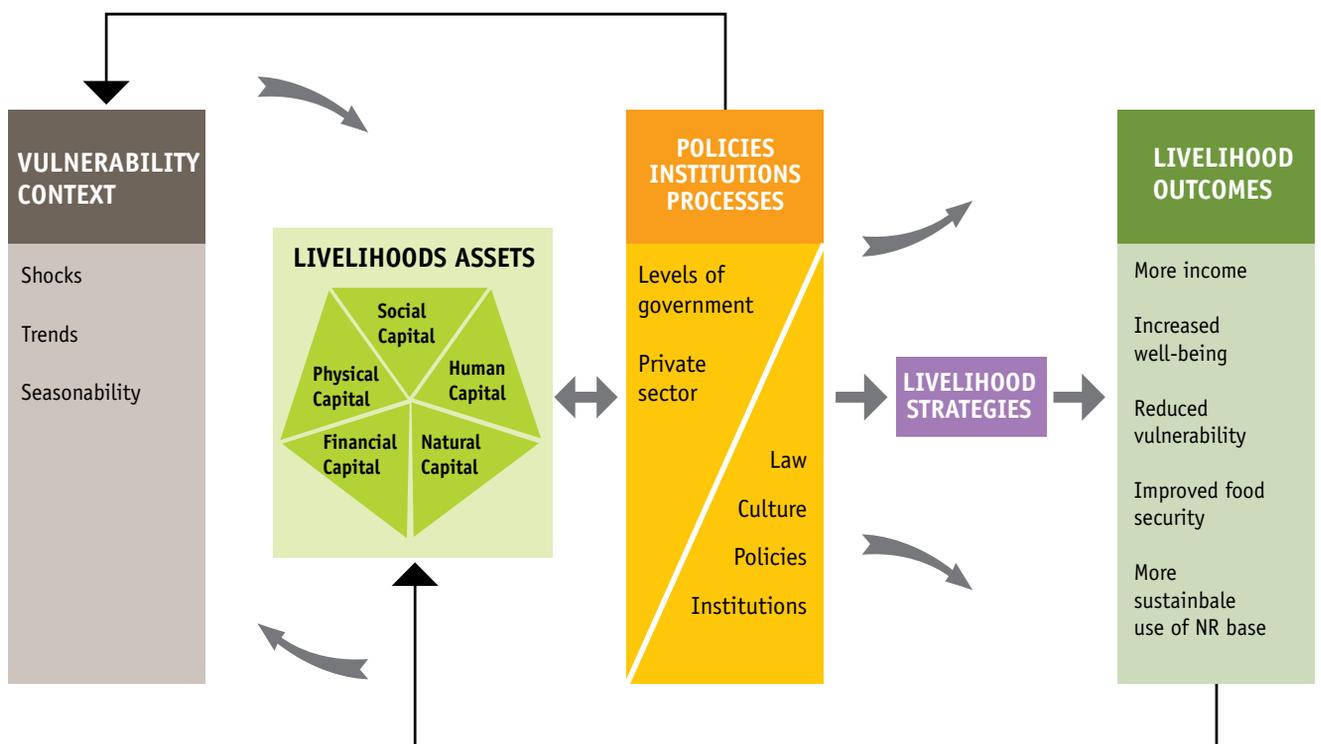


Fig 3: DFID's Sustainable Livelihoods Framework

3

PROFILE OF THE STUDY AREA

Almost every year, Bangladesh experiences disasters such as tropical cyclones, tidal surges, coastal erosion, floods and droughts. The Ganges-Brahmaputra-Meghna (GBM) river basin is one of the most populous river basins in the world. Floods and droughts in the GBM may affect, directly or indirectly, the fate of nearly one-sixth of the population of the world (Chowdhury et al, 2012).

Among different hard-to-reach agro-ecological zones in Bangladesh three areas i.e. exposed coastal areas, drought-prone areas and flood-prone areas have been selected for the study. All the study villages are experiencing a number of environmental and climate change related problems including temperature rise, erratic rainfall, prolonged droughts, sudden floods, frequent cyclones and tidal surges. Slow onset of climate change and environmental problems like the drawing down of ground water, salinity, arsenic and iron in ground water, were also reported by the communities.

The report will focus specifically on the 3 eco zones of the study sites, beginning with the coastal zone, followed by the drought prone zones and finally those most exposed to floods. Each section will outline the districts selected with hazards maps of these areas. This will be followed by the gender impacts of these hazards and recommends addressing them. The current diversified women's livelihoods are then investigated through a seasonal livelihood calendar and a priority ranking of the climate impacts on these livelihoods. The section will conclude with an analysis of community needs and recommendations with a positive case study of local women forging success with a sustainable and viable livelihood model.

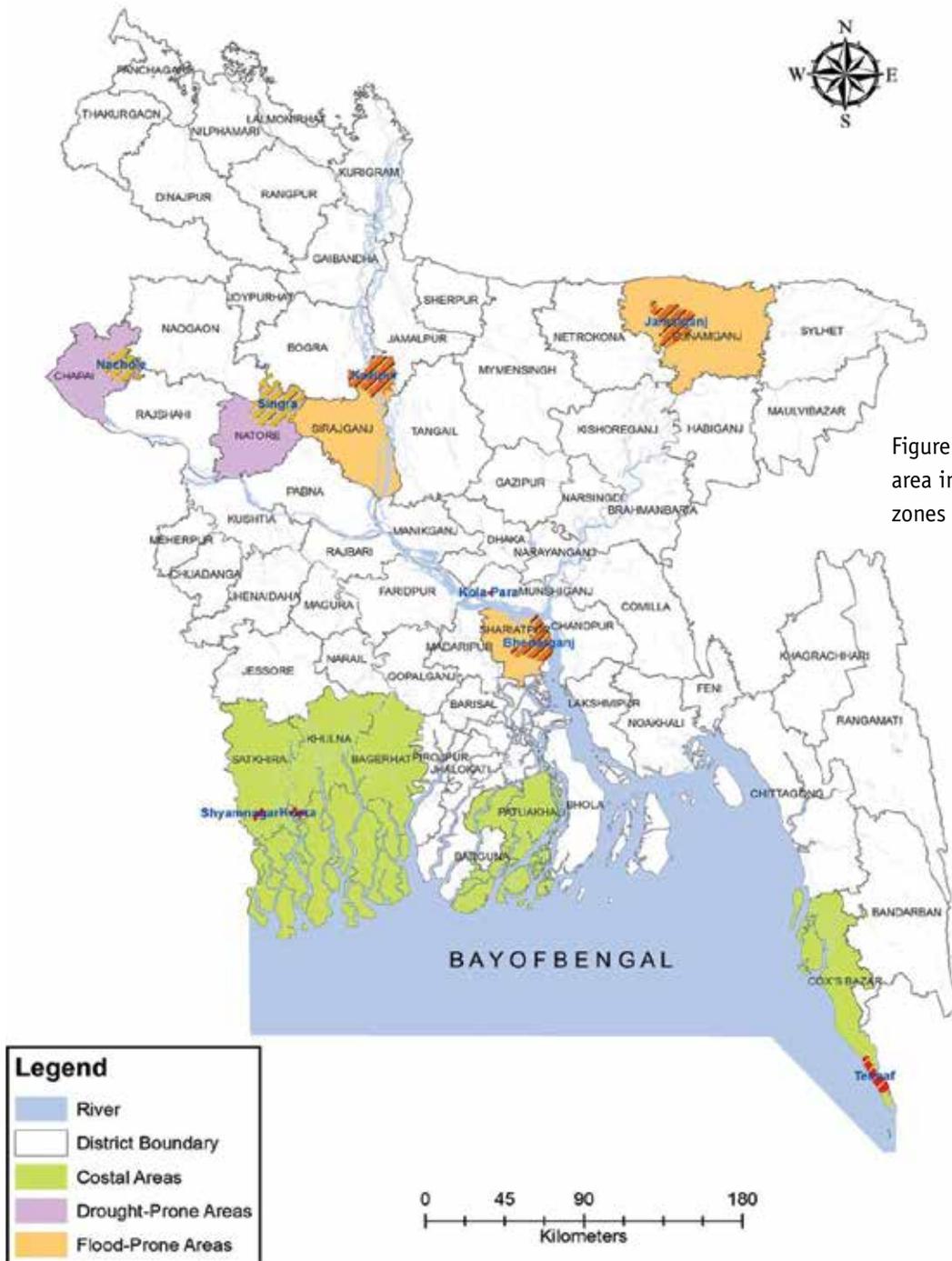


Figure 4: Location of the study area in different ecological zones in Bangladesh

There are three main agricultural seasons in Bangladesh: *kharif-1*², *kharif-2*, and *Rabi*³. The major crops grown in the study areas are jute, aus rice (broadcast) in the *kharif-1* season and boro rice, mustard, chili, coriander, and pulses in the *Rabi* season. In the *kharif-2* season, however, the water depth becomes too high in the flood-prone areas, so no crops can be grown, except in limited areas where deep-water *Aman*⁴ rice is grown.

² Kharif—pre-monsoon and monsoon growing season.

³ Rabi—dry (sunny) growing season, (including both the cool winter and hot pre-monsoon seasons)

⁴ Aman—group of rice varieties grown in the monsoon season and harvested after the monsoon season.

4

COASTAL ZONE

The southernmost part of Bangladesh is bordered by about 710 km of coastal belts, where cyclones, storm surges, salinity intrusion and coastal erosion are common. The coastal belt has been identified as a problem area due to different climatic disasters, complex hydro geological conditions and adverse water quality, which make safe water supply difficult. Similar to other areas in the coastal belt, Satkhira, Khulna, Bagerhat, Patuakhali and Cox's Bazar districts are also associated with an acute drinking water crisis. The salinity of the contour lines has proved that the Bagerhat district is more vulnerable to salinity and the unit of salinity is 10 ppt. Cyclone surges in the Bagerhat and Patuakhali districts are very high (above 1 meter high) and these districts are the most vulnerable to cyclonic hazards. In this context, the coastal belt, especially the exposed areas and islands are the most hazard-prone hard-to-reach areas in Bangladesh.



4.1 CLIMATIC HAZARDS WITH SEASONALITY FOR THE COASTAL STUDY AREA

Coastal communities face multiple vulnerabilities more varied and more intensive than those faced by most of the more inland-situated communities. The major threats faced by people living in the coastal zone are cyclones and storm surges, floods, drainage congestion and water logging, droughts and salinity intrusions, erosion and deteriorating ecosystems. This is aggravated by a greater probability of increased rainfall during the monsoon season, less precipitation in winter, higher temperatures and sea level rise leading to adverse impacts on the livelihoods of people in the coastal zones (Ahmed and Wilde, 2010).

The southernmost part of Bangladesh is bordered by about 710 km of coastal belts, where cyclones, storm surges, salinity intrusion and coastal erosion are common.

NATURAL HAZARDS WITH SEASONALITY IN COASTAL AREA

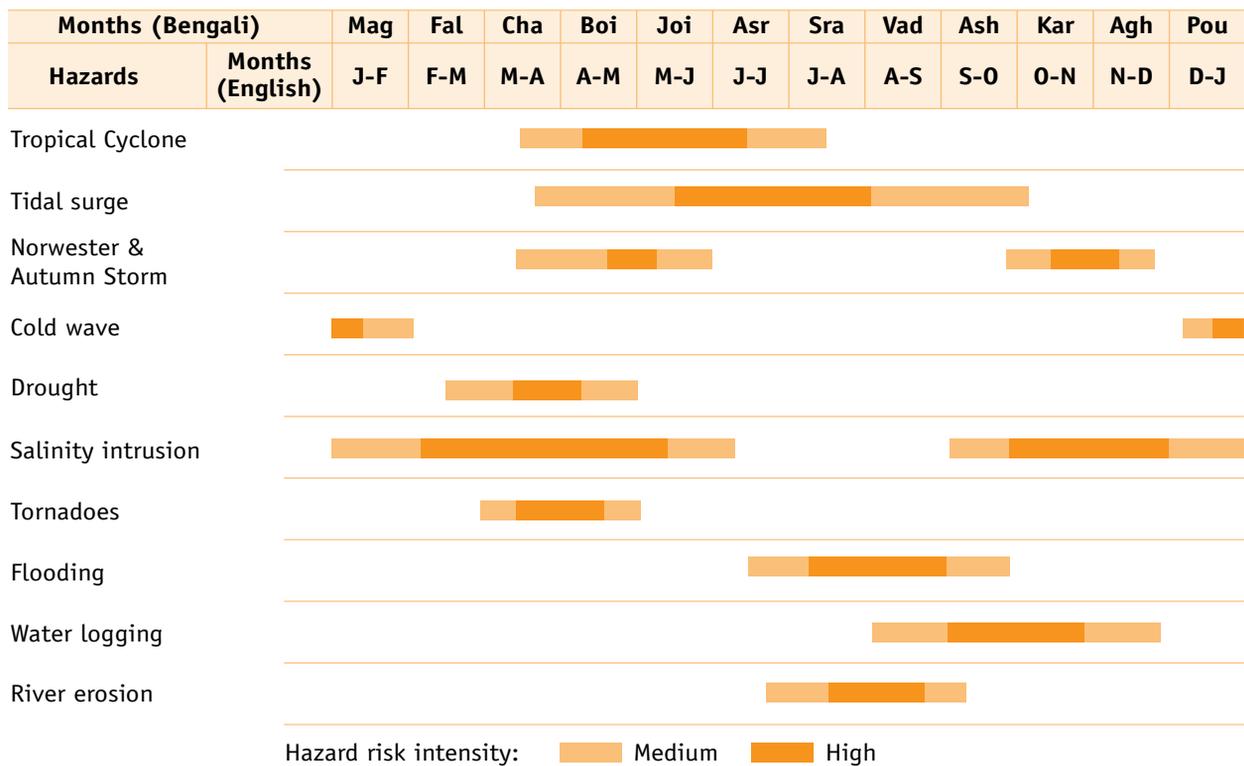


Fig 5: HAZARD seasonality developed through PRA sessions

For this study, three regions of the coastal area have been selected: Satkhira, Khulna and Bagerhat district in the south-west coast; Patuakhali district in the south-center coast and Cox's Bazar district in the southeast coast of Bangladesh. Figure 5 shows the status of climate-induced hazards with seasonality in the study sites of the coastal areas. The PRA sessions of hazards seasonality revealed that the coastal zones and their people, especially women, are very vulnerable, where tropical cyclones, storm surges, flooding, salinity intrusion, droughts, cold waves, water logging and bank erosion hazards cause major damage every year. Tidal surge intensity is very high in the months of June, July and August in the study area. Salinity intrusion intensity is extreme in the months of March, April and May. In addition, the people of coastal area are severely affected by tornadoes and droughts in April and flooding and erosion hazards severely in the months of August and September. The field data also revealed that October and November are the months of Norwester hazards in the coastal areas.

