



Gender and Climate Change: Inclusive Disaster Risk Management in Coastal Bangladesh

Ph.D Dissertation

Submitted by

Ishrat Shamim

Ph.D Researcher

Registration No: 55/2018-2019

Institute of Disaster Management and Vulnerability Studies

University of Dhaka

Supervised by

Mahbuba Nasreen, Ph.D

Professor

Former Director & Co-Founder

Institute of Disaster Management and Vulnerability Studies (IDMVS)

University of Dhaka

Dhaka – 1000, Bangladesh

Declaration

I would like to declare that the dissertation for the degree of Doctor of Philosophy entitled, "Gender and Climate Change: Inclusive Disaster Risk Management in Coastal Bangladesh" capitulated to the Institute of Disaster Management and Vulnerability Studies, University of Dhaka is an absolutely novel and empirical research work. This research work is my own work and the sources that I have quoted have been indicated and acknowledged by means of complete references. This dissertation has not been submitted for any other degree at the University of Dhaka or any other institute/university.

Prof. Ishrat Shamim

Ph.D Researcher

Registration No:

Institute of Disaster Management and Vulnerability Studies (IDMVS)

University of Dhaka

Dhaka – 1000, Bangladesh

Certification from the Supervisor

The dissertation entitled, "Gender and Climate Change: Inclusive Disaster Risk Management in Coastal Bangladesh" for pursuing the degree of Doctor of Philosophy submitted to Institute of Disaster Management and Vulnerability Studies, University of Dhaka has been conducted by my direct supervision and guidance. The researcher, Prof. Ishrat Shamim declares that this research work is novel and empirical one and she did not submit it or any part of it earlier to other institute or university to achieve any degree. I certify that I have carefully scrutinized and checked the subject matter, language, materials and references and that this work is researcher's own effort and achievement under my supervision.

Supervisor

Mahbuba Nasreen, Ph.D

Professor

Former Director & Co-Founder

Institute of Disaster Management and Vulnerability Studies (IDMVS)

University of Dhaka

Dhaka – 1000, Bangladesh

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Professor Ishrat Shamim

Ph.D Researcher

Institute of Disaster Management and Vulnerability Studies (IDMVS)

University of Dhaka

Abstract

Climate-induced disasters pose significant threats to vulnerable and marginalized populations in Bangladesh, particularly in disaster-prone coastal regions. This study presents a comprehensive analysis of community level perceptions, lived experiences, and coping strategies related to climate change and recurring disasters in Satkhira district. Through qualitative and quantitative data gathered from intersectional group such as elderly men and women, men and women heads of households, widows and widowers, men and women with disabilities, the research illustrates a deeply rooted understanding of climate and environmental change, despite limited or no access to institutional knowledge and services.

Respondents identified multiple manifestations of climate change such as rising temperatures, irregular rainfall, salinity intrusion, cyclones, tidal surges, and thunderstorms, all of which they associated with both environmental and anthropogenic causes such as deforestation, shrimp farming, and unregulated brick kiln activities. There was widespread consensus that human activities significantly contribute to environmental degradation, further intensifying the frequency and severity of disasters. Communities particularly noted salinity intrusion and frequent cyclones as recurring and destructive forces that disrupt health, food security, livelihoods, and water and sanitation systems.

The impacts of climate induced disasters were gendered and intersectional. Elderly people, children, persons with disabilities, and women, especially widows faced disproportionately higher risks. Disasters resulted in mental health issues, loss of employment, food insecurity, livestock deaths, and deteriorating access to clean water. Gender-based violence was reported to increase during crises, particularly in shelters, revealing systemic safety and privacy issues. Respondents described unequal food distribution within households during and after disasters, with women and girls often receiving less food compared to men and boys.

Despite these challenges, communities demonstrated significant resilience. Disaster preparedness was evident across all groups, but varied in intensity. Coping strategies included storing dry food, saving money, and borrowing from relatives or lenders, though widows often lacked access to these support systems. While men frequently sought wage labour during post-disaster, women engaged in poultry farming, homestead gardening, and limited agricultural labour, but faced barriers in securing viable livelihood options. Water was primarily sourced from ponds or pressure sand filters; however, salinity and distance to portable water remained persistent issues.

Effective early warning mechanisms included mosque announcements, community miking, and mobile alerts, though access and awareness remained uneven. While government and NGOs provided essential post-disaster support such as food, water, and shelter, these efforts were not always sufficient or equitably distributed.

The study is distinctive from other previous studies as it has combined Intersectionality and Gender Equality and Social Inclusion (GESI) principles into the Progression of Vulnerability, where disaster risk is reframed not as a natural inevitability but as the outcome of inequality. This integrated framework exposes how identity-based exclusions shape root causes, pressures, unsafe conditions, and capacities, while also highlighting the need for reforms. Integrating Intersectionality and Gender Equality and Social Inclusion (GESI) into the Progression of Vulnerability reframes and ultimately transforms Disaster Risk Management (DRM) into a

pathway for equity, empowerment, and social justice. The study used this inclusive model which links vulnerability to systemic exclusion and drives justice oriented, equitable resilience ensuring that no one is left behind in building resilience to disasters and climate change.

Based on the findings, the study proposes a comprehensive set of policy recommendations rooted in community needs and capacities. These include the promotion of climate-resilient livelihoods such as salinity tolerant crops, small-scale animal husbandry, and eco-friendly enterprises targeted especially at women and marginalized households. Strengthening mobile health units, community mental health services, and nutritional programmes for women and children is critical for improving post-disaster recovery.

To address gender and social inclusion issues, the establishment of safe spaces in shelters, confidential reporting mechanisms, and the training of local responders is vital. Water, Sanitation, and Hygiene (WASH) interventions should include deep tube wells, rainwater harvesting systems, and the construction of mobile sanitary toilets. The policy framework also recommends enhanced community-based disaster preparedness trainings, localized early warning dissemination, and school-based evacuation drills to improve risk reduction.

Long term climate adaptation and ecological restoration efforts such as embankment construction, mangrove reforestation, and regulating brick kiln emissions are essential. Migration management must prioritize displaced families through comprehensive data systems, urban livelihood programmes, and temporary shelters with adequate facilities.

Finally, inclusive governance is emphasized through the participation of women and intersectional groups in disaster management committees, community monitoring mechanisms, and partnerships with local NGOs and youth. The study concludes that a multi-sectoral, gender-responsive, and community-led intersectional policy approach is essential to build long term resilience in coastal Bangladesh. Addressing structural inequalities and amplifying marginalized voices, especially women and widows are central to ensuring equitable, just, and sustainable recovery pathways in the face of ongoing climate threats.

Abbreviations

ADPC	Asian Disaster Preparedness Center
AMCDRR	Asian Ministerial Conference on Disaster Risk Reduction
APP	Asian Preparedness Partnership
ARPDRR	Asian Regional Plan for Disaster Risk Reduction
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BBS	Bangladesh Bureau of Statistics
BGMEA	Bangladesh Garment Manufacturers and Exporters Association
BMGF	Bill and Melinda Gates Foundation
BPP	Bangladesh Preparedness Partnership
CBD	Convention on Biological Diversity
ccGAP	Climate Change Gender Action Plan
CDD	Centre for Disability in Development
CEDAW	Convention on the Elimination of all Forms of Discrimination Against Women
CDM	Comprehensive Disaster Management
CIDA	Canadian International Development Agency
CIF	Climate Investment Funds
CNN	Cable News Network
COP	Conference of the Parties on Climate Change
CPP	Cyclone Preparedness Programme
CRA	Community Risk Assessment
CSW	Commission on the Status of Women
CWWL	Council of Women World Leaders
DIA	Disaster Impact Assessment
DDM	Department of Disaster Management
DDMC	District Disaster Management Committee
DMC	Disaster Management Committee
DRM	Disaster Risk Management

DRR	Disaster Risk Reduction
DWA	Department on Women Affairs
EOCs	Emergency Operation Centres
ECOSOC	United Nations Economic and Social Council
FAO	Food and Agriculture Organization
FBCCI	Federation of Bangladesh Chambers of Commerce and Industry
FGD	Focus Group Discussion
FSCD	Bangladesh Fire Service and Civil Defense
FSNSP	National Food Security and Nutrition Surveillance Project
GoB	Government of Bangladesh
GDP	Gross Domestic Product
GESI	Gender Equality and Social Inclusion
GFDRR	Global Facility for Disaster Reduction and Recovery
GGCA	Global Gender and Climate Alliance
GHG	Green House Gas
HFA	Hyogo Framework for Action 2005-2011
HIV/AIDS	Human Immunodeficiency Virus Infection and Acquired Immune Deficiency Syndrome
ICT	Information and Communication Technology
IDDR	International Day for Disaster Risk Reduction
IDMVS	Institute of Disaster Management and Vulnerability Studies
IDRM	Inclusive Disaster Risk Management
ILO	International Labour Organization
IPMCC	Inter-Ministerial Disaster Management Coordination Committee
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
KII	Key Informant Interview
LGED	Local Govt. and Engineering Department
MDGs	Millennium Development Goals
MoDMR	Ministry of Disaster Management and Relief
MPI	Multidimensional Poverty Index
NAHAB	National Alliance of Humanitarian Actors in Bangladesh

NAPA	National Adaptation Programme of Action
NDCs	Nationally Determined Contributions
NDMC	National Disaster Management Council
NDRCC	National Disaster Response Coordination Center
NGO	Non Governmental Organization
NIRAPAD	Network for Information Response and Preparedness Activities on Disaster
NPDM	National Plan for Disaster Management
NPRP	National Preparedness and Response Plan
PAR	Pressure and Release Model
PIO	Public Information Officer
PPCR	Pilot Programme for Climate Resilience
PPDM	Postgraduate Programmes in Disaster Management, BRAC University
SAARC	South Asian Association for Regional Cooperation
SDGs	Sustainable Development Goals
SFA	SAARC Framework for Action
SFDRR	Sedai Framework for Disaster Risk Reduction
SOD	Standing Orders on Disaster
SPCR	Strategic Programme for Climate Resilience
UNCCD	United Nations Convention to Combat Desertification
UNCRPD	United Nations Convention on the Rights of Persons with Disabilities
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNISDR	United Nations Office for Disaster Risk Reduction
UNO	Upazila Nirbahi Officer
UN-REDD	United Nations Collaborative Programme on reducing Emissions from Deforestation and Forest Degradation
UP	Union Parishad
USA	United States of America
WCDRR	World Conference on Disaster Risk Reduction

WDMC	Ward Disaster Management Committee
WEDO	Women's Empowerment and Development Organization
WGRI-2	Second Working Group on Review of Implementation of the Convention
WHO	World Health Organization

Chapter 1

Introduction

1.1 Statement of the Problem

Climate change is affecting the ability of both men and women to earn a living particularly in developing countries like Bangladesh and especially among people who rely on natural resources as a primary livelihood strategy. Bangladesh is highly vulnerable to natural hazards due to its geographical location, land characteristics, multiplicity of rivers and having monsoon climate. However, anthropogenic hazards, such as climate change, deforestation, overfishing, overgrazing are also insurmountable threat for the country, increasing risks and vulnerability of communities especially those living near the sea and rivers. Though the government and non-government actors have started to undertake programmes on disaster preparedness and risk reduction, still the concerns of vulnerable groups have not always been considered.

The high population density, widespread poverty, lack of awareness and education, enormous pressure on rural land, and agriculture based economic system cause and accelerate the vulnerabilities of the general population of Bangladesh. However, the impacts of any disasters are not equally distributed over the population, since some groups of people are more vulnerable than others (Nasreen, 1995; 2019). Hence the marginalized people suffer the most from the disaster damages and have least capacities to resist and recover from the losses sustained from a disaster or other threat. Women and children, persons with disabilities as well as the socially excluded categories are most vulnerable to hazards due to their high degrees of base vulnerabilities.

Climate change is not gender-neutral. Women are disproportionately and more severely affected by its impacts. It is harsh on vulnerable groups, a large majority among them members of rural communities, particularly women. Gender-based inequities lead women to face more adverse climate change impacts than men. Same holds true with disasters as women are particularly exposed to disaster risks and are likely to suffer higher rates of mortality, morbidity and post-disaster damage to their livelihoods.

Women are often poorer, receive less education and are excluded from political, community and household decision-making processes that affect their lives (Dunkelman et al., 2008; Nasreen, 1995; 2008; 2012). Economic and social inequities translate into women possessing fewer assets and meager means to cope with the negative effects of the changing climate. Several underlying factors exacerbate women's vulnerability to the impacts of disasters, including limited livelihood options, restricted access to basic services and discriminatory social, cultural and legal norms and practices (Nasreen, 2019; 2022).

Moreover, certain groups, such as people with disabilities, women headed households, widows, elderly, children have historically been disproportionately affected by disasters. Disasters risk management efforts for these groups should include inclusive disaster preparedness, inclusive policy development and emergency response, and risk mitigation interventions.

A UNISDR survey (2014) indicates that a key reason for a disproportionate number of persons with disabilities falling victims to disasters is because their needs are ignored in the planning process. The Sendai Framework for Disaster Risk Reduction (SFDRR, 2016-2030), the first major

agreement of the post-2015 development agenda, underscores that disaster risk reduction is essential to achieve sustainable development and it should include certain groups such as persons with disabilities and leaving no one behind.

Bangladesh is a low-lying deltaic country in South Asia formed by the Ganges, the Brahmaputra and the Meghna rivers. It is a land of about 165,158,616 people within its 147,570 sq. km territory (Bangladesh Bureau of Statistics, 2022). More than 310 rivers and tributaries have made this country a land of rivers. The economic performance of the country has been relatively strong since 1990, with an annual 5% average GDP growth rate. Although half of the GDP is generated through the service sector, nearly two thirds of Bangladeshis are employed in the agriculture sector with paddy as the single most important product. The geographical location, land characteristics, multiplicity of rivers and the monsoon climate render Bangladesh highly vulnerable to natural hazards. The coastal morphology of Bangladesh influences the impact of natural hazards on the area. Especially in the south western area, natural hazards increase the vulnerability of the coastal dwellers and slow down the process of social and economic development.

The IPCC Working Group II has reported in their fourth assessment that the production of rice and wheat might drop in Bangladesh by 8 percent and 32 percent respectively by the year 2050. Bangladesh is especially susceptible to increasing salinity of their groundwater as well as surface water resources, especially along the coast, due to increases in sea level as a direct impact of global warming. With a 1m rise in sea level, the Sundarbans mangrove forest is likely to be lost; Bangladesh would be worst affected by the sea level rise in terms of loss of land. Approximately 1000 square kilometers of cultivated land and sea product culturing area is likely to become salt marsh. Projected sea-level rise could flood the residence of millions of people living in the low-lying areas such as in Bangladesh. The coastal lowlands below the elevation of 1000-year storm surge are widely distributed in Bangladesh where millions of people live. Global burden (mortality and morbidity) of diarrhea and malnutrition attributable to climate change are already the largest in Bangladesh. The relative risks for these conditions for 2030 are also expected to be the largest. Bangladesh's population is expected to increase by 130 million more people over the next 50 years. Climatic changes in Bangladesh would likely exacerbate present environmental conditions that give rise to land degradation, shortfalls in food production, rural poverty and urban unrest (IPCC, 2007).

The coastal region of Bangladesh is highly vulnerable to a range of natural and climate-induced hazards due to its low-lying, densely populated, and ecologically sensitive geography. Cyclones with devastating storm surges are among the most severe threats, frequently causing widespread damage and loss of life despite improvements in early warning and evacuation systems. Salinity intrusion poses a growing risk to freshwater availability, agriculture, public health, and ecosystems, affecting nearly 20 million people. Riverbank erosion, driven by shifting river courses, displaces thousands annually, contributing to urban slum growth. Flooding is a recurrent hazard, often exacerbated by climate change and unplanned urbanization. Coastal communities also face risks from droughts, arsenic contamination of drinking water, lightning, and potential tsunamis. These overlapping hazards make integrated and adaptive disaster risk management essential for building resilience in Bangladesh's coastal zone (NPDM 2021-2025).

The coastal zone of Bangladesh hosts over 35 million of people who are exposed to cyclones, storm surges, rough seas, salinity intrusion and permanent inundation due to sea level rising. There

are 72 offshore islands with an area of 4,200 square km where over 3 million people are extremely vulnerable. About 18 percent households of the Sundarbans impact zone are dependent on Sundarbans resources (shrimp fry collectors, honey collectors, *golpata* collectors, shell/crab collectors and medicinal plant collectors) and are vulnerable to the weather extremes and salinity intrusion. Around 0.5 million households' (family members 2.7 million) primary income source is fishing and they lose working days because of rough weather in the Bay. Over 160,000 coastal fishermen and an estimated 185,000 shrimp fry collectors are involved in marine fisheries (Bangladesh National Portal, Government of Bangladesh, 2024).

Bangladesh has been identified as one of the most vulnerable countries to cyclones and floods especially the coastal areas. Over the past 40 years, cyclones, storm surges and floods have led to nearly 520,000 deaths due to disaster being recorded in addition to significant economic damage. Moreover, extreme vulnerability of Bangladesh to hydro-meteorological hazards such as storm-induced tidal flooding is likely to increase due to climate change (Government of Bangladesh, 2008). Satkhira is in the southwestern part of Bangladesh bordering Khulna district on the east, Jessore district on the north, Bashirhat subdivision of Twenty-four Parganas (India) district on the and south and Bay of Bengal on the west. Satkhira district has an area of 3,858.33 square kilometers with a population of 20,79,884 (10,04,415 males and 94,50,233 females). About 1445.18 square kilometer of Sundarbans, the world's largest mangrove forest is part of Satkhira (Government of Bangladesh, 2024).

On 15 November 2007, cyclone *Sidr* swept through the coastal area of Bangladesh. When cyclone *Sidr* approached, 40,000 Red Crescent volunteers were deployed to help residents of the 15 affected districts to safe shelters. Still there were about 3,406 confirmed deaths and over 55,000 people sustained permanent physical injuries in addition to economic loss, and damage to houses, crops and vegetable lands, wood and fruit trees, domestic animals, community infrastructures and coastal defenses. It was estimated that 10 million people were affected and 1.5 million houses were damaged while 186,883 hectares of crop areas were totally damaged. Again, on 25 May 2009, cyclone *Aila* severely hit the south-western coastline of Bangladesh and the hard-core poor were the worst victims. However, *Aila* did not result in a high death toll, but due to permanent waterlogged condition, nearly half a million people migrated from the affected areas while 2 million people were displaced. On 13 May 2020, cyclone *Amphan* also had a of devastating effect with wind speed of up to 180km/h and over 10 feet of tidal surges (Nasreen, Hossain and Khan, 2023). Satkhira was one of the coastal districts where cyclone *Sidr* not only caused huge loss, but salinity intrusion into the soil made the land barren and affected many agro-based communities (Government of Bangladesh, 2024).

In July 2011, excessive rainfall and failure of drainage system created flood and water logged the new areas of seven upazilas of Satkhira district. Four upazilas namely Tala, Debhata, Satkhira Sadar and Kolarua were the worst affected. About 8,26,124 people of 1,95,562 families in 66 unions and 2 municipalities of Satkhira were affected. Among these, 27,966 families shifted in shelter centres and rest of the families took place on both sides of Khulna-Satkhira highway or stay back in the water-logged villages. At least 45 percent of the affected population was children. Moreover, many of the earthen houses collapsed making the people homeless leaving the children and their family in a very vulnerable situation and adolescent girls were sent to relatives' house for safety and security, minor children were sent to the relatives' house to protect them from snake bites, drowning, etc. Ministry of Women and Children Affairs, UNICEF, Save the Children and Plan Bangladesh, among others, responded to protect the children from the above threats.

Organizing Child Friendly Space and repair of schools as well as distribution of hygiene kits and educational materials were part of those interventions. All these initiatives were able to reach about 4000 children directly (Government of Bangladesh, 2024).

1.2 Rationale of the Study

In past decades, Bangladesh has been experiencing a considerable rise in the magnitude, severity and frequency of catastrophic climate-induced disasters. Coastal regions in Bangladesh are highly exposed to severe disasters and lacks adaptation ability. Numerous studies such as Cinner et al., (2018; Nasreen, Khan and Hossain, 2023) have focused on coastal communities' vulnerability and adaptive capacity indexes to analyze the features of vulnerability and adaptive capacity. Similarly, Pike et al. (2022) investigated the adaptive capacity differences between men and women in marines protected households to evaluate the factors influencing the score of adaptive capacity; and D'agata et al. (2020) created a multi-scale index of adaptive social capacity for small fishing residents. However, in Bangladesh, Ahsan and Warner (2014) developed an index of socio-economic vulnerability using household surveys in the southwestern part of the coastal area while Naz and Saqib (2021) utilized a hierarchical regression method for evaluating the gendered variations in flood vulnerability in the Char land area.

Bari et al. (2023) in their article on Gender-based vulnerability and adaptive capacity in the disaster-prone coastal areas from an intersectionality perspective considered the

Differences between gendered vulnerability and capacity for adaptation in disaster-prone regions from the viewpoint of emerging economies for several reasons. First, gender has emerged as the leading indicator of vulnerability in this disaster-prone region, spanning a wide variety of difficulties such as the destruction of natural assets, availability of knowledge, and chances for livelihood, among others, which aids in evaluating vulnerable elements and taking benefits of opportunities for long-term adaptation (Bullough et al., 2022 cited in Bari et al 2023). Second, the impact of global climate change exposes emerging economies to warnings of catastrophic calamities that need measuring adaptability for better coping (Bari et al 2023).

However, study has yet explored gender-based vulnerability and intersectionality among so many categories of respondents among the marginalized group in the coastal region. In the context of climate induced disasters, gender is a crucial factor of vulnerability, spanning a wide variety of concerns such as diminishing natural resources, food, water, sanitation facilities, making decisions, and livelihood opportunities during and after disasters. Climate induced disasters reduce food security, water supply, firewood and other essentials putting additional stress and workload on women, who are traditionally expected to handle such household responsibilities. Therefore, from the perspective of intersectionality and gender, it is essential to explore the existing and upcoming adaptation techniques to address vulnerability in the coastal area like Satkhira.

Moreover, intersectionality is a core conceptual lens to understand how different forms of social inequalities and vulnerability interconnect and overlap with each other in the context of climate change and disaster. Proponents of the intersectional theory with roots in Black feminist opined those different social identities such as gender, race, socioeconomic class, cultural and ethnic background, age and disability, all combine to create unique modes of disadvantage and oppression (Crenshaw, 2017; Crenshaw, 1989 as cited in Amorim-Maia et al 2022). "It is a push to look beyond the effects of any one social driver (e.g., racism or sexism) and towards the forces that

simultaneously generate power imbalances across multiple drivers as the sources of injustice. Intersectionality does not only concern categories of identities, but it also embraces the complexities that are essential to understand entrenched social, political, and structural inequalities (Cho et al., 2013; McCall, 2005 as cited in Amorim-Maia et al 2022), which in turn translate into different kinds of vulnerabilities and unequal caring needs and responsibilities” (Hankivsky, 2014 as cited in Amorim-Maia et al 2022). Raghuram (2016 as cited in Amorim-Maia et al 2022) based on that very premise argued that “intersectionality builds on care ethics and prescribes ‘good care’ practices that shift away from historic often racial and gendered hierarchies constraining who is responsible for care versus those who are deprived from it.” Recently a four-year project on gender and intersectionality, Gender Responsive Resilience and Intersectionality in Policy and Practices (GRRIPP, 2021-2024) South Asia, has been implemented by the Institute of Disaster Management and Vulnerability Studies, University of Dhaka, which gave some lights in the South Asian region to adopt the Intersectional Approach in disaster risk reduction.

Despite the proven value of intersectional approaches in enriching gender research, such perspectives remain largely underutilized in climate change studies. Gender is frequently framed in binary terms men versus women while deeper considerations of power dynamics, social hierarchies, and political structures are often overlooked. These limitations, which mirror broader trends in gender and development literature, contribute to a narrative that portrays women primarily as vulnerable victims by framing that reinforces the "feminization of vulnerability." However, by incorporating intersectional analysis into climate adaptation research is essential to move beyond reductive categorizations. It enables a more nuanced understanding of how climate impacts are experienced differently across diverse social groups, and how adaptation processes can support agency, resilience, and transformative change.

There are gaps related to the lack of intersectional approaches as well as to a lack of power relation analysis in the climate change debate. Therefore, it is pertinent that informed empirical research be undertaken on gender, intersectionality and climate change. It is within this theoretical backdrop that the study developed the framework to operationalize intersectional thinking by addressing gender and climate change among diversified groups namely elderly men and women; men and women as heads of household; widowers and widows; and lastly men and women with disabilities in the rural coastal setting of Satkhira district. This is the first study of its kind to use intersectionality as a framework to guide towards an inclusive disaster risk management in the coastal area by analyzing not only the gender differences but also considered heterogeneous categories among men and women.

1.3 Objectives of the Study

The broad objective of the present study is to address the vulnerabilities and responses to climate change and disasters of intersectional categories of people living in coastal region of Bangladesh.

The specific objectives of the study are as follows:

- To understand the prospective of climate change and disaster of the affected communities in coastal regions;
- To explore the impacts of disasters on food security, health, water, sanitation and livelihood activities, gender relationship, displacement and migration on vulnerable groups;

- To document the disaster preparedness and response activities of the vulnerable groups;
- To identify the disaster warning system, providers of early warning and support services received by vulnerable groups in post disaster phase.

1.4 Review of Literature

The review of literature critically examines how gender is addressed in scholarly articles on climate change adaptation, through the lens of intersectionality. Disasters often expose and deepen existing social inequalities, disproportionately impacting those who are already vulnerable.

Bangladesh ranks among the countries most susceptible to natural hazards, particularly those driven by climate induced disasters. Projections indicate that climate-induced disasters will become more frequent and severe in the years ahead, posing significant threats to marginalized communities living in the coastal areas especially on their livelihoods. Moreover, the effects of disasters and climate change are not experienced equally. Marginalized and socially excluded groups such as women, persons with disabilities, the elderly, and the poor often bear a disproportionate burden. These groups typically reside in more hazard-prone areas, possess fewer resources to cope with disasters, and are frequently excluded from decision-making processes related to disaster risk management (World Bank. 2021).

Disaster management encompasses multiple disciplines each offering perspectives that is different both analytically in their approaches and findings. International Federation for Red Cross (2014) defined disaster management as the organization and management of resources and responsibilities particularly dealing with preparedness, response and recovery with a view to lessen the impact of disasters. In short, it deals with the humanitarian aspects of emergencies during field action that is carried out in different phases while managing disasters. It encompasses set of activities related to different phases of the disaster cycle, especially major activities related to pre-disaster and post-disaster. Andharia (2020) conceived the pre-disaster phase which is related to risk reduction while post disaster consists of relief that is immediate and short-term and recovery that is long-term management (Andharia 2020).

Social exclusion remains widespread in Bangladesh and significantly influences both development and disaster outcomes. Studies have highlighted a strong correlation between poverty and climate vulnerability: poorer populations tend to face greater exposure to hazards, suffer higher proportional losses, and receive less support during recovery whether from social networks, financial institutions, or governments (Nasreen, 2012; Hallegatte et al., 2017).

Less attention has been paid to how climate vulnerability, poverty, and social exclusion intersect to produce distinct and complex disaster experiences for different groups. Socio-cultural norms, roles, and values linked to identity shape people's access to resources, economic opportunities, and representation. In South Asian countries, social identity factors such as gender, caste, ethnicity, religion, disability, age, and geographic location often contribute to social marginalization (GRRIPP, South Asia, 2021-2024). These intersecting identities can amplify the negative effects of disasters. As such, Disaster Risk Management (DRM) and poverty alleviation efforts must be aligned and intentionally inclusive to effectively meet the needs of all marginalized communities (World Bank 2021).

Disasters tend to deepen existing inequalities rooted in social hierarchies but can also serve as catalysts for promoting equity and empowering disadvantaged groups. For example, persons with disabilities face heightened risks when early warning systems fail to consider their specific needs such as accessible formats for the blind or sufficient lead time for those with mobility challenges making timely action difficult or impossible. However, it is important to recognize that marginalized groups are not merely passive victims. They possess unique skills and knowledge that can enhance community resilience. Elderly persons, for instance, are often seen as vulnerable, yet their lived experience can provide valuable insights into local hazards and traditional coping mechanisms that complement scientific approaches. Inclusive disaster risk management strategies that address both the vulnerabilities and strengths of marginalized populations can lead to more effective outcomes and foster resilience at both community and societal levels (World Bank 2021; GRRIPP, South Asia, 2021-2023).

Wisner et al. (2004) refer vulnerability to the characteristics and conditions of individuals or groups that affect their capacity to anticipate, cope with, resist, and recover from the effects of natural hazards. These conditions ultimately shape the degree of risk to a person's life, livelihood, property, and assets during extreme natural events. Birkmann (2006) further emphasizes that vulnerability is not only multidimensional and context-specific, but also dynamic and scale-dependent. It extends beyond physical exposure to include socially constructed factors such as age, gender, socioeconomic status, religion, and sexuality each of these can significantly influence how one experience and recover from disasters (Birkmann 2006).

Weare (2020) stated that pre-existing social inequalities play a crucial role in shaping how hazard events affect individuals, communities, and regions. These structural disparities often determine who is most at risk and who has access to resources and support during and after a disaster. In this context, women are particularly vulnerable and may experience disproportionate suffering as a result of both the immediate impacts of the disaster and the long-term recovery process (Weare, 2020).

The Intergovernmental Panel on Climate Change (IPCC), the foremost global authority on assessment of climate change published a Special Report exploring the challenges to “understanding and managing the risks of climate extremes to advance climate change adaptation” (IPCC 2011). The report identified disasters to be adverse impacts of climate events that “produce widespread damage and cause severe alterations in the normal functioning of communities or societies,” by acknowledging the physical and social dimensions of disasters with special emphasis to the social aspects with regard to ‘exposure’ and ‘vulnerability.’ Essentially, a disaster event correlates the combination of an extreme natural phenomenon with ‘exposure’ and ‘vulnerability’ of a community, its infrastructure and resources. It is pertinent to understand the implications of anthropogenic and natural climate change and severity. Therefore, capacities of communities and institutions to improve resilience should be built to better adapt or transform themselves. Only then it is possible for communities and institutions to mitigate risk and enhance emergency preparedness and response in the event of a disaster (Andharia 2020).

One of the primary objectives of this research was to establish an intersectional framework for analyzing gender within the context of climate change in the coastal area. The wider body of research on climate change adaptation and vulnerability tends to overlook power dynamics, particularly those related to gender. Although climate change and adaptation efforts have differing

impacts on men and women, this is rarely explored in-depth. Djoudi et al. (2016) analyzed 41 studies on climate change adaptation using an intersectional approach and found that, despite the strengths of intersectionality for examining gender, it has yet to be meaningfully applied in this field. Most climate change research continues to treat gender in simplistic, binary terms typically as a comparison between men and women without considering the broader social and political power structures. These analytical gaps, which are also present in other areas of development and gender studies, contribute to a narrative that portrays women as inherently vulnerable and passive victims often described as the "feminization of vulnerability." The authors argue that incorporating a critical intersectional perspective would help reveal the active roles and adaptive strategies of marginalized groups, shedding light on the underlying power relations that influence both climate impacts and responses, and opening up new possibilities for empowerment and transformative change (Djoudi et al. 2016).

Haider et al., (1991) and Akhter (1992) described the April 1991 cyclone as one of the most devastating that hit the coastal islands of Bangladesh. Some termed it as the super cyclone, caused massive death and destruction. "It was almost like keyamat (doomsday)," said the member of Harishpur Union, Sandwip, "I did not think that I would survive, in fact, no one ever thought that he or she would live through it". People were crying and shouting, and they were praying to Allah and delivering *azan* (call for prayer) (Haider et al., 1991). No doubt people's courage and determination helped them to cope with the aftermath (Akhter, 1992). With formal disaster response limited, people improvised survival strategies: floating on logs, climbing trees, or taking refuge on rooftops and cyclone shelters. Many credited divine interventions, though survival depended on quick thinking, physical effort, and chance (Ahmed and Afreen, 1992). Case studies highlight desperate measures: families tied themselves to rooftops, clung to lofts, or sought shelter in kitchens and storage areas, often with fatal results. The cyclone destroyed homes, livestock, and crops, leaving corpses and debris scattered. Contaminated water, wounds, and delayed medical aid caused further deaths, especially among children (Bari, 1992; Adnan, 1992). Survivors focused on immediate survival rather than mourning.

Shamim (1992) narrated that people in coastal and offshore areas interpreted warnings based on experience, local conditions, and beliefs. Charlands are highly hazard-prone, yet people settle there due to fertile land, fishing opportunities, and seasonal labour demand. Migrant labourers live in bamboo and thatch dwellings on *macha* (bamboo bench) or earthen killas for protection. Group discussions in Sandwip, Sitakunda, and Cox's Bazar revealed reliance on environmental cues like wind, clouds, tides and skepticism due to past false alarms. Warning systems were poorly understood; only 10-20 percent moved to shelters, often at the last minute, fearing looting or overcrowding. Houses are mostly raised platforms with tin roofs; pucca structures are rare. Mosques, schools, and some bungalows offered temporary shelters, but many collapsed during storms. Communication, transport, and accessibility issues further limited evacuation. Women, in particular, lack access to information and autonomy, limiting their ability to respond to cyclones effectively. Despite access to nearby shelters, many remain at home due to social, economic, and cultural reasons, including male dominated decision-making, fear of losing assets, and social insecurity. Women's mobility and decision-making were restricted; they often waited for male family members, increasing vulnerability (Shamim, 1992).

Oxfam (2005) documented how women and girls often experience greater impacts from certain natural disasters due to a range of factors that heighten their vulnerability during and after such events. For instance, in Bangladesh during Cyclone Gorky in 1991, the death toll among women was 14 times higher than that of men, primarily due to cyclone related flooding. Likewise, in Indonesia, when the 2004 Indian Ocean earthquake and tsunami struck, the number of women fatalities was three to four times higher than that of men (Oxfam, 2005).

Nasreen, M. et. al., (2023) identified that in Satkhira, the groups most vulnerable to climate change are those whose livelihoods rely heavily on climate-sensitive resources and ecosystems, such as agriculture, fisheries, and forests. Women, marginalized communities, and socially excluded groups face heightened risks due to their limited assets, restricted access to resources, and weak political representation, which reduces their adaptive capacity. Other highly vulnerable groups include daily wage earners, shrimp collectors, shrimp farm workers, forest-dependent communities, and families residing on embankments, all of whom are directly exposed to the impacts of climate-induced disasters (Nasreen, M. et. al., 2023).

Moreover, some women are more vulnerable than others: subgroups of women such as single, widowed, or abandoned women as well as female headed households tend to be more adversely affected than others. The pioneering and longitudinal research on gender and disasters in Bangladesh by Nasreen (1995; 2008; 2012; 2019; 2023) indicates that disasters affect all segments of population, but the burden of coping falls heavily on women's shoulders. The researcher argues that the differences in disaster response not only vary by gender but also by socio-economic, (dis)ability, regional differences and women and children living in difficult circumstances. However, the research concludes that despite challenges women shows continuous fortitudes and ingenuity for their household sustenance.

A study in coastal area by Zawad Ibn Farid and Mahbuba Nasreen (2023) reveals several determinants behind the non-evacuation behavior of elderly residents during cyclones in Satkhira. Key challenges include their age-related susceptibility, limited space in shelters, distant locations, unhygienic and unsegregated sanitation facilities, and a sense of insecurity, which particularly discourages women from seeking shelter due to overcrowding and the dominance of male presence. In addition, issues related to cyclone warning messages and evacuation orders play a significant role in shaping decisions. Many elderly persons both men and women reported not receiving adequate lead time to prepare, failing to hear or access warnings, and sometimes receiving evacuation orders prematurely, which led to confusion and reluctance to evacuate. Furthermore, difficulties in understanding the meaning or language of official cyclone warnings further hindered their ability to take timely and informed action (Farid. Z. I., & Nasreen. M., 2023).

During the Nepal earthquake in 2015, UN Women worked side by side with government, UN agencies, and women's groups to highlight the distinct needs of women and girls, and to promote their role as meaningful participants in eventual recovery, reconstruction and development. Women, who make up 51 percent of Nepal's population, were the most severely impacted group by the disaster. In the 14 hardest hit districts, there were approximately 327,000 female headed households, accounting for 26.5 percent of all households. These areas also included around 40,000 women and girls with disabilities and over 163,000 women aged 65 and above. The death toll among women and girls was higher than that of men and boys, largely due to gender specific roles that keep women indoors and the widespread migration of men abroad (UN Women 2016). The disproportionate impact on women often results from cultural norms that restrict women to

certain household roles, thereby limiting their mobility and increasing their vulnerability when disasters strike. These roles include caring for children, elders, or sick household members (GFDRR 2016).

Kamal and Nursey-Bray (2024) analyzed the community-based adaptation to climate change which aims to strengthen the resilience and adaptive capacity of the most vulnerable populations in developing countries such as Bangladesh. These initiatives are typically led by non-governmental organizations and often involve organizing poor women into groups to empower them in addressing climate-related risks at the community level. A qualitative case study was conducted to explore the experiences of marginalized women engaged in such group-based adaptation efforts revealed that their empowerment was frequently constrained by their families and broader community structures. However, these limitations affected their ability to act with agency both at home and in public settings. Deeply rooted gender norms, compounded by factors such as social class, age, and marital status, continued to restrict women's roles and hindered their capacity to adapt effectively to climate change (Kamal & Nursey-Bray. 2024).

Nakagawa and Shaw (2004) stated that, the role of social networks and ties have been recognized as coming to the forefront in the speedy recovery of vulnerable groups (Nakagawa and Shaw 2004). Kamel and Loukaitou-Sideris (2004) found that households with less education and fewer job skills often face greater challenges in securing alternative livelihoods in the aftermath of disasters. They are also typically the most disadvantaged when it comes to accessing support and resources from the state or non-governmental organizations (NGOs), due to structural barriers, lack of awareness, or limited social and political capital (Kamel and Loukaitou-Sideris 2004).

Research highlights the critical role of “informal insurance” provided by social networks in enhancing community solidarity and resilience. Social ties can serve as “informal insurance” mechanisms allowing the affected groups to draw upon ready-made support networks of relatives, neighbours and friends. Buckland and Rahman (1999) found that communities with dense social ties were better equipped to respond to disasters compared to those with weaker connections. Similarly, Hurlbert et al. (2000), in a survey of disaster survivors, observed that core social networks influenced the type and amount of support individuals received during post-disaster phase. Survivors of severe flooding who relied solely on local networks consisting of many members clustered geographically in the town received less assistance than those who could access support beyond their immediate community. Granovetter (1973) also found that social networks played a crucial role in providing job-related information and administrative or financial support, particularly through weak ties rather than strong, close-knit relationships (Granovetter 1973, cited in Aldrich 2020). Moreover, high levels of social capital aid recovery is by facilitating information sharing and collective action. In communities with stronger trust and social cohesion, neighbours help one another to navigate bureaucratic processes, to share updates on critical deadlines, and to work together to prevent illegal dumping, and deter looting (Aldrich, 2020).

The networks, norms, and levels of trust within a community that influence social cohesion and facilitate collective action especially in post disaster recovery is referred to as social capital. It plays a vital role in shaping both social and economic interactions, often determining how effectively communities can mobilize resources, respond to crises, and support one another during crisis like disasters.

Coleman (1988), one of the founders of the term social capital sees,

Social capital is defined by its function. It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors whether persons or corporate actors within the structure (Coleman 1988).

Nakagawa & Shaw (2004) defined social capital,

As the function of mutual trust, social networks of both individuals and groups, and social norms such as obligation and willingness toward mutually beneficial collective action, which is the post disaster recovery process. This social capital will be facilitated and/or enforced by trust for community leaders and also by the political maturity of the community (Nakagawa & Shaw 2004).

The two case studies of earthquakes in Kobe, Japan and Gujarat, India show that although the local socio-economic and cultural backgrounds are different in these two areas, still the recovery process were quite similar for the urban areas. However, community activity is connected to certain basic issues and norms, which are widely applicable without any geographic boundaries. It is argued that social capital and community leadership are fundamental attributes that play a crucial role in rehabilitation processes, regardless of a country's stage of development. Other influential factors also significantly influence rehabilitation processes and outcomes such as government policies, involvement of NGOs, and the role of external consultants. These factors can vary widely across contexts, as seen in the differing experiences of post-disaster recovery in Kobe and Gujarat (Nakagawa & Shaw 2004).

Aldrich (2020) narrated how social capital played a clear and visible role in the rebuilding process in Tamil Nadu after the 2004 Indian Ocean tsunami. However, it was also accompanied by negative externalities. Local village councils provided lists of affected people during tsunami to government officials as well as they served as the primary gatekeeper's center for relief materials. Unfortunately, often these lists excluded certain affected people such as widowed women, *dalits*, and other marginalized groups. These unfortunate groups who were initially left off had to be "caught" and identified by NGOs and other humanitarian actors. Moreover, some local village councils refused aid all together or accepted aid only conditionally if each household within the village receives the same amount of assistance (Aldrich, 2020).

Agarwal (1990) emphasized the importance of examining how households with different income and asset levels cope with disaster risks. Since most disaster-prone households lack access to formal insurance, they often rely on informal mechanisms such as credit or engage in self-insurance strategies like using their savings. According to Hogeveen (2000), households may build up liquid assets during favorable periods and then use or sell them when facing hardship.

Agarwal (1990) also identifies five primary strategies employed by the rural poor in India to navigate economic and environmental challenges. These include diversifying income sources often through seasonal migration to reduce reliance on a single livelihood; utilizing communal resources such as common lands or water bodies; and depending on social networks, including kinship ties, patronage systems, friendships, and informal credit arrangements. Additionally, households manage risks by drawing on their own reserves, such as stored food and fuel, while also adjusting their consumption patterns during difficult times. Finally, when necessary, they may resort to using or selling household assets to sustain themselves through periods of crisis (Agarwal 1990 cited in Andharia 2020).

In the absence of a dedicated analytical framework linking gender and climate change, many studies struggle to draw meaningful comparative conclusions regarding gendered dimensions of vulnerability or the differentiated impacts and outcomes of environmental change. Evidence on gendered vulnerability at the local level remains limited, with much of the existing knowledge derived from surveys comparing female and male headed households. Typically, these studies employ random sampling and incorporate social determinants such as age, wealth, and household gender in their analysis. However, most report had a higher number of men than women respondents, potentially skewing the gendered insights. Many conclude that female headed households are more vulnerable than their male headed counterparts.

While gender is frequently included as a variable in many studies, few provide gender-specific recommendations in their conclusions (Deressa et al., 2009). Carr (2008) raises a critical question: “What is successful adaptation, if socially just outcomes would require unacceptable challenges to men’s authority? And how might we foster adaptation that promotes both social justice and material security?” Although some studies integrated gender considerations into their methodologies such as conducting separate Focus Group Discussions with men and women, but they often lacked in-depth gender comparisons. While stakeholder perspectives were collected, most studies failed to compare the coping mechanisms, adaptation strategies, or distinct barriers faced by men and women (Ziervogel et al., 2006 & West et al., 2008 cited in Djoudi 2016).

The application of gender in the reviewed literature was highly inconsistent. While many papers incorporated additional social categories beyond gender, none conducted a clear or identifiable intersectional analysis. As a result, few studies engaged meaningfully with the core dimensions of intersectionality namely, the use of multiple identity categories, multilevel analysis, attention to power dynamics, and consideration of emancipatory outcomes. Although variables such as age and ethnicity were included in many studies, they were typically treated as explanatory factors in statistical models rather than as indicators of power relations or structural inequities.

Nasreen, Hossain and Khan (2023) in their book entitled, ‘*Coastal Disaster Risk Reduction in Bangladesh: Vulnerability and Resilience*’ have discussed several issues related to disasters in risk management and climate change in the coastal region. It was to identify the vulnerabilities of coastal region as well as finding out the potentials of people living in the hazardous location to adapt with the adversities. It has been pointed out that salinity intrusion in coastal belt marked as the severe threat for the people in the region. In the highly stratified society, marginalized people such as poor, women and special occupational group depending on agriculture or fisheries are facing the challenges more than others. They argued that communities in coastal regions have started to practice alternative agricultural activities as adaptation approach. Some research articles explored and identified few gender based agricultural adaptation to climate change (Nasreen, 2014; Abedin, Awual and Shaw, 2010; Nasreen et al, 2016; Shaktee, 2021; Nasreen, Mallick and Neelormi, 2023). These adaptation practices include identification of suitable cropping pattern, choice of seed, homestead gardening including waterlogged areas, fish cage cultivation, irrigation and water management, soil management, crop intensification, suitable transplanting and others. The book has been designed to identify the vulnerabilities of coastal region as well as finding out the potentials of people living in the hazardous location to adapt with the adversities.

However, the limited presence of intersectional analysis in the reviewed literature posed challenges to fully applying this framework across broader social categories. Despite these constraints, the

review tried to incorporate additional social identifiers such as ethnicity, age, and race for both men and women, wherever relevant data and studies were available. These instances underscore the potential of intersectionality to deepen our understanding of differentiated climate vulnerabilities, even if its application remains limited in current discourse. The majority of focused their case studies on a single level of analysis, limiting the scope for understanding how intersecting structures of inequality operate across scales. Analyses of the power relations that underpin vulnerability and adaptation processes were notably rare. However, some studies highlighted that, in certain contexts, both men and women have begun to challenge prevailing gender and caste norms through their engagement in adaptation strategies. These instances suggest the presence of emerging emancipatory pathways, an area that warrants deeper exploration within climate adaptation research.

1.5 Operational Definitions of Key Concepts

1.5.1 Gender

Gender refers to the social attributes and opportunities associated with being male and female and the relationships between women, men, girls and boys, as well as the relations between women and between men. These attributes, opportunities and relationships are socially constructed, learned, and changeable over time. In all excluded social groups (people living in poverty, lower castes, people with disabilities or people of alternative sexual orientations) women and girls are generally further marginalized because of gendered power relations that privilege men and subordinate women. Women's disadvantage and their unequal access to resources, legal protection, decision making and power, their reproductive burden and their vulnerability to violence consistently render them more vulnerable than men to the impacts of disasters. Often women have little control over their fertility, sexuality or marital choices, and have limited mobility. This limits their participation in risk reduction or disaster response actions, and increases their vulnerability to disasters (Sharma, A. 2014).

1.5.2 Climate Change

Climate change refers to long-term shifts in temperatures and weather patterns which can be natural, due to changes in the sun's activity or large volcanic eruptions. However, human activities have been the main driver of climate change since 1800s, which is due to the burning of fossil fuels like coal, oil and gas. These fossil fuels generate greenhouse gas emissions that in turn wrapped around the earth thus trapping the sun's heat and raising temperatures. Carbon dioxide and methane are the main greenhouse gases that are causing climate change. Carbon dioxide can come from using gasoline, burning coal, clearing land and cutting down forests while methane can be released from agriculture, oil and gas operations. The main sectors causing greenhouse gases are energy, industry, transport, buildings, agriculture and land use (United Nations Climate Action web).

1.5.3 Inclusive Disaster Risk Reduction

Disaster Risk Reduction (DRR) involves disaster management, disaster mitigation and disaster preparedness, and is also part of sustainable development. On the other hand, Inclusive Disaster Risk Management:

Is about equality of rights and opportunities, dignity of the individual, acknowledging diversity, and contributing to resilience for everyone, not leaving aside members of a community based on age, gender, disability or other. Inclusion is challenging because

exclusion cuts across multiple groups and contexts, and current policy instruments address it inadequately (Making Disaster Risk Management Inclusive, Briefing Paper, June 2014).

Physical, economic and social vulnerability are closely linked. Poor countries and poor people suffer significantly more than the others from disasters. The hardest hit are the most vulnerable sections of the population such as elderly, widows, persons with disabilities and orphaned children are disproportionately impacted by climate change and disasters. These groups are made with specific disadvantages related to their physical, economic or social status. They have context specific and different needs before, during and after a disaster which are hardly taken into consideration. Moreover, the disproportionate impact of disasters on these groups is due to their vulnerable factors including exclusion from decision-making processes, poor living conditions, inadequate dwelling houses, inequality in income, diversified sources of income and limited access to basic services, especially education, healthcare and information (Making Disaster Risk Management Inclusive, Briefing Paper).

Issue Brief of the UN World Conference on Disaster Risk Reduction (2014) clearly stated that:

These groups have unique knowledge and capacities to approach the wide range of interconnected risks in the complex contexts they are situated in. They are often the first and only responders to the everyday risks they face, and have their own existing sources of resilience developed through extensive learning from real life experiences on the ground.

The need for inclusive disaster risk management has emerged as an important lesson from the implementation of both the *Yokohama Strategy and Plan of Action for A Safer World* and the *Hyogo Framework for Action (HFA)*. However, the disaster risk management initiatives could not always provide the platforms for engaging all segments of the society to provide their voice. Although a systematic shift towards inclusive disaster risk management not been observed, some successful examples have emerged in various parts of the world that can be scaled up wherever appropriate. Furthermore, limited progress towards realizing the *Hyogo Framework for Action (HFA)* Priority for Action 4, 'Reduce underlying risk factors,' highlights that the underlying inequalities that lead to the exclusion of these groups in the first place, continue to exacerbate their vulnerabilities (Issue Brief, UN World Conference on Disaster Risk Reduction, 2014).

The Issue Brief further highlighted that:

In the last ten years, deliberations on inclusion have shifted from perceiving persons and groups subject to increased risk as passive victims towards recognizing them as proactive participants who can and must contribute alongside governments and other stakeholders in all aspects of planning, design, implementation, and monitoring of Disaster Risk Reduction (DRR) and Disaster Risk Management (DRM). More and more focus on resilience has led to increased initiatives that aim to address the underlying drivers of risk, including the inequalities that lead to the exacerbated vulnerabilities of particular groups. This has been a positive step towards more inclusive DRM initiatives.

1.5.4 Vulnerability

Chambers was one of the first to introduce formally the term 'vulnerability' into the analysis of rural poverty. It came as one of five elements that interlocked with each other, producing what he termed a 'ratchet effect' or 'deprivation trap': a condition of 'integrated rural poverty' from which

it is very difficult to extract oneself (Chambers 1983: 112). The other elements were political powerlessness, physical weakness (ill health), isolation, and income poverty. The concept of vulnerability may be defined as the proportion of human lives, assets, and economic activity that could be affected in a given place should a given disaster occur. The calculation of different levels of vulnerability is made by combining the probability of a destructive event with the level of exposure of lives and assets to that hazard' (Trujillo *et al.*, 2000).

Vulnerability is applied as a core concept in disaster risk in the study of livelihoods and poverty, food security and climate change (Miller *et al.*, 2010). Adger (2006), and Gallopin (2006) identify, amidst the diverse interpretations of vulnerability, the key concepts of exposure, sensitivity, coping and adaptive capacity as underpinning many dominant approaches. Moreover, Downing *et al.* (2005) identify the following common elements of most approaches to vulnerability: the threat, e.g., climate change; a place or sector, e.g., health outcomes; a socioeconomic group, e.g., the poor, and the consequences of outcomes of vulnerability, e.g., loss of livelihoods (Miller *et al.*, 2010).

In this study, vulnerability means the way of economic activities, assets, and lives of women and men are affected due to climate change induced disasters in coastal area of Bangladesh.

Many other definitions of vulnerability exist which interpret the word from different points of view: social, economic, public health, climate change, amongst other sectors and topics. Nevertheless, the definition used in framing the Handbook overlaps sufficiently with others that its 'family resemblance' should facilitate mutual comprehension across disciplines (Wisner, B., Gaillard, J., & Kelman, I. 2012).

Cross-linkages between multiple vulnerability issues

Understanding the link between gender, disability, social exclusion and disaster risk requires a crosscutting perspective that identifies the various causes of exclusion and its impact in terms of enhanced vulnerability. Likewise, the extent to which different individuals and groups are vulnerable to disaster risk depends on similar factors. Multiple exclusion and vulnerability issues are often at play, such as in the case of women with disabilities (Making Disaster Risk Management Inclusive, Briefing Paper, June 2014).

Shocks and stresses, and differential risks

Adverse impacts of exclusion during rapid onset, large scale and lower probability disaster events such as earthquakes, as well as in slow onset, low impact but high probability stresses such as health impacts of recurrent floods, water logging and poor sanitation need to be included in the agenda of taking a developmental approach to inclusion and disaster risk management. The fact that different populations are exposed to differential risk levels depending on their context adds further dimensions to the already multi-layered vulnerability (Making Disaster Risk Management Inclusive, Briefing Paper).

1.5.5 Preparedness

Preparedness is the *aggregate of all measures and policies taken by humans before the event occurs that reduces the damage that otherwise would have been caused by the event*. Preparedness is comprised of the ability to mitigate the immediate result of the impact of an event and our ability to alleviate suffering and accelerate recovery. It consists of measures that a local/region/country maintains, at a particular time, to combat the deleterious effects of situations to which it may be exposed (hazard); and a complex of measures, specific for each local community, that provides

the community with the *capacity* to withstand a forthcoming event, provide for effective response, and assist expedient rehabilitation and reconstruction. Preparedness includes warning systems, evacuation, relocation of dwellings (e.g., for floods), stores of food, water, and medical supplies, temporary shelter, energy, response strategies, disaster drills and exercises, etc.

Contingency plans and responses are included in preparedness as used in this document and are part of overall disaster management. Such measures are aimed at meeting the increased demands during and following an event (conditional functions) or to compensate for destruction and damage to the societal infrastructure and organizational functions by the event, or both. Preparedness consists of actions taken before an event occurs.

The training and preparation of the disaster managers affects the way in which the persons function during and after the event. As preparedness increases, the ability of the society to absorb the event and mitigate the damage is augmented as a dependent variable of the level of preparedness. Some aspects of preparedness may be event specific, while others may apply to mitigate the damage sustained from a host of potential events (Sundnes, K. O. 1999).

1.5.6 Resilience

Resilience is defined as: “The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions” (UNISDR, 2009).

1.5.7 Hazard

Hazard is defined in the Hyogo Framework for Action as: “A potentially damaging physical event, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Hazards can include latent conditions that may represent future threats and can have different origins: natural (geological, hydro meteorological and biological) or induced by human processes (environmental degradation and technological hazards) (UNDRR web).

1.5.8 Social Exclusion

Social exclusion affects a large number of people and is based on race, class, caste, gender, as well as many other factors, such as disability. Exclusion is the process that prevents certain people or groups from fulfilling their rights. The process involves complex economic, social, cultural and environmental factors and dynamics that create inequality in people’s access to and control over opportunities and resources. Exclusion is caused by inequality in the distribution of resources and power by inequality in the social value assigned to different social groups, and by the social norms that perpetuate these differences often most acute when people suffer multiple layers of discrimination. Excluded groups are denied their human rights because of their place within a system of unequal social relations of power. Exclusion can increase a person’s vulnerability by reducing their ability to overcome shock and adversity. Vulnerability, in turn, can create and reinforce exclusion (Plan International, March 2016). Both diminish life opportunities of people and can result in poverty which deprive them access to natural resources, infrastructure, education, health service, employment, housing, financial services and access to markets. Disadvantaged groups such as these are seen to be exposed to higher levels of risk, and subsequently face the brunt of disasters harder than others. Overlooked throughout the DRM cycle, inclusion concerns

relate to limited social participation in DRR activities, poor access to information and services, poverty, invisibility during relief operations, response to basic needs not adapted and specific needs ignored. The economically marginalized, elderly, young, ethnic and religious minorities can all be at similar disadvantages in the disaster context as the groups discussed above (Reliefweb, 2014)

1.5.9 Disability

Disability is a contextual and evolving concept. The UN Convention on the Rights of Persons with Disabilities (UNCRPD,) states in its first article: “Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.” The Convention, in its articles 11 and 32, requires that persons with disabilities benefit from and participate in disaster relief, emergency response and disaster risk reduction strategies. It has been observed that persons with disabilities are often invisible and thus not only get excluded in risk reduction and disaster response measures but are also not socially recognized (Reliefweb, 2014)

1.6 Theoretical Framework

A disaster occurs when the damage sustained by a society is so great that the local resources are insufficient to cope with the magnitude of the damage, and hence, resources from outside the area are required to deal with the damage. The multiple components that lead from the discovery of a hazard to damage to recovery offer many avenues for the application of interventions that can affect subsequent steps in the continuum. A structured approach to each of the components is provided in the theoretical framework and discussions that follow.

The present study has incorporated the “disaster pressure and release model” as useful theoretical framework in understanding gender vulnerability to disasters in the socio-economic and geographical context of coastal area of Bangladesh that is most vulnerable to various disasters. It is an inclusive model that takes into consideration how disasters are produced and influenced by the socio-economic, political, cultural and environmental factors that constitute and reinforce each other as well as positively influence on the overall risk reduction and mitigation strategies. Moreover, gender is cited as one of the more systemic components of the social structure and power system as women and men experience different levels and types of vulnerability to disasters (Macalandag, R., & T. Obenza, J., 2016).

Macalandag and Obenza, 2016 explicitly stated:

The generic limitation characteristic of policy makers and aid organizations in understanding gender and development concerns have often times revealed the invisibility of gender and the exclusionary nature of current disaster risk management frameworks (Macalandag, R., & T. Obenza, J. (2016).

They affirmed the contention of Wisner et al. (2003) that “Such frameworks fail to take into consideration the socio-cultural, political and economic factors that interplay along people’s lives and the embeddedness of disaster experiences in these various contexts” (Macalandag, R., & T. Obenza, J., 2016).

The above statements clearly depict that so-called gender-neutral frameworks ignore gender-specific vulnerabilities which should be considered while analyzing the different socio-economic and psychological impacts of disasters on women, men, girls and boys as they have different roles,

responsibilities, and access to resources. These in turn will be influencing as how each individual will be affected by different hazards, and their coping and recovery strategies from disaster (Macalandag, R., & T. Obenza, J. (2016).

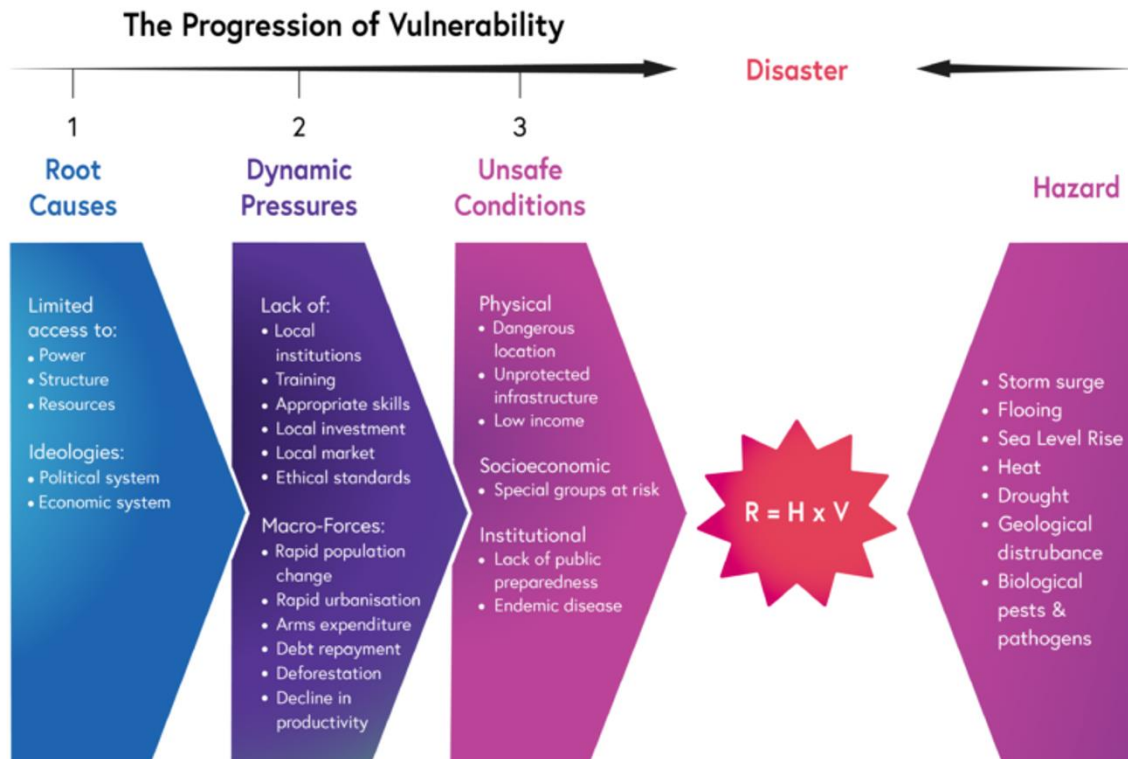
1.6.1 Progression of Vulnerability Framework

Blaikie (1994) has developed a model named pressure and release model by which human vulnerability to natural hazards are revealed. The Pressure and Release (PAR) model indicates that a disaster is the junction of two opposing forces' that are the process generating vulnerability and physical exposure to hazard. Increasing pressure may come from either side, but to relieve the pressure, vulnerability has to be reduced. Blaikie presents three main levels of progression of vulnerability: (i) root causes, (ii) dynamic pressures and (iii) unsafe conditions. Root causes have indirect influences on vulnerability. These are economic, demographic and political processes within society that reflect the distribution of power in a society and its limitation bring vulnerability to the people during hazards. Dynamic pressures related to the root causes can form in security of resources and bring vulnerability to the affected people. For example, lack of local institutions, and skills, local markets cause vulnerability to hazards affected people of a particular locality. About unsafe conditions, Blaikie asserted that it is a specific form in which people's vulnerability is expressed in time and space in conjunction with hazard (Blaikie, 1994).

Building on this pioneering work, and that of Blaikie and Brookfield (1987), the framework here uses 'vulnerability' to denote the degree to which one's social status (e.g. culturally and socially constructed in terms of roles, responsibilities, rights, duties and expectations concerning behaviour) influences differential impact by natural hazards and the social processes which led there and maintain that status. Thus, depending on the society and situation, social characteristics such as gender, age, physical and mental health status, occupation (in caste systems), marital status, sexuality, race, ethnicity, religion and immigration status may have a bearing on potential loss, injury or death in the face of hazards or resources made to be hazards and the prospects and processes for changing that situation.

The Progression of Vulnerability framework elaboration and adaption is given in Figure 1.1 with explanations.

Figure 1. 1 Progression of Vulnerability Framework



Source: Wisner et al., 2004.

Root causes

In the search for the answer to the question, ‘why?’, Figure 1.1 on The Progression of Vulnerability has a series of ‘root causes’ which are social and political structures, and suggest that one should trace the origins of such structures historically and explain the ideological and cultural assumptions that give those structures perceived legitimacy.

Disaster risk

A formal definition of disaster risk is contained at the core of Figure 1.1: $DR = H \times V$. in fact, $DR = H \times V$ can be expanded and rewritten as the following mnemonic (Wisner et al. 2004):

$DR = H \times [(V/C)-M]$, where DR is disaster risk, V stands for vulnerability, C represents capacity for personal protection, and M symbolizes larger-scale risk mitigation by preventive action and social protection.

Wisner et al. (2012) stated that: “Disaster risk is a function of the magnitude, potential occurrence, frequency, speed of onset and spatial extent of a potentially harmful natural event or process (the ‘hazard’). It is also a function of people’s susceptibility to loss, injury or death. Also, some people are better placed to recover quickly from such losses than others. Taken together, susceptibility to harm and the process that creates and maintains that susceptibility to harm can be called ‘vulnerability’. Vulnerability, in turn, may be counteracted either by individual and local capacity for protective action (C) or by protective actions carried out by larger entities such as government

(M, which stands for mitigation and prevention).” Ben Wisner, JC Gaillard and Ilan Kelman (January 2012). 3 Framing disaster: Theories and stories seeking to understand hazards, vulnerability and risk.

Hazards

“Hazards are not entirely free of human influence, although some hazards are difficult to influence at a large scale such as space weather and earthquakes. The arrow labelled ‘accentuation’ at the bottom of Figure 1.1 is meant to suggest the influence of human activities. One weakness of the framework is that it either focus on the human (left) side of Figure 1.1, making only a slight reference to natural hazards and the physical environment, or they focus mostly on the physical (right) side of Figure 1.1, giving only a nod to or brief treatment of the many underlying risk factors on the human side” (Wisner et al. 2012).

Unsafe livelihoods and locations

Chambers and Conway (1991:1) defined sustainable livelihoods as “a livelihood comprises people, their capabilities and their means of living, including food, income and assets”. They further emphasized that “a livelihood is environmentally sustainable when it maintains and enhances the local and global assets on which livelihoods depend, and has net beneficial effects on other livelihoods. A livelihood is socially sustainable which can cope with and recover from stress and shocks, and provide for future generations” (Quoted in Wisner et al. 2012).

Along the same line, Wisner et al. (2012) contended that, “a livelihood is an arrangement for making a living. Livelihoods thus encompass all resources required to sustain durably people’s basic needs. Basic needs refer to food, shelter, clothing, cultural values and social relationships. The livelihoods concept is often associated with that of sustainability, especially in hazardous environments. Natural hazards, as well as economic shocks and social disruption, may thus be of serious threat to people’s livelihoods. The concept of sustainability implies that basic needs are met on both an everyday basis and in the long term. It is therefore essential to consider everyday life when dealing with both the sustainability of people’s livelihoods and their vulnerability to natural hazards. Social and economic threats to daily needs, especially to food security, are almost always more pressing than framing disaster threats from rare or seasonal natural hazards”.

Gaillard et al. (2009) argued that this is particularly true when hazards turn to resources, such as for fertile volcanic lands or flood plains, or dumpsites for those who have no alternative than scavenging rubbish to make a living (Quoted in Wisner et al. 2012).

In addition, Figure 1.1 lists six categories of resources that are vital to dealing with hazard events as well as being central to sustainable livelihoods: natural, physical, human, social, economic and political (Wisner et al. (2012).

Dynamic pressures

Figure 1.1 also indicates a set of macro processes that ‘transmit’ the historic weight of root causes along the ‘chain of explanation’, as an intermediary between them and fragile livelihoods and unsafe locations and conditions. The list is not meant to be exhaustive but indicative of the large scale, external drivers of significance. They fall into two parts (Wisner et al.,2012).

First, there are societal deficiencies. The United Nations’ (UN) road map for decreasing disaster impacts (UNISDR 2005b) lists numerous actions that national governments should undertake. Since 168 governments signed the Hyogo Framework for Action in 2005, it was expected that

initiatives would be taken. Unfortunately, there was serious lack of positive government action in building local institutions for disaster risk reduction (DRR), training and scientific research into hazards and disaster risk, credit and investment in households' economic resources, farm-to-market roads and other transport and market infrastructure, etc. Another dynamic pressure includes socio-political and economic processes as well as negative trends in conservation of land, water and biosphere (Wisner et al., 2012).

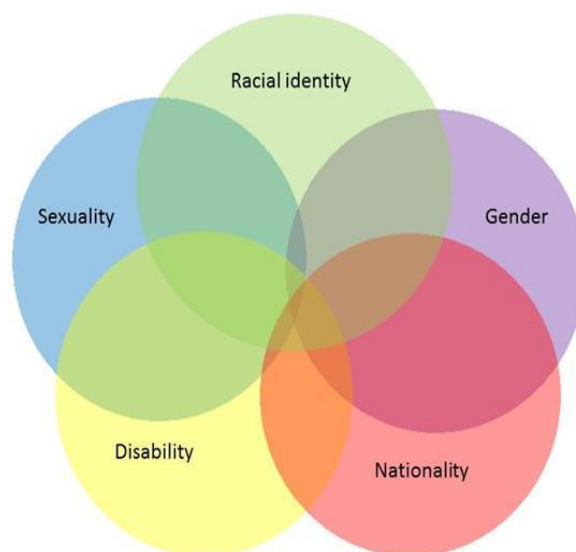
1.6.2 Intersectionality and Gender Equality and Social Inclusion (GESI) Approach of Inclusive Disaster Risk Management

Inclusive Disaster Risk Management (IDRM) recognizes that vulnerability to disasters is not uniform across populations. Instead, it is deeply shaped by intersecting social, economic, and political inequalities. It is pertinent that a theoretical framework for IDRM must therefore integrate principles from intersectionality theory and Gender Equality and Social Inclusion (GESI) approaches to ensure that the voices and needs of all people and individuals, especially the most marginalized and vulnerable, are considered in disaster risk reduction (DRR) planning and implementation (World Vision, 2022).

Intersectionality Theory

The intersectionality theory originates from Kimberle Williams Crenshaw 1989 (USA), to understand how different forms of discriminations and power relations have impact on individual's experience an event of disaster. To build gender sensitive strategies and initiatives in the disaster management process it is crucial to address the needs and interests of different categories of people adopting intersectional approaches. Intersectionality offers a way to understand and respond to the ways different factors, such as gender, age, disability, and ethnicity, intersect to shape individual identities, thereby enhancing awareness of people's needs, interests, capacities, and experiences. *"People are not born vulnerable; they are made vulnerable. [...] different axes of inequality combine and interact. [...] Intersectionality calls attention to the need to avoid statements like "women are vulnerable" in favour of a more nuanced view"* (Tiernny, 2019).

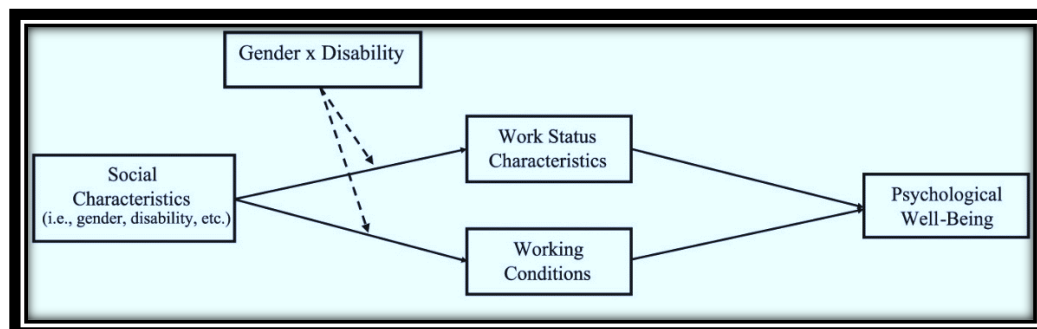
Figure 1. 2 Different factors which shape individual identities



At the core of inclusive DRR lies the concept of intersectionality, which acknowledges that individuals are diverse and identify across multiple axes of identity including gender, age, disability, class, ethnicity, and more. These intersecting identities often result in overlapping vulnerabilities or compounded exclusion. Bradshaw and Nasreen (2023) pointed out that risk is socially constructed, and thus who will be most at risk varies by context and characteristics, such as gender, race, and age. It is the combination of specific economic, social and cultural characteristics in any given context, that creates vulnerability. This notion of the combination of characteristics and the context in which they occur as key, is the essence of intersectionality. The degree of exclusion is not uniform and may vary depending on other factors, such as economic status or access to social services. Recognizing these intersections is essential for crafting DRR policies that are truly inclusive and equitable (World Vision, 2023).

Intersectional theory provides a nuanced framework for understanding how overlapping social identities and systemic structures shape the experiences of vulnerable categories in various aspects of life (such as gender, race, sexual orientation, and socio-cultural standings) intersect, including employment, community integration, and life satisfaction. For example, women with disabilities tend to be affected psychologically by unfair workplace conditions, partly due to earning lower wages, facing higher levels of workplace stress, and having fewer opportunities for autonomous working conditions (Brown and Moloney, 2019).

Figure 1. 3 Conceptual Model of the Associations between Status Characteristics, Work Status Characteristics, Working Conditions, and Psychological Well-Being



Source: Model is based on Eckenrode and Gore's (1990) discussion of the transmission processes through which work affects well-being.

Gender Responsive Resilience and Intersectionality in Policy and Practice (GRRIPP)

'Gender Responsive Resilience and Intersectionality in Policy and Practice (GRRIPP) - Networking Plus Partnering for Resilience', funded by the Global Challenges Research Fund (GCRF/UKRI). GRRIPP (2021-2024) was a four-year global collaboration and knowledge-exchange project on gender and intersectionality, implemented by a collective of universities in Africa, Bangladesh, Latin America-Caribbean and United Kingdom (UK). It attempted to bring together theory, policy and practice to promote a gender-responsive approach to disaster management and development. With this change of focus and methods, GRRIPP contributed to

renew theory and implement better policies and practices in the fields of gender-responsive disaster risk reduction, climate change action and development using intersectional lens.

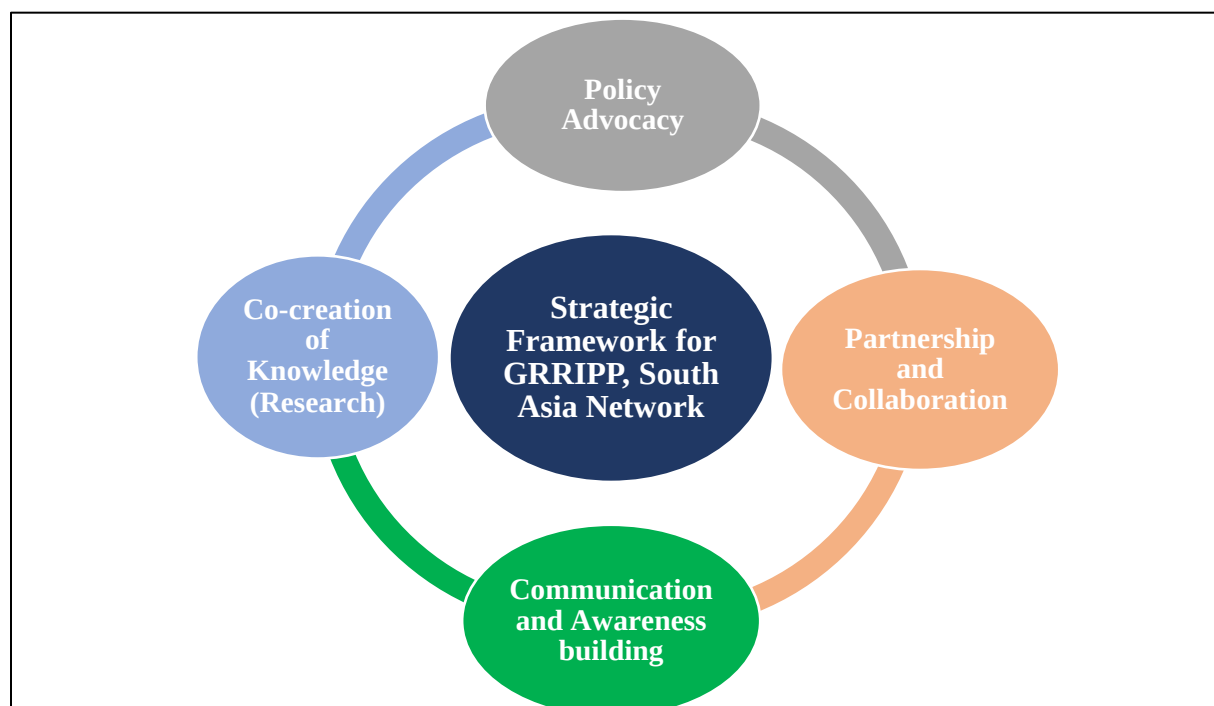
GRRIPP South Asia (<https://www.gripp.net/southasia>) was a first ever long term project in South Asian region implemented by academia and launched in 2021 through signing a memorandum of understanding between University of Dhaka, Bangladesh and University College London (UCL), UK and implemented by the Institute of Disaster Management and Vulnerability Studies (IDMVS), University of Dhaka. GRRIPP awarded several projects to the academia and gender and DRR practitioners in Bangladesh, India, Nepal and Sri Lanka on gender, reproductive health, disaster, disaster governance, pandemic, curriculum development, persons with disability, elderly, indigenous people, Hijra community and relevant others using intersectionality lens.

The Regional Lead of GRRIPP South Asia M. Nasreen (2024) argues that there are inclusion challenges in risk management in the South Asian region as, in most cases, exclusion cuts across intersectional groups and contexts. “Physical, economic, and social factors of vulnerability are closely linked with people's age, gender, (dis)abilities, and other identities. Intersectionality refers to the interconnected nature of social categorizations such as ethnicity, caste, aging, disability, mental health, sexual and gender identity, class, religion, indigeneity, membership to certain groups, etc. as they apply to a given individual or group, regarded as creating overlapping and interdependent systems of discrimination or disadvantage” (Nasreen, M. 2024).

An Action Research titled ‘Devastating Flash Flood in North-East Bangladesh and Assam, India: through Gender and Intersectional Lens’ conducted immediately after the flash floods both in Sunamganj, Bangladesh and Assam, India sponsored by GRRIPP South Asia indicated that women are frequently portrayed as helpless victims whereas Nasreen's (1995; 2012) groundbreaking research shows women have the capacity to act as catalysts for transformation by participating in managerial, adaptable, and resilient endeavours that ensure the sustenance of their households. However, in the context of disasters, the particular needs, constraints, and contributions of these intersectional communities are conspicuously neglected (GRRIPP, South Asia, 2023).

Based on the several research findings, GRRIPP South Asia developed a Strategic Framework on Gender, DRR and Intersectionality. It has been argued that to build gender-sensitive strategies and initiatives in the disaster management process, it is crucial to address the needs and interests of different categories of people adopting intersectional approaches. Intersectionality offers a way to understand and respond to the ways different factors, such as gender, age, disability, and ethnicity, intersect to shape individual identities, thereby, enhancing awareness of people's needs, interests, capacities, and experiences (Nasreen, 2024).

Figure 1. 4 GRRIPP South Asia Strategic Framework



The Framework

Four interconnected functions comprise the broader scope of this strategy: a) policy advocacy, b) partnership and collaboration, c) communication and awareness building, and d) co-creation of knowledge through research and action. This is intended to offer a conceptual frame within which we will design our particular programmes of work in GRRIPP South Asia Network as well as in different partner organisations utilizing their respective institutional strengths and comparative advantages.

These are briefly explained as follows:

- a) **Policy advocacy:** On the basis of our learning through community interaction and studies, the network will promote gender-responsive policies and aim to mainstream Gender and Intersectionality in DRR Policies. We will endeavour to promote integration of intersectional perspectives into national and regional disaster management frameworks. We will support local and national governments to formally adopt gender-sensitive guidelines for disaster preparedness and response by the designated public and private sector agencies.
- b) **Partnership:** Collaborative action and research will be pivotal for the network to make a substantial regional impact on the major themes of our focus. Collaboration with governments, non-governmental organizations, community leaders, academia, and international partners is essential to ensure a high quality of implementation of our work. For the purpose, GRRIPP South Asia Network will foster partnerships with NGOs, Civil Society Organizations (CSOs), Universities, research institutes, and international agencies

besides government departments and ministries. Partnership and collaboration will offer opportunities to leverage our collective resources and expertise to elevate the value of the network and facilitate its wider acceptability. GRRIPP South Asia Network will positively exploit and expand its already established contacts and connections in the region through the GRRIPP global project. In fact, this strategy document has the ownership of many regional and international partners who attended the “GRRIPP South Asia Seminar 2023” in Dhaka. This new regional forum of South Asia will also maintain its international linkages including its African and Latin American colleagues who were part of the GRRIPP initiative.

- c) **Communication:** Generation and dissemination of information through various communication media and methods will be an important component of work for the network. This will help the network members and its stakeholders enhance their knowledge and understanding about its various activities including work related to policies and actions on gender, intersectionality and disasters. Besides producing information, education and communication (IEC) materials in print, the network will use different digital platforms available in the electronic media, such as Facebook, Website, LinkedIn and YouTube. The awareness-raising component of the work will rely on campaigns, advocacy workshops, dialogues, and webinars to help raise awareness on gender, intersectionality, and disaster risk reduction. Effective communication work will contribute to empowering women and marginalised groups to actively participate in decision-making processes, particularly linked to disaster risk reduction, but also to livelihood skills. Production of attractive and informative communication products should help generate public support to our work, influencing public opinion and also in mobilizing funds for our work.
- d) **Knowledge creation:** An important function of the network will be to create knowledge through research and studies to promote, among other objectives, the ideas related to gender and intersectionality to reduce disaster impact. It will involve collaborative processes in which stakeholders including researchers and community members will work together to generate insights, solutions and innovations. Findings based on high quality research will give legitimacy to our demands and pleas for policy reform in favour of disadvantaged groups of women and men. This will not only give the network participants access to valuable knowledge and information, but also support our ‘cases’ made to governments for policy change and reform.

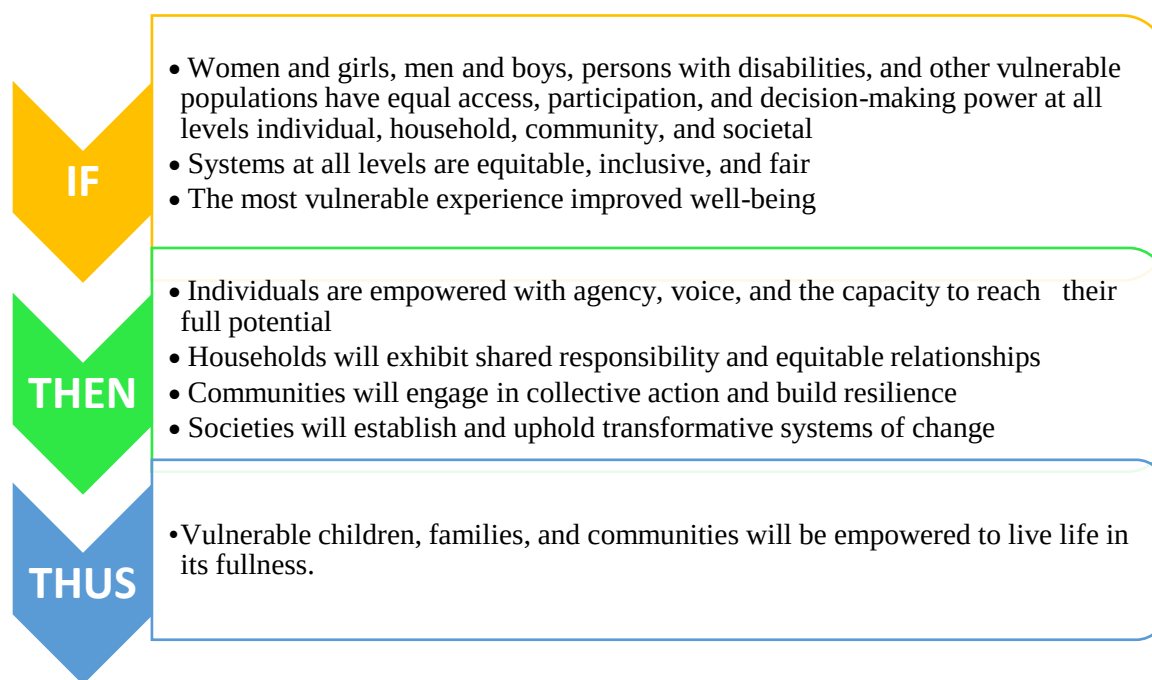
Gender Equality and Social Inclusion (GESI) Approach

Gender discrimination is perhaps the most universal form of social exclusion. Gender issues, and the interaction of gender discrimination and poverty, have attracted rigorous academic analysis and now benefit from a strong conceptual basis (Nasreen & Tate, 2007). The GESI Approach specifically examines interrelated vulnerabilities, understanding that disaster impacts and resilience capacities are shaped not only by gender but also by broader social exclusion dynamics. This perspective shifts disaster risk reduction (DRR) from a one-size-fits-all model to one that is responsive to the complexity of real-life contexts (World Vision, 2023).

GESI Theory of Change

World Vision’s GESI Theory of Change offers a structured framework for promoting inclusive disaster resilience. It outlines a logical progression from inputs to outcomes and impacts as follows:

Box 1. 1 GESI Theory of Change



Source: World Vision, 2023.

This theory of change underlines the need to address both structural barriers and social norms that hinder participation and resilience-building among marginalized groups.

Definition and Application of GESI in IDRM

According to World Vision, GESI is a transformative process that promotes (World Vision, 2023):

Box 1. 2 Transformative process that promotes GESI

- Equal and inclusive access, decision-making, and well-being of vulnerable groups;
- Systemic transformation of norms, institutions, and power dynamics;
- Strengthened agency and resilience at both individual and community levels;
- The empowerment of children, families, and communities to thrive in the face of risk.

Source: World Vision, 2023.

The World Bank's flagship report on social inclusion, *Inclusion Matters: The Foundation for Shared Prosperity*, suggests that poverty tends to be concentrated among people with certain distinguishing characteristics that set them apart as socially excluded groups. These may be minorities, caste groups, indigenous people, female-headed households, or households including persons with disabilities, among others (World Bank 2013). Climate related shocks and stresses have differential impacts on these groups according to their abilities and limitations, especially

during the post disaster recovery and reconstruction period. Disaster management and prevention strategies therefore must focus on the differential needs of and impacts on these vulnerable and excluded groups

1.6.3 Merging the Frameworks: A Comprehensive Model for IDRM

The Progression of Vulnerability framework, developed by Wisner et al. (2004), explains how disaster risk is not a product of hazards alone but arises from deeper social, political, and economic structures that produce vulnerability. It traces risk through three stages: Root Causes, Dynamic Pressures, and Unsafe Conditions, which interact with hazards to produce disasters. However, while powerful, the framework tends to treat vulnerability in aggregate terms, without sufficiently unpacking how intersecting identities such as gender, age, class, ethnicity, and disability shape differentiated experiences of risk.

By embedding intersectionality and Gender Equality and Social Inclusion (GESI) principles into each stage of the Progression of Vulnerability, the model can be transformed into a more inclusive and justice oriented framework for Disaster Risk Management (DRM). This integration not only highlights who is most affected and why, but also points to systemic reforms needed to dismantle the inequalities that create and sustain vulnerability.

Table 1. 1 Integrating the Progression of Vulnerability with Intersectional GESI for IDRM

Progression of Vulnerability	Intersectionality & GESI Enhancements
Root Causes → Structural inequalities (e.g., land tenure, governance, power)	Include gender norms, cultural stigmas, and historic exclusion based on identity
Dynamic Pressures → Lack of institutions, urban crowding, deforestation	Recognize social norms, barriers to participation, and access to services
Unsafe Conditions → Hazard-prone locations, fragile livelihoods	Disaggregate by group: how and why women, children, disabled, etc., are affected differently
Capacity (C) & Mitigation (M) → Local and institutional efforts to reduce risk	Expand to include inclusive participation, empowerment, and social transformation
Disaster Risk (DR) as the outcome of systemic failures	DR must be tackled not only by technical fixes but by justice-oriented policies

When integrated, the Progression of Vulnerability (POV) and Intersectional GESI frameworks offer a comprehensive model for Inclusive Disaster Risk Management (IDRM) and its implications which is being discussed in the following sections:

1. Root Causes → Structural Inequalities and Identity-Based Exclusion

- **Traditional POV:** Root causes are traced to deep structural issues such as unequal land tenure, poor governance, exploitative economic systems, and lack of political representation.
- **Intersectional/GESI enhancement:** These root causes must also include social norms, cultural stigmas, and historical exclusions based on identity. For instance, patriarchal inheritance laws may prevent women from owning land, limiting their access to compensation or credit in the aftermath of a disaster. Similarly, lower caste or minority groups may be systematically excluded from decision-making spaces.
- **Implication:** Risk reduction must begin with dismantling structural barriers of power, patriarchy, and discrimination that produce and reinforce vulnerability across generations.

2. Dynamic Pressures → Social Barriers and Institutional Gaps

- **Traditional POV:** Dynamic pressures describe how root causes translate into specific pressures such as lack of institutions, training, investment, urban crowding, and deforestation.
- **Intersectional/GESI enhancement:** An intersectional lens reveals how barriers to participation, access to services, and discriminatory institutional practices intensify these pressures. For example, women may be excluded from community disaster committees due to social norms, youth may lack access to employment opportunities, and persons with disabilities may face inaccessible public infrastructure or early warning systems.
- **Implication:** DRM must not only strengthen institutions but also ensure that participation is inclusive and meaningful, addressing invisible barriers such as unpaid care work, social stigma, or language and literacy challenges.

3. Unsafe Conditions → Differentiated Vulnerabilities in Place and Livelihoods

- **Traditional POV:** Unsafe conditions describe the specific contexts in which people live and work — for example, hazardous locations, fragile livelihoods, and lack of protective infrastructure.
- **Intersectional/GESI enhancement:** These unsafe conditions must be disaggregated by social group to show how and why different populations are affected differently. For example:
 - Women may face gender-based violence in cyclone shelters.
 - Children may lose access to schooling during displacement.
 - Elderly men and women may lack mobility to evacuate.
 - Persons with disabilities may face inaccessible transport and shelter facilities.
- **Implication:** Risk assessments and resilience building must account for these differentiated lived realities, rather than assuming communities are homogeneous.

4. Capacity (C) and Mitigation (M) → Inclusive Empowerment and Social Transformation

- **Traditional POV:** Capacity and mitigation are seen as the ability of individuals, communities, and institutions to reduce risk through local knowledge, preparedness, and protective measures.
- **Intersectional/GESI enhancement:** Capacity must also be understood in terms of agency, empowerment, and rights-based participation. This requires shifting from a purely technical view of mitigation to one that centers on inclusive governance, redistribution of resources, and transformative social change.
- **Implication:** Building resilience must involve supporting women's leadership, empowering youth, and creating platforms where marginalized voices can shape DRM strategies.

5. Disaster Risk (DR) → From Technical Fixes to Justice Oriented Policies

- **Traditional POV:** Disaster risk results when hazards interact with unsafe conditions, pressures, and root causes. It is often addressed through technical interventions such as flood embankments, cyclone shelters, or improved warning systems.
- **Intersectional/GESI enhancement:** While technical measures remain essential, disaster risk cannot be reduced sustainably without tackling its social and political roots. Justice oriented policies are needed to ensure equitable access to resources, dismantle discriminatory practices, and transform institutions to be more inclusive, accountable, and reflective of local realities.
- **Implication:** Risk reduction must be reframed by taking into account equity, justice, and systemic transformation, rather than hazard control alone.

Principles for Inclusive Disaster Risk Management (IDRM)

An integrated framework therefore demands the following principles:

- **Participatory risk assessments** with data disaggregated by gender, age, disability, ethnicity, and socio-economic status.
- **Policies and programs** that dismantle exclusionary power structures and promote equity.
- **Support for alternative, resilient livelihoods** that address both immediate survival and long-term climate resilience.
- **Recognition of everyday risks** (e.g., water scarcity, food insecurity, displacement) alongside episodic disasters like cyclones or floods.
- **Institutions that are accountable, inclusive, and rooted in local realities**, with mechanisms for monitoring by women, youth, and marginalized groups.

We can conclude that by embedding intersectionality and GESI into the Progression of Vulnerability, disaster risk is reframed not as a technical or natural inevitability but as a product of inequality. This combined framework promotes a transformative, inclusive, and sustainable model of resilience, ensuring that disaster risk reduction becomes a pathway to social justice, empowerment, and equity. Ultimately, it ensures that ***no one is left behind*** in the face of climate change and disaster risk.

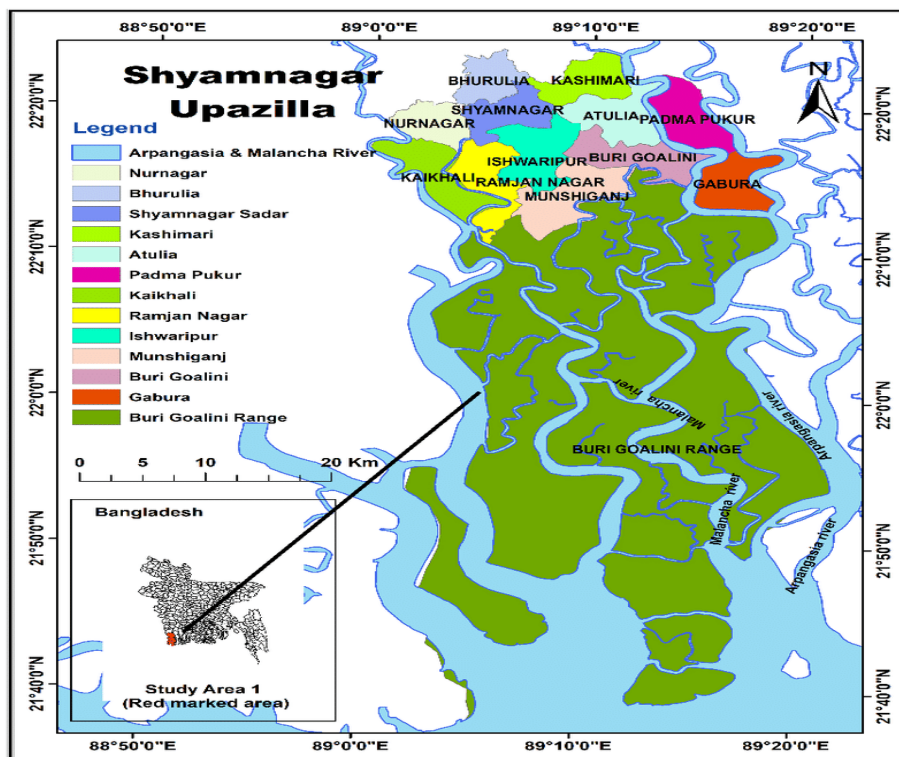
1.7 Methodology

A judicious methodology combining both quantitative and qualitative research techniques will be used in this study. The purpose of this methodology is to capture the complex ground level reality which has experienced climate change having impact on the vulnerable households and other disasters with myriad implications on the environment and population in the study area. The emphasis of the qualitative methodology will be on in-depth understanding, description, narratives and analysis and as well as people's adaptation and survival strategies in this emerging situation. The approach followed will be flexible which will allow greater adaption since the interviews will be conducted through open ended questions.

Study area

The study area consisted of the worst disaster prone upazila of Satkhira district namely Shyamnagar. Shyamnagar Upazila is bounded by Kaliganj (Satkhira) and Assasuni upazilas in the North, West Bengal state of India and the Bay of Bengal on the South, Koyra and Assasuni upazilas on the East, West Bengal state of India on the West. Shyamnagar has an area of 1968.24 square kilometers and population of 313,781 (160,294 males and 153,487 females) (Banglapedia National encyclopedia of Bangladesh, Shyamnagar Upazila).

Figure 1. 5 Map of Shyamnagar upazila, Satkhira



Source: https://www.researchgate.net/figure/Location-map-of-the-Shyamnagar-Upazila_fig6_323867897

Sources of data

The data for the study was collected from both primary and secondary sources. Primary data was collected by an array of quantitative and qualitative research techniques. Secondary sources comprised information and data from already published sources.

1.7.1 Secondary sources

Existing literature on gender and climate change such as books, journals, articles etc. were thoroughly reviewed. The desk review further included international instruments and national legal framework on gender, climate change and disaster such as Convention on the Elimination of All Forms of Discrimination against Women, CEDAW (1979) and Optional Protocol to the Convention (1999); United Nations Framework Convention on Climate Change (UNFCCC), 1992 Sendai Framework for Disaster Risk Reduction (2015 - 2030); Hyogo Framework for Action (2005–2015) etc. National legal framework will include The Constitution of Bangladesh; National Women Development Policy on Women, 2011; Seventh Five Year Plan (2016-20); and The Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009.

1.7.2 Primary data sources

Primary data was collected directly from the study location by applying quantitative and qualitative research techniques considering the objectives of research, nature and type of respondents who constituted the primary sources of data in this study.

Exploratory phase

The first step in the collection of data was an exploratory phase of the study. During this phase, several field trips were undertaken in Shyamnagar upazila in order to introduce the objective of the study to the community people thus building rapport for collecting necessary data. Rapport building was done in two levels i.e. one at the community level and another at the household level. Field visits undertaken by the study team was to know more about the area, community as well as to get an overall idea regarding how the study location are being affected by climate change and the onset of disasters. The researcher made transect walks around different locations. The exploratory phase helped the researcher to know the area better, establish rapport, get a fairly good idea about the potential key informants and respondents. The walk was random but with a purpose.

1.8 Quantitative Research Techniques

Quantitative research technique included sample survey. Purposive sampling was used to select the sample households which included elder men and women, men and women heads of household, widowers and widows, and men and women with disabilities who were adversely affected by disasters in the disaster prone upazila Shyamnagar of Satkhira district.

Sample size: About 1,000 marginalized households, which consisted of hard-core poor, occupational groups and are dependent solely on forest and water resources, women headed households affected by disasters and still in a vulnerable situation were selected using purposive sampling for the study. Sample size of each category was determined from the data available at the Upazila Parishad office. They all belong to the government safety net coverage programme. About 20 percent of each category was selected.

However, the actual sampling also depended on the availability of the respondents of each category. For example, when elderly men or women belonged to the widowers, widows, heads of

households and persons with disabilities, then they were counted in those respective categories. Given below the number of respondents of each category:

Table 1. 2 Categories of respondents by number

Categories of respondents	Number of respondents
Elderly men	189
Elderly women	114
Men heads of households	158
Women heads of households	153
Widowers	71
Widows	176
Men with disabilities	70
Women with disabilities	69
Total	1000

1.8 Qualitative Research Techniques

Qualitative data was collected by applying different participatory methods that included observation, conversation, small group meetings, focus group discussion, key informant interview and case studies.

Direct observation constituted an important technique to generate information that was descriptive though objective-oriented. The observation was made following different check-lists/open-ended questions that not only generated new information but also to cross-check, validate information and generated new research questions. Observations were related to questions such as: what? when? where? who? why? how? These questions were in mind during the direct observation and conversation with different categories of people living in the coastal area.

Focus Group Discussions (FGDs)

FGDs were one of the major tools in the collection of qualitative data to explore the persisting socio-economic inequalities and marginalization among small groups. Two (02) FGDs were organised in the community, one with men and another with women from different marginalized categories. Participants were asked open-ended responses conveying their thoughts on socio-economic inequalities, marginalization and responses during disasters at their household level. The number of participants varied from 6 to 8. FGDs provided an insight into different experiences among smaller vulnerable groups focused on inequalities regarding the impact of climate change and disasters.

Key Informant Interviews (KIIs)

About ten (10) KIIs were conducted with local government officials and professionals who are responsible for disaster risk management at the local level namely Upazila Nirbani Officer, members of Upazila Disaster Risk Management Committee, Red Cross Society, NGOs, community leaders and other stakeholders who were able and willing to provide useful information commensurate with the objectives of the study. However, information received from the key informants was cross-checked through group discussions and interviews with other groups in the study location.

Case Studies

About eight case studies from each category of respondents were gathered namely elderly man and woman, men and women heads of household, widower and widow and men and women with disabilities. Data was collected following recollection method to depict the changes that were occurring in the study area over the years, the impact of disasters in their lives, challenges they have faced and strategies to overcome these as well as suggestions for better disaster risk management efforts in future.

1.9 Organization of the Study

The study is organized into eleven (11) chapters. Chapter One is the introductory chapter with the statement of the problem, goal and specific objectives of the study, operational definitions of key terms, theoretical framework, and lastly elaborated on the methodology of the study.

Chapter Two focus on the gender linkages in development goals and climate change discourse incorporating the global development goals, framework for action with regard to climate change, gender in climate change discourse in the successive global initiatives, and how women groups promoted gender equality in the successive climate change meetings. It ends with a note regarding lack of explicit recognition of gender consideration in climate change high level discourse and meetings.

Chapter Three is on the legal frameworks and strategies in Bangladesh related to climate change which consists of institutional arrangements, Poverty Reduction Strategy Paper, National Adaptation Plan of Action, Bangladesh Climate Change Strategy and Action Plans, Climate investment Funds, Strategic Programme for Climate resilience, National Plan for Disaster management, Climate Change and Gender action Plan, and lastly assessing gender-inclusive disaster management policies in Bangladesh.

Chapter Four unfolds the gendered impacts of climate induced disaster through discussion on gender equality, poverty and climate induced disaster, and issues such as health, water, sanitation, agriculture, food security, forestry, livelihood, displacement, migration and lastly gender needs, responses and adaptation strategies.

Chapter Five is on the socio-economic profile of the respondents namely age, level of education, marital status, primary occupation, source of water and sanitation issues.

Chapter Six is related to perception of climate change and experiences of disasters by respondents and starts with their understanding of climate change and disaster, causes of these calamities, changes in climate that respondents have noticed during their lifetime, experience of disasters in their lifetime, disasters that were more frequent, category of people mostly and moderately affected by disaster in the area, challenges faced by respondents and their families and measures that they took to reduce the losses incurred due to recent disaster in their area.

Chapter Seven discusses the various impacts of disaster namely health of family members and measures being taken in this regard, food consumption pattern of family members before, during and after disasters, impacts on livelihood activities, water, sanitation, gender based violence, displacement and migration.

Chapter Eight is mainly on disaster preparedness and support services namely disaster preparedness activities taken by respondents, which are the most effective preparedness and

disaster warning system and who are the providers, and lastly the support services being rendered by government, NGOs, relatives and neighbours after disasters.

Chapter Nine is based on the strategies and suggestions being provided by respondents for reducing the negative impacts of climate change and disasters.

Chapter Ten provides eight case studies of the different category of respondents' namely elderly man and woman, widower and widow, men and women heads of households and lastly men and women with disabilities.

Chapter Eleven is the conclusion and highlights the policy recommendations for an inclusive disaster risk management for coastal Bangladesh.

Chapter 2

Gender Linkages in Development Goals and Disaster-Related Global Protocols

The gender linkages to global development goals and framework for action have been discussed in the backdrop of the Sustainable Development Goals, Agenda 2030 integrating disaster risk reduction, frameworks for action namely Hyogo Framework for Action: Building the Resilience of Nations and Communities (2005-2015), Sendai Framework for Disaster Risk Reduction (2015-2030) and SAARC Framework for Action (SFA, 2006-2015). In addition, gender in climate change discourse in the successive global initiatives have been elaborated to include United Nations Framework Convention on Climate Change (UNFCCC), Convention on Biological Diversity (CBD), and United Nations Convention to Combat Desertification (UNCCD). With references to linking women and the environment, the study highlighted the discussions that took place at the Commission on the Status of Women, World Conferences on Women at Nairobi and Beijing, World Summit on Environment and Development at Rio de Janeiro, and World Conference on Disaster Reduction at Kobe. Lastly, it elaborated on how women groups promoted gender equality in the successive meetings on climate change and noted the lack of explicit recognition of gender considerations in climate change.

2.1 Global Development Goals

2.1.1 Millennium Development Goals, Climate Change and Gender-Differentiated Implications

The Millennium Development Goals (MDGs) were agreed upon by countries which are interrelated and have multiple conditions concerning compliance (Garmer, 2008). The Millennium Development Goals (MDGs), adopted in 2000, were globally endorsed as a blueprint for development, encompassing poverty reduction, gender equality, environmental protection, and health improvement. While they served as a mobilizing framework, the MDGs suffered from critical design and implementation flaws that limited their effectiveness particularly in climate-vulnerable, gender-unequal contexts like Bangladesh. Bangladesh made commendable progress in achieving mainly two MDG targets:

- **Goal 2 Universal Primary Education:** The country achieved gender parity in primary school enrolment, due to stipend programmes for girls, school meal initiatives, and community-based education models.
- **Goal 4 Reduce Infant Mortality:** Substantial improvements in maternal and child health were made, largely through expanded immunization, antenatal care, and rural outreach by community health workers (*Aguilar, et al., 2007, Dankelman et al., 2008, UNDP, 2003 and Oxfam, 2005*).

These achievements reflect strong policy commitment and targeted investments. However, the remaining goals fell short, revealing deeper systemic issues. However, **most** MDGs remained unfulfilled in Bangladesh due to the following reasons:

Climate vulnerability was overlooked

The MDGs were conceptualized without adequately considering the impacts of climate change, which is a daily reality in Bangladesh. Sea-level rise, floods, cyclones, salinity intrusion, and droughts disproportionately affect agriculture, water access, health, and infrastructure which are all key areas tied to MDG success. These climate shocks repeatedly undermined gains in poverty alleviation, food security, and environmental sustainability.

Gender was treated narrowly

Although gender was given a standalone goal (Goal 3), it was primarily framed around educational parity, overlooking structural gender inequalities in access to land, credit, employment, political participation, and resilience-building resources. This limited the scope of empowerment and ignored the disproportionate burden climate change places on women, especially in rural and coastal areas.

Poverty alleviation (Goal 1) was not climate resilient

MDG strategies for poverty reduction often emphasized economic growth and productivity without recognizing how climate impacts undermine livelihoods, particularly for women reliant on natural resources. With recurrent crop failures, livestock loss, and declining fisheries, rural poverty persisted, especially among female-headed households, which lacked access to climate resilient technologies or land ownership.

Weak focus on health system resilience (Goal 6)

The goal to combat HIV/AIDS, malaria, and other diseases overlooked how climate change increases disease exposure, such as waterborne and vector borne illnesses. Moreover, the health burden on women both as caregivers and patients grew heavier in disaster-prone zones, yet the MDGs failed to integrate public health strategies with climate adaptation.

Environmental sustainability (Goal 7) failed to define actionable paths

The MDGs called for environmental sustainability but failed to define actionable, community-led pathways to resilience. In Bangladesh, deforestation, water contamination, and land degradation were aggravated by climate change—but policies rarely considered women’s dependency on natural resources or included them in environmental governance.

Global partnership (Goal 8) was imbalanced

The notion of a “global partnership for development” often translated into top-down aid mechanisms, with limited transfer of climate finance or technology to the most affected communities. Gender concerns were rarely mainstreamed into international support programmes, and local women’s voices were largely excluded from decision-making spaces.

Lessons for the future

The MDGs provided a valuable starting point, but their siloed, top-down, and gender-blind design was not suited for contexts like Bangladesh where climate stress and gender inequality intersect daily. The Sustainable Development Goals (SDGs), which succeeded the MDGs in 2015, attempt to correct these shortcomings with more integrated and inclusive approaches. For climate vulnerable nations, however, the MDG experience makes one thing clear: development cannot

succeed if it fails to address the gendered realities of climate change. Goals must be context sensitive, locally grounded, and intersectional to create sustainable, equitable outcomes.

2.1.2 Sustainable Development Goals and 2030 Agenda integrating Disaster Risk Reduction

Disaster risk reduction is an integrating element within the 2030 Agenda for Sustainable Development. “Integrating disaster risk reduction across global efforts in support of the 2030 Agenda for Sustainable Development provides a practical and tangible bridge between the development and humanitarian communities, as well as an important rallying point for key stakeholders, including civil society and the private sector, who are highly motivated and essential participants in reducing disaster and climate risk globally, regionally, nationally, and locally.”

Ten of the 17 SDGs relate to disaster risk by positively establishing the role of disaster risk reduction in realizing the 2030 Agenda for Sustainable Development. Moreover, there are 25 targets related to disaster risk reduction in 10 of the sustainable development goals, by firmly establishing the role of disaster risk reduction as a core development strategy. Given below the SDG development goals and the targets set related to disaster risk reduction.

Box 2. 1 SDGs targets related to disaster risk

Goal 1. End poverty in all its forms everywhere	Target 1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.
Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Target 2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.
Goal 3. Ensure healthy lives and promote well-being for all at all ages	Target 3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Target 4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development. Target 4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.

Goal 6. Ensure availability and sustainable management of water and sanitation for all	Target 6.6: By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Target 9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all. Target 9.a: Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island development states.
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable	Target 11.1: By 2030, ensure access for all to adequate, safe and affordable and basic services and upgrade slums. Target 11.3: By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries. Target 11.4: Strengthen efforts to protect and safeguard the world's cultural and natural heritage. Target 11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations. Target 11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels. Target 11.c: Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials.

Goal 13. Take urgent action to combat climate change and its impacts	Target 13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries. Target 13.2 Integrate climate change measures into national policies, strategies and planning. Target 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning. Target 13.a Implement the commitment undertaken by developed country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible. Target 13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries, including focusing on women, youth and local and marginalized communities. Target 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning. Target 13.a Implement the commitment undertaken by developed country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible. Target 13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries, including focusing on women, youth and local and marginalized communities.
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	Target 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Target 15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and dry lands, in line with obligations under international agreements. Target 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally. Target 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world. Target 15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for 19 sustainable development. Target 15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.

Source: SDGs with Targets related to Disaster Risk in UNDRR PreventionWeb.

2.2 Frameworks for Action

2.2.1 Hyogo Framework for Action: Building the Resilience of Nations and Communities 2005-2015

The World Conference on Disaster Reduction was held from 18 to 22 January 2005 in Kobe, Hyogo, Japan where 168 countries adopted the Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. The Conference provided a unique opportunity to promote a strategic and systematic approach to reducing vulnerabilities¹ and risks to hazards. It underscored the need for, and identified ways of, building the resilience of nations and communities to disasters (UNISDR, 2005).

The expected outcome is:

The substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries. However, the realization of this outcome will require the full commitment and involvement of all actors concerned, including governments, regional and international organizations, and civil society including volunteers, the private sector and the scientific (UNISDR, 2005).

In Section III Priorities for Action 2005-2015 of the Framework's General considerations (d) states that:

A gender perspective should be integrated into all disaster risk management policies, plans and decision-making processes, including those related to risk assessment, early warning, information management, and education and training (UNISDR, 2005).

On the basis of the above statement that gender should be integrated into all disaster risk management activities, gender will be a cross-cutting issue in the following priorities for action.

Box 2. 2 Objectives, strategic goals and priorities for action of the Hyogo Framework

Objectives	Strategic goals	Priorities for action
To conclude and report on the review of the Yokohama Strategy and its Plan of Action, with a view to updating the guiding framework on disaster reduction for the twenty-first century;	The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction;	Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation
To identify specific activities aimed at ensuring the implementation of relevant provisions of the Johannesburg Plan of Implementation of the World Summit on Sustainable Development on vulnerability, risk assessment and disaster management;	The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience ⁷ to hazards;	Identify, assess and monitor disaster risks and enhance early warning
To share good practices and lessons learned to further disaster reduction within the context of attaining sustainable development, and to identify gaps and challenges;	The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction of affected communities.	Use knowledge, innovation and education to build a culture of safety and resilience at all levels
To increase awareness of the importance of disaster reduction policies, thereby facilitating and promoting the implementation of those policies;		Reduce the underlying risk factors
To increase the reliability and availability of appropriate disaster related information to the public and disaster management agencies in all regions, as set out in relevant provisions of the Johannesburg Plan of Implementation.		Strengthen disaster preparedness for effective response at all levels

Source: Hyogo Framework for Action 2005-2015 (UNISDR, 2005)

After the second World Conference on Disaster Reduction in Kobe in 2005, an underlying concern of civil society representatives was that the high level policy statements of programmes developed under the HFA guidelines would not be translated into effective implementation and change at the ‘frontline’ – where communities vulnerable to disasters live and work.

In expressing this concern they had history on their side, as the review of the preceding ten year programmes, the ‘Yokohama Strategy for Natural Disasters’ had concluded that intentions still needed to be turned into actions. The midterm review of the HFA notes that while the HFA played a decisive role in promoting disaster risk reduction across international, regional and national agenda, the progress achieved in its implementation is uneven across countries. It identified gaps in ‘systematic multi-hazards risk assessments and early warning systems factoring in social and economic vulnerabilities; the integration of disaster risk reduction into sustainable development policies and planning at national and international level, and the still insufficient level of implementation of the Hyogo Framework for Action at the local level. It remains difficult to increase resilience to hazards, especially in the most vulnerable segments of society (UNDRR, 2011).

However, the midterm report of Asia-Pacific regions and other countries on HFA progress indicated that much progress have not been achieved in context of gender and DRR. For this reason the theme for the International Day for Disaster Risk Reduction (IDDR, 2012) was “Women and Girls-the Invisible Force of Resilience”. On the occasion the Principal Investigator launched a book on *Women and Girls: Vulnerable or Resilient?* (Nasreen, 2012; 2019, 2nd edition). Since then the actors on DRR started to emphasize in incorporating gender and disaster risk reduction in relevant policy agenda. The framework was finalized in the Third World Conference on Disaster Risk Reduction (WCDDR) held in Sendai, Japan in 2015. Gender experts around the world, including Principal Investigator, contributed significantly for incorporating gender and social inclusion issues in the next framework, Sendai Framework for Disaster Risk Reduction (SFDRR).

2.2.2 The Sendai Framework for Disaster Risk Reduction 2015-2030

The Sendai Framework for Disaster Risk Reduction 2015-2030 builds on achievements and elements established under its predecessor, the Hyogo Framework for Action: Building the Resilience of Nations and Communities 2005- 2015. The agreement introduces a number of important innovations, including a stronger emphasis on disaster risk management, as opposed to disaster management. The Sendai Framework underscores that disaster risk reduction is essential to achieve sustainable development.

The Sendai Framework for Disaster Risk Reduction 2015-2030 was adopted by UN Member States on 18 March 2015 at the Third UN World Conference on Disaster Risk Reduction in Sendai City, Miyagi Prefecture, Japan. The Sendai Framework is the first major agreement of the post-2015 development agenda, with seven targets and four priorities for action.

The Framework aims to achieve the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries over the next 15 years.

The Sendai Framework for Disaster Risk Reduction (2015–2030), the successor agreement to the Hyogo Framework for Action (2005–2015), was adopted at the 3rd UN World Conference on Disasters Risk Reduction in March 2015. The Framework is a 15-year international blueprint for saving lives and reducing the economic impact of natural and man-made hazards. One of the key

distinctions of the Sendai Framework with past frameworks is recognizing the significance of gender-dimensions in disaster risk reduction and calls for inclusion of all members of the society. It calls for “a gender, age, disability and cultural perspective in all policies and practices; and the promotion of women and youth leadership; in this context.”

The Framework underscores that:

Women and their participation are critical to effectively managing disaster risk and designing, resourcing and implementing gender-sensitive disaster risk reduction policies, plans and programmes; and adequate capacity building measures need to be taken to empower women for preparedness as well as build their capacity for alternate livelihood means in post-disaster situations (UNDRR, 2015).

At the global level, the Sendai Framework for Disaster Risk Reduction (2015-2030), as well as many national plans and policies on disaster risk reduction have recognized the importance of better understanding of the gender aspects of disaster risk reduction efforts.

Building on the Hyogo Framework for Action, the Sendai Framework aims to achieve the following outcome over the next 15 years:

The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.

To attain the expected outcome, the following goal must be pursued:

Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience.

To support the assessment of global progress in achieving the outcome and goal of the present Framework, seven global targets have been agreed. These targets will be measured at the global level and will be complemented by work to develop appropriate indicators. National targets and indicators will contribute to the achievement of the outcome and goal of the present Framework.

Box 2. 3 Seven Global Targets

Target 1	Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020–2030 compared to the period 2005–2015.
Target 2	Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020–2030 compared to the period 2005–2015;9.
Target 3	Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.

Target 4	Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.
Target 5	Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.
Target 6	Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the present Framework by 2030.
Target 7	Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030. ⁹ Categories of affected people will be elaborated in the process for post-Sendai work decided by the Conference.

Source: Sendai Framework for Disaster Risk Reduction 2015-2030 (UNDRR, 2015).

Priorities for Action

Taking into account the experience gained through the implementation of the Hyogo Framework for Action, and in pursuance of the expected outcome and goal, there is a need for focused action within and across sectors by States at local, national, regional and global levels in the following four priority areas:

Box 2. 4 Priorities for Action

Priority 1: Understanding disaster risk.	Policies and practices for disaster risk management should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment. Such knowledge can be leveraged for the purpose of pre-disaster risk assessment, for prevention and mitigation and for the development and implementation of appropriate preparedness and effective response to disasters.
Priority 2: Strengthening disaster risk governance to manage disaster risk.	Disaster risk governance at the national, regional and global levels is of great importance for an effective and efficient management of disaster risk. Clear vision, plans, competence, guidance and coordination within and across sectors, as well as participation of relevant stakeholders, are needed. Strengthening disaster risk governance for prevention, mitigation, preparedness, response, recovery and rehabilitation is therefore necessary and fosters collaboration and partnership across mechanisms and institutions for the implementation of instruments relevant to disaster risk reduction and sustainable development

Priority 3: Investing in disaster risk reduction for resilience.	Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and cultural resilience of persons, communities, countries and their assets, as well as the environment. These can be drivers of innovation, growth and job creation. Such measures are cost-effective and instrumental to save lives, prevent and reduce losses and ensure effective recovery and rehabilitation.
Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction.	The steady growth of disaster risk, including the increase of people and assets exposure, combined with the lessons learned from past disasters, indicates the need to further strengthen disaster preparedness for response, take action in anticipation of events, integrate disaster risk reduction in response preparedness and ensure that capacities are in place for effective response and recovery at all levels. Empowering women and persons with disabilities to publicly lead and promote gender equitable and universally accessible response, recovery, rehabilitation and reconstruction approaches is key. Disasters have demonstrated that the recovery, rehabilitation and reconstruction phase, which needs to be prepared ahead of a disaster, is a critical opportunity to “Build Back Better”, including through integrating disaster risk reduction into development measures, making nations and communities resilient to disasters.

Source: Sendai Framework for Disaster Risk Reduction 2015–2030, (UNDRR, 2015).

The Framework further states:

In their approach to disaster risk reduction, States, regional and international organizations and other relevant stakeholders should take into consideration the key activities listed above under each of these four priorities and should implement them, as appropriate, taking into consideration respective capacities and capabilities, in line with national laws and regulations.

Moreover, in the context of increasing global interdependence, concerted international cooperation, an enabling international environment and means of implementation are needed to stimulate and contribute to developing the knowledge, capacities and motivation for disaster risk reduction at all levels, in particular for developing countries (UNDRR, 2015).

The Framework incorporates the role of non-State stakeholders who play an important role as enablers in providing support to States, in accordance with national policies, laws and regulations, The Framework acknowledges that in the implementation of the present Framework at local, national, regional and global levels, non-State stakeholders’ commitment, goodwill, knowledge, experience and resources will be required. It clearly asserts that States should encourage actions on the part of all public and private stakeholders including women.

It recognizes that:

Women and their participation are critical to effectively managing disaster risk and designing, resourcing and implementing gender-sensitive disaster risk reduction policies, plans and programmes; and adequate capacity building measures need to be taken to empower women for preparedness as well as to build their capacity to secure alternate means of livelihood in post-disaster situations (UNDRR, 2015).

2.2.3 SAARC Framework for Action (SFA) 2006-2015

The Heads of State or Governments in the 13th Dhaka Summit called for elaboration of a Comprehensive Framework on Early Warning and Disaster Management. In view of the December 2004 Asia Tsunami and the 2005 Pakistan Earthquake, the Heads of State underscored the urgency to put in place a regional response mechanism dedicated to disaster preparedness, emergency relief and rehabilitation to ensure immediate response. They directed the concerned national authorities to coordinate their activities in the areas of disaster management such as early warning, exchange of information, training and sharing of experiences and best practices in emergency relief efforts.

Following the Dhaka Declaration, a South Asian Association for Regional Cooperation) (SAARC) Expert Group was formed to formulate a regional comprehensive framework on disaster management for the SAARC region. The expert group met in Dhaka on 7-9 February 2006. As per the mandate of the Meeting and taking into account the deliberations of the Meeting, Bangladesh circulated a draft Comprehensive Framework on Disaster Management entitled “Disaster Management in South Asia: A Comprehensive Regional Framework for Action 2006-2015” for consideration. After detailed discussions and amendments, the Framework was adopted in the meeting.

Strategic Goals of the framework include the following:

- *Professionalizing the disaster management system*
- *Mainstreaming disaster risk reduction*
- *Strengthening of community institutional mechanisms*
- *Empowering community at risk particularly women, the poor and the disadvantaged*
- *Expanding risk reduction programming across a broader range of hazards (all hazards approach)*
- *Strengthening emergency response systems*
- *Developing and strengthening networks of relevant national, regional and international organizations.*

The SFA identifies the following as the priority areas for action:

- Develop and implement risk reduction strategies
- Establish Regional and National Response Mechanisms
- Establish a Regional Information Sharing Mechanism and Develop Network of Institutions and Organizations
- Develop and implement Disaster Management training, education, research and awareness programmes

- Apply the ICT for disaster management
- Establish an effective monitoring and evaluation mechanism.

For implementation and follow up of the SFA, it has been emphasized that:

- *The strategic goals and priorities for action should be addressed by different stakeholders in a multi-sectoral approach, including the development sector.*
- *Member States and regional organizations will integrate disaster risk reduction considerations into their sustainable development policy, planning and programming at all levels.*
- *Civil society, including volunteers and community-based organizations, the scientific community and the private sector are vital stakeholders in supporting the implementation of disaster risk reduction at all levels.*
- *While each Member State has primary responsibility for its own economic and social development, an enabling regional environment is vital to stimulate and contribute to developing the knowledge, capacities and motivation needed to build disaster resilient nations and communities.*
- *All the Member States will be encouraged to apply a holistic approach and maintain consistency in programming and building multi-stakeholder partnerships at all levels, as appropriate, to contribute to the implementation of this Framework for Action.*
- *Member States and other actors are encouraged to promote the strengthening or establishment of volunteer corps, which can be made available during disasters.*
- *Member countries shall develop their own plan of action for implementation of this framework.*
- *The draft SFA was placed before the SAARC Environment Ministers' Meeting held in Dhaka from 22-24 May 2006. The Meeting endorsed the SFA and urged the Member States to prepare their own plans of actions for implementation of the SAARC framework and forward to the SAARC Secretariat by December 2006.*

2.3 Gender in Climate Change Discourse in the Successive Global Initiatives

The climate change strategies have no mechanism specifically linked to promoting and including gender equality. However, the international framework related to environmental themes offer sufficient guidelines to include such a mechanism.

2.3.1 Global environment instruments

In 1992, during the United Nations Conference on Environment and Development, known as the “Earth Summit,” held in Rio de Janeiro, Brazil, two legally binding global agreements of environmental importance were signed namely United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD).

2.3.1.1 The United Nations Framework Convention on Climate Change (UNFCCC)

The United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1992 and entered into force on 21 March 1994. The objective of the UNFCCC are:

“To stabilize concentrations of GHGs in the atmosphere, to prevent anthropogenic interferences in the climate system, and to allow for enough time to permit ecosystems to naturally adapt to the change; this will help ensure that food production is not threatened and allow for sustainable economic development. One of its other purposes is to raise worldwide public awareness about problems related to climate change. In 1997, governments agreed to incorporate an addition to the UNFCCC, known as the Kyoto Protocol, with the objective of reducing emissions of GHGs by 5% between 2008 and 2012 by taking more energetic and legally binding measures (Garmer, 2008).”

However, the UNFCCC has no mention of gender perspective or role of women and men as specific stakeholders. Therefore the implementation of the UNFCCC failed to recognize the gender aspects of climate change, gender equality and women’s participation.

2.3.1.2 The Convention on Biological Diversity (CBD)

The Convention on Biological Diversity (CBD) emphasizes the need for the full participation of women at all levels of policymaking and implementation for biological diversity conservation. The Conferences of the Parties (COP) and working groups have also incorporated gender perspectives in other documents, including:

- *Programme of the working group to implement article 8 (j) of the CBD. General Principles: “Recognizing the vital role that women play in the conservation and sustainable use of biodiversity, and emphasizing that greater attention should be given to strengthening this role and the participation of women of indigenous and local communities in the programme of work.”*

The Second Working Group on Review of Implementation of the Convention (WGRI-2). Urged the Parties in July 2007 to “develop, review and implement their national biodiversity strategies and action plans and, in cases where there are regional strategies [...] to promote mainstreaming of gender considerations.” Since 2007, the CBD Secretariat has made specific efforts to mainstream gender and has designated a Gender.

- *Focal Point. In January 2008 it worked with IUCN’s Gender Office to develop a Gender Plan of Action which was approved by the Bureau of the Convention and was presented during COP-9 in Bonn, Germany in May 2008. The Plan of Action has four strategic objectives:*
- *To mainstream a gender perspective into the implementation of the Convention and the associated work of the Secretariat;*
- *To promote gender equality in achieving the three objectives of the Convention on Biological Diversity and the 2010 Biodiversity Target;*

- *To demonstrate the benefits of gender mainstreaming in biodiversity conservation, sustainable use and benefit sharing from the use of genetic resources; and*
- *To increase the effectiveness of the work of the Secretariat of the Convention on Biological Diversity* (Secretariat of the Convention on Biological Diversity, 2009).

2.3.1.3 The United Nations Convention to Combat Desertification (UNCCD)

The United Nations Convention to Combat Desertification (UNCCD), adopted in 1994, is the legally binding instrument dealing with the problem of land degradation in rural areas. The objective of this Convention is to demonstrate that the risks of desertification are substantial and clear. Present calculations show that the means of subsistence of more than 1 billion people could be at risk because of desertification and, as a consequence, 135 million people could be in danger of being driven from their lands. Especially vulnerable are poor people living in rural zones, particularly those in less developed countries. For that reason, there is an urgent need to tackle the implications of this problem.”

“The UNCCD goes beyond mainstreaming gender, not only recognizing the role women play in rural sustenance, but also promoting equal participation of women and men. The prologue of the Convention stresses the important role played by women in regions affected by desertification and/or drought, particularly in rural areas of developing countries, and the importance of ensuring the full participation of both men and women at all levels in programmes to combat desertification and mitigate the effects of drought (UNCCD. 2022).”

Moreover Article 4 of the General Obligations requires the affected country to

Promote awareness and facilitate the participation of local populations, particularly women, with the support of non-governmental organizations, in efforts to combat desertification and mitigate the effects of drought.

2.3.2 Linking Women and the Environment

The linkages between women and environment began with discussion at the Commission on the Status of Women followed by the World Conferences in Nairobi and Beijing where women activists took up the issue and to include women in decision-making roles concerning their lives and livelihood. In 1992, the Earth Summit in its chapter 24 was specifically dedicated to women followed by World Conference on Disaster Reduction in 2005 to integrate gender equity into all decision-making and planning processes related to disaster risk management.

Subsequently, the Global Gender and Climate Alliance (GGCA) was launched in 2007 on the fundamental principle to guarantee the inclusion of women’s voices in decision-making and in policy-making on climate change at global, regional and national levels.

2.3.2.1 Commission on the Status of Women

The Commission on the Status of Women (CSW) has continued to promote awareness of the links between gender, disaster and climate change since 2002 until the present. At its 46th session in 2002, the CSW under themes related to climate change, it focused on disaster management and mitigation. In its conclusions, the Commission called for the integration of a gender perspective in ongoing research being conducted on the impact of climate change and its deep-rooted causes. Moreover, the Commission also concluded that the results of such research should be considered

when policies and programmes are formulated and implemented by government and non-state actors.

In accordance with resolution 2006/9 of the United Nations Economic and Social Council (ECOSOC), the CSW in each of its annual sessions, identifies emerging global themes that require global and regional actions.

In 2008, specifically, Resolution (jj) on Financing for Gender Equality and Women's Empowerment (E/CN.6/2008/L.8) requests governments to:

Integrate a gender perspective in the design, implementation, monitoring, evaluation and reporting of national environmental policies, strengthen mechanisms and provide adequate resources to ensure women's full and equal participation in decision-making at all levels on environmental issues, in particular on strategies related to the impact of climate change on the lives of women and girls.

At its 52nd session in March 2008, the CSW considered the "Gender perspective on climate change" as an emerging theme. To identify gender perspectives and women's participation in actions concerning climate change, the participants in the interactive dialogue shared experiences on good practices at the national, regional and international levels (Garmer, L., 2008).

2.3.2.2 World Conferences on Women at Nairobi and Beijing

The Third World Conference to Review and Assess the Achievements of the United Nations Decade for Women: Equality, Development and Peace held at Nairobi in 1985 was the first global meeting of Member States to officially deliberate and discuss on the theme of women and the environment and the linkage between gender, environment and sustainable development. Chapter K of the Platform for Action makes specific reference to the environment with strategic objectives and action as central themes:

Including the poverty that affects many women; the need for women to participate vigorously in making decisions about the environment at all levels; and integration of the gender perspective in sustainable development policies and programmes.

The above perspective was later taken up in a number of international meetings that further explored and discussed the relationship between gender and sustainable development.

For example, in the follow-up meeting to the Beijing Platform for Action in 2005, the General Assembly stressed the need:

To actively involve women in environmental decision-making at all levels; integrate their concerns and the gender perspective in sustainable development policies and programmes and consolidate or establish mechanisms at the national, regional, and international levels to assess the impact of development and environmental policies on women (Csdwand.net. 2022).

2.3.2.3 World Summit on Environment and Development at Rio de Janeiro, 1992

In 1992, during the World Summit on Environment and Development also known as the Earth Summit at Rio de Janeiro, a gender perspective in all development and environment policies and programmes was adopted which was mainly initiated by non-government organizations and women activists, leading to the promotion of women's effective participation in the proper use of

natural resources. It was the first international precedent for including the gender perspective in promoting sustainable development in its Agenda 21 to achieve sustainable development.

Box 2. 5 Gender Perspective at the Earth Summit

Agenda 21 describes action priorities to achieve sustainable development “from now and into the twenty-first century.” Although women issues are mentioned throughout the 40 sectorial and intersectoral chapters, but chapter 24 specifically is dedicated to women. It focuses on the crucial role women play in changing the present consumption and production model and stresses that, if the Summit’s resolutions are to be successfully implemented, women will need to play a part in politico-economic decisions.

- At the same time, there are proposed actions to end present discrimination against women. These include:
- The implementation of measures that strengthen and stimulate women’s institutions, nongovernmental organizations and groups that provide training on using and managing resources.
- The promotion of a reduction of women’s very heavy workload by establishing child care centres, evenly dividing household tasks between men and women and using environmentally healthy technologies.
- The implementation of programmes that establish and strengthen preventive health and health care services directed and managed by women and that include safe, cheap and voluntary family planning services.

Agenda 21 recognizes the importance of women’s traditional knowledge and practices, stresses the contributions women have made to biodiversity conservation (Section 24.8 (a) and asks that specific measures be adopted to transform objectives into strategies (Section 24.2 (f)).

Source: Rico, N. 1998.

2.3.2.4 World Conference on Disaster Reduction at Kobe in 2005

The World Conference on Disaster Reduction held at Kobe in 2005 is one of the most important international advances in efforts to integrate gender equity into all decision-making and planning processes related to disaster risk management. The Framework for Action of the World Conference on Disaster Reduction states:

A gender perspective should be integrated into all disaster risk management policies, plans and decision-making processes, including those related to risk assessment, early warning, information management, and education and training (Gender consideration of action priorities).

Develop early warning systems that are people centred, in particular systems whose warnings are timely and understandable to those at risk, which take into account the demographic, gender, cultural and livelihood characteristics of the target audiences,

including guidance on how to act upon warnings, and that support effective operations by disaster managers and other decision makers (Essential priority activity to take early warning action).

Ensure equal access to appropriate training and educational opportunities for women and vulnerable constituencies, promote gender and cultural sensitivity training as integral components of education and training for disaster risk reduction (Essential priority activity for action for teaching and training) (Garmer, 2008). ”

2.4 Women Groups Promoting Gender Equality in the Successive Meetings

Since COP-11, the Women’s Caucuses have vigorously negotiated for the inclusion of the gender approach in all areas of the Convention, facilitated by the Gender and Climate Change Network - Women for Climate Justice (www.gendercc.net).

Box 2. 6 Demand of CEDAW and Beijing related to environmental sustainability

According to the precepts of CEDAW and Beijing Platform of Action, governments must ensure that women - especially in rural zones - participate at all levels of decision-making concerned with environmental sustainability, and that women’s interests and perspectives are adequately reflected in all policies and approaches adopted.

Furthermore, governments must ensure that women have access to and control over certain key environmental resources such as water and land. Governments also need to protect women from the effects of environmental deterioration so that women may be better able to improve their environment.

Source: UNIFEM, 2005

In COP-13 at Bali, members of the Global Gender and Climate Alliance (GGCA), which was launched in 2007 have also been active in promoting gender equality concerns in global efforts to address climate change.

For example, IUCN has worked with the UNFCCC Secretariat to incorporate a gender perspective. Moreover, the UNFCCC secretariat has designated a Gender Focal Point and suggested a series of steps to integrate gender into the Convention and the Secretariat.

In the UNFCCC documents, the only reference to gender is in the guide on how to prepare National Adaptation Plans of Action (NAPA). Gender equality is one of the principles included when designing the NAPA and it advises that experts – both women and men – be included on the teams working on gender issues. Aguilar (2008) concluded that many of the national reports submitted by the signatory nations to the UNFCCC Secretariat thus far stress, in very general terms, the vulnerability of women and the importance of equality (Aguilar, L. 2008). It was revealed that many of these NAPA recognize that women are mainly responsible for domestic and household chores such as collecting water, firewood (or other fuels), producing and preparing meals. In addition they also mention that, in general, vulnerable women are found in the poorest populations.

However, some NAPAs has provided examples to show how climate change is affecting women. For example, Tuvalu reports that the reduction in the literacy rate and in girls attending school is correlated to more time being needed to collect water and firewood.

In Uganda, the NAPA records an increase in the number of families that marry off their daughters at an early age when droughts occur to get the dowry and have more resources. These girls then

become exposed to sexually transmitted diseases because their husbands tend to have several sexual partners. In Tanzania, women have had to change their productivities as they now have to buy water to irrigate their land (Dunkelman, I., etl. 2008).

It has been found that very few NAPAs recognize women as important agents in adaptation activities. One of the exceptions is Malawi, whose NAPA recognizes gender as an important factor and stipulates that:

Several interventions are proposed that target women in highly vulnerable situations, including: (i) empowerment of women through access to microfinance to diversify earning potential, (ii) ensuring easier access to water and energy sources by drilling boreholes and planting trees in woodlots, and (iii) use of electricity provided through the rural electrification programme (NAPA, Malawi, 1996).

Zambia also states that providing women with micro-credit is a priority, while Tanzania reveals that women's groups must be strengthened to be able to support community participation (Unfccc.int. 2022).

Aguilar (2008) concluded that in general, the NAPAs portray women as victims without the skills that would allow them to become involved in negotiations or strategic planning. Most of these plans do not even recognize that women do have the knowledge that can make a contribution to adaptation processes or they should be a focal group of adaptation programmes. On the other hand, some reports mention that when those reports were being prepared there were consultations with groups of women and women's ministries. However, the problem still remains that these consultations do not translate into actions that involve women in any concrete manner although direct inclusion of women both in policy-making and in project planning must be promoted (Aguilar, 2008).

2.4.1 High-Level Roundtable on Gender and Climate Change, New York 2007

In September 2007, a high-level roundtable on "Gender and Climate Change" was organized by Women's Environment and Development Organization WEDO, the Heinrich Böll Foundation (HBF) and the Council of Women World Leaders (CWWL). This meeting was a prelude to the United Nations Secretary General's High-Level Event on Climate Change (New York, September 2007) and was attended by representatives of the United Nations, NGOs and officials from 60 countries. It had extensive discussions on the connection between climate change and gender. There were presentations from various countries demonstrating that relationship and mention was made of the importance of including gender approach in all policies regarding climate change, especially in adaptation policies. It put forward suggestions for specific steps to ensure that gender equity is included in decision-making processes (Heinrich BOLL Foundation, 2007).

2.4.2 Conference of the Parties on Climate Change, Bali 2007

In December 2007, COP-13 was held in Bali which clearly underlined the commitments of Member States concerning climate change. Parties also formulated the Bali Action Plan, a crucial framework to begin negotiations to reach a global agreement on climate change by the end of 2009. The Bali Action Plan affirmed that an effective approach to climate change should include all the dimensions such as mitigation, adaptation, technology and financing (United Nations Climate Change, Bali Climate Change Conference, 3 - 14 Dec 2007).

The Bali conference led toward the promotion of gender equality. In the framework of the UNFCCC COP-13, there were efforts to promote incorporation of the gender theme. Among these efforts, especially noteworthy was the 11 December 2007 meeting of the Network of Women Ministers and Leaders for Environment and their call upon the Parties and the UNFCCC Secretariat to:

- *Recognize that women are powerful agents of change and that their full participation in climate change adaptation and mitigation policies and initiatives is indispensable and to ensure participation of women and female gender experts in all decisions relating to climate change;*
- *Take steps to ensure that the UNFCCC acts in accordance with human rights frameworks and with national and international agreements on gender equality and equity, including CEDAW;*
- *Develop a gender strategy, invest in research on climate change gender implications and establish a system of gender-sensitive criteria and indicators for governments that include national communications sent to the UNFCCC Secretariat;*
- *Analyze and identify protection impacts and measures, disaggregated by gender, to deal with floods, droughts, heat waves, diseases and other environmental changes and disasters;*
- *Design financial mechanisms to which women have access and which make them less vulnerable, recognizing the fact that millions of poor women who are affected by climate change live and work outside formal markets, and provide women and men living in poverty with greater access to commercial mitigation initiatives such as the Clean Development Mechanism (CDM) (Garmer, L., 2008).*

2.4.2.1 Global Gender and Climate Alliance (GGCA)

In an unprecedented effort, within the UNFCCC COP-13 framework, UNDP, UNEP, IUCN and WEDO launched the Global Gender and Climate Alliance (GGCA). The principal objective of this Alliance is to ensure that policies, initiatives and decision-making processes on climate change include the gender approach at global, regional and national levels. The fundamental principle is to guarantee the inclusion of women's voices in decision-making and in policymaking.

The GGCA's objectives and strategies aim to:

- *Integrate the gender approach in world policies and decision-making to ensure full compliance with United Nations mandates on gender equality;*
- *Ensure that mitigation and adaptation financing mechanisms take equal account of the needs of poor men and women;*
- *Build capacities at global, regional and local levels to design policies, strategies and programmes on climate change that recognize gender equity.*

To reach the above objectives, the Alliance decided to:

- *Establish a global policy on climate change and gender equity*
- *Collaborate with the Secretariat to prepare a plan to incorporate a gender perspective in the UNFCCC*
- *Develop gender guidelines for financing mechanisms associated with climate change*
- *Attempt to advise UNFCCC delegates about gender and climate change. Moreover, representatives of the Alliance met with the Executive Secretary of the UNFCCC during the Bali conference, and have since begun cooperation with the Gender Focal Point. The GGCA is also developing a training module to focus on mitigation, adaptation, financing and the technology associated with climate change (Garmer, 2008).*

2.4.3 Conference of the Parties on Climate Change at Poznan, 2008

At the COP-14, gender and climate change advocates had a high profile. The Global Gender and Climate Alliance (GGCA) led various events:

A High-Level Panel advocating for the inclusion of Gender in the climate change dialogue; the meeting of the Network of Women Ministers and Leaders for the Environment, which addressed the need for a gender perspective within the UNFCCC process and produced a joint letter of recommendations to the UNFCCC; and a side event on gender and climate change finance, led by WEDO, which highlighted the need for gender-sensitive funding for climate change. Further, the GGCA, led by IUCN, compiled a training manual on gender and climate change and trained 17 regional trainers from Africa, Arab States, Asia, Latin America and the Caribbean, and oriented over 50 national delegates to the UNFCCC. The orientation raised awareness about the gendered impacts of climate change and resulted in greater delegate support to address the dire need to include a gender strategy in the UNFCCC (Garmer, 2008).

At the same time, the global network of women and gender activists and experts working on gender and climate justice actively advocated for gender justice in climate change, including facilitating the daily women's caucus meetings and participating in other advocacy events (Garmer, 2008).

2.4.4 Conference of the Parties on Climate Change at Paris, 2015

At the COP-21 held in Paris in December 2015, the Paris Agreement was adopted by 196 Parties which is a legally binding international treaty on climate change and entered into force on 4 November 2016. The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brought all Parties into a common platform to undertake ambitious efforts to combat climate change and accordingly adapt measures to reduce its effects. Its goal is to limit global warming and to achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century.

However, implementation of the Paris Agreement requires economic and social transformation and will work on a 5- year cycle of increasingly ambitious climate action to be carried out. Moreover, by 2020, countries will submit their plans for climate action known as Nationally Determined Contributions (NDCs). But all developing countries do not have sufficient capacities

to deal with many of the challenges faced by climate change. Therefore, the Paris Agreement places great importance to climate-related capacity-building for developing countries on the one hand and requests all developed countries to enhance support for capacity-building actions in developing countries (Unfccc.int. 2022).

The Paris Agreement acknowledged that:

Climate change is a common concern of humankind, Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity.

Moreover, Parties acknowledged that:

Adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems, and should be based on and guided by the best available science and, as appropriate, traditional knowledge, knowledge of indigenous peoples and local knowledge systems, with a view to integrating adaptation into relevant socioeconomic and environmental policies and actions, where appropriate.

Capacity-building should be country-driven, based on and responsive to national needs, and foster country ownership of Parties, in particular, for developing country Parties, including at the national, subnational and local levels. Capacity-building should be guided by lessons learned, including those from capacity-building activities under the Convention, and should be an effective, iterative process that is participatory, cross-cutting and gender-responsive (UNFCCC, 2015).

The above statements of the Paris Agreement clearly emphasized that adaptation action and capacity building should be country driven, gender-responsive and participatory taking into consideration vulnerable groups which are mostly women and girls.

2.4.5 Conference of the Parties on Climate Change at Baku, 2024

At COP-29, held in Baku, Azerbaijan, from 11 to 22 November 2024, global discussions centred on the urgent need to scale up climate finance and accelerate the transition to renewable energy. A key outcome was the establishment of a new climate finance framework to support adaptation and mitigation efforts, particularly in developing countries vulnerable to climate change impacts.

COP-29 acknowledged Gender and Social Equity in Climate Policy:

The review stresses the importance of addressing gender disparities in climate impacts and incorporating equity into the global climate response was one of the key theme of COP-29. Recognizing that climate change disproportionately affects women, girls, and marginalized groups, COP-29 emphasized the importance of integrating gender equality into all aspects of climate action. In its final outcome documents, Parties reaffirmed that

effective climate finance and adaptation initiatives must be gender-responsive, participatory, and inclusive of vulnerable communities (UNFCCC, 2024).

Furthermore, COP-29 called for enhancing the role of women in climate governance and decision-making processes at all levels, acknowledging that gender-responsive approaches are essential for achieving resilience and equitable sustainable development. Parties were encouraged to incorporate gender analysis into the design and implementation of national climate strategies, and to ensure that climate finance mechanisms prioritize the needs and leadership of women in vulnerable communities. By reinforcing the principles of social inclusion, human rights, and gender equality, COP29 built upon previous commitments under the Paris Agreement and highlighted that empowering women and marginalized groups is critical to the success of global climate action (UNFCCC, 2024).

2.5 Lack of Explicit Recognition of Gender Considerations in Climate Change

Although there is continuous demand for gender approach to be integrated in all spheres of development, human rights and the environment, the approach is still absent from international climate change policies. Nevertheless, the UNFCCC is determined by the United Nations framework. Therefore, decisions taken by the General Assembly and conventions or treaties concerning gender are binding. If responses to climate change are to consider the vulnerabilities and capacities of men and women, the debate about climate change should also take into account development and human rights.

At present, global negotiations on climate change are mainly focused on reducing GHGs by means of the UNFCCC, the IPCC, the Kyoto Protocol, and other related mechanisms. Therefore, gender dimension has not been significantly addressed in considering adaptation and mitigation, and therefore they provide neither a legal framework nor a rights-based approach needed to implement responses to climate change that are equitable for both men and women.

2.6 Disability and Disaster Risk Management Initiative

An initiative was taken to organize a conference on Disability and Disaster Risk Management which was held on 12-14 December 2015 at Dhaka. It was participated by representatives from 18 countries. The participants of the conference recalled:

United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) principles and Articles that call for inherent dignity, equal and inalienable rights of all human beings, non-discrimination, protection, accessibility, full and effective participation in decision making processes, equalization of opportunities, individual autonomy and independence of persons with disabilities;

The Sendai Framework for Disaster Risk Reduction - 2015-2030 as the first major agreement around post-2015 development agenda, with four priorities, seven targets, and 13 guiding principles for action including a people centred approach and recognition of disability inclusion; and the Sustainable Development Goals (SDGs) that calls for 'End Poverty in all of its forms everywhere', 'By 2030, to build resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate related extreme events and other economic, social and environmental shocks and disasters' and 'Take urgent actions to combat climate change and its impacts.'

The participants called on all governments and other stakeholders to ensure people-centred approach; strengthen governance, partnership and cooperation; integrate gender, age and disability disaggregated data; promote empowerment and protection; removal of barriers to reduce the impacts of disasters on persons with disabilities; and lastly to act at local, national and global levels. Accordingly, in the ‘Dhaka Declaration on Disability and Disaster’ specific actions were formulated emphasizing full representation of persons with disabilities and their meaningful engagement at all levels (MoDMR, 2018).

2.7 Critical Review of Major Global Protocols and Instruments

While The **United Nations Framework Convention on Climate Change (UNFCCC)** was a milestone for initiating collective international efforts against climate change, it lacked an explicit gender perspective. The convention primarily focused on stabilizing greenhouse gas concentrations without recognizing the differentiated vulnerabilities of women and marginalized groups. Consequently, early implementation failed to mainstream gender, missing an opportunity to promote inclusive and equitable climate solutions from the outset. Gender-related considerations were only gradually incorporated through later mechanisms like the Gender Action Plan under the UNFCCC process.

The **Convention on Biological Diversity (CBD)** stands out for being more progressive in recognizing gender dimensions. Early on, it acknowledged women's critical role in biodiversity conservation and sustainable use. It institutionalized gender mainstreaming efforts through specific programmes like the Gender Plan of Action (2008). However, although the CBD set an example by designating a Gender Focal Point and developing strategic objectives, the practical implementation at the national level has been inconsistent and often tokenistic.

The **United Nations Convention to Combat Desertification (UNCCD)** made stronger advances compared to the UNFCCC by explicitly recognizing women's vital role in rural livelihoods and land management. It emphasized gender equality in participation and action against desertification. Nevertheless, while its legal language was gender-sensitive, actual practices on the ground in affected countries often lagged, partly due to limited resources, political will, and a lack of gender-specific indicators to measure progress effectively.

The **Commission on the Status of Women (CSW)** has been instrumental in linking gender with climate change and disaster management issues. Its annual sessions consistently called for integrating gender perspectives into climate research, policy design, and financing. However, despite strong advocacy, the CSW's resolutions are non-binding, limiting their enforcement power. National-level follow-through has often been weak, highlighting a gap between rhetoric and action.