4.2 IMPACT OF COASTAL WEATHER HAZARDS ON WOMEN

The rivers in the delta are shifting their courses and these new islands built of silt (Char) house people (known as char dwellers) who live with some of the most at risk situations as the very land under their feet may be taken away by the river with the onslaught of a disaster. They are severely at risk of tidal surges and cyclones. As mentioned, the coastal region are also more prone to cyclones and in 1991 of the 140,000 people who died in the cyclone of that year, 90% were women (Ikeda, 1995).

Women are more at risk due to their familial roles in caring for children, the sick and elderly, they are often unable to swim, and they often have limited mobility. But it is not only that women are more vulnerable in terms of death and injury, the impacts after climate hazards are also greater, as those dying of water borne diseases can be higher than that from the disaster itself. Women's vulnerability extends into the

Patuakhali District has been washed away by tidal surges



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aftermath and recovery in many ways and takes various forms from social, cultural, religious, economic and personal (safety and violence). The Bangladesh government Guidebook on Gender and Social Inclusion in DRR states “women are often vulnerable to sexual harassment in pre and post disaster situations” (Rashid and Shafie, 2009). After the 1991 cyclone it was documented that young women were abducted and abused, and it has also been reported that there has been harassment in shelters, especially where there is not a separate safe space for women to toilet, shower and sleep. Khondker refers to how in Bangladeshi society women are prohibited from outdoor activities for cultural and religious reasons, but also points out that there are class issues here, as the poorest often cannot afford to maintain these restrictions. As such she expresses “the village women were caught in a double bind. The cultural norms discouraged, if not proscribed completely, their visitation to the relief centres, yet they had very little choice (hunger being the alternative): when any family member had to go, the lower status of the woman in

the family meant that she be it” (Khondker, 1996: 289).

Farhana Sultana (2010: 47) states “some of the challenges that men and women face are cultural and religious edicts that local religious heads (imams) or social heads (matabbar, mondol) may issue that reinforce gender roles rather than enable changes”. The other side of this coin is that disasters may bring opportunities to bring about a change in gender roles which is more equitable and this will depend on local contexts and individuals.

This needs assessment looks at how livelihood activities can also be affected by and influence disaster management for women during preparedness, response and recovery, and need to be cognizant of these issues from the perspective of information management, mobilisation of women and women’s access to mobility, participation in decision making and women’s roles in warning and response systems and operations.

SEASONAL LIVELIHOOD CALENDAR FOR WOMEN IN COASTAL AREA

Livelihoods	Months (Bengali)	Mag	Fal	cha	Boi	Joi	Asr	Sra	Vad	Ash	Kar	Agh	Pou
	Months (English)	J-F	F-M	M-A	A-M	M-J	J-J	J-A	A-S	S-O	O-N	N-D	D-J
Wage labour (Farm)													
Wage labour (Non-farm)													
Poultry rearing													
Cattle rearing													
Carb collection													
Fishing													
Prawn collection													
Handicrafts & Swing													
Tailoring													
Homestead gardening													

Fig 6: Seasonal Livelihood Calendar for Women in Coastal Area

4.3 RECOMMENDATIONS FOR GENDER EQUITY IN COASTAL ZONES:



- Prioritise and ensure women's safety in shelters, latrines and public spaces
- Enable equal access for women and girls to food and nutrition
- Ensure access to women's specific and gender sensitive accessible medical care (female doctors, private spaces, reproductive health)
- Increase gender awareness of migration push and pull factors and the social and economic impacts on the household
- Assistance from male members of the family with collection of fuel and water
- Maintaining girls as well as boys in school as a priority
- Ensure women are represented in all decision making on coastal management

4.4 DIVERSIFIED WOMEN LIVELIHOOD WITH SEASONALITY IN THE COASTAL AREAS

The investigation of study sites entailed an analysis of existing qualitative information, which provides a preliminary understanding of the livelihood pattern with seasonality in the coastal areas. This section of the study tried to identify the major livelihoods options undertaken by women of coastal communities in different periods of the year. The seasonal livelihood calendar for women in the coastal study area is shown in Figure 7 illustrating that cattle and poultry rearing and tailoring are practiced all the year round. Many female household members are also involved fishing, crabs and prawn collection which is seasonal and farm-based wage labour in Rabi and Kharif-1 crop production is undertaken during October to May in the coastal study areas.



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Duck rearing as an alternative livelihood coastal communities

4.5 DEGREE OF IMPACTS AND DURATION ON COASTAL WOMEN’S LIVELIHOODS

The study team investigated the degree of impacts and duration of multiple climatic hazards in the coastal areas selected on women’s livelihoods. A hazards calendar and impact matrix rankings were applied to develop an index of climatic hazards impacts on different women’s livelihood groups in the coastal study areas.

Figure 7 shows the climatic hazards impacts. Among the coastal women’s livelihood groups, farm-based wage labour and farming livelihoods of cattle rearing and poultry are severely affected by all kinds of coastal hazards and ranked as first and second respectively. The least affected, therefore the most recommended areas are in prawn collecting and tailoring.

Table 2 presents the adverse impacts on livelihoods during climatic hazards in the coastal areas. Among the climate-induced hazards, some are slow on set (salinity intrusion, droughts) but create long term effects on livelihoods. The PRA findings show that the substantial amount of increase of

Fig 7: NATURAL HAZARDS WITH SEASONALITY IN COASTAL AREA

LIVELIHOODS FOR WOMEN	Tropical Cyclone	Tidal surge	Norsester & Autumn Stom	Cold Wave	Drought	Salinity intrusion	Tomadoes	Flooding	Water logging River erosion/	Embankment failure Rank of being	Affected
Wage Labour (Farm)	+++++	++++	+++	+++	++++	+++++	++++	+++++	++++	+++++	1
Cattle Rearing	+++++	++++	+++	++	++++	++++	++++	+++++	++++	+++	2
Poultry rearing	+++++	++++	+++	+++	++	+++	+++	+++++	++++	+++	3
Homestead gardening	++++	++++	+++	+	+++	++++	++	+++++	+++	+++	4
Carb production	++++	+++++	+++	+++	---	++	---	+++++	++	+++++	5
Wage labor (Non-farm)	+++	++++	++	+++	+	+++	+	+++++	+++	++	6
Handicrafts & swing	+++++	++++	++	++	---	---	---	+++++	+++	++	7
Fishing	+++	++++	+++	---	---	++	---	++++	+++	+++	8
Prawn collection	+++++	+++++	+++	---	---	---	---	+++	++	+++	9
Tailoring	++++	++++	+	+	---	---	+	++++	+++	+++	10

Impact scale: (+++++ = Very high; ++++ = High; +++ = Moderate; ++ = Low; + very Low; --- = Insignificant)

salinity is ultimately affecting the fresh water quality and in turn the coastal habitats, agriculture, fisheries, aquatic plants and animals in the ecosystem. Due to salinity intrusion, the local community observed the following impacts: fodder and pasture were not available for cattle, lack of fresh irrigation water, domestic work hampered due to lack of fresh water and severe water and sanitation problems. What is possible though in saline water is shrimp and crab farming, and this needs to be explored further.

A study that was conducted in 2002 in one of the sites for this study, Khulna, compared, gross production, economic output and employment potential of brackish water shrimp, crab and moderately saline-tolerant tilapia and prawn culture, freshwater carp culture and traditional rice production systems (Salam, Ross and Beveridge, 2002: 477). Bangladesh houses the largest continuous mangrove forest and this can be harvested sustainably, with new saline intrusion creating new farming opportunities. There is simultaneously a need to protect the mangrove areas and not to over farm as the mangroves also protection the coast from storms and cyclones. Sustainable farming with marine fish, shrimp and crabs has increased. The study by Salam, Ross and Beveridge found that

the best employment options measured through average annual labour requirements per hectare of land was from prawn culture, followed by crab, shrimp, carp, tilapia and rice cultivation (2002: 491). Their study also conducted an evaluation of agricultural by-products, including oil cake, rice bran, wheat bran and other products for low cost animal feed that could enhance aquaculture development. These products are very sustainable and are using agricultural waste, making their usage not only possible for women's livelihood and personal use, but are also a form of climate mitigation, and as such highly advocated for usage and expansion.

The coastal women from this study cited crab farming as an option, although shrimp farming was ranked much lower risk due to hazards. This should be explored further along with the production of agricultural by products, with increased training and awareness for women in these industries as these could be harnessed as viable livelihood options for more women in coastal regions.

Salt cultivation by the coastal communities at Teknaf Upazila



Table2: Adverse impacts on life and livelihoods during hazards in the coastal area

Types of Hazards	Affected Livelihoods	Specific Impacts on Life and Livelihoods
Norwester and Autumn Storm	<ul style="list-style-type: none"> ● Wage labor (Farm) ● Cattle rearing ● Poultry rearing ● Homestead gardening ● Crab production ● Wage labor (Non-farm) ● Handicrafts and swing ● Fishing ● Prawn collection ● Tailoring 	<ul style="list-style-type: none"> ◆ People can't go out for work ◆ Damage household physical structures ◆ Livestock died ◆ Fish pond damage ◆ Agricultural crop and tree damage
Tidal surge	<ul style="list-style-type: none"> ● Wage labor (Farm) ● Cattle rearing ● Poultry rearing ● Homestead gardening ● Crab production ● Wage labor (Non-farm) ● Handicrafts and swing ● Fishing ● Prawn collection ● Tailoring 	<ul style="list-style-type: none"> ◆ Damage household physical structures ◆ Cattle and poultry damage ◆ Fish pond damage ◆ Agricultural crop damage ◆ Damage homestead gardens and plants ◆ Road and embankment failure
Tropical Cyclone	<ul style="list-style-type: none"> ● Wage labour (Farm) ● Cattle rearing ● Poultry rearing ● Homestead gardening ● Crab production ● Wage labor (Non-farm) ● Handicrafts and sewing ● Fishing ● Prawn collection ● Tailoring 	<ul style="list-style-type: none"> ◆ People injured and died ◆ Damage local and village physical structures ◆ Damage household level structures ◆ Severely damage cattle and poultry ◆ Fish pond damage ◆ Agricultural crop and tree damage ◆ Damage homestead gardens and plants ◆ No scope for wage labour
Cold-wave	<ul style="list-style-type: none"> ● Wage labour (Farm) ● Cattle rearing ● Poultry rearing ● Homestead gardening ● Crab Breeding ● Wage labor (Non-farm) ● Handicrafts and sewing ● Tailoring 	<ul style="list-style-type: none"> ◆ Seasonal disease for cattle and poultry ◆ Decrease agricultural crop production ◆ Production fall due to lack of irrigation water ◆ Elderly people and children affected by disease ◆ Crab are not available in low temperature ◆ Honeycombs are not available in low temperature
Drought	<ul style="list-style-type: none"> ● Wage labour (Farm) ● Cattle rearing ● Poultry rearing ● Homestead gardening ● Crab production ● Wage labor (Non-farm) 	<ul style="list-style-type: none"> ◆ Lack of food for livestock ◆ Damage agricultural production ◆ Irrigation water is not available ◆ Increase salinity in water and soil ◆ Lack of fresh water for domestic work
Salinity Intrusion	<ul style="list-style-type: none"> ● Crop farming ● Cattle rearing ● Homestead gardening ● Farm-based wage labour ● Household activities 	<ul style="list-style-type: none"> ◆ Fodder and pasture are not available for cattle ◆ Increase salinity in water and soil ◆ Lack of fresh irrigation water ◆ Domestic work hampered due to lack of fresh water ◆ Severe water and sanitation problems ◆ Health hazard for all family members

Types of Hazards	Affected Livelihoods	Specific Impacts on Life and Livelihoods
Tornado	<ul style="list-style-type: none"> ● Crop farming ● Livestock rearing ● Homestead gardening ● Household activities 	<ul style="list-style-type: none"> ◆ People injured and died ◆ Damage household physical structures ◆ Livestock damage ◆ Agricultural crop damage
Flood	<ul style="list-style-type: none"> ● Wage labour (Farm) ● Cattle rearing ● Poultry rearing ● Homestead gardening ● Crab Breeding ● Wage labor (Non-farm) ● Handicrafts and sewing ● Fishing ● Prawn collection ● Tailoring 	<ul style="list-style-type: none"> ◆ Agricultural crops submerged under water ◆ Sand deposits on farmlands ◆ Food insecurity ◆ Submerged homestead area ◆ Damage household physical structures ◆ Submerged all tube-well and lack of safe drinking water ◆ Communication system disrupted
Water Logging	<ul style="list-style-type: none"> ● Wage labour (Farm) ● Cattle rearing ● Poultry rearing ● Homestead gardening ● Crab production ● Wage labor (Non-farm) ● Handicrafts and sewing ● Fishing ● Prawn collection ● Tailoring 	<ul style="list-style-type: none"> ◆ People can't go out for work ◆ Damage household physical structures ◆ Livestock died ◆ Fish pond damage ◆ Agricultural crop and tree damage
River bank Erosion/ Embankment Failure	<ul style="list-style-type: none"> ● Wage labour (Farm) ● Cattle rearing ● Poultry rearing ● Homestead gardening ● Crab production ● Wage labor (Non-farm) ● Handicrafts and swing ● Fishing ● Prawn collection ● Tailoring 	<ul style="list-style-type: none"> ◆ People can't go out for work ◆ Damage household physical structures ◆ Livestock died ◆ Fish pond damage ◆ Agricultural crop and tree damage

4.6 COMMUNITY NEEDS AND RESOURCE MOBILIZATION FOR COASTAL WOMEN

Men and women face their social, economic and environmental reality in different ways; how they participate is also different, and depends on age, socio-economic class and culture. However, across age and culture, usually women have fewer assets than men to recover from natural disasters.