Both **World Conferences on Women Nairobi 1985 and Beijing 1995** were significant in embedding the concept of women's agency in sustainable development. The Nairobi conference officially introduced the environment-gender nexus, while the Beijing Platform for Action explicitly called for women's participation in environmental decision-making. However, the impact of these conferences depended heavily on national governments' willingness to implement recommendations, and progress has been uneven across countries.

The **World Summit on Environment and Development (Earth Summit, Rio 1992)** was historic for introducing the gender perspective into sustainable development discourse through Agenda 21.

Chapter 24 focused on women's roles in sustainable consumption and production. Yet, despite strong language, implementation mechanisms to ensure women's participation remained vague, and follow-up actions were often led more by NGOs than by state actors.

The **World Conference on Disaster Reduction (Kobe, 2005)** marked a major advancement by calling for gender integration across all stages of disaster risk management. It laid the foundation for gender-sensitive early warning systems and risk reduction strategies. However, challenges remain, particularly in operationalizing these commitments at national and local levels, where disaster policies still often neglect gender-responsive planning.

The Conference of the Parties on Climate Change at Paris, 2015 was a breakthrough in explicitly linking human rights and gender equality to climate action. It called for gender-responsive adaptation and capacity-building efforts. Yet, the Agreement's language remains largely aspirational; it lacks mandatory enforcement mechanisms requiring countries to integrate gender equity into their climate plans (NDCs). Progress thus depends heavily on national political will.

The successive Conference of the Parties at Baku (COP-29, 2024) made notable strides by putting gender and social equity at the centre of climate finance discussions. The recognition that vulnerable groups, especially women and girls, are disproportionately affected was a significant step forward. However, critics point out that while gender analysis was encouraged in climate finance frameworks, binding commitments and clear accountability measures were lacking. There is a risk that these gender-responsiveness commitments will remain under-implemented without robust monitoring.

2.8 Overview of Gender Linkages in Global Development, Climate Change, and Disaster Frameworks

The chapter offers a comprehensive examination of how gender perspectives have been incorporated or often overlooked in global development goals and climate change discourse. It contextualizes gender within international policy frameworks such as the Sustainable Development Goals (SDGs), the Hyogo and Sendai Frameworks for Disaster Risk Reduction, and various environmental conventions including the UNFCCC, CBD, and UNCCD. It critically analyzes the extent to which gender equality has been acknowledged and acted upon in global climate governance.

The integration of disaster risk reduction within the 2030 Agenda for Sustainable Development is highlighted as a foundational strategy, with gender equity considered a cross-cutting issue. The Hyogo Framework (2005–2015) initially set the tone by emphasizing the need to build resilience but failed to translate gender-sensitive policy statements into localized action. Its successor, the Sendai Framework (2015–2030), took a significant step forward by explicitly calling for gender, age, and disability inclusion in disaster risk reduction policies. It acknowledged the critical role women play in managing disaster risk and urged their leadership in preparedness and post-disaster recovery.

The chapter traces the evolution of gender in climate change discourse across major international conventions. The UNFCCC, despite being central to global climate negotiations, initially lacked gender-specific language and mechanisms. Although subsequent processes introduced the Gender Action Plan and gender focal points, these additions came late and with limited enforcement. In contrast, the Convention on Biological Diversity (CBD) and the Convention to Combat

Desertification (UNCCD) have been more proactive in incorporating gender considerations, although implementation at the national level remains inconsistent.

The narrative also delves into the advocacy work by women's groups and global networks such as the Global Gender and Climate Alliance (GGCA), which have been instrumental in pushing for gender equity in climate negotiations. These efforts led to increased visibility of gender in conferences like COP-13 (Bali), COP-14 (Poznan), and especially COP-21 (Paris), which marked a turning point by linking climate action to human rights, including gender equality. The more recent COP-29 (Baku, 2024) reinforced this progress by embedding gender responsiveness into climate finance frameworks and calling for inclusive governance and decision-making.

Additionally, the chapter highlights the initiatives linking women with environmental stewardship through historical milestones like the Nairobi and Beijing World Conferences on Women and the Rio Earth Summit, where Agenda 21 first codified the gender-environment nexus. Despite this legacy, many global agreements have fallen short in implementation, due to lack of binding commitments and national accountability.

Lastly, it discusses the Disability and Disaster Risk Management initiative, emphasizing the importance of inclusive disaster planning that recognizes the needs of persons with disabilities alongside gender considerations. The Dhaka Declaration on Disability and Disaster (2015+) calls for disaggregated data, inclusive governance, and full representation in risk reduction policies.

In conclusion, the chapter underscores that while gender has gradually gained recognition in climate and disaster policy discourses, meaningful inclusion remains limited by weak enforcement, vague language, and uneven national implementation. Strengthening gender-responsive mechanisms, institutional accountability, and grassroots involvement is crucial for realizing equitable and effective climate and disaster resilience strategies.

Chapter 3

Legal Frameworks and Strategies to Address Gender and Inclusive Response to Climate Change and Disaster Risks

Bangladesh is committed to implement a gender and socially inclusive disaster risk management framework, at the local and national levels in alignment with regional and international frameworks beginning from the Yokohama Strategy to the Hyogo Framework of Action and the Sendai Framework for Disaster Risk Reduction. The legal framework of disaster risk management for Bangladesh includes Disaster Management Act, National Disaster Management Policy, National Plan for Disaster Management, Standing Orders on Disaster, which are related with disaster management. Moreover, policies and action plans of climate change are also relevant such as National Adaptation Programmes of Action, Bangladesh Climate Change Strategy and Action Plan, Climate Investment Funds (CIF), Strategic Programme for Climate Resilience and Climate Change Gender Action Plan. In some of the above frameworks, policies and action plans, persons with disabilities have been identified and accordingly inclusive response to climate change and disasters have been included.

3.1 Legal Framework of Disaster Risk Management

The legal framework of disaster risk management in Bangladesh has been prepared and revised in the context of a paradigm shift from a reactive to a proactive approach, which is followed in the disaster risk management programmes of Bangladesh. All Disaster Risk Reduction (DRR) and Emergency Response Management (ERM) Programmes are being implemented under this framework, which is constituted with relevant laws, policies, rules, orders and guidelines. The structure of the framework includes:

Disaster Management Act 2012

The Disaster Management Act, 2012 (Law no. 34 of 2012) was enacted with a view to make disaster-related activities coordinated, target-oriented and strong; and making rules for an effective disaster risk management framework for all types of disasters.

National Disaster Management Policy 2015

The National Disaster Management Policy 2015 was formulated as per section 19 of the Disaster Management Act, 2012. Through this, initiatives are taken to ensure good governance for disaster risk management, participation and accountability of all concerned stakeholders. The main purpose of this policy is to formulate and implement hazard-specific strategies based on assessments of major disaster risks in Bangladesh.

National Plans for Disaster Management (NPDM), 2016-2020 and 2021-2025

The National Plan for Disaster Management (NPDM) was formulated for the period of 2010-2015 in the light of the government's vision, mission and national and international approaches on disaster risk management. Subsequently, the National Plan for Disaster Management, 2016-2020 was formulated considering the achievements of the implementation of previous plan, learnings and challenges to ensure disaster risk management through the coordinated and effective efforts of relevant stakeholders. The plan has considered the principles of the Sendai Framework for

Disaster Risk Reduction (SFDRR), Sustainable Development Goals (SDG), and national policies and strategies such as the Seventh Five Year Plan. The action plan has indicated the intent to identify the areas of investment for disaster risk management through a Risk Informed Development Plan and emphasized its implementation with participation of all concerned.

Main purposes of the plan are:

- Protecting lives and resources
- Protecting investments
- Effective recovery and rebuilding to restore life and livelihood in the quickest possible time.

The NPDM is a medium-term plan that addresses key issues such as risk reduction, capacity building, climate change adaptation, livelihood security, gender mainstreaming, community empowerment, and response and recovery management (Ministry of Environment of Forest, 2013).

NPDM 2021-2025: NPDM 2021-2025 is upgraded from the previous National Plan for Disaster Management (NPDM) 2016-2020 as well as 2010-2015, which were the first policy document of its kind. NPDM 2016-2020 reflected a paradigm shift from relief-based disaster response to proactive disaster risk reduction, with emphasis on capacity strengthening. NPDM 2016-2020 was drawn from regional and global frameworks including the Sendai Framework for Disaster Risk Reduction (SFDRR) and Asia Regional Plan for Implementation of Sendai Framework for Disaster Risk Reduction 2015-2030. It was recognized the national strategy for addressing global and regional targets.

A review of NPDM 2016-2020 indicated the achievement of reducing the disaster victims, ensuring early warning and response mechanism, mainstreaming disability and gender inclusive disaster risk management, strengthening civil-military coordination for humanitarian response and starting Implementation of SFDRR, etc. However, still piecemeal works or patchwork-based pilot interventions are dominant in DRR sector. It is necessary for enhancing the capacity for whole disaster cycle management including increasing no regret investment, tackling urban disasters, enhancing information management mechanism etc. (Ministry of Disaster Management and Relief, 2020).

The vision of NPDM 2021-2025 is “Winning resilience together against all disasters.” NPDM 2021-2025 was prepared under the leadership of MoDMR and is aligned with national, regional and international frameworks including Delta Plan 2100, 8th Five-Year Plan of Government of Bangladesh, SFDRR, Asia Regional Plan for Implementation of the Sendai Framework for

Disaster Risk Reduction, Dhaka Declaration 2015 Plus for Disability Inclusive Disaster Risk Management. The plan places importance for disaster risk management linking with rapid urbanization and climate change, and the necessity of DRR for sustainable development, and is flexible and adaptive in cognizance of the changing nature of risks in Bangladesh. NPDM 2021-2025 produced through a participatory and inclusive approach through extensive stakeholder and expert consultations.

The purpose of NPDM 2021-2025 is to guide implementation of the Disaster Management Act 2012 and Standing Orders on Disaster 2019, allowing Ministries and Departments of GoB and

other agencies to use it to produce their Annual Work Plans. The plan takes a ‘whole-of Society’ approach for effective implementation.

NPDM 2021-2025 have a set of strategic aims reflecting its alignment with SFDRR, strategy guidance to relevant stakeholders, recognition of disaster risks and phased implementation of prioritized actions. A set of objectives allow operationalizing the aims through identifying priority actions, providing a roadmap for implementation of at least 20 core investments area, incorporating DRM aspects in sectoral plans, exploring public-private investments, ensuring inclusivity, addressing emerging risks, promoting risk governance and illustrating how the work of various stakeholders can contribute to GoB’s DRM vision.

Inclusion as an underlying strategy:

Social inclusion is an underlying and cross-cutting strategy in all the action plans of NPDM 2021-2025, and were informed by the outputs of stakeholder consultations. Two main inclusivity areas should inform all DM initiatives, policies, programmes and planning: i) To ensure incorporation of gender issues in decision making and participation of women and men in all NPDM 2021-2025 priority actions; and ii) To ensure adequate considerations for people with vulnerabilities across implementation of NPDM 2021-2025.

Accountability framework:

Implementation of NPDM 2021-2025 is linked to the framework of national policy, legislation and business rules, involving various strategies, including: Ministry, department and agency focal point; Links between policy and operations; Expanding the scope of planning; Political consensus and allocation of resources; Contingency/Preparedness plan; Periodic review of the implementation of the plan; Funding requirement and resource mobilization; and Coordination, Communication and Cooperation.

Priority level action plans:

The extensive stakeholder and expert consultations undertaken to develop NPDM 2021-2025 focused on the following SFDRR priorities and action plans were derived following an ‘all hazards’ approach with hazard-specific activities linked to broader priority level action plans.

- **Priority 1:** *Understanding disaster risk* – Action plans under this priority focus on raising awareness, research and development activities, networking, and information/knowledge management.
- **Priority 2:** *Strengthening disaster risk governance to manage disaster risk* – This priority area is concerned with inclusion of Disaster Impact Assessment (DIA) into policy, inter-ministerial coordination, institutional capacity strengthening, publicprivate engagement, and international and regional cooperation.
- **Priority 3:** *Investing in disaster risk reduction for resilience* – Under this priority, action plans include nationwide capacity building, physical works for resilience, DM financing, institution building, addressing the key hazards of floods and cyclones, but also following an ‘all-hazards’ approach.
- **Priority 4:** *Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction* – Concerned action plans include strengthening forecasting and early warning systems, emergency response capacity

building, sector-wise preparedness, inclusive recovery and rehabilitation, business continuity, and multi-hazard response and recovery measures.

The purpose of the plan is to guide enhancing the implementation of the Disaster Management Act 2012, DM Policy 2015 and SOD 2019 which seek to promote safer and more resilient communities. It is a government-wide framework for the effective integration of disaster management planning and programming focusing on risk reduction and resilience approach across agencies and sectors. Various ministries of GoB and other relevant agencies are expected to use this framework as a guidance to produce their detailed Departmental/Agency-specific Annual Work Plans.

The plan takes the ‘in a ‘whole of society’ approach to disaster risk management and response initiatives through gender responsiveness and disability inclusive approach for resilience. It also seeks to promote mainstreaming of climate change adaptation and mitigation to reduce existing and future risks. The NPDM 2021-2025 pursues disaster risk management into relevant areas of activity of the entire government, businesses and non-government entities. In the advent of rising significance of the area of private sector investment, the plan attaches importance to the engagement of other sectors beyond the public sector (Ministry of Disaster Management and Relief, 2020).

Standing Orders on Disaster 2019

It is highly important to build synergies between the three international frameworks namely Sendai Framework for Disaster Risk Reduction (SFDRR), Sustainable Development Goals (SDGs), Paris Agreement on Climate Change and National Five-Year Plan and Delta Plan 2100. For disaster risk reduction, SFDRR identified four priorities of action for achieving seven targets and it is equally linked for achieving the SDGs. More recently, one of the key premises of the Paris Agreement was intensity of disasters is increasing due to the effects of climate change which is more relevant for Bangladesh given its geographical location in a delta region. Therefore, Inter-coordination among the international frameworks with the aim of disaster risk reduction is essential which is reflected in the revised Standing Orders on Disaster (Ministry of Disaster Management and Relief, 2020). A component on ‘Gender and Social Inclusion’ has been recorded as one of the thematic issues in the revised SOD (Nasreen, 2022).

The Standing Orders on Disaster (SOD) aimed to inform all concerned about their roles and responsibilities at every stage of disaster risk management. As per the SOD, each ministry, division, department and agency will prepare its own detailed work plan to perform its responsibilities and functions efficiently; and will take necessary measures to implement it as per their own duty and capacity. At the national level, the National Disaster Management Council (NDMC) and the Inter-Ministerial Disaster Management Coordination Committee (IMDMCC) will coordinate disaster-related activities. At the division, district, City Corporation, upazila, pourashava, union and ward levels, coordination will be done by the respective Disaster Management Committees (DMC). Moreover, based on the six hot spots identified in the Delta Plan 2100, it is required to formulate medium and long-term disaster risk management and risk informed development plans.

A series of inter-related institutions, at both national and sub-national levels have been created to ensure effective planning and coordination of disaster risk reduction and emergency response management.

Standing Orders on Disaster Emphasizing Community Level Preparedness Approach

In 1997, Bangladesh drafted its first Standing Orders on Disaster (SOD) to deal with disaster related risks. However, the SOD has been revised in 2010 and most recently in 2019. The SOD 2019 envision to "leave no one behind" by identifying and clarifying the responsibilities of all parties at all levels involved in disaster management from national to the local. As per the SOD Disaster Management Committees (DMC) have been formed at District (DDMC), Sub-District/Upazila(UzDMC), Union (UDMC) and Ward (WDMC) levels. The lowest tier is the Ward Disaster Management Committee (WDMC) of the local government structure undertaking pre, during and post disaster activities including all categories of community people represented by women, men and persons with disabilities. Before a disaster the members of the WDMC organize meetings to disseminate disaster preparedness and response related activities to the community people. The SOD outlines specific responsibilities and duties to be followed by all community people, to establish well-coordinated search-and-rescue operations, humanitarian assistance, and rehabilitation work. The revised SOD (2019) has also added a separate section on 'Gender and Social Inclusion' for providing special care to the community people to make it more inclusive (Mahbuba Nasreen, May 2023).

Addressing Disaster Risks Faced by Vulnerable Communities in Disaster-Prone Areas

The National Plan for Disaster Management (NPDM) 2021–2025 has prioritized by addressing disaster risks faced by vulnerable communities in disaster-prone areas of Bangladesh. An inclusive approach has also been developed for community level interventions under the section 4.4. Inclusion as an underlying strategy: "To ensure incorporation of gender issues in decision making and ensure participation of women and men, girls and boys in all the priority actions of NPDM." The vision of NPDM 2021-2025 is "Winning resilience against all odds," with the goals of reducing disaster risk and building resilience. The NPDM is largely based on the SOD 2019 and aligned with the four priorities of Senai Framework for Disaster Risk Reduction (SFDRR) and the Asian Regional Plan for Disaster Risk Reduction (ARPD RR) which was one of the key outcome documents of the Asian Ministerial Conference on Disaster Risk Reduction (AMCD RR) in November 2016 in New Delhi, India. Disaster management is a cross-cutting concern where the Ministry of Disaster Management and Relief (MoDMR) is primarily responsible for providing technical assistance to sectoral ministries/departments/agencies, NGOs, the private sector, and others stakeholders to mainstream disaster risk reduction and management issues in the policies, plans, and programmes under NPDM. Moreover, a National Preparedness and Response Plan (NPRP) was prepared to prevent and control COVID-19 and lessen its impact on health, welfare, and economy of the country headed by the Prime Minister as Chairman of the National Advisory Committee for NPRP planning and coordination (Mahbuba Nasreen, May 2023).

'Whole of Society' Approach

The National Plan for Disaster Management (NPDM 2021-2025) focuses on 'whole of society' in addressing disaster risks and response initiatives and has adopted gender responsiveness and disability inclusive approach for resilience. Moreover, it is promoting mainstreaming of climate change adaptation and mitigation to reduce risks for all categories of people following the principle of leaving no one behind. At the same time, the NPDM aims to involve different institutions including government, private sectors and non-government actors in disaster risk management initiatives. Emphasis is placed on working together with all key stakeholders in building strategic

partnerships, including all relevant government departments, agencies, NGOs, academic institutions, technical sector, private sector, and development partners following the ‘whole of society’ approach for disaster management and risk reduction (Mahbuba Nasreen, 2023).

Regional Partnership with Asian Disaster Preparedness Center

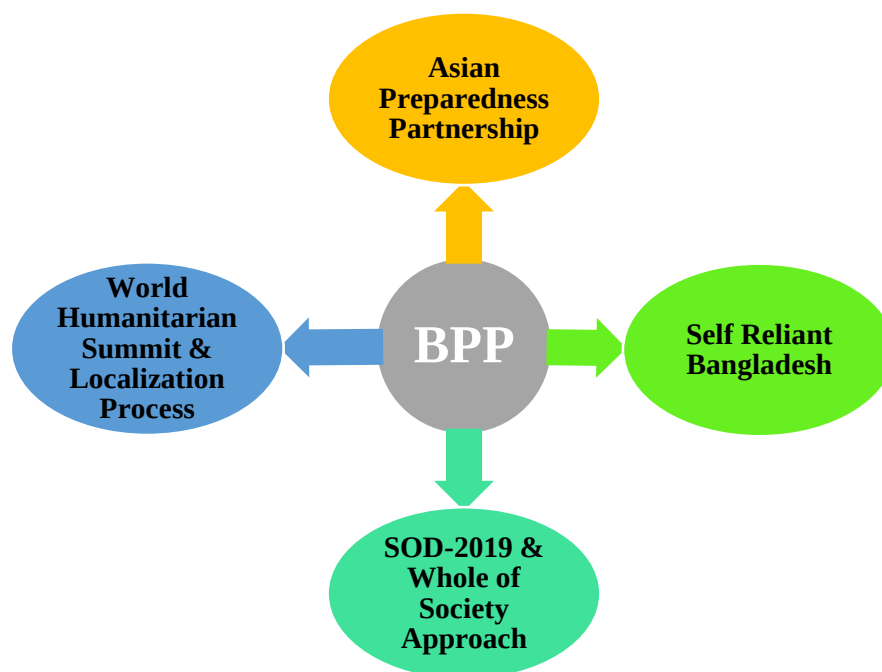
The NPDM is largely based on the SOD 2019 and aligned with the four priorities of SFDRR and the Asian Regional Plan for Disaster Risk Reduction (ARPD RR), one of the key outcome documents of the Asian Ministerial Conference on Disaster Risk Reduction (AMCD RR) in November 2016 in New Delhi, India. Recognized as a cross-sector issue, disaster management is a cross-cutting concern. The MoDMR is primarily responsible for providing technical assistance to sectoral ministries/departments/agencies, NGOs, the private sector, and others to include/mainstream disaster risk reduction/management issues in the policies, plans, and programmes under NPDM (Nasreen, 2023). To achieve the goal the Asian Disaster Preparedness Programme initiated a project called Bangladesh Preparedness Partnership (BPP) in 2023. Highlighting the importance of the proper implementation of SOD and NPDM, the BPP Process Documentation (Nasreen, 2023, ‘Process Documentation of Bangladesh Preparedness Partnership’-ADPC) pointed out the importance of all concerns involvement. In this backdrop the formation of BPP focused on the ‘whole of society approach’ developing partnership with Government (MoDMR as lead; Department of Disaster Management/DDM; Department on Women Affairs/DWA; Local Govt. and Engineering Department/LGED); Academia (Prof. Mahbuba Nasreen, Institute of Disaster Management and Vulnerability Studies, University of Dhaka as lead; BRAC University and others); Local NGOs (NAHAB consortium as lead and number of NGOs) and Private Sectors (FBCCI as lead and others) for inclusive disaster preparedness and management. One of the major focuses of BPP is to conduct a survey of SOD (Nasreen, 2025, ‘Baseline Survey on Standing Orders on Disaster’, ADPC) including NPDM implementation. The findings of the survey will be useful for revising SOD and formation of next NPDM (2026-2031). Gender Equity and Social Inclusion (GESI) is one of the priorities of BPP roadmap (2023-2026).

The Asian Disaster Preparedness Center established the Asian Preparedness Partnership (APP), a unique multi-stakeholder regional partnership of the South and Southeast Asian countries to better prepare for, respond to, and recover from disasters of which Bangladesh is a partner. Learning from the APP approach, the Bangladesh Preparedness Partnership (BPP) was conceived with this strategy and vision of a collaborative partnership to drive the effective execution of the SOD 2019 in accordance with the "Whole of Society" approach. The Bangladesh Preparedness Partnership aims to improve emergency management coordination from national to sub-national levels in Bangladesh promoted by the core mandate of the Standing Orders on Disaster (SOD) 2019 which envision to develop an inclusive multi-sectoral approach as a strategy to reduce risk and impacts of disasters in the country (Report of the Co-Creation Workshop, 30 November - 1 December 2022). Through key interventions, the BPP programme encourages the active participation of local actors in government-led emergency management coordination at the national and sub-national levels. Moreover, Bangladesh’s ambition to become self-sufficient gives a unique opportunity for the BPP programme to promote and develop locally led emergency preparedness and response initiatives (Mahbuba Nasreen, May 2023).

The BPP Programme Framework was conceptualized in coordination with Ministry of Disaster Management and Relief (MoDMR), Asian Disaster Preparedness Center (ADPC) and in

consultation with inputs and feedback received from the Bill and Melinda Gates Foundation (BMGF). After a series of meetings, the BPP programme framework was finalized on 4 August 2021 and endorsed by the MoDMR in the Tripartite meeting between MoDMR, BMGF and ADPC. Subsequently, in September 2021 a strategic roadmap was developed through a participatory and inclusive multi-sectoral workshop and later endorsed by MoDMR on 11 January 2022. The roadmap provides short, medium, and long-term key priority interventions to enhance emergency response coordination using the “Whole of Society” approach with multi-sector partners. The Bangladesh Preparedness Partnership has been conceptualized as a strategic programme that aims to improve emergency management coordination at the national and sub-national levels in Bangladesh through multi-sectoral engagement for disaster management. BPP is led by the Ministry of Disaster Management and Relief (MODMR) with technical assistance from the Asian Disaster Preparedness Center (ADPC). The initiation phase of the BPP programme spans October 2018 through April 2023.

Figure 3. 1 Emergence of Bangladesh Preparedness Partnership (BPP)



Source: Adapted from Mahbuba Nasreen, May 2023. Process Documentation on Bangladesh Preparedness Partnership (BPP)

A well-coordinated response system is needed to be established to effectively prepare for disasters where the government, local humanitarian organizations, private sector, and other key stakeholders must collaborate actively. Moreover, this multi-stakeholder partnership will encourage local actors to take initiative and collaborate at the grassroots level to improve emergency coordination. It will also reduce duplication and maximize the use of humanitarian response resources. Under the leadership of MoDMR in mobilizing multiple stakeholders through a partnership will assist on the collective strengths of diverse stakeholders for an effective disaster response. In addition, it will streamline emergency coordination systems among the National Disaster Response Coordination

Center (NDRCC) and Emergency Operation Centres (EOCs) at all levels in order to facilitate the adoption and implementation of SOD and its provisions.

Establishing and Mobilizing the Multi-Stakeholder Partnership

The BPP programme interventions were intended to be implemented in a stepwise order to encourage local actors to actively participate in government-led emergency management coordination at the national and sub-national levels. Accordingly, a series of consultations were held with multi-sector stakeholders from government agencies, local NGOs, academic institutions, and the Private Sector from February 2021 through June 2021.

Consultation with local NGO network and civil society organizations included:

- National Alliance of Humanitarian Actors in Bangladesh (NAHAB)
- Bangladesh Scout
- Foundation of Disaster Forum
- Disaster Network (DNET)
- BRAC Humanitarian Programme
- Centre for Disability in Development (CDD)
- Network for Information Response and Preparedness Activities on Disaster (NIRAPAD)

The local NGO network and civil society organizations identified a number of significant issues regarding emergency coordination mechanism preparedness:

- Insufficient national and local expertise, as well as a lack of adequate resources among local partners which is an impediment to capacity building.
- In partnerships and stakeholder coordination, equitable and complementary partnerships between local, national, and international actors should be prioritized.
- Since local NGOs are not financially sustainable, poor organizational governance, lack of institutional capacity, and a lack of understanding of the dynamics of global resource mobilization and grand bargain dynamics are among the issues that must be addressed.
- Innovation and policy advocacy may face a problem if academics are engaged in innovation less frequently than in short-term consulting.
- With the assistance of academic partners, BPP's mandate requires periodic study and reporting.
- BPP's information dissemination and knowledge sharing are hampered by a lack of knowledge management capacity, insufficient application of knowledge and potentialities, and inadequate communication capacity.
- If there is a lack of planning and centralized coordination at the directing and technical levels, there will be a plethora of significant obstacles to overcome at the field level as the BPP progresses.

Consultation and mobilization of academic sector stakeholders included two unique academic institutions of Bangladesh in the relevant field namely Institute of Disaster Management and

Vulnerability Studies (IDMVS), University of Dhaka and Postgraduate Programmes in Disaster Management (PPDM), BRAC University.

Consultation and mobilization of government sector stakeholders included:

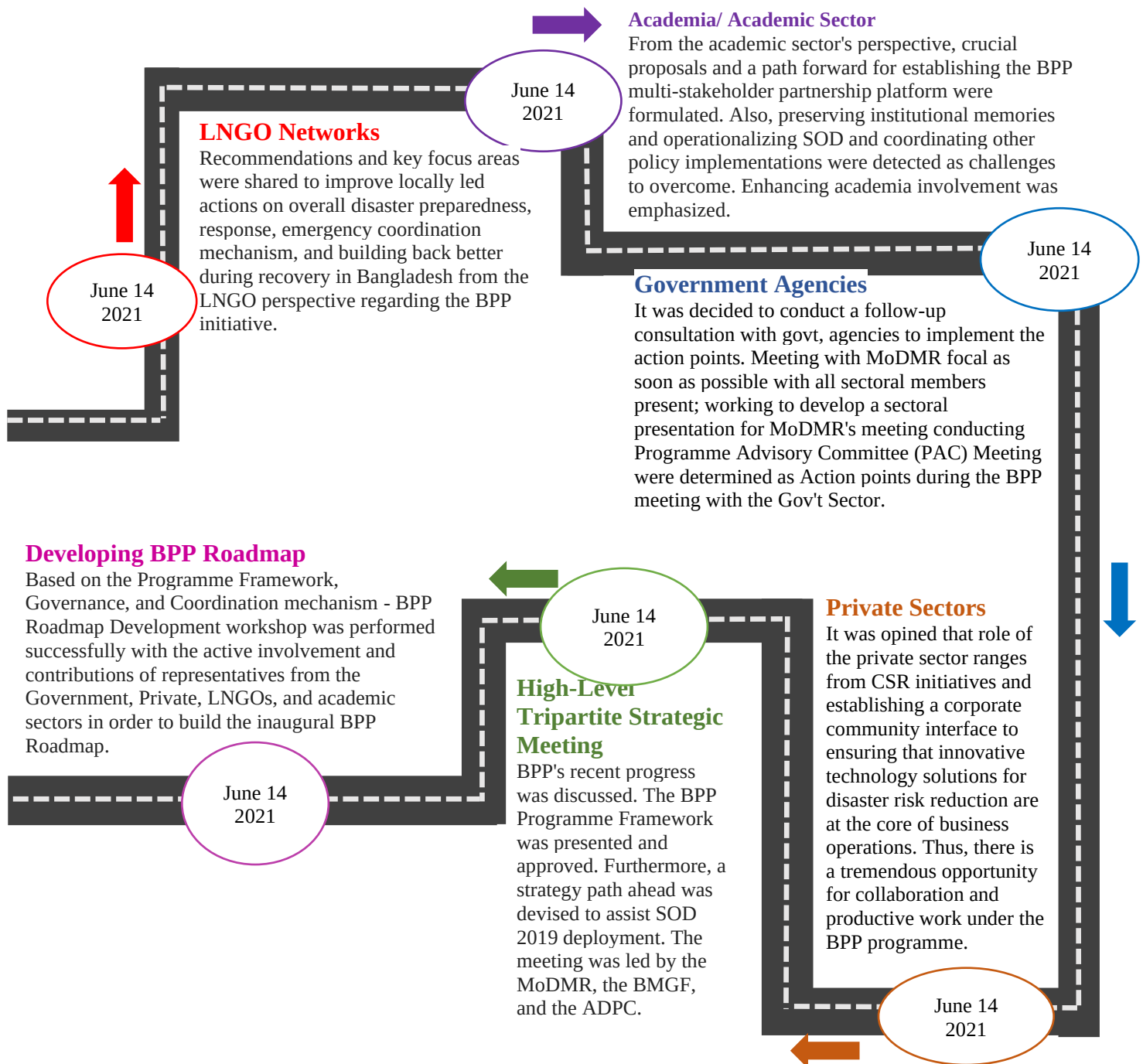
- Ministry of Disaster Management and Relief (MoDMR)
- Department of Disaster Management (DDM)
- Cyclone Preparedness Programme (CPP)
- Bangladesh Fire Service and Civil Defense (FSCD)

Consultation meeting with private sectors encompassed the following agencies:

- Bangladesh Garment Manufacturers and Exporters Association (BGMEA)
- Federation of Bangladesh Chambers of Commerce & Industries (FBCCI)

The progress of Bangladesh Preparedness Partnership looks quite promising. Despite few challenges due to Covid-19 and difficulty to keep all the stakeholders aligned with the programme objective, still it had improved sustainability because of positive responses from the stakeholders. A sense of ownership among the responsible government officials and agencies were observed. Moreover, the gaps identified during the consultation and training workshops showed how important and necessary all the operations were at the field level. For example, the flash flood in Sylhet and Sunamganj testify the necessity of an integrated emergency response system that adheres an “whole of society” approach. With the operationalization of SOD and the implementation of other planned activities, the overall disaster risk management system will surely be unified in the future years to come.

Figure 3. 2 The Key Milestones in Roadmap Development Process under BPP through Sectoral Consultation on 11 January 2022 and it was approved by MoDMR



Source: Adapted from Mahbuba Nasreen, May 2023. Process Documentation on Bangladesh Preparedness Partnership (BPP)

3.2 Policies and Action Plans on Climate Change

3.2.1 National Adaptation Programmes of Action (NAPA), 2005

As an outcome of the climate change convention, National Adaptation Programmes of Action (NAPAs) provides a process for Least Developed Countries to identify priority activities that respond to their urgent and immediate needs with regard to adaptation to climate change. Bangladesh was among the first countries to prepare and submit its NAPA with the UNFCCC Secretariat in November 2005 (MoEF, 2005).

The Government of Bangladesh also launched its National Adaptation Programme of Action (NAPA) in 2005. The document is the product of a collective effort of stakeholders and highlighted the main adverse effects of climate change. It also identified the country's adaptation needs. At the time of submission, the NAPA provided a response to the urgent and immediate needs of adaptation and identified priority programmes in Bangladesh.

Bangladesh is among a group of eight countries that incorporated gender in a more comprehensive manner throughout the document. In total, eight references to gender are made. Poverty reduction and security of livelihoods with a gender perspective has been ranked as the most important set of criteria for prioritization of adaptation needs and activities and it is acknowledged that various groups in society will experience the impacts thereof in various degrees depending largely on the economic condition, they find themselves (poor or non-poor), their location (coastal or non-coastal, rural or urban) and their gender (ccGAP, 2013).

3.2.2 Bangladesh Climate Change Strategy and Action Plan (BCCSAP), 2009

Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009 rightly weighted the linkage of the climate change and disaster potentials and appropriately taken disaster management as one of the pillar of strategy which are: i) Food security, Social protection and health; ii) Comprehensive disaster management; iii) Infrastructure; iv) Research and knowledge management; v) Mitigation and low carbon development; and vi) Capacity building and institutional strengthening (BCCSAP, 2009).

The government's vision is to eradicate poverty and achieve economic and social wellbeing for all the people which can only be achieved through a pro-poor Climate Change Strategy, which prioritizes adaptation and disaster risk reduction, and also addresses low carbon development, mitigation, technology transfer and the provision of adequate finance.

Accordingly, government formulated Bangladesh Climate Change Strategy and Action Plan (BCCSAP, 2009).

The BCCSAP is presented in two parts, first part provides the background based on physical and climatic contexts, core socio-economic realities and policies in the country and the consequent rationale for a strategy on climate change. The thrust of the strategy is on sustainable development, poverty reduction and increased wellbeing of all vulnerable groups in society with special emphasis on gender sensitivity. The second part elaborates a set of programmes based upon six pillars or broad areas of intervention (not necessarily mutually exclusive) that have been elaborated in the first part. The BCCSAP sums up Bangladesh's current thinking on desirable activities to build climate resilience into the economy and society of Bangladesh through adaptation to climate change as well as mitigation for a low carbon development path. BCCSAP provides the context, outline the implications and likely impacts of climate change in Bangladesh, an overview of

different adaptation strategies and briefly outline mitigation issues. It also describes a ten-year programme to build the capacity and resilience of the country to meet the challenge of climate change over the next 20-25 years.

Following are the thematic areas:

1. Food security, social protection and health to ensure that the poorest and most vulnerable in society, including women and children, are protected from climate change and that all programmes focus on the needs of this group for food security, safe housing, employment and access to basic services, including health.
2. Comprehensive disaster management to further strengthen the country's already proven disaster management systems to deal with increasingly frequent and severe natural calamities.
3. Infrastructure to ensure that existing assets (e.g., coastal and river embankments) are well maintained and fit-for-purpose and that urgently needed infrastructure (e.g. cyclone shelters and urban drainage) is put in place to deal with the likely impacts of climate change.
4. Research and knowledge management to predict the likely scale and timing of climate change impacts on different sectors of the economy and socio-economic groups; to underpin future investment strategies; and to ensure that Bangladesh is networked into the latest global thinking on climate change.
5. Mitigation and low carbon development to evolve low carbon development options and implement these as the country's economy grows over the coming decades.
6. Capacity building and institutional strengthening to enhance the capacity of government ministries and agencies, civil society and the private sector to meet the challenge of climate change.

The strategy includes all the line ministries and department/agencies such as Department of Environment, Department of Forests, Disaster Management Bureau, Comprehensive Disaster Management Programme, Bangladesh Water Development Board, Local Government

Engineering Department, Department of Public Health Engineering, National Agricultural Research System, Department of Livestock and Fisheries to name a few who are involved in climate change and specifies roles and responsibilities.

Programmes funded under the Action Plan will be implemented by line ministries and agencies, with participation, as appropriate, of other stakeholder groups, including civil society, professional and research bodies and the private sector. A National Steering Committee on Climate Change chaired by State Minister for Environment and Forest has been established to coordinate and facilitate national actions on climate change and reports to the National Environment Committee, chaired by the Prime Minister. A Climate Change Unit will be set up in the Ministry of Environment and Forests, to support the National Steering Committee on Climate Change. It will work with climate change cells in all ministries (BCCSAP).

3.2.3 Climate Investment Funds (CIF) Strategic Programme for Climate Resilience (SPCR), 2010

Given Bangladesh's vulnerability to climate change, its protracted experience in dealing with disasters coupled with its commitment to mainstream climate change in development policies and planning, the country was nominated to participate in the Pilot Programme for Climate Resilience (PPCR) by the PPCR Expert Group of the CIF. As one of nine CIF PPCR Pilot Countries, Bangladesh is eligible to receive financial assistance to support efforts for building climate resilience.

The PPCR Sub-Committee reviewed the SPCR document submitted by Bangladesh as a result, endorsed it and agreed to further development of the foreseen activities contained therein. The CIF Trust Fund Committee also agreed to an envelope of up to USD 50 million in grant resources and USD 60 million in concessional loans in PPCR funding to finance the Programme.

Areas of intervention included:

- i. Investment Project 1: Promoting Climate Resilient Agriculture and Food Security;
- ii. Investment Project 2: Coastal Embankments Improvement and Afforestation;
- iii. Investment Project 3: Coastal Climate Resilient Water Supply, Sanitation, and
- iv. Infrastructure Improvement;
- v. Technical Assistance 1: Climate Change Capacity Building and Knowledge Management; and
- vi. Technical Assistance 2: Feasibility Study for a Pilot Programme of Resilient Housing in the Coastal Region.

A Gender Review of the Bangladesh PPCR conducted by the Global Gender Office of the International Union for Conservation of Nature (IUCN) upon instruction of the CIF Administrative Unit in late 2012, concluded that gender was a key theme during the consultation process for the development of the SPCR, but the drafters omitted to include the

Ministry of Women and Children Affairs (MoWCA) as a key stakeholder in the process. Although gender differentiated impacts of climate change are acknowledged and specific areas were highlighted that require special attention in this regard, only 1 out of the 3 proposed Investment Projects (i.e. Investment Project 3) mentioned women issues. It is also the only Investment Project or Technical Assistance Project that noted gender-sensitive indicators of success (Ministry of Environment of Forest, 2013). The BCCSAP is under revision for incorporating some more relevant issues, especially recommendations made by ccGAP in 2013.

3.2.4 Climate Change Gender Action Plan, 2013

The Climate Change Gender Action Plan (ccGAP, 2013) seeks to mainstream gender in climate change advantage of opportunities that promote gender equality and facilitate transformative nature of gender interventions as the climate action will be built on the BCCSAP, NAPA and other policy documents. It was formulated to mainstream gender concerns into climate change-related policies, strategies and interventions ensuring access, participation, contributions and benefits for the diverse group of stakeholders for the sustainable and equitable development of Bangladesh. The formulation of ccGAP followed a participatory process that included in-country meetings,

stakeholder consultations involving representatives from various ministries/government departments, civil society, academia, research institutions, local NGOs and international organizations, as well as desk review of reports, publications, websites, surveys and in-person interviews.

A critical step in the implementation process is anchoring global agreements within national contexts through the development of ccGAPs. The ccGAP integrates gender considerations into four of the six main pillars as identified in the BCCSAP: i) food security, social protection and health; ii) comprehensive disaster management; iii) infrastructure; and (iv) mitigation and low carbon development. The remaining two pillars of the BCCSAP, those of research and knowledge management and capacity building and institutional strengthening, were mainstreamed within the above four pillars throughout the document as crosscutting topics.

The ccGAP establishes clear objectives, outlines substantive activities that have achievable indicators within the scope of the four pillars as identified and highlights the specific contribution of women and what they can do within each of these as well as the required interventions necessary to incorporate the role of women effectively over a timeframe of five years, from 2013/14-2018/19.

Under the food security, social protection and health pillar, emphasis has been given to integrate gender and climate change concerns into policies and national documents concerning the agricultural sector, create environment to lease land/water bodies to women, ensure crop insurance and/or other safety nets for women farmers, access to financial institutions, capacity building and involvement of women to alternative technologies for example bio-fertilizer, climate resilient cropping etc. To integrate climate change and gender in national health policy and programmes, actions will be taken to support livelihood for women migrated due to climate change, better participation of women for efficient water management and better social security/protection of women, adolescents, and children in pre, during and post-disaster and emergency situations.

Under the Comprehensive Disaster Management (CDM) pillar, actions are development of gender responsive disaster management policy, increased women's participation from central to local committees especially UDMC/UzDMC, more allocation of financial resources to address gender and DRR issues, participation of women in Community Risk Assessment (CRA) vulnerability and capacity assessment activities, capacity development activities for women and men in providing first aid and primary health care as first responders.

In relation to infrastructure, focus has been given to increase women's participation in climate change related infrastructure development and management, monitoring, maintenance and secure and uninterrupted mobility of women in transport sector.

In areas of mitigation and low carbon development pathway, increased women's participation, access and benefit in the energy policy has been emphasized, development of gender responsive programmes to reduce GHG emission at household, increased access to energy and power technologies, entrepreneurship development programmes related to waste management, solid waste and drainage management and more participation of women in coastal and social forestry programmes have been encouraged (ccGAP, 2013).

3.3 Overview of Gender and Inclusive DRM Frameworks in Bangladesh

The chapter presents an extensive review of Bangladesh’s legal and policy frameworks for disaster risk management (DRM), highlighting the country’s commitment to gender and social inclusion. It outlines how national initiatives are aligned with international and regional frameworks such as the Yokohama Strategy, Hyogo Framework for Action, and Sendai Framework for Disaster Risk Reduction. Central to this discussion are key national documents including the Disaster Management Act 2012, National Disaster Management Policy 2015, the National Plan for Disaster Management (NPDM), Standing Orders on Disaster (SOD) 2019, and various climate change strategies and action plans.

Bangladesh’s disaster risk management paradigm has evolved from reactive responses to a more proactive and inclusive approach. The NPDM 2021–2025, in particular, emphasizes a “whole-of-society” strategy that prioritizes gender responsiveness and disability inclusion. It aims to build resilience by protecting lives and livelihoods, promoting inclusive governance, and encouraging public-private partnerships. The NPDM is structured around four priority areas from the Sendai Framework: understanding disaster risk, strengthening risk governance, investing in risk reduction, and enhancing preparedness for effective response. Gender and inclusion are embedded throughout the plan, including specific provisions for women, persons with disabilities, and other vulnerable groups.

The Standing Orders on Disaster (SOD) 2019, a key operational tool, underscores decentralized, community-level preparedness. It mandates the formation of disaster management committees at every level—from national to ward—ensuring participation from women and persons with disabilities. It includes a dedicated section on gender and social inclusion, reinforcing the commitment to leave no one behind.

The chapter also highlights several key climate-related policy frameworks that integrate gender considerations. The National Adaptation Programme of Action (NAPA, 2005) was among the first to recognize gendered vulnerabilities, ranking gender-sensitive poverty reduction as a top priority. The Bangladesh Climate Change Strategy and Action Plan (BCCSAP, 2009) identifies disaster management and social protection for vulnerable groups, including women and children, as strategic pillars. Subsequent initiatives like the Climate Investment Funds’ Strategic Programme for Climate Resilience (SPCR) and the Climate Change Gender Action Plan (ccGAP, 2013) build on these efforts, outlining actionable gender-responsive strategies across sectors such as agriculture, health, infrastructure, and energy. Institutional partnerships such as the Bangladesh Preparedness Partnership (BPP) further the agenda of inclusive DRM by strengthening coordination between government, civil society, academia, and the private sector. The BPP adopts a collaborative, multi-stakeholder model to implement the Standing Orders on Disaster, aiming for locally led and gender-responsive emergency preparedness.

The chapter concludes by noting that while Bangladesh has made significant progress in mainstreaming gender and inclusion into disaster and climate frameworks, implementation challenges remain. These include gaps in institutional capacity, funding, coordination, and knowledge management. Nevertheless, the country’s evolving legal and policy landscape demonstrates a strong foundation for building inclusive resilience and sustainable disaster risk governance.

Chapter 4

Unfolding Gendered Impacts of Climate Induced Disaster

The last twenty years have seen a dramatic rise of 151 per cent in direct economic losses from climate-related disasters according to a report released on 13 October 2018 by the United Nations Office for Disaster Risk Reduction (UNISDR). In the period 1998-2017, disaster-hit countries reported direct economic losses of US\$2,908 billion of which climate-related disasters accounted for US\$2,245 billion or 77 percent of the total. In terms of occurrences, climate related disasters also represent 91 percent of all 7,255 major recorded events between 1998 and 2017 with 43.4 per cent floods and 28.2 per cent storms which were the two most frequent disasters. During this period, 1.3 million people lost their lives and 4.4 billion people were injured, rendered homeless, displaced or in need of emergency assistance. About 563 earthquakes, including related tsunamis, accounted for 56 percent of total deaths or 747,234 lives lost. Another key finding is the disproportionate impact of disaster events on low- and middle-income countries even if high-income countries bear the brunt of absolute economic losses (UNDRR, 2018).

While high-income countries recorded losses for 53 percent of reported disasters between 1998 and 2017, low-income countries only recorded them for 13 per cent of disasters. It clearly indicates that those who are suffering the most from climate change are those who are contributing least to greenhouse gas emissions. However, the economic losses suffered by low and lower-middle income countries have drastic consequences for their future development. The report concludes that climate change is increasing the frequency and severity of extreme weather events, and that disasters will continue to be major impediments to sustainable development so long as the economic incentives to build and develop hazard prone locations outweigh the perceived disaster risks. The report further states that, “Integrating disaster risk reduction into investment decisions is the most cost-effective way to reduce these risks; investing in disaster risk reduction is therefore a pre-condition for developing sustainable in a changing climate (UNDRR, 2018).”

Disasters have a huge impact on human infrastructure, lives and livelihoods. They can result from natural causes (earthquakes, floods, cyclones, etc.) or from human-influenced factors (like climate change and conflicts) which can lead to food insecurity and displacement of large populations (Axelss, C., 2022).

Disasters are a frequent phenomenon in Bangladesh but since the last eighties, these have increased both in frequency and severity. Nasreen (2022) noted that:

The consecutive devastating floods of 1987 and 1988 and the cyclone of 1991 attracted international attention. Due to geographical settings and anthropogenic causes, the country is exposed to disasters that include devastating floods, cyclones, tornadoes, tidal surges, riverbank erosion, drought, and salinity intrusion; and climate change is intensifying these events.

4.1 Disaster Impacts are not Gender-Neutral

The impact of disaster caused by natural hazards is not gender-neutral. A 20-year study on gendered nature of natural disaster shows that in societies where the socioeconomic status of women is low, natural disasters kill more women than men—both directly and indirectly through

related post disaster events. The study also shows that disasters kill women at a younger age than men, and that the impacts of natural disasters are never merely determined by nature on its own. The reason for the difference in mortality lies in the fact that women in general have lower socioeconomic status which, in turn, leads to unequal access to opportunities and unequal exposure to risks, making them more vulnerable to natural disasters (Neumayer, & Plümper, 2007). Women's increased vulnerability to disaster has many dimensions. The pioneering research (Nasreen, 1995) on women's coping with disasters argued that disasters affect all segment of population but the burden of coping falls heavily on women's shoulders. Women's reproductive roles can limit their chances of survival those in their final stages of pregnancy and women with young kids are less mobile. If basic health care infrastructure is severely damaged and access to obstetrical care is limited, chances of miscarriage as well as maternal and infant mortality increase (Asian Development Bank, 2014).

Social norms and gendered roles may significantly affect women and girls' ability to survive the impacts of a disaster. Studies on the impact of the 2004 tsunami highlight that differences in self-rescue ability are partly determined by learned skills such as swimming and tree climbing which, in many contexts, are primarily taught to and practiced by men and boys. Further, dress codes can restrict women's ability to move quickly in times of disaster or restrict them from learning survival skills. Social norms may prevent women from relocating without the consent of a male family member, restricting women from getting information about evacuation centers or how to escape during disasters (Asian Development Bank, 2014).

Women also have limited access to economic resources as well as information and technology, increasing their vulnerability and adaptive capacity to disaster. Traditional expectations and home-based responsibilities limit women's mobility and opportunities for political involvement, education, access to markets, and a myriad of other resources the lack of which reinforces the cycle of vulnerability. Inheritance laws and traditions, marriage arrangements, banking systems, and social patterns that reinforce women's dependence on fathers, husbands, and sons all contribute to their unfavorable access to resources and their lack of power to change things (Anderson, 1994).

A key gendered impact of disaster is women's increased post disaster workload. Women are often in the frontline of reestablishing households in relocated or reconstructed sites and collecting basic household needs such as water, food, hygiene items, and fuel. Such engagements may cause girls to drop out of school, disrupt women's skill building and other livelihood opportunities, and negatively impact women and girls' time poverty (Nasreen, 1995, 2019; Asian Development Bank, 2014).

4.2 Gender Inequality, Vulnerability and Poverty

Hazards become disasters when they occur in locations where vulnerable populations reside. Vulnerable communities and households do not have sufficient capacity to respond to and protect themselves from the impact of unexpected events. The risk of a disaster occurring following an extreme event, such as an earthquake, flood, or drought, is inextricably linked to the vulnerability that millions of poor women and men face on a daily basis. Deepening poverty, environmental degradation, unplanned urbanization, and the effects of climate change are making more women and men more vulnerable to disasters than ever before. And with climate change increasing the frequency, intensity, and unpredictability of extreme weather events, already vulnerable populations are experiencing more and more disasters, leading to increased loss of life, injury, mass population displacements, and economic crises.

Poverty plays a critical role in determining a person's resilience to disaster. Factors such as poor housing, farms and settlements in unsafe locations, fewer resources, less robust coping strategies, inadequate access to information, and limited participation in decision making mean that poor women and men are hit hardest by the impacts of natural hazards, and recover much more slowly.

Those sectors of society that have the most limited access to resources, opportunities, and power are likely to be most vulnerable to the effects of extreme events – they include women, children, frail and elderly people, those with HIV status, refugees, ethnic minorities, people of lower caste and class, and people with disabilities, as well as those belonging to other marginalized groups.

The disadvantages faced by many women – their unequal access to resources, legal protection, decision making and power, their reproductive burden,² and their risk of exposure to violence – mean that they are more vulnerable to poverty and to the impacts of disaster. But women also show remarkable resilience in the face of risk and disaster. Their knowledge of and responsibilities for natural resource management and building sustainable livelihoods have often been critical in mobilizing communities to prepare for and to respond to disaster. Women's ability to organize in order to claim their rights and to ensure the survival of their communities demonstrates their capacity as agents of change.

Women and men have specific vulnerabilities to risk and disaster. A dramatic indicator of women's particular vulnerabilities is the difference in the mortality rates of women and men during and following disasters. Several studies have shown that disaster mortality rates are higher for women than for men and that an important factor in this can be the differences in vulnerability of women and men as a result of socially constructed gender roles. For instance, women and girls are less likely to have been taught how to swim, which means they have lower chances of survival in flooding. And because they are most often involved in child care and their mobility may be restricted, they are more likely to be at home (often in poorly constructed houses) when an earthquake, hurricane, or landslide strikes. Following the 2004 Asian tsunami, Oxfam found that girls and women in many villages in Aceh, Indonesia, and in parts of India accounted for over 70 per cent of the dead. In the 1991 cyclone disaster which killed 140,000 in Bangladesh, 90 per cent of victims were women.

A study of 141 countries found that more women than men are killed during disasters, and at an earlier age; particularly in poor communities, because of the discrimination they suffer due to their gender. The next section describes how understanding the way in which gender relations shape a community's experience of and response to the impacts of disaster is critical to ensure effective programme planning. It is also important that women are empowered by this process, rather than further disadvantaged.

Disaster risk is not 'gender neutral' - disasters impact differently on women and men, girls and boys. Women and men experience different types of vulnerability and have different capacities to offer in responding to disaster. Women and girls may be particularly vulnerable in times of disaster because of the inequalities and discrimination they experience in almost all societies.

Gender Inequality

The Global Gender Gap Index Report produced by the World Economic Forum is a framework for capturing the magnitude and scope of gender-based disparities and tracking their progress globally by benchmarking national gender gaps on economic, political education and health

criteria, and provides rankings that allow for effective comparison across regions and income groups, over time (Global Gender Gap Report 2021, 30 March 2021).

In the World Economic Forum's Global Gender Gap Report 2023, Bangladesh ranked 59th globally with a score of 72.2%, leading South Asia in gender parity. This puts Bangladesh ahead of its South Asian neighbors, including Bhutan, Sri Lanka, Nepal, Maldives, India, Pakistan, and Afghanistan (Global Gender Gap Report 2023, 20 June 2023).

The Global Gender Gap Index Report 2024 states:

Experiencing a decline in both score (68.9%) and rank (99th) since 2023, Bangladesh loses 40 ranks and -3.3 percentage points on the 2024 index. The drop derives to a large extent from an update to the 2017 values for economic indicators used in prior calculations, including the 2023 edition of the report.

In the past five years, economic gender parity has deteriorated significantly, leaving Bangladesh with a wider gender gap to close. In 2024, the economic parity score of 31.1% is the lowest achieved by Bangladesh since 2014 and the lowest ranking globally in the 2024 index.

Gender disparity in labour-force participation has rolled back the gender gap from 42.5% in 2018 to 30.7%. Income inequality between men and women in 2024 (10.2%) has increased nearly five times over since 2018 (48.9%) in 2018. Women's representation in senior leadership roles has also decreased, resulting in a 92 percentage-point gap to bridge. Additionally, in 2024 women encompass just one-fifth of professional and technical workers, resulting in a 25.4% parity score.

Where Bangladesh performs well is in Educational Attainment, with a 94% attainment rate reflecting full parity in secondary enrolment, gender parity in literacy rate of 93% and gender parity in tertiary enrollment of 84.1%.

In Political Empowerment, Bangladesh has the highest gender parity score in its region (54.3%) and seventh overall, on account of having had women in head-of-state roles for 30.3 years out of the last 50. However, there is only one-woman minister for every nine men (score of 9%) and women occupy just one-fourth of parliamentary seats, which translates to a gender parity score of 25%, with slight drops on both indicators compared to 2023 (Kusum Kali Pal, et.al. 11 June 2024).

Poverty and Hunger

The 2024 Global Multidimensional Poverty Index (MPI) published jointly by the United Nations Development Programme (UNDP) and Oxford Poverty and Human Development Initiative of the Oxford University stated that about 41.7 million people in Bangladesh live in extreme poverty. Of them, 6.5 per cent are vulnerable. The study considered deprivations which include a lack of adequate housing, sanitation, electricity, cooking fuel, nutrition and school attendance.

The Global MPI-2024 shows low living standards are contributing the most to overall multidimensional poverty (45.1 per cent) followed by deprivations of education (37.6 per cent) and health (17.3 per cent).

As per the latest updates of the Bangladesh Bureau of Statistics (BBS), some 18.7 per cent people of Bangladesh live below the poverty line and 5.6 per cent of them live in extreme poverty.

According to the latest census, the country's population now stands at more than 169.8 million. As such, more than 31.7 million people live in poverty. Therefore, poverty reduction constitutes the central development challenge in Bangladesh.

The profile of poverty in Bangladesh is uneven, the most severe deprivation being found in the southern coastal belt, which is already experiencing changing climate conditions, with drought, lack of fresh water, and severe decline of fisheries - both marine and fresh water, and the northern regions which is prone to *monga* (seasonal food shortages).

The capital, Dhaka, is believed to be the fastest expanding and most densely populated of the world's major cities. In common with other Bangladeshi cities, informal slum areas accommodate as much as a third of the urban population, imposing a new and challenging dimension for poverty reduction.

4.3 Gender, Health, Water and Nutrition

It has been widely recognised that the rising water levels associated with climate change will lead to an increase in water borne diseases. Other likely health consequences of climate change include higher rates of malnutrition due to food shortages, increases in heat-related mortality and morbidity, and increased respiratory disease where air pollution worsens. Children under five are the main victims of sanitation-related illnesses, and – along with the elderly – are most affected by heat stress (Bartlett 2008). Gender discrimination in the allocation of resources, including those relating to nutrition and medicines, may put girls at greater risk than boys. More research into the gender-specific health impacts of climate change on children and adolescents would help to illuminate the extent to which this is the case, and would in turn enable a more targeted response.

Women and girls are generally expected to care for the sick, particularly in times of disaster and environmental stress (IUCN/WEDO 2007). This limits the time they have available for income generation which, when coupled with the rising medical costs associated with family illness, heightens levels of poverty. It also means they are less able to contribute to community-level decision-making processes on climate change or disaster risk reduction. In addition, being faced with the burden of caring for dependents while being obliged to travel further for water or firewood makes women and girls prone to stress-related illnesses and exhaustion (Voluntary Services Overseas 2006; CIDA 2002). Women and girls also face barriers to accessing healthcare services due to a lack of economic assets to pay for healthcare, as well as cultural restrictions on their mobility which may prohibit them from travelling to seek healthcare.

The elderly is at highest risk from climate change-related health impacts like heat stress and malnutrition. Elderly women are likely to be particularly vulnerable, especially in developing countries where resources are scant and social safety nets limited or non-existent. Despite this, there has been little research on their specific vulnerabilities in the context of climate change. Elderly women may have heavy family and caring responsibilities which cause stress and fatigue while also preventing wider social and economic participation; and their incomes may be low because they can no longer take on paid work. They may also not understand their rights to access community and private sector services, such as local clinics. Even when they are aware of these services, even nominal amounts for clinic visits and drugs may not be affordable. Access is further restricted for older women living in rural areas, who are often unable to travel the long distances to the nearest health facility. Older men are particularly disadvantaged by their tendency to be less

tied into social networks than women and therefore unable to seek assistance from within the community when they need it (WHO 2000).

A decline in food security and livelihood opportunities can cause considerable stress for men and boys, given the socially ascribed expectation that they will provide economically for the household. This can lead to mental illness in some cases. It has been recognised that men and boys are less likely to seek help for stress and mental health issues than women and girls (Masika 2002), meaning that preparation for, and responses to, climate change need to be sensitive to gender differentials in healthcare (including mental) seeking behaviour. Stress is likely to be heightened after disasters, particularly where families are displaced and have to live in emergency or transitional housing. Overcrowding, lack of privacy and the collapse of regular routines and livelihood patterns can contribute to anger, frustration and violence, with children (especially girls) and women most vulnerable (Bartlett 2008).

Water is needed to maintain hygiene and sanitation, vegetable gardening, farming, plastering courtyard, washing and cooking. Women play key role in carrying water and they are knowledgeable about the location and quality of water. Women look for best quality water from tube wells within 200 yards to more than a km. During dry season the water level goes down women use special techniques to collect water (Nasreen, 1995; Nasreen, 2016). Due to gendered culture and economics women have restricted access to productive resources (Nasreen, 2019). In the gendered division of labour, women and girls are the most overburdened with managing water. Gendered patterns of governance exclude women from policy making and management in the water and agricultural sectors. Although women are involved in most of the water related tasks, their participation in decision making processes on water management remains very low. Research (WHO/UNICEF, 2010) conducted in 45 developing countries (including Bangladesh) between 2005 and 2008 on distribution of those in the households who collect drinking water shows that 72 percent women (64%) and girls (8%) carry drinking water compare to 28 percent men (24%) and boys (4%).

Water is crucial for maintaining sanitation and hygiene, which also has different gender dimension and should be understood from the following perspectives: men and women have distinctive use/tasks and responsibilities related to water; distribution of water should be gender sensitive (such as menstrual management of women during a crisis/disaster); developing a right based and inclusive approach while planning for water (Sarkar & Nasreen, 2023; Zaman, Nasreen & Hossain, 2023).

The dialogue emphasizing the centrality of women to water resources management and water security was initiated in the International Decade for Clean Drinking Water (1981- 1990). It has been intensified by the global acceptance of the four Dublin Principles presented at the 1992 Rio Earth Summit (Global Water Partnership, 2012), and further extended by the establishment of the International Water for Life Decade (2005-2015) through a resolution adopted by the United Nations General Assembly (UNGA, 2004). The United Nations Human Rights Council's affirmation in 2010 of the right to water and sanitation as human rights has further assured water security in a legislative sense (UN Human Rights Council, 2010). However sufficient attention was not given to ensure a gendered perspective.

Increase in water literacy, defined here as enhancement of knowledge on technical, legal and social aspects of water management and current institutional structures. This builds a foundation of information which, coupled with their own traditional knowledge systems, can be used by women to make informed choices, define options and apply pressure for equitable access to water-related

decision-making within their own environment and communities. In view of climate-related changes and resultant challenges, it is critically important that women not only be afforded opportunities to better understand the technical processes of water management and the supporting institutional framework, but also that adequate capacity building programmes are designed to support them. An increased water literacy and water management awareness for rural women, filtered down through women's organizations to the grassroots level, can enhance women's capacities as domestic water users and in their agricultural initiatives with wide-scale impacts on community well-being (Nasreen, M. 2016; Roy, Nasreen, Hasan, & Sony, 2023).

4.4 Gender, Health and Climate Change

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Recent studies in Bangladesh highlight the intricate connections between gender, health, and climate change, underscoring how women, especially in rural and coastal regions bear disproportionate burdens from environmental stressors. Climate-induced salinity in coastal areas has been linked to increased reproductive health issues among women, including higher rates of preeclampsia, gestational hypertension, and chronic kidney disease (Kareeda Kabir, 16, July 2018).

Women in vulnerable communities face heightened mental health challenges due to climate change. Factors such as increased workloads, food insecurity, and social instability, especially when male family members migrate for work contribute to anxiety and depression (Jean-Marc Goudet et.al., June 27, 2024). Erratic weather patterns have led to a rise in climate-sensitive diseases like dengue fever, disproportionately affecting women who often have limited access to healthcare (Mercy Tembon, 14 November 2021).

4.5 Gender, Agriculture and Food Security

Although rural women and men play complementary roles in guaranteeing food security, women tend to play a greater role in natural resource management and ensuring nutrition (FAO 2003). Women often grow, process, manage and market food and other natural resources, and are responsible for raising small livestock, managing vegetable gardens and collecting fuel and water (FAO 2003). For example, in Southeast Asia, women provide up to 90 percent of labour for rice cultivation and in Sub-Saharan Africa they are responsible for 80 percent of food production. Men, by contrast, are generally responsible for cash cropping and larger livestock. Women's involvement in an agricultural capacity is most common in regions likely to be most adversely affected by the impacts of climate change, particularly Sub-Saharan Africa and Asia. In these contexts, responsibility for adaptation is likely to fall on their shoulders – including finding alternative ways to feed their family (CIDA, 2002). However, statutory and/or customary laws often restrict women's property and land rights and make it difficult for them to access credit and agricultural extension services, while also reducing their incentive to engage in environmentally sustainable farming practices and make long-term investments in land rehabilitation and soil quality. Despite these obstacles, recent evidence demonstrates that women who are already experiencing the effects of weather-related hazards –such as erratic monsoon patterns, flooding and extended periods of drought – are developing effective coping strategies, which include adapting their farming practices (see Mitchell et.al. 2007). The importance of women's role in adaptation will be taken up later in this paper.

As noted above, women's access to economic resources in terms of income and property ownership including land is already often unequal, particularly in developing countries. A gender gap in earnings persists across almost all employment categories, including informal wage employment and self-employment (ILO 2007). Women comprise the majority of those working in the informal employment sector which is often worst hit by climate change-related disasters and

other shocks (IUCN/WEDO, n.d.), increasing women's already unequal access to resources and diminishing their capabilities to cope with unexpected events/disasters or adapt to change. There is a clear need for studies that can accurately map these impacts across global regions and sectors in order to trace patterns. Such evidence could provide the basis for policy on labour rights at national and international levels but there is also a role for labour unions and local non-governmental organisations (NGOs) in raising awareness of rights among groups of women workers and in reporting back on employers' unjust practices.

Roy (undated) indicates that malnutrition levels in Bangladesh were among the highest in the world. More than half of the pregnant women in the country are anemic, and about 30 percent women suffer from chronic energy deficit. This poor nutritional status during pregnancy is one of the main causes of high incidence of low birth weight among newborns. Under nutrition among older children too is widely prevalent. Around 40 percent of children below five years of age are underweight and 43 percent stunted. Ironically, despite the fact that women are actively involved in agriculture, evidence indicate that they suffer from higher levels of mortality and morbidity than their male counterparts, mainly due to the fact that women suffer from higher levels of malnourishment (Cited in Nasreen, 2004).

A study conducted by National Food Security and Nutrition Surveillance Project (FSNSP, 2010) reported that despite quantitative increase in food grains production, 60 per cent of the households with 10 million children suffered from food insecurity in the year 2009. Close to 80 percent of these households affected by food insecurity were from the lowest income bracket of the population. Although food insecurity affects both women and men, the burden of coping with food shortages falls heavily on women's shoulders in Bangladesh. During crises women's own adoptive techniques and initiatives become crucial for their family sustenance, ensuring food security and nutrition (Nasreen, 2008). Women carry out several tasks related to ensuring food and nutritional security within families. They are responsible for managing the meager resources, allocation of food to family members, preparation of food and for feeding the children. They also contribute to food security, albeit behind the scenes. Women's role as productive members of the family and society is largely under recognized and unappreciated. Despite women being the primary caregivers, their contribution to the well-being of their families, particularly of their children, remains hidden. Neither the women, nor their family members acknowledge the worth of the work being carried out by the women to keep their families healthy.

Women continue to be seen as largely dependent upon men for ensuring food security and nutrition. This dependence exacerbates women's vulnerability to exploitation and to violence by their husbands. Women are constrained by social, cultural and economic factors in providing for the families. Lack of education, opportunities, societal restrictions and access to resources are serious constraints that prevent women from bringing about changes in the quantity and quality of foods for their families (Nasreen, 2022).

Nasreen (1995, 2008, 2019) also argues that women are not only the mere victims of climate change but are also playing crucial roles for household's sustenance. Women's contribution to rural production activities and conservation include raising seedlings, gathering seeds, post harvesting, cow fattening and milking, goat farming, backyard poultry rearing, pisciculture, agriculture, horticulture, food processing, cane and bamboo works, silk reeling, handloom weaving, garment making, fishnet making, coir production and handicrafts. It is evident that

women's own adoptive techniques and initiatives become crucial for their family sustenance and ensuring food security (Nasreen, 2022).

4.6 Gender and Forestry

Most of the ecosystems in Bangladesh are vulnerable to climatic events, which are potential threats to habitats, biodiversity and ecological integrity. Researchers (Koudstaal, R., Werners, S.E., Ahmed, A. U, Rahman, A., and Huq, S., 1999) argue that ecosystem and biodiversity of the Sundarbans as well as wetlands, fish and other aquatic species are at risk due to climate change.

As women are the users of wood fuel future planning should be based on targeting women (reduce wood fuel consumption through introducing wood saving stove; initiate large scale afforestation to increase wood supply etc.). UN conference cited examples of *Chipko* movement in India and proved women are the protectors of forest and environment. Recent WED publications depict women as environmental managers because of their intimate knowledge of natural processes due to their closer relationship with nature; i.e., women are seen as the answer of the crises, however, they do not have legal control over resources and that should be given emphasis. Women in Bangladesh are inextricably linked with environmental conservation through playing crucial roles in different sectors agriculture, forestry, water and others, their role in forest conservation, however, goes largely unrecognized.

Nasreen (2016) indicates that women play major role in protecting the homestead forestry and support household with adaptive capacity and sustainability in food security. Another study by Nasreen (2019) finds out that the integration of homestead gardens and nutrition education is providing the vehicle for change in nutrition practices in the families. Women are using the vegetables grown in the homestead gardens, and with the savings they are purchasing other items such as eggs to supplement their families' diets. This enhanced knowledge is a source of pride for the women, who regularly comment on how much they know now as compared to before. The value of providing chemical free high quality vegetables is now recognized by the women. Since the gardens are located near the homes, the women no longer have to depend upon the men for purchasing vegetables from the markets. Women's contributions to the families are becoming more visible. Recognition of these from others in the community is also a source of pride for the women. Women, especially those who have successfully established homestead gardens, are viewed as resource persons in the community. They are sought out to help others in the community. This recognition from others also contributes to women's formation of a positive self-image (Nasreen, 2019).

It is also documented earlier that women in the ethnic communities play significant roles in protecting and nurturing valuable tree species, such as medicinal herbs, edible plants, aquatic plants, preventing environmental degradation and using for cultural and other purposes (Nasreen, 2016).

However, although women are playing significant roles in protecting homestead forestry as well as directly or indirectly contributing to community forestry; their roles are not officially recognized. In most cases women are mainly the beneficiaries of NGOs as NGOs have been playing increasingly effective role in extending social forestry activities in the country. Most of the NGOs are promoting afforestation as one of their many people oriented programmes. This has resulted in substantial increase of private nurseries in the country. There is a need to mainstream women's homestead based contribution (Nasreen, 2016).

Forest dependent communities living in poverty utilize diverse livelihood strategies to maximize incomes as one livelihood does not provide sufficient income and to manage risks. These livelihood strategies combine agriculture and forest-based activities. Women and men have specific roles, rights and responsibilities, particular use and knowledge of forests, shape their experiences differently. They often use the forests differently, respond differently to incentive measures, policy interventions, and have different relationships with institutions. Gendered practices of forest use and management are much more pronounced where men generally tend to focus on timber and profitable non-timber forest products, while women are likely to focus on firewood and fodder. In addition, women tend to rely more on natural resources for their livelihoods (UN-REDD, FAO, UNDP and UNEP 2013).

Evidence from both agriculture and forestry sectors indicate that women's labour hours, frequently tied to subsistence and family care, are greater than men's. As a result, women have less free time to attend and participate in meetings and consultations (Das 2011) and can lead to incomplete sharing of relevant information on which to design policies and programmes. Even when women are present in meetings, women's ability for free expression in public meetings can be constrained by social structures and patriarchy norms and values; hence the often cited "gender-blind" approaches that assume communities are homogenous (Agrawal et al. 2006).

Participation of women to preserve the forest was documented by CNN in Chunati Wildlife Reserve of Bangladesh. The story of the 'Sari squad' protecting wildlife sanctuary is one such example. In southern Bangladesh, a small group of local women is taking the initiative when it comes to environmental protection. Wives, mothers and villagers, they all have taken one more role in their community: guardians of the Chunati Wildlife Reserve. Every day, they wear green saris and patrol the forest along forest rangers. Walking silently through the trees, they seek out anyone who wants to disturb the wildlife and the century-old trees. "When we come with our green dress, the illicit tree fellers are scared of us. They hide from us," says Dilwara, a member of the patrol. As for the female patrol group, they are volunteers, but they received a small stipend of about \$50 for joining the programme. Many of them bought cows with the money. Now they consume the milk or sell it for some extra cash. They also received respect in their village. "If there are trees in the forest this will help our community," says Hosnara, a member of the patrol. In the years since they began their walks, she tells CNN, they have seen the resurgence of the 77-square kilometre sanctuary.

Community leader Amin Khan used to hunt in Chunati, making his living off the wildlife. Now, convinced his hunting damaged the area's biodiversity, he works with the government to help oversee its conservation. He says positive change only became possible here when the government provided work and other opportunities for villagers within the sanctuary. "The government did not welcome people's participation on their land before," he says. "But now they are gradually thinking without the participation of the people, no project will be successful." To that end, the Bangladeshi government now allows for limited logging within designated areas of Chunati. Community members can plant, cut and sell trees in parts of the forest, provided they replant and they don't cut the old growth. They keep 75% of the proceeds and the rest goes towards reforestation efforts. Once heavily damaged by logging and farming, it is now beginning to thrive, with the patrol encountering wild birds, monkeys, foxes and even elephants. The co-management model that has worked for Chunati is now being implemented throughout the country. There are now 26 such protected areas in Bangladesh (Boykoff 2011).

4.7 Gender, Displacement and Victims of Violence

Research shows that gender inequalities can also be exacerbated in the aftermath of disasters. The household workload may increase substantially, forcing many girls to drop out of school to help with chores (Davis et al 2005). There is also evidence that women and girls are more likely to become victims of domestic and sexual violence after a disaster, particularly when families have been displaced and are living in overcrowded emergency or transitional housing where they lack privacy. The increase in violence is often partly attributed to stress caused by men's loss of control in the period following a disaster, compounded by longer term unemployment or threatened livelihoods.