According to the community-based needs assessment survey, women from poor households in the coastal areas suggested to involve in poultry farming, cattle rearing and dairy farming, tailoring and embroidery, grocery shops, homestead gardening, vegetable farming, work in Government development projects as KABIKHA (food for work) and making different types of handicrafts like fishing nets, fish cages, bamboo-made goods

and snail shell made toys as viable livelihood options for the exposed coastal areas in Bangladesh.

As the targeted community is very poor and vulnerable to different types of climatic hazards, it is essential to know what types of capital, resources and skill development training will be needed to practice new livelihoods such as crab and shrimp farming, which are conducive to increased salinity. Identifying organisations to provide and support the development of agricultural by products is also essential. In addition, it is also necessary to know the social acceptance and future risks of these livelihood options in the community. In this regards, Table 3 presents the needs assessment of the viable livelihood options identified by coastal women in the study sites.

Table 3: Needs Assessment of the proposed viable livelihood options for coastal women

Proposed Livelihood Options	Justification	Resource and Capital	Sources of Resource Mobilization	Skill Development Training Needs	Organizations need to support	Future risks or constraints
Poultry farm	<ul style="list-style-type: none"> Investment cost is low Suitable for females Limited resources needed Can be operated from inside the home 	<ul style="list-style-type: none"> Seed money Product marketing Vaccination Poultry feed 	<ul style="list-style-type: none"> MFIs Schedule Bank Veterinary Hospital NGOs GOs 	<ul style="list-style-type: none"> Incubator training Feeding process Poultry rearing training 	<ul style="list-style-type: none"> Veterinary Hospital Department of Livestock Directorate of Youth Development Office NGOs 	<ul style="list-style-type: none"> Natural hazards Disease (Bird flu)
Cattle rearing and dairy farm	<ul style="list-style-type: none"> Limited labor needed For cattle rearing High demand in local market Profit is very high Availability of fodder 	<ul style="list-style-type: none"> Seed money Product marketing Vaccination and treatment 	<ul style="list-style-type: none"> MFIs Schedule Bank Livestock Hospital NGOs GOs 	<ul style="list-style-type: none"> Training on primary treatment Feeding process Cattle rearing training 	<ul style="list-style-type: none"> Department of Livestock NGOs GOs 	<ul style="list-style-type: none"> Natural hazards Transportation
Tailoring and embroidery	<ul style="list-style-type: none"> Suitable for females Limited resources needed Can be continued during disasters Local demand is also high 	<ul style="list-style-type: none"> Seed money Sewing machine Embroidery machine 	<ul style="list-style-type: none"> NGOs Cooperative Society MFIs 	<ul style="list-style-type: none"> Cutting and sewing training Machine operation training 	<ul style="list-style-type: none"> SME Foundation Directorate of Youth Development Office NGOs 	<ul style="list-style-type: none"> Marketing
Handicrafts (Fishing net, fish cage, bamboo-made goods, snail-made toys)	<ul style="list-style-type: none"> Suitable for both males and females Limited capital needed Raw materials are available Can be continued during disaster Local demand is high 	<ul style="list-style-type: none"> Seed money Product marketing Raw materials 	<ul style="list-style-type: none"> NGOs Cooperative Society 	<ul style="list-style-type: none"> SME training Skill development training 	<ul style="list-style-type: none"> Directorate of Youth Development Office NGOs SME Foundation 	<ul style="list-style-type: none"> Marketing
Small Business/ Grocery shop	<ul style="list-style-type: none"> Local Demand Can be operated from house Limited effort is needed Less affected by disasters 	<ul style="list-style-type: none"> Space allocation in the village market Shops Seed money 	<ul style="list-style-type: none"> MFIs Schedule Bank NGOs GOs 	<ul style="list-style-type: none"> SME training 	<ul style="list-style-type: none"> Directorate of Youth Development Office NGOs SME Foundation 	
Homestead Gardening	<ul style="list-style-type: none"> Possible to do in house country yard Easily managed by females Local demand is high Investment and running cost is very low Limited efforts needed 	<ul style="list-style-type: none"> Seeds Seed money Product marketing 	<ul style="list-style-type: none"> MFIs NGOs Upazila Agriculture Extension Office Office 	<ul style="list-style-type: none"> Horticulture training SME training 	<ul style="list-style-type: none"> Directorate of Youth Development Office NGOs MFIs Upazila Agriculture Extension Office 	<ul style="list-style-type: none"> Transportation Attacked by Insects Natural hazards
Vegetable farm	<ul style="list-style-type: none"> Easily managed by females Local demand is high Investment and running cost is very low Limited efforts needed 	<ul style="list-style-type: none"> Seeds Seed money Product marketing 	<ul style="list-style-type: none"> MFIs NGOs Upazila Agriculture Extension Office Office 	<ul style="list-style-type: none"> Horticulture training SME training 	<ul style="list-style-type: none"> Directorate of Youth Development Office NGOs MFIs Upazila Agriculture Extension Office 	<ul style="list-style-type: none"> Transportation Attacked by Insects Natural hazards
Work in Govt. development projects (KABIKHA)	<ul style="list-style-type: none"> Local alternative options of income Land resources is not needed No capital is needed 	<ul style="list-style-type: none"> Enrollment as a wage labour in local development projects 	<ul style="list-style-type: none"> UNO Office NGOs LGED Office Union Parishad Office 	<ul style="list-style-type: none"> Female safety net training 	<ul style="list-style-type: none"> Directorate of Youth Development Office NGOs LGED Local government 	<ul style="list-style-type: none"> Rough weather Social Constraints



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Migration is a well-established response by human societies to ecosystem variability and changes. There are three types of migration that were found in the study sites: overseas (foreign) migration, rural to urban migration and rural to rural migration. These seasonal and permanent migrations are driven by both push and pull factors in the coastal and flood-prone Bangladesh. The major push factors are salinity intrusion, erosion of farming land and settlement areas, landscape changes due to sea level rise (SLR), and water logging and flood inundation. For these disaster-prone areas, migration is considered as a coping strategy for their life and livelihoods. Frequent floods and erosion induced settlement migration have severe impacts on immovable assets such as farmland, homestead area, ponds and trees. The victims always face varying magnitudes of risk to their movable assets, family and community kinship, post-erosion livelihoods, food insecurity, lack of cooking and fuel facilities, drinking water and sanitation facilities. In this fragile situation women are more vulnerable than men, and this will be discussed further in the next section.

4.7 RECOMMENDATIONS FOR COASTAL ZONE SUSTAINABLE LIVELIHOODS FOR WOMEN

- Increase access to training for sustainable crab and shrimp production and other salinity resilient farming
- Increase training in financial skills to plan for new resilient coastal livelihoods including agricultural by products
- Maximize the diversification of livelihoods to increase economic security
- New livelihoods for women cannot involve a huge increase in time unless other household members take on other time burden activities women currently hold.



CASE STUDY

COASTAL ZONE

**Location: Vill: Kachharibari, Union: North Bedkashi,
Upazila: Koyra, District: Khulna.**

‘Handicraft, woodcraft and embroidery – all these three activities have changed my way of life’, said 38 year old Shafia Begum. ‘We lost our livelihood means after Aila. But now we are very happy, we have found a different livelihood practice that can be done in bad weather conditions too’.

The look on Shafia’s face was almost audible as she recalled the massively destructive cyclone Aila that hit the coastal zone of Bangladesh in 2009. “Our lives almost stopped after the cyclone,” reflected Shafia. “The demand of tailoring was almost nothing, and my husband lost his job due to most of the land being destroyed by saline water. We were at a complete loss.”

Shafia told of intense hardship as she had to find manual labour digging land and selling fish just to meet ends. Her daughter’s education almost stopped due to their economic crisis. After starting her handloom business though, Shafia states that her entire life changed for the better. “I am now not only earning sufficiently right from my home, but my daughter is able to continue her studies properly, which I think is one of my best achievements.”

Building a handloom requires a wooden structure that costs around 700 tk to construct. The material is available in the local markets and the local carpenters have adequate knowledge in building, making replication for other households easy. Shafia claims that 24 families have started this business after they saw her success in it, and all of them have taken it up as an alternative source of income in the climate stricken coastal area.

“All that needs to be ensured is the supply of the cloth material at all times, to ensure smooth running of the business. This is especially true in times of disaster, when if the supply can be ensured, there is no reason for someone’s income to be hampered due to the disaster.”

Shafia mentioned that a local NGO took the initiative to train individuals interested to take up this business and were providing the raw materials necessary. They were also helping in the networking between different individuals in the business and the buyers and sellers.

The handloom work, which entails mainly designing cloth material for clothes such as Salwar Kameezes, Blouses, Panjabis and Fatuas, is easy to learn and requires only the purchase of the cloth material which is obtained from a local organization. In

return, for each cloth material designed, they earn a revenue of 250 tk, and can design up to four pieces of cloth material every week.

“The best part of it though,” continued Shafia, “is that the structure used in the process is light weight and can be dismantled for transport, which can sometimes become a necessity in times of disaster. And since it is an inside task, it is not impacted by disasters like cyclones or tidal surges and income is not affected in times of disaster.”

Shafia says that she formed a committee with other women of the area and was elected to be president of this committee. After learning that a local NGO was conducting handloom training, she arranged for 24 women from her committee to be trained at this NGO. All of them are now working in the handloom business.

I used to be a tailor of clothes for 13 years and my husband used to work in the lands as an agro-laborer. Things were not perfect, but we were passing our days. Our 13 year old daughter Sanjida was in class seven at that time. The cyclone changed everything.



5

DROUGHT PRONE AREA

In recent decades, the hydro-climatic environment of northwestern Bangladesh has suffered from many droughts of major magnitudes which worsen the existing water scarcity situation. According to the National Drought Mitigation Center (2006), Bangladesh has shown an increased frequency of droughts in recent years. Every year Bangladesh experiences a dry period for seven months, from November to May when rainfall is normally low. Since 1971, Bangladesh has suffered severe droughts in 1973, 1978, 1979, 1981, 1982, 1992, 1994, 1995, 2000 and 2006. The 1973 drought was one of the most severe and was responsible for the local famine in northern Bangladesh in 1974. Even in the 1975 drought, 47% of the country was affected (Task Force Report 1992). Rural women are the principal producers of basic food items and the agricultural sector is very exposed to risks of droughts and uncertain precipitation; climate endangers food security in addition to the wellbeing of families and their capacities to survive (FAO, 2007).

5.1 Climatic Hazards with Seasonality for the Drought Prone Study Area

For this study, Chapainawabganj and Natore districts have been selected as drought-prone areas in Bangladesh to investigate. Figure 8 shows the situation of climate-induced hazards with seasonality in these drought-prone areas. The PRA sessions of hazards seasonality revealed that the women of these drought-prone areas are very vulnerable to Norwesters, autumn storms, droughts, cold waves, fog, hail storm, and river bank erosion causing major damage every year. The field data also revealed that the months of December and January are highly vulnerable to fog, which reduces agricultural production extensively. Sudden hailstorms also destroy the standing crops from March –April.



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Irregular rainfall heavily impacted on agriculture and crop production

Drought intensity is very high in the months of March, April and December. As a result water levels deplete and many water bodies (ponds, canals and ditches) become dry (Photo 4). The intensity of cold waves is extreme in the months of December-January.

Fig 8: NATURAL HAZARDS WITH SEASONALITY IN DROUGHT-PRONE AREA

Months (Bengali)		Mag	Fal	Cha	Boi	Joi	Asr	Sra	Vad	Ash	Kar	Agh	Pou
Hazards	Months (English)	J-F	F-M	M-A	A-M	M-J	J-J	J-A	A-S	S-O	O-N	N-D	D-J
Norwester & Autumn Storm				Medium	High	Medium					Medium	High	Medium
Cold wave		High	Medium										High
Drought			Medium	High	Medium							High	Medium
Fog		High	Medium							Medium	High	High	High
Flooding							Medium	High	Medium				
Hail				Medium	High	Medium							
River erosion							Medium	High	Medium				
Hazard risk intensity:				Medium			High						



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5.2 Impact of Drought Prone Weather Hazards on Women

It is clear that droughts cause a scarcity of clean water and adequate food, and these two facts change women's days to being spent in pursuit of clean water, fuel and food. This may leave no additional time for any livelihood activities, depending on the severity of the drought. The distance and safety issues related obtaining water and fuel may also put women and girls physically at risk of violence, harassment and sexual assault. In a study by Rahman reported in 2013, it was reported that 72.5% of women were responsible for collecting drinking water during a disaster. The simple act of having more men engaged in this activity could provide greater opportunity for women to engage more actively in livelihood activities as well as protect their personal health and safety.