Adolescent girls report especially high levels of sexual harassment and abuse in the aftermath of disasters and complain of the lack of privacy they encounter in emergency shelters (Bartlett, 2008; Nasreen, 2008). In Sri Lanka after the tsunami, according to local field workers on the ground, these conditions were a key contributing factor in the harassment and abuses experienced:

There were repeated references to the difficulties associated with many families living together in one open space, with no privacy for dressing or bathing – or even for families crowded together in a tent. Many were reluctant to acknowledge the extent of the problems, and said that given the situation, people had managed well. But staff from both Save the Children and partner organisations, along with some of the more vocal women, made it clear that the situation resulted in many abuses (Bartlett, 2008).

Helpful responses, especially for older girls and women, may involve working with girls on ways to protect them from these potential abuses (Bartlett 2008). This could involve lighting the way to the toilets, or finding people who are willing to monitor the route or accompany children, adolescent girls and women. It can also mean finding ways to ensure their privacy while they are bathing or dressing (ibid). While there is some excellent work that traces the links between climate change/disasters and violence against women, there is a clear need for more in-depth research in this area to shape effective policy and practical interventions. As with research into other impacts of climate change, poor women's voices and experiences need to be at the core of this work.

4.8 Gender Needs, Responses and Adaptation Strategies

Women's active involvement in agriculture and livelihood activities means that they are closely involved in effective environmental management. They are often at the forefront of activities to reduce risks from environmental degradation. In situations where women have received timely information about disaster risks and probability, women have been seen to have demonstrated great ability in mobilizing communities to prepare for and respond to disasters. Similarly, for many women who stay in their homes and villages, they had more opportunities to know their neighbours and communities well, hence are seen as a good source of information in assessing damage, impact of the disasters in their communities, but also, a good information source when identifying for example, who may be missing among community members in the immediate post-disaster or rescue phases. Their knowledge of the communities' pre-existing vulnerabilities are enormous and, if sufficient efforts are given to listen to their views, will help define what are the key areas that need change. Their role as active agents of social change needs to be recognized, and they should not just be seen as helpless victims.

Women's safety

- ❑ Loss of housing during disaster means many families are forced to relocate to shelters or move in with relatives or neighbours, where women and girls may not be safe.
- ❑ In the aftermath of disasters women and children are at risk of becoming victims of trafficking, domestic and sexual violence.
- ❑ Male migration during disasters can lead to an increase in unsafe sexual practices for both women and men, and to the risk of women being forced into unsafe transactional sex.

Gender-differentiated capacities to reduce risk and respond to disaster

The different levels of access to power and resources experienced by women and men, as well as their particular knowledge and expertise, determine how they each cope with and recover from disasters. Women have a key role in village-based disaster-preparedness groups in Bangladesh. The committees use radios to find out about and pass on early warning messages. They also make sure that every family has dried food and a portable oven, and a safe place to shelter food and livestock. In the floods of 2007 in Bangladesh, villages with emergency committees were better prepared to deal with the disaster.

Existing gender roles can change in disaster settings

Disasters disrupt commerce and markets and destroy productive resources and infrastructure. In some cases, women become breadwinners as the male members are killed by disaster or choose to stay with the remaining property in order to safeguard the little that remains. This may put additional burden on women to find new sources of livelihood and continue the traditional role of taking care of the family (Asian Development Bank, 2014).

Gendered response can reduce long-term social consequences

The immediate impact of disasters displacement; destruction of homes, schools, and health services; loss of financial security and livelihood; and disruption of existing social protection mechanisms may further expose women and girls to devastating, long-term effects and consequences. These may include early and forced marriages, trauma, and increased vulnerability to gender-based violence, exposure to sexually transmitted infections and HIV, and unintended pregnancies. Failure to apply gender lens in disaster risk management and response can reinforce or perpetuate these social consequences on women and girls (Asian Development Bank, 2014).

Women and girls of marginalized families have to depend more on natural resources for their livelihoods also lends itself to increased vulnerability. Climatic stress on water and forest resources often leads to women having to travel longer distances for a longer time to fetch water or wood, exposing them to health risks (WHO 2011) and limiting their prospects for engaging in high-return ventures such as education, politics and business (UNDP 2011; FAO 2011).

Gendered asymmetry in vulnerability to disaster risk is rooted primarily in geographic, economic, social, educational/informational and political power imbalances in societies. These vulnerability factors translate into women having lower levels of access to economic resources in general and, in particular, lower levels of access to education and information that would allow them to read and act upon disaster warnings (Aguilar, Albanell, Miñarro, & Capellas, 2015).

Women also tend to live by, and work closely with, natural resources and geographical features that are most affected by disasters and shocks e.g., marginal lands and informal settlements; men

also live in these areas, but women are less likely to be able cope with the shocks. Cultural norms on gender roles sometimes limit women's ability to make snap decisions in disaster situations and, in some cases, the clothes they wear and/or their unpaid care work of children, the sick and/or the elderly and household responsibilities may restrict their range of movement to escape disasters particularly water-related hazards.

While disasters pose threats to everyone in their paths, they often have disproportionate impacts on women. Studies have shown that disaster fatality rates are much higher for women than for men. It is due, in large part, to gendered differences in the capacity to cope with such events and insufficient access for women to information and early warnings (Neumayer & Plümper, 2007). For example, women accounted for 61 percent of fatalities caused by Cyclone Nargis in Myanmar in 2008, 70 percent to 80 percent in the 2004 Indian Ocean tsunami and 91 percent in the 1991 cyclone in Bangladesh (Castañeda, & Gammage, 2011).

Disasters in Bangladesh, according to recent histories, have always impacted the women and children more adversely because of built-in societal norms. Different studies on 1988 and 1998 flood reveals that the women became more severely affected than men because of their responsibilities and everyday activities including food processing and cooking, cleaning, collecting water and fuel, looking after the livestock and belongings (Ahsan, & Khatun (Eds.). 2004) Women and children are rather confined to homes and are less mobile than the males, which increase their vulnerabilities and sufferings during such flood incidences (Ahsan, & Khatun (Eds.) 2004).

In a similar epidemiological assessment (BBS, 2007) study on 1991 cyclone, carried out on 45 housing clusters comprising 1,123 persons in Chakaria and Kutubdia, exhibits that the children under 10 years and women over 40 years sustained the highest mortality of 26% and 31% respectively.

Women are often vulnerable to sexual harassment in pre and post disaster situation (Nasreen, 2008). The study indicates that violence against women increases to a level that women and girls had to leave with flood water other than moving to flood shelter or refuge. The pioneering study (Nasreen 2008) on violence against women during disasters indicated that women in both rural and urban areas face physical, social, psychological and other kinds of violence during floods. The study also identified that women with disabilities, female headed households, and adolescent girls face such violence more than others. Married women become victims of verbal and physical violence by their husbands or family members. This study also identified resilience of women with disabilities.

During and immediate after the disasters, household food insecurity becomes one of the major concerns for women. The collection of drinking water during floods, cyclones and drought disasters becomes very challenging as almost all tube wells are under water and women have to take considerable risks to obtain drinking water, often over great distances. It has been observed that during these periods' women, at times, have to walk through chest high water or even swim to collect fresh water. The food security of women farmers is also threatened as floods from disasters destroy their land, stored seeds and livestock (Nasreen, 2012). Often existing early warning systems do not reach women resulting in them having to run away from impending disasters with clothing and children in hand at the last minute. It is also reported that women also face more violence during and after disasters (Nasreen, 2008).

Building resilience to risks and addressing underlying vulnerability are increasingly being accepted as a unifying goal for climate change adaptation/mitigation, disaster risk management and poverty reduction. From the perspective of gender equality and women's empowerment, any effort addressing adaptation and disaster risk reduction policy needs to be cognizant that (a) climate change and disasters can reinforce, perpetuate and increase gender inequities and that (b) women's contributions greatly enhance adaptation and disaster reduction and management policies and actions.

Box 4. 1 Global gender statistics around vulnerability to climate change and disaster risk

- Women and children are 14 times more likely than men to die during a disaster.
- The Human Development Index (HDI) value is lower for women than for men.
- Globally, women earn 24 percent less than men. In Latin America, in Mexico, women earn an average of 20 percent less than men; in Argentina, 12 percent less; and, in Brazil, 25 percent less.
- In the 2004 Asian tsunami, women in many villages in Aceh, Indonesia, and in parts of India, accounted for over 70 percent of the dead.
- More women than men died during the 2003 European heat wave. In France, most deaths were among elderly women.
- During Hurricane Katrina, most of the people trapped in New Orleans were African American women and children, the poorest demographic group in the United States.
- A study by the World Bank indicates that 155 of the 173 economies it covered (one in nine) have at least one law impeding women's economic opportunities.

Sources: UNDP (2015a); UNDP (2015b); UNFPA and WEDO (2009); World Bank Group (2015); MGI (2015)

Gender is an important dynamic in climatic and disaster risk reduction efforts. The reasons are essentially twofold: (1) the agency of women is essential for tackling the perils of climate change and disaster risk; (2) despite significant strides that have been made in addressing gender inequalities over the years, women are still among the most marginalized groups of society and are particularly vulnerable to current and future climate change and disaster risk. While women's vulnerability is almost always assumed, their unique capacities and contributions to adaptation and across the disaster management cycle i.e. mitigation, preparedness, response and recovery have not been well documented (Bradshaw, & Fordham, 2013). In fact, women's individual and collective knowledge and experience in natural resource management and other societal activities at the household and community levels equip them with unique skills that benefit adaptation and disaster efforts across scales and sectors (Parikh, 2007) (WEDO 2007). For example, during a drought in the small islands of the Federated States of Micronesia, the knowledge of island hydrology that the women had as a result of their land-based work enabled them to find potable water by digging a new well. Similarly, in Honduras, post-Hurricane Mitch (1998), women helped save lives and assets as the water rose (Parikh, 2007) and, as part of the recovery efforts, they led and organized community-based work to rebuild homes and other properties (Forino, Meding, & Brewer 2015).

Women are key agents of change. Their unique knowledge is essential to ensure the effectiveness and sustainability of climate change adaptation and disaster risk reduction efforts; their full and effective participation is indispensable (Nasreen, Neelormi and Mallick, 2023). A related obstacle for women is that climate change adaptation and disaster risk reduction response could unintentionally worsen socio-economic inequalities. While there is almost unanimous consensus on climate change and its damaging impacts, the specific methods and ingredients required to implement ‘good’ adaptation on the ground is far from clear (Berrang-Ford, Siders, Lesnikowski, Fischer, Callaghan, Haddaway, & Abu, 2021). Thus, it is not enough that we make a concerted response to climate change - how we respond is just as important. Adaptation and disaster risk reduction policies, plans and projects that do not take women’s issues and needs into account may unintentionally exacerbate existing gender inequities. These examples underscore the need for proper consideration of the interests and contributions of all members of society, especially women and other vulnerable groups, in the design, planning, financing and implementation of adaptation actions.

All segments of the population are affected by challenges of hazards and disasters. But Nasreen (2022) clearly stated:

There is a gender dimension that shows the way women and men respond and adapt to these disasters. Both women and men are unable to utilize their time in productive activities due to the absence of employment opportunities. Women and girls have a wider range of responsibilities in their households due to their socially defined gender identity. During a disaster the affected households are often forced to move to shelters or refuges, where women have to perform their gender-assigned domestic responsibilities in difficult circumstances. When men move elsewhere in search of work, women have to shoulder both women's and men's tasks to maintain family sustenance with available resources. Women and girls suffer more than men from poverty, hunger, malnutrition, economic crises, environmental degradation, insecurity, and health-related problems, including those related to reproductive health and adolescence. Women and girls are also frequent victims of violence.

However, despite challenges, women's strategies are vital to rural populations' ability to cope with and adapt to different phases of disasters. Gender and disaster discourse seeks explanations of the principal factors structuring the responses of women and girls during crises and in post disaster situations. Issues related to women's gender-specific disaster vulnerabilities and resilience mechanisms, and how they are affected by climate change and pandemic, require continuous research, and legal and regulatory frameworks must mainstream gender and disaster with inclusive interventions (Nasreen, 2022).

4.9 Overview of the Gendered Impacts of Climate Induced Disasters

This chapter provides a comprehensive analysis of how climate-induced disasters disproportionately affect women, girls, and marginalized communities, particularly in low- and middle-income countries such as Bangladesh. It contextualizes the discussion within global disaster trends, noting a significant increase in climate-related disasters over recent decades and the severe economic and human losses they bring. The chapter highlights that while high-income

countries bear the brunt of economic loss in absolute terms, low-income countries experience deeper developmental setbacks due to their vulnerability and lack of resilience.

The analysis emphasizes that disasters are not gender-neutral. Women are more likely to die, suffer injury, or be displaced during disasters, especially in societies with lower gender equity. Cultural norms, such as restrictive dress codes, limited access to education, and a lack of mobility, increase women's vulnerability. These gendered disparities are further compounded by poverty, lack of access to resources, and limited representation in decision-making processes. Post-disaster, women also face increased workloads, as they are typically responsible for caregiving and managing scarce household resources, which can lead to time poverty and the withdrawal of girls from education.

The chapter further explores the intersection between gender, poverty, and vulnerability, showing how women, especially elderly women, persons with disabilities, and marginalized groups, face greater risks and fewer opportunities for recovery. Disasters exacerbate existing inequalities, and in many cases, lead to increased gender-based violence, displacement, and food and water insecurity. Women's access to healthcare especially during emergencies is severely constrained by cultural, economic, and logistical barriers.

It also addresses gender disparities in agriculture, food security, and forestry. Women play a critical but underrecognized role in ensuring food and water security and managing natural resources. However, their access to land, credit, technology, and agricultural support is limited by legal and cultural barriers. Despite this, women demonstrate resilience and adaptability by engaging in alternative livelihood activities, managing homestead gardens, and leading conservation efforts, such as in community forestry and afforestation.

The narrative also highlights how disasters can reshape gender roles. In many cases, women become primary earners when men migrate or are killed. While this shift can lead to empowerment, it also increases the burden on women and exposes them to new risks. Furthermore, post-disaster shelters often fail to provide safe spaces for women and girls, increasing the risk of sexual violence and exploitation. These gender-specific risks demand urgent attention in disaster response planning.

Crucially, the chapter emphasizes that women are not just victims but also agents of change. Their knowledge of local environments, resource management, and social networks can greatly enhance community resilience. However, this potential remains underutilized due to exclusion from formal decision-making processes in disaster management and climate adaptation.

Finally, the chapter calls for gender-responsive approaches in disaster risk reduction and climate adaptation strategies. It argues for inclusive legal frameworks, improved access to information and services, investment in gender-sensitive infrastructure, and capacity-building for women at the grassroots level. Recognizing and integrating women's roles, knowledge, and leadership into policy and practice is essential to building equitable and effective resilience in disaster-prone contexts like Bangladesh.

Chapter 5

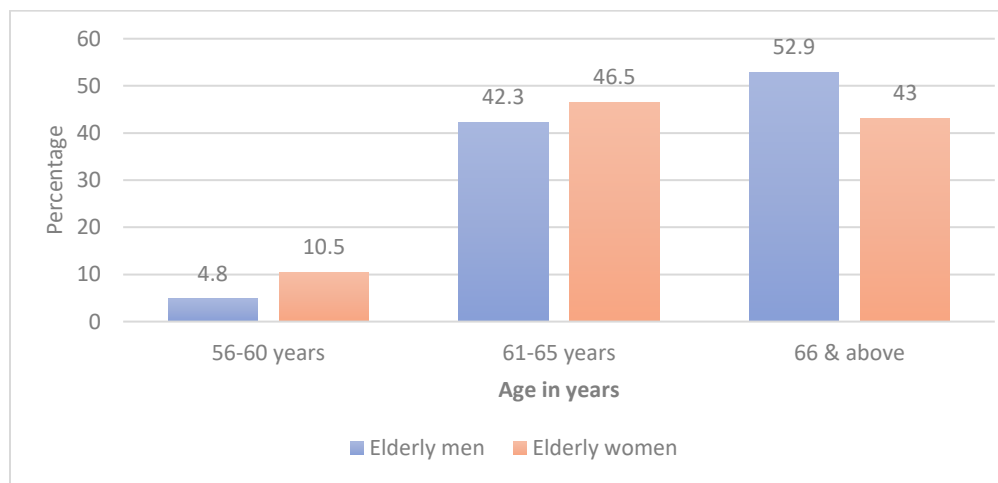
Socio-Economic Profile of the Respondents

5.1 Age Group of Respondents

Elderly men and women by their age group

Elderly men and women were categorized in different age groups. Majority of elderly men (52.9%) were in the age group of 66 years and above compared to 43 percent elderly women in the same age group. Most of the elderly women (46.5%) were in the age group of 61-65 years. Very few elderly men and women were in the age group of 56-60 years.

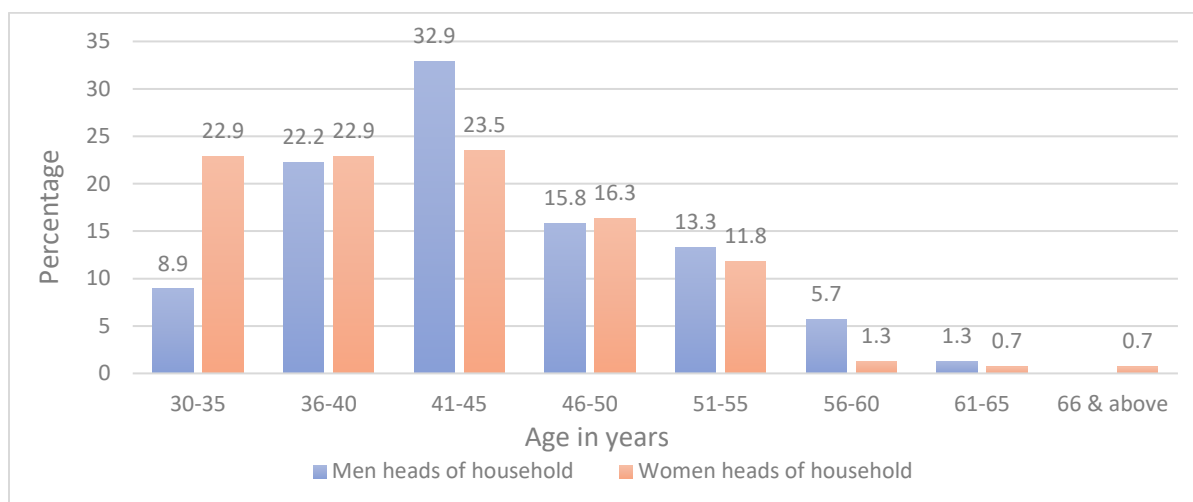
Figure 5. 1 Elderly men and women by age group



Men and women heads of household by age group

Men and women heads of household were categorized into different age groups considering their present age. About 22.2 percent men heads of household and 22.9 percent women head of households were in the age group between 36-40 years while 13.3 percent men head of households and 11.8 percent women head of households were in the age group of 51-55 years. However, there were fewer men and women head of households in the age groups of 41-45 years, 56-60 years and 61-65 years.

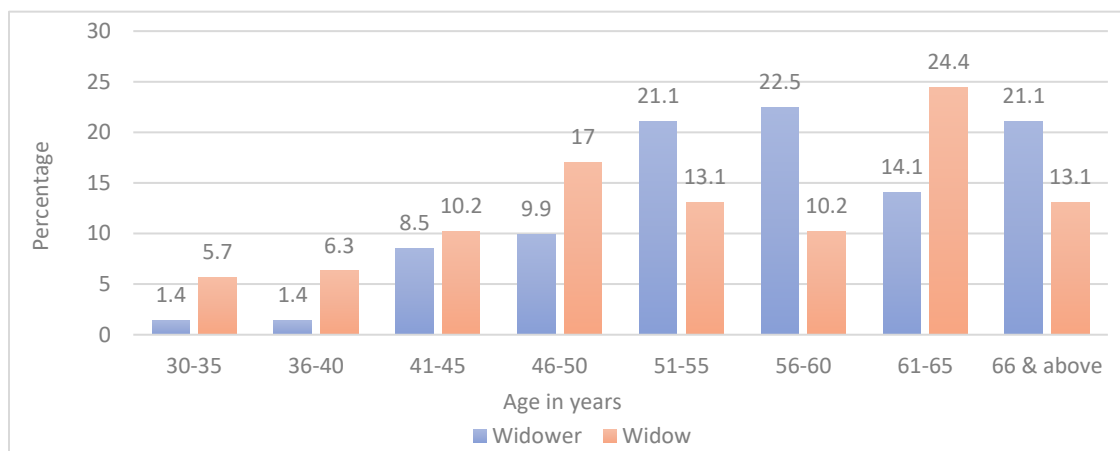
Figure 5. 2 Men and women heads of household by age group



Widowers and widows by age group

Widowers and widows were categorized in different age groups. About 22.5 percent widowers and 10.2 percent widows were in the age group between 56-60 years followed by 21.1 percent widowers and 13.1 percent widows in the age group of 51-55 years. However, the highest percent of widows (24.4%) were in the 61-65 age group and 13.1 percent were in age group 66 years and above. Very few widowers (1.4%) and widows (5.7%) were in the age group of 30-35 years.

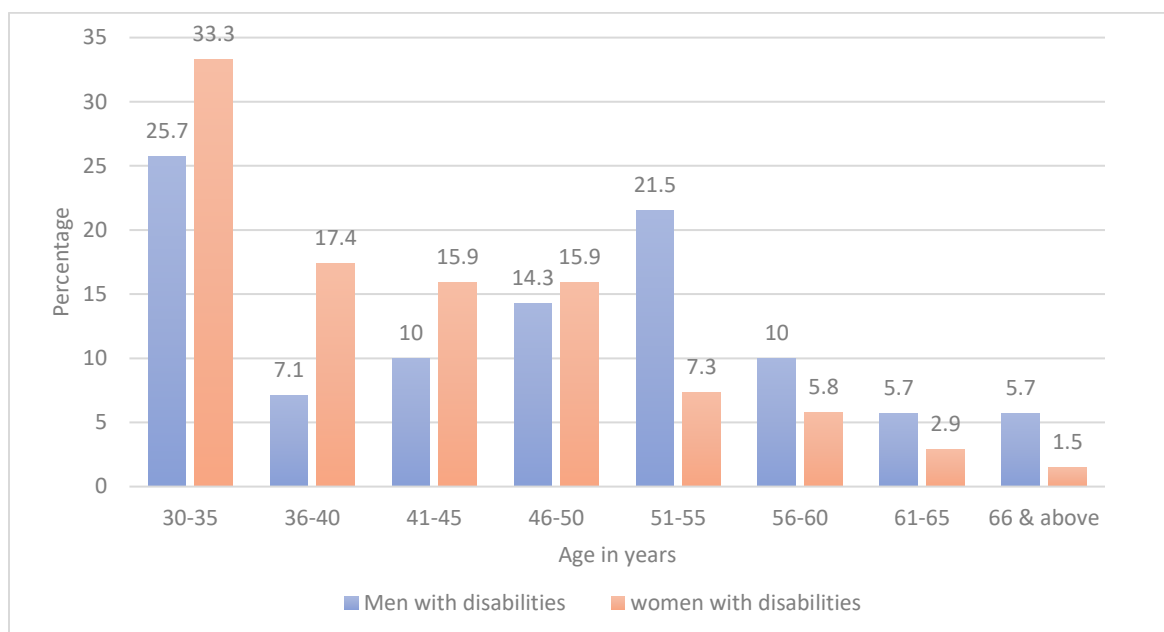
Figure 5. 3 Widowers and widows by age group



Men and women with disabilities by age group

Men and women with disabilities were categorized into different age groups according to their present age. About 25.8 per cent men with disabilities and 34.5 per cent women with disabilities were in the age group between 30-35 years followed by 22.6 per cent men with disabilities and 6.9 per cent women with disabilities in the age group of 51-55 years. However, there were fewer men as well as women with disabilities in the other age groups of 41-45 years, 56-60 years and 61-65 years.

Figure 5. 4 Men and women with disabilities by age group

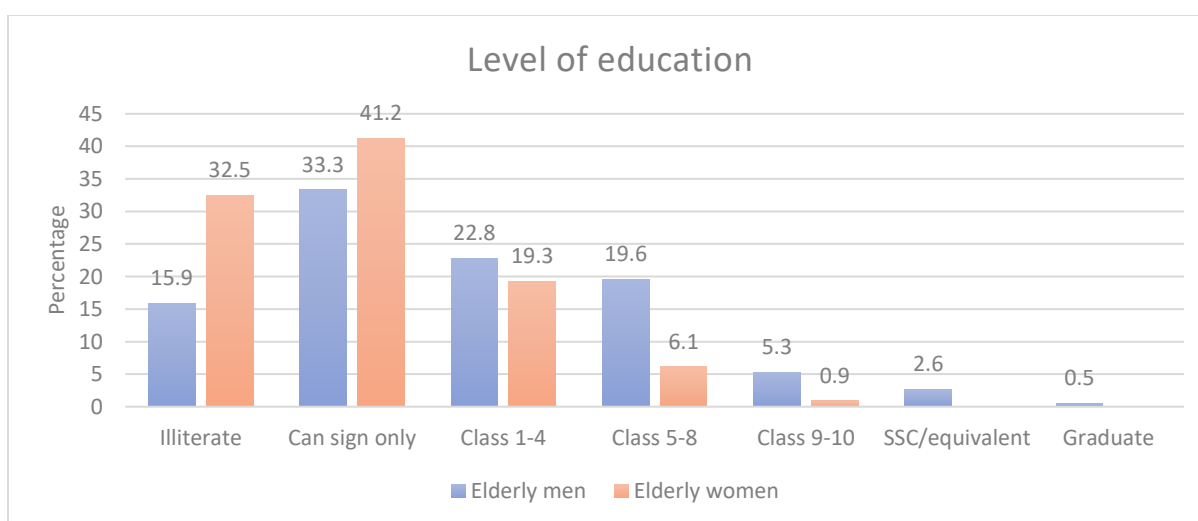


5.2 Level of Education of Respondents

Elderly men and women by level of education

With regard to the level of education, most of the elderly men (33.3%) and women (41.2%) can sign only followed by 22.8 percent among elderly men and 19.3 percent among elderly women who were in the primary level of class 1-4. There were sharp differences in percentage among elderly men and women who were illiterate where proportionately, elderly women were more. A handful of elderly men and women had completed primary level, 19.6 per cent among men compared to 6.1 per cent among women. Only one elderly man had completed graduation.

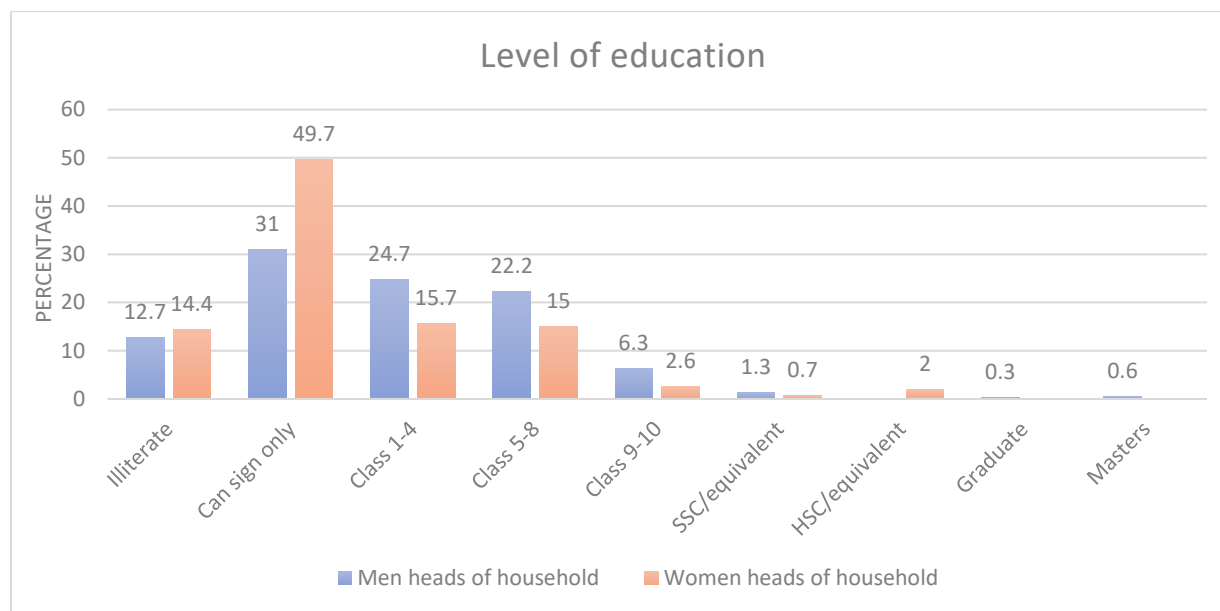
Figure 5. 5 Elderly men and women by level of education



Men and women heads of household by level of education

With regard to level of education, a large number of respondents can sign only, about 31 percent among men and 49.7 per cent among women heads of household. A handful of heads of household were in the category of primary level from class 1-4, 24.7 per cent among men compared to only 15.7 per cent among women heads of household. Same was found in category of class 5-8 where there were 22.2 per cent men compared to only 15 per cent women. In the higher education level, there were a smaller number of men and women with only 2 men heads of household who were graduates and one who had completed masters.

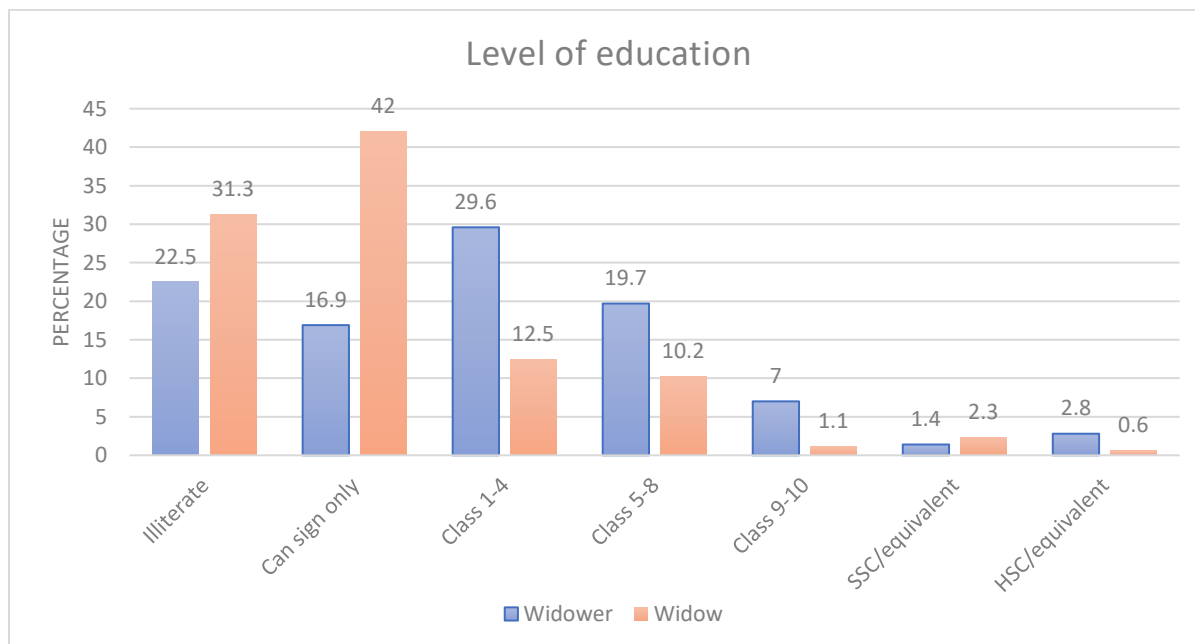
Figure 5. 6 Men and women heads of household by level of education



Widowers and widows by their level of education

With regard to level of education, about 16.9 per cent widowers compared to 42 per cent among widows can sign only. A handful of 29.6 per cent among widowers compared to 12.5 per cent among widows were in the category of class1-4 whereas is further deceased in the higher levels. There were no respondents who had completed graduation level. Moreover about 22.5 per cent widowers and 31.3 per cent widows were illiterate.

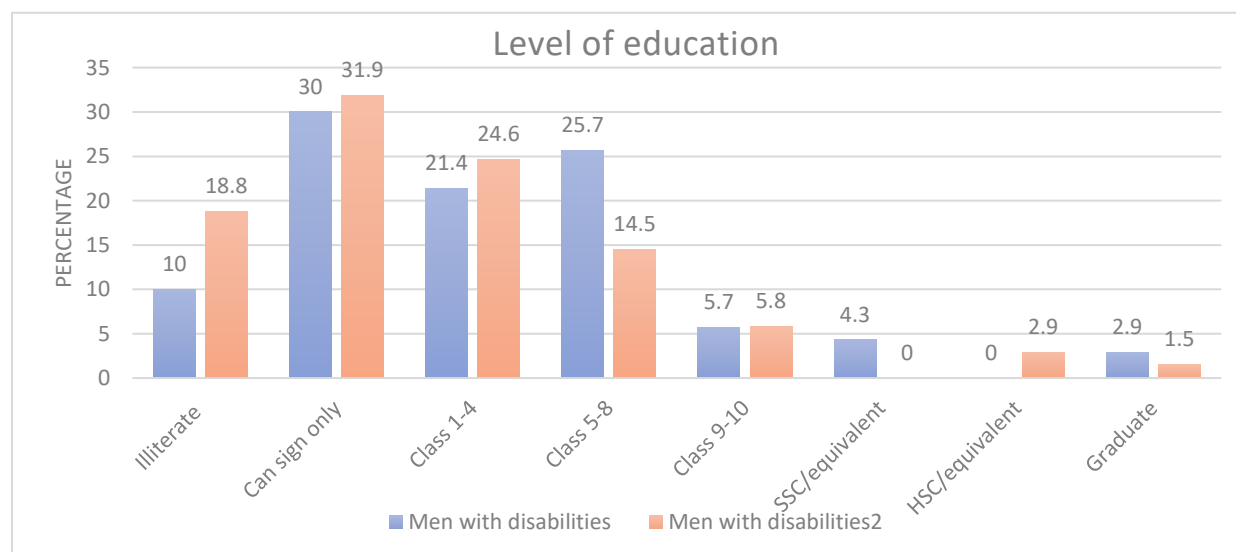
Figure 5. 7 Widowers and widows by level of education



Men and women with disabilities by level of education

With regard to level of education, about 33.9 per cent men with disabilities compared to 31 per cent women with disabilities can sign only, followed by 24.2 per cent men with disabilities compared to 24.1 per cent women with disabilities were in the category of class 5-8. However, the numbers gradually reduced in the higher education level, only 2 men completed Secondary School Certificate (SSC); 2 women completed Higher Secondary Certificate (HSC); whereas 2 men and one woman with disabilities graduated. At the same time, there were 6 men and 12 women with disabilities who were illiterate.

Figure 5. 8 Men and women with disabilities by level of education

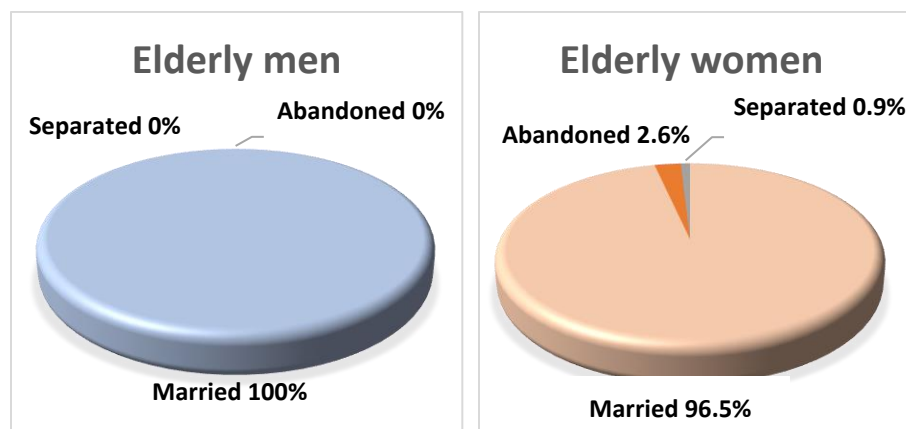


5.3 Marital Status of Respondents

Elderly men and women by marital status

With regard to marital status, all elderly men were married compared to 96.5 per cent elderly women. However, only 3 elderly women were abandoned by their husbands and one was separated from her husband.

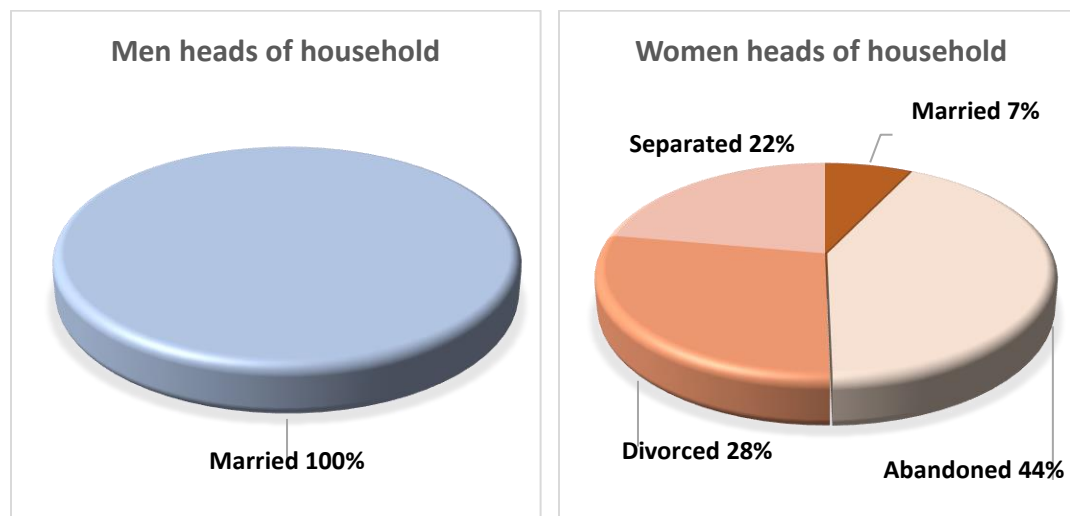
Figure 5. 9 Elderly men and women by marital status



Men and women heads of household by marital status

With regard to marital status, all men heads of household were married compared to only 7.2 per cent women heads of household. However, women heads of household were married in the past but presently 42.5 per cent were abandoned, 28.1 per cent were divorced and 22.2 per cent were separated from their husbands.

Figure 5. 10 Men and women heads of household by marital status



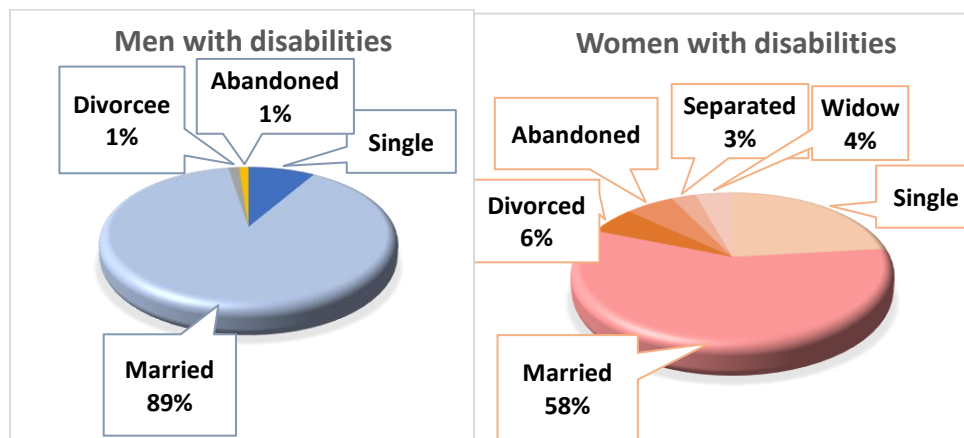
Widowers and widows by their marital status

About 71 widowers and 176 widows were interviewed for the study. Moreover, it is irrelevant to state their marital status which is self-explanatory.

Men and women with disabilities by their marital status

An overwhelming majority of 93.5 per cent men with disabilities were married compared to 62.1 per cent women with disabilities. Only 4.8 per cent men with disabilities were single compared to 19 per cent women with disabilities. Among women with disabilities, there were divorcee (5.2%), abandoned (5.2%) and separated from husbands (3.4%). Moreover, 5.2 per cent among women with disabilities were widows.

Figure 5. 11 Men and women with disabilities by marital status



5.4 Primary Occupation of Respondents

Elderly men and women by their primary occupation

Most of the elderly men were employed as agricultural labourers (24.3%) followed by those who were depended on government allowance for elderly persons (23.3%), fishermen (16.4%), and day labourers other than agriculture (9%). Some elderly men were also doing various agricultural related activities like shrimp cultivation, farming, share cropping, homestead gardening and non-agricultural like rickshaw or van puller, selling forest wood, fishing nets, handicrafts etc. A few elderly men were engaged as carpenter, mason, barber, religious leader while some were involved in business, selling handicrafts etc.

On the other hand, majority of the elderly women were homemakers (45.6%) followed by domestic helper (13.2%), rearing and selling poultry and eggs (11.4%), rearing and selling of goats and cows (8.8%) while a significant few were engaged as agricultural/non-agricultural labourers and fishing.

Men and women heads of household by their primary occupation

Regarding primary occupation of the respondents, most of men as well as women heads of household were engaged as day labourers other than agricultural (34.2% among men and 31.4% among women) followed by agricultural day labourers, 32.9 percent among men heads of household compared to 24.2 percent among women heads of household and fishing, 12.7 percent among men and 18.3 percent among women heads of household.

Very few women heads of household were engaged in household chores whereas no elderly men were found as domestic helpers such as livestock rearing, poultry raising, small business, dab selling.

Widowers and widows by their primary occupation

Since the respondents were all persons, majority of widowers relied on day laborer in agricultural sector and also relied on allowance from the government. There were slight differences among elderly men in fishermen, day laborer other than agricultural, rickshaw or van puller etc.

Very few widows were engaged in household chores whereas no elderly men were found as domestic helpers such as livestock rearing, poultry raising.

Men and women with disabilities by their primary occupation

Since the respondents were all persons with disabilities, majority of men and women with disabilities relied on disability allowance from the government. There were slight differences among persons with disabilities who got disability allowance, whereas proportionately, 38.71 percent men with disabilities and 37.93 percent women with disabilities.

About 14 percent women with disabilities were engaged in household chores whereas no men with disabilities were found as domestic helpers. However, a handful of men with disabilities were engaged as fishermen and day laborers in the rural areas (9.68%), while 15.52 percent women with disabilities were particularly involved in poultry raising.

Figure 5. 12 Respondents by primary occupation as agricultural day labour

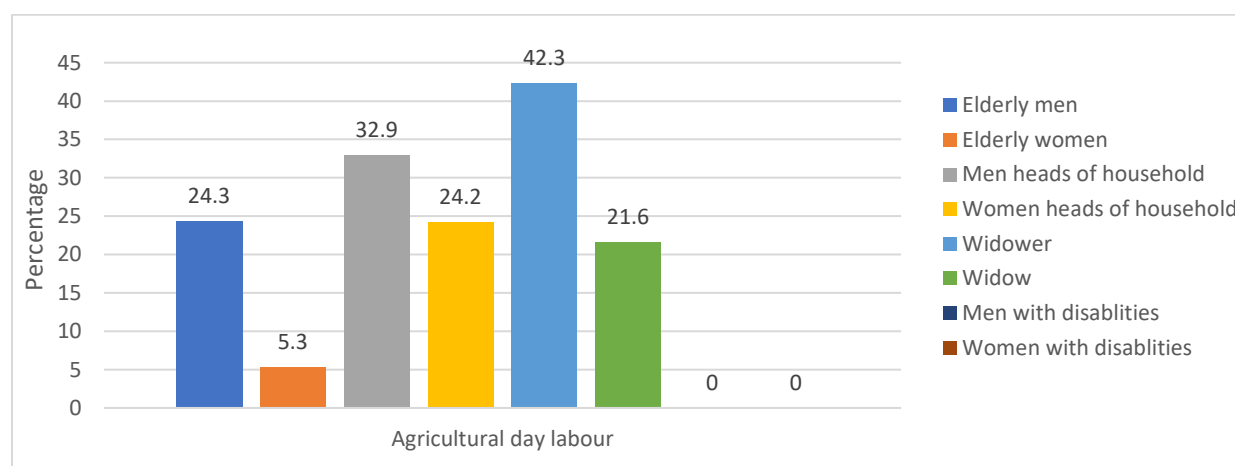


Figure 5. 13 Respondents by primary occupation as day labour other than agriculture

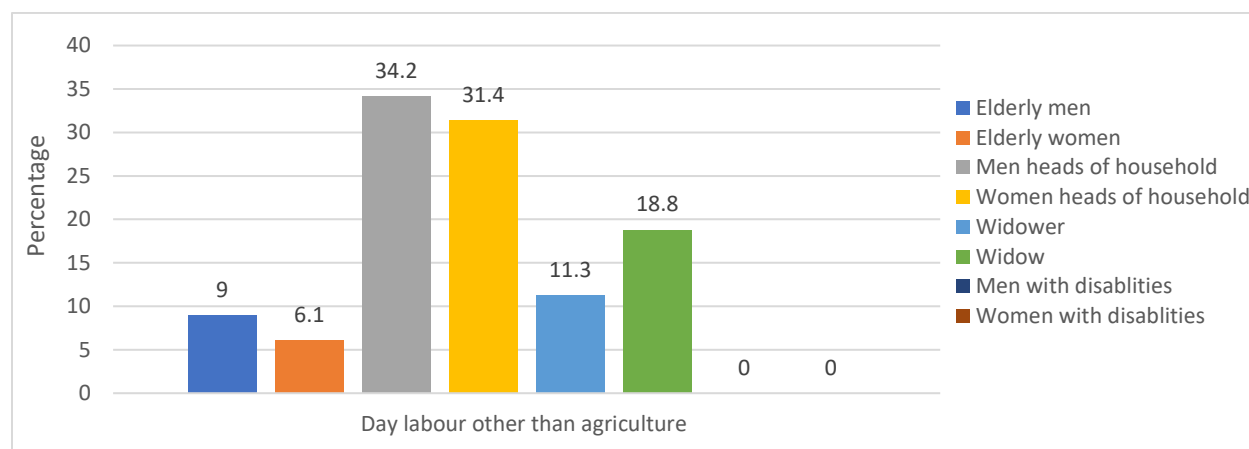
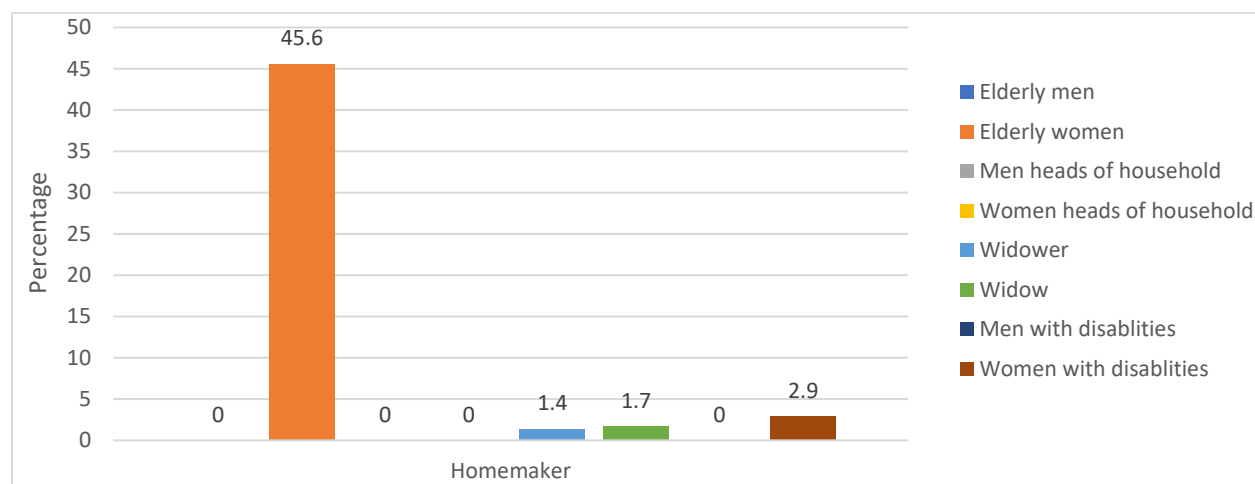


Figure 5. 14 Respondents by primary occupation as homemaker



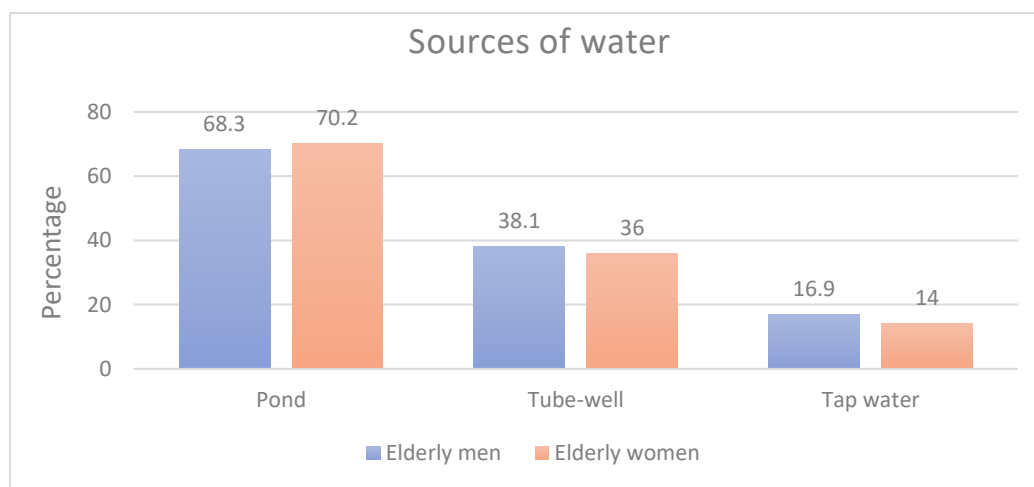
5.5 Water Related Issues

5.5.1 Existing sources of water

Elderly men and women by their existing sources of water

Of the various water sources, majority elderly men and women collect household water from pond (elderly men 68.3% and elderly women 70.2%) followed by tube well (elderly men 38% and elderly women 36%) while 16.9 percent elderly men and 14.0 percent elderly women had collected tap water.

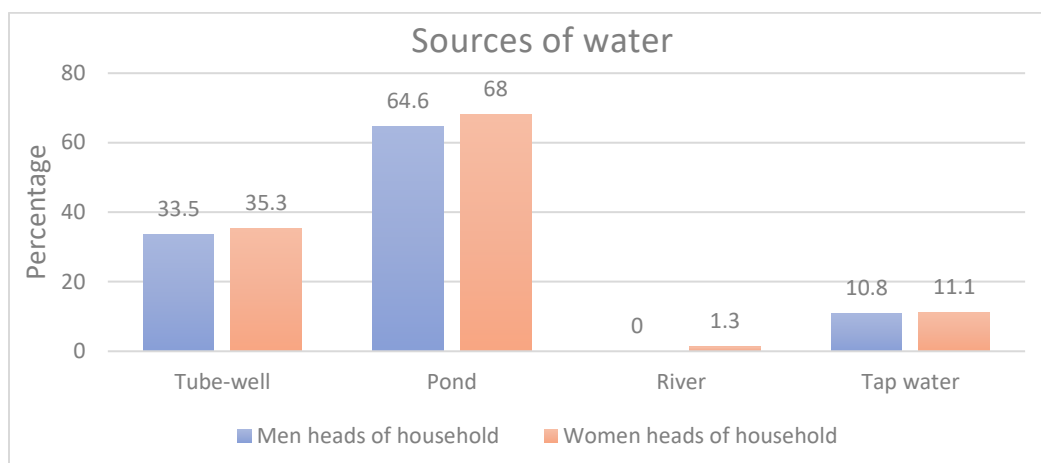
Figure 5. 15 Elderly men and women by existing sources of water



Men and women heads of household by their existing sources of water

Of the various water sources, majority heads of households collect household water from pond (64.6% among men heads of household and 68% among women heads of household) followed by tube well (33.5% among men heads of household and 35.3% among women heads of household), Only few collected tap-water (10.8% among men heads of household and 11.1% among women heads of household), while only 2 women heads of household collect water from river.

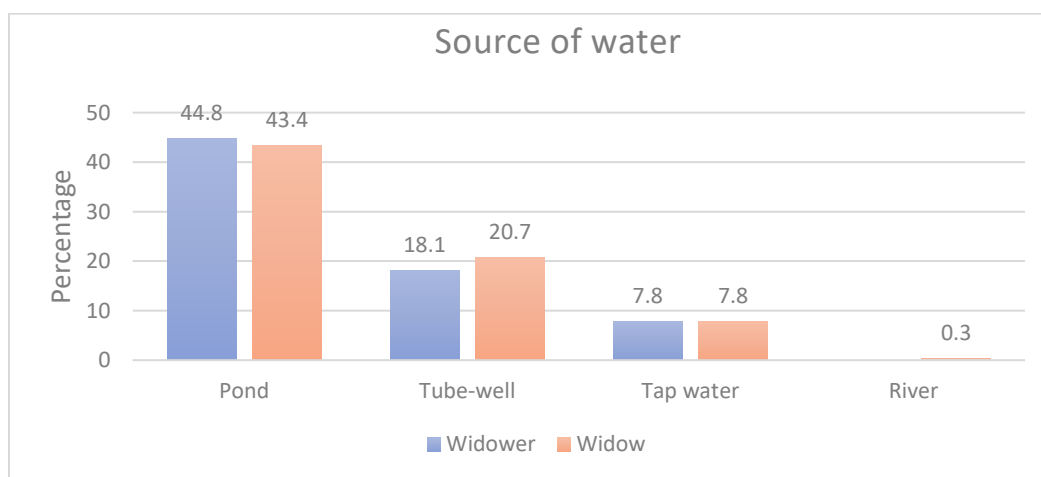
Figure 5. 16 Men and women heads of household by their existing sources of water



Widowers and widows by their existing sources of water

Of the various water sources, widowers were 44.8 percent and widows were 43.4 percent collect household water from pond followed by tubewell (18.1% among widowers and 20.7% widows), Others (29.3% among widowers and 27.8% widows), while only 7.8 percent of widowers and widows both had tap water and only 0.3 percent widows collect water from river.

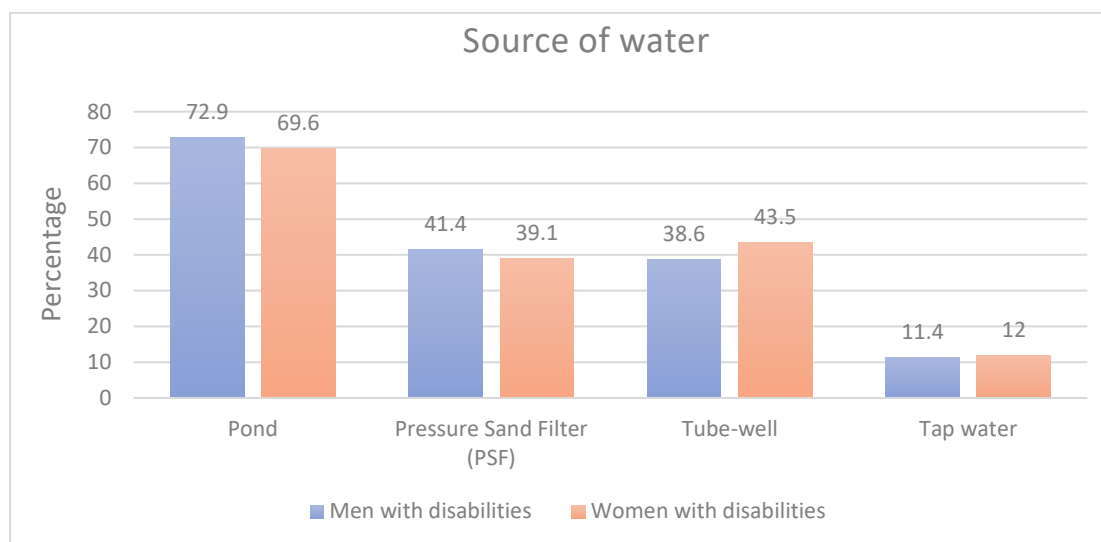
Figure 5. 17 Widowers and widows by existing sources of water



Men and women with disabilities by their existing sources of water

Of the various water sources, majority of households with men with disabilities (72.9%) and women with disabilities (69.6%) collect water from pond followed by Pressure Sand Filter (PSF) (41.4% among men with disabilities and 39.1% among women with disabilities), tubewell (38.6% among men with disabilities and 43.5% among women with disabilities) while only a few had tap water.

Figure 5. 18 Men and women with disabilities by existing sources of water

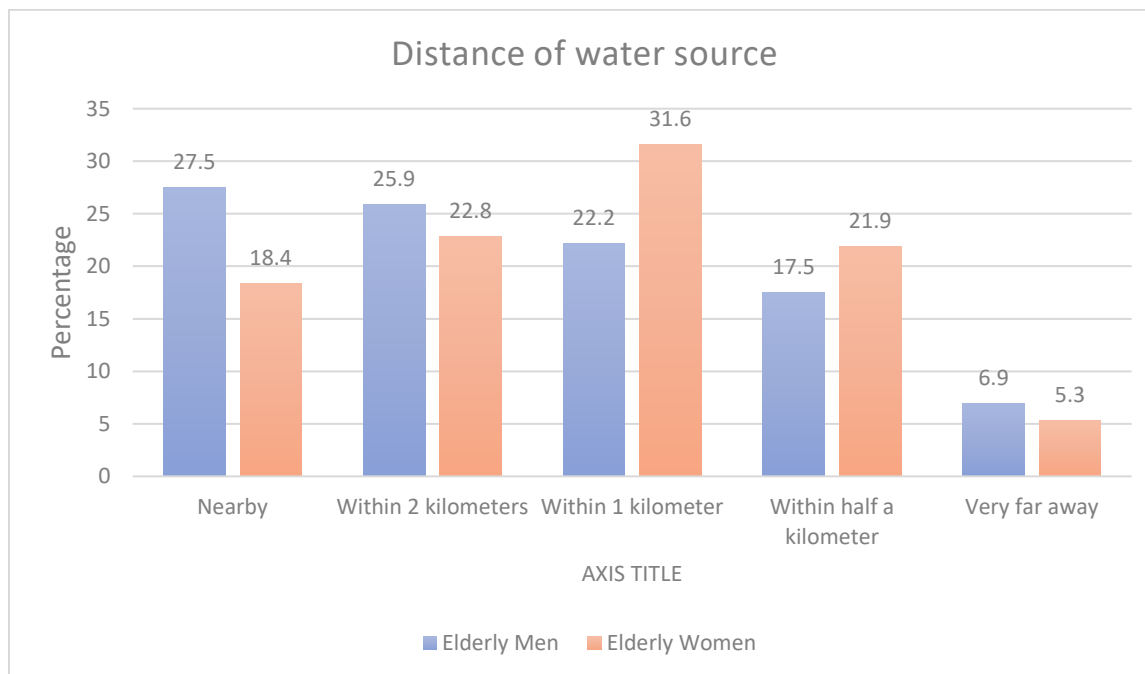


5.5.2 Distance of Water Source

Elderly men and women by their distance of water source

Regarding distance of water sources from the respondent's households, a handful of households have water sources within 2 kilometres (25.9% among elderly men and 22.8% elderly women), followed by few who have water sources within half a kilometre (17.5% among elderly men and 21.9% elderly women), within 1 kilometre (22.2% men and 31.6% women) and very few of them collect water from very far away sources.

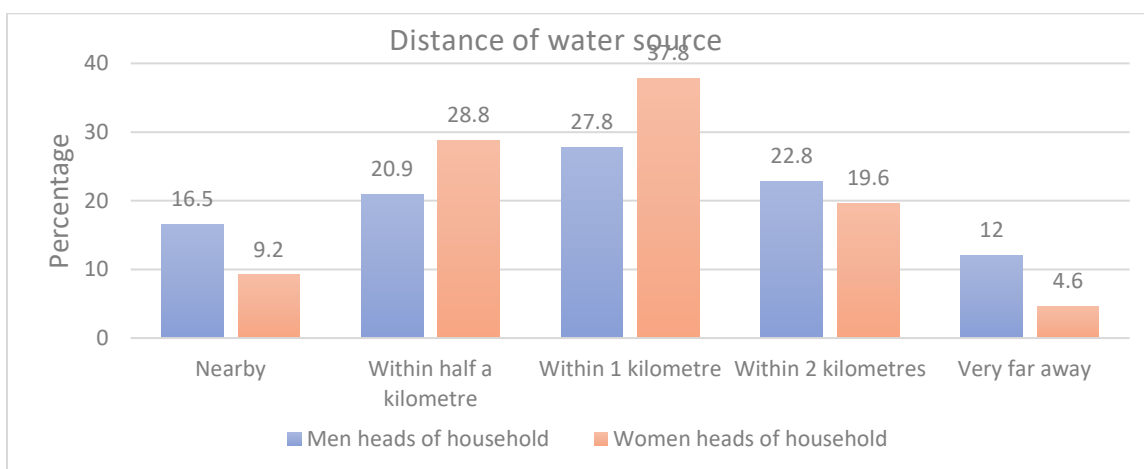
Figure 5. 19 Elderly men and women by their distance of water source



Men and women heads of household by their distance of water source

Regarding distance of water sources from the respondent's households, a handful of households have water sources within 1 kilometre (27.8% among men heads of household and 37.9% among women heads of household), followed by few who have water sources within half a kilometre (20.9% among men heads of household and 28.8% among women heads of household), within 2 kilometers (22.8% among men heads of household and 19.6% among women heads of household) while a few of them collect water from very far away sources.

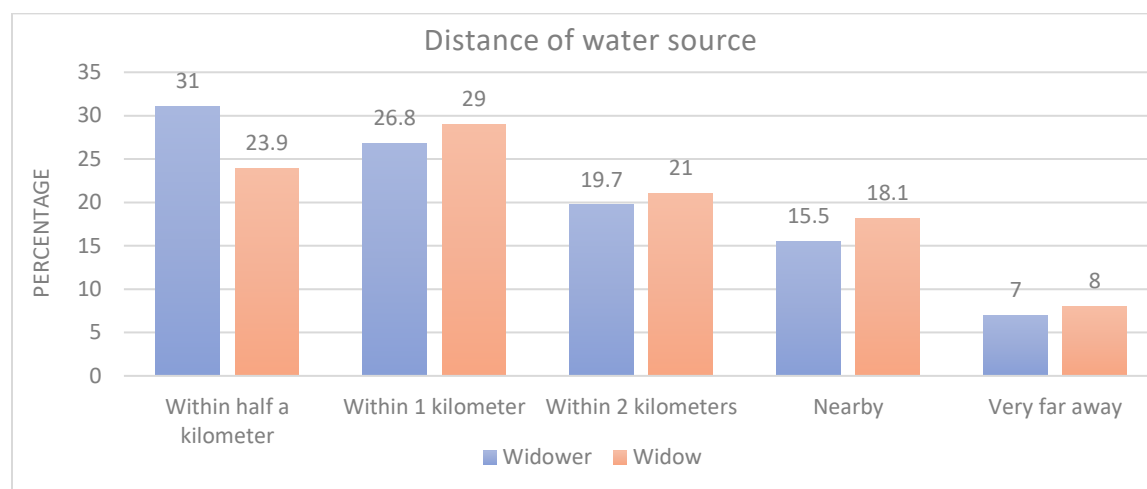
Figure 5. 20 Men and women heads of household by their distance of water source



Widowers and widows by their distance of water source

Regarding distance of water sources from the respondent's households, a handful of households have water sources within half a kilometre (31% among widowers and 23.9% among widows) followed by those who have water sources within 1 kilometre (26.8 % among widowers and 29% widows) and within 2 kilometres (19.7% widowers and 21% widows). A few collected water from nearby sources (15.5% among widower and 18.1% among widows) and negligible percent of respondents collected water from very far away sources.

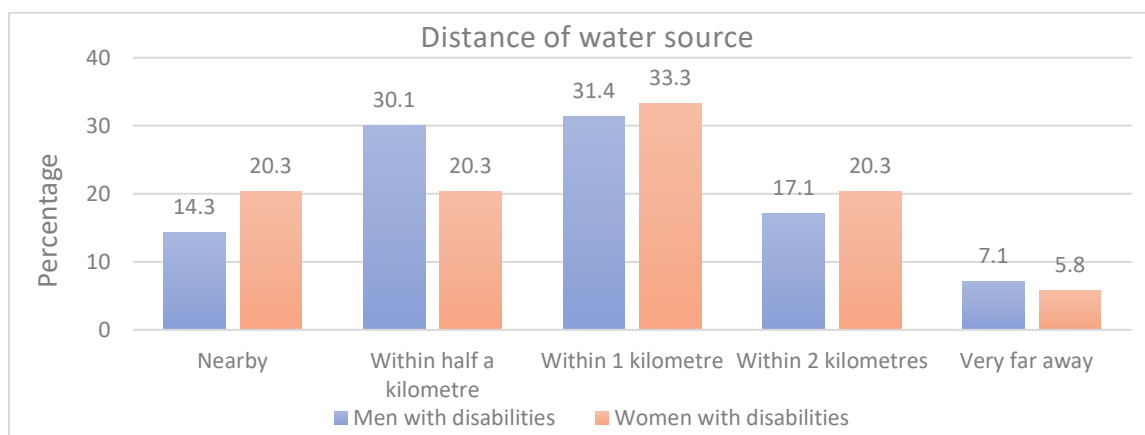
Figure 5. 21 Widowers and widows by their distance of water source



Men and women with disabilities by their distance of water source

Regarding distance of water sources from the respondent's households, a handful of households have water sources within 1 kilometre (31.4% among men with disabilities and 33.3% women with disabilities) followed by those having water sources within half a kilometre (30.1% among men with disabilities and 20.3% among women with disabilities), within 2 kilometres (17.1% among men with disabilities and 20.3% among women with disabilities). Only few households collected water from nearby sources or from very far away distance.

Figure 5. 22 Men and women with disabilities by their distance of water source



5.6 Toilet Facilities

5.6.1 type of toilet facilities

Elderly men and women by type of toilet facilities

Regarding type of toilet the household members are presently using, an overwhelming majority of respondents (81% among elderly men and 80.7% among elderly women) had slab latrines at home while very few had sanitary latrines with water system (7.4% among elderly men and 4.4% elderly women) and open latrine with makeshift wall (7.4% among elderly men and 7% among elderly women). Only 3.5 percent of elderly women respondents had no latrine at all.

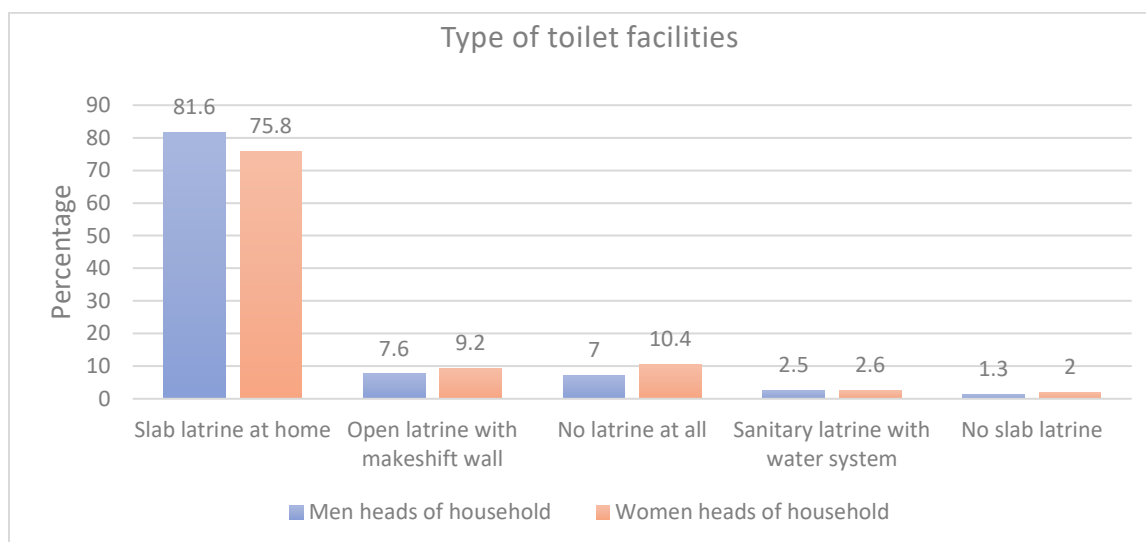
Figure 5. 23 Elderly men and women by type of toilet facilities



Men and women heads household by type of toilet facilities

Regarding type of toilet the household members are presently using, an overwhelming majority of respondents had slab latrines at home (81.6% among men heads of household and 75.8% among women heads of household) while very few had sanitary latrines with water system, open latrine with makeshift fence. However, quite a few respondents had no latrine at all (7% among men heads of household and 10.4% among women heads of household).

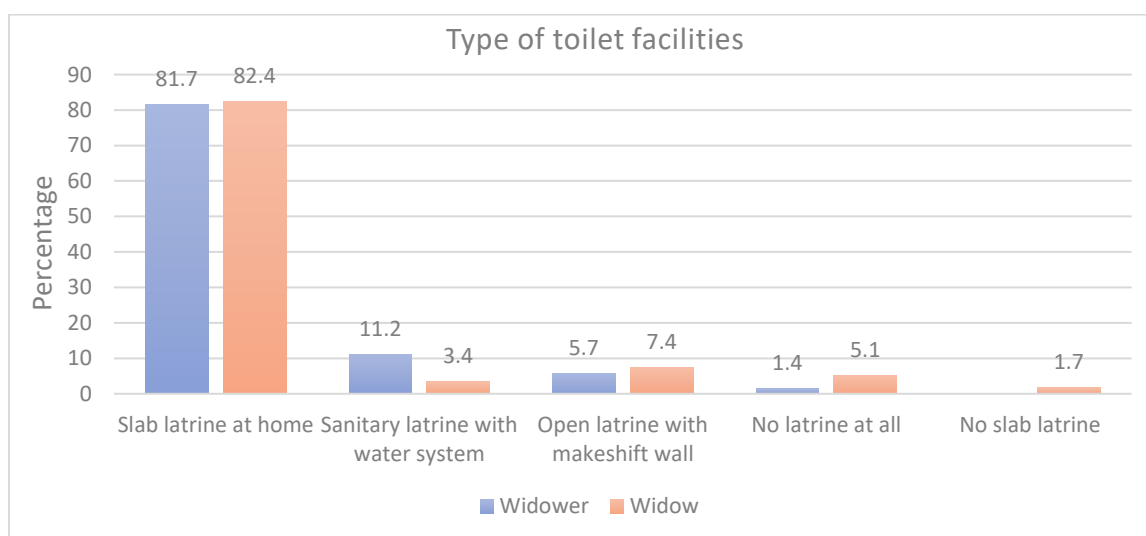
Figure 5. 24 Men and women heads of household by type of toilet facilities



Widowers and widows by type of toilet facilities

Regarding type of toilet the household members are presently using, an overwhelming majority of respondents had slab latrines at home (81.7% among widowers and 82.4% among widows) while very few had sanitary latrines with water system, open latrine with makeshift fence. Only one respondent had no latrine at all.

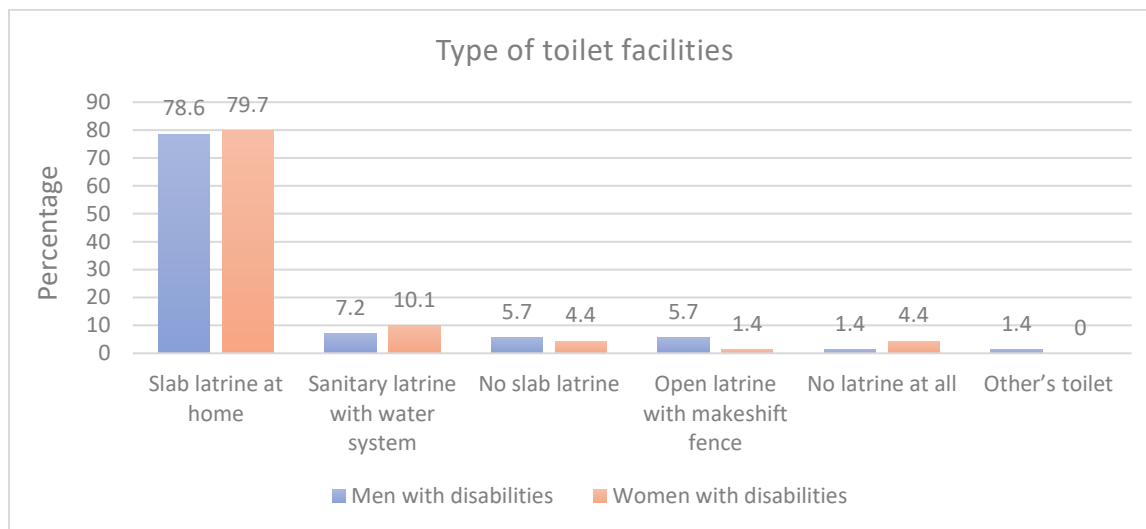
Figure 5. 25 Widowers and widows by type of toilet facilities



Men and women with disabilities by type of toilet facilities

Among households having men and women with disabilities, an overwhelming majority of respondents had slab latrines at home (75.8% among men with disabilities and 75.9% among women with disabilities) while very few had sanitary latrines with water system, open latrine with makeshift fence. Only one respondent had no latrine at all.