Women also eat less amounts and quality of food than men as a coping mechanism during disasters. This leads to women being less healthy, and considering they are doing heavy work in the collection of water and fuel, adds to women's ill health. This is a vicious cycle for women as they bear the majority of household tasks, and caring for family members, their access to essential food, clothing and education, yet they are the most at risk of health. This is a false economy and women need to reverse these trends. Cannon refers to how "women's poorer nutritional status is a key aspect of their reduced capacity to cope with the effects of a hazard (Cannon, 2009: 14). This is compounded as women become weaker they are more prone to water borne and other diseases and suffer additional mental strain. There is a need to address women's vulnerability, and as they rise from vulnerability and their health becomes stronger, they can increase their role in decision making in livelihoods, but until this happens, they cannot be expected to provide increased and new livelihood

options. Men have a crucial role to play in this context, to allow women to have increased roles in livelihood, and increase the household income, they need to take on some of the household tasks including the collection of water and fuel, and they need to ensure the nutritional status of women and girls for the health of the whole family.

Again it is essential to include training on the gender analysis matrix for the role of women in disaster management (at the end of this report) in all livelihood activities for them to address key issues for gender equity and sustainability and allow livelihood activities to be successful.

Droughts also lead to migration due to the need for productive work. This often is the male head of the household and Farhana Sultana refers to how this leads to destabilising families, where desertion, divorce and polygamy can lead to women's increased economic vulnerability (Sultana, 2010, 48). When these households become women headed the statistics for their levels of poverty increase and their access to resources and sources of resilience decrease. In some cases, especially female headed households, the women themselves may migrate due to lack of employment, and here an OXFAM study in Bangladesh found that women ended up as the urban poor in the informal sector. Their work included domestic work, brick breaking, sewing, jute bag making, ash selling, fish and vegetable vending, selling rice cakes and working in the garment factories (WEDO, 2008). If sustainable resilient livelihoods can be found in the drought prone areas much of this rural-urban migration could be prevented, and women's standards of living and family cohesion could improve.

5.3 RECOMMENDATIONS FOR GENDER EQUITY IN DROUGHT ZONES



- Enable equal access for women and girls to food and nutrition
- Enable women's access to provision and training on deep tube wells
- Assistance from male members of the family with collection of fuel and water
- Ensure women are consulted at all stages of drought management on their needs and concerns

5.4 DIVERSIFIED WOMEN LIVELIHOOD WITH SEASONALITY IN THE DROUGHT-PRONE AREA

Women in these study sites are engaged in different types of primary and secondary livelihoods like farm-based wage labor, non-farm wage labor, cattle and poultry rearing, tailoring, handicrafts and sewing. The seasonal livelihood calendar for women in the drought-prone area is shown in Figure 8. This calendar shows that cattle and poultry rearing and tailoring are practiced all the year round. Many marginal female household members are also involved in farm-based wage labor in Rabi and Kharif-1 crop production during November to June and some female household members, belonging to extreme poor families, are active in wage labour in brickfields and some local government development works like KABIKHA (work for food) programs in the drought-prone study areas.

5.5 DEGREE OF IMPACTS AND DURATION ON DROUGHT-PRONE WOMEN'S LIVELIHOODS

Agriculture, as well as other rural livelihoods is badly affected by climate hazards in drought-prone areas. Every year Bangladesh's dry season lasts for seven months, consequently, droughts occur mostly in the pre-monsoon (March to May) and post-monsoon (October to November) seasons.

The term 'Monga' is a local term which means range scarcities that suddenly affect the people of drought-prone northern Bangladesh during a particular period in the year. The Monga is closely associated with various issues, like landlessness, seasonal unemployment, lack of alternative income and lack of purchasing capacity for daily necessities that often leads to chronic impoverishment and starvation. This is influenced by various physiographic phenomena, like soil, climate and agro-ecological factors.

Figure 10 shows the climatic hazards impacts on different women's livelihoods in the drought-prone areas. The hydro-climatic risks of flooding, droughts, cold waves, storms and erosion have direct relevance to an area's crops and cropping system. A short period of no rainfall may induce water stress to crops leading to substantial yield losses. Most crops are highly sensitive to droughts during the time of flowering. In the drought-prone study areas, the Rabi crops are certain

Fig 12: SEASONAL LIVELIHOOD CALENDER FOR WOMEN IN FLOOD-PRONE AREAS

Livelihoods	Months (Bengali)	Mag	Fal	Cha	Boi	Joi	Asr	Sra	Vad	Ash	Kar	Agh	Pou
	Months (English)	J-F	F-M	M-A	A-M	M-J	J-J	J-A	A-S	S-O	O-N	N-D	D-J
Wage labour (Non-farm)		██████████									██████████		
Wage labour (Farm)		██████████	██████████	██████████	██████████	██████████						██████████	██████████
Poultry rearing		██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████
Cattle rearing		██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████	██████████
Farming			██████████	██████████	██████████	██████████	██████████						
Garments worker		██████████	██████████	██████████	██████████								██████████
Horticulture		██████████	██████████									██████████	██████████
Small & petty business		██████████	██████████									██████████	██████████
Homestead gardening		██████████	██████████	██████████	██████████	██████████	██████████			██████████	██████████	██████████	██████████

to experience drought during November-April if irrigation is not provided. The Kharif-1 crops, such as jute, which is sown between mid-March and mid-May, are also almost certain to face water stress after sowing if irrigation is not provided.

Many of the women engaged in tailoring, sewing and making handicrafts at household levels can continue their work all the year-round. These activities are less impacted (impact scores of 5 and 6 respectively) by climatic hazards as they are performed inside buildings.

Among the climate induced hazards, some are slow-on-set (droughts) and some are rapid (floods, erosion) which create long term effects on livelihoods. The local communities in the study have observed the following impacts from floods and erosion: agricultural crops are submerged under water, sand deposits on farmlands, food insecurity, submerged homestead areas, damaged household physical structures, domestic work hampered due to lack of fresh water and severe water and sanitation problems faced by women. According to the PRA exercises, the major impacts from drought are the lack of food for livestock, damaged agricultural production, irrigation water not being available, lack of fresh water for domestic work and wage labour not being available.



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Durjog Shohisnu Dol receiving Livelihood training

Fig 10: CLIMATIC HAZARDS IMPACT ON LIVELIHOOD IN DROUGHT-PRONE

LIVELIHOODS FOR WOMEN	Norwester & Autumn Stom	Cold-wave	Drought	Hail	Flooding*	River erosion/ Embankment failure*	Rank of being affected
Wage Labour (Farm)	++	+++	++++	++	++++	+	1
Wage Labour (Non-Farm)	++	+++	+++	---	+++	++	2
Poultry rearing	+++	+++	++	---	+	+	3
Cattle Rearing	+++	++	++++	---	+	+	4
Handicrafts & swing	++	+++	---	---	+	+	5
Tailoring	+	+++	---	---	+	+	6

Impact scale: (+++++ = Very high; ++++ = High; +++ = Moderate; ++ = Low; + very Low; --- = Insignificant)
*Only for Kalam Union of Natore district

5.6 COMMUNITY NEEDS AND RESOURCE MOBILIZATION FOR DROUGHT-PRONE WOMEN

According to culture in the rural areas of the study sites, married women who are not engaged in field agriculture are usually confined to the homestead, however they are willing to work outside provided the husband agrees. In this respect, when families in drought-prone areas are unable to hire full-time hired labor, family members, particularly women, are used to fill these gaps. When traditional agro-based livelihoods are vulnerable, women need to find alternative viable livelihood options to recover from poverty.

The community-based needs assessment survey found that drought-prone women suggested poultry farming, cattle rearing and dairy farming, tailoring and embroidery, grocery shops, homestead gardening, tree plantation, laha cultivation and different types of handicrafts like making fishing net, fish cage, bamboo-made goods and winter seasonal cake (pitha) making as viable livelihood options. However, as the targeted community is drought prone, the issues of wage labour, livestock and agricultural production are most at risk. This illustrates that women may not be able to see the most

sustainable livelihoods themselves, but they suggest more of the same of what they have been doing. There is a need for a great deal more diversification and for innovation with drought resistant crops and livestock. Swans have been found to be a type of poultry that can withstand a great deal less water than ducks and they are more resilient to cold waves. Table 6 presents a needs assessment of the proposed viable livelihood options women suggested in the drought-prone sites, the most resilient to climate changes are tailoring and embroidery, handicrafts, small businesses, pitha production and Laha cultivation.

There is a need for external knowledge to be brought into drought affected areas to offer new viable livelihoods, with new resources and skill development training. It is also necessary to work simultaneously on social acceptance and future risks of these livelihood options in the community.

Table 4: Adverse impacts on life and livelihoods during hazards in the drought-prone areas

Hazards	Affected Livelihoods	Specific Impacts on Life and Livelihoods
Norwester	<ul style="list-style-type: none"> • Wage labour (Farm) • Wage labour (Non-farm) • Poultry rearing • Cattle rearing • Handicrafts and sewing • Tailoring 	<ul style="list-style-type: none"> ◆ People injured ◆ People can't go out for work ◆ Damage household physical structures ◆ Agricultural crop and tree damage
Cold-wave	<ul style="list-style-type: none"> • Wage labour (Farm) • Wage labour (Non-farm) • Poultry rearing • Cattle rearing • Handicrafts and sewing • Tailoring 	<ul style="list-style-type: none"> ◆ Seasonal disease for cattle and poultry ◆ Decrease agricultural crop production ◆ Production fall due to lack of irrigation water ◆ Elderly people and children affected by disease
Drought	<ul style="list-style-type: none"> • Wage labour (Farm) • Wage labour (Non-farm) • Poultry rearing • Cattle rearing 	<ul style="list-style-type: none"> ◆ Irrigation water is not available ◆ Lack of food for livestock ◆ Damage agricultural production ◆ Lack of fresh water for domestic work ◆ Wage labour is not available
Flood*	<ul style="list-style-type: none"> • Wage labour (Farm) • Wage labour (Non-farm) • Poultry rearing • Cattle rearing • Handicrafts and sewing • Tailoring • Homestead gardening 	<ul style="list-style-type: none"> ◆ Agricultural crops submerged under water ◆ Sand deposits on farmlands ◆ Food insecurity ◆ Submerged homestead area ◆ Damage household physical structures ◆ Submerged all tube-well and lack of safe drinking water ◆ Collapse sanitation systems ◆ Communication system disrupted ◆ Seasonal disease for cattle and poultry ◆ Damage livestock fodder
Riverbank erosion*	<ul style="list-style-type: none"> • Wage labour (Farm) • Wage labour (Non-farm) • Poultry rearing • Cattle rearing • Handicrafts and sewing • Tailoring 	<ul style="list-style-type: none"> ◆ Damage household physical structures ◆ Agricultural crop damage ◆ Agricultural land and settlement damage ◆ Damage roads and embankment
Hail	<ul style="list-style-type: none"> • Wage labour (Farm) • Wage labour (Non-farm) • Poultry rearing • Cattle rearing • Handicrafts and sewing • Tailoring 	<ul style="list-style-type: none"> ◆ People injured and died ◆ Damage household physical structures ◆ Livestock damage ◆ Agricultural crop damage