Figure 5. 26 Men and women with disabilities by type of toilet facilities

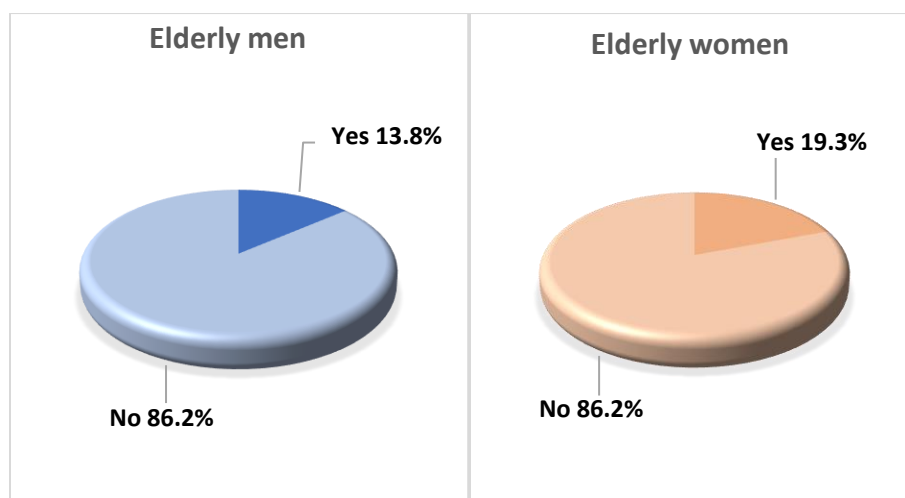


5.7 Toilets for Persons with Disabilities

Elderly men and women with toilets for persons with disabilities

An overwhelming majority of elderly men and women respondents did not have any toilet facilities for persons with disabilities such facilities. However, 19.3 percent among elderly women and 13.8 percent elderly men had toilets according to the needs of persons with disabilities.

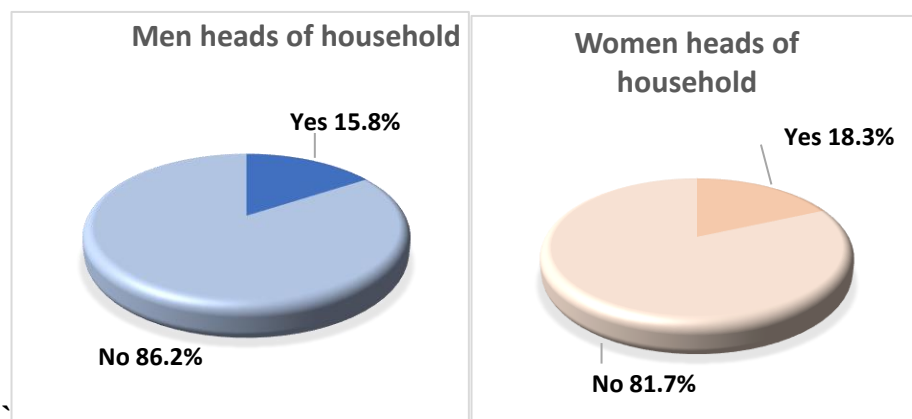
Figure 5. 27 Elderly men and women by toilets for persons with disabilities



Men and women heads of household with toilets for persons with disabilities

Regarding disabled friendly toilets, an overwhelming majority of respondents did not have such facilities. However, some had toilets according to the needs of persons with disabilities (18.3% among women heads of household and 15.8% among men heads of household).

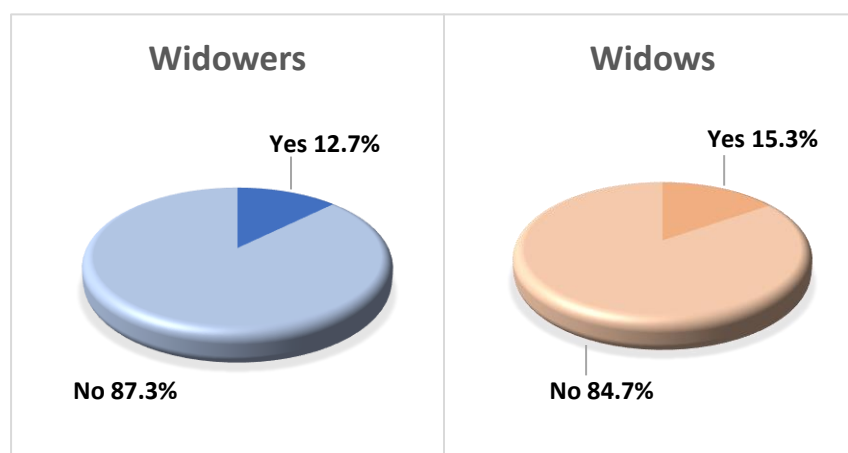
Figure 5. 28 Men and women heads of household by toilets for persons with disabilities



Widowers and widows by toilets for persons with disabilities

Among the respondent households, 15.3 percent among widows and 12.7 percent widowers had toilets according to the needs of persons with disabilities. However, an overwhelming majority of respondents did not have such facilities for persons with disabilities.

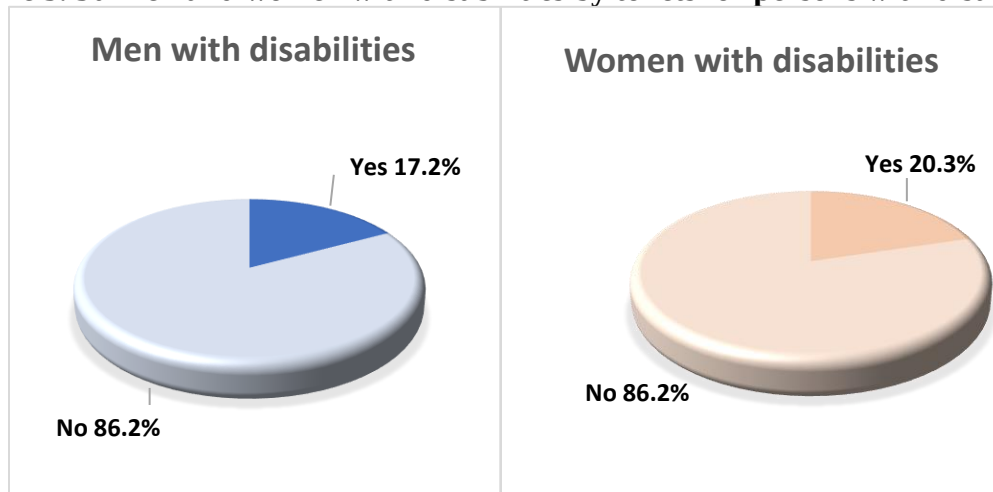
Figure 5. 29 Widowers and widows by toilets for persons with disabilities



Men and women with disabilities by toilets for persons with disabilities

Regarding toilet facilities for persons with disabilities, an overwhelming majority of households with men and women with disabilities did not have such facilities. Only 20.3 percent among households of women with disabilities and 17.2 percent households of men with disabilities had toilets according to their needs.

Figure 5. 30 Men and women with disabilities by toilets for persons with disabilities



Box 5. 1 Toilet facilities for persons with disabilities

Department of Disaster Management ensures separate room and toilet facilities for women and person with disabilities in cyclone shelter centres during disasters. Wheelchair and disabled friendly toilets are also provided in shelter centres.

-KII with Project Implementation Officer (PIO) of Shyamnagar Upazila

Chapter 6

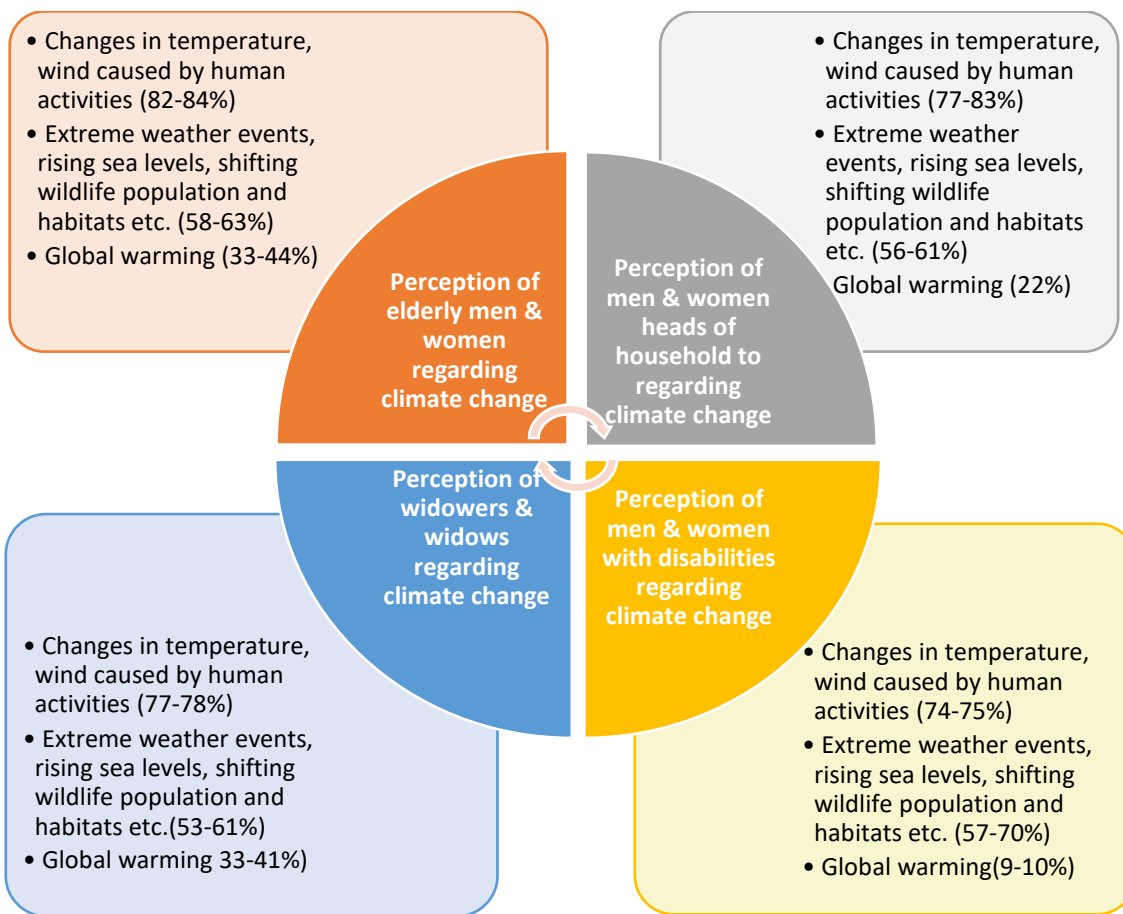
Perception of Climate Change and Experience of Disasters

This chapter has explored the understanding, perception and causes of climate change and disasters by different categories of respondents. The gender specific experiences of elderly, heads of households, widowers and widows and persons with disabilities have also been discussed here.

6.1 Perception of Climate Change of Respondents¹

The perception of climate change among various community groups staying at Shymanagar upazila reveals both shared concerns and distinct awareness levels shaped by socio-demographic factors.

Figure 6. 1 Perception of respondents regarding climate change



A majority across all groups-elderly individuals, heads of households, widows/widowers, and persons with disabilities-associate climate change with human-induced changes in temperature and wind patterns, ranging from 74 percent to 84 percent. Notably, elderly men and women show the highest awareness (82-84%), suggesting a deeper intergenerational connection to environmental

¹ For more detail information refer to annex 1

changes. Similarly, a significant proportion across all groups recognizes the impact of extreme weather events, rising sea levels, and ecological shifts, with perception rates between 53 percent and 70 percent. However, understanding of the broader concept of global warming remains relatively low, particularly among persons with disabilities (9-10%) and heads of households (22%), indicating a gap in awareness of scientific terminology and causes. This suggests that while experiential knowledge of climate impacts is widespread, there is a need for more accessible, inclusive climate education tailored to different social groups, especially those with limited access to formal information channels.

6.1.1 Understanding of Climate Change among Community Men and Women

Response from men's group regarding their understanding of climate change

Men from various occupational categories like farmers, fishermen, businessmen, health workers and community people participated in the Focused Group Discussion (FGD) which was held at village Datinakhali in Shyamnagar upazila. Men shared diverse perspectives on their understanding of climate change. They identified that global climate change, driven by emissions and deforestation, has worsened the living conditions, and local practices like over fishing and shrimp farming have further contributed to the environmental degradation. Climate change is a pressing issue that is directly affecting agricultural practices and the coastal community. The gradual changes in weather patterns, including rising temperatures and unpredictable rainfall, have become more evident over the years. Participants emphasized how these changes disrupt daily life and business operations. Seasonal variations, such as prolonged monsoons and intensified cyclones, create challenges in accessing supplies and maintaining consistent sales. They believed that these issues stem from deforestation, industrial pollution, and global warming, which is associated with rising sea levels and the salinity of groundwater in Shyamnagar. They noted that frequent disasters like cyclones and tidal surges not only damage infrastructure but also increase operational costs for small businesses. Despite limited formal education on climate science, still they understand the importance of adapting to these changes and highlighted how local communities need stronger infrastructure, sustainable farming practices, and disaster preparedness programmes to combat the adverse effects of climate change effectively.

Farmers understanding of climate change manifests in rising temperatures, erratic rainfall, and increased frequency of natural disasters like cyclones and tidal surges. Farmers opined that erratic weather patterns, including unseasonal rainfall, prolonged dry spells, and stronger cyclones, are making it harder to predict the right times for planting and harvesting crops. These changes have severely affected traditional farming practices, with salinity intrusion making fertile lands unproductive and disrupting crop cycles. Moreover, the rising salinity in the soil and water as one of the most concerning effects of climate change, as it is damaging crops and reducing available freshwater resources that depend on consistent weather patterns. Rising sea levels and salinity in both soil and water have led to crop failures, reduced yields, and the loss of arable land. They emphasized how these changes disrupt daily life and business operations. Seasonal variations, such as prolonged monsoons and intensified cyclones, create challenges in accessing supplies and maintaining consistent sales. Frequent disasters like cyclones and tidal surges not only damage infrastructure but also increase operational costs for small businesses. Climate change is not just a future threat, but a current reality that is disrupting livelihoods and forcing farmers to adapt or face loss. Many farmers have been forced to switch to more salt-tolerant crops and adopt new farming techniques, but these adaptations are often not enough to counter the full impact. Farmers are

struggling to grow staple crops, leading to reduced income and food insecurity. There is lack of adequate support in adopting climate-resilient farming techniques or accessing alternative livelihoods.

Fishermen opined that climate change is a serious threat to both the environment, food security and economic well-being of coastal communities and livelihoods of local communities, especially fishermen. The unpredictable weather patterns, rising sea levels, and increasing salinity have severely affected fish populations and the coastal ecosystems. The salinity in the water has been rising due to climate change, making it harder for fish to thrive and for fishermen to catch their usual harvest. Moreover, frequent and intense storms, such as cyclones, damage fishing boats and disrupt fishing schedules, leading to economic losses. Human activities like deforestation and unregulated shrimp farming, have worsened the situation by damaging the coastal mangroves that serve as natural habitats for many fish species. Moreover, climate change is causing changes in fish migration patterns, making it harder for local fishermen to predict the best times for fishing.

According to health workers climate change is not only an environmental issue but a significant public health concern. It is a growing threat that is deeply affecting public health in the community. Rising temperatures, erratic rainfall, and frequent cyclones have created conditions that worsen waterborne diseases, such as diarrhea and cholera, especially during and after floods. The increasing salinity in water sources is also contributing to various health issues, including skin diseases and dehydration. Moreover, climate change is amplifying these health risks by disrupting the availability of clean water, and forcing people to rely on contaminated sources. Additionally, the displacement of families during disasters increases the spread of infectious diseases, as people crowd into temporary shelters without proper sanitation facilities. There are also the mental health impacts of climate change, as the constant threat of disasters causes stress and anxiety among community members and vulnerable groups, such as children, the elderly and women, are particularly at risk. There is the need for stronger healthcare infrastructure, including disaster-resilient health services, along with community awareness programmes on how to adapt to these health challenges.

Response from women's group regarding their understanding of climate change

Women who participated in the Focus Group Discussion, held at village Datinakhali in Shyamnagar upazila, were mainly housewives/home makers including a tailor and one NGO worker. They shared diverse perspectives on the issue of climate change. Women participants categorically stressed that climate change is not just an environmental issue but a pressing social and economic crisis that threatens the mere survival of coastal communities. These changes have resulted to the loss of fertile agricultural land resulting to food and water scarcity, forcing many families to depend on alternative sources or even migrate in search of work. It is a social challenge that disrupts education, and particularly impacts women and children. Climate change is a gradual yet devastating shift in weather patterns that has profoundly impacted their community's way of life. The rising temperatures, unpredictable rainfall, and increasing frequency of cyclones like Aila and Amphan are clear signs of these changes. Climate change is a daily reality, as it has worsened salinity in the soil and water, reducing agricultural productivity and making access to clean drinking water more challenging. Moreover, these changes have disrupted livelihoods, forcing many to migrate in search of work, leaving women and children more vulnerable. Human activities, such as deforestation, industrial pollution, and global carbon emissions, have contributed significantly to these shifts. The NGO worker attributed these changes to global factors, such as

the burning of fossil fuels and deforestation, which have accelerated climate change. Locally, the effects of human activities like shrimp farming contributes to the destruction of mangrove forests that serve as natural protection against storms.

In summary, there are notable differences between the responses of men and women regarding their understanding of climate change, though there are also common concerns.

Box 6. 1 Common understandings of climate change of both men and women

Common understandings of climate change of both men and women are:

- Climate change is real and currently affecting their lives.
- Common causes identified: deforestation, industrial pollution, global warming, and shrimp farming.
- Observed impacts include rising temperatures, unpredictable rainfall, increased cyclones, and salinity intrusion.
- Both groups discussed the destruction of livelihoods such as farming and fishing, and the damaging effects of cyclones and tidal surges on infrastructure and income.
- They recognized that human actions local and global have worsened climate vulnerabilities.

Box 6. 2 Understanding of climate change of men's group

Understanding of men's group about climate change:

- Focus on livelihood impacts by occupation:
 - Farmers talked about disrupted crop cycles, salinity, and food insecurity.
 - Fishermen highlighted changes in fish migration, increased storm risks, and economic losses.
 - Businessmen noted supply chain disruptions and increased operational costs.
- Infrastructure needs and technical adaptation came up frequently namely sustainable farming, stronger physical infrastructure, and disaster preparedness.
- They demonstrated a functional, systems-oriented understanding, emphasizing productivity, economy, and technical solutions.
- Health workers brought a public health angle, focusing on disease, sanitation, and healthcare infrastructure.

Box 6. 3 Understanding of climate change of women's group

Understanding of women's group about climate change

- Emphasized climate change as a social and economic crisis that directly affects:
 - Family well-being, food and water security.
 - Education and migration, especially how these stressors impact women and children.
- They highlighted the emotional toll and vulnerabilities stress, anxiety, and the burden left behind when men migrate for work.
- Pointed to daily life impacts - difficulty accessing clean water, reduced agricultural productivity, increased domestic burdens.
- Less technical but more holistic, emphasizing interpersonal and intergenerational effects of climate change.

Box 6. 4 Understanding of climate change and natural disasters of family members of persons with disabilities

Men's understanding of climate change and natural disasters

Most family members of men with disabilities stated that due to climate change, there is rainfall during winter, increase of salinity, reduction and scarcity of fish in the river while some said that weather has changed.

There were various interpretation relating to their understanding of natural disasters which were mainly severe storms, increased struggle of livelihood, and destruction of houses and agriculture land.

Source: FGD with family members of men with disabilities

Women's understanding of climate change and natural disasters

Family members of women with disabilities perceived that due to climate change, there are changes in the occurrence of natural disasters such as cyclones, floods, tidal surges, and lightening, severe rainfall and as a consequence, there is seasonal changes such as before there were 6 seasons but now, we have 4 seasons.

On the other hand, natural disasters are those that occur suddenly such as severe rainfall, lightening, cyclone and these had caused destruction of life and property.

Source: FGD with family members of women with disabilities

Box 6. 5 Opinions of UNO and PIO of Shyamnagar Upazila regarding climate change and disasters

Climate change and disasters

Shyamnagar is one of the worst disasters affected areas of coastal Bangladesh due to geographical conditions. Every year various types of natural and human induced disasters occur here such as cyclones, floods, tidal surge, salinity intrusion, water logging, river bank erosion etc. Among these, cyclone is the most devastating.

Climate change is the main cause of disasters. Due to the geography and physiological conditions, Bangladesh is at the high risk of climate change and frequent disasters. In addition, due to the deterioration of Sundarbans natural setting, the impact of cyclones has been ameliorating year to year.

Source: KII with the UNO of Shyamnagar Upazila of Satkhira district

Climate change is one of the causes for disasters. Besides, Deforestation, increasing temperature, amelioration of Sundarbans natural environment, greenhouse effect, destruction of environmental balance and lack of implementation of the environmental policies, acts and plans.

Source: KII with the Project Implementation Officer, Shyamnagar Upazila

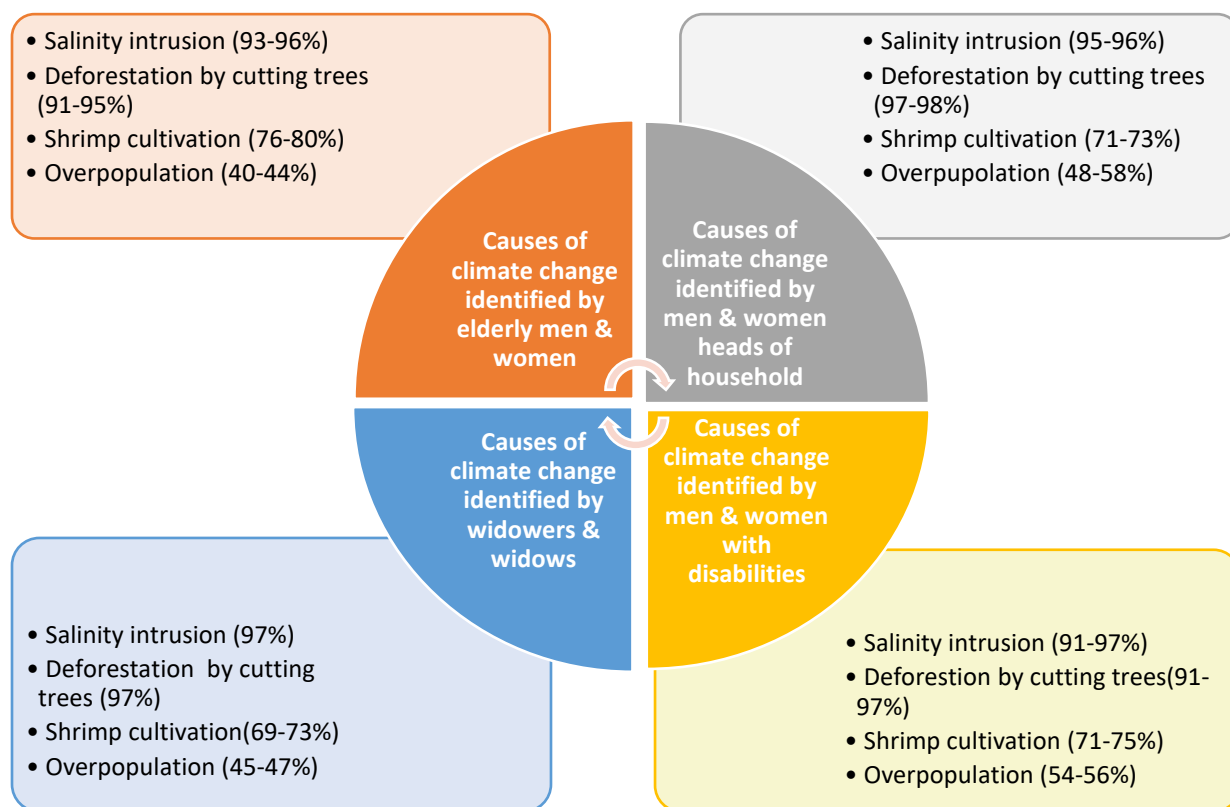
6.2 Causes of Climate Change Identified by the Respondents

There are various causes of climate change being identified by the different categories of respondents. In Satkhira, with rising sea levels, saline water intrusion into coastal aquifers, surface waters and soils are expected to become more frequent and advance further inland.

The respondents of coastal areas like Shyamnagar upazila, consistently identified key local drivers of climate change, underscoring a strong awareness of region-specific environmental issues.

Salinity intrusion and deforestation due to tree cutting were overwhelmingly cited as the top causes, with recognition rates ranging from 91 percent to 98 percent. This high level of agreement reflects the lived experience of environmental degradation in the coastal zone, where seawater encroachment and loss of vegetation are visibly altering ecosystems and livelihoods. Shrimp cultivation, widely practiced in the region, was also frequently mentioned (69-80%), highlighting community concern over its contribution to land degradation and water salinity. Interestingly, perceptions of overpopulation as a contributing factor varied more significantly, with elderly respondents reporting lower awareness (40-44%) compared to persons with disabilities (54-56%) and heads of households (up to 58%). This suggests that while the physical and economic drivers of climate change are well understood at the community level, there is more variation in recognizing demographic pressures. Overall, the responses reveal a nuanced understanding of both natural and human-induced causes, with strong emphasis on local practices and their environmental consequences.

Figure 6. 2 Causes of climate change identified by the respondents



6.3 Perception of Disaster by Respondents

All categories of respondents had a clear understanding of disasters and described them in various ways, reflecting a broad and layered understanding of both natural and human-induced hazards that they frequently encountered. Moreover, Satkhira district has been identified as one of the worst disaster-prone districts and the most vulnerable are the coastal belt.

Figure 6. 3 Perception of disasters by the respondents



Across all demographics, tropical storms, extreme temperatures, floods, landslides, and earthquakes were overwhelmingly recognized as disasters, with the highest recognition among heads of households (96-98%) and persons with disabilities (91-96%). This strong awareness reflects the region's direct exposure to climatic hazards. Sudden-onset events were also widely perceived as disasters (49-59%), showing a recognition of the unpredictability and urgency of such events.

Interestingly, perceptions around man-made disasters such as road and industrial accidents or building collapses varied more, ranging from 19 percent among elderly respondents to as high as 58 percent among widows and widowers indicating differences in lived experiences or exposure to such events. Fewer respondents consistently linked disasters to their broader impacts, such as

human, material, economic, and environmental disruption (24-37%), suggesting that while the immediate threats are well recognized, the long-term consequences may be less internalized. This points to a need for enhanced disaster education that connects sudden events to systemic losses, particularly among vulnerable populations, to strengthen community-level preparedness and resilience.

6.3.2 Understanding of Disasters and its Impact by Community Men and Women

Men and women from various occupational group shared their understanding of disaster and its impacts in Focus Group Discussions held at village Datinakhali in Shyamnagar upazila.

Response from men's group regarding their understanding of disasters and its impacts

Men perceived disaster as an event or series of events that severely disrupts the functioning of a community or society leading to widespread human, material, economic, or environmental losses that exceed the community's ability to cope using its resources. As residents of Shyamnagar upazila, they deeply reflect that living in a region frequently affected by cyclones, floods, and salinity intrusion, disasters are not only the sudden onset of events like cyclone Amphan but also the slow, creeping issues like waterlogging and soil degradation that gradually loss of livelihoods. Disasters are both natural and human-induced, as they noted the role of climate change, deforestation, and poor infrastructure which is intensifying the vulnerabilities of their community. Shyamnagar's geographical location, combined with poverty and limited access to resources, makes the area especially prone to the devastating impacts of disasters. These events disrupt every aspect of life, from destroying homes and crops to creating health crises and displacing families. For them, disasters, whether sudden cyclone like Sidr or gradual rising sea levels, are not purely natural events but are often intensified by human actions such as deforestation, poorly maintained embankments, and climate change.

Disaster disrupts the normal functioning of life and leaves a lasting impact on community's safety, livelihoods, and well-being. Living in an area frequently hit by cyclones, tidal surges, and salinity intrusion, they perceive disasters not only as natural calamities but also as outcomes of human neglect and environmental degradation. Disasters in Shyamnagar are often cyclical, with events like cyclone Aila and cyclone Amphan causing widespread destruction and leaving behind lingering challenges such as waterlogging, loss of arable land, and displacement of families. Disasters exacerbate existing vulnerabilities in the community, particularly for women and children who struggle with limited access to safe shelters, clean water, and health services during and after these events. Disaster is not just the storm or flood itself but the ripple effects it creates destroyed crops, job losses, and health risks that linger long after the event has passed. Community people are resilient depending on traditional knowledge, building elevated houses, and storing dry food, which helps mitigate some impacts, but these measures often fall short when disasters are more frequent and intense due to climate change.

Response from women's group regarding their understanding of disasters and its impacts

Women described disasters as severe and recurring events like cyclones, tidal surges, and waterlogging that disrupt lives and livelihoods. These disasters lead to the destruction of homes, crops, and fisheries, causing immense economic hardship. The specific challenges faced by women are increased domestic burdens and limited access to shelters during emergencies. They pointed out that disasters exacerbate existing social inequalities, leaving marginalized groups more vulnerable. They shared their concerns about the lack of reliable infrastructure, such as

embankments, to protect the community and noted the mental toll of disasters that fall upon vulnerable families. They emphasized the heightened vulnerabilities faced by women, who bear the burden of caring for families amid resource scarcity and displacement. They emphasized the psychological stress disasters impose on families, particularly for mothers worrying about their children's safety. They also noted how disasters exacerbate health challenges due to poor sanitation and limited healthcare access.

In summary, there are notable differences between the responses of men and women regarding their understanding of disasters and its impacts, though there are also common concerns.

Box 6. 6 Shared understandings of disasters and its impacts

Shared understandings of disasters and its impacts of both men and women are:

- Disasters are recurring and severe, including cyclones (e.g., Sidr, Aila, Amphan), tidal surges, salinity intrusion, and waterlogging.
- Both groups recognize disasters as not purely natural, but worsened by human activities such as deforestation, poor infrastructure, and climate change.
- Disasters lead to economic hardship, loss of livelihoods, displacement, and health challenges.
- Both groups emphasize that the impacts are long-term, not just during the event but also afterward in terms of recovery and rebuilding.

Box 6. 7 Understanding of disasters and its impacts

Understanding of disasters and its impacts of men's group:

- Defined disaster in broader terms: a disruption to community functioning with widespread human, material, and environmental losses.
- Included slow onset disasters like salinity intrusion and waterlogging, not just sudden events.
- Emphasized underlying causes: climate change, poor embankments, deforestation, and poverty.
- Noted community resilience strategies like building elevated homes, storing dry food, and using traditional knowledge but highlighted that these are increasingly inadequate.
- Acknowledged vulnerabilities of women and children, but more in general terms.

Box 6. 8 Understanding of disasters and its impacts of women's group

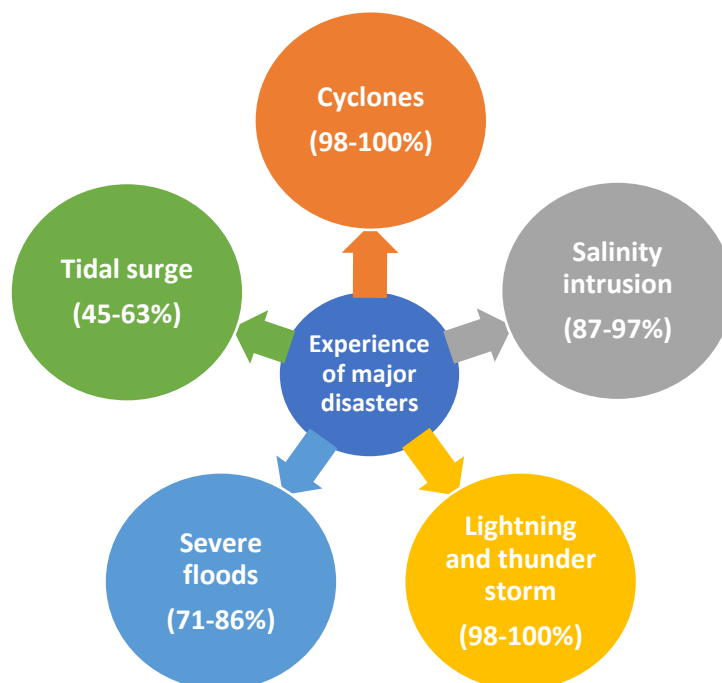
Understanding of disasters and its impacts of women's group

- Framed disasters in terms of daily life impacts, especially on homes, food, and caregiving responsibilities.
- Focused strongly on the gendered impacts:
 - Increased domestic burdens during disasters.
 - Limited access to shelters.
 - Mental stress, especially related to caring for children and worrying about safety.
- Emphasized social inequalities - how marginalized groups (especially women) are more vulnerable during and after disasters.
- Spoke about the psychological and emotional toll, such as stress and anxiety, in more personal terms.
- Highlighted inadequate infrastructure and poor health/sanitation facilities as major concerns during disasters.

6.4 Disasters Experienced by Respondents

Various disasters were experienced by the respondents in the lifetime in Shyamnagar upazila among them the major disasters were mentioned by the respondents. An overwhelming majority of respondents stated that they experienced cyclones (97-100%) and lightning and thunder storms (97-100%), followed closely by salinity intrusion (87-97%) and severe floods (71-86%). In contrast, fewer respondents identified tidal surge (45-63%).

Figure 6. 4 Disasters experienced by respondents in their lifetime



However, water logging is as one of the continuous hazards in the area but very less respondents has identified it as a disaster due to the fact that they are habituated in experiencing water logging all over the year.

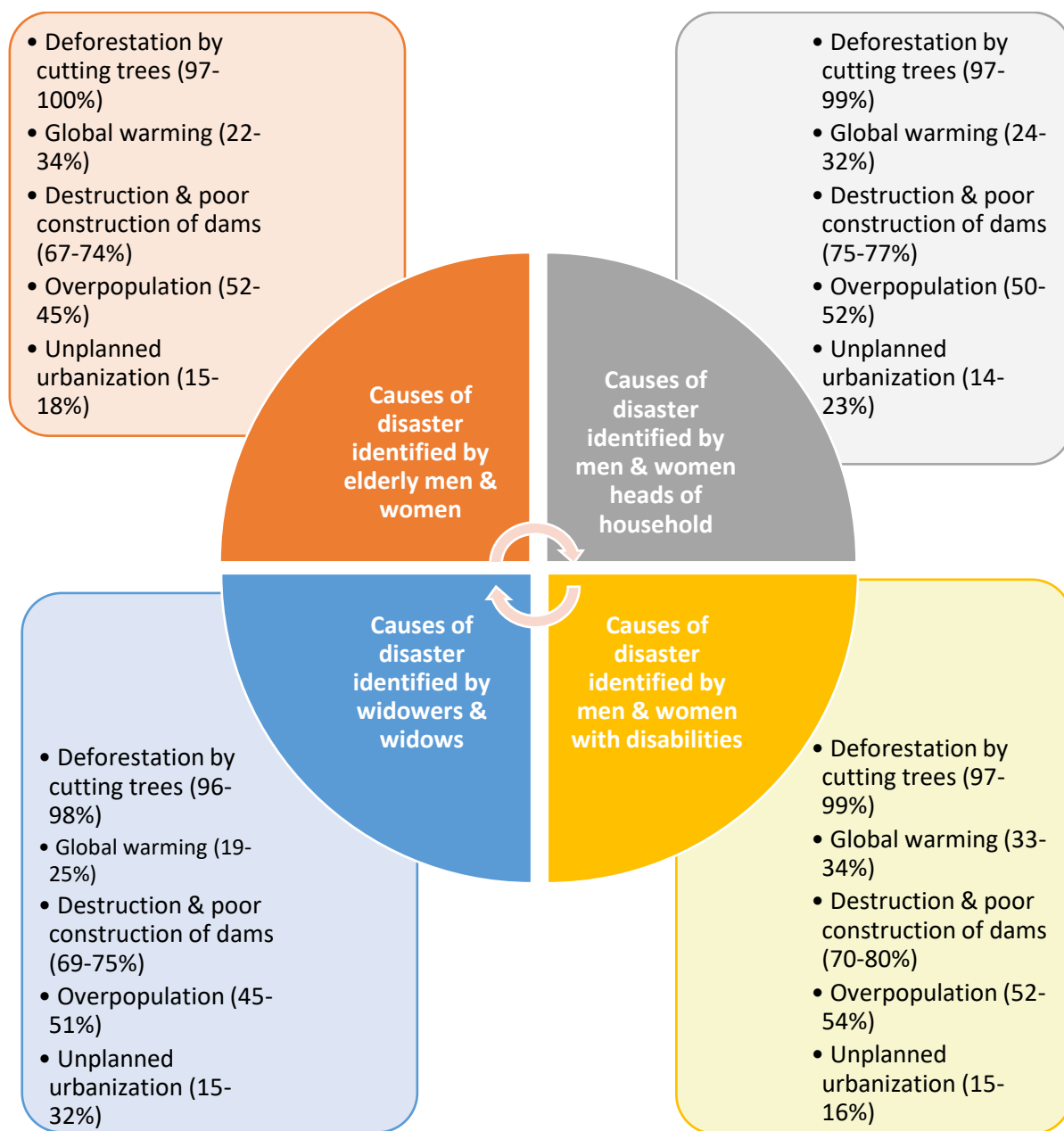
6.5 Causes of Disasters Identified by all Categories of Respondents

Disasters can stem from natural, man-made, and technological hazards, with factors like climate change, environmental degradation which are crucial in increasing the frequency, complexity, and severity of their impacts. Respondents of all categories have identified the various causes of disasters.

Across all respondent categories, deforestation by cutting trees was overwhelmingly identified as the primary cause of disasters, with agreement levels ranging from 96 percent to 100 percent. This was followed by concern over the destruction and poor construction of dams, recognized by 67 percent to 80 percent of participants, indicating a strong awareness of infrastructural vulnerabilities. Overpopulation was cited as a contributing factor by 45 percent to 54 percent, reflecting recognition of demographic pressure on resources and ecosystems. Meanwhile, global warming was acknowledged by a smaller yet significant portion of respondents (19% to 34%),

pointing to growing awareness of broader climatic influences. Unplanned urbanization, though less frequently mentioned (14% to 32%), was still noted across all groups, highlighting concerns over rapid and unregulated development contributing to disaster risks. These findings reflect a mix of environmental, infrastructural, and human-induced factors perceived as central to disaster causation.

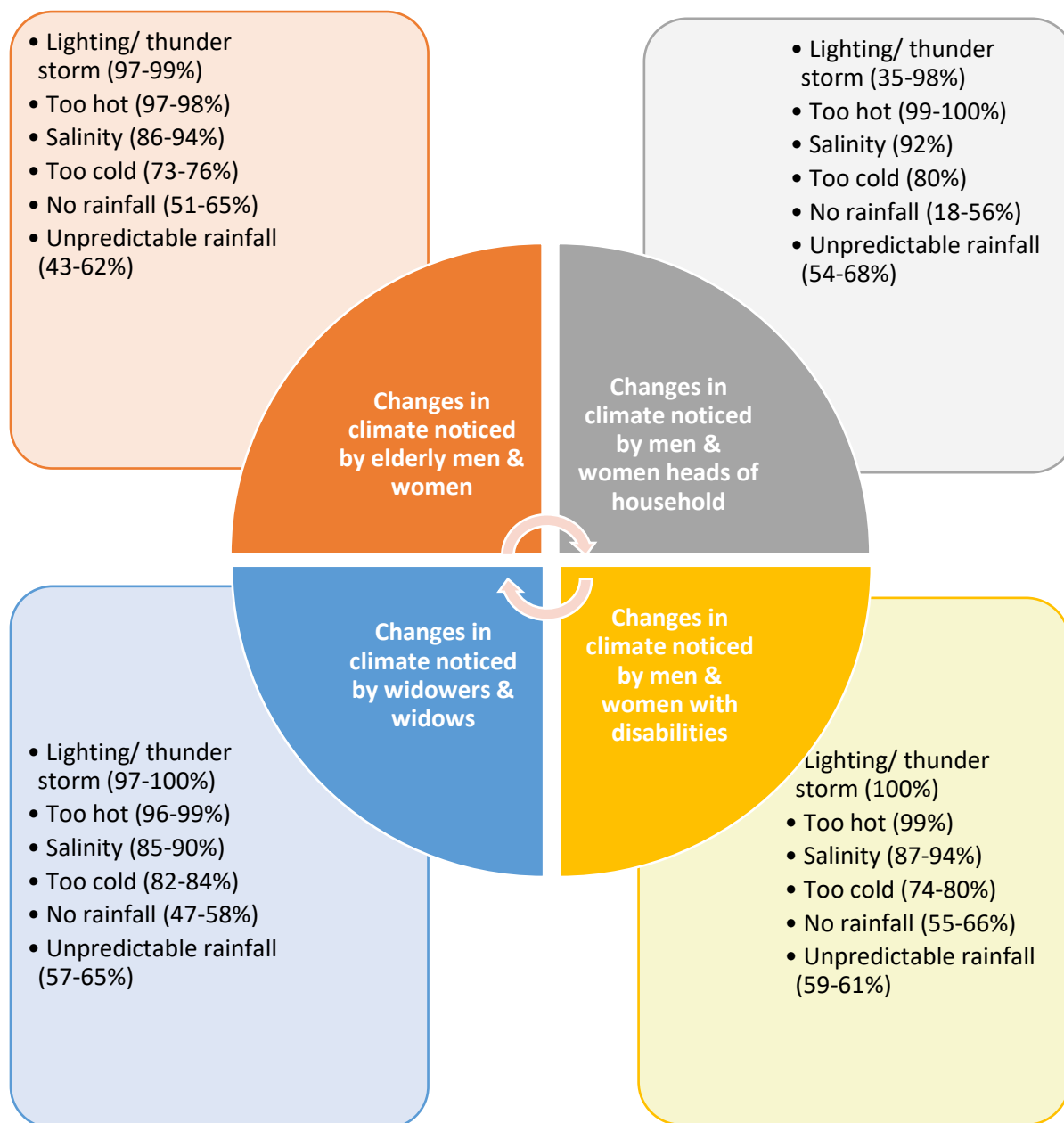
Figure 6. 5 Causes of disaster identified by respondents



6.6 Changes in Climate Noticed During the Lifetime of Respondents

Climate change is expected to lead to more intense and frequent thunderstorms, with warmer air holding more moisture, potentially causing heavier rainfall, stronger winds, and more lightning strikes. During their lifetime, almost 100 percent respondents stated that they had noticed lightning and thunderstorms as change in climate. Notably, 35.3 percent women heads of household has experienced lightning and thunder storm due to change in climate.

Figure 6. 6 Change in climate noticed during their lifetime of respondents



Respondents across all demographic categories reported a consistent set of changes in climate during their lifetime, highlighting a shared perception of environmental degradation. Deforestation by cutting trees emerged as the most frequently observed change, noted by 96-100 percent

respondents, suggesting a widespread awareness of its direct impact on local ecosystems and climate conditions. The destruction and poor construction of dams was also widely recognized, especially by men and women heads of households and persons with disabilities (up to 80%), indicating a strong linkage in people's minds between infrastructure failures and worsening climate impacts like flooding or water scarcity.

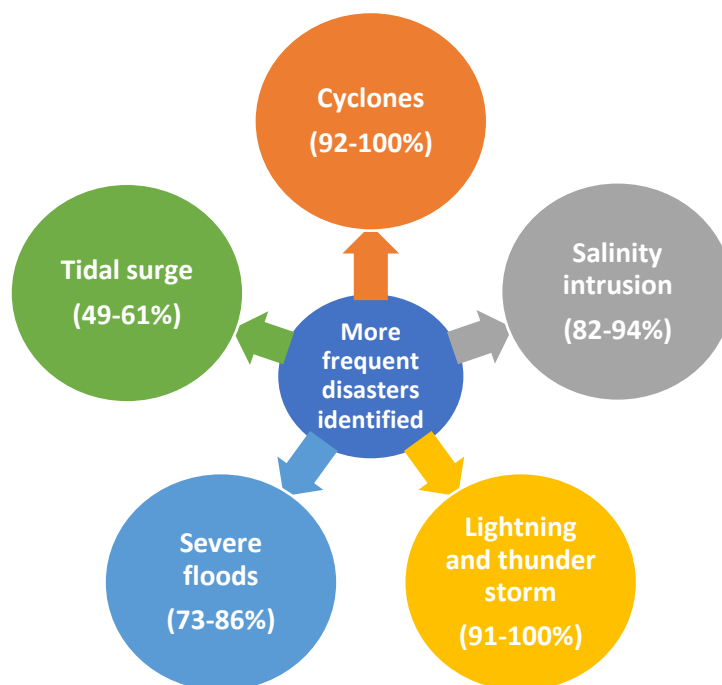
Global warming was acknowledged by a relatively smaller but growing portion (19% to 34%), with people with disabilities demonstrating the highest recognition. This variation may reflect differing access to climate-related information or education among groups. Overpopulation was seen as a contributing factor by 45-54 percent, suggesting awareness of its role in resource depletion and stress on natural systems. Unplanned urbanization, though mentioned by fewer respondents (14-32%), still points to a concern over rapid development without adequate environmental consideration.

The data indicates that lived experiences of environmental changes, particularly deforestation and failing infrastructure are the most salient for respondents, while conceptual or global phenomena like global warming are less immediately recognized, especially among older or more vulnerable groups. This emphasizes the importance of localized environmental education and participatory planning to enhance climate awareness and adaptive capacity.

6.7 Disasters that are More Frequent as Perceived by Respondents

The respondents identified several types of disasters that have become more frequent in recent times, reflecting the increasing climate vulnerability of their region. Cyclones were the most frequently cited, with 92-100 percent of respondents reporting their occurrence. This high level of recognition underscores the regular and devastating impact cyclones have had on the community.

Figure 6. 7 Disasters that are more frequent as identified by respondents



Salinity intrusion was also widely recognized, noted by 82-94 percent of participants, highlighting growing concerns over the degradation of agricultural land and freshwater resources. Lightning and thunderstorms were mentioned by 91-100 percent of respondents, indicating a noticeable rise in sudden and intense weather events.

Severe floods were reported by 73-86 percent of individuals, showing widespread exposure to water-related disasters that threaten homes, livelihoods, and infrastructure. Tidal surges, while less frequently mentioned, were still identified by 49-61 percent of respondents, suggesting an awareness of their periodic but destructive nature.

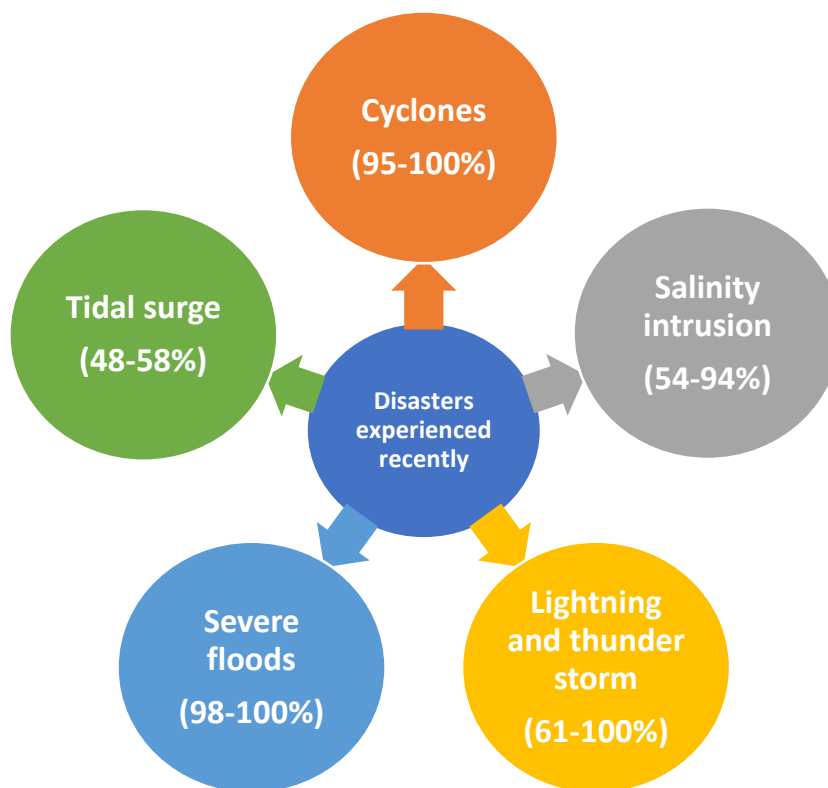
In summary, these findings reflect a shared perception across the population that climate-induced disasters are not only more common but also increasingly disruptive to their everyday lives and long-term security.

6.8 Disasters Experienced Recently in the Area by Respondents

The figure below highlights the range and frequency of climate-induced disasters recently experienced by respondents in the study area, reflecting the heightened vulnerability of coastal communities in Satkhira, particularly Shyamnagar upazila.

Among the most universally reported events were severe floods, experienced by 98-100 percent of respondents, marking it as the most widespread and impactful disaster. This was closely followed by cyclones, with 95-100 percent of respondents indicating recent exposure, underscoring the region's persistent exposure to powerful tropical storms.

Figure 6. 8 Disasters experienced recently in the area by respondents



Lightning and thunderstorms were also widely recognized, with 61-100 percent of participants reporting these events, suggesting increased intensity and frequency, likely linked to broader climatic changes. Similarly, salinity intrusion—a major threat to agriculture, freshwater availability, and infrastructure was reported by 54 -94 percent of respondents. This highlights the salinization of land and water bodies as a growing concern in the face of rising sea levels and shrimp cultivation practices.

On the other hand, tidal surges were reported by a comparatively lower, yet still significant, 48-58 percent of respondents, showing the regular impact of tidal activities on low lying coastal zones.

These findings point to a multi-hazard risk landscape, where communities are simultaneously exposed to both sudden-onset disasters (like cyclones and floods) and slow onset hazards (like salinity intrusion). This calls for integrated and inclusive disaster risk reduction strategies that address both the frequency and the compound nature of such environmental threats.

6.9 Category of People Mostly and Moderately Affected by Disaster in the Area

The perceptions of community members in coastal Bangladesh reveal distinct views on which groups are most and moderately affected by disasters. These insights are shaped by local experiences, social roles, and levels of vulnerability within different age and gender groups. Understanding these perceptions is crucial for designing inclusive disaster risk reduction strategies that address the specific needs of each population segment.

6.9.1 Category of people mostly affected by disaster in the area

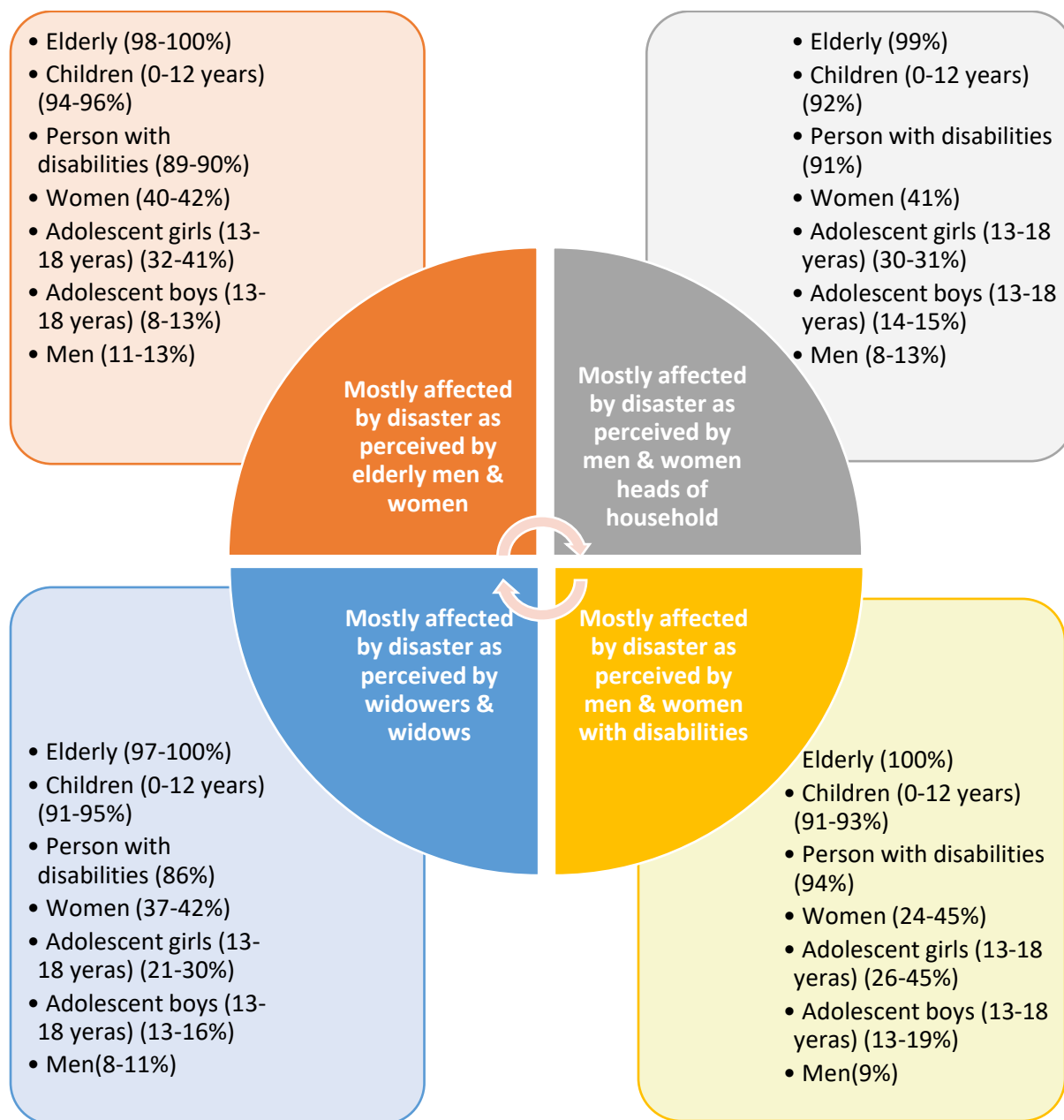
Respondents narrated the critical insights into the social vulnerability of different demographic groups in disaster-prone areas, particularly in the coastal region of Satkhira.

According to respondents, the elderly, children aged 0-12 years, and persons with disabilities are the most severely impacted during disaster events.

- Elderly individuals were identified as the most vulnerable, with 97-100 percent of respondents indicating that this group is disproportionately affected. Their limited mobility, dependency on caregivers, and often-precious health conditions increase their susceptibility during disasters, especially in emergency evacuation and relief scenarios.
- Children aged 0-12 years also emerged as highly at risk, with 91-96 percent of respondents recognizing them as major victims of disasters. Their physical vulnerability, nutritional needs, and emotional sensitivity make them less capable of coping with or escaping hazardous conditions.
- Persons with disabilities were reported to be affected at rates between 89-94 percent, underscoring the challenges they face in accessing timely information, mobility constraints, and often being excluded from mainstream disaster preparedness plans.

These findings highlight the urgent need for inclusive Disaster Risk Reduction (DRR) strategies, which prioritize the needs of the most at-risk groups. Tailored support systems, accessible infrastructure, and targeted early warning mechanisms must be integrated into local and national disaster management frameworks to ensure no one is left behind in times of crisis.

Figure 6. 9 Category of people mostly affected by disaster in the area

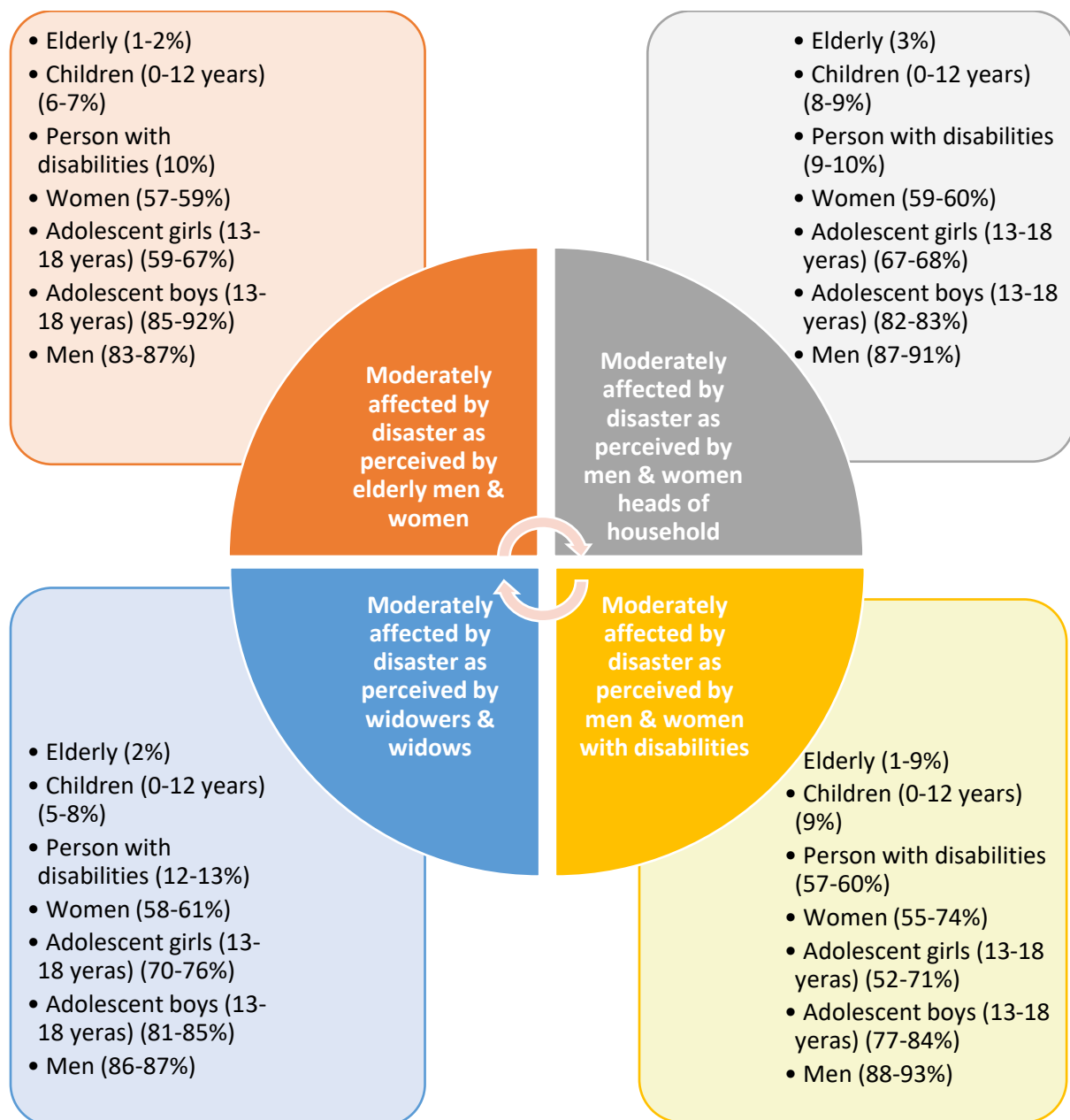


6.9.2 Category of people moderately affected by disaster in the area

The perception of groups moderately affected by disasters, as reported by various respondent categories, reveals consistent patterns of vulnerability with some notable variations. Across all demographic segments, men and adolescent boys (aged 13-18 years) were most frequently cited as moderately affected. Men were identified by 83-93 percent of respondents, while adolescent boys ranged between 77-92 percent, suggesting their high exposure to outdoor risks and responsibilities during disaster events.

Women and adolescent girls also emerged as significantly affected, with women noted by 55-74 percent and adolescent girls by 52-76 percent of respondents. These figures highlight gendered vulnerabilities related to caregiving roles, mobility restrictions, and lack of gender-sensitive facilities in emergency contexts. Persons with disabilities were moderately affected as perceived by 9-60 percent of respondents, with particularly high concern expressed by individuals with disabilities themselves. This points to heightened risk due to limited accessibility and tailored support during emergencies.

Figure 6. 10 Category of people moderately affected by disaster in the area



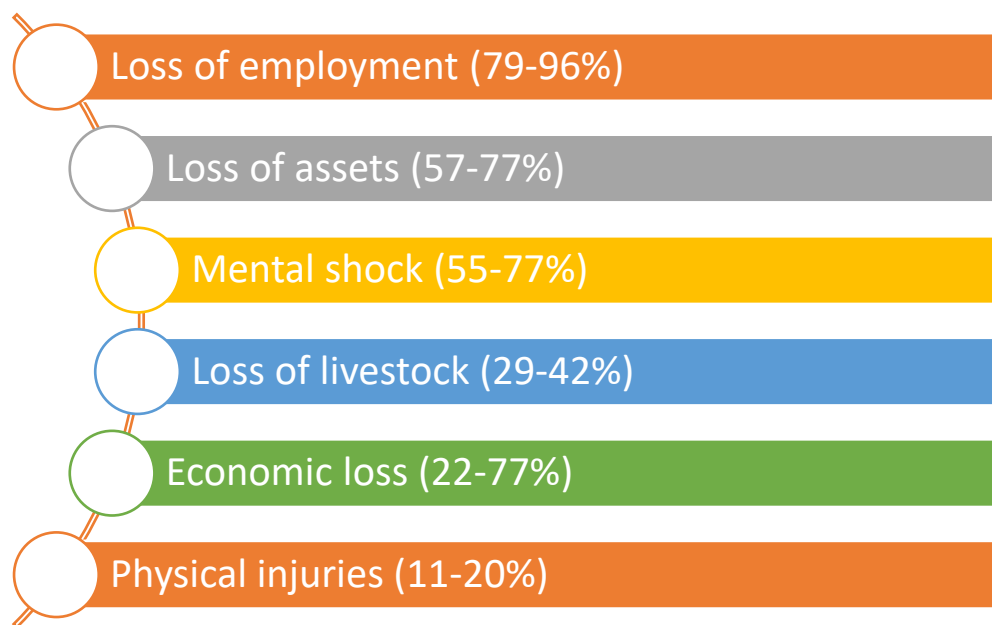
Children aged (0-12) years were perceived as moderately affected by 5-9 percent of respondents, while elderly individuals were noted by only 1-3 percent, indicating a possible underestimation of their vulnerability or a stronger perception of them being severely, rather than moderately, affected. Overall, the data suggests that able-bodied adult men, adolescent boys, and women bear a significant brunt of disaster impacts, while the nuanced vulnerabilities of children, the elderly, and people with disabilities may require more focused attention in disaster response planning.

6.10 Damages Incurred Due to Recent Disaster in the Area

Disasters usually cause a wide range of damages, encompassing direct losses like assets, property and livestock, as well as indirect consequences like economic disruption due to loss of employment, psychological trauma, and social instability.

Most of the respondents perceived the damages incurred due to recent disasters in the area by stating that they lost their employment (79-96%), followed by loss of assets (57-77%), and livestock, mainly goats and cows (29-42%), alongside mental shock (55-77%). In addition, economic loss was reported by a significant number of respondents, ranging from 22-77 percent, reflecting how disasters disrupted local markets, destroyed agricultural yields, and halted daily wage opportunities. Furthermore, physical injuries (11-20%) were also cited, particularly among those engaged in rescue operations or those without access to safe shelter. It can be noted that fewer respondents perceived the loss of livestock, primarily because they are mostly from marginalized and vulnerable communities where very few households could afford to own cows and goats. On the other hand, the majority suffered losses in terms of livelihood and income sources, making economic recovery a critical challenge post-disaster.

Figure 6. 11 Damages incurred due to recent disaster in the area as identified by respondents

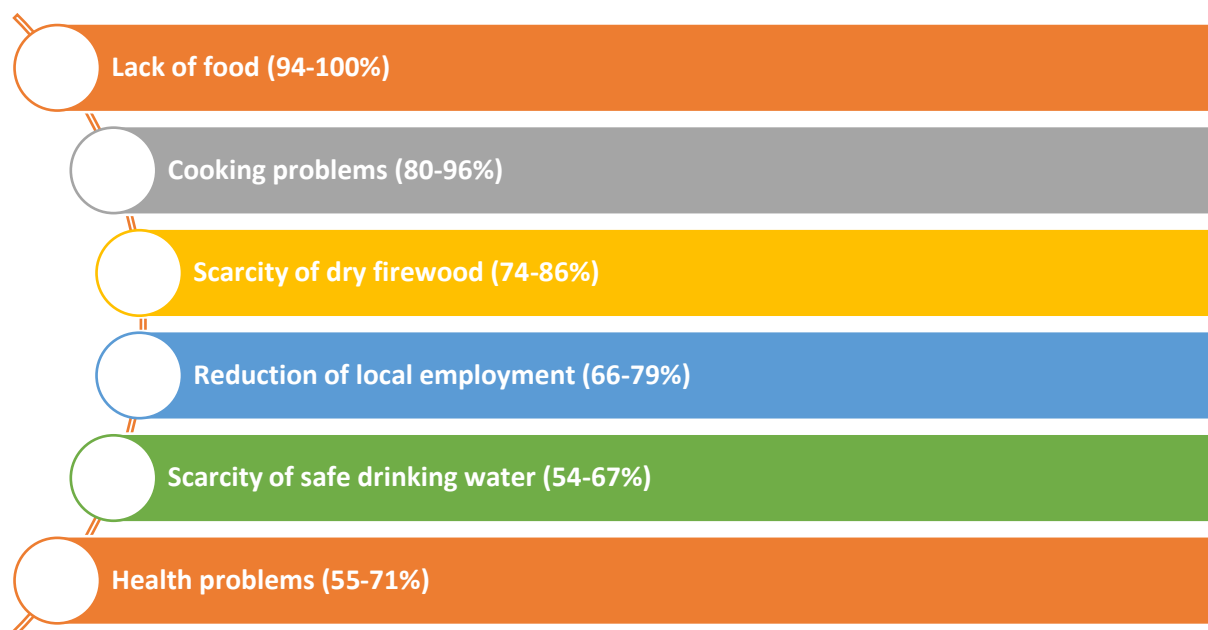


Moreover, there are very less difference between the perception of men and women of all categories regarding damages incurred due to recent disaster in the area.

6.11 Challenges Faced by the Respondents Due to the Recent Disaster

Challenges faced by respondents due to disasters are many given their vulnerable living situation in the coastal area. An overwhelming majority of respondents (94-100%) stated that lack of food was the main problem which relates to cooking problems (80-96%) because their homes were devastated, there were scarcity of dry firewood (74-86%) or place to cook. Moreover, a handful of respondents (66-79%) from all categories said that they could not find local employment opportunities or a viable livelihood option in their area. In addition, there was scarcity of safe drinking water (54-67%) although there was water everywhere but unsafe for drinking or cooking. On the other hand, some of the respondents (55-71%) faced various kinds of health problems in their families due to the adverse effect of disaster where they had to live in crowded shelter facilities or temporary makeshift arrangements on roadsides. It can be noted that mostly women articulated that they faced cooking problems and shortage of fuel wood as they were solely responsible for food preparation. On the contrary, mostly men lost their livelihood and found hard to find viable employment options due to the onset of disaster.

Figure 6. 12 Challenges faced by the respondents and their families due to recent disaster



Box 6. 9 Challenges of persons with disabilities

Challenges of persons with disabilities

Elderly men and women with disabilities are most vulnerable and at the same time they are very helpless. Therefore, they should be given more preference than others in the disaster affected communities and the administration should take special care so that they are not neglected or left out from the government support services.

Source: KII with the President of Shyamnagar Press Club

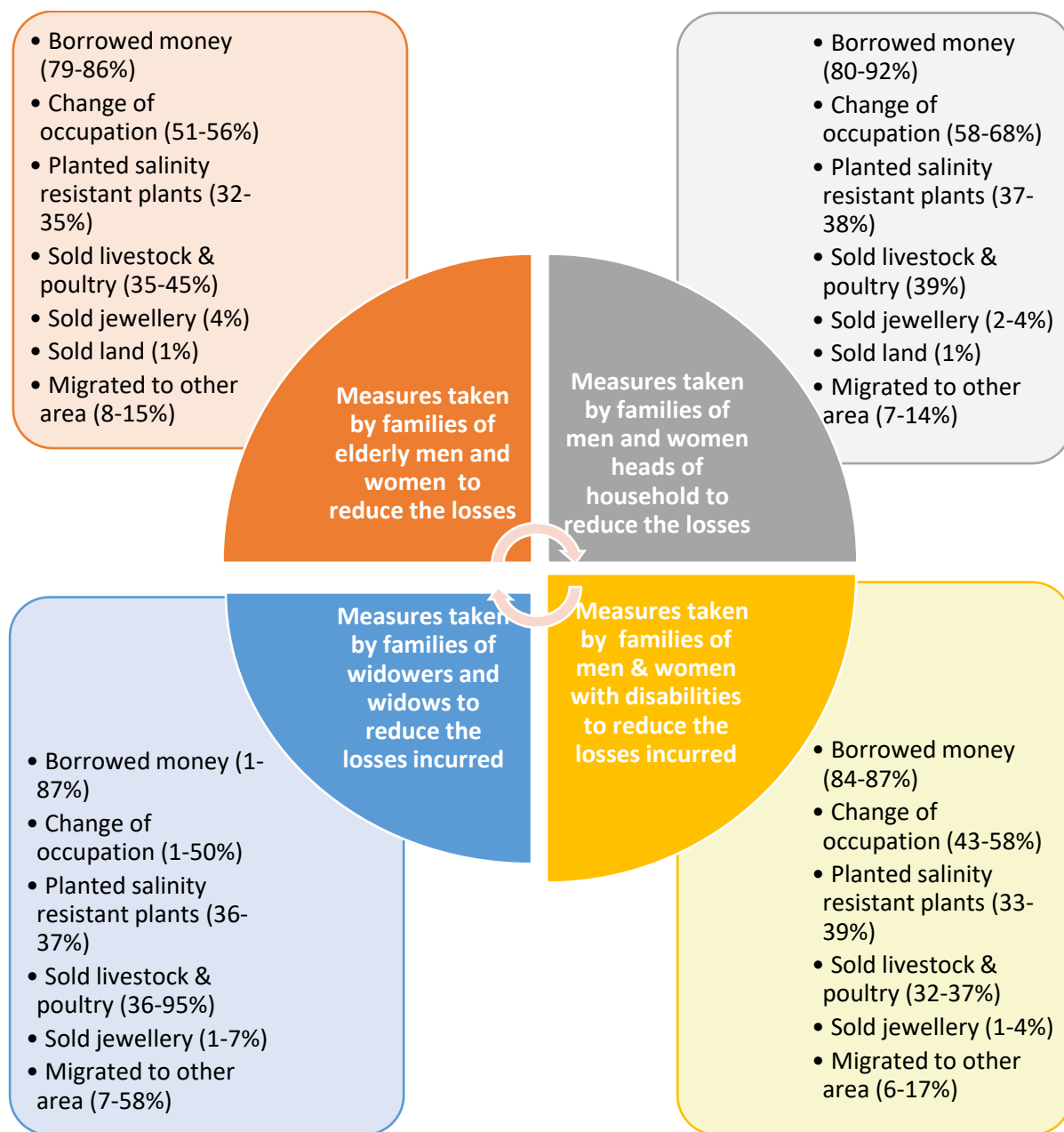
6.12 Measures Taken to Reduce the Losses Incurred by Recent Disaster

In response to the recent disasters, families across all categories of respondents adopted a variety of measures to reduce their losses and sustain their livelihoods. The most common strategy was borrowing money, reported by a significant majority of 79-92 percent among elderly men and women, heads of households, widows/widowers, and persons with disabilities. This high reliance on loans highlights both the urgency of their needs and the lack of formal financial safety nets. Changing occupation was another major measure, especially among heads of households (58-68%) and people with disabilities (43-58%), indicating a shift away from disaster-affected sectors like agriculture or fishing toward alternative income sources.

Additionally, planting salinity-resistant crops (32-39%) was a moderately adopted adaptive strategy, particularly in saline-prone areas. Families also coped by selling livestock and poultry, which ranged widely from 32-95 percent, and selling jewellery (1-7%), suggesting that those with even minimal assets liquidated them to survive. A very small portion reported selling land (1%), likely reflecting the deep-rooted value of land as a last resort for the poorest families.

Migration emerged as a crucial adaptive strategy, especially among widows and widowers (7-58%), who were more likely to relocate temporarily or permanently in search of work or safer living conditions. The diverse yet limited range of measures taken reveals that while households are actively trying to mitigate disaster impacts, their options are often constrained by poverty, lack of resources, and systemic barriers, calling for stronger institutional support and inclusive risk reduction programmes.

Figure 6. 13 Measures taken to reduce the losses incurred by recent disaster in the area



6.13 Overview of perceptions of climate change and disasters among vulnerable groups

The chapter provides an in-depth analysis of how vulnerable communities in Shyamnagar upazila of coastal Bangladesh perceive climate change and disasters. It reveals that most community members especially the elderly, household heads, widows, and persons with disabilities are aware of environmental changes, particularly shifts in temperature, erratic weather, and increased

cyclonic activity. However, their understanding is largely rooted in local experience rather than scientific terminology, with concepts like “global warming” less commonly recognized, especially among marginalized groups. This points to a gap in formal climate education and the need for inclusive awareness programmes.

Men and women alike express concern about the impact of climate change on agriculture, fishing, health, and daily life. Men, especially farmers and fishermen, highlight the challenges of salinity intrusion, unpredictable rainfall, and extreme weather events on crop yields and fish stocks. Health workers point out the public health risks, including increased waterborne diseases and mental health issues due to displacement and anxiety. Women, particularly homemakers, emphasize how climate change worsens water scarcity, food insecurity, and forces migration, placing greater burdens on women and children.

Across all groups, respondents identify deforestation, shrimp farming, and poor dam infrastructure as major causes of both climate change and disasters. While sudden disasters like cyclones and floods are widely recognized, slow onset hazards such as salinity intrusion and waterlogging are also seen as highly destructive. Men often view disasters as compounded by human activities and infrastructure failures, while women emphasize the social and emotional toll, particularly on family caregiving roles and health risks.

The chapter documents the wide range of disasters experienced in recent years, including floods, cyclones, salinity intrusion, and lightning storms, with cyclones and floods being the most commonly reported. Communities are exposed to both rapid and slow onset hazards, and the frequency and intensity of disasters are perceived to have increased significantly over time.

In terms of vulnerability, respondents consistently identify the elderly, children, and persons with disabilities as the most severely affected. These groups face major challenges in evacuation, access to services, and recovery. Men, adolescent boys, women, and adolescent girls are also moderately affected, often due to their roles in labor, caregiving, or mobility constraints during emergencies. The data shows that while adult men face exposure due to outdoor responsibilities, women and girls suffer due to a lack of gender-sensitive facilities and safety in shelters.

The impacts of recent disasters have been severe and widespread. Most respondents report loss of income and employment, damage to assets and livestock, and increased psychological stress. Women particularly face cooking difficulties due to destroyed homes and lack of fuel, while men report loss of livelihoods. Drinking water scarcity, health problems, and food insecurity are widespread challenges across all groups.

To cope with these hardships, families employ a range of adaptive measures. Borrowing money is the most common, reflecting the absence of formal safety nets. Some switch occupations or migrate, while others adopt agricultural adaptations like planting salinity-tolerant crops. Many are forced to sell assets such as livestock or jewelry. These coping strategies, though varied, highlight the community’s resilience while also revealing their economic fragility and the urgent need for targeted institutional support.

Overall, the chapter illustrates the complex intersection of climate change, disasters, and vulnerability. It underscores the importance of localized, inclusive, and gender-sensitive disaster risk reduction and climate adaptation strategies that address both immediate threats and long-term challenges.

Chapter 7

Impacts of Disasters on the Lives of Respondents

This chapter deals with various impacts of disaster such as health, livelihood, water and sanitation, food consumption, health, gender violence, displacement and migration. Three main phases of disaster namely pre, during and post situation were also addressed to assess the impacts of disasters on livelihood, water and sanitation, food consumption, health and gender violence against men and women as family members and in some cases children as well. However, displacement and migration were mainly documented as an effect of disasters.

Disasters directly impact the health of the population resulting in both physical and mental disorder. In addition, disasters may increase the morbidity and mortality associated with chronic disease and infectious disease through the impact of the healthcare system. (Giorgadzi, *et al.*, 2011). Disasters such as floods, cyclones and lightning are gender neutral but their impacts are not. Men and women are affected differently from disaster, even if they live in the same household.

Bangladesh, a densely populated South Asian country, is uniquely vulnerable to a range of natural disasters. Its geographic location, coupled with socio-economic factors, exacerbates the impact of these events. Cyclones, floods, droughts, and riverbank erosion are recurrent phenomena that disrupt lives, damage infrastructure, and hinder economic development (Nasreen, 2022). The frequency and intensity of these disasters have increased in recent years, necessitating a comprehensive understanding of their multifaceted impacts.

Among the highest levels recorded of disaster-related internal displacement globally (International Displacement Monitoring Centre/IDMC), 2019). Bangladesh is also one of the most climate vulnerable countries (Eckstein, Künzel, Schäfer, and Wings, 2019). Climate-related losses and damages threaten livelihoods, ecosystem services, food security, public health, human security and socio-economic development, often in the most vulnerable communities, and disproportionately impacting on those displaced (Displacement Solutions, 2012). In turn, impacts from climate change, from severe weather to prolonged droughts and water insecurity, exacerbate internal and cross-border displacement (The Nansen Initiative 2015).

7.1 Impact of Disaster on Health of Family Members of Respondents During and After Disasters

People living in the coastal area experience a range of health problems during and after disasters such as physical ailments like fever, diarrhea, skin diseases, and malnutrition, as well as mental health issues like depression, anxiety, and Post-Traumatic Stress Disorder (PTSD).

Health problems of all categories of respondents and their family members during and after disasters are varied. During disasters, the health of family members is severely affected due to contaminated water, lack of sanitation, poor shelter conditions, and limited access to healthcare services. Mostly men and women suffered from depression and anxiety followed by fever and cough while children suffered mostly from fever, cough and diarrhoea during disasters. Many family members, especially children and the elderly, suffer from waterborne diseases like diarrhoea, skin infections, and respiratory issues caused by exposure to polluted floodwater and

overcrowded living conditions. Particularly, pregnant women and people with chronic illnesses face additional risks due to the unavailability of medical support, medicines, and proper nutrition. Health centres are often damaged or inaccessible, making it difficult for families to get timely treatment. Mental health issues also rise during disasters, as people experience stress, anxiety, and trauma from displacement and loss.

Box 7. 1 Breakdown of health problems during and after disasters

Physical health problems:

- **Communicable diseases:** Diarrheal diseases and acute respiratory infections are common causes of morbidity and mortality in disaster situations.
- **Fever and Diarrhea:** These are highly prevalent both during and after disasters.
- **Skin Diseases:** Skin diseases increase following disasters.
- **Malnutrition:** Malnutrition is a significant concern, particularly for children and vulnerable populations.
- **Asthma:** Asthma exacerbations can increase after disasters.
- **Other physical symptoms:** Fatigue, headache, dyspnea, back pain, muscle pain, gastrointestinal symptoms, palpitations, dizziness, and sleeping problems have been described post-disaster.

Mental health problems:

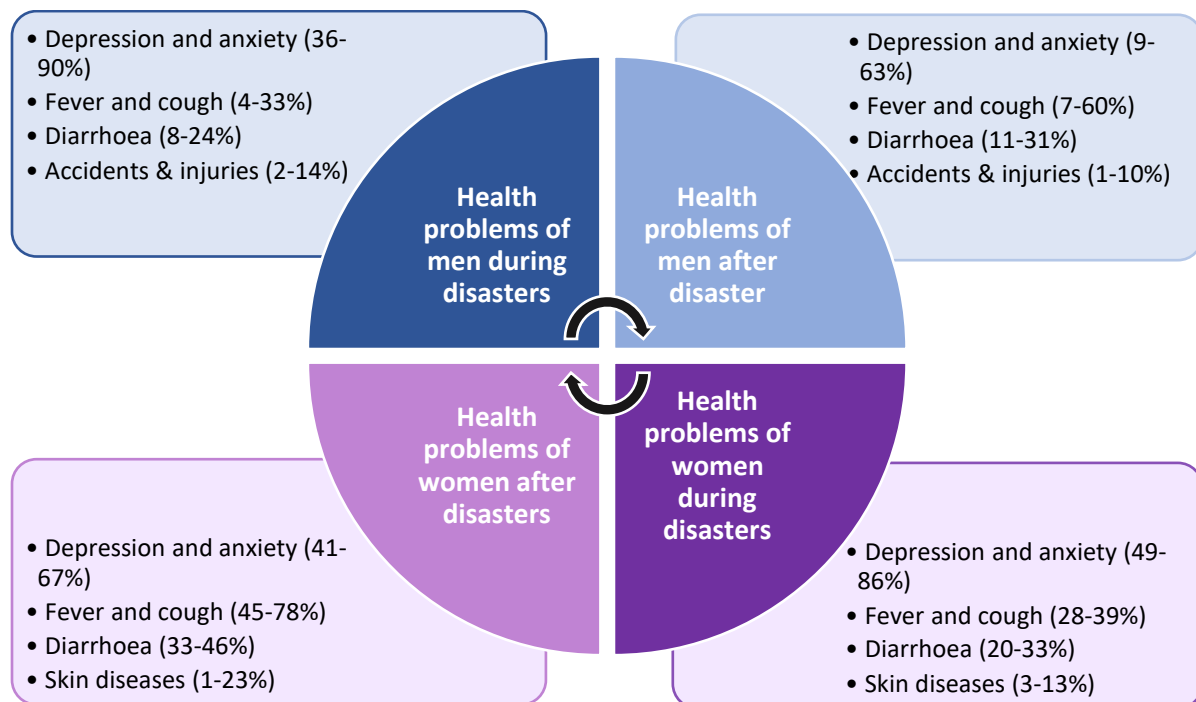
- **Depression:** Depression is a common mental health challenge following disasters.
- **Anxiety:** Anxiety disorders, including generalized anxiety disorder, are prevalent.
- **Post-Traumatic Stress Disorder (PTSD):** Exposure to trauma during disasters can lead to PTSD.
- **Suicidal ideation:** Suicidal ideation is a serious risk factor during and after disasters.
- **Sleep disturbances:** Sleep disorders are common among disaster-affected populations.
- **Grief:** Prolonged or complicated grief can occur after the loss of loved ones.
- **Other mental health issues:** Substance abuse problems, behavioral problems, and phobias are also possible.

After disasters, the health situation remains poor for an extended period. Malnutrition becomes common, especially among children and women, due to prolonged food insecurity and lack of dietary diversity. Chronic diseases worsen without regular access to medication or healthcare services. Families continue to live in makeshift shelters or damaged homes, increasing the risk of illness due to unsanitary conditions. Mental health challenges persist as families cope with the loss of livelihoods, homes, and loved ones. The lack of follow-up care and support systems means many health problems go untreated, leading to long-term physical and psychological consequences for affected family members.

7.1.1 Impact of disaster on health of men and women as family members of respondents during and after disasters

During disasters, respondents report that men primarily suffer from mental and physical health issues, with depression and anxiety affecting a significant portion - ranging from 36 percent to as high as 90 percent. Physical illnesses like fever and cough (4-33%) and diarrhoea (8-24%) are also common. Although less frequent, some men experience accidents and injuries (2-14%), largely because they are more likely to be outside working during disaster events. A small number also report cases of jaundice and memory loss.

Figure 7. 1 Health problems suffered by men and women family members during and after disasters



Women, however, tend to suffer to a greater extent across several health indicators. Depression and anxiety affect 49-86 percent of women, while fever and cough (28-39%) and diarrhoea (20-33%) are also prevalent. Additionally, due to their close involvement with water for household chores like washing and cooking, 3-13 percent of women develop skin diseases. Some women also face reproductive health issues, memory loss, and symptoms of post-traumatic stress disorder (PTSD), highlighting the compounded impact of disasters on their mental and physical well-being.

In the post-disaster period, men report fewer health problems overall, though challenges remain. Depression and anxiety are still experienced by 9-63% of men, while fever and cough (7-60%) and diarrhoea (11-31%) continue to pose health risks. Accidents and injuries decrease but are still reported by 1-10 percent. A few men also suffer from conditions such as jaundice, malaria, memory loss, and PTSD.

Women, however, continue to bear a heavier health burden even after the disaster has ended. Depression and anxiety remain high (41-67%), and respiratory and digestive issues like fever and cough (45-78%) and diarrhoea (33-46%) persist. In addition, some women continue to suffer from

skin diseases, jaundice, and symptoms of PTSD, indicating prolonged vulnerability and the need for gender-sensitive health interventions in both emergency response and recovery phases.

7.1.2 Impact of disaster on health of children as family members of respondents during and after disasters

During disasters, children suffered from various health problems due to exposure to unsafe living conditions, contaminated water, and lack of proper hygiene. Fever and cough (17–36%) are common among children, as they are exposed to cold, damp environments and poor ventilation in crowded shelters. Children were affected from diarrhoea (20-29%) mostly due to consumption of unsafe drinking water and inadequate sanitation. Psychological impacts also emerge where children experienced depression and anxiety (2-28%) as a result of displacement, fear, and witnessing the distress of family members. Additionally, few children develop skin diseases caused by prolonged exposure to dirty water and unhygienic living conditions.

After disasters, the health problems among children become even more severe. The incidence of fever and cough (48-83%) rises significantly affecting children, as many continue to live in poorly ventilated, overcrowded shelters or damaged homes. Diarrhoea remains a major concern, impacting 30-48 percent of children due to ongoing water contamination and limited access to clean food and hygiene facilities. Depression and anxiety continue to affect fewer children, as they struggle to cope with the loss of normal life, homes, schools, and sometimes family members. Skin diseases also become more prevalent after disasters, affecting 8-17 percent of children, often due to the lack of clean clothing, proper bathing facilities, and extended exposure to polluted environments.

Figure 7. 2 Health problems suffered by children as family members during and after disasters

Health problems suffered by children during disasters	Health problems suffered by children after disasters
• Fever & cough (17-36%) • Diarrhea (20-29%) • Depression & anxiety (2-28%) • Skin diseases (1-17%)	• Fever & cough (48-83%) • Diarrhea (30-48%) • Depression & anxiety (5-14%) • Skin diseases (8-17%)

7.1.3 Findings from FDGs with community men and women regarding health impacts of disasters

Responses from men’s group regarding health impacts of disasters

Men shared their experiences regarding the severe health impacts of disasters on their community. A farmer spoke about how cyclones and flooding lead to contaminated water sources, causing widespread outbreaks of diseases like diarrhoea, skin infections, and respiratory problems, particularly among children and the elderly. Small business owner added that during disasters, access to clean water and nutritious food becomes extremely limited, weakening immunity and

exacerbating health issues. Health worker elaborated on the challenges faced by healthcare providers during disasters, noting the destruction of health centres, lack of medical supplies, and difficulty in reaching affected areas, which leave many people out of reach. He also highlighted the long-term impacts, such as increased cases of malnutrition, mental health issues, and chronic illnesses due to poor living conditions in the aftermath of disasters. Fisherman recollected how his family often had to endure untreated illnesses during storms, as transportation to hospitals was nearly impossible, and post-disaster relief rarely included adequate medical support. The discussion revealed a critical gap in disaster health management, with participants emphasizing the need for better-equipped healthcare facilities, mobile medical teams, and pre-disaster planning to mitigate health risks. They unanimously called for greater investment in public health infrastructure and awareness programmes to ensure that communities are better prepared to address health challenges during future disasters.

Responses from women's group regarding health impacts of disasters

Women's group mostly consisted of housewives, a tailor and an NGO worker. Women shared their experiences and health related challenges faced during and after disasters. A housewife spoke about how cyclones and floods often lead to outbreaks of waterborne diseases like diarrhoea and skin infections, especially as drinking water becomes contaminated and hygiene practices are compromised. She mentioned the difficulty in accessing medical care due to damaged roads and overwhelmed health facilities. Another housewife added that women face specific health challenges during disasters, including the lack of sanitary supplies and privacy in shelters, which lead to further health complications. Pregnant women and young children, she explained, are especially vulnerable as access to proper nutrition and medical support becomes limited. A women tailor described how her family struggles to afford medicine and treatment for illnesses caused by stagnant water and unsanitary conditions following floods, with her tailoring income being insufficient for such emergencies. Meanwhile, an NGO worker highlighted how the broader community suffers from trauma and stress, which are rarely addressed, along with physical ailments caused by exposure to harsh conditions and poor shelter. She emphasized the need for more mobile health clinics and better disaster-preparedness training focused on health and hygiene. However, they all agreed that the lack of access to healthcare during disasters amplifies suffering, underscoring the urgent need for more resilient health systems, pre-positioned medical supplies, and gender-sensitive approaches to address the unique health needs of women and children during crises.

Box 7. 2 Similarities in Men's and Women's Responses regarding health impacts of disasters

Similarities in Men's and Women's Responses regarding health impacts of disasters:

- Waterborne diseases: Both groups report outbreaks of diarrhea, skin infections, and respiratory problems due to contaminated water and unsanitary conditions following floods and cyclones.
- Limited access to medical care: Both mentions the inaccessibility of healthcare during disasters because of damaged infrastructure and lack of supplies.
- Need for better health infrastructure: Both emphasize the need for mobile clinics, better-prepared health facilities, and pre-disaster planning to manage health risks more effectively.

Box 7. 3 Differences in Men's and Women's Responses regarding health impacts of disasters

Differences in Men's and Women's Responses regarding health impacts of disasters:

Men's responses take a broader, infrastructural view, emphasizing system-wide health breakdowns, mobility challenges, and malnutrition that affect the community during and after disasters.

Women's responses are more personal and specific to gendered experiences, focusing on reproductive health, care responsibilities, sanitation needs, and the compounding effect of economic hardship during health emergencies.

Responses from family members of men and women with disabilities

In the FDGs with family members of men and women with disabilities, many of the above issues were identified regarding health impacts during and after disaster.

Box 7. 4 Health impacts of men and women with disabilities and their family members

Health impacts of men and women with disabilities and their family members:

Most of the participants stated that "We have suffered from diarrhoea, food poisoning, fever, cold, and some feminine diseases due to salinity during and after the disaster".

They have also addressed the health issues of children, pregnant women, and person with disabilities members of the family. As per their comments, these group was found as most vulnerable in terms of health risks.

-FGD with family members of men with disabilities

"During and after the disaster, different types of skin diseases, uterine problems, hair fall, and infection on tongue were found severely. Commonly, children, pregnant women, and old aged members of the family could not move freely".

-FGD with family members of women with disabilities

Box 7. 5 Mental health problem after disaster

Mental health problem after disaster

"People affected by disasters usually have various mental traumas. There is no special counselling programme. However, Project Implementation Officer with the support of some NGOs, organizes courtyard meetings for people having Post Traumatic Stress Disorder (PTSD) in post disaster period to be aware about mental health".

-KII with the UNO of Shyamnagar Upazila

7.2 Measures Taken by Respondents and Their Families to Reduce the Health Impacts During and After Disasters

To reduce the health impacts during disasters, a variety of preventive and responsive measures are taken by both community members and organizations. These may include emergency medical support where mobile health camps and emergency medical teams are deployed in affected areas to provide immediate treatment for common illnesses like fever, diarrhoea, and injuries. Temporary clinics are often set up in cyclone shelters or accessible community points. In addition, distribution of medicine and hygiene kits, access to clean water and psychosocial support are provided by some NGOs and government agencies who distribute essential medicines, oral saline, sanitary napkins, soap, and water purification tablets to prevent the spread of waterborne diseases and promote hygiene. These measures, while helpful, are often limited by logistical challenges, funding shortages, and the overwhelming scale of disasters. Respondents emphasized the need for more sustained investment in disaster-resilient healthcare systems and long-term planning to minimize health risks during future disasters.

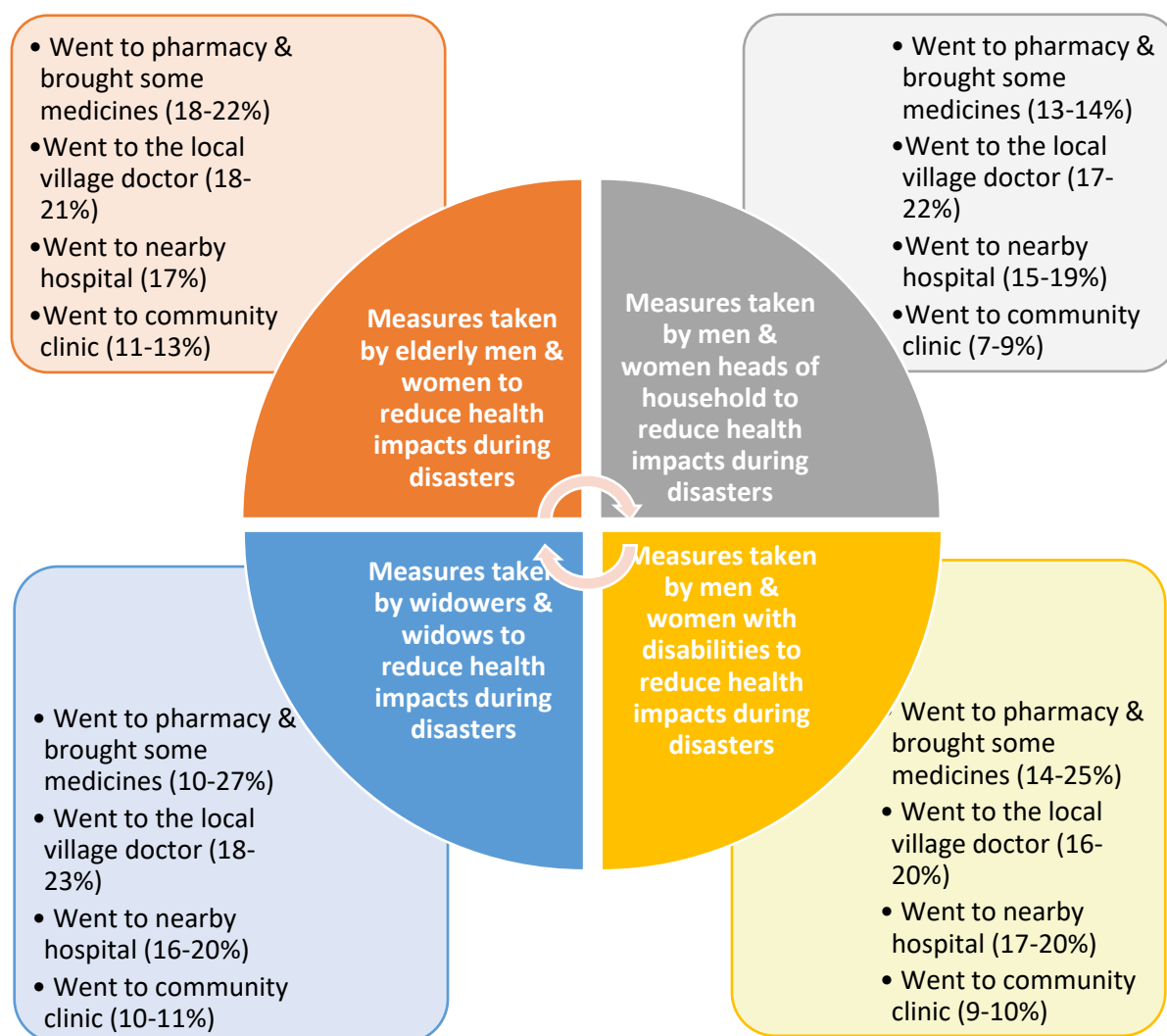
7.2.1 Measures taken to reduce the health impacts during disasters by all categories of respondents

During disasters, community members adopt a variety of strategies to reduce health impacts, with their actions varying based on age, ability, marital status, and household roles. Men and women who serve as heads of households often take initiative by seeking help from local village doctors (17-22%), nearby hospitals (15-19%), pharmacies for over-the-counter medicines (13-14%), and community clinics (7-9%). Elderly men and women, who are more susceptible to health complications, also visit pharmacies (18-22%), village doctors (18-21%), hospitals (17%), and community clinics (11-13%) to manage their health during such critical times.

Widowers and widows, many of whom manage their healthcare independently, take similar steps, including going to pharmacies (10-27%), consulting local doctors (18-23%), visiting hospitals (16-20%), and attending community clinics (10-11%). People with disabilities, who often face added challenges during disasters, also attempt to manage their health by accessing pharmacies (14-25%), local doctors (16-20%), hospitals (17-20%), and community clinics (9–10%).

Across all groups, consulting local village doctors and accessing nearby hospitals appear to be the most common practices, reflecting both the urgency and limited healthcare options available during crises. While pharmacies offer immediate access to basic medicine, the relatively lower use of community clinics suggests that more needs to be done to strengthen their role and accessibility. These findings highlight the community's resilience and adaptability but also underscore the importance of improving health infrastructure, outreach services, and inclusive health support for vulnerable groups during and after disasters.

Figure 7. 3 Measures taken to reduce the health impacts during disasters by all categories of respondents



7.2.2 Measures taken to reduce the health impacts after disasters by all categories of respondents

After disasters, families adopt a variety of measures to reduce health impacts, depending on their roles, vulnerabilities, and access to healthcare services. Elderly men and women mostly seek care from local village doctors (69-76%), pharmacies (58-61%), and also visit community clinics (34-36%) or nearby hospitals (18-21%). Their reliance on local doctors reflects both familiarity and accessibility during post-disaster recovery.

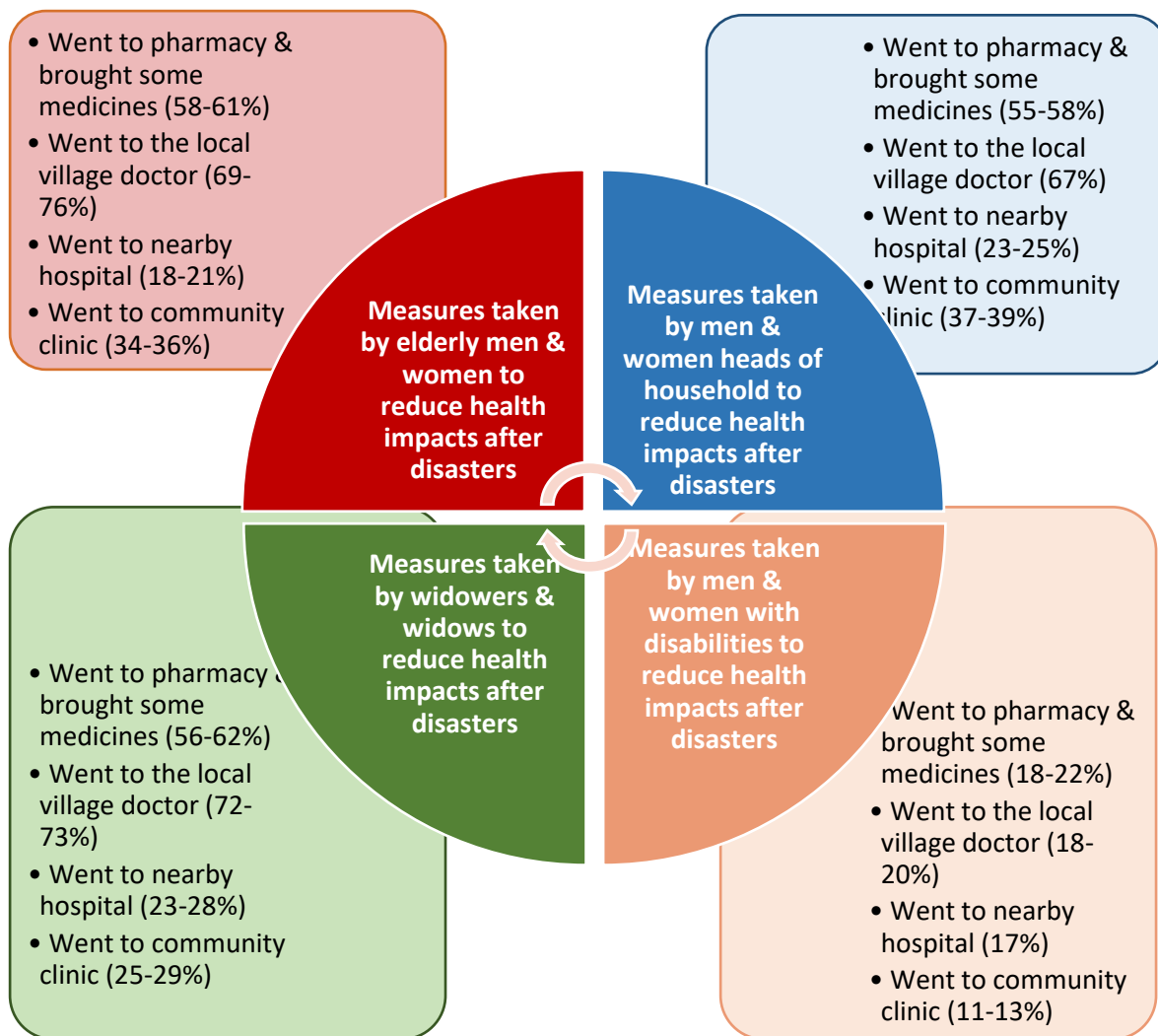
Men and women who are heads of households follow similar health-seeking patterns, with 67 percent visiting village doctors, 55-58 percent going to pharmacies, 37-39 percent utilizing community clinics, and 23-25 percent seeking treatment at hospitals. These households, often responsible for the well-being of all members, show a greater tendency to access multiple types of care providers.

Widowers and widows also respond proactively, primarily by visiting local doctors (72-73%) and purchasing medicines from pharmacies (56-62%). Some also go to hospitals (23-28%) and community clinics (25-29%), showing an increased engagement with formal healthcare channels during the recovery phase.

Men and women with disabilities, however, appear to have limited access to healthcare even after disasters. Only 18-22 percent go to pharmacies, 18-20 percent consult local doctors, 17 percent visit hospitals, and 11-13 percent access community clinics. This highlights their continued vulnerability and the need for more inclusive healthcare responses.

Across all groups, local village doctors remain the most frequently consulted, while community clinics and hospitals gain more prominence after disasters than during them. This suggests a shift towards more formal healthcare systems once access improves, though disparities in access for people with disabilities remain a key concern needing targeted interventions.

Figure 7. 4 Measures taken to reduce the health impacts after disasters by all categories of respondents



7.3 Food Consumption Patterns of Family Members Before, During and After Disasters

7.3.1 Food consumption patterns of men as family members before, during & after disasters

Prior to disasters, men in the household typically consume a regular diet consisting of rice, lentils, seasonal vegetables, and, when affordable, fish or meat. Their meals are generally more consistent in both frequency and portion size compared to women. As primary earners, men are often prioritized in household food distribution, especially in low-income families. Respondents stated different food consumption pattern and strategies of men family members before disasters which includes:

- Consumption of meat and fish (45-90%)
- Consumption of fruits (9-25%)
- Unequal distribution between men & women (19-54%)
- Hunger & food insecurity (4-16%)
- Reducing the number of meals (2%)

Figure 7. 5 Food consumption patterns of men as family members before, during & after disasters

Food consumption patterns & strategies of men family members before disaster	Food consumption patterns of men family members during disaster	Food consumption patterns of men family members after disaster
• Consumption of meat and fish (45-90%) • Consumption of fruits (9-25%) • Unequal distribution between men & women (19-54%) • Hunger & food insecurity (4-16%) • Reducing the number of meals (2%)	• Consumption of meat and fish (4%) • Consumption of fruits (3%) • Unequal distribution between men & women (11-35) • Hunger & food insecurity (40-69%) • Reducing the number of meals (23-64%)	• Consumption of meat and fish (40-83%) • Consumption of fruits (5-18%) • Unequal distribution between men & women (19-46%) • Hunger & food insecurity (11-25%) • Reducing the number of meals (22-43%)

During disasters, men's food consumption is significantly disrupted due to closed markets, damaged roads, and flooded homes. Families often rely on dry or pre-stored food items such as puffed rice, dry lentils, or emergency relief. Meal portions become smaller, and the number of

meals reduces to once or twice a day. While some men report skipping meals to prioritize children or the elderly, men's food intake remains relatively more protected than women's. Respondents stated different food consumption pattern and strategies of men family members during disasters which includes:

- Consumption of meat and fish (4%)
- Consumption of fruits (3%)
- Unequal distribution between men & women (11-35)
- Hunger & food insecurity (40-69%)
- Reducing the number of meals (23-64%)

In the aftermath of disasters, food insecurity continues as income sources are lost and agricultural or fishing activities remain disrupted. Men involved in labour-intensive work suffer from physical exhaustion and reduced work capacity due to poor nutrition. With limited income, their ability to purchase sufficient and nutritious food remains constrained. Respondents stated different food consumption pattern and strategies of men family members after disasters which includes:

- Consumption of meat and fish (40-83%)
- Consumption of fruits (5-18%)
- Unequal distribution between men & women (19-46%)
- Hunger & food insecurity (11-25%)
- Reducing the number of meals (22-43%)

7.3.2 Food consumption patterns of women as family members of respondents before, during and after disasters

Women in the households generally consume staple foods such as rice, lentils, vegetables, and occasionally fish or meat when available. Meals are regular, though often limited in variety and nutritional value due to economic constraints. Women are primarily responsible for food preparation and often prioritized feeding other family members before themselves. Respondents stated different food consumption pattern and strategies of women family members before disasters which includes:

- Consumption of meat and fish (70-93%)
- Consumption of fruits (13-25%)
- Unequal distribution between men & women (62-85%)
- Hunger & food insecurity (6-21%)
- Reducing the number of meals (1-3%)

However, during disasters, the food consumption patterns of women change drastically. Women often reduce their own intake or skipped meals to ensure that children and husbands had enough to eat. Access to food becomes severely limited due to flooded or destroyed markets and supply

chains; loss of stored food and cooking facilities; limited access to clean water, affecting cooking and hygiene. Families mainly rely on dry food such as rice, puffed rice, and lentils, with little to no vegetables or protein sources. Respondents stated different food consumption pattern and strategies of women family members during disasters which includes:

- Consumption of meat and fish (2-5%)
- Consumption of fruits (1-3%)
- Unequal distribution between men & women (49-66)
- Hunger & food insecurity (51-78%)
- Reducing the number of meals (48- %)

In the post-disaster phase, food insecurity persists for weeks or even months. In such situation women usually continue to eat less or lower-quality food, especially as families struggle financially to recover. Gardens and livestock are often destroyed, and incomes were lost, making it difficult to afford a balanced diet. As difficulty in accessing vegetables, protein, and clean water increase, many depend on borrowed money to buy essential food items. Thus, nutritional intake remain low after disasters, particularly for women who continued to deprioritize their own consumption for the sake of other family members. Respondents stated different food consumption pattern and strategies of women family members after disasters which includes:

- Consumption of meat and fish (40-83%)
- Consumption of fruits (5-18%)
- Unequal distribution between men & women (19-46%)
- Hunger & food insecurity (11-25%)
- Reducing the number of meals (22-43%)

Figure 7. 6 Food consumption patterns of women as family members before, during & after disasters

Food consumption patterns & strategies of women family members before disaster	Food consumption patterns of women family members during disaster	Food consumption patterns of women family members after disaster
• Consumption of meat and fish (70-93%) • Consumption of fruits (13-25%) • Unequal distribution between men & women (62-85%) • Hunger & food insecurity (6-21%) • Reducing the number of meals (1-3%)	• Consumption of meat and fish (2-5%) • Consumption of fruits (1-3%) • Unequal distribution between men & women (49-66) • Hunger & food insecurity (51-78%) • Reducing the number of meals (48- 68%)	• Consumption of meat and fish (40-86%) • Consumption of fruits (10-58%) • Unequal distribution between men & women (22-73%) • Hunger & food insecurity (13-28%) • Reducing the number of meals (27-64 %)

7.3.3 Food consumption patterns of children as family members of respondents before, during and after disasters

Children in the households of respondents generally consume a balanced diet that includes rice, lentils, seasonal vegetables, eggs, and occasionally fish or meat, depending on affordability. Families try to ensure that children receive adequate portions to support their growth and health before disasters. Fruits and milk are also sometimes included in their diets, particularly when they are available and affordable. Most households prioritize feeding children, so their food intake tends to be more protected than that of adults, especially women, under normal conditions. Respondents stated different food consumption pattern and strategies of children as family members before disasters which includes:

- Consumption of meat and fish (61-82%)
- Consumption of fruits (11-23%)
- Unequal distribution between boys & girls (27-48%)
- Hunger & food insecurity (3-11%)
- Reducing the number of meals (1-2%)

During disasters, children's food consumption becomes highly compromised. With markets closed, roads blocked, and food supplies disrupted, families rely on limited dry food items such as puffed rice, biscuits, dry lentils, and leftover rice. The variety and nutritional value of food decrease significantly. Many families reduce portion sizes, and meals often drop to once or twice a day. Children experience hunger more frequently, and their intake of protein-rich and nutrient-dense foods like fish, eggs, fruits, and milk becomes almost non-existent. Respondents stated different food consumption pattern and strategies of children as family members before disasters which includes:

- Consumption of meat and fish (1-30%)
- Consumption of fruits (1-7%)
- Unequal distribution between boys & girls (10-28%)
- Hunger & food insecurity (38-56%)
- Reducing the number of meals (27-47%)

The recovery period remains difficult for children in terms of food security after disasters. Loss of income, damaged farmland, or disrupted livelihoods delay the restoration of regular diets. Parents continue to struggle to provide nutritious food, leading to a prolonged period of under-nutrition. Although some improvement occurs with the gradual resumption of work and market activity, many families still cannot afford a diverse diet. Children's consumption of meat, fish, fruits, and milk remains irregular, and they often continue to eat fewer meals than before. This prolonged disruption in diet contributes to malnutrition and weakens children's overall health, making them more susceptible to disease and slower physical development. Respondents stated different food consumption pattern and strategies of children as family members before disasters which includes:

- Consumption of meat and fish (54-71%)
- Consumption of fruits (8-19%)

- Unequal distribution between boys & girls (24-40%)
- Hunger & food insecurity (9-15%)
- Reducing the number of meals (14-27%)

Respondents emphasized the urgent need for child-focused food relief, nutritional supplements, and pre-stocked emergency food items suitable for children, along with post-disaster feeding programmes to support their recovery and growth.

Figure 7. 7 Food consumption patterns of children as family members before, during & after disasters

Food consumption patterns & strategies of children as family members before disaster	Food consumption patterns of children as family members during disaster	Food consumption patterns of children as family members after disaster
• Consumption of meat and fish (61-82%) • Consumption of fruits (11-23%) • Unequal distribution between boys & girls (27-48%) • Hunger & food insecurity (3-11%) • Reducing the number of meals (1-2%)	• Consumption of meat and fish (1-30%) • Consumption of fruits (1-7%) • Unequal distribution between boys & girls (10-28%) • Hunger & food insecurity (38-56%) • Reducing the number of meals (27-47%)	• Consumption of meat and fish (54-71%) • Consumption of fruits (8-19%) • Unequal distribution between boys & girls (24-40%) • Hunger & food insecurity (9-15%) • Reducing the number of meals (14-27%)

7.3.4 Responses from FDGs with community men and women regarding food consumption patterns during and after disasters

Two FDGs were held separately with men and women groups regarding food consumption patterns during and after disasters at village Datinakhali in Shymanagar upazila of Sakthira district.

Responses from men's group regarding food consumption patterns

Men from various occupational group shared their experiences regarding food consumption during and after disasters, highlighting the challenges faced by their family members in the Focus Group Discussion held at village Datinakhali in Shyamnagar upazila.

A farmer explained that disasters like cyclones not only destroy crops but also contaminate water sources, leaving families with limited food supplies and forcing them to rely on emergency aid, which is often insufficient and delayed. Small business owner described how market disruptions during disasters make it difficult to access essential food items, while inflated prices further limit their purchasing power, leading to reduced meals or skipping meals altogether. Health worker highlighted the health consequences of inadequate food intake during disasters, particularly for children and pregnant women, noting a rise in malnutrition and related illnesses due to a lack of

diverse and nutritious food. Fisherman shared that during disasters, his family struggles to secure even basic food supplies as fishing activities are halted, cutting off his income, while relief efforts seldom reach remote areas in time. The men's group collectively emphasized that food insecurity during disasters not only impacts immediate survival but also leads to long-term health and economic challenges. They stressed the importance of pre-disaster planning, including the establishment of community food banks, better distribution of relief materials, and programmes to ensure that vulnerable families have access to nutritious and sufficient food during crises.

Responses from women's group regarding food consumption patterns

Women mostly housewives also shared their food consumption patterns during and after disasters, highlighting the challenges faced by their family members in the Focus Group Discussion held at village Datinakhali in Shyamnagar upazila. Women experienced food insecurity which worsens during crisis times. During cyclones and floods, families often rely on limited stocks of dry food like rice, lentils, and puffed rice, which run out quickly. When markets are closed and transportation are disrupted, accessing fresh food becomes nearly impossible, leading to a decline in nutritional intake, especially for children and the elderly. During these times, women often prioritize feeding their children and husbands while cutting down on their own portions, resulting in widespread hunger and malnutrition among women. Disasters also destroy food supplies stored at home and damage their small income source, making it difficult to buy even basic staple food. On the other hand, relief efforts are often delayed or insufficient, leaving families in dire conditions for weeks. Moreover, the broader community challenges such as contaminated water sources and damaged roads exacerbate the lack of food availability. While NGOs and local organizations try to distribute emergency food relief, it is often not enough to meet the needs of larger families. Women agreed that the food crisis during disasters creates long-term health issues and economic stress, calling for better disaster preparedness, such as pre-stocked food supplies, community storage systems, and enhanced food relief distribution to ensure that no family goes hungry during emergencies.

Box 7. 6 Similarities in men's and women's responses regarding food consumption patterns

Similarities in men's and women's responses regarding food consumption patterns:

- **Food insecurity during disasters:** Both groups noted that disasters cause immediate food shortages due to destroyed crops, damaged food stocks, and disrupted markets.
- **Limited access to nutritious food:** Both reported a decline in diet quality and diversity, especially affecting children and vulnerable family members.
- **Inefficient and delayed relief:** Both mentioned that aid and food relief efforts often come late or are insufficient, especially in remote areas like Datinakhali.
- **Call for preparedness:** Both groups emphasized the need for better food distribution systems, community food storage, and pre-disaster planning.

Box 7. 7 Differences in men's and women's responses regarding health impacts of disaster

Differences in men's and women's responses regarding health impacts of disasters:

Men emphasized economic and supply-side challenges, focusing on how disasters affect income, agriculture, markets, and distribution systems.

Women emphasized the invisible sacrifices within households, especially how they ration food, manage limited resources, and face higher health and nutritional risks during crisis times.

Box 7. 8 Responses from family members of men and women with disabilities

In the FDGs with family members of men and women with disabilities regarding food consumption patterns of men, women and children before, during and after disasters, many of the above food consumption patterns were identified as given in the box below:

Patterns of food consumption among family member before, during and after disasters

Most of the family members of men with disabilities stated that during and after disasters, they did not enough food because they were from vulnerable communities and hardly had enough financial resources. Moreover, some of them shared, "We take meals once a day and sometimes go hungry." However, with NGO initiatives, families having persons with disabilities are provided necessary food during and after disasters, usually those who were in shelters. During COVID-19 pandemic, family members of persons with disabilities were in worst condition when hit by severe cyclone. Fortunately, they were provided the required food support even those living in temporary shelters or in their devastated homes.

- FGD with family members of men with disabilities

Family members of women with disabilities mostly articulated that during and after disaster their food consumption patterns change significantly compared to normal times. Although they have scarcity of food, still they are busy with taking care of life and family resources. Some people hardly could get food to eat and there were instances when they have taken one meal in 2 days. Even those few who had one meal a day could not get sufficient food according to their needs. It was like half starvation.

They also shared that there is evidence of corruption in food distribution to the vulnerable communities and only those who are politically involved with local government agencies get more priority.

-FGD with family members of women with disabilities

7.6 Livelihood Activities Before Disaster and Impacts After Disasters of Respondents' Families

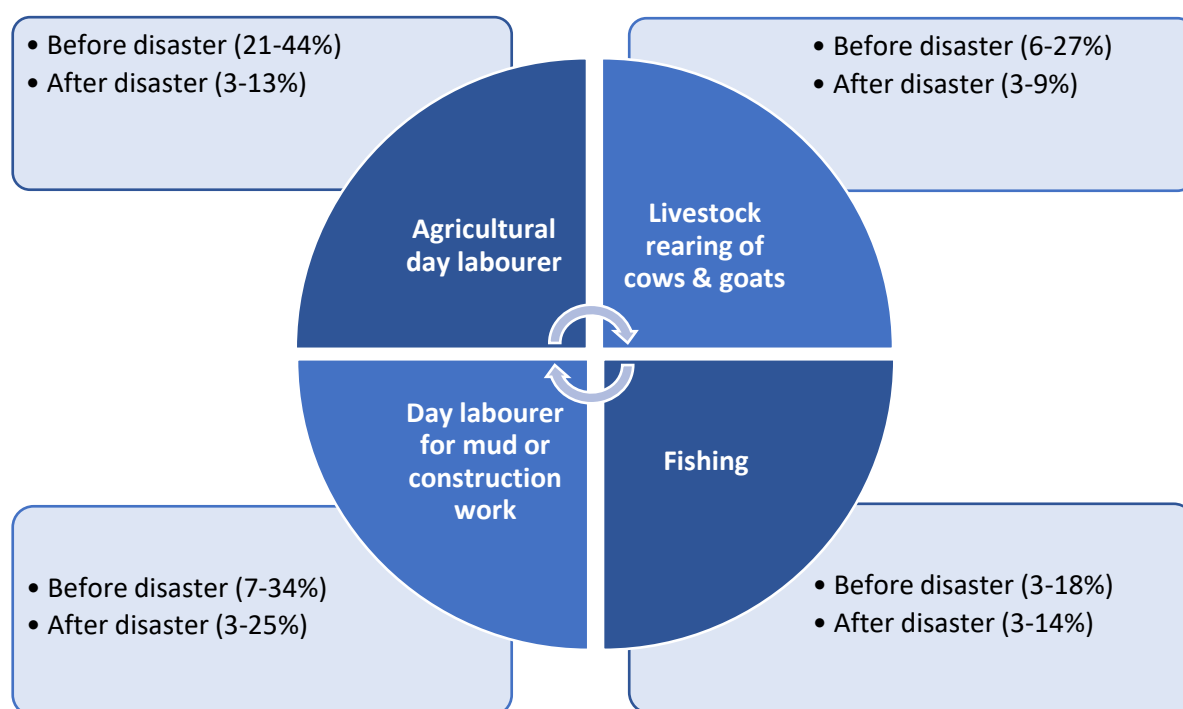
7.6.1 Livelihood activities of men from all categories of respondents before and impacts after disaster

The livelihood activities of men from all categories of respondents experience significant disruption before and after disasters. Prior to disasters, a large proportion of men work as agricultural day labourers, with 21-44 percent engaged in this sector. However, this figure drops

drastically to just 3-13 percent after disasters, indicating the extensive damage to farmland and crop cycles. Similarly, day labourers involved in mud or construction work account for 7-34 percent before disasters, but this reduces to 3-25 percent afterward, reflecting the decline in available work opportunities of men due to damaged infrastructure and halted development activities. In terms of livestock rearing, 6-27 percent of men are involved before disasters, but only 3-9 percent continue this activity after disasters, often due to loss of animals or destruction of shelters. Fishing, another vital livelihood in coastal regions, also sees a reduction from 3-18 percent before disasters to 3-14 percent after owing to damaged fishing equipment, unsafe conditions, and loss of access to rivers and coastal waters.

Overall, these statistics highlight a sharp decline in all forms of traditional livelihood activities for men post-disaster, underlining the urgent need for recovery programmes, livelihood diversification, and skill development initiatives in disaster-affected areas.

Figure 7. 8 Livelihood activities of men from all categories of respondents before and after disaster



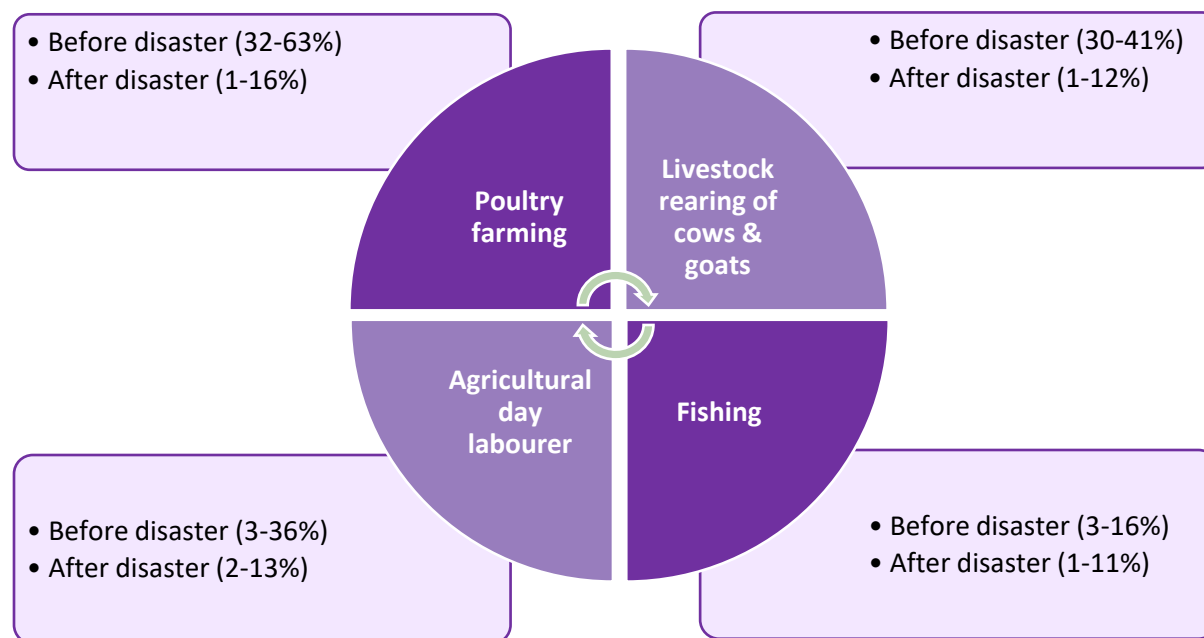
7.6.2 Livelihood activities of women from all categories of respondents before and impacts after disaster

The livelihood activities of women from all categories of respondents experience a stark decline after disasters, especially in rural and disaster-prone areas. Before disasters, a significant proportion of women are engaged in poultry farming, ranging from 32 to 63 percent. This is a common livelihood activity for women due to its proximity to the home and relatively low cost. However, after disasters, this figure drops dramatically to just 1-16 percent as poultry birds often die in floods or storms, and resources to restart farming become scarce. Livestock rearing is another major activity, with 30-41 percent of women involved before disasters. After disasters, the

proportion falls to only 1-12 percent due to the loss of animals, damage to shelters, and lack of access to veterinary care or fodder. Similarly, agricultural day labour employs around 3-36 percent of women before disasters. This too declines sharply to 2-13 percent post-disaster as agricultural lands are often damaged, flooded, or take time to become cultivable again. In fishing and related activities, which include post-harvest work such as drying or sorting fish, 3-16 percent of women are involved before disasters. After disasters, this number reduces to 1-11 percent, primarily due to the disruption of fishing operations and destruction of gear and infrastructure.

These figures highlight the severe impact of disasters on women's livelihoods. The sharp decline in their economic activities not only undermines household income but also deepens gender inequality, as recovery resources are often more accessible to men. Supporting women's livelihood recovery post-disaster is therefore essential for community resilience and equitable development.

Figure 7. 9 Livelihood activities of women from all categories of respondents before and after disaster



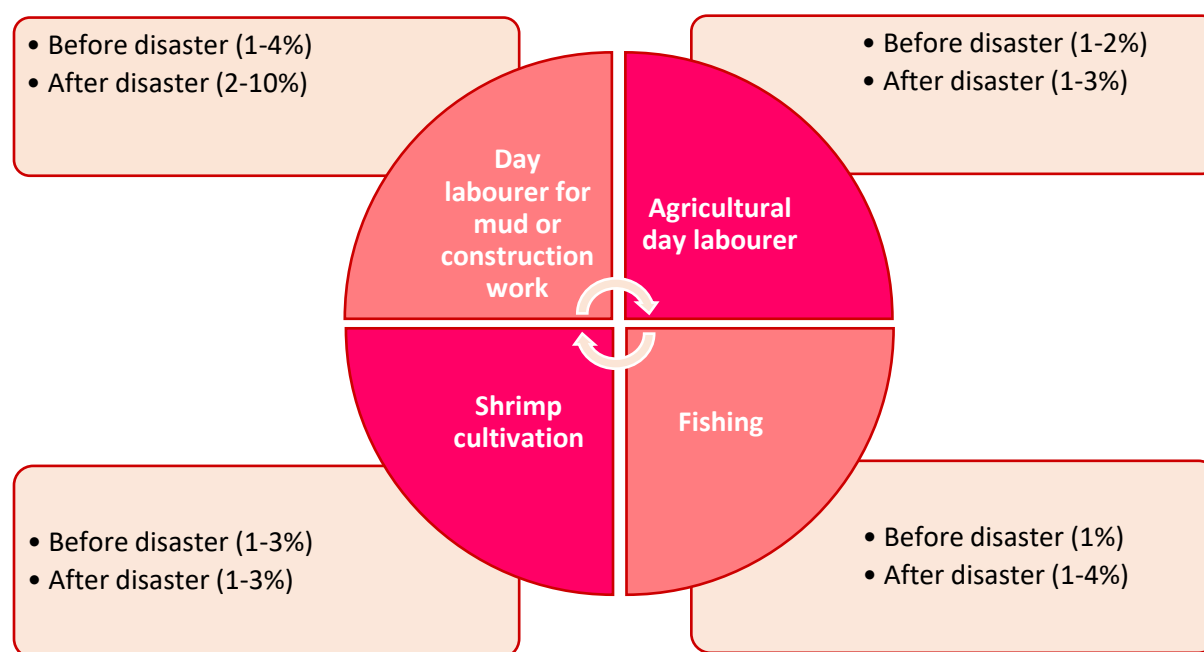
7.6.3 Livelihood activities of children from all categories of respondents before and impacts after disaster

The livelihood activities of children from all categories of respondents show a concerning trend of increased involvement in labor after disasters. Before disasters, only a small percentage of children are engaged in work such as day labour for mud or construction work, ranging from 1 to 4 percent. However, after disasters, this figure rises to 2-10 percent as families face economic hardship and loss of income, compelling children to contribute financially. In the case of agricultural day labour, about 1-2 percent of children are involved prior to disasters. This slightly increases to 1-3 percent afterward, as damaged farmlands require more labour and households may rely on all available members, including children, to recover productivity. Children's participation in shrimp cultivation remains relatively stable, with 1-3 percent engaged both before and after disasters. Despite its

consistency, it still indicates ongoing involvement of children in labour-intensive and often hazardous aquaculture activities. Similarly, involvement in fishing rises from 1 percent before disasters to 1-4 percent after disasters. This increase likely reflects the necessity to support family livelihoods after the destruction of assets and income sources.

Overall, these shifts highlight the growing vulnerability of children in disaster-affected communities. Economic pressures after disasters push more children into the labour force, potentially compromising their education, health, and well-being. This underlines the need for targeted support and protective policies to prevent child labour in post-disaster recovery contexts.

Figure 7. 10 Livelihood activities of women from all categories of respondents before and after disaster



7.6.4 Responses from FDGs with community men and women regarding livelihood activities after disasters

Two FDGs were held separately with men and women groups regarding livelihood activities after disasters at village Datinakhali in Shymanagar upazila of Sakthira district.

Responses from men's group regarding livelihood activities after disasters

Men shared their personal experiences of how disasters have severely impacted their livelihoods, exposing the vulnerabilities of their community. A farmer described how repeated cyclones, such as Aila, Sidr and Amphan, have destroyed crops and have increased the salinity of fertile lands, forcing many farmers to switch to shrimp farming, which offers inconsistent income and further degrades the land. Small business owner explained that his business suffers frequent disruptions as cyclones damage shops and stocks, while prolonged periods of market inactivity make it difficult to recover investments and sustain his family. Health worker highlighted the cascading impact of disasters on health and livelihoods, pointing out that many individuals are unable to

work due to post-disaster illnesses, while access to healthcare becomes increasingly difficult because of damaged healthcare infrastructure. Fisherman recalled losing his fishing nets and boats during storms, leaving him unable to earn for weeks or months, moreover salinity in the water has drastically reduced fish availability, making his livelihood even more uncertain. The group collectively expressed that the compounded impact of disasters on agriculture, business, health, and fishing has pushed families into chronic poverty, forcing some to migrate in search of better opportunities. They emphasized the urgent need for government and NGO interventions to provide financial assistance, alternative livelihood training, and robust disaster preparedness measures to break the cycle of vulnerability and restore sustainable livelihoods.

Responses from women's group regarding livelihood activities after disasters

Women shared how recurrent cyclones and floods have disrupted their means of earning and sustaining their families. A housewife explained that during disaster times, families lose not only their homes but also their primary sources of income, such as livestock and small-scale farming, making survival incredibly challenging. Furthermore, women often take on additional burdens, such as finding alternative food sources and managing resources with limited money. They highlighted the struggles of managing household finances when their husband has lost his daily labour opportunities due to floods or cyclones, leaving the family with no income for weeks. A woman tailor spoke about the repeated losses to her tailoring business, as disasters damage her materials, delay customer payments, and reduce demand, forcing her to borrow money at high-interest rates to recover the loss. She expressed the frustration of starting over again after every disaster. Meanwhile, an NGO worker pointed out the broader impact on community livelihoods, such as destruction of agricultural land due to salinity, damaged infrastructure hindering trade, and limited access to support systems during emergencies. She stressed that while NGOs provide temporary relief, long-term solutions like resilient farming techniques, access to microloans, and training for alternative livelihoods are crucial. The women emphasized that disasters disproportionately affect women with their household responsibilities and economic recovery with minimal support, calling for more inclusive policies and sustainable livelihood programmes to help families bounce back after each disaster.

Box 7. 9 Similarities in men's and women's responses regarding livelihood activities after disasters

Similarities in men's and women's responses regarding livelihood activities after disasters:

- **Severe Disruption of Livelihoods:** Both groups expressed that disasters repeatedly destroy sources of income whether farming, fishing, small businesses, or tailoring.
- **Economic Instability:** They both mentioned financial struggles, such as reduced income, loss of materials/resources, and increased debt following each disaster.
- **Calls for Support:** Both groups emphasized the need for government and NGO interventions, such as financial assistance, alternative livelihood training, and better disaster preparedness.
- **Chronic Vulnerability:** Both men and women noted how the recurring nature of disasters traps families in a cycle of poverty and insecurity.

Box 7. 10 Differences in men’s and women’s responses regarding livelihood activities after disasters

Differences in men’s and women’s responses regarding livelihood activities after disasters:

Men focused more on the direct destruction of their income-generating assets (boats, land, shops) and the systemic barriers to recovery.

Women highlighted their invisible economic contributions, the emotional labor of holding families together post-disaster, and the lack of gender-sensitive support.

7.6.4 Responses from government officials of Shyamnagar regarding impacts of disasters on livelihood activities

In the Key Informant Interviews (KIIs) with UNO and PIO of Shyamnagar upazila many of the above issues were identified regarding impact of disasters on livelihoods activities during and after disaster given in the box below:

Box 7. 11 Impacts of disasters in livelihood activities

Impacts of disasters in livelihood activities

Every disaster causes damages and losses but cyclones damage the most in Shyamnagar.

People lose their livelihood options, livestock, houses etc. in cyclones. The poor suffer more than the rich because they do not have enough resources to cope and recover from the impacts of disasters.

-KII with the UNO of Shyamnagar Upazila

Everyone is more or less affected by the disaster. However, those who are extremely poor, vulnerable women, children, elderly and the person with disabilities are the most affected. They are more sensitive, cannot move alone and their livelihood depends on others. Especially pregnant women and bedridden are more affected by the disaster.

-KII with PIO

7.7 Existing Alternative Livelihood Options in the Area for Men, Women and Children from all Categories of Respondents

In the study area Shyamnagar upazila, a diverse range of alternative livelihood options exists for men, women, and adolescents, reflecting both traditional and adaptive economic activities in response to environmental and disaster-induced challenges. For men, the most prominent livelihood alternatives include small trading (99-100%), van pulling (93-99%), and animal husbandry (93-97%). Fish cultivation (94-97%) and shrimp cultivation (87-94%) are also widely practiced, taking advantage of the region’s aquatic resources. Other notable options include crab cultivation (38-44%), vending (34-45%), and migration for work (32-43%). Although less common, floating agriculture (4-26%), nursery development (11-19%), and honey collecting (3-10%) provide supplementary or seasonal income.

Women also participate in several alternative livelihoods, though their engagement is more limited in high-intensity or mobility-based work. Animal husbandry (92-97%) and small trading (75-90%) are the dominant options for women, allowing them to earn while staying close to home. However, their involvement in fish, shrimp, and crab cultivation, as well as honey collecting, nurseries, and floating agriculture, is minimal (1-5%). Similarly, only a small proportion of women are involved in vending (7-15%) or migration (19-26%), which reflects gendered constraints in mobility and physical labour.

Figure 7. 11 Existing alternative livelihood options in the area for men, women and children

Existing alternative livelihood options in the area for men	Existing alternative livelihood options in the area for women	Existing alternative livelihood options in the area for adolescents
• Small trading (99-100%) • Animal husbandry (93-97%) • Fish cultivation (94-97%) • Shrimp cultivation (87-94%) • Crab cultivation (38-44%) • Honey collecting (3-10%) • Nursery (11-19%) • Floating agriculture (4-26%) • Van pulling (93-99%) • Vending (34-45%) • Migration (32-43%)	• Small trading (75-90%) • Animal husbandry (92-97%) • Fish cultivation (1-5%) • Shrimp cultivation (1-4%) • Crab cultivation (1-4%) • Honey collecting (1-4%) • Nursery (1-4%) • Floating agriculture (1-4%) • Vending (7-15%) • Migration (19-26%)	• Small trading (56-69%) • Animal husbandry (21-31%) • Fish cultivation (1-14%) • Shrimp cultivation (6-11%) • Crab cultivation (6-11%) • Honey collecting (2-7%) • Nursery (1-3%) • Van pulling (49-61%) • Vending (10-25%) • Migration (2-9%)

Among adolescents, alternative livelihoods are emerging as vital coping mechanisms, especially in disaster-prone settings. The most common options include small trading (56-69%), van pulling (49-61%), and to a lesser extent, animal husbandry (21-31%). Some adolescents also engage in fish cultivation (1-14%), shrimp and crab cultivation (6-11%), vending (10-25%), and migration (2-9%). Less frequently, they participate in nursery work (1-3%) and honey collection (2-7%).

Overall, while men have broader access to diversified livelihoods, women and adolescents are gradually engaging in a variety of economic roles. However, their options are often shaped by social norms, access to resources, and the physical demands of the work. Alternative livelihood options in the area reveals that men have the widest range and highest participation across various activities, including small trading, van pulling, animal husbandry, fish and shrimp cultivation, and migration. In contrast, women are mostly engaged in animal husbandry and small trading, with very limited involvement in physically demanding or mobility-based work such as van pulling or aquaculture. Adolescents participate moderately, primarily in small trading, van pulling, and

animal rearing, with growing involvement in aquaculture and vending. Overall, while all groups engage in alternative livelihoods, gender and age influence the type and intensity of their participation.

7.8 Water Sources Before, During and After Disasters

Access to safe water undergoes significant shifts before, during, and after disasters in coastal regions like Shyamnagar. Before disasters, households primarily rely on traditional sources such as ponds (65–73%), pressure sand filters (30-56%), and tube-wells (30-44%). Tap water is available to a limited extent (11-17%), while advanced methods like reverse osmosis and bottled water are rarely used, often due to limited infrastructure and affordability.

Figure 7. 12 Water sources before, during and after disaster for all categories of respondents

Water sources before disaster	Water sources during disaster	Water sources after disaster
• Pond (65-73%) • Pressure sand filter (PSF) (30-56%) • Tube-well (30-44%) • Tap water (11-17%) • Reverse osmosis (1-3%) • Rain water (1%) • River (1%) • Bottle water provided by government organization, NGOs & community people (2%)	• Pond (17-47%) • Pressure sand filter (PSF) (16-29%) • Tube-well (13-29%) • Tap water (1-8%) • Reverse osmosis (4-10%) • Rain water (3-13%) • River (48%) • Bottle water provided by government organization, NGOs & community people (23-64%)	• Pond (27-71%) • Pressure sand filter (PSF) (36-45%) • Tube-well (31-42%) • Tap water (3-46%) • Reverse osmosis (1-3%) • River (1-14%) • Bottle water provided by government organization, NGOs & community people (1-4%)

However, during disasters, access to these sources is severely disrupted due to flooding, salinity intrusion, and infrastructure damage. The reliance on unsafe and exposed sources, such as rivers (48%), increases drastically, posing health risks. Simultaneously, bottled water distribution by government, NGOs, and community networks rises significantly (23-64%), indicating emergency relief efforts. Use of rainwater and reverse osmosis units also increases slightly during this period, reflecting adaptive strategies.

After disasters, as the situation stabilizes, households gradually return to previous water sources, with the use of ponds (27-71%), tube-wells (31-42%), and pressure sand filters (36-45%) increasing once more. While tap water access improves in some areas (3-46%), dependence on bottled water (1-4%) and rivers (1-14%) declines, showing recovery in local water systems. This transition highlights both the vulnerability and resilience of water access systems in disaster-prone areas and emphasizes the need for sustainable, disaster-resilient water infrastructure.

7.9 Water Quality Before, During and After Disasters

Water quality in disaster-prone regions like Shyamnagar significantly fluctuates across different phases of a disaster - posing serious challenges to public health and wellbeing. Before disasters, most households report access to pure drinking water (61-82%), though many have to fetch it from long distances (59-73%). Even in normal times, a considerable percentage of people face unacceptable levels of salinity in drinking water (43-56%), and water scarcity is noted by a smaller portion (14-19%). Only a very small number (1-4%) lack access to pure drinking water altogether.

During disasters, water quality deteriorates rapidly. The availability of pure drinking water drops sharply (13-59%), while salinity becomes a major issue (63-77%), making most sources unfit for consumption. The burden of traveling long distances for water continues for many (39-73%), and some households (up to 33%) report having no access to pure drinking water at all. Water scarcity persists (7-15%), exacerbated by flooding, contamination, and damage to supply systems.

Figure 7. 13 Water quality before, during and after disasters for all categories of respondents

Water quality before disaster	Water quality during disaster	Water quality after disaster
• Pure drinking water was available (61-82%) • Avaialbe drinking water needed to be fetched from long distance (59-73%) • Salinity in water was unexceptable for consumption (43-56%) • Water was scarce but accessible (14-19%) • No pure drinking water (1-4%)	• Pure drinking water was available (13-59%) • Avaialbe drinking water needed to be fetched from long distance (39-73%) • Salinity in water was unexceptable for consumption (63-77%) • Water was scarce but accessible (7-15%) • No pure drinking water (1-33%)	• Pure drinking water was available (51-72%) • Avaialbe drinking water needed to be fetched from long distance (65-75%) • Salinity in water was unexceptable for consumption (55-71%) • Water was scarce but accessible (12-18%) • No pure drinking water (1-5%)

After disasters, water quality begins to improve but does not fully return to pre-disaster levels. Access to pure drinking water recovers to 51-72 percent, yet a large number of households still travel long distances (65-75%) to obtain it. Salinity remains a significant issue (55-71%), highlighting long-term impacts of saltwater intrusion. While extreme scarcity and complete lack of clean water decrease (to 12-18% and 1-5% respectively), the data indicates a lingering need for resilient and accessible water infrastructure to withstand future climate shocks.

7.10 Sanitation and Toilet Facilities Before, During and After Disasters

Access to sanitation facilities varies significantly before, during, and after disasters in disaster-prone areas like Shyamnagar, reflecting the deep impact of environmental shocks on hygiene infrastructure. Before disasters, the majority of respondents (70-78%) report using slab latrines at home, which are basic but functional sanitation facilities. However, a portion of the population still relies on open latrines with makeshift walls (10-17%), and a very small percentage (1-5%) has access to sanitary latrines with water systems. Alarming, 1-7 percent do not have slab latrines, and 2-9 percent report having no toilet facilities at all, indicating pre-existing vulnerabilities.

During disasters, the situation worsens drastically. The number of households able to use slab latrines at home drops to 20-34 percent, likely due to flood damage or displacement. Use of sanitary latrines with water systems increases (19-32%), largely due to temporary installations in shelter homes (4-9%). However, the percentage of people with no access to any latrine rises sharply to 16-24 percent, reflecting the breakdown of sanitation infrastructure. Open latrines (11-21%) and non-slab options (1-11%) become more common, raising health and hygiene risks.

Figure 7. 14 Sanitation and toilet facilities before, during and after disasters for all categories of respondents

Sanitation and toilet facilities before disasters	Sanitation and toilet facilities during disasters	Sanitation and toilet facilities after disasters
• Slab latrine at home (70-78%) • Open latrine at makeshift wall (10-17%) • Sanitary latrine with water system (1-5%) • No slab latrine (1-7%) • No latrine at all (2-9%)	• Slab latrine at home (20-34%) • Open latrine at makeshift wall (11-21%) • Sanitary latrine with water system (19-32%) • No slab latrine (1-11%) • Latrine at shelter home (4-9%) • No latrine at all (16-24%)	• Slab latrine at home (77-83%) • Open latrine at makeshift wall (1-9%) • Sanitary latrine with water system (2-14%) • No slab latrine (1-6%) • No latrine at all (1-13%)

After disasters, there is significant recovery in access to slab latrines at home (77-83%), showing efforts to rebuild. Open latrine usage drops to 1-9 percent, and sanitary latrines with water systems increase slightly (2-14%). Yet, a portion of the population (1-6%) still lacks slab latrines, and 1-13 percent report having no latrines at all, pointing to ongoing disparities in recovery.

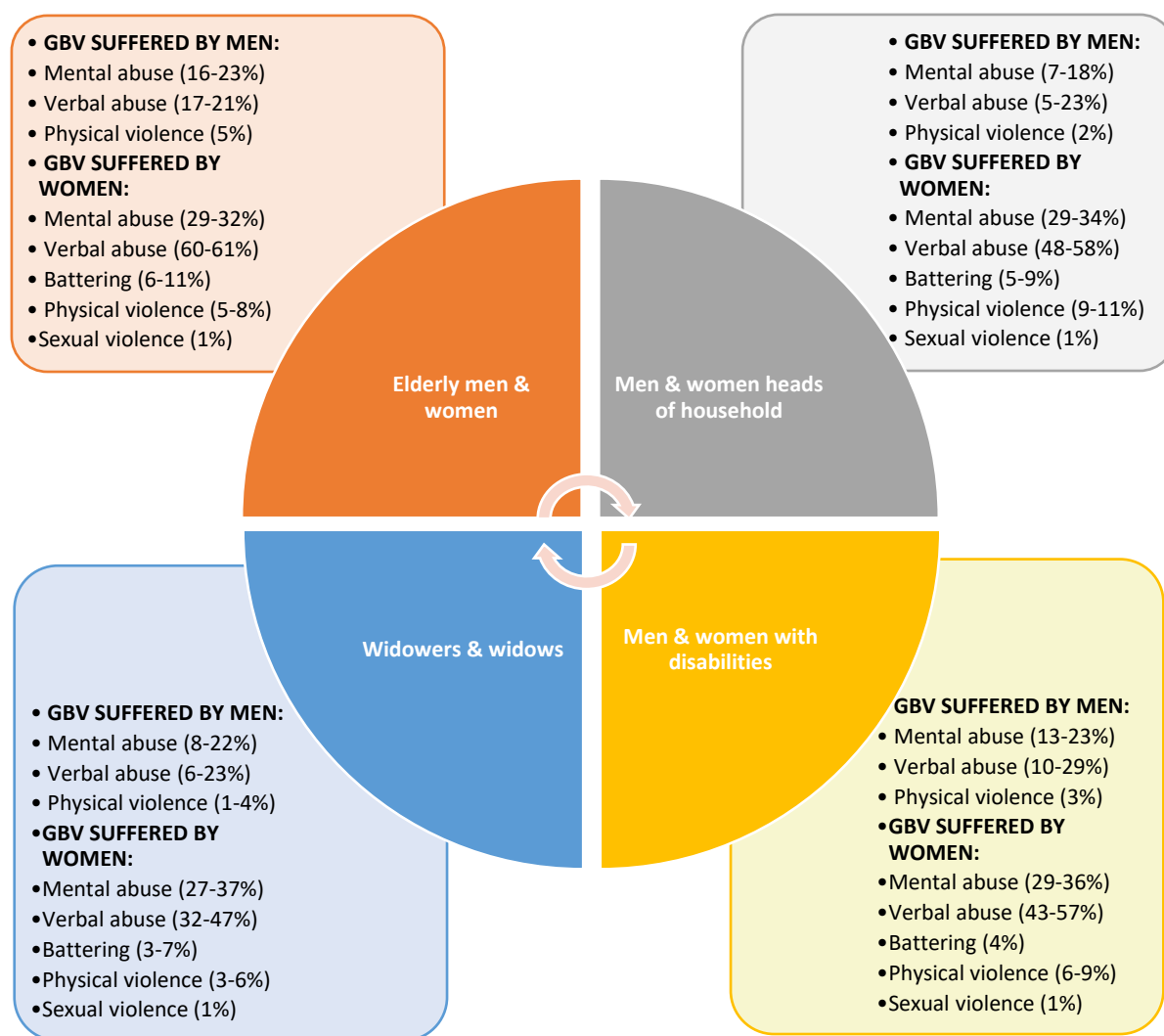
Overall, the analysis reveals that while sanitation infrastructure recovers post-disaster, the period during disasters poses the highest risk, particularly for vulnerable groups, and highlights the need for resilient, accessible, and emergency-ready sanitation solutions.