Table 5: Needs Assessment of proposed livelihoods for drought-prone women

Proposed Livelihood Options	Justification	Resource and Capital	Sources of Resource Mobilization	Skill Development Training Needs	Organizations need to support	Future risks or constraints
Poultry farm	<ul style="list-style-type: none"> • Suitable for females • Limited resources needed • Can be managed from inside home • Limited efforts needed • Investment cost is medium 	<ul style="list-style-type: none"> • Seed money • Product marketing • Vaccination • Poultry feed 	<ul style="list-style-type: none"> ◆ MFIs ◆ Schedule Bank ◆ Livestock Hospital ◆ NGOs ◆ GOs 	<ul style="list-style-type: none"> • Incubator training • Feeding process • Poultry rearing training 	<ul style="list-style-type: none"> ◆ Livestock Hospital ◆ Department of Livestock ◆ Directorate of Youth Development Office ◆ NGOs 	<ul style="list-style-type: none"> • Natural Hazards
Cattle rearing and dairy farm	<ul style="list-style-type: none"> • Suitable for females • Limited resources needed • Can be operated from inside the home • Limited labor needed • High demand in local market • Profit is very high • Availability of fodder 	<ul style="list-style-type: none"> • Seed money • Product marketing • Vaccination and treatment 	<ul style="list-style-type: none"> ◆ MFIs ◆ Schedule Bank ◆ Livestock Hospital ◆ NGOs ◆ GOs 	<ul style="list-style-type: none"> • Training on primary treatment • Feeding process • Cattle rearing training 	<ul style="list-style-type: none"> ◆ Department of Livestock ◆ NGOs ◆ GOs 	<ul style="list-style-type: none"> • Natural hazards • Transportation • Food crisis in drought season
Tailoring and embroidery	<ul style="list-style-type: none"> • Suitable for females • Limited resources needed • Can be continued during disasters • Local demand is also high 	<ul style="list-style-type: none"> • Seed money • Sewing machine • Embroidery machine 	<ul style="list-style-type: none"> ◆ NGOs ◆ Cooperative Society ◆ MFIs 	<ul style="list-style-type: none"> • Cutting and sewing training • Machine operation training 	<ul style="list-style-type: none"> ◆ Directorate of Youth Development Office ◆ NGOs ◆ SME Foundation 	<ul style="list-style-type: none"> • Marketing
Handicrafts (Fishing net, fish cage, bamboo-made goods)	<ul style="list-style-type: none"> • Suitable for both males and females • Limited capital needed • Raw materials are available • Can be continued during disaster • Local demand is high 	<ul style="list-style-type: none"> • Seed money • Product marketing • Raw materials 	<ul style="list-style-type: none"> ◆ NGOs ◆ Cooperative Society 	<ul style="list-style-type: none"> • SME training • Skill development training 	<ul style="list-style-type: none"> ◆ Directorate of Youth Development Office ◆ NGOs 	<ul style="list-style-type: none"> • Marketing • Transportation
Small Business/ Grocery shop	<ul style="list-style-type: none"> • Local Demand • Can be operated from house • Limited effort is needed • Less affected by disasters 	<ul style="list-style-type: none"> • Space allocation in the village market • Shops • Seed money 	<ul style="list-style-type: none"> ◆ MFIs ◆ Schedule Bank ◆ NGOs ◆ GOs 	<ul style="list-style-type: none"> • SME training 	<ul style="list-style-type: none"> ◆ Directorate of Youth Development Office ◆ NGOs ◆ SME Foundation 	<ul style="list-style-type: none"> • Security
Homestead Gardening	<ul style="list-style-type: none"> • Possible to do in house country yard • Easily managed by females • Local demand is high • Investment and running cost is very low • Limited efforts needed 	<ul style="list-style-type: none"> • Seeds • Seed money • Product marketing 	<ul style="list-style-type: none"> ◆ MFIs ◆ NGOs ◆ Upazila Agriculture Extension Office 	<ul style="list-style-type: none"> • Horticulture training • SME training • Pesticide training 	<ul style="list-style-type: none"> ◆ Directorate of Youth Development Office ◆ NGOs ◆ MFIs ◆ Upazila Agriculture Extension Office 	<ul style="list-style-type: none"> • Transportation • Attacked by Insects • Natural hazards
Vegetable farm	<ul style="list-style-type: none"> • Easily managed by females • Local demand is high • Investment and running cost is very low • Limited efforts needed 	<ul style="list-style-type: none"> • Seeds • Seed money • Product marketing 	<ul style="list-style-type: none"> ◆ MFIs ◆ NGOs ◆ Upazila Agriculture Extension Office 	<ul style="list-style-type: none"> • Horticulture training • SME training • Pesticide training 	<ul style="list-style-type: none"> ◆ Directorate of Youth Development Office ◆ NGOs ◆ MFIs ◆ Upazila Agriculture Extension Office 	<ul style="list-style-type: none"> • Transportation • Attacked by Insects • Natural hazards
Tree Plantation	<ul style="list-style-type: none"> • Easily managed by females • Investment and running cost is very low • Limited efforts needed 	<ul style="list-style-type: none"> • Plants • Space • Sow mills 	<ul style="list-style-type: none"> ◆ NGOs ◆ Upazila DoF ◆ Cooperative Society 	<ul style="list-style-type: none"> • Horticulture training • Pesticide training 	<ul style="list-style-type: none"> ◆ Directorate of Youth Development Office ◆ NGOs ◆ Upazila Agriculture Extension Office 	<ul style="list-style-type: none"> • Transportation
Winter-seasonal Cake Making (Pitha)	<ul style="list-style-type: none"> • Easy to make by females • High demand • Investment is low • Limited efforts needed 	<ul style="list-style-type: none"> • Capital • Raw materials • Packaging • Marketing 	<ul style="list-style-type: none"> ◆ NGOs ◆ Directorate of Youth Development Office ◆ Cooperative Society 	<ul style="list-style-type: none"> • Cake making training • Packaging training • Raw materials preservation system 	<ul style="list-style-type: none"> ◆ Directorate of Youth Development Office ◆ NGOs ◆ MFIs 	<ul style="list-style-type: none"> • Preservation process • Marketing
Laha(Lac) Cultivation	<ul style="list-style-type: none"> • Locally available materials is needed • Easily managed by females • Investment and running cost is very low • Limited efforts needed 	<ul style="list-style-type: none"> • Capital • Seed-worm 	<ul style="list-style-type: none"> ◆ NGOs ◆ MFIs ◆ Directorate of Youth Development Office ◆ Cooperative Society 	<ul style="list-style-type: none"> • Training on cultivation • Processing training 	<ul style="list-style-type: none"> ◆ NGOs ◆ Directorate of Youth Development Office ◆ Cooperative Society 	<ul style="list-style-type: none"> • Marketing

5.7 RECOMMENDATIONS FOR DROUGHT RESILIENT SUSTAINABLE LIVELIHOODS FOR WOMEN

- Increase access to training for economic activities which are drought resilient, e.g. swan production and indoor activities
- Increase training in financial skills to plan for drought seasons and maximize marketing of goods before drought season
- Minimise reliance on cattle and poultry due to their high risk for all climatic hazards
- Maximize the diversification of livelihoods to increase economic security
- New livelihoods for women cannot involve a huge increase in time unless other household members take on other time consuming activities women currently hold.



CASE STUDY

Drought Prone Zone

“Day by day the temperature is increasing and we are feeling it. The drought is also prolonged. We are running short of water. Everywhere we see only barren lands”, said Kulsum, a 30 year old woman of Makrapur village of Nachole, Chapai Nawabganj. “Day by day we are losing our livelihood. Crops are not growing properly, the vegetable gardens are dying without water and fodder collection is almost impossible. Once we found out that swan rearing was suitable here, we have recovered from our financial stress. Although swans are species of ducks, they do not require much water to survive. So we started rearing swans in our homestead. Usually women in our area assist their husbands in post-harvest crop processing, but do not go to fields. Other than assisting their husbands, women usually rear cow and poultry in their houses; however swan farming on a commercial basis is very popular now. Many females are now engaged in this activity. Males usually collect the eggs for hatching or buy the mother swan from markets, and females look after them and feed them on a regular basis” relayed Kulsum.

“Except swan or poultry rearing, the women in our area are also involved in tailoring, stitching, embroidery, handicrafts, laha production and in mango gardening, but swan rearing is easy and now, more that 80% households of our village have swans. Droughts are the main natural disaster in this area. In winter severe cold waves also cause a great

problem, but the swans are strong enough to survive these conditions. During cold waves the swans need some extra care. They must be caged at night. Sometimes different wild animal such as foxes and wild cats attack the swans. Different training and medications and vaccinations are essential to develop swan rearing. Now we are happy and earn money by selling swans and eggs. By this way we are coping with prolonged droughts,” said Kulsum, with a smiling face.

Day by day the temperature is increasing and we are feeling it. The drought is also prolonged. We are losing our livelihood. Crops are not growing properly, the vegetable gardens are dying without water and fodder collection is almost impossible.



6

FLOOD PRONE AREAS

The rivers of Bangladesh have a combined peak discharge (in the flood season) of 180,000 m³/sec (the second highest in the world, after the Amazon) and they carry approximately two billion tons of sediment each year. Two-thirds of the country is less than 5 meters above sea level and is susceptible to river and rainwater flooding and, in lower-lying coastal areas, to tidal flooding during storms (MoEF, 2009). In South Asia, the Fourth Intergovernmental Panel on Climate Change (IPCC) Report predicts that monsoon rainfall will increase, resulting in higher monsoon season river flows; these rivers flow into Bangladesh from India, Nepal, Bhutan, and China (IPCC, 2007).



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6.1 CLIMATIC HAZARDS WITH SEASONALITY FOR THE FLOOD-PRONE STUDY AREA

Floodplains occupy 80% of Bangladesh with mean elevations ranging from less than 1 meter in tidal floodplains, 1 to 3 meters on the main river and estuarine floodplains, and up to 6 meters in the Sylhet basin in the northeast (Rashid, 1991). For this study, three types of flood-prone areas have been selected: the first one is the Active Ganges Floodplain on the river Padma under Shariatpur district, the second one is the active Brahmaputra Jamuna Floodplain on the River Jamuna in the Sirajganj district and the last is the Surma-Kusiyara Floodplain in the Sunamganj district.

The study location of Shariatpur district is located in the lower Padma riverine area and is an area of high floods and river erosion where vulnerable poor people often suffer repeated and multiple shocks to their lives, their settlements, and their livelihoods. These areas suffer river floods, flash

floods, cold waves, droughts and bank erosion hazards which cause major damage every year. Figure 6 shows the status of climate-induced hazards with seasonality in the study sites of the flood-prone areas. Heavy rainfall occurs in the months of July and August in the floodplain study area. When water levels in the three major rivers rise simultaneously and cross the danger marks, severe river floods usually occur all over the country.

Flood damage has both socioeconomic and spatial dimensions. Floods cause considerable damage to standing crops, livestock, houses, transportation and communication systems, educational and other social facilities. It also seriously affects the livelihood of the flood-prone communities. In addition to flood disaster, the floodplain people also face recurrent riverbank erosion disasters. Many households in the study area are forced to move away from their homesteads due to this riverbank erosion and floods which cause trees and homesteads to be washed away within a short period of time.

In addition Sunamganj district is highly prone to flash flooding. This type of flood is characterized by rapid rising water and inundation, the onset range of which can vary between a few minutes and a few hours. This type of flood occurs mostly in the north-central, northeastern and southeastern parts of the country. River erosion consumes fertile agriculture land, homestead and other infrastructure that destroys the livelihood options of the people of flood-prone areas during the months of July to August. In Sunamganj sudden flooding washes away the crops in the months of June, July and August which are prone to severe flash floods. Locals are also severely affected by cold waves and fog hazards in the months of January and February. Norwesters hit in April and October from the south and southwest side and cause huge structural settlement damage and agricultural destruction, and the months of March and April are prone to hail which also causes huge agricultural loss.

6.2 IMPACT OF FLOOD PRONE WEATHER HAZARDS ON WOMEN

Floods cause many difficulties that are specific for women. Firstly more women die than men due in part from the mobility

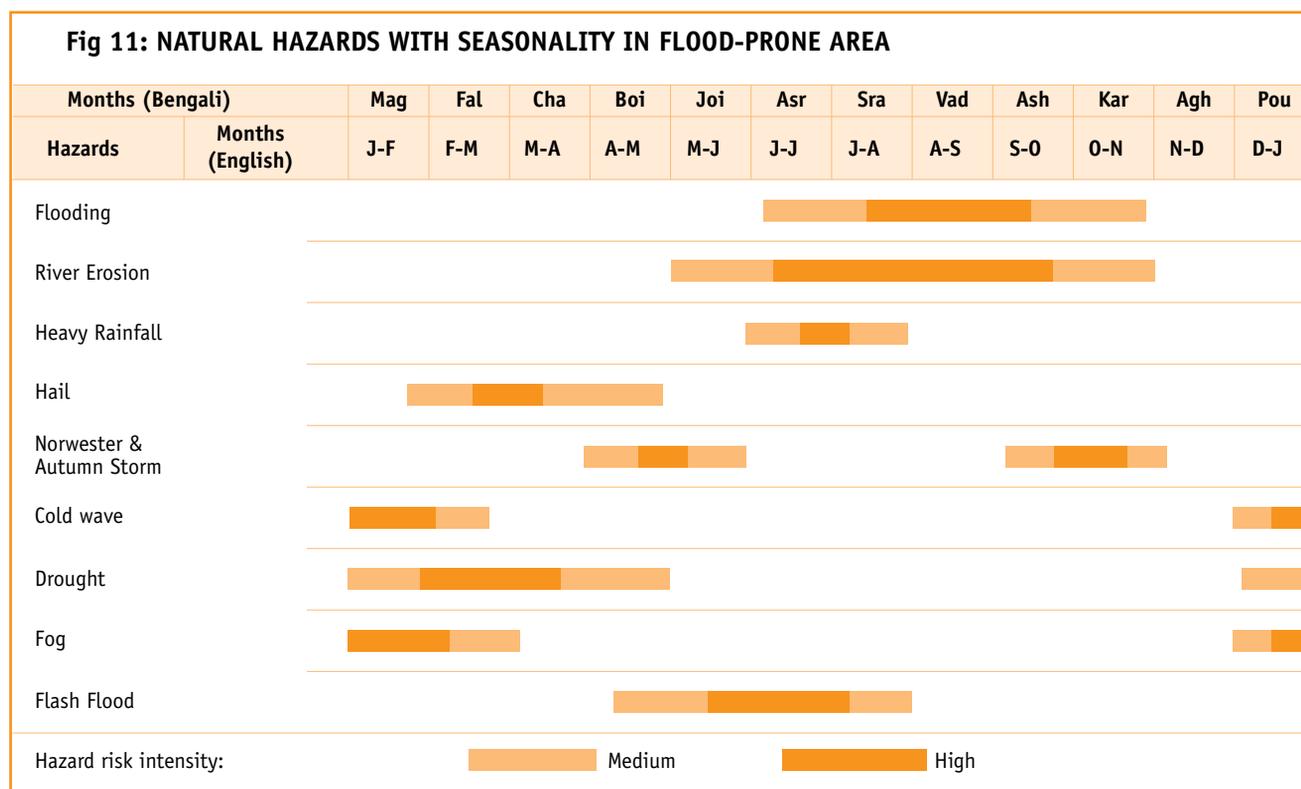
of their clothes and their restrictions to the household areas. Their care for children and the elderly hamper their survival skills in a flood, as does their inability to swim. Loss and damage also have specific impacts as the loss of food and cooking utensils, fuel and safe water are major hardships for traditional gender roles in feeding and caring for the family members.

There are specific female health issues during floods from lactation for nursing mothers, to increased perineal rashes and urinary tract infections in adolescent girls as they are not able to adequately clean their menstrual rags (WHO 2005, in Rahman, 2013: 70). Wider health issues are due to unclean water and lack of medical facilities or women doctors.

Poor health is coupled with less food and nutrition. The social norm in Bangladesh is for women to eat after men, and women throughout the world tend to volunteer the best and most food to the men and children, leaving the least for themselves. This leads to women becoming weak, yet their workload during disasters increases.

In addition to these increased stressors on women are the increased workloads of their daily tasks such as collecting

Fig 11: NATURAL HAZARDS WITH SEASONALITY IN FLOOD-PRONE AREA



clean water fuel, provision of food and other household and caring duties. The increased workload can lead to girls being pulled out of school to assist with these daily tasks (if schools are still functioning). Women’s weakness, workload and stress is compounded by their lack of personal safety as women are more at risk of rape and assault during times of disaster. Rahman talks of “the shame attached to leaving the house and moving in public”, making women less likely to inhabit shelters during disasters (2013: 80). Once women are however in a shelters there is also “eve-teasing, domestic and public sexual harassment and violence against women and girls” that has been documented (Rahman, 2013:78).

For many of these reasons, even without considering the livelihood activities and economic issues, there are some basic gender equity issues that need to be addressed for any economic activities to make any lasting changes to women’s lives.

6.3 RECOMMENDATIONS FOR GENDER EQUITY IN FLOOD PRONE ZONES:

- Ensuring and prioritising women’s safety in shelters, latrines and public spaces
- Equal access for women and men to food and nutrition
- Access to women’s specific and gender sensitive accessible medical care (female doctors, private spaces, reproductive health)
- Assistance from male members of the family with collection of fuel and water
- Maintaining girls as well as boys in school as a priority
- Ensure women’s voices as well as men’s voices are heard at all stages of flood management (from preparedness to recovery) on their specific gendered needs and concerns
- Ensure women and men are represented on all decision making and rescue/recovery committees



Flood preparedness activities can also include swimming lessons for women and girls; awareness on the need for women to leave the house and access safe shelter as well as awareness and training for men on the need for women to be able to increase their mobility and be free from shame and other discriminatory cultural norms. Rescue and recovery committees should also receive gender sensitive DRR and DRM training and develop checklists to put in place during flood seasons and disasters.

6.4 DIVERSIFIED WOMEN’S LIVELIHOOD WITH SEASONALITY IN THE FLOOD-PRONE AREA

The women from floodplain regions are engaged in different types of primary and secondary livelihoods such as farm-based wage labour, non-farm wage labour, cattle and poultry rearing, horticulture, homestead gardening, small and petty business and work in garment factories. The seasonal livelihoods calendar for women in the flood-prone area is shown in Figure 9.

Livestock are important for the flood-prone communities for multiple purposes: plowing, threshing and transportation of crops, agriculture, supplying manure and sources of food and nutrition, and cash income. Livestock are especially important for the flood-prone people that do not have farmlands to cultivate or capital to conduct small businesses (Islam, 2012). In particular, one of the advantages in the island char areas is the availability of spacious uncultivated land, which provides people with a good opportunity to rear livestock. The seasonal livelihoods calendar shows that cattle and poultry rearing are practiced all the year round. However, these are also highly vulnerable to climate hazards of all kinds.

Among women of the study area, specifically in Sirajgang, handloom, including string processing, dyeing and sewing, is a common livelihood practiced most of the year. Many marginal female household members are also involved in farm-based wage labor in Rabi and Kharif-1 crop production during November to May, and some female household members, coming from poor families, are involved in wage labour in garment factories, and some local government development works like KABIKHA (work for food) program.

Fig 13: NATURAL HAZARDS WITH SEASONALITY IN THE STUDY AREA (COASTAL AREA)

LIVELIHOODS FOR WOMEN	Norwester & Autumn Storm	Hail	Cold wave	Drought	Fog	Flooding	Heavy rainfall	Flash flood*	River erosion/ Embankment failure	Rank of Impact
Wage Labour (Farm)	++++	+++	+++	++++	++++	++++	+++	++++	++++	1
Cattle Rearing	++	+++	++	++++	+	++++	+++	+++	+++	2
Poultry rearing	++	+++	+++	++	++	++++	+	+++	+++	3
Homestead gardening	++	++	++	++	+	++++	++	+++	++++	4
Carb production	++	++	++	+	+	++++	+++	+++	+++	5
Wage labor (Non-farm)	++	++++	---	++	---	+++	++	++	+++	6
Handicrafts & swing	++	---	++	---	---	++	+	++	++	7
Fishing	++	++	+	++	+	++++	++	+	++	8
Prawn collection	++	++	+	+	---	++++	+	---	++	9
Tailoring	+	---	+	---	---	++	+	+	+++	10

Impact scale: (+++++ = Very high; ++++ = High; +++ = Moderate; ++ = Low; + very Low; --- = Insignificant)

*Flash flood is only observed in Jamalganj Upazila, Sunamganj

homestead gardening and different types of handicrafts like making fishing nets, fish cages, bamboo-made goods and winter seasonal cake (pitha) making are viable livelihood options for the flood-prone areas in the study sites. As the targeted community is very poor and vulnerable to different types of hazards, cattle and poultry are high risk and if they are continued they need to be offset with a diversity of other non-seasonal and climate resilient forms of livelihood.

Of the livelihoods practiced, the lowest risk were tailoring, handloom, homestead gardening, handicrafts and horticulture. Provision of needs-based skill development training in different sectors like cutting and sewing, horticulture and micro enterprise training and handloom work are all areas for exploration. Capital, resources and skill development training will again be needed, especially for women to actively engage in new livelihoods. As with coastal areas and droughts, again it is necessary to know the social acceptance and future risks of new livelihood options in the community. Table 7 presents the needs assessment of the proposed viable livelihood options put forward by flood-prone women in the study sites.

6.7 RECOMMENDATIONS FOR FLOOD RESILIENT SUSTAINABLE LIVELIHOODS FOR WOMEN

- Increase access to training for economic activities which can be home or factory based (i.e. indoors and flood proof)
- Increase training in financial skills to plan for flood seasons and maximize marketing of goods before flood season.
- Minimise reliance on cattle and poultry due to their high climate risk for all hazards in flood prone areas.
- Maximize the diversification of livelihoods to increase economic security
- New livelihoods for women cannot involve a huge increase in time unless other household members take on other time burden activities women currently hold.



Table 6: Adverse impacts on life and livelihoods during hazards in the flood-prone area

Hazards	Affected Livelihoods	Specific Impacts on Life and Livelihoods
Norwester and Autumn Storm	<ul style="list-style-type: none"> • Farming • Cattle rearing • Poultry rearing • Wage labour (Farm) • Wage labour (Non-farm) • Horticulture • Handicrafts and swing • Homestead gardening • Handloom • Tailoring 	<ul style="list-style-type: none"> ◆ People injured and died ◆ People can't go out for work ◆ Damage household physical structures ◆ Livestock died ◆ Fish pond damage ◆ Agricultural crops and trees damage
Hail	<ul style="list-style-type: none"> • Wage labour (Non-farm) • Wage labour (Farm) • Farming • Poultry rearing • Cattle rearing • Horticulture • Handloom • Homestead gardening 	<ul style="list-style-type: none"> ◆ Agricultural crops and trees damage ◆ Damage household physical structures ◆ People can't go out for the work ◆ Vegetable and fruit garden destroyed ◆ Less opportunity for handloom work
Cold-wave	<ul style="list-style-type: none"> • Farming • Cattle rearing • Poultry rearing • Wage labour (Farm) • Wage labour (Non-farm) • Handicrafts and sewing • Homestead gardening • Handloom • Tailoring 	<ul style="list-style-type: none"> ◆ Seasonal disease for cattle and poultry ◆ Decrease agricultural crop production ◆ Production fall due to lack of irrigation water ◆ Elderly people and children affected by disease ◆ Decrease mobility and low income
Drought	<ul style="list-style-type: none"> • Farming • Cattle rearing • Poultry rearing • Wage labour (Farm) • Wage labour (Non-farm) • Horticulture • Homestead gardening • Handloom 	<ul style="list-style-type: none"> ◆ Lack of food for livestock ◆ Damage agricultural production ◆ Irrigation water is not available ◆ Lack of fresh water for domestic work ◆ Wage labour is not available
Flood	<ul style="list-style-type: none"> • Farming • Cattle rearing • Poultry rearing • Wage labour (Farm) • Wage labour (Non-farm) • Horticulture • Handicrafts and sewing • Homestead gardening • Handloom • Tailoring 	<ul style="list-style-type: none"> ◆ Agricultural crops submerged under water ◆ Sand deposits on farmlands ◆ Food insecurity ◆ Submerged homestead area ◆ Damage household physical structures ◆ Submerged all tube-well and lack of safe drinking water ◆ Collapse sanitation systems ◆ Communication system disrupted ◆ Seasonal disease for cattle and poultry ◆ Damage livestock fodder ◆ Damage hand-loom and power-loom textiles ◆ Decrease mobility and low income

Hazards	Affected Livelihoods	Specific Impacts on Life and Livelihoods
Riverbank erosion	<ul style="list-style-type: none"> • Farming • Cattle rearing • Poultry rearing • Wage labour (Farm) • Wage labour (Non-farm) • Horticulture • Handicrafts and sewing • Homestead gardening • Handloom • Tailoring 	<ul style="list-style-type: none"> ◆ Damage household physical structures ◆ Agricultural crops and trees damage ◆ Agricultural land and settlement damage ◆ Damage roads and embankment ◆ Damage hand-loom and power-loom textiles
Fog	<ul style="list-style-type: none"> • Farming • Cattle rearing • Poultry rearing • Wage labour (Farm) • Wage labour (Non-farm) • Homestead gardening 	<ul style="list-style-type: none"> ◆ Reduce agricultural production ◆ Disease for livestock ◆ Reduce agricultural production ◆ Reduce visibility for domestic work ◆ Reduce working hour in a day
Heavy Rain fall	<ul style="list-style-type: none"> • Farming • Cattle rearing • Poultry rearing • Wage labour (Farm) • Wage labour (Non-farm) • Horticulture • Handicrafts and sewing • Homestead gardening • Handloom • Tailoring 	<ul style="list-style-type: none"> ◆ Agricultural crops submerged under water ◆ Food insecurity ◆ Submerged homestead area ◆ physical structures ◆ Submerged all tube-well and lack of safe drinking water ◆ Collapse sanitation systems ◆ Communication system disrupted ◆ Seasonal disease for cattle and poultry ◆ Damage livestock fodder ◆ Damage hand-loom and power-loom textiles ◆ Decrease mobility and low income
Flash Flood	<ul style="list-style-type: none"> • Farming • Cattle rearing • Poultry rearing • Wage labour (Farm) • Wage labour (Non-farm) • Horticulture • Handicrafts and sewing • Homestead gardening • Tailoring 	<ul style="list-style-type: none"> ◆ Agricultural crops submerged under water ◆ Sand deposits on farmlands ◆ Food insecurity ◆ Submerged homestead area ◆ Damage household physical structures ◆ Submerged all tube-well and lack of safe drinking water ◆ Collapse sanitation systems ◆ Communication system disrupted ◆ Seasonal disease for cattle and poultry ◆ Damage livestock fodder ◆ Damage hand-loom and power-loom textiles ◆ Decrease mobility and low income

Table 7: Needs Assessment of proposed livelihoods for flood-prone women

Proposed Livelihood Options	Justifications	Resource and Capital	Sources of Resource Mobilization	Skill Development Training Needs	Organizations need to support	Future risks or constraints
Poultry farm	<ul style="list-style-type: none"> • Suitable for females • Limited resources needed • Can be managed from inside home • Limited efforts needed • Investment cost is medium 	<ul style="list-style-type: none"> • Seed money • Product marketing • Vaccination • Poultry feed 	<ul style="list-style-type: none"> ◆ MFIs ◆ Schedule Bank ◆ Livestock Hospital ◆ NGOs ◆ GOs 	<ul style="list-style-type: none"> • Incubator training • Feeding process • Poultry rearing training 	<ul style="list-style-type: none"> ◆ Livestock Hospital ◆ Department of Livestock ◆ Directorate of Youth Development Office ◆ NGOs 	<ul style="list-style-type: none"> • Natural hazards • Disease
Cattle rearing and Dairy farm	<ul style="list-style-type: none"> • Suitable for females • Limited resources needed • Can be operated from inside the home • Limited labor needed • High demand in local market • Profit is very high • Availability of fodder 	<ul style="list-style-type: none"> • Seed money • Product marketing • Vaccination and treatment 	<ul style="list-style-type: none"> ◆ MFIs ◆ Schedule Bank ◆ Livestock Hospital ◆ NGOs ◆ GOs 	<ul style="list-style-type: none"> • Training on primary treatment • Feeding process • Cattle rearing training 	<ul style="list-style-type: none"> ◆ Department of Livestock ◆ NGOs ◆ GOs 	<ul style="list-style-type: none"> • Natural hazards • Transportation • Food crisis in drought season • Disease
Tailoring and Embroidery	<ul style="list-style-type: none"> • Suitable for females • Limited resources needed • Can be continued during disasters • Local demand is also high 	<ul style="list-style-type: none"> • Seed money • Sewing machine • Embroidery machine 	<ul style="list-style-type: none"> ◆ NGOs ◆ Cooperative Society ◆ MFIs 	<ul style="list-style-type: none"> • Cutting and sewing training • Machine operation training 	<ul style="list-style-type: none"> ◆ Livestock Hospital ◆ Department of Livestock ◆ Directorate of Youth Development Office ◆ NGOs 	<ul style="list-style-type: none"> • Marketing • Transportation • Lack of raw materials
Handicrafts (Fishing net, fish cage, bamboo-made goods,)	<ul style="list-style-type: none"> • Suitable for both males and females • Limited capital needed • Raw materials are available • Can be continued during disaster • Local demand is high 	<ul style="list-style-type: none"> • Seed money • Product marketing • Raw materials 	<ul style="list-style-type: none"> ◆ NGOs ◆ Cooperative Society 	<ul style="list-style-type: none"> • SME training • Skill development training 	<ul style="list-style-type: none"> ◆ Livestock Hospital ◆ Department of Livestock ◆ Directorate of Youth Development Office ◆ NGOs 	<ul style="list-style-type: none"> • Marketing • Transportation • Lack of raw materials
Small Business/ Grocery shop	<ul style="list-style-type: none"> • Local Demand • Can be operated from house • Limited effort is needed • Less affected by disasters 	<ul style="list-style-type: none"> • Space allocation in the village market • Shops • Seed money 	<ul style="list-style-type: none"> ◆ MFIs ◆ Schedule Bank ◆ NGOs ◆ GOs 	<ul style="list-style-type: none"> • SME training 	<ul style="list-style-type: none"> ◆ Directorate of Youth Development Office ◆ NGOs 	<ul style="list-style-type: none"> • Security
Homestead Gardening	<ul style="list-style-type: none"> • Possible to do in house country yard • Easily managed by females • Local demand is high • Investment and running cost is very low • Limited efforts needed 	<ul style="list-style-type: none"> • Seeds • Seed money • Product marketing 	<ul style="list-style-type: none"> ◆ MFIs ◆ NGOs ◆ Upazila Agriculture Extension Office 	<ul style="list-style-type: none"> • Horticulture training • SME training • Pesticide training 	<ul style="list-style-type: none"> ◆ Directorate of Youth Development Office ◆ NGOs ◆ MFIs ◆ Upazila Agriculture Extension Office 	<ul style="list-style-type: none"> • Transportation • Attacked by Insects • Natural hazards