7.11 Prevalence of Gender Based Violence (GBV) Suffered by Men and Women During Disasters among all Categories of Respondents

During and after disasters, gender-based violence (GBV) affects both men and women, though women and girls are disproportionately impacted. The stress and instability caused by disasters intensify existing gender inequalities, exposing both groups to different forms of violence inside the home, in shelters, and in public spaces.

7.11.1 Gender based violence (GBV) suffered by men and women during disasters inside the house

Figure 7. 15 Gender based violence (GBV) suffered by men & women inside the house



The prevalence of gender-based violence (GBV) experienced by both men and women inside the house, highlighting how different groups such as the elderly, heads of households, widows/widowers, and persons with disabilities are affected. Across all groups, women consistently face higher levels and a wider range of GBV compared to men. Common forms

include mental and verbal abuse, with women also experiencing battering, physical, and sexual violence to a greater extent. Among elderly men and women, women report up to 61 percent verbal abuse and 32 percent mental abuse, while men report 17–21 percent verbal and 16–23 percent mental abuse, with 5 percent experiencing physical violence. In household heads, women face 58 percent verbal abuse and up to 34 percent mental abuse, with 9–11 percent facing physical violence, while men's experiences are significantly lower. Widows and widowers show a similar trend, where widows face up to 47 percent verbal abuse and 37 percent mental abuse, while widowers experience up to 23 percent verbal and 22 percent mental abuse.

In households with persons with disabilities, women again suffer more: 57 percent verbal abuse, 36 percent mental abuse, and up to 9 percent physical violence, while affected men report 13–23 percent mental and 10–29 percent verbal abuse. Notably, sexual violence, though comparatively lower, is reported across all groups of women (1%), reflecting a persistent risk.

Overall, the data underscores the gendered nature of domestic violence, with women—especially those vulnerable due to age, disability, or widowhood—bearing the brunt of GBV within the household. Men, although less affected, also experience significant mental and verbal abuse, indicating that GBV inside homes is a critical concern for all genders, demanding inclusive and protective responses.

7.11.2 Gender Based Violence (GBV) suffered by men and women during disasters outside the house

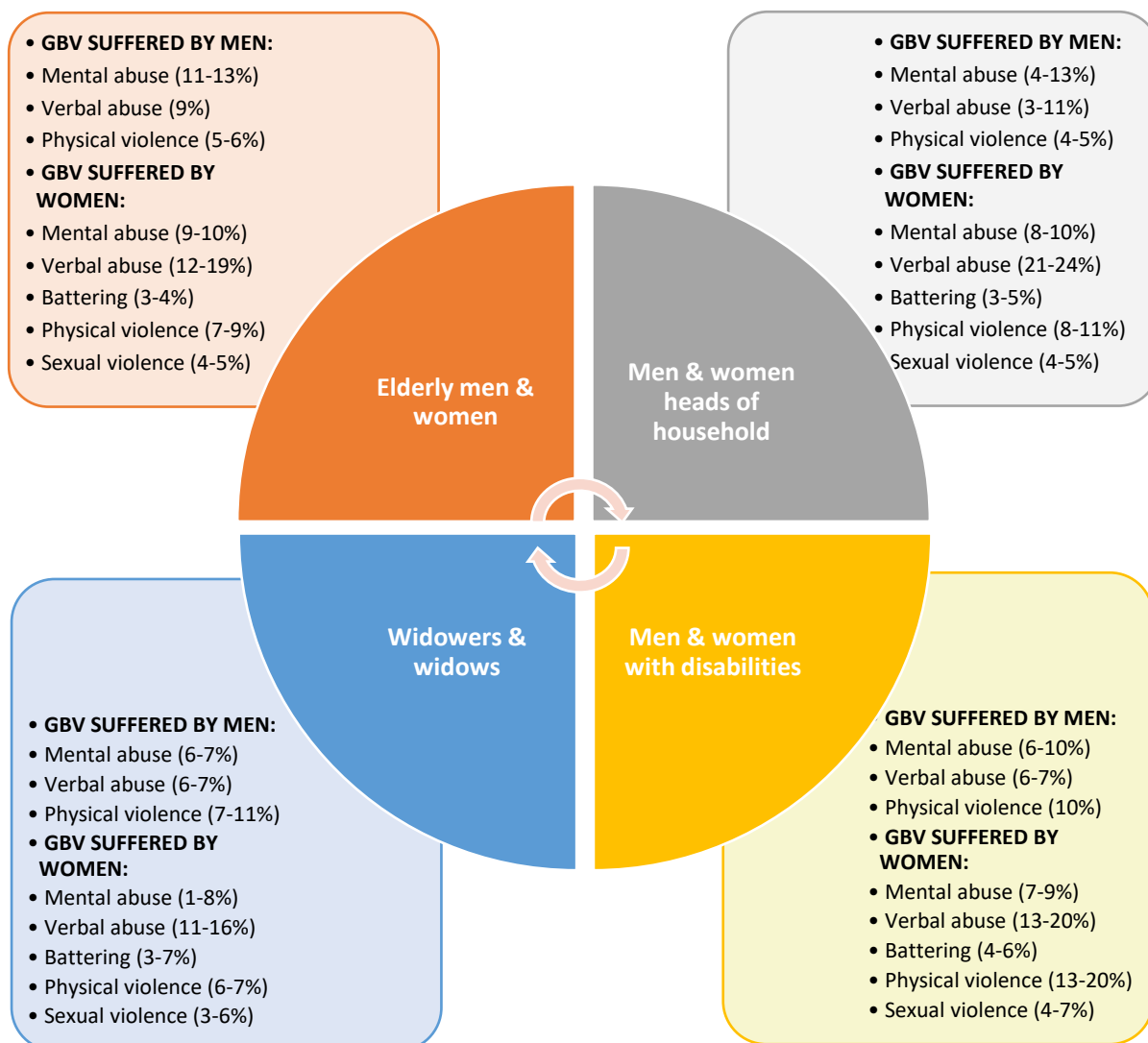
The gender-based violence (GBV) experienced by men and women outside the house, particularly among vulnerable groups such as the elderly, household heads, widows/widowers, and persons with disabilities have been highlighted. The data clearly reflects that women are disproportionately affected by various forms of GBV outside the home compared to men.

Among elderly individuals, women suffer higher rates of verbal abuse (12-19%), physical violence (7-9%), and sexual violence (4-5%), while men face 11-13 percent mental abuse and 5-6 percent physical violence. Similarly, for men and women heads of household, women report significantly more verbal abuse (21-24%), physical violence (8-11%), and sexual violence (4-5%), in contrast to men, whose experiences range from 4-13 percent mental abuse to 4-5 percent physical violence.

Among widows and widowers, women again show higher vulnerability, with physical violence (6-7%) and sexual violence (3-6%) being notable, while men experience 7-11 percent physical violence and 6-7 percent mental/verbal abuse. Finally, for persons with disabilities, women are most affected, with up to 20 percent physical violence and 4-7 percent sexual violence, while men show 10 percent physical violence and up to 10 percent mental abuse.

This comparative overview reveals that GBV outside the household remains a persistent and severe threat to women, especially those who are marginalized by age, disability, or widowhood. Although men also report incidents of violence, women consistently face broader and more severe forms, including battering and sexual assault, underscoring the urgent need for targeted protection and support systems in public and community spaces during and beyond crises.

Figure 7. 16 Gender based violence (GBV) suffered by men & women outside the house



7.11.3 Gender based violence (GBV) suffered by men and women during disasters in shelters

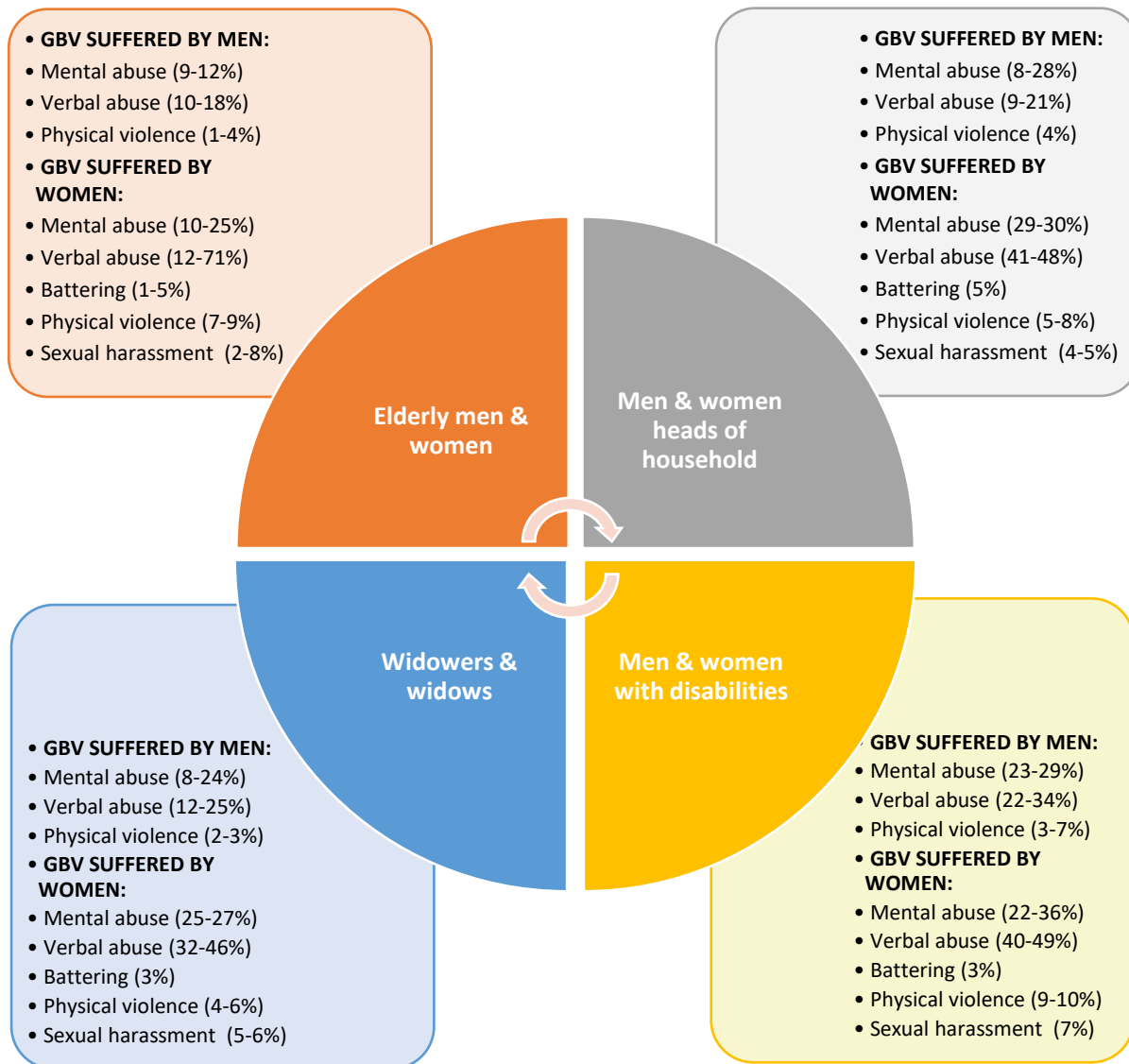
The data reveals a troubling pattern of gender-based violence (GBV) experienced by both men and women in disaster shelter across different vulnerable groups, with women consistently facing higher and more varied forms of abuse. Mental abuse affects both genders significantly, with women with disabilities (22-36%) and female heads of households (29-30%) reporting the highest incidence. For men, those with disabilities (23-29%) experience the most mental abuse compared to other male groups.

Verbal abuse is the most widespread form of GBV, with elderly women reporting rates as high as 71 percent, while women with disabilities (40-49%) and female heads of households (41-48%) also face high verbal abuse. In contrast, verbal abuse among men peaks among those with disabilities (22-34%), though all groups face notable levels.

Physical violence and battering are less frequent but remain concerning. Women with disabilities (9-10%) and elderly women (7-9%) report the highest physical violence, while battering is present across all female groups (1-5%), indicating ongoing intimate partner or domestic abuse. Men face lower rates of physical violence, with the highest among those with disabilities (3-7%).

Sexual harassment, exclusively reported for women, is highest among women with disabilities (7%), followed by widows (5-6%) and female heads of households (4-5%), highlighting their increased vulnerability in both public and private spaces.

Figure 7. 17 Gender based violence (GBV) suffered by men & women in disaster shelters



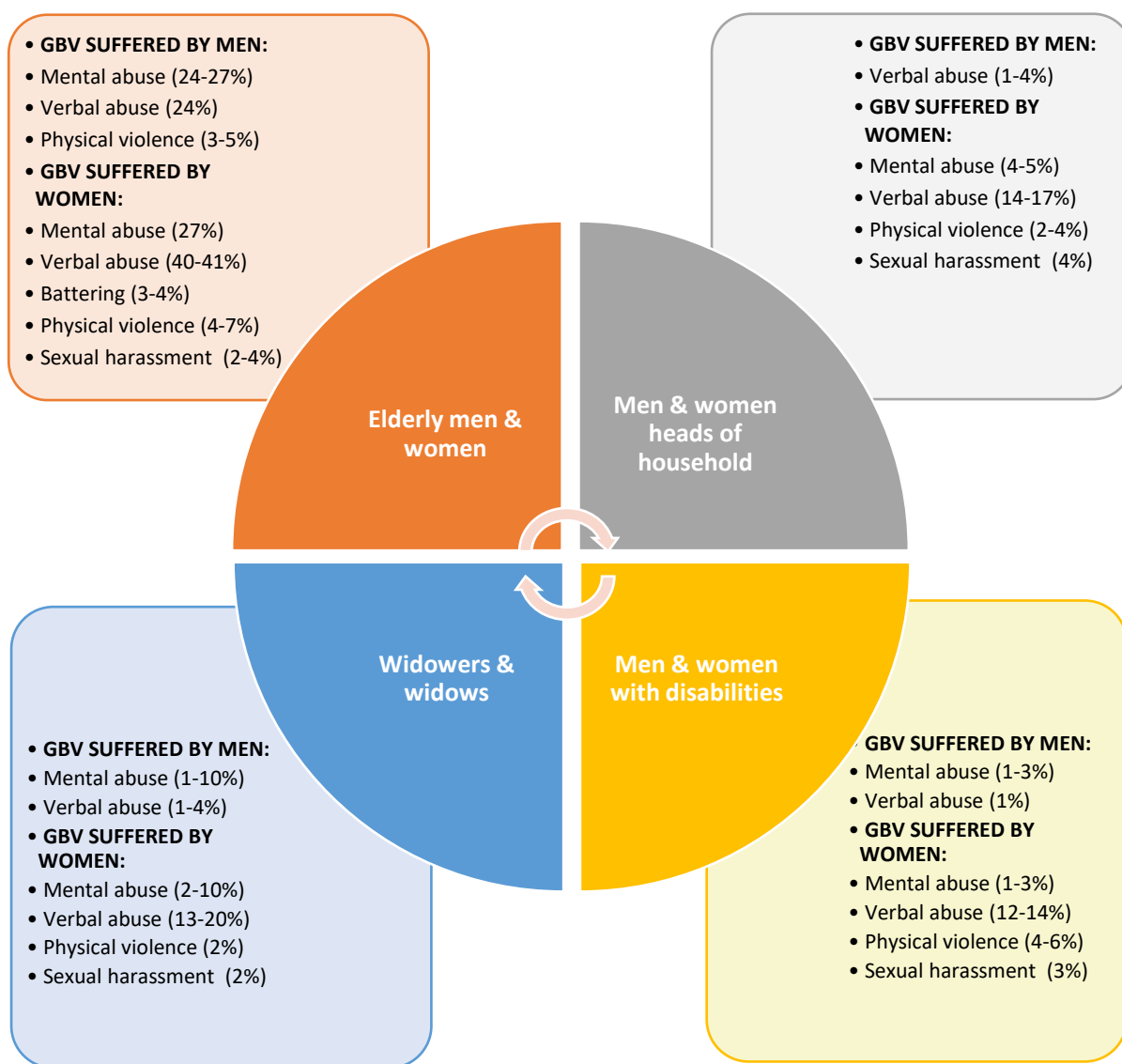
In summary, women, particularly those with disabilities, elderly, or heading households, face a wider range and higher incidence of GBV. While men are not immune- especially those with disabilities- the gendered disparity in type and intensity of abuse is clear. These findings

underscore the urgent need for targeted protection and GBV mitigation strategies that address both gender and social vulnerabilities.

7.11.4 Gender based violence (GBV) suffered by men and women during disasters in other places like school as shelters etc.

In other shelter places like school as shelters, the data on gender-based violence (GBV) reveals a gradual shift in the experiences of different vulnerable groups, with elderly populations still reporting the highest levels of abuse overall. Among elderly men, mental abuse (24-27%) and verbal abuse (24%) remain notable, along with physical violence (3-5%).

Figure 7. 18 Gender based violence (GBV) suffered by men & women in other places like school as shelters etc.



Elderly women, however, continue to face more diverse and severe forms of GBV, with mental abuse (27%), verbal abuse (40-41%), and physical violence (4-7%), along with battering (3-4%) and sexual harassment (2-4%), highlighting their particular vulnerability.

In contrast, men and women heads of household report significantly lower levels of GBV. Men in this category only report verbal abuse (1-4%), whereas women face mental abuse (4-5%), verbal abuse (14-17%), physical violence (2-4%), and sexual harassment (4%), suggesting that even within more stable household structures, women still face multiple forms of abuse.

Widowers and widows also show lower but still relevant exposure to GBV. Widowed men experience mental abuse (1-10%) and verbal abuse (1-4%), while widowed women report mental abuse (2-10%), verbal abuse (13-20%), physical violence (2%), and sexual harassment (2%), again underlining persistent risks for women.

For people with disabilities, the pattern is notably different. Men report very low levels of abuse, with mental abuse (1-3%) and verbal abuse (1%), while women with disabilities still experience mental abuse (1-3%), verbal abuse (12-14%), physical violence (4-6%), and sexual harassment (3%). Though lower than previous data sets, this still reflects a gendered vulnerability that persists regardless of physical or social condition.

Overall, while the intensity and variety of GBV have declined slightly in this dataset, women- especially elderly, widowed, and those with disabilities-continue to face disproportionate risks, pointing to the need for focused interventions that address both gender and intersecting vulnerabilities such as age and disability.

7.11.5 Gender based violence (GBV) suffered by children during disasters inside and outside the house

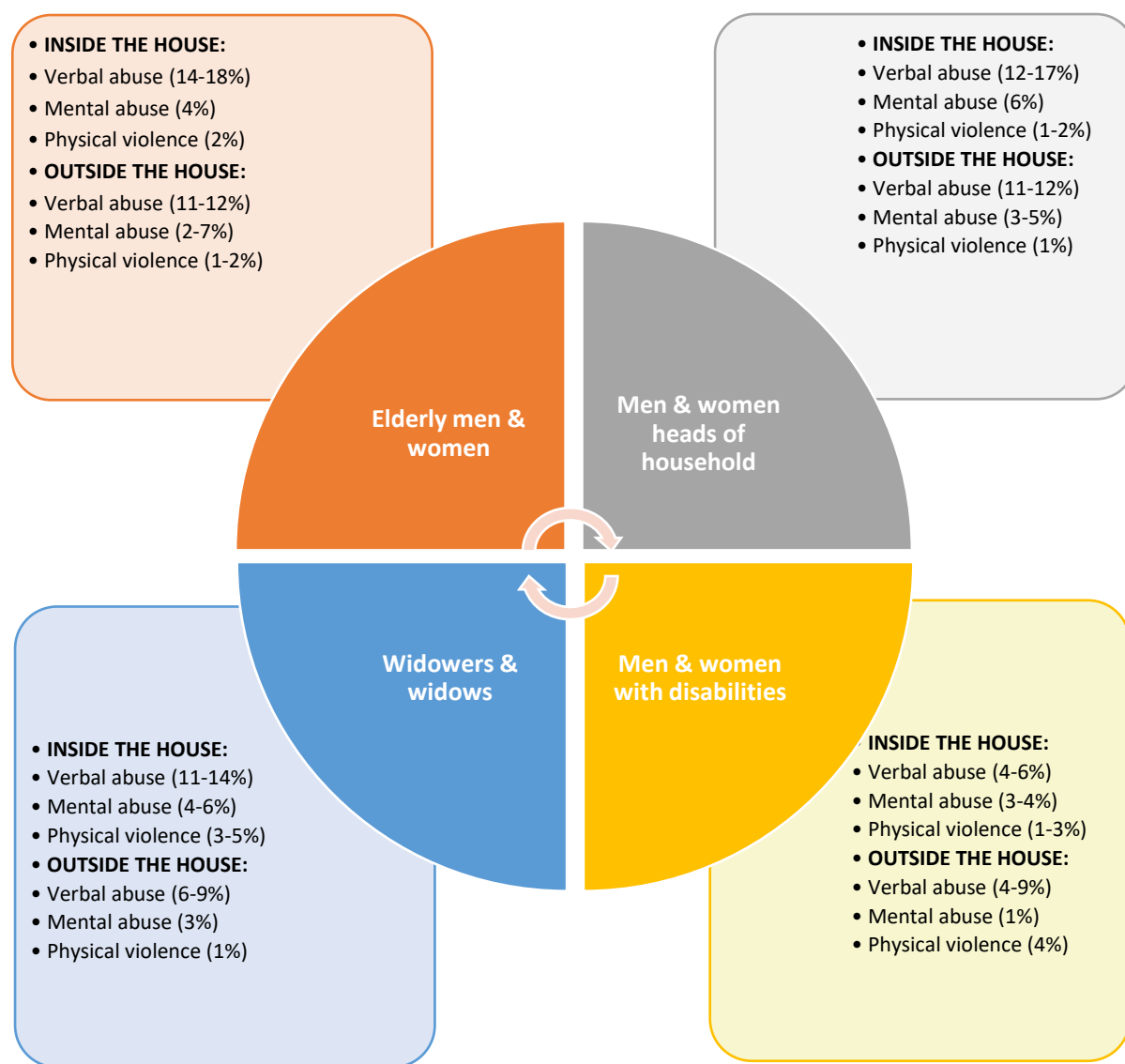
The data on gender-based violence (GBV) suffered by children during disasters, based on reports from different household categories, reveals notable differences in abuse experienced inside and outside the home. Across all groups, verbal abuse inside the house is consistently reported at higher rates, with the highest among children in households of elderly men and women (14-18%) and men and women heads of household (12-17%).

Children in widowed households also faced considerable verbal abuse (11-14%), while the lowest was in households with people with disabilities (4-6%). Mental abuse inside the home ranged from 3-6%, with slightly higher rates in widowed and head-of-household categories. Physical violence inside the house, while generally less prevalent, still appeared across all groups, peaking in widowed households (3-5%).

Outside the home, verbal abuse remained a concern but was slightly lower in most groups compared to indoors, especially among widowed households (6-9%) and households with persons with disabilities (4-9%). Mental abuse outside ranged from 1-7 percent, most frequently reported in elderly households. Interestingly, physical violence outside the house was relatively low across groups (1-2%), except in households with persons with disabilities, where it reached 4%, the highest reported rate.

These findings emphasize the dual vulnerability of children during disasters- not only to environmental hazards but also to increased GBV risks in both domestic and public spaces. Tailored child protection strategies are crucial, particularly in widowed, elderly, and disabled-headed households, where certain forms of abuse are more pronounced.

Figure 7. 19 Gender based violence (GBV) suffered by children during disasters

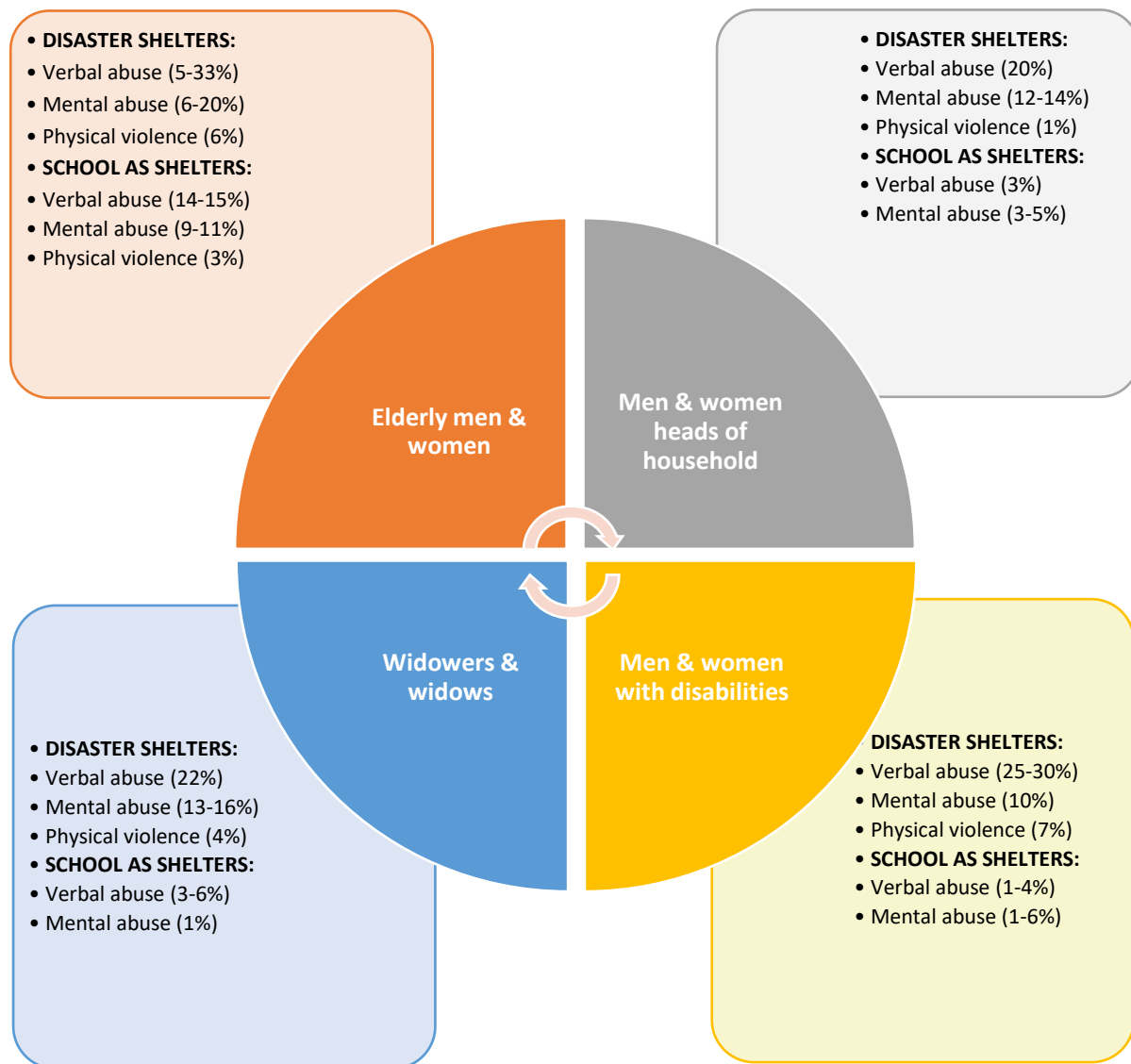


7.11.6 Gender based violence (GBV) suffered by children during disasters in disaster shelters and school as shelter etc.

The data on gender-based violence (GBV) suffered by children in disaster shelters and schools used as shelters during disasters reveals significant variation depending on the type of shelter and household type. In disaster shelters, verbal abuse rates are the highest across all groups, especially among children from elderly households (5-33%) and households with persons with disabilities (25-30%). These children also reported considerable mental abuse - up to 20 percent in elderly households and 13-16 percent in widowed households. Physical violence in disaster shelters is also

notable, particularly among children from disabled households (7%) and elderly households (6%), suggesting that children in these environments face heightened risks of harm and mistreatment during displacement.

Figure 7. 20 Gender based violence (GBV) suffered by children during disasters in disaster shelters and school as shelter etc



In contrast, schools used as shelters appear to be relatively safer environments, with lower reported rates of all forms of abuse. The highest reported verbal abuse in schools comes from children in elderly households (14-15%), while mental abuse peaks at 9-11 percent in the same group. For other groups, verbal and mental abuse rarely exceeds 6 percent, and physical violence is either low

or not reported at all. Children from disabled households report the lowest rates of GBV in school shelters, with verbal abuse at just 1-4 percent and mental abuse at 1-6 percent.

Overall, these findings suggest that disaster shelters pose a higher risk for children in terms of exposure to GBV, particularly verbal and mental abuse, while schools as shelters offer a relatively safer alternative. The data underscores the need for strengthened child protection protocols in disaster shelters and prioritization of schools or family-based shelters where feasible, especially for vulnerable groups such as the elderly, widowed, or disabled-headed households.

7.11.6 Responses from FDGs with community men and women regarding gender-based violence during disasters

Responses from men's group regarding gender based violence during disasters

Participants shared their observations and concerns about the rise in violence against women during and after disasters, revealing the compounded vulnerability faced by women in these crises. Bakik Gazi², a farmer described how the displacement caused by cyclones and flooding often forces women to live in overcrowded shelters where privacy is limited, making them more vulnerable to physical and sexual violence. He also noted that in the chaos of post-disaster recovery, women often face increased domestic violence, as men struggle with stress, loss of income, and frustration, leading to tensions and abusive behaviour at home. Small business owner Harun-or-Rashid shared similar concerns, mentioning that during disasters, women are left with added responsibilities, such as caring for children and elderly family members, which often leaves them exposed to exploitation or harassment, especially when families are forced to stay in temporary shelters or seek refuge in unfamiliar areas. Health worker Shamim Sarker emphasized that the psychological impact of disasters exacerbates the vulnerability of women, who already face social inequality, making it harder for them to seek help or report violence. He pointed out that healthcare services are often overwhelmed during disasters, and women in particular struggle to access reproductive health services, increasing the risk of sexual violence and exploitation. Fisherman Rifat Hawlader shared his concern about the increase in early marriages, as some families, in an effort to reduce economic burdens during hard times, marry off their daughters at younger ages after a disaster, which exposes them to greater risks of abuse and exploitation. The group collectively agreed that violence against women during disasters is an often-overlooked aspect of disaster impact, and they stressed the need for better community awareness, stronger legal protection, and accessible support services for women. They called for specific interventions to address gender-based violence, including training for both men and women on safe practices during disasters, ensuring better privacy and safety in shelters, and improving women's access to healthcare and legal resources.

Responses from women's group regarding gender based violence during disasters

In a focus group discussion on violence against women during disasters in Shyamnagar, Satkhira, four women Hasina Begum, a housewife; Sanzida Akter, also a housewife; Zorina Begum, a tailor; and Shumiya Akter, an NGO worker shared their experiences and concerns regarding the increase in violence against women during times of crisis. Hasina Begum explained that during and after disasters like cyclones and floods, families face immense stress, and this often leads to heightened domestic violence. She noted that men, overwhelmed by the loss of livelihood and security, may

² Actual names are used taking prior consent of the respondents

turn to alcohol or other harmful behaviors, which puts women and children at greater risk of physical and emotional abuse. Sanzida Akter added that the overcrowded conditions in cyclone shelters can also contribute to abuse, as women are forced to share space with strangers, and there is a lack of privacy and security. She emphasized that in these situations, women feel particularly vulnerable and unable to seek help. Zorina Begum pointed out that in addition to physical violence, women also face exploitation, especially in the form of sexual harassment or trafficking, as they are displaced and separated from their communities. She mentioned that the lack of proper support systems makes it difficult for women to report these incidents, leaving many without justice or protection. Shumiya Akter, drawing from her work with an NGO, spoke about the importance of providing psychosocial support, legal aid, and protection services for women in disaster situations. She stressed the need for training community leaders and shelter staff to identify signs of violence and respond appropriately. All the women agreed that disasters exacerbate existing gender-based violence issues, and without a strong, coordinated response, women continue to suffer in silence. They called for better disaster response mechanisms that include gender-sensitive policies, safe spaces for women, and accessible support services to prevent and address violence during and after disasters.

Box 7. 12 Similarities in Responses regarding gender based violence during disasters

Similarities in Responses regarding gender based violence during disasters:

- **Acknowledgment of Increased GBV during Disasters:** Both men and women groups clearly recognized that disasters escalate the risk of violence against women, particularly in the form of domestic abuse, sexual violence, and harassment.
- **Concerns about Overcrowded Shelters:** Both men and women pointed to overcrowded and insecure cyclone shelters as dangerous spaces where women's privacy and safety are compromised.
- **Stress and Economic Strain as Triggers:** Both men and women groups mentioned that economic hardship and emotional stress among men after disasters often translate into increased domestic violence.
- **Need for Interventions:** Both men and women called for better protection systems, including legal aid, support services, and awareness training to prevent and respond to violence

Box 7. 13 Differences in Responses regarding gender based violence during disasters

Differences in Responses regarding gender based violence during disasters:

Men's responses reflect awareness and concern, with an emphasis on social causes and system-level changes to reduce GBV during disasters.

Women's responses highlight personal experiences and lived realities, including the fear, helplessness, and silence many face due to the lack of support and protection.

In the FDGs with family members of men and women with disabilities, many of the above issues were identified regarding their understanding of gender violence (during & after disaster) as given in the box below:

Box 7. 14 Family members understanding of gender violence

Family members understanding of gender violence

In most of the families, both wife & husband work outside their homes to meet living expenses. During the disaster, they lost their jobs and experienced financial crises which resulted in a big violence in the family.

Financial insolvency created chaos in the disaster affected areas and communities. For this reason, husbands felt depression, children and wives were physically tortured.

-FGD with family members of men with disabilities

During the disaster, many of the families were unable to migrate to the safe places. The family members had to stay at a congested space which hampered their physical and mental health, and gender violence came out eventually. After disaster, they had to collect relief and while taking relief goods, the women didn't get sufficient space and even the women were tortured physically, received slang language from the men.

-FGD with family members of women with disabilities

Box 7. 15 Gender based violence during disasters

Natural disasters disrupt the life of large number of people every year as well as destroys the rural economies and social structures. In post disaster settings, gender based violence such as sexual harassment, verbal abuse, physical violence and mental abuse etc., has increased. Besides, there may be some cases of land dispute. Most of the cases are solved by the Union Parishad at the local level.

-KII with the UNO of Shyamnagar Upazila

7.12 Displacement and Migration During Disasters

Displacement and migration are common and often unavoidable outcomes of disasters in vulnerable areas like coastal Bangladesh. During disasters such as cyclones, floods, and tidal surges, people are frequently forced to evacuate their homes in search of safety, shelter, and survival. This displacement can be both temporary and long-term, depending on the severity of the disaster and the ability to recover. Many families, especially in low-lying areas like Shyamnagar upazila, move to emergency shelters, higher ground, or urban centers to escape rising waters, destroyed homes, or loss of livelihood. In many cases, this internal migration is not planned but rather a reactive step to immediate threats. Entire communities are uprooted, often without adequate support or preparation.

Men typically migrate in search of income-generating opportunities, leaving behind women, children, and elderly family members who face additional vulnerability. Women and girls, during such displacement, face heightened risks of gender-based violence, health issues, and economic insecurity, especially when relocated to overcrowded or unfamiliar areas. Children's education is also disrupted, and they may be pulled into labour due to financial strain.

The breakdown of social networks, lack of access to healthcare, and limited job opportunities in new locations further complicate the experience. For many, the migration results in long-term social and economic instability, with few returning to their original homes due to repeated environmental shocks or lack of resources to rebuild. To mitigate these challenges, there is a need

for planned relocation strategies, resilient infrastructure, social safety nets, and livelihood support both in origin and destination areas. Migration should be viewed not just as a crisis response but as a strategic adaptation tool if supported with the right policies and resources.

Gender differences in migration patterns

Dhaka city emerges as a key destination for men, with 3-50 percent migrating there, compared to only 3-13 percent of women. This suggests that men are more likely to travel to the capital in search of work or safety. Neighbouring villages saw high female migration (75%), indicating that women who migrate often stay closer to their home due to safety concerns, responsibilities, or cultural norms. In contrast, 8-50 percent of men also move to neighbouring villages, possibly as an initial coping mechanism before relocating further if needed. Migration within the same village is relatively low for both genders (men 9%, women 8-11%), pointing to limited movement when local options for shelter are available. Urban/city areas within Satkhira district are more frequently reported by men (8-43%), while women do not mention this destination, reinforcing the idea that men migrate more often to urban centers for employment opportunities.

Distant migration and cross-district movement

Men also show significant mobility across different districts. Far away villages are chosen by 3-42 percent of men and 7 percent of women, suggesting that men are more likely to relocate far from their original homes. Migration to other districts (e.g., Chattogram, Cox's Bazar, Faridpur, Jashore, Khulna, etc.) ranges from 3-7 percent among men, while Khulna (7%) is the only district destination reported by women. This limited inter-district migration among women may be due to security risks or family responsibilities. Notably, cross-border migration to India is mentioned by 3-5 percent of men and a higher 13 percent of women, potentially indicating instances of family reunification, trafficking vulnerabilities, or perceived safety across the border.

Box 7. 16 Migration of men and women during disasters

Places where people have moved or migrated	Men (%)	Women (%)
Dhaka city	3-50	3-13
Same village	9	8-11
Neighbouring village	8-50	75
Urban/city within Satkhira district	8-43	-
Far away village	3-42	7
Barishal district	3	-
Chattogram district	7	-
Cox's Bazar district	3	-
Faridpur district	3	-
Gopalganj district	3	-
Jashore district	3-7	-
Khulna district	3-7	7
Madaripur district	3	-
Mymensingh district	3	-
Sylhet district	3	-
Cross-border migration to India	3-5	13

In summary, men are more likely to migrate longer distances and to urban or capital areas, reflecting their role as income earners and greater freedom of movement. Women, on the other hand, typically stay closer to home, preferring neighbouring or same-village options, but are also more vulnerable to cross-border migration, which may include forced or unsafe movements. This gendered pattern of migration underscores the need for targeted support systems that address the specific challenges faced by both men and women during disaster-induced displacement.

7.12.2 Responses from FDGs with community men and women regarding displacement and migration during disasters

Responses from men's group regarding displacement and migration during disasters

Men who participated in the discussion highlighted their personal experiences related to forced migration during disaster times from Shamnagar upazila, an area vulnerable to severe cyclones and flooding. A farmer shared how the changing climate, combined with the destruction of crops and lands by recurring disasters, often forces farmers like him to migrate in search of more fertile land or other work opportunities. A businessman also provided insights into the challenges faced by small business owners who, when disaster strikes, often lose their assets and are compelled to move to cities or neighboring areas for survival and rebuilding their businesses. A health worker approaches the families who are migrating in the aftermath of disasters, particularly focusing on the health impacts, the loss of healthcare access, and how the shifting of populations affects community health systems. The fisherman discussed the situation of fishermen, who are particularly vulnerable due to the destruction of fishing equipment, saline water intrusion, and the depletion of fish stocks in the aftermath of cyclones, which drive many to migrate in search of livelihood opportunities. Together, they will reflect on how migration, while often seen as a necessity, brings with it the loss of homes, livelihoods, and social structures, leading to long-term socio-economic implications for the people of Shyamnagar.

Responses from women's group regarding displacement and migration during disasters

A housewife explained that during cyclones and floods, families are often forced to leave their homes for higher ground or temporary shelters, sometimes relocating for weeks or even months. She mentioned that migration disrupts not only daily life but also long-term stability, as people lose access to their livelihoods and struggle to return to normal once the disaster passes. Another housewife added that many families in Shyamnagar, especially women, migrate to nearby towns or cities in search of work or safety. However, migration comes with its own set of challenges, such as limited job opportunities, poor living conditions, and the emotional strain of leaving behind everything. A woman tailor explained how, as a small business owner, she has had to move temporarily with her family when floods damage her home and business, but the constant relocation makes it hard to rebuild her tailoring work and reconnect with customers. She also mentioned that migration can lead to increased vulnerability, especially for women who lack social networks in new areas. Drawing on NGO experience, a NGO worker pointed out that while migration may seem like a survival strategy, it often exposes women and children to exploitation, such as trafficking or sexual harassment, in unfamiliar places. She also emphasized that migration disrupts access to essential services like healthcare, education, and legal protection. The women collectively agreed that migration is a complex coping mechanism driven by the severity of disasters, but it requires more comprehensive support systems, including livelihood opportunities in both the home area and migration destinations. They called for better planning to address the root causes of migration, such as improving disaster preparedness, creating safer migration routes,

and providing targeted assistance to women and children to reduce their vulnerability during forced displacement.

Box 7. 17 Similarities in Men's and Women's Responses regarding displacement and migration during disasters:

Similarities in Men's and Women's Responses regarding displacement and migration during disasters:

- **Acknowledgment of Forced Migration:** Both men and women recognize displacement as a survival strategy during and after disasters such as cyclones and floods.
- **Loss of Livelihoods:** All participants emphasized how disasters disrupt or destroy income sources, forcing people to migrate in search of work.
- **Disruption of Daily Life and Stability:** Both groups mentioned that migration leads to loss of routine, difficulty rebuilding, and long-term instability.
- **Call for Support:** Both groups stressed the need for better planning, support systems, and alternatives to migration, such as improving disaster preparedness and livelihood opportunities in affected areas.

Box 7. 18 Differences in Men's and Women's Responses regarding displacement and migration during disasters

Differences in Men's and Women's Responses regarding displacement and migration during disasters:

Men's perspectives largely emphasize economic and infrastructural impacts, seeing migration as an economic response to environmental degradation and resource loss.

Women's perspectives highlight the personal, emotional, and gender-specific challenges tied to migration, such as increased risk of exploitation, difficulty maintaining family life, and lack of support systems in unfamiliar areas.

Responses from FDGs with family members of men and women with disabilities

Many of the above issues were identified regarding their understanding of displacement and migration (during & after disaster) as given in the box below:

Box 7. 19 Family members understanding of displacement and migration

More than twenty families were forced to move different areas in Jashore, Khulna, and Dhaka during disasters. However, very few families returned to their own villages after the disasters. Many families had to stay at the new shelters for a long period of time. Disaster ultimately causes them a permanent displacement from their birth place.

FGD with family members of men with disabilities

Thirty to fifty families forced to move from Satkhira to Khulna, Jashore, Barishal, Dhaka, and Rangamati during and post disaster times. Few widows had to move to their parental homes and others had to take up work as domestic aids in the adjacent cities.

FGD with family members of women with disabilities

Box 7. 20 Displacement leading to migration

“Temporarily displaced populations usually return to their homes after the disaster. Some people go to Dhaka, Khulna and sometimes in India to work so that they can recover from the losses and damages they had. Union Parishad makes a list of affected people including migrated people using D-form and SOS form”.

KII with the UNO of Shyamnagar Upazila

7.13 Overview of the Impacts of Disasters among Vulnerable Groups

The chapter provides a comprehensive exploration of the impacts of disasters on health, food security, livelihoods, and gender-based violence among vulnerable populations in coastal Bangladesh. It highlights how disasters such as cyclones and floods severely disrupt daily life, especially for women, children, the elderly, and persons with disabilities.

Health issues are widespread during and after disasters, including fever, diarrhea, skin diseases, and respiratory infections, exacerbated by poor sanitation, unsafe water, and overcrowded shelters. Mental health problems, such as depression and anxiety, are prevalent among all groups, with women facing additional reproductive health issues and PTSD. Children suffer from increased illness and malnutrition, particularly in prolonged post-disaster conditions.

To manage health risks, families rely on local doctors, pharmacies, and community clinics. However, access is often limited, particularly for people with disabilities. Emergency interventions like mobile health camps and hygiene kit distributions offer short-term relief but fall short of addressing long-term health needs.

Food security is significantly affected. Before disasters, men and women consume modest but regular meals, with men often receiving preferential portions. During disasters, food intake drops sharply; women frequently skip meals for their families, and children’s diets become nutritionally inadequate. After disasters, food scarcity persists due to income loss and damaged resources. Women and children continue to bear the brunt of food deprivation, affecting their health and development.

Livelihoods are disrupted across all groups. Men experience sharp declines in traditional employment such as farming, fishing, and labor work. Women's livelihoods, including poultry farming and livestock rearing, suffer dramatic losses. Children increasingly engage in labor post-disaster to support household income, raising concerns about education and child protection.

Alternative livelihoods like small trading, van pulling, and aquaculture exist, with men participating the most. Women and adolescents engage in limited activities due to gender norms and physical demands. While there is some diversification, gendered barriers continue to restrict opportunities for women and youth.

Water and sanitation access deteriorates during disasters due to flooding, salinity, and infrastructure damage. While bottled water and temporary solutions are provided, the lack of durable water systems remains a major challenge. Sanitation facilities collapse during disasters, and recovery is uneven, leaving many with no or inadequate access.

Gender-based violence intensifies during disasters, affecting women, men, and children in homes, shelters, and public spaces. Women suffer more frequent and severe abuse, including physical, verbal, and sexual violence. Men also report mental and verbal abuse, especially those with disabilities. Children face abuse both at home and in shelters, with those from elderly and widowed households being especially vulnerable. Schools used as shelters are perceived as relatively safer environments.

Displacement and migration are common, often forced and unplanned. Men usually migrate for work to cities like Dhaka, while women tend to stay closer to home due to safety and family responsibilities. Cross-border movement, especially among women, indicates heightened vulnerability to trafficking and exploitation. This migration disrupts education, healthcare access, and social networks, leading to prolonged instability.

Overall, it underscores the complex interplay of gender, age, disability, and poverty in shaping how communities experience and recover from disasters. It calls for inclusive, gender-sensitive policies, improved infrastructure, and targeted support to build resilience in disaster-prone regions.

Chapter 8

Disaster Preparedness and Support Services

The chapter on disaster preparedness and supports services dealt with the respondents and their household family members regarding support services provided by government and NGOs. Regarding disaster preparedness the focus was mainly on information regarding early warning, who provided this information and which were the most effective. It also discussed on various support services such as food, water, medicine, monetary support, shelter, clothing, bedding and housing materials which were provided to the affected community during and after the disaster. Key Informant Interviews with various stakeholders who are involved in disaster preparedness and also providing support services after disasters have given an in-depth information of their different activities undertaken at the community level.

8.1 Disaster Preparedness Activities taken in Previous Disasters by Respondents

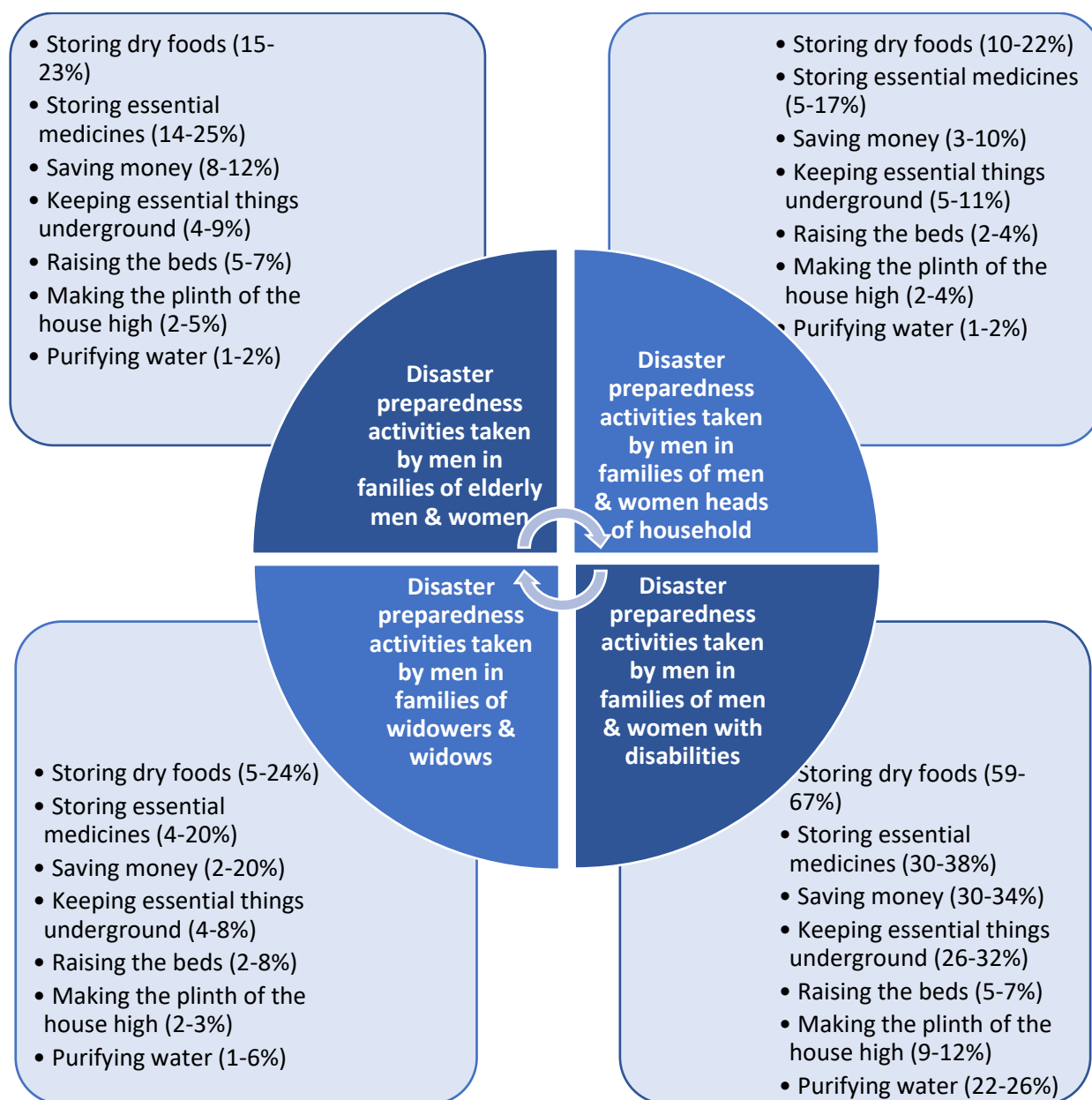
Various disaster preparedness activities were taken by respondents and their family members during previous disasters. These measures were mainly using indigenous, local knowledge and practices when they had experienced cyclones namely *Yaas* (2021), *Amphan* (2020), *Bulbul* (2019) and *Aila* (2009) or severe floods way back in 1988. However, majority of them were involved during the cyclone *Amphan* as in recent times, community people are more aware of the consequences of cyclones. They now understand the importance of disaster preparedness more than before to save lives and basic necessities prior disasters. People have also reported about the requirements of receiving more supports for reducing disaster risks and vulnerabilities.

8.1.1 Disaster preparedness activities taken by men in previous disasters

The disaster preparedness activities undertaken by men in different vulnerable groups reveal a notable disparity in engagement levels, particularly in terms of proactive measures. Men and women with disabilities reported the highest levels of preparedness across all activities taken by men. A significant majority stored dry foods (59-67%), essential medicines (30-38%), and saved money (30-34%), while also engaging in structural adaptations such as raising the beds (5-7%) and making the plinth of the house high (9-12%). In contrast, elderly men and women, widowers and widows, and men and women heads of household demonstrated moderate to low levels of preparedness. Elderly participants showed fairly consistent behavior in storing dry food (15-23%) and essential medicines (14-25%) but had minimal water purification (1-2%) and house elevation (2-5%). Widowers and widows exhibited a wide range of engagement by storing dry foods (5-24%) and saving money (2-20%) but these figures varied greatly, suggesting inconsistent preparedness. Heads of household, while typically assumed to be better resourced, reported surprisingly lower figures across most categories, especially in purifying water (1-2%) and elevating house structures (2-4%).

Overall, the data highlights a crucial gap in preparedness among more socially and economically disadvantaged or overlooked groups, pointing to a need for targeted, inclusive disaster risk reduction strategies.

Figure 8. 1 Disaster preparedness activities taken by men in previous disasters



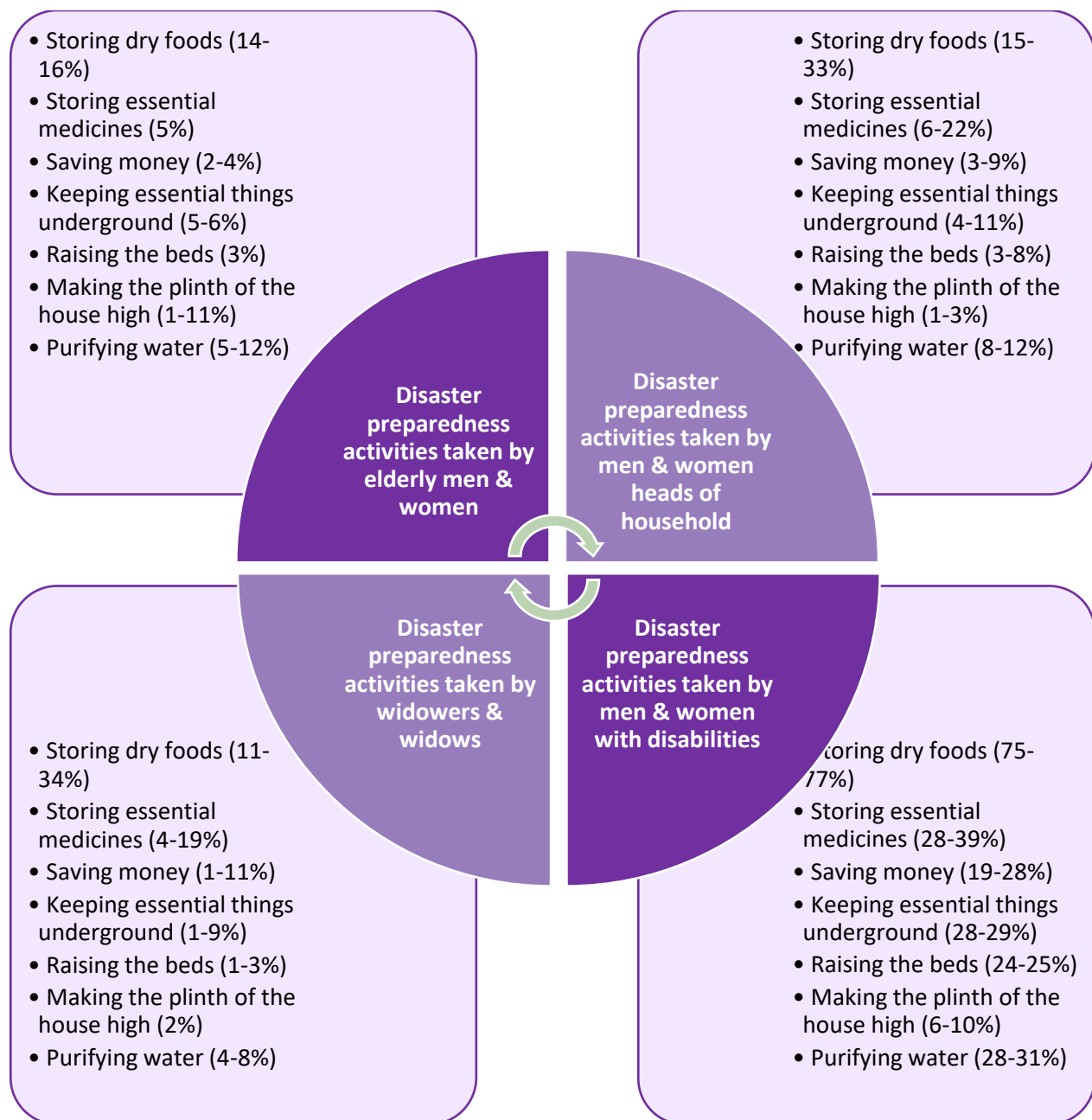
8.1.2 Disaster preparedness activities taken by women in previous disasters

Disaster preparedness activities undertaken by women across different household categories reveal a significant variation in both the level and type of engagement. Women with disabilities demonstrated the highest levels of preparedness, with a large majority storing dry foods (75-77%), essential medicines (28-39%), saving money (19-28%), and purifying water (28-31%). They were also more involved in structural preparations like raising beds (24-25%) and making the house plinth high (6-10%), showing a comprehensive approach to risk mitigation. In contrast, women in elderly households displayed the lowest levels of preparedness, with only 14-16 percent storing dry foods and minimal percentages for other activities, such as purifying water (5-12%) and saving money (2-4%). Widows and widowers showed a more varied range, with moderate participation

in storing dry foods (11-34%) and essential medicines (4-19%), though they were less involved in infrastructure-related preparations. Similarly, female heads of household demonstrated moderate activity in storing dry foods (15-33%) and essential medicines (6-22%) but lower involvement in structural adaptations like raising beds (3-8%) or making house plinths high (1-3%).

The comparison suggests that women with disabilities are notably more proactive in disaster preparedness than their counterparts, possibly due to increased vulnerability and awareness, whereas elderly women and widows often face barriers that hinder comprehensive preparation. This underscores the need for more inclusive and accessible disaster readiness programmes tailored to different vulnerabilities.

Figure 8. 2 Disaster preparedness activities taken by women in previous disasters

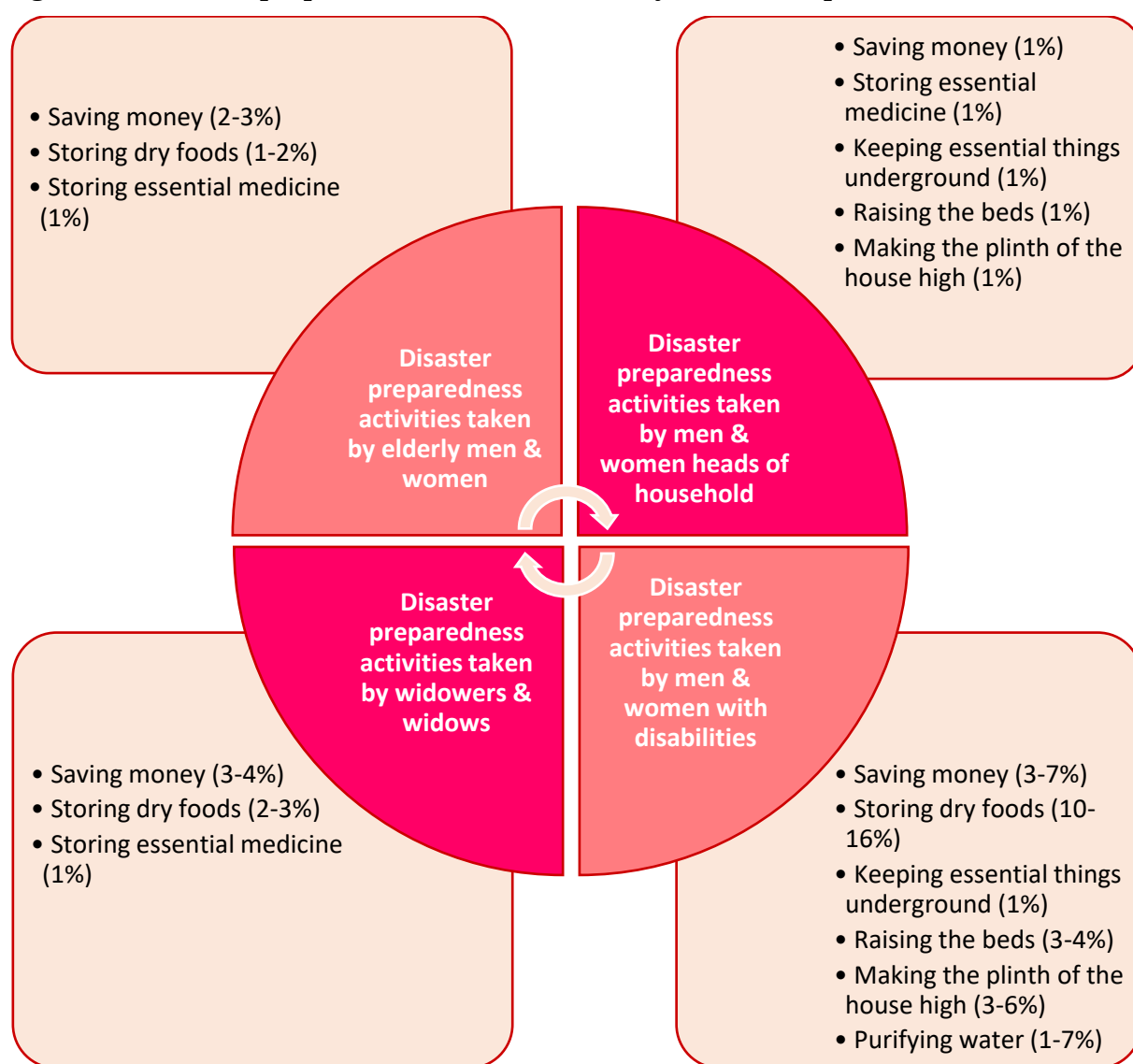


8.1.3 Disaster preparedness activities taken by children in previous disasters

Disaster preparedness activities undertaken by children across various household categories reveal limited but notable involvement, particularly among those from households with disabilities. Children from families with disabilities showed the highest level of participation, especially in storing dry foods (10-16%), saving money (3-7%), and engaging in structural preparations such as raising beds (3-4%) and elevating the house plinth (3-6%).

Some also participated in purifying water (1-7%), indicating a more holistic preparedness approach. In contrast, children from elderly households had minimal engagement, with only 1-2 percent storing dry foods and essential medicines and 2-3 percent saving money. Similarly, children in households headed by men and women or widowers and widows showed very low involvement, with activities like saving money (1-4%) and storing dry foods (2-3%) being the most common, while structural measures were nearly absent.

Figure 8. 3 Disaster preparedness activities taken by children in previous disasters



The comparison highlights that while children's overall role in disaster preparedness remains low, those in households with people with disabilities tend to be more active, possibly due to heightened household awareness and collective effort. This underscores the potential to increase children's involvement through targeted awareness and empowerment initiatives, especially given their capacity to contribute meaningfully when encouraged.

8.2 Most Effective Disaster Preparedness Activities taken by all Categories of Respondent Households

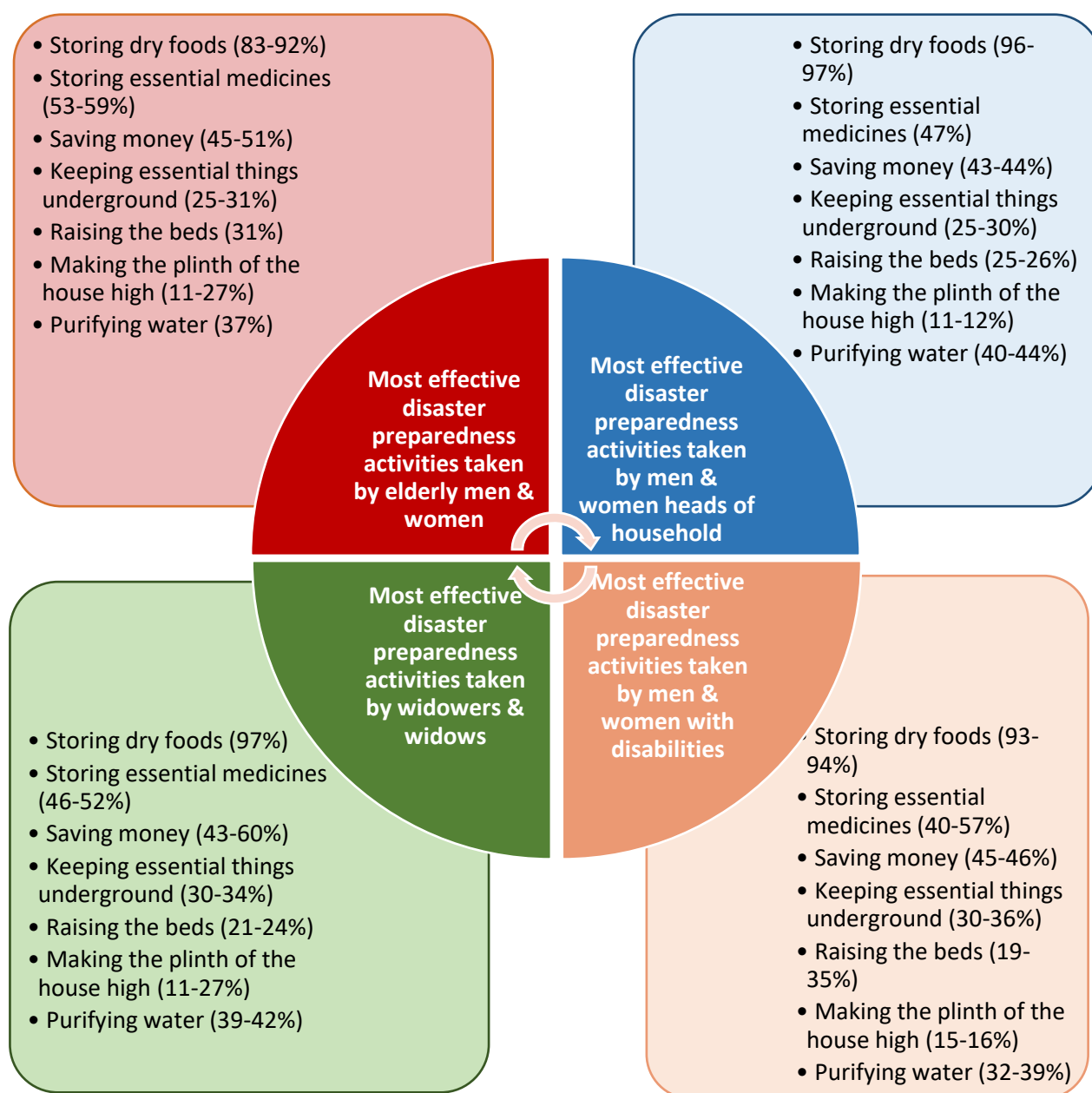
The most effective disaster preparedness activities across different household categories reveal a consistent emphasis on essential survival strategies such as storing dry foods, medicines, and saving money, with slight variations in participation rates.

Widowers and widows demonstrated particularly high engagement in key activities, with 97 percent storing dry foods, 43-60 percent saving money, and strong participation in purifying water (39-42%) and making the plinth of the house high (11-27%). Similarly, men and women heads of households had 96-97 percent participation in storing dry foods, with notable levels of purifying water (40-44%) and raising beds (25-26%), reflecting a strong preparedness culture.

Elderly men and women, while slightly lower in food storage (83-92%), also showed significant activity across all areas, especially in purifying water (37%) and raising beds (31%). On the other hand, households with people with disabilities displayed consistent engagement, with 93-94 percent storing dry foods, 30-36 percent keeping items underground, and purifying water (32-39%), reflecting adaptive practices even among vulnerable groups.

Overall, while all groups actively engage in preparedness, heads of households and widows/widowers tend to perform slightly better across most indicators, possibly due to their dual responsibility in household and survival decisions. These insights highlight the critical role of tailored disaster preparedness programmes that build upon existing knowledge and capacities within specific demographic groups.

Figure 8. 4 Most effective disaster preparedness activities by all categories of respondents



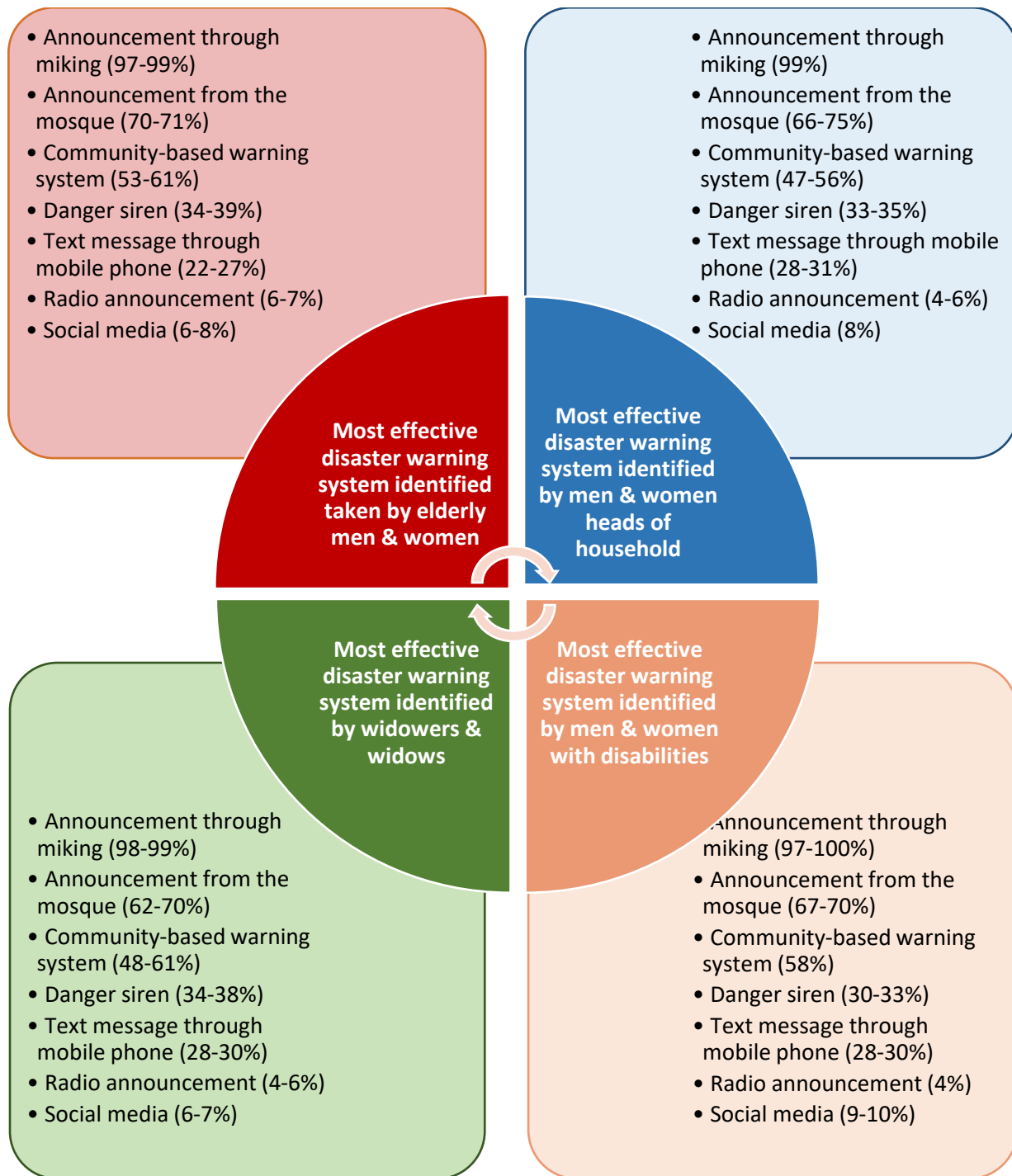
8.3 Most Effective Disaster Warning System Identified by Respondents

The most effective disaster warning systems identified by different categories of respondents underscore the overwhelming reliance on announcement through miking, with near-universal recognition across all categories: 97-100 percent for elderly, heads of households, widows/widowers, and persons with disabilities.

This method remains the most trusted and accessible. Announcements from mosques follow closely, especially for men and women heads of households (66-75%) and elderly respondents (70-71%), indicating the strong influence of religious institutions in community mobilization. The

community-based warning system also ranks high, particularly among elderly individuals (53-61%) and widows/widowers (48-61%), reflecting its importance in localized response efforts.

Figure 8. 5 Most effective disaster warning system identified by respondents



Text messages via mobile phones are moderately valued (22-31%) across all groups, with slightly higher usage reported by heads of households and widows/widowers (28-31%), pointing to increased mobile penetration but limited effectiveness due to possible barriers like illiteracy or power outages.

Danger sirens rank lower, but still play a role (30-39%), especially among widowers/widows and elderly. Radio announcements and social media appear to be the least relied upon, with radio usage between 4-7 percent and social media between 6-10 percent, suggesting limited access or perceived utility, particularly among older or more vulnerable populations.

In summary, traditional and community-embedded systems such as miking and mosque announcements are the most effective and trusted warning methods, while digital systems like text messages and social media show potential but remain supplementary. This highlights the need for integrating both traditional and technological approaches in future disaster communication strategies.