Location: Upazila: Jamalganj, District: Sunamganj,

Name: Kulsum, Age: 40

Kulsum from Jamalgonj Upazila, has a family of 5 with 3 children. "Today, I have been able to build a strong and secure life for me and my children, which even some years ago, was a dream that was fading very fast. Deity making has enabled me to single handedly rescue myself and my children out of a dark abyss, and I have shown that a woman can do anything if she puts her mind to it."

Due to tradition, she was forced to get married at a very early age to a person who was an alcoholic. To support fund the consumption of his alcohol her husband would sell things from the house. Eventually he could pay little attention to his family as his addiction grabbed all of his attention.

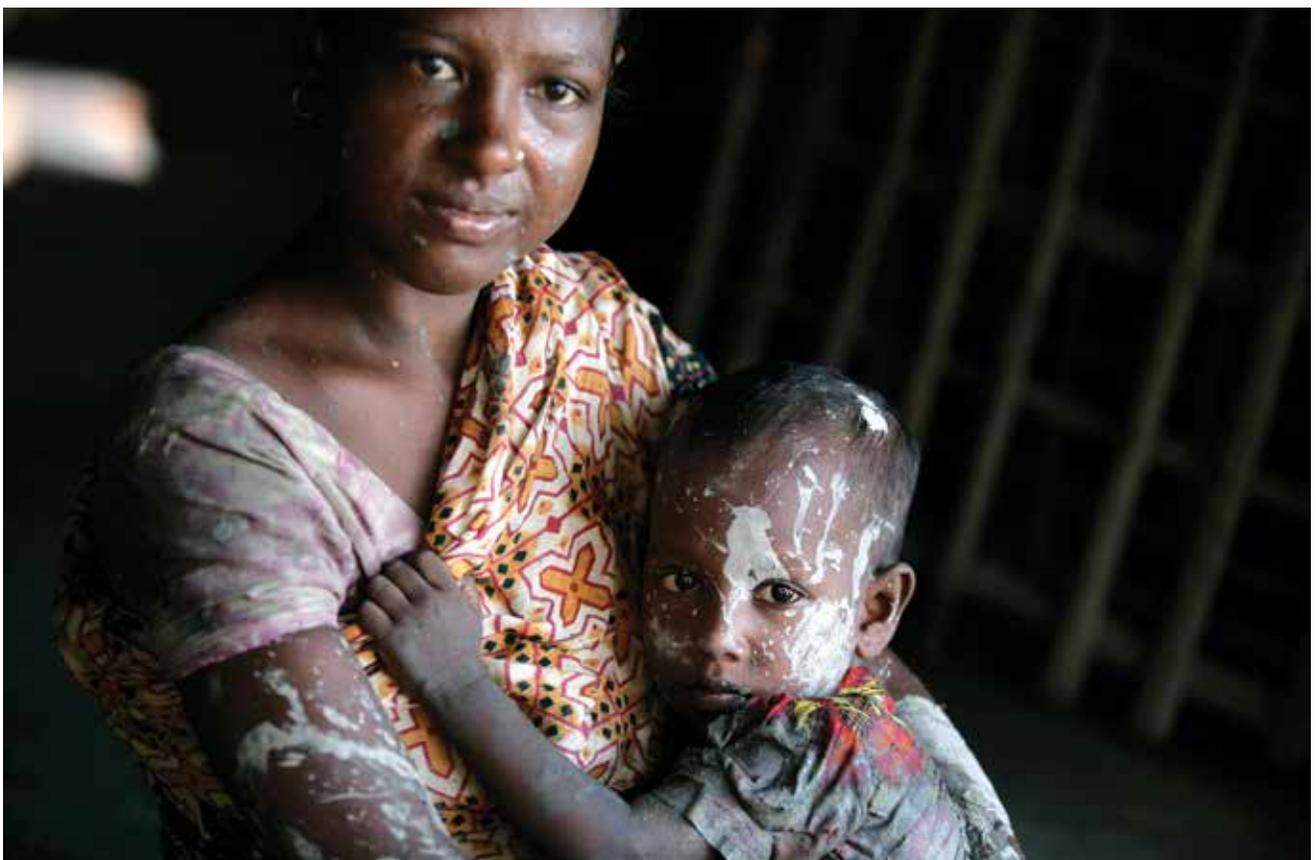
"I was thus left with no choice but to take the financial responsibility of my family," stated Kulsum; "I even had to travel outside my village to try to make a living, but I could not earn enough to sustain my family."

In this time of extreme need and hardship, her brother had to help, but in the meantime one of the sons had also started drinking. "Eventually, one of my relatives gave me the idea to produce deity, which is a mandatory item that Hindus use during their puja and other religious activities. I took the advice very seriously and started to make the deity", explained Kulsum.

She took the advice and training from several expert deity makers from other villages and then started her own small scale production. She took a loan from a local NGO and bought the necessary raw materials. "Gradually, I became an expert maker myself and started to earn well enough for myself and my family! I also started to train my son in this art and very soon he too became an expert."

Her son did well for himself and was even able to rent a shop in the local market to sell his deity. She then explained with some pride that her son had been awarded the best deity maker of the area and this also increased their business tenfold. "Disasters like floods don't impact the business at all since deities can be made indoors."

I was thus left with no choice but to take the financial responsibility of my family. Received training from several expert deity makers and took loan from a local NGO then started small scale production.





CONCLUSIONS AND RECOMMENDATIONS

The present study is an exploratory research, which attempts to address climate-induced vulnerability on women's livelihood issues. The study has explored livelihood options with seasonality for climate vulnerable women in different eco-zones in Bangladesh.

The women of these coastal, drought and flood-prone regions pursue a range of livelihood options in agriculture, cattle and poultry rearing, wage laboring (farm and non-farm), fishery, tailoring and sewing, small and petty businesses and other livelihoods highly dependent on natural resources. The lean agricultural season is a hard time for most climate vulnerable communities in Bangladesh. Due to deviation of climate variability with seasonality, its impacts on women differ within and between climate vulnerable ecological zones. Diversifying livelihood strategies with a combination of options would reduce the risks climate presents.

Discussion of each eco zone has concluded with a case study of a positive climate change adaption—those featured include handloom work conducted through lightweight looms in coastal areas; swan rearing in drought prone areas and the production of deities in flood prone areas. In many cases women suggested more of the same livelihoods even though some such as livestock and poultry rearing are high risk. There is a need to increase women's and community awareness of new options from the development of agricultural and animal byproducts—oil, rice husks, biomass and other waste products that can be converted to green uses. New farming techniques and climate resilient crops may be available or new farming practices, such as shrimp and crab farming in areas where salinity has increased (coastal).

In each of the eco zones the work of women indoors through handicrafts and tailoring is advocated as these are not exposed to the harsh climatic conditions. This is logical, and there are many examples of excellent micro enterprises in these areas that have assisted women's economic empowerment. However there is a need to be cautious that these handicrafts do not reinforce gender stereotypes, and increase the working day of women who are already time poor. There also need to be adequate markets for women and their goods, and many women cited that they were not getting good prices for their goods as there were middle people in between the sales from the village level to the markets. Women also have little knowledge and power over pricing and price fluctuations.

Addressing disasters and climate change provides a unique opportunity to challenge existing gender inequalities within society and offers the possibility of introducing new vocational choices which can mitigate climate change. There is a need to provide training in gender equity and disaster risk reduction and climate change adaptation for local women farmers in areas highly prone to climate disasters (vulnerability). Through support women will increase their decision making for the local community and beyond. For the process to be transformational, not just addressing women's leadership and access and control over resources, but working actively with men and addressing their stereotyped gender roles as well, there is a need to ensure that project initiatives do not increase women's time burden but lead to a more equitable approach to development needs of the household and community.

With women's access to increased skills and resources they will be able to work with men in sharing household work to increase sustainable livelihoods by having less vulnerability with cropping and access to energy. These gains need to be institutionalized and feed into wider community processes to ensure that these gains are both sustainable and replicated and spread to other communities as good practice. Moving women from vulnerable to active change makers in DRR/CCA leads to lasting sustainable community development. This approach can be more affective as it is institutionalized in local and district level policies, support from organisations and increased local capacity.

Below is a listing of all the recommendations which have been developed throughout the needs assessment.

Recommendations

1 a. Recommendations for gender equity in coastal zones:

- i. Prioritise and ensure women's safety in shelters, latrines and public spaces
- ii. Enable equal access for women and girls to food and nutrition
- iii. Ensure access to women's specific and gender sensitive accessible medical care (female doctors, private spaces, reproductive health)
- iv. Increase gender awareness of migration push and pull factors and the social and economic impacts on the household
- v. Assistance from male members of the family with collection of fuel and water
- vi. Maintaining girls as well as boys in school as a priority
- vii. Ensure women are represented in all decision making on coastal management

1 b. Recommendations for coastal zone sustainable livelihoods for women

- i. Increase access to training for sustainable crab and shrimp production and other salinity resilient farming
- ii. Increase training in financial skills to plan for new resilient coastal livelihoods including agricultural by products
- iii. Maximize the diversification of livelihoods to increase economic security
- iv. New livelihoods for women cannot involve a huge increase in time unless other household members take on other time burden activities women currently hold.

2. a. Recommendations for gender equity in droughts:

1. Enable equal access for women and girls to food and nutrition
2. Enable women's access to provision and training on deep tube wells
3. Assistance from male members of the family with collection of fuel and water
4. Ensure women are consulted at all stages of drought management on their needs and concerns

2. b Recommendations for drought resilient sustainable livelihoods for women

- i. Increase access to training for economic activities which are drought resilient, e.g. swan production and indoor activities
- ii. Increase training in financial skills to plan for drought seasons and maximize marketing of goods before drought season
- iii. Minimise reliance on cattle and poultry due to their high risk for all climatic hazards
- iv. Maximize the diversification of livelihoods to increase economic security
- v. New livelihoods for women cannot involve a huge increase in time unless other household members take on other time consuming activities women currently hold.

3. a Recommendations for gender equity in floods:

- i. Ensuring and prioritising women's safety in shelters, latrines and public spaces
- ii. Equal access for women and men to food and nutrition
- iii. Access to women's specific and gender sensitive accessible medical care (female doctors, private spaces, reproductive health)
- iv. Assistance from male members of the family with collection of fuel and water
- v. Maintaining girls as well as boys in school as a priority
- vi. Ensure women's voices as well as men's voices are heard at all stages of flood management (from preparedness to recovery) on their specific gendered needs and concerns

- vii. Ensure women and men are represented on all decision making and rescue/recovery committees

3. b Flood preparedness activities can also include swimming lessons for women and girls; awareness on the need for women to leave the house and access safe shelter as well as awareness for men on the need for women to be able to increase their mobility and be free from shyness and other discriminatory cultural norms. Rescue and recovery committees should also receive gender



sensitive DRR and DRM training and develop checklists to put in place during flood seasons and disasters.

3. c Recommendations for flood resilient sustainable livelihoods for women

- i. Increase access to training for economic activities which can be home or factory based (i.e. indoors and flood proof)
- ii. Increase training in financial skills to plan for flood

seasons and maximize marketing of goods before flood season.

- iii. Minimise reliance on cattle and poultry due to their high climate risk for all hazards in flood prone areas.
- iv. Maximize the diversification of livelihoods to increase economic security
- v. New livelihoods for women cannot involve a huge increase in time unless other household members take on other time burden activities women currently hold.



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9 ANNEXES

61 Checklist for Focus Group Discussion (FGD)

62 Guideline for Interview

64 Guideline for Community Consultation

70 Guideline for Case Study

Comprehensive Need Assessment on
REDUCING VULNERABILITY OF WOMEN AFFECTED BY CLIMATE
CHANGE THROUGH VIABLE LIVELIHOOD OPTIONS

Checklist for Focus Group Discussions

Focus Group Discussion (FGD)

2 Separate FDG should be conducted with male and female group. For conducting FGD, KII/ In-depth Interview checklist should be followed. Some other topics on livelihood demand also need to be discussed.

A. Livelihood related

1. What are the main livelihood practices and other associated livelihood options in your area?
2. What are the main livelihood practices for female and other associated livelihood options in your area?
3. What are the seasonal livelihood options of male in your area?
4. What are the seasonal livelihood options of female in your area?
5. Are they able to earn easily from these livelihood options?
6. If they are not able to earn easily from these livelihood options, what are the barriers?
7. Impact of natural disasters on livelihood?
8. How the barriers can be removed?

B. Climate change hazards/ Disaster impacts

1. Are the people of your area especially the women, aware about the impacts of disasters?
2. What are the impacts of climate change induced disasters on children education, housing structure, fuel collection and other household activities.

C. Knowledge and Practices about climate change:

1. Are the community people wanted to know about climate change, coping, adaptation, risk reduction?
2. Who are giving information or advice to the community people on disaster risk reduction, livelihood and climate change?

D. Migration

1. What is the migration status of male and female of your area for last 5 years? If they migrate, what types of livelihood options did they adopt?
2. If migrated, what types of problem they faces and how the problem can be removed? What are the merit and demerits of seasonal/ permanent migration?

E. Diversification of labor and decision making right:

1. What types of problem faced by the women during climate change induces disaster (such as: communication, going market, purchasing products, education, health, loan sanction etc.?)

F. Facing disaster and adaptation strategy:

1. What are the current barriers for coping with disasters in your area? How the barriers can be removed? To overcome the barriers, do you suggest some new livelihood or coping activities.
2. In disaster management activities by local government or government organization is there any difference between male and female participation? Are there any separate options for female in disaster management activities? If there any, what are those options?
3. Does the community especially female of your area receive any training on disaster management? If received any training, is there any follow up session? Is there any awareness program arranged by the NGO in your area, and what is the necessity of those programs?

G. livelihood and capacity buildup training

1. What types of livelihood options is necessary in your area for poor/ destitute women? What types of change in livelihood you observed in last 5/10 years? what is the trend of the livelihood change?
2. Does the community want their next generation getting involved in their existing livelihood? If no, why?

H. Social safety net program for Female

1. What are the main problems/barriers for the female for getting social safety net services in your locality?
2. What types of social safety net programs are required for the elderly and destitute women of your area? According to you what types of facilities are essential?
3. What types of measures do you take for ensuring social safety net program for the female during and post disaster period in your area?
4. How the female participation can be improved in different social and local government activities? For this, what types of improvements are essential for women?

Comprehensive Need Assessment on
REDUCING VULNERABILITY OF WOMEN AFFECTED BY CLIMATE
CHANGE THROUGH VIABLE LIVELIHOOD OPTIONS
Checklist for Focus Group Discussions

Guideline for Interview

Place and person of interview

- To identify the most vulnerable union, visit Upazila (Sub-District) Nirbahi officer's office and discuss with respective government officials. The officials include:
- Upazila Nirbahi Officer (UNO)/ Project implementation officer (PIO): (Any one)
- Upazila female welfare officer/ female Upazila chairman/ Social welfare officer (If female): (Any one)
- Female NGO worker/ Female social leader: (Any one)

Total: Three Responsible People

Issues for discussion:

The aim of the study is to collect information of viable female livelihood by climate affected female. The following issues should be discussed:

1. Local livelihood related information (male/female)
2. Impact of climate change on livelihood (Season and duration and other issues)
3. Community people knowledge on climate change (male/female)
4. Migration for livelihood (male/female)
5. Adaptation options for existing local livelihood.
6. Initiatives for reducing impacts of climate change by government/ non-government organization.
7. Involvement of female in local social safety net program.
8. Alternate livelihood options for female by using local resources and practices.

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Checklist for KII and In-depth Interviews

Name of the interviewee: _____ Designation: _____

Location: _____ Upazila: _____ District: _____ Time: _____

A. Livelihood related

1. What are the main livelihood practices and other associated livelihood options in your area?
2. What are the main livelihood practices for female and other associated livelihood options in your area?
3. What are the seasonal livelihood options of male in your area?
4. What are the seasonal livelihood options of female in your area?
5. Are they able to earn easily from these livelihood options?
6. If they are not able to earn easily from these livelihood options, what are the barriers?
7. Impact of natural disasters on livelihood?
8. How the barriers can be removed?

B. Climate change hazards/ Disaster impacts

1. Are the people of your area especially the women, aware about the impacts of disasters?
2. What are the impacts of climate change induced disasters on children education, housing structure, fuel collection and other household activities.

C. Knowledge and Practices about climate change:

1. Are the community people wanted to know about climate change, coping, adaptation, risk reduction?
2. Who are giving information or advice to the community people on disaster risk reduction, livelihood and climate change?

D. Migration

1. What is the migration status of male and female of your area for last 5 years? If they migrate, what types of livelihood options did they adopt?
2. If migrated, what types of problem they faces and how the problem can be removed? What are the merit and demerits of seasonal/ permanent migration?

E. Diversification of labor and decision making right:

1. What types of problem faced by the women during climate change induces disaster (such as: communication, going market, purchasing products, education, health, loan sanction etc.?)

F. Facing disaster and adaptation strategy:

1. What are the current barriers for coping with disasters in your area? How the barriers can be removed? To overcome the barriers, do you suggest some new livelihood or coping activities.
2. In disaster management activities by local government or government organization is there any difference between male and female participation? Are there any separate options for female in disaster management activities? If there any, what are those options?
3. Does the community especially female of your area receive any training on disaster management? If received any training, is there any follow up session? Is there any awareness program arranged by the NGO in your area, and what is the necessity of those program?

G. livelihood and capacity buildup training

1. What types of livelihood options is necessary in your area for poor/ destitute women? What types of change in livelihood you observed in last 5/10 years? What is the trend of the livelihood change?
2. Does the community want their next generation getting involved in their existing livelihoods? If no, why not?

H. Social safety net program for women

1. What are the main problems/barriers for the female for getting social safety net services in your locality?
2. What types of social safety net programs are required for the elderly and destitute women of your area? According to you what types of facilities are essential?
3. What types of measures do you take for ensuring social safety net program for the female during and post disaster period in your area?
4. How the female participation can be improved in different social and local government activities? For this, what type of improvements are essential for women?

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Guideline for Community consultation workshop

Place selection for the Workshop

The workshop should be conducted in a suitable place of most affected union of an Upazila. The workshop venue should be any school, CBO meeting room, Farmer's Field School or in meeting room of Union Parishad. But the most important issues, the place should be gender friendly, where the female can come without any problem, can talk about their problem and needs freely. Information of the following tables should be collected properly. The tables should be drawn in large brown paper sheet by the officials before conducting the workshop. At least two copy and more of each table should be prepared.

Participant selection procedure

The project is for identification of viable female livelihoods that is why during participant selection those female should be preferred those who are poor, destitute and climate affected. Before main workshop session, some startup discussion and ice breaking session should be conducted so that the female can speak without any shy. Except poor female, the other participants of the workshop should be local leaders such as Chairman, female member, Female Local elites, female school teachers etc. But those should be given preference, which are aware about the problems of local females and their livelihood activities. The total number of participants should be within 15-20.

Possible participants

- Union Parishad representative (UP Chairman/ Secretary/ Male Member): Any 2
- Union Parishad female member: Any One
- Destitute/ Poor female (Landless/ Day labor): Any Three
- Local School Teacher: Any Two (One Male/ One Female)
- Representative from local leaders/ change makers: Any Three (One Male/ Two Female)
- Male worker (farmer/ Fisher/ Other): Any Two
- Female Worker (housewife/ Farmer/ Fisher) Any Two
- (Male and female should be collected from separate households)
- Total 15 people

Issue should be discussed

The project is for identification of viable female livelihoods options for climate affected area. That is why the following topics should be discussed:

- Livelihood related information (Seasonal,
- Climate change/ Disaster impacts on livelihood
- Knowledge on disaster and climate change
- Migration for livelihood (Permanent or Temporary)
- Current adaptation strategies for livelihood
- Government/Non-government initiatives for reducing climate induced disaster risk.
- Local Social Safety Net program
- Alternate and Viable livelihood options for female based on local demand and resources.

1. Community Hazard Mapping (Male/ Female separate)

- i. Union map will be supplied to the community people in workshop
- ii. At first they will understand the map by the help of facilitator
- iii. After understanding the map, two separate group of male and female group will be formed and both groups prepare separate map by their own.
- iv. Community people will identify the climate induced disasters, write their names and identify the affected places of their locality.
- v. The affected places to climate change induced disaster will be identified properly
- vi. The role and place of action can be taken by female for adaptation will also be find out through community consultation during mapping

Focus Group Discussion (FGD)

2 Separate FDG should be conducted with male and female group. For conducting FGD, KII/ In-depth Interview checklist should be followed. Some other topics on livelihood demand also need to be discussed.

2. Seasonal Hazard Calendar (Male and female separate)

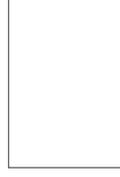
Name of Disasters	Disaster occurring months											
	January	February	March	April	May	June	July	August	September	October	November	December
	Poush- Magh	Magh- Falgun	Falgun- Choitro	Choitro- Boishakh	Boishakh- Joistho	Joistho- Ashar	Ashar- Srabon	Srabon- Bhadro	Bhadro- Ashwin	Ashwin- Kartik	Kartik- Agrohayon	Agrohayon- Poush



Very Less impact



Less Impact



Moderate Impact



Severe Impact

1. Community people will identify the natural and climate induced disasters and writes their name in the left column according to the intensity.
2. After writing the name of disasters, they will make the month of occurrence using the above lines
3. The thickness of the line indicates the intensity of disaster. Thin line indicate lesser impact, thicker line indicates severe impacts.

4. Hazard and Livelihood Index including sub activities (Male and Female separate)

Livelihood activities With sub activities	Types of Hazards	Name of the disasters of the area			
		Flood	Storm	Drought	Salinity
Sources of Livelihood Activities	Crop production (Kharip-1)				
	Crop production (Kharip-2)				
	Crop production (Rabi)				
	Seasonal fishing				
	Livestock rearing				

Ranking: + = Very low impact, ++ = Low Impact, +++ = Moderate Impact, ++++ = High impact, +++++ = Severe impact

1. Community people will write the name of livelihood activities on the left column and disaster on upper row of the table.
2. Later they will rank the impact of disaster on livelihood by using + Sign according to the above ranking.

5. Identification of impacts of disasters

Climate induces disasters	Livelihood and livelihood Sub activities	Impact of Disasters (with residual impact)

1. This table will identify the impacts of disaster on livelihood.
2. Community people will write the name of the disasters in the first column.
3. Different livelihood option of male and female during normal period will be written in the second column.
4. In third column they will write the impact of disasters on their livelihood written in the second column.

6. Identification of Viable Livelihood options for women

Climate change induces disasters	Duration of Impact of Disasters on livelihood (with residual impact)	Existing livelihood practices during disaster	Suggested Viable livelihood options/ New livelihood which can cope with future disaster	Priority ranking of viable livelihood option

1. Community people will write the name of different disasters in the first column.
2. In second column they will write the duration of the disaster on livelihood.
3. In third column they will write the Existing livelihood practices during disaster
4. In fourth column they will write the Suggested Viable livelihood options/ New livelihood which can cope with future disaster
5. In fifth column they will rank the livelihood options (1st, 2nd, 3rd priority)

7. Needs for implementation of Viable Livelihood options (Female focused)

Viability livelihood options/ New livelihood which can cope with future disaster (Derived from the last column of previous table)	What assets are essential for the specific viable livelihood option	Which organization will support assets for viable livelihood option	What types of training need for viable livelihood option	Which organization will support Training for viable livelihood option	Any future challenge for viable livelihood option	Any future social constraint for viable livelihood option	Recommendation for solution

1. The above table will identify the Needs of viable livelihood options. The first column of this table will be filled up with livelihood options from the last column of the previous table.
2. In second column the name of assets should be written for formulation of viable livelihood option.
3. Third column will indicate the name of respective NGO/GO organization name those who give assistance for those assets.
4. The training need will be written in the n fourth column.
5. In the fifth column the name of the organization will be written who will provide the training.
6. In sixth column community people will write any future challenge for viable livelihood option (natural)
7. In seventh column community people will write any future challenge for viable livelihood option (Social)
8. In eighth column community people will write the recommendation of solution for the problems.

8. Livelihood Mobility Chart for female

Purpose of Travel of females		Union	Upazila	District	Capital	Other places
Livelihood Activities	For selling crops		III	I		I
	Work for food allowance		IIII			
	collecting VGD		III			
Other services	for Medical purpose		IIII	II	I	
	child school purpose		II			

1. This table will represent the female mobility chart. In first column they will write the purpose of travel under two categories.
2. After writing the causes they will write the name of the places and the frequency of travel in those places
3. After that by using the tally mark (I) they will indicate the places according the importance.

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Best livelihood adaptation option of the project area

Guideline for Case Study

Total Two case studies should be taken

Participants should be selected from Group Discussion and FGD

Location

Name: _____ Village: _____ Union: _____

Upazila: _____ District: _____ Time: _____

Mobile: _____

Topics of Discussion

1. Most successful two livelihoods from existing all livelihoods of the area (At least two)
2. Who initiated the livelihood option – Male/ Female (Details with name)
3. Total cost (including Labour) for the livelihood option.
4. Profit from the livelihood option.
5. Types of work (Agriculture, Fisheries, homestead, cottage industry)
6. Percentage of (%) of people involved with the livelihood option of that village
7. In which disaster the livelihood option being affected, Is the livelihood option is viable during disaster, any adaptation option taken for continuing the livelihood during disaster (Detail).
8. Adaptation option/ change to sustain the livelihood option in future disaster.
9. Do you receive any help from GO/NGO for the development of that livelihood practice? If yes, bring details.



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