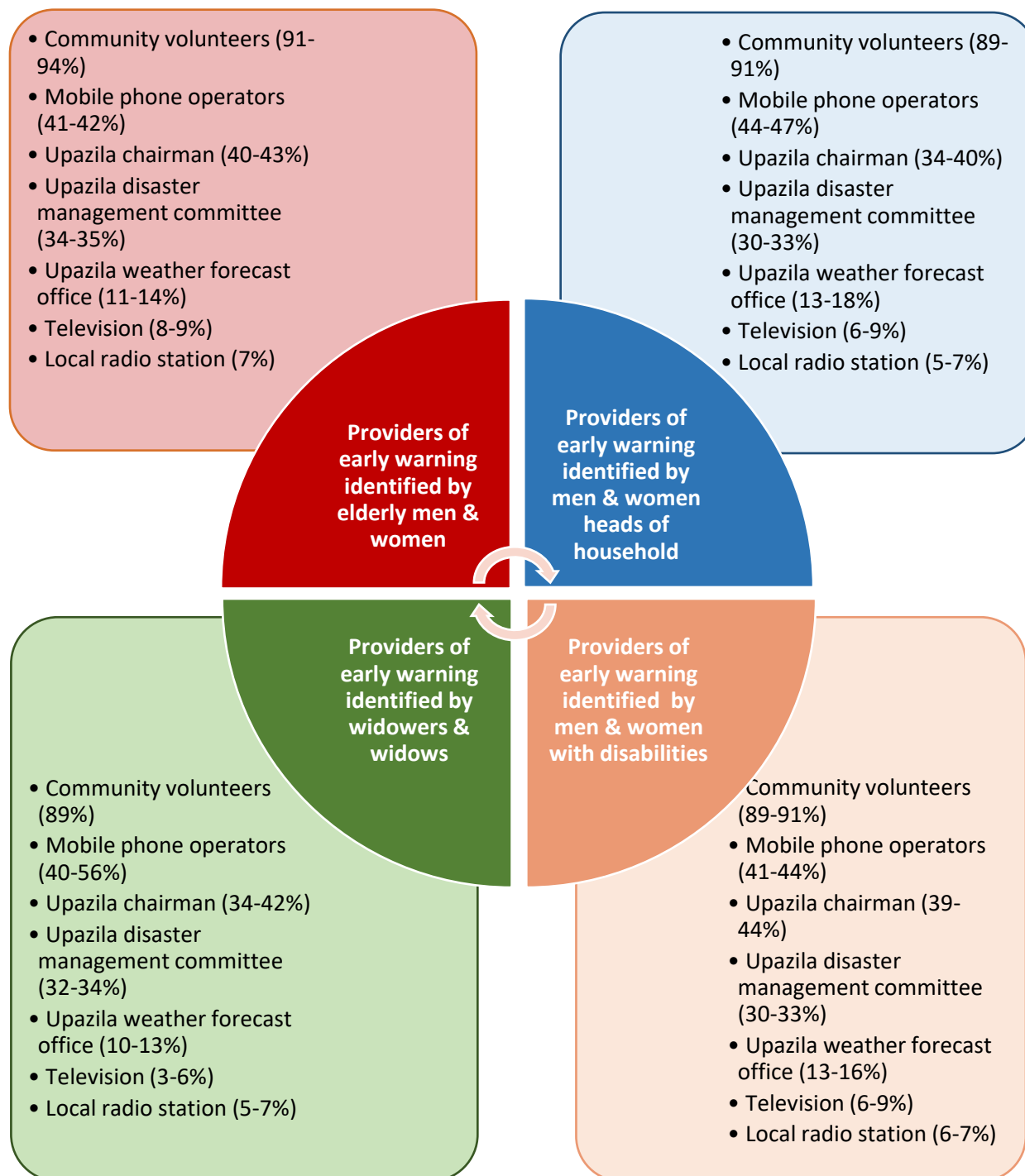
8.4 Providers of Early Warning Regarding Forthcoming Disasters

In the study area, not all modes of early warning dissemination to the community people are homogeneous or effective before disasters. Multiple factors determine the effectiveness of early warning such as risk communication, warning channel and network, communities' perception on disaster warning, awareness among community people, disaster type with occurrence, time and geographical condition etc. Respondents identified disaster warning providers like community volunteers, mobile phone operators, announcements from mosques and upazila chairman warning system.

The data reveals that community volunteers are overwhelmingly recognized as the primary providers of early warning across all groups, with exceptionally high percentages: 91-94 percent among elderly, 89-91 percent among men and women heads of households, 89 percent among widowers and widows, and 89-91 percent among persons with disabilities. This highlights the critical role of local, trusted individuals in disseminating timely and accessible warnings before disasters. Mobile phone operators are the second-most cited source, with a broader range of 40-56 percent, notably higher among widowers and widows (up to 56%), suggesting mobile communication plays a crucial supplementary role, especially when traditional networks are weak. The upazila chairman is also commonly identified, with 34-44 percent recognition across all groups, indicating the importance of elected local leadership in disaster communication chains. The Upazila Disaster Management Committees and weather forecast offices are moderately recognized, suggesting a need for strengthening awareness and visibility of these formal institutions. Meanwhile, television and local radio stations receive the lowest acknowledgment (generally under 10%), likely due to accessibility barriers such as electricity, signal coverage, or prioritization of other channels during emergencies.

Overall, the findings emphasize the centrality of community-based networks and mobile operators in early warning delivery, with institutional sources like local government bodies playing secondary but still important roles. Strengthening collaboration between formal institutions and community volunteers, while expanding the reach of mobile-based alerts, could enhance the effectiveness and reach of early warning systems.

Figure 8. 6 Providers of early warning regarding forthcoming disasters



8.5 Role and Responsibilities of Different Stakeholders in Disaster Preparedness Activities

The role of various stakeholders in disaster preparedness were gathered by conducting 9 Key Informants Interviews (KIIs). Given below the role and responsibilities of each stakeholder in early warning and emergency preparedness before disasters:

8.5.1 Role and responsibilities of Cyclone Preparedness Programme (CPP)

Munshi Nur Mohammad, Assistant Director of CPP narrated the important role of CPP by stating, "The Cyclone Preparedness Programme (CPP) plays a vital role in coordinating with local government agencies and non-governmental organizations (NGOs) during emergencies. In Shyamnagar, our volunteers work alongside the Upazila Disaster Management Committee, ensuring a unified response when cyclones hit. We help with evacuation efforts, guiding residents to designated shelters, and providing logistical support. One of our key contributions is the maintenance of communication channels before, during, and after the disaster, allowing for real-time updates and efficient resource allocation. This coordination has been critical in past cyclones, such as Cyclone Amphan, where timely evacuation saved thousands of lives."

He further added that, "The Cyclone Preparedness Programme (CPP) has been instrumental in safeguarding lives and assets in highly vulnerable areas like Shyamnagar in the Satkhira district. This region, being coastal and prone to frequent cyclones, faces significant risks every year. The CPP's primary role here is to ensure early warning dissemination, evacuation, and shelter management. We work closely with local communities to enhance their understanding of the risks and ensure they take timely action. Our volunteers are trained to use advanced communication tools, including megaphones and wireless systems, to provide accurate and timely warnings to remote and hard-to-reach areas."

He emphasized, "A critical aspect of our work in Shyamnagar involves community-based disaster preparedness training. We conduct regular sessions for local volunteers, school children, and community members, focusing on first aid, search and rescue, and cyclone awareness. These efforts are crucial in building local capacity, as the community is often the first to respond in the event of a cyclone. In Shyamnagar, we have observed a significant improvement in community resilience due to these ongoing training programmes. The local population is now more aware of the signs of an approaching cyclone and better equipped to respond swiftly, reducing casualties and damages" (*KII with Munshi Nur Mohammad, Assistant Director of CPP, Shyamnagar*).

Box 8. 1 Suggestions for more effective disaster preparedness

Assistant Director of CPP, Shyamnagar, "Despite our successes, Shyamnagar remains a challenging area due to its geographical isolation and poor infrastructure. The frequent flooding and erosion make it difficult to maintain communication equipment and access certain areas. To address these issues, we are working on enhancing our volunteer network and integrating modern technology, such as mobile apps and satellite communication, to reach the most affected communities quickly. Moving forward, our focus will be on building more resilient infrastructure and strengthening community engagement, as these are key to minimizing the impact of future cyclones in Shyamnagar"

Source: KII with Munshi Nur Mohammad, Assistant Director of CPP, Shyamnagar

8.5.2 Role and responsibilities of Red Crescent Society

Early warning systems are a crucial part of the disaster management strategy of Red Crescent Society in Shyamnagar. The Red Crescent Society works closely with the government, local authorities, and the Cyclone Preparedness Programme (CPP) to ensure that accurate and timely warnings are issued to the community. Md. Hafizur Rahman, Life Member of Red Crescent Society said that, "When a cyclone or flood is forecasted, we help disseminate these warnings through various channels, including loudspeakers, radio, and social media, to ensure they reach even the most remote areas. Our local volunteers also play a vital role in spreading these warnings at the grassroots level, ensuring that everyone, especially vulnerable groups like the elderly, children, persons with disabilities and those living in flood-prone areas are informed and can take the necessary precautions. The goal is to give the community enough time to prepare, evacuate, and seek safety before the disaster strikes."

He further added, "While early warning systems and emergency response efforts have greatly improved over the years, we still face several challenges in Shyamnagar. The most pressing issue is the disruption of communication and transportation networks during a disaster, which can delay response efforts. In some cases, roads are submerged, and telecommunications are down, making it difficult to coordinate on-the-ground operations. Furthermore, not everyone in the community has access to the early warning messages, especially in rural areas or where people may not be familiar with the systems in place. The Red Crescent continues to work on strengthening these systems, ensuring better coverage, and training local volunteers to provide direct support to those in need during emergencies. It is also essential to continuously improve evacuation plans and ensure that shelters and emergency supplies are ready for rapid deployment." *(KII with Md. Hafizur Rahman, Life Member of Red Crescent Society in Shyamnagar)*

8.5.3 Role and responsibilities of Public Information Officer (PIO)

Shahinul Islam serves as the Public Information Officer (PIO) for Shyamnagar, a coastal area in Satkhira known for its vulnerability to natural disasters such as cyclones and floods. With over five years of experience in this role, Shahinul Islam has been instrumental in enhancing the community's resilience to disasters. His responsibilities include disseminating critical information about disaster preparedness, coordinating with local authorities, and engaging with community members to promote awareness about disaster risks. He emphasized the importance of proactive measures to mitigate the impacts of disasters in the region.

According to Shahinul Islam, several initiatives have been implemented to improve disaster preparedness in Shyamnagar. The local government conducts regular training sessions for community leaders and volunteers, focusing on emergency response and evacuation procedures. These sessions aim to equip communities with the knowledge and skills needed to respond effectively during disasters. Shahinul Islam highlights the collaboration between various government agencies and non-governmental organizations (NGOs) to develop community-based disaster management plans that tailor responses to local needs.

Shahinul Islam discusses the early warning systems established to alert the community about impending disasters. These systems utilize multiple channels, including SMS alerts, community radio broadcasts, and loudspeaker announcements during local gatherings. He mentions that these efforts have significantly improved the timeliness and effectiveness of communication, ensuring that vulnerable populations receive warnings promptly. However, he also notes challenges in

reaching remote areas and populations with limited access to technology, indicating the need for ongoing improvements.

Community engagement plays a crucial role in the success of disaster preparedness efforts. Shahinul Islam shares that local leaders are actively involved in disseminating information and mobilizing community members during disaster preparedness activities. However, he identifies challenges such as limited resources, public apathy, and the need for continuous education on disaster risks. To address these issues, Shahinul Islam advocates for more interactive outreach programmes that encourage community participation and ownership of disaster preparedness initiatives.

In conclusion, Shahinul Islam emphasized the importance of ongoing investment in disaster preparedness and early warning systems. He recommends strengthening partnerships with NGOs to enhance resource availability and training opportunities. Additionally, he suggests implementing feedback mechanisms to evaluate the effectiveness of communication strategies and community training programmes. By fostering a culture of preparedness and resilience, Shahinul Islam believes that Shyamnagar can better withstand the impacts of disasters, ultimately protecting the lives and livelihoods of its residents (*KII with Shahinul Islam, Public Information Officer (PIO) for Shyamnagar*).

8.5.4 Role and responsibilities of Upazila Nirbahi Officer

Akter Hossen serves as the Upazila Nirbahi Officer (UNO) for Shyamnagar, Satkhira, a region that frequently experiences natural disasters such as cyclones and floods. With a background in public administration and a focus on disaster management, Akter has been in his position for over three years. His role is pivotal in coordinating government efforts, mobilizing resources, and facilitating communication between local authorities and the community to enhance disaster preparedness and response.

Akter Hossen outlines that the UNO's primary responsibility in disaster management is to ensure that local government agencies are well-prepared to respond effectively to emergencies. This involves developing and implementing disaster management plans that incorporate risk assessments and community needs. He emphasized the importance of community involvement in these plans, stating that local knowledge is crucial for understanding vulnerabilities and resource availability. The UNO also collaborates with various stakeholders, including NGOs and community organizations, to enhance the overall disaster response framework.

To improve early warning systems, Akter describes several initiatives implemented by the UNO office. One significant step is the establishment of a community-based early warning network that utilizes local volunteers to disseminate information quickly during emergencies. This network includes training sessions for volunteers on how to identify potential risks and communicate alerts effectively. Additionally, Akter highlights the use of modern technology, such as SMS alerts and social media platforms, to reach a wider audience and ensure timely warnings about impending disasters.

Akter emphasized the importance of preparedness measures to mitigate the impact of disasters on the community. The UNO office conducts regular drills and training programmes for both government officials and community members to practice emergency response protocols. These drills help to build confidence and ensure that everyone knows their roles during a disaster. Furthermore, Akter is actively working to create awareness among residents about the importance

of disaster preparedness, encouraging families to develop their own emergency plans and stock essential supplies.

Despite the progress made, Akter Hossen acknowledges several challenges in disaster management and preparedness in Shyamnagar. Limited resources and funding can hinder the implementation of comprehensive disaster response programmes. Additionally, reaching remote communities with early warnings and preparedness information remains a challenge due to infrastructure limitations. To address these issues, Akter advocates for strengthening partnerships with national agencies and international organizations to secure additional support. By fostering a more resilient community through enhanced preparedness and effective early warning systems, he believes Shyamnagar can significantly reduce the risks associated with disasters (*KII with Akter Hossen, Upazila Nirbahi Officer (UNO) for Shyamnagar*).

8.5.5 Role and responsibilities of the Department of Women Affairs

Upazila Women Affairs Officer Sharid bin Shafique stated that in Shyamnagar upazila, the effectiveness of early warning systems varies. While there are some systems in place that provide alerts for upcoming cyclones or floods, the reach and accuracy of these warnings often fail to cover remote areas adequately. In many cases, women, especially in rural communities, do not have access to timely or reliable information. The traditional methods, such as mobile alerts or community loudspeakers and miking are not always inclusive. He identified that, “Cultural barriers often prevent women from taking immediate steps after getting the warnings, as they are not always part of the decision-making process. This highlights the need for gender-sensitive early warning systems that actively involve women in the communication chain and ensure they receive clear, actionable information. (*KII with Upazila Women Affairs Officer Sharid bin Shafique in Shyamnagar*)

Box 8. 2 Suggestions for improving early warning systems

Upazila Women Affairs Officer suggested, “For improving early warning and emergency response systems in Shyamnagar, it is essential to make these more inclusive and gender-responsive. First, we need to strengthen communication channels by ensuring that women have access to timely warnings through multiple platforms, such as miking, mobile phones, community radio, and local leaders. It is crucial to integrate women into disaster planning and response teams so that their specific needs like access to healthcare, security, and proper shelter are prioritized. Additionally, training local women as first responders can help ensure that they are equipped to support their communities during a disaster. Finally, emergency shelters must be equipped with appropriate facilities, such as separate bathrooms and safe spaces, to prevent gender-based violence and to ensure that women’s dignity is preserved. Empowering women as key agents in disaster management is the main cornerstone in building more resilient and effective disaster response systems.”

Source: KII with Upazila Women Affairs Officer Sharid bin Shafique in Shyamnagar

8.5.6 Role and responsibilities of the Union Parishad Chairman

Nazrul Islam is the Chairman of the Burigoalini Union Parishad (UP) of Shyamnagar, Satkhira, an area frequently affected by disasters such as cyclones and floods. With several years of experience in local governance, Nazrul plays a vital role in coordinating disaster management efforts at the community level. His responsibilities include liaising with government agencies, NGOs, and local residents to ensure that the community is well-prepared for disasters and that effective response

mechanisms are in place when emergencies occur. His commitment to enhancing the resilience of his community is evident in his proactive approach to disaster management.

Nazrul Islam outlines that the role of the UP Chairman in disaster management is multifaceted, encompassing planning, coordination, and community engagement. He is responsible for developing disaster preparedness plans that involve the local population in identifying risks and determining appropriate responses. This includes organizing community meetings to raise awareness about potential hazards and discussing strategies to mitigate risks. Nazrul emphasized the importance of grassroots involvement in these plans, as local knowledge is crucial for effective disaster management. By engaging with the community, he aims to foster a culture of preparedness that empowers residents to take action before disasters strike.

In terms of early warning systems, Nazrul Islam highlights several initiatives implemented by the Union Parishad to ensure timely communication of disaster risks to the community. He has worked to establish a network of local volunteers who are trained to disseminate early warning information effectively. These volunteers play a critical role in sharing alerts through various channels, including community meetings, loudspeaker announcements, and mobile messaging. Nazrul stresses that ensuring everyone, especially the most vulnerable populations, receives accurate and timely information is essential to minimize the impact of disasters. He believes that improving these communication systems is a priority to enhance community readiness.

Nazrul Islam also emphasized the importance of preparedness training for both local leaders and community members. The UP organizes regular workshops and drills to simulate disaster scenarios, allowing residents to practice their responses in a controlled environment. This hands-on approach helps build confidence and ensures that community members understand their roles during an emergency. Nazrul notes that fostering a sense of responsibility within the community is crucial, as it encourages individuals to prepare their households and support their neighbors during crises. He is committed to enhancing these training initiatives to ensure that the community is well-equipped to handle potential disasters.

Despite the progress made, Nazrul Islam acknowledges several challenges in implementing effective disaster management strategies. Limited resources and funding can hinder the ability to establish comprehensive early warning systems and preparedness programmes. Additionally, reaching remote areas with timely information and support remains a challenge due to infrastructure issues. To address these challenges, Nazrul advocates for stronger collaboration with national and international organizations to secure additional resources and expertise. He believes that enhancing community resilience through improved disaster management practices is crucial for protecting the lives and livelihoods of the residents of Shyamnagar. His vision is to create a more prepared and resilient community that can withstand the impacts of natural disasters (*KII with Nazrul Islam, Chairman of the Burigoalini Union Parishad (UP) in Shyamnagar*).

8.5.7 Role and responsibilities of Union Parishad Secretary

Burigoalini Union Parishad Secretary Riazul Islam emphasized that early warning systems are a crucial part of disaster preparedness in their area, given the frequent cyclones, floods, and tidal surges. As part of the Union Disaster Management Committee, they work closely with the Cyclone Preparedness Programme (CPP), local authorities, and the Red Crescent to ensure that early warnings are effectively communicated to the community. These warnings are issued through loudspeakers, local radio stations, SMS in mobile phones and by volunteers who go door-to-door,

particularly in remote areas. It is vital that these warnings reach everyone in time, and they focus on ensuring that the vulnerable, including the elderly and persons with disabilities, are informed well before a disaster strikes.

He added that, "When a disaster strikes, our committee has a clear set of responsibilities to coordinate emergency response efforts. We activate our local response teams, which consist of volunteers and officials, to provide immediate assistance to those affected. We ensure that evacuation centers are prepared to receive displaced families, with provisions of food, water, and medical care. The Red Crescent, alongside other partners, helps set up emergency medical camps and provides first aid to the injured. Our main priority is to ensure that the most vulnerable populations, such as children and the elderly, are safely evacuated and have access to emergency care and shelter. The coordination between the local government, the committee, and national organizations is vital to making sure that no one is left behind in the aftermath of the disaster."
Source: KII with Riazul Islam, Burigoalini Union Parishad Secretary in Shyamnagar.

Box 8. 3 Challenges in the early warning system

Riazul Islam further said that despite the efforts in place, "We still face significant challenges in the early warning and emergency response systems in Shyamnagar. One of the biggest challenges is the physical infrastructure. After a major cyclone or flood, roads can be washed away or made impassable, which delays our ability to provide aid to more isolated communities. The local communication systems also face disruptions during severe weather events, which can delay the transmission of information. Moving forward, we aim to strengthen our early warning systems, improve the capacity of local shelters, and ensure that our communication channels are more resilient. We are also working on better training for volunteers and local responders to ensure that they can act quickly and effectively during a disaster."

Source: KII with Riazul Islam, Burigoalini Union Parishad Secretary in Shyamnagar

8.5.8 Role and responsibilities of the Press Club

President of the Shyamnagar Press Club Akbar Kabir identified that in Shyamnagar, where the risk of cyclones and flooding is high, early warning systems are absolutely vital for saving lives. He said that, "As a local media organization, we play a critical role in ensuring that communities receive timely alerts about impending disasters. We work closely with the Cyclone Preparedness Programme (CPP) and local authorities to broadcast early warning messages through radio, loudspeakers, and social media platforms. When a disaster like a cyclone is approaching, early warnings allow people to evacuate their homes, move to safer locations, and prepare by securing their belongings. However, the effectiveness of these systems relies not only on the warnings themselves but also on the ability of people to understand and act on them promptly."

Challenges of early warning systems

Despite the importance of early warnings, he identified that there are several challenges in getting the message out efficiently. Many areas in Shyamnagar, especially remote villages, have limited access to radio or mobile networks, which are the primary ways early warning messages are delivered. In some cases, infrastructure such as roads and communication lines are damaged or completely cut off during a disaster, making it difficult for us to continue our coverage. Additionally, while the CPP does a great job of sending warnings, we still face issues with the

speed and reach of these alerts, particularly in terms of making sure that people in the most vulnerable areas are informed in time. This is where local media's role becomes even more critical as we help bridge the gap by spreading information through every possible channel, including public announcements and community leaders.

He further added that, "Moving forward, improving early warning systems and emergency response in Shyamnagar requires better coordination and access to technology. For instance, increasing the number of community-based volunteers equipped with basic communication tools could help extend the reach of warnings. Moreover, training local journalists on how to effectively cover disaster preparedness and response can ensure that emergency messages are not only broadcasted widely but also understood by all. Strengthening public awareness campaigns about the importance of early warnings and ensuring that all community members, particularly the elderly and those with disabilities, have a clear plan for evacuation will also be critical. By fostering stronger collaboration between the media, government agencies, and community organizations, we can improve our emergency response efforts and reduce the impacts of future disasters" (*Source: KII with Akter Kabir, President of the Shyamnagar Press Club*).

8.5.9 Role and responsibilities of NGO

NGO representative of Shushilon SM Zakir Hossain informed that they have been working in Shyamnagar for several years, focusing on reducing the impact of natural disasters through early warning systems, emergency services, and long-term resilience-building programmes. This region is highly vulnerable to cyclones, tidal surges, and flooding, making early warning and emergency response crucial for saving lives and minimizing damage.

He emphasized that, "Early warning is a key part of our disaster management strategy in Shyamnagar. We work closely with local authorities and community leaders to ensure that timely and accurate information is disseminated before a disaster strikes. We have established a network of trained volunteers known as Community Disaster Response Teams who receive updates from the Bangladesh Meteorological Department. These volunteers then use loudspeakers, mobile messaging, and door-to-door visits to alert communities, especially those in remote or hard-to-reach areas, about impending threats like cyclones or tidal surges. By ensuring that people are informed early, we can help them take necessary precautions, such as moving to higher grounds or evacuating to cyclone shelters."

"Community involvement is at the heart of our approach. We conduct regular training and mock drills with local community people to enhance their understanding of early warning signals and evacuation procedures. Our goal is to empower them with the skills and knowledge needed to act quickly and effectively when a disaster warning is issued. We have also established disaster committees at the village level, which include representatives from all key community groups. These committees play a crucial role in coordinating response efforts, assessing immediate needs, and managing local resources during emergencies."

Challenges in the warning system

"However, one major challenge is the lack of adequate infrastructure, such as roads and communication networks, which makes it difficult to reach certain areas quickly, especially during heavy flooding. Additionally, frequent disasters have damaged many cyclone shelters, reducing the safe spaces available for evacuation. Another issue is the increasing salinity in the region, which not only affects livelihoods but also limits the availability of clean drinking water, making

it difficult to meet the basic needs of affected communities. Despite these challenges, we are continuously working to improve our response capabilities and adapt our strategies based on community feedback.”

He concluded by saying, “We are currently working on expanding our early warning system by integrating digital tools, such as mobile apps and SMS alerts, to reach more people quickly. We also plan to invest in strengthening the local infrastructure, including renovating damaged cyclone shelters and building new ones in strategic locations. Furthermore, we are collaborating with other NGOs and government agencies to create a comprehensive disaster management plan for the region, focusing on community-led resilience initiatives and long-term adaptation strategies. By doing so, we aim to reduce the overall vulnerability of Shyamnagar’s coastal communities and ensure a faster, more effective response in future disasters” (Source: KII with NGO representative of Shushilon SM Zakir Hossain).

Box 8. 4 Challenges of fishermen in receiving early warnings

Fisherman Abul Hossain identified that, "One of the biggest challenges we face is the lack of timely information. Although the Cyclone Preparedness Programme (CPP) does a good job, there are times when we are out at sea and do not receive early warnings. By the time we learn about the approaching storm, it is often too late to safely return. The communication systems need to be improved, especially for fishermen like us who spend most of our time away from the coast. We rely heavily on radios, but during severe weather, the signal often gets disrupted, making it hard to receive accurate updates."

Source: KII with fisherman Abul Hossain

8.5.10 Overview of the role and responsibilities of different stakeholders in disaster preparedness activities

The overview of the role and responsibilities of different stakeholders in disaster preparedness activities namely Cyclone Preparedness Programme, Red Crescent Society, Public Information Officer (PIO), Upazila Nirbahi Officer (UNO), Department of Women Affairs, Union Parishad Chairman and Secretary, Press Club and NGO are given below:

Box 8. 5 Overview of the role and responsibilities of different stakeholders in disaster preparedness activities

Cyclone Preparedness Programme (CPP)

- Coordinates with local authorities and NGOs during cyclones.
- Mobilizes trained volunteers for evacuation, shelter management, and communication.
- Maintains communication channels before, during, and after disasters.
- Provides community-based disaster preparedness training (first aid, rescue, awareness).
- Played a key role in past disasters like Cyclone *Amphan*.

Red Crescent Society

- Disseminates early warnings via loudspeakers, radio, and social media.
- Focuses on reaching vulnerable groups (elderly, children, disabled).
- Faces challenges with communication and transport disruptions during disasters.
- Enhances community coverage and trains volunteers for emergency response.

Public Information Officer (PIO)

- Disseminates disaster preparedness info and coordinates awareness campaigns.
- Supports early warning systems through SMS, community radios, and loudspeakers.
- Encourages interactive community engagement to foster disaster readiness.
- Recommends feedback mechanisms and stronger NGO collaboration.

Upazila Nirbahi Officer (UNO)

- Coordinates local government disaster response and resource mobilization.
- Implements disaster management plans based on community risk assessments.
- Uses SMS and social media for early warning and organizes preparedness drills.
- Advocates for stronger national/international partnerships to overcome resource gaps.

Department of Women Affairs

- Highlights gender disparities in access to early warnings.
- Notes that cultural barriers limit women's participation in disaster decision-making.
- Calls for gender-sensitive early warning and inclusion in communication chains.

Union Parishad Chairman

- Leads grassroots disaster planning and community engagement.
- Trains local volunteers and conducts awareness campaigns.
- Implements early warning dissemination using loudspeakers and mobile alerts.
- Organizes drills to ensure community-level readiness and response.

Union Parishad Secretary

- Works with CPP, Red Crescent, and local committees for effective early warning.
- Coordinates immediate emergency response, evacuation, and shelter logistics.
- Focuses on vulnerable groups and ensures timely communication and aid delivery.

Press Club

- Disseminates early warning information via media and social platforms.
- Collaborates with CPP and authorities to ensure public awareness.
- Stresses the importance of timely and understandable alerts.

NGO (Shushilon)

- Runs early warning dissemination and resilience-building programmes.
- Deploys Community Disaster Response Teams to alert communities.
- Conducts regular training, mock drills, and forms village-level disaster committees.
- Promotes local leadership and resource coordination during emergencies.

8.6 Support Received from Various Sources after Disasters

The support received from the government after disasters varies across different vulnerable groups, yet certain patterns emerge clearly. Food aid is the most commonly received form of assistance, with men and women with disabilities (71-84%) and heads of households (64-73%) reporting the highest access, followed closely by the elderly (65-71%) and widowers/widows (63-64%).

Shelter support also remains critical, with people with disabilities receiving the most (40-52%), compared to elderly (38-47%), heads of households (37-38%), and widowers/widows (31-34%).

Access to clean water shows a similar trend, highest among people with disabilities (26-41%) and heads of households (33-36%), while medicine and medical treatment are more variably distributed - men and women with disabilities (29-33%) receive slightly more medicine, though widowers and widows (20%) report the highest rate of medical treatment, reflecting possible higher vulnerability.

Monetary support is notably more accessible to people with disabilities (30-38%), while the other groups report lower figures (13-23%). Support in the form of housing materials and clothing remains relatively low across all groups, though people with disabilities (up to 7%) are slightly better served than others. Interestingly, clothing support shows a wide range, especially among the elderly and people with disabilities (up to 27-29%), possibly reflecting targeted distribution efforts in certain areas.

In summary, while food and shelter are the primary supports received across all demographics, people with disabilities tend to receive more comprehensive aid overall. However, widowers and widows appear slightly under-supported in key areas, especially shelter and medical needs, highlighting a gap that should be addressed in future post-disaster relief efforts.

Figure 8. 7 Support received from government after disasters

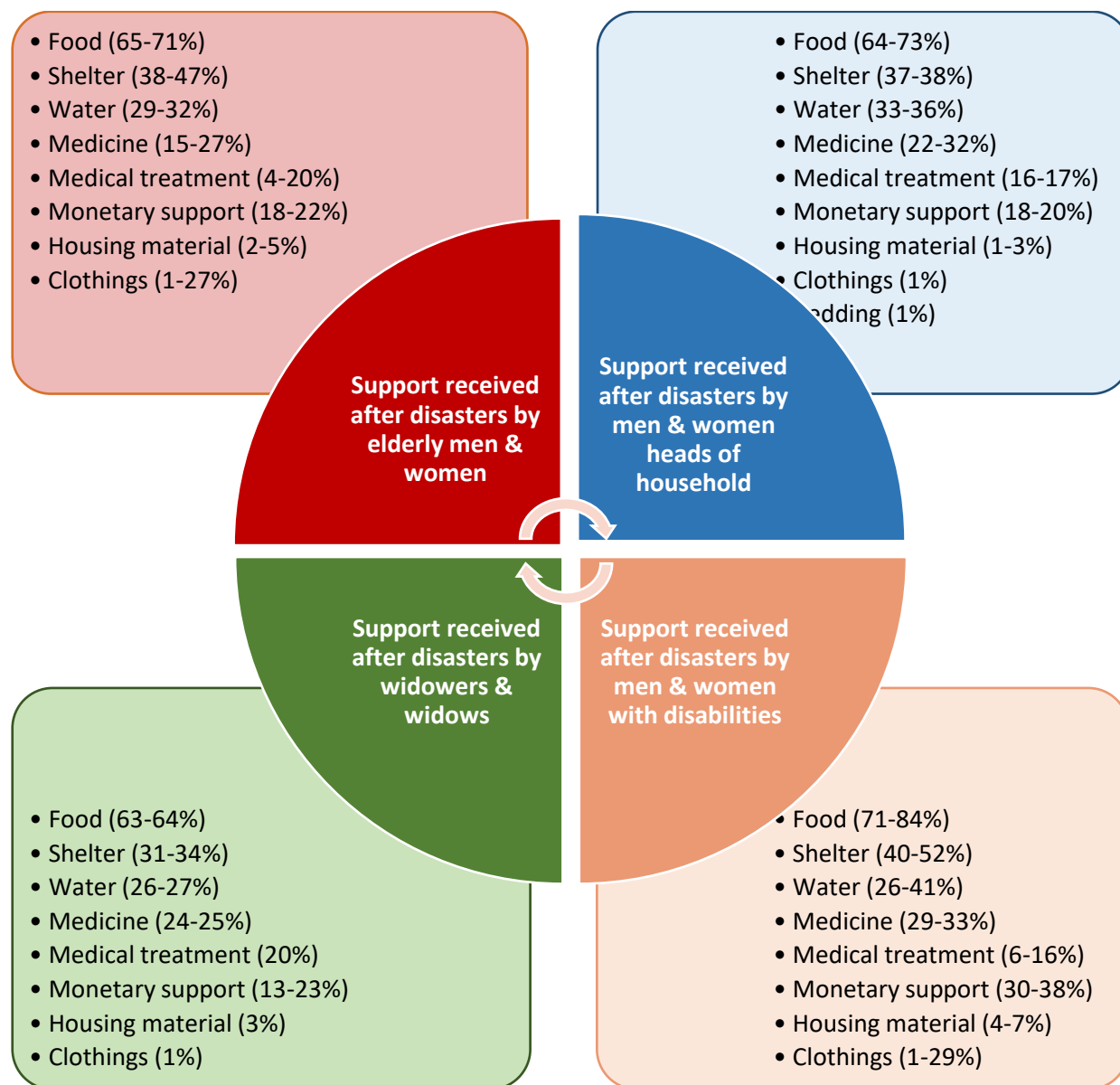


Figure 8. 8 Support received from NGOs after disasters

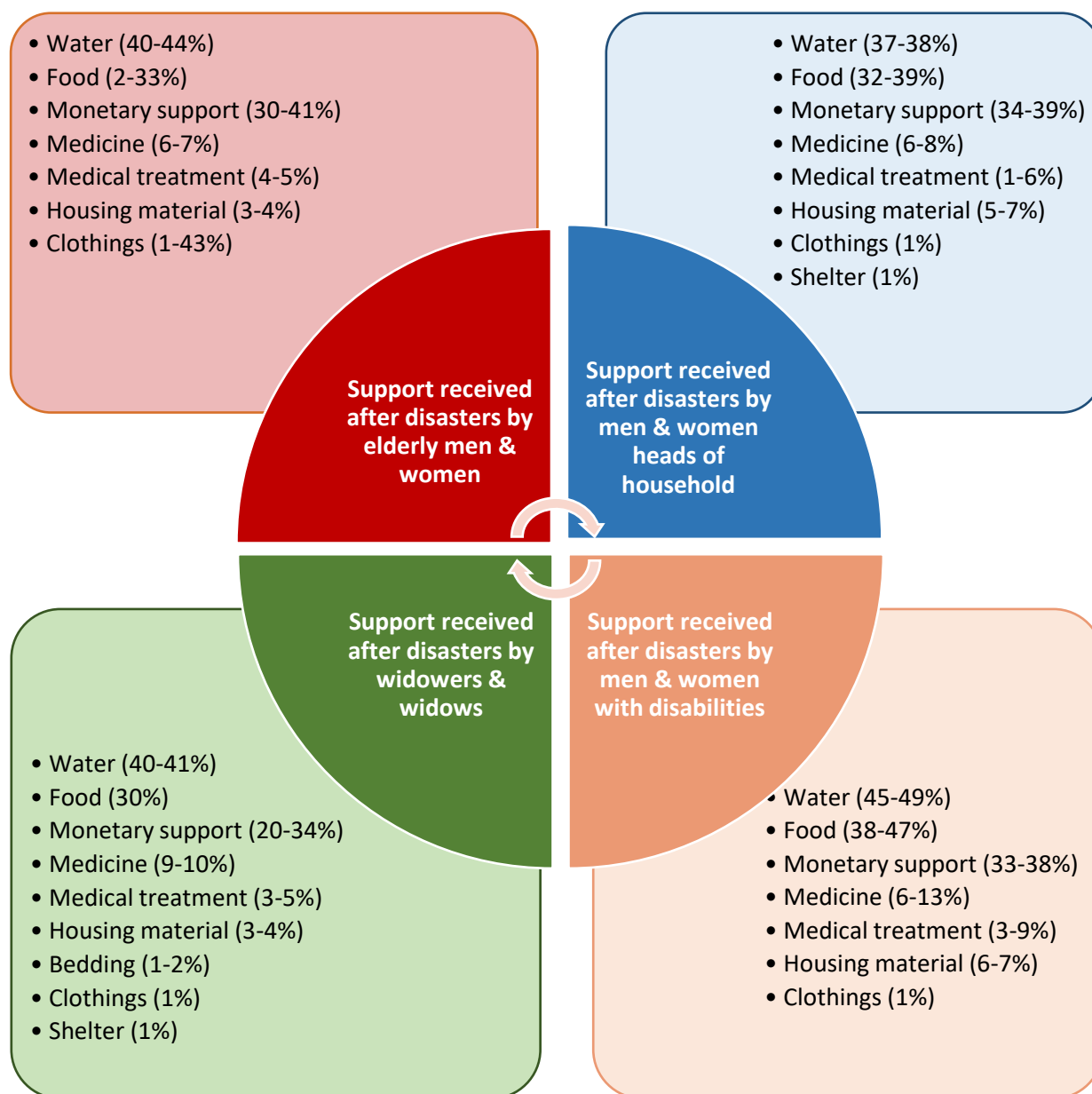
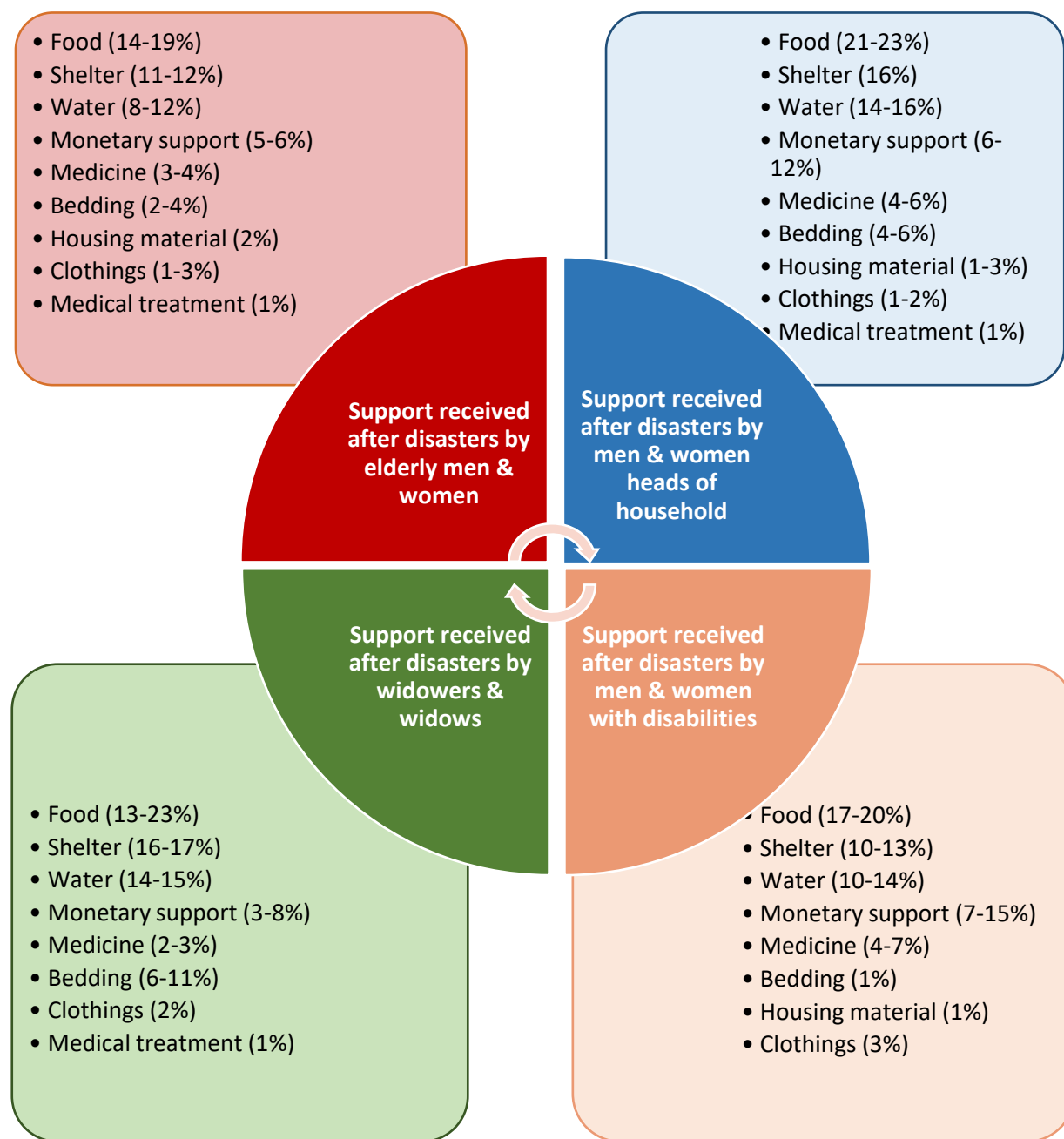


Figure 8. 9 Support received from relatives & neighbours after disasters



8.7 Emergency Response of Various Stakeholders During Disasters

The emergency response of various stakeholder during disasters were gathered by conducting 10 KIIs. Given below the activities of each stakeholder's emergency response during disasters:

8.7.1 Emergency response during disasters of Comprehensive Disaster Management Programme (CDMP)

Munshi Nur Mohammad, Assistant Director of CDMP said that during disasters, the Comprehensive Disaster Management Programme (CDMP) plays a critical role in coordinating and facilitating emergency response in Shyamnagar. CDMP's primary objective is to save lives and reduce suffering by ensuring that affected communities receive timely assistance. This includes the provision of emergency relief materials such as food, clean drinking water, medical supplies, and shelter. They work closely with local government agencies, the Bangladesh Red Crescent Society, and community volunteers to ensure that affected populations are quickly identified and supported. One of the key strategies is the establishment of disaster response teams at the local level. These teams are trained in first aid, search and rescue operations, and emergency distribution of supplies, ensuring rapid deployment of help in the most affected areas.

The coastal area of Shyamnagar coastal area presents several unique challenges when it comes to emergency response. The region is prone to flooding, and many communities are isolated due to damaged roads, especially following heavy storms like cyclones or tidal surges. Access to remote villages becomes difficult, which can delay relief efforts. In addition, the sheer scale of displacement following a disaster can overwhelm the available resources, and local shelters often become overcrowded. To address these challenges, CPP has developed robust logistics systems that involve pre-positioning emergency supplies in strategic locations and using boats or other means of transportation to reach cut-off areas. We also rely heavily on community networks, local volunteers, and community leaders who are often the first responders. Their local knowledge is invaluable for identifying those most in need and ensuring that aid is distributed equitably.

CPP's emergency response is closely linked to longer-term recovery and resilience-building efforts in Shyamnagar. After the immediate emergency phase, their focus shifts to rehabilitation, which includes restoring livelihoods, rebuilding homes, and repairing infrastructure such as roads and embankments. They also work on providing psychological support and addressing the social needs of displaced families. Simultaneously, CPP focus on disaster preparedness, using the lessons learned from the response to strengthen community resilience. This includes conducting awareness campaigns on early warning systems, improving local disaster response capacity, and integrating disaster risk reduction into local development planning. By involving the community in recovery efforts, they not only help them rebuild their lives but also ensure they are better equipped to handle future disasters with greater resilience.

Lack of services during disaster

Assistant Director of CPP said, "One of the biggest challenges we face in Shyamnagar is the lack of essential services, which severely impacts disaster response and recovery. The area's remoteness and poor infrastructure make it difficult to provide timely relief. During disasters, the existing communication networks often collapse, and there is limited access to medical facilities. Many of the cyclone shelters are under-equipped, lacking basic amenities like clean water, sanitation, and emergency medical supplies. This leaves the local population, especially women,

children, elderly and the persons with disabilities, vulnerable in the immediate aftermath of a cyclone."

He also added, "While we are working to bridge these gaps, progress has been slow due to resource constraints and the area's geographical challenges. The CPP is collaborating with local government and NGOs to improve infrastructure and enhance shelter facilities, but the needs far outweigh the available resources. We have also initiated training programmes for local volunteers to provide basic healthcare support, as the lack of medical services is a pressing issue in Shyamnagar. However, addressing these deficiencies requires a long-term commitment and investment in resilient infrastructure to truly make a difference in this disaster-prone region." (*KII with Munshi Nur Mohammad, Assistant Director of CPP, Shyamnagar*)

8.7.2 Emergency response during disasters of Red Crescent Society

Md. Hafizur Rahman, Life Member of Red Crescent Society said that, "During a disaster in Shyamnagar, the Red Crescent Society is at the forefront of providing immediate assistance to the affected communities. Our primary role is to ensure that people's immediate needs are met, which includes providing food, clean water, medical care, and temporary shelter. When cyclones or floods strike, our trained emergency response teams are mobilized quickly to assess the situation on the ground and coordinate with local authorities and other humanitarian organizations. We set up emergency relief camps and shelters to house displaced families and distribute essential supplies. Our teams also provide first aid and medical care to those injured, ensuring that the most vulnerable populations receive immediate attention."

In addition to our emergency medical response, the Red Crescent Society coordinates with local government agencies, other NGOs, and community volunteers to ensure that aid is distributed efficiently and fairly. We also work to ensure that evacuation operations are carried out effectively, guiding families to safer places and making sure that critical infrastructure, like health facilities and schools, are protected. One of the key challenges we face is ensuring that our operations reach isolated communities, especially those located in remote or flood-prone areas. The disruption of communication lines and damaged roads during cyclones can make it difficult to coordinate relief, but through local volunteers and community networks, we ensure that people are informed about where to find help and resources. Our aim is to respond quickly, with the proper supplies and services, to reduce the loss of life and minimize suffering."

"Despite our best efforts, there are several challenges that complicate emergency response during disasters in Shyamnagar. One of the main issues is the widespread destruction of infrastructure. Roads and bridges are often damaged or completely washed away, making it difficult to reach some of the most affected areas. Additionally, the sheer scale of a disaster, such as a severe cyclone or extensive flooding, can overwhelm available resources and personnel. Many affected families lose their homes, livelihoods, and personal belongings, which makes recovery challenging even after the initial relief phase. However, the Red Crescent Society remains committed to addressing these challenges through continuous assessment and by strengthening our capacity to respond to future disasters. We work closely with local authorities to build a more resilient and effective emergency response system for the future." (*KII with Md. Hafizur Rahman, Life Member of Red Crescent Society in Shyamnagar*)

8.7.3 Emergency response during disasters by Public Information Officer (PIO)

According to Shahinul Islam, Public Information Officer (PIO), effective emergency response in Shyamnagar hinges on timely communication and community involvement. The local government has established a multi-tiered response strategy that includes training local volunteers, conducting regular emergency drills, and creating a network of communication among local agencies. Shahinul highlighted the importance of community volunteers who play a critical role during emergencies, as they are often the first responders before official help arrives. He emphasized that their training helps them to provide immediate assistance, conduct evacuations, and disseminate information about safe shelters.

Despite the established strategies, Shahinul acknowledges several challenges that impact emergency response efforts in Shyamnagar upazila. One major issue is the inadequate infrastructure, which complicates access to remote areas during disasters. Additionally, he points out that misinformation can spread quickly, creating confusion among the public. To combat these issues, he emphasized the need for ongoing public education campaigns that focus on accurate information dissemination and the importance of following official warnings. He also calls for increased investment in infrastructure to facilitate better access during emergencies.

In conclusion, Shahinul believes that strengthening community engagement and enhancing communication systems are vital for improving emergency response in Shyamnagar. He recommends developing a comprehensive community response plan that includes regular feedback from residents to adapt strategies to their needs. Furthermore, he advocates for establishing stronger partnerships with NGOs and other stakeholders to leverage additional resources and expertise. By fostering a collaborative approach and empowering community members, Shyamnagar can improve its resilience and response effectiveness during disasters. *(KII with Shahinul Islam, Public Information Officer (PIO) for Shyamnagar).*

8.7.4 Emergency response during disasters by Upazila Nirbahi Officer (UNO)

During disasters, Upazila Nirbahi Officer Akter Hossen highlighted the importance of a well-coordinated emergency response system. The UNO office collaborates with various stakeholders, including local government bodies, NGOs, and community volunteers, to mobilize resources quickly. Akter explained that their primary focus is on assessing the immediate needs of the affected population, which includes providing shelter, food, and medical assistance. He emphasized that effective communication is essential, as it allows for the timely dissemination of information regarding available resources and support services to those impacted by the disaster.

Akter Hossen pointed out that community involvement is crucial in enhancing the effectiveness of emergency response efforts. Local volunteers are trained to act as first responders, assisting in evacuations and providing initial aid to affected families. The UNO office conducts regular training sessions to prepare these volunteers for various disaster scenarios. He believes that empowering the community not only speeds up the response process but also fosters a sense of ownership and responsibility among residents during emergencies. This community-based approach has proven to be effective in minimizing casualties and ensuring that aid reaches those who need it most.

Despite the structured emergency response framework, Akter acknowledged several challenges that impede effective disaster management in Shyamnagar. One significant issue is the limited infrastructure, which can hinder access to remote areas during a disaster. Additionally, there can

be delays in the arrival of government assistance due to bureaucratic processes, which can exacerbate the suffering of affected families. He also noted that misinformation can spread quickly during crises, leading to confusion and panic among residents. Addressing these challenges requires continuous improvement in coordination and communication among all stakeholders involved in disaster response.

Looking ahead, Akter Hossen emphasized the need for ongoing improvements in emergency response strategies. He advocates for enhanced training programmes for government officials and community members to ensure they are well-prepared for various disaster scenarios. Furthermore, he suggests investing in better infrastructure and logistics to facilitate quicker access to affected areas. By fostering stronger partnerships with national and international agencies, Akter Hossen believes that Shyamnagar can build a more resilient disaster response system that can effectively protect the lives and livelihoods of its residents. His commitment to improving emergency response reflects a broader goal of ensuring safety and preparedness for the community in the face of inevitable disasters. *(KII with Akter Hossen, Upazila Nirbahi Officer (UNO) for Shyamnagar).*

8.7.5 Emergency response during disaster of the Department of Women Affairs

Upazila Women Affairs Officer Sharid bin Shafique stated that the emergency response systems have made significant progress in recent years, but there is still much to be done to ensure that women's needs are fully addressed. During disasters, women are often disproportionately affected, losing their homes, livelihoods, and even family members. Emergency shelters often lack essential facilities such as separate sanitation spaces, which puts women at risk of gender based violence and makes it harder for them to care for their families. Additionally, women, particularly pregnant women, elderly women, women with disabilities and those with young children, face unique challenges that are often overlooked in the general relief efforts. It is crucial that disaster response mechanisms consider the specific vulnerabilities of women to ensure a more effective and equitable response.

She asserted that, "One of the main gaps is the lack of gender-sensitive planning in emergency response. For example, shelters may not have adequate space, separate toilets, or facilities to address women's menstrual hygiene needs. These are basic necessities that should be part of any disaster response but are often neglected. Moreover, many women are not sufficiently involved in the decision-making process, either in terms of disaster preparedness or in post-disaster recovery efforts. This exclusion limits the effectiveness of the response. To address these issues, it is important to have more women involved in local disaster management committees, ensuring that their perspectives are considered in every phase of disaster preparedness and response. Additionally, relief efforts should be designed with a focus on providing resources like safe spaces, mental health support, and tailored healthcare services, especially for pregnant women and survivors of gender based violence."

She further added, "Empowering women to be active participants in disaster management is essential for building stronger and more resilient communities. First, we need to ensure that women are trained in basic disaster preparedness, first aid, and emergency response techniques, so they can respond to crises within their own families and communities. Creating local women's disaster response groups and providing leadership training for women in these areas will help foster a culture of active participation. In addition, communities should work to eliminate barriers to women's participation, such as transportation issues, social restrictions, or lack of access to information. Lastly, it is vital to promote women's economic empowerment, as financial

independence can significantly reduce their vulnerability during and after disasters. By giving women the tools, resources, and support they need, we can not only ensure that they are protected during disasters but also that they can lead the way in helping their communities recover and rebuild.” (*KII with Nazrul Islam, Chairman of the Burigoalini Union Parishad (UP) in Shyamnagar*).

8.7.6 Emergency response during disaster of Union Parishad Secretary

Burigoalini Union Parishad Secretary Riazul Islam proudly said, “I serve as the Union Parishad Secretary. When a disaster strikes, such as a cyclone or flood, our primary responsibility as the Union Disaster Management Committee is to ensure that the emergency response is swift and well-coordinated. We immediately activate our disaster response plan, which involves coordinating with local authorities, Red Crescent Society and other NGOs. Our focus is to ensure that the affected communities receive the necessary relief and support. We quickly mobilize teams of local volunteers to provide on-the-ground support, including evacuating vulnerable populations, setting up temporary shelters, and ensuring that relief materials, such as food, water, and medical supplies, are distributed where they are most needed. Ensuring that all affected areas receive aid is a top priority, especially when transportation routes are disrupted.”

One of the most important aspects of their emergency response is providing immediate medical support to those injured during the disaster. In Shyamnagar, where many families live in low-lying areas that are prone to flooding, the need for emergency medical care is critical. We coordinate with local health facilities and the Red Crescent Society to set up mobile medical camps where people can receive first aid and treatment. Simultaneously, we make sure that temporary shelters are set up in safe locations, and these shelters are stocked with food, water, and other essential supplies. We also work to provide psychological support to those who have lost their homes or loved ones, ensuring that their mental and emotional needs are addressed alongside their physical ones.

Although emergency response efforts are generally effective, they still face several challenges in Shyamnagar. One of the most significant issues is the destruction of infrastructure, particularly roads and bridges, which can cut off access to some of the more remote areas. This makes it difficult to reach everyone with aid in a timely manner. Additionally, there are challenges in managing large numbers of displaced people and ensuring that they have access to basic needs in the shelters. Therefore he perceived that, “In the future, we are working to improve our communication systems and ensure that evacuation routes are clearly marked and accessible, even in extreme weather conditions. We also aim to increase our stockpile of emergency supplies and enhance our coordination with other local organizations to make our response more efficient and effective.” (*KII with Riazul Islam, Burigoalini Union Parishad Secretary in Shyamnagar*).

8.7.7 Emergency response during disasters of the Union Parishad Chairman

Nazrul Islam, Chairman of Burigoalini Union Parishad Shyamnagar upazila shared his insights on the emergency response strategies employed during disasters in this highly vulnerable coastal region. He highlighted the significant risk posed by cyclones and flooding, which frequently affect the area due to its geographic location. According to him, the community’s vulnerability has been exacerbated by climate change, causing more intense and frequent disasters in recent years. The Chairman emphasized the critical importance of early warning systems, which are coordinated

with the Cyclone Preparedness Programme (CPP) and local volunteers to ensure timely dissemination of alerts to all residents, particularly in remote villages.

During the emergency phase of a disaster, he noted that immediate response efforts focus on evacuation and ensuring safety. The Union Parishad collaborates closely with the CPP, local law enforcement, and NGOs to facilitate swift evacuations to cyclone shelters. However, challenges remain in effectively communicating with isolated communities due to poor infrastructure and network disruptions. The Chairman underscored the role of local volunteers and youth groups, who are vital in assisting with evacuations and managing shelters, often putting their own lives at risk to help others.

In terms of shelter management, Nazrul Islam highlighted the limited capacity of cyclone shelters, which can quickly become overcrowded during a major disaster. To address this, the Union Parishad has taken steps to pre-stock essential supplies like food, water, and medical kits in the shelters before a disaster strikes. He also pointed out the importance of addressing the specific needs of vulnerable groups, including women, children, and the elderly, during the sheltering process. Despite these efforts, resource constraints and logistical issues remain significant hurdles in ensuring adequate support for everyone affected.

Looking towards recovery and long-term resilience, the Chairman shared that rebuilding efforts after a disaster focus on restoring livelihoods and critical infrastructure, such as roads and embankments. He emphasized the importance of community involvement in resilience-building activities, including mangrove planting and the reinforcement of embankments to protect against future storms. Nazrul Islam concluded by recommending stronger coordination between local authorities and national agencies, as well as increased investment in resilient infrastructure, to better safeguard Shyamnagar's population against the growing threat of climate-induced disasters. *(KII with Nazrul Islam, Chairman of the Burigoalini Union Parishad (UP) in Shyamnagar).*

8.7.8 Emergency response during disaster of the Press Club

Press Club President asserted that, "During disasters, Shyamnagar's media plays an essential role in coordinating the emergency response. As the first point of contact for many affected people, our press club works closely with local authorities, NGOs, and the Cyclone Preparedness Programme (CPP) to ensure that accurate and timely information is disseminated. When cyclones or floods strike, the media's role extends beyond reporting; we help to direct people to shelters, broadcast information about available relief, and provide guidance on safety protocols. Our reporters are often on the ground, in close contact with rescue teams, to update the community on the latest developments. It's critical that the media not only informs but also reassures the public, especially when panic occurs."

"While we are able to report and guide the community, the actual emergency response on the ground is often delayed or hampered by several challenges. One of the major hurdles is the lack of adequate infrastructure. Roads are often washed away or submerged in floodwaters, which severely restricts the movement of emergency responders and relief supplies. Moreover, the sheer number of displaced people and damaged properties often overwhelms the capacity of local authorities and NGOs. This is where the media steps in to bridge the gap by making sure that relief efforts are coordinated, and urgent needs like food, water, and medical assistance are met. However, the overwhelming need for resources makes it difficult to meet all demands immediately."

"Looking ahead, the response to disasters in Shaymnagar needs more effective preparedness and better resources. Stronger disaster management infrastructure, including better communication networks, more well-equipped shelters, and improved access roads, are essential. The media can play a bigger role by not only providing information during disasters but also in the months leading up to them. Public education campaigns on disaster preparedness, the location of shelters, and evacuation procedures are crucial in ensuring people act in time. Additionally, establishing local volunteer networks that can assist during emergencies would be a major step toward strengthening our community's resilience. The collaboration between media, government agencies, and local organizations must be continuous and proactive, focusing on both preparedness and rapid response." (*KII with Akter Kabir, President of the Shyamnagar Press Club*).

8.7.9 Emergency services during disaster by NGO

NGO representative of Shushilon SM Zakir Hossain stated that, "During disasters like cyclones, our organization plays a crucial role in delivering emergency services to the affected communities in Shyamnagar upazila. The area is highly vulnerable, and the need for immediate relief is immense. We focus on distributing emergency food supplies, clean drinking water, and hygiene kits to families who have lost their homes or are forced to take refuge in cyclone shelters. Access to clean water is particularly important because flooding often contaminates local sources, increasing the risk of waterborne diseases. Our emergency teams are trained to work under challenging conditions, ensuring that aid reaches even the most remote villages despite damaged roads and infrastructures."

In Shyamnagar, access to healthcare is limited even under normal circumstances, and this situation worsens during disasters. The NGO sets up temporary medical camps in affected areas, providing first aid, basic medical treatment, and mental health support. They collaborate with local healthcare providers and the Cyclone Preparedness Programme (CPP) to ensure that injured individuals and vulnerable groups, like the elderly and pregnant women, receive timely care. Additionally, they distribute medicines and work to prevent the outbreak of diseases such as diarrhea and respiratory infections, which are common after cyclones due to poor living conditions in temporary shelters.

He further added, "Despite our best efforts, providing comprehensive emergency services in Shyamnagar is challenging due to the area's geographical isolation and lack of infrastructure. Transportation becomes difficult when roads are submerged or damaged, delaying relief efforts. Moreover, the existing cyclone shelters often lack adequate facilities, making it hard to provide a safe environment for displaced families. To improve our response, we are advocating for better infrastructure and increased investment in resilient health services. We also emphasize the importance of community-based preparedness training, so that local residents are better equipped to handle emergencies before external aid arrives. Strengthening local partnerships and improving coordination with government agencies are key priorities for us moving forward." (*KII with NGO representative of Shushilon SM Zakir Hossain*).

8.7.10 Emergency response during disasters of fishermen

Fishermen Abul Hssen said that, "We face frequent challenges from disasters, especially during the cyclone season. When a disaster is imminent, the first thing we do is secure our boats and fishing equipment because they're our main source of income. During cyclones, we usually move our families to safer places, like higher ground or nearby cyclone shelters, if there's time. Sometimes, there isn't enough warning, and we have to act very quickly. Over the years, we've

learned to rely on each other neighbors help one another out, and those who still have boats can assist in rescuing people. We also make sure to store some basic supplies in advance like dry food and medicine so we're prepared for emergencies. While the local government and NGOs have improved early warning systems in recent years, we still feel vulnerable when the storms intensify unexpectedly."

When a cyclone or flood hits, fishermen are among the first to assist with search-and-rescue operations. Fishermen know the waterways better than anyone else, so we can get to areas that others can't reach, especially when the roads are submerged. In our community, many of us use our boats to rescue people who are trapped by floodwaters or stranded in remote areas. After the initial rescue phase, they also help with distributing relief supplies, like food and water, to affected families. However, the coordination can be challenging because sometimes it's hard to know where the most help is needed. In recent years, there has been more collaboration with NGOs and local authorities, but often they have to work with what they have. They also help rebuild damaged homes and fishponds when the waters recede, but this is a slow and difficult process.

He added that, "The biggest challenge we face is the lack of resources when it comes to post-disaster recovery. After a disaster, it takes time for the government or aid organizations to reach us with relief supplies. There needs to be faster and more efficient delivery of aid, especially food, water, and medical supplies. Additionally, we could use more training in disaster preparedness, first aid, and rescue operations so we can better assist in emergencies. Strengthening the infrastructure like building stronger cyclone shelters and more durable roads would also help us recover more quickly." Fishermen should be included in planning and training programmes, as they often are the first responders. Lastly, providing financial support for rebuilding the fishing boats and gear after a disaster would help them get back to work faster, ensuring that their livelihoods are not permanently disrupted. *(KII with fisherman Abul Hossain).*

Box 8. 6 Summary of the emergency response of various stakeholders during disasters

Comprehensive Disaster Management Programme (CPP)

- **Key role:** Coordinates emergency relief (food, water, medical aid, shelter) through local teams and volunteers.
- **Challenges:** Remote access issues due to flooding and infrastructure damage.
- **Strategies:** Pre-positioned supplies, boat access, trained community teams.
- **Post-disaster:** Focus on rebuilding homes, infrastructure, and resilience through community involvement.

Red Crescent Society

- **Key role:** Provides immediate relief and medical care, sets up emergency shelters.
- **Coordination:** Works with government and NGOs to ensure equitable distribution.
- **Challenges:** Infrastructure damage, communication breakdowns, overwhelming demand.
- **Commitment:** Continuous capacity building and stronger coordination for future response.

Public Information Officer (PIO)

- **Focus:** Effective communication and volunteer mobilization.
- **Challenges:** Inadequate infrastructure, spread of misinformation.
- **Recommendations:** Invest in public awareness campaigns, infrastructure, and community feedback systems.

Upazila Nirbahi Officer (UNO)

- **Leadership role:** Coordinates local response with NGOs and volunteers.
- **Focus areas:** Rapid need assessment, effective communication, volunteer training.
- **Challenges:** Bureaucratic delays, poor infrastructure, misinformation.
- **Suggestions:** Invest in logistics, continuous training, and stronger national/international partnerships.

Department of Women Affairs

- **Concern:** Women are disproportionately affected and underserved.
- **Key gaps:** Lack of gender-sensitive shelters, minimal female participation in planning.
- **Recommendations:**
 - Involve women in decision-making and disaster response teams.
 - Provide gender-sensitive facilities, mental health support, and healthcare.
 - Promote women's economic empowerment and leadership.

Union Parishad Secretary (Riazul Islam)

- **Role:** Coordinates immediate disaster response via Union Disaster Management Committee.
- **Key actions:** Activates disaster plan, mobilizes volunteers, coordinates with NGOs & Red Crescent, sets up shelters and distributes relief (food, water, medical aid).
- **Challenges:** Infrastructure damage (roads/bridges), managing displaced people.
- **Future goals:** Improve communication, mark evacuation routes, stockpile emergency supplies and enhance inter-agency coordination.

Union Parishad Chairman (Nazrul Islam)

- **Role:** Oversees broader disaster management and community coordination.
- **Key Actions:** Activates early warning systems with CPP, manages evacuations and shelters and pre-stocks supplies.
- **Challenges:** Communication with remote areas, shelter overcrowding, resource limitations.
- **Resilience Focus:** Rebuilding infrastructure (roads, embankments), community-led initiatives (e.g., mangrove planting), calls for stronger local-national coordination.

Press Club

- **Role:** Media support during disasters for communication and coordination.
- **Key Actions:** Disseminates warnings and relief info, supports community guidance, partners with CPP and NGOs.
- **Challenges:** Infrastructure collapse, overwhelming relief demands.
- **Suggestions:** Improve infrastructure and shelters, increase media role in preparedness education and build local volunteer networks.

NGO

- Role: Delivers emergency relief and healthcare support.
- Key Actions: Distributes food, water, hygiene kits; sets up medical camps; provides mental health support; prevents disease outbreaks.
- Challenges: Poor infrastructure, limited shelter capacity, delayed access.
- Improvements Needed: Better roads, resilient health systems, local preparedness training and stronger partnerships with government

8.8 Emergency Responses of Different Stakeholders after Disasters

The emergency responses of various stakeholders after disaster were gathered by conducting 10 KIIs. Given below the emergency responses of each stakeholder after disasters:

8.8.1 Emergency response of CPP after disasters

Munshi Nur Mohammad, Assistant Director of CPP stated that, "Following a disaster, our immediate priority at CPP is to assess the situation and activate emergency response mechanisms. In the case of Shyamnagar, which is often heavily impacted due to its coastal location, we deploy our trained volunteers to the affected areas as quickly as possible. They assist in conducting rapid damage assessments, providing crucial data to the local disaster management authorities. Our volunteers are equipped to perform search and rescue operations, often navigating challenging conditions like flooded roads and debris. We coordinate closely with the Upazila Disaster Management Committee, ensuring that relief operations are streamlined and that resources are distributed effectively."

"In Shyamnagar, the community plays a pivotal role in the immediate aftermath of a disaster. Our approach focuses on leveraging local volunteers who are already embedded within these communities. After a cyclone, these volunteers help evacuate injured individuals to nearby healthcare facilities and distribute emergency supplies, such as food, water, and essential medical kits. This rapid mobilization is key, as external aid often faces delays due to damaged infrastructure. We have found that the involvement of local volunteers, who understand the terrain and needs of their own communities, significantly enhances the efficiency of our emergency response efforts."

"Despite our efforts, there are considerable challenges in responding effectively in Shyamnagar, particularly due to the remoteness and poor accessibility of many villages. Communication lines often break down during severe cyclones, making it difficult to coordinate our response teams. Additionally, limited shelter capacity sometimes forces us to make tough decisions about prioritizing the most vulnerable groups. To improve our response, we are working on strengthening our volunteer network and expanding the use of mobile and satellite technology for better communication. We also aim to increase the number of equipped emergency shelters in Shyamnagar to accommodate more people in future disasters" (Source: KII with Munshi Nur Mohammad, Assistant Director of CPP in Shyamnagar). *(KII with Munshi Nur Mohammad, Assistant Director of CPP, Shyamnagar)*

8.8.2 Emergency response of Red Crescent Society after disasters

Md. Hafizur Rahman, Life Member of Red Crescent Society stated that, "After a disaster, the Red Crescent Society is immediately involved in the post-disaster phase, focusing on delivering essential relief and conducting damage assessments. In Shyamnagar, our priority is to ensure that the community receives the support they need to survive in the immediate aftermath. We deploy teams to evaluate the extent of the damage to infrastructure and homes, particularly in the most affected areas. In parallel, we distribute food, clean water, and hygiene kits, while setting up emergency medical camps to treat those injured or suffering from post-disaster illnesses. Our goal is to stabilize the community in the short term by addressing the most urgent needs and ensuring that no one is left behind."

"In addition to providing food and medical support, the Red Crescent Society focuses on helping families who have lost their homes or livelihoods. In Shyamnagar, many families depend on agriculture or fishing for their income, and these sectors are often severely impacted during cyclones and floods. We assist families in rebuilding their homes or finding temporary shelter while longer-term solutions are implemented. We also distribute livelihood support materials such as seeds, tools, and fishing gear to help people restore their sources of income. Our teams work closely with local authorities to identify vulnerable families who need urgent assistance and ensure that relief efforts reach all corners of the community."

"Beyond the initial emergency response, the Red Crescent Society's role extends into long-term recovery and rehabilitation. This includes helping to rebuild infrastructure such as schools, hospitals, and roads that have been damaged or destroyed. We also focus on providing psychosocial support to individuals and families who have experienced significant trauma. We recognize that the effects of a disaster are not just physical; the emotional and mental toll on the community is equally important. Additionally, the Red Crescent Society advocates for stronger disaster risk reduction measures and supports the community in building resilience for future events. Our post-disaster efforts are focused on ensuring that the community can recover fully and is better prepared for any future disaster"(Source: KII with Md. Hafizur Rahman, Life Member of Red Crescent Society in Shyamnagar). *(KII with Md. Hafizur Rahman, Life Member of Red Crescent Society in Shyamnagar)*

8.8.3 Emergency response of Public Information Officer (PIO) after disasters

In the aftermath of a disaster, Shahinul Islam, Public Information Officer emphasized the importance of swift action to assess damages and mobilize resources for affected families. He describes the procedures in place, including damage assessment teams that quickly evaluate the impact on infrastructure and livelihoods. His office plays a key role in disseminating vital information about available relief services, shelter locations, and health services to the community. Shahinul Islam notes that the collaboration between government agencies and NGOs is crucial during these times, as it allows for a more coordinated and efficient response to meet the urgent needs of the affected population.

Despite the established protocols, Shahinul highlights several challenges that complicate post-disaster recovery efforts in Shyamnagar. One significant issue is the limited availability of resources and funding for rehabilitation projects, which often delays recovery efforts. Additionally, the lack of adequate infrastructure, such as roads and communication networks, hampers timely access to remote areas that are often the hardest hit. Shahinul also points out that

misinformation can spread rapidly during recovery periods, leading to confusion and frustration among residents regarding the availability of aid and resources.

To address these challenges, Shahinul Islam recommends enhancing community preparedness and building stronger local networks before disasters strike. He advocates for ongoing training programmes for local volunteers, emphasizing the importance of their role in providing immediate support during recovery efforts. Furthermore, Shahinul suggests that local authorities collaborate with national agencies to secure more funding and resources specifically earmarked for post-disaster recovery. By fostering a culture of resilience and improving resource allocation, Shahinul believes that Shyamnagar can enhance its recovery processes and better support its residents in the aftermath of disasters (Source: KII with Shahinul Islam, Public Information Officer (PIO) for Shyamnagar). *(KII with Shahinul Islam, Public Information Officer (PIO) for Shyamnagar).*

8.8.4 Emergency response of Upazila Nirbahi Officer (UNO) after disasters

Following a disaster, Akter Hossen emphasized the importance of prompt and coordinated emergency response efforts. He describes the initial actions taken by the UNO office, which include conducting damage assessments and mobilizing resources to address immediate needs. Akter Hossen collaborates with various stakeholders, including local government bodies, NGOs, and community organizations, to ensure a unified response. This coordination allows for a quick deployment of relief efforts, including food distribution, medical assistance, and temporary shelter for those displaced by the disaster. Akter believes that clear communication among all parties involved is essential to avoid duplication of efforts and to effectively reach those in need.

Akter Hossen highlights the critical role of community engagement in the recovery process after disasters. He notes that local volunteers and community leaders are often the first responders, providing essential support to their neighbors. The UNO office actively involves these community members in recovery efforts, offering training programmes to enhance their capacity to assist during emergencies. Akter Hossen emphasized that empowering local residents not only accelerates recovery but also fosters a sense of ownership and responsibility within the community. By involving citizens in recovery efforts, the UNO office strengthens community ties and ensures that support is tailored to the specific needs of the affected population.

Despite these efforts, Akter Hossen acknowledges several challenges faced during the post-disaster recovery phase. One significant issue is the lack of adequate infrastructure, which can impede access to remote areas where help is most needed. Additionally, limited financial resources often delay the recovery process, as funding is crucial for rebuilding homes and restoring livelihoods. Akter also points out the importance of managing public perception and misinformation, which can arise in the aftermath of a disaster. Clear and accurate communication is necessary to maintain public trust and ensure that residents are aware of available resources and recovery plans.

Looking ahead, Akter Hossen emphasized the need for ongoing improvements in emergency response strategies and recovery planning. He advocates for the establishment of a more robust disaster management framework that includes regular training and capacity-building exercises for local officials and community members. Additionally, Akter stresses the importance of developing better infrastructure to facilitate quicker and more efficient responses in future disasters. By fostering partnerships with national and international organizations, he believes Shyamnagar can enhance its resource mobilization efforts and build a more resilient community. Akter remains

committed to ensuring that Shyamnagar is better prepared for future challenges, ultimately aiming to protect the lives and livelihoods of its residents (*KII with Akter Hossen, Upazila Nirbahi Officer (UNO) for Shyamnagar*).

8.8.5 Emergency response of Department of Women Affairs after disasters

Sharid bin Shafique, Women Affairs Officer stated that, “The aftermath of disasters is particularly difficult for women. While the emergency response often provides immediate relief like food, water, and shelter, women face unique challenges that are not always adequately addressed in the recovery process. After disasters, women often find themselves without homes, income, or access to healthcare. This leaves them vulnerable to various forms of violence, including gender-based violence, trafficking, and exploitation. Moreover, women are typically the primary caregivers in their families, and the loss of infrastructure, such as schools or healthcare centers, disproportionately affects them and their children. There is a critical need for a more comprehensive, gender-responsive recovery strategy that not only provides immediate relief but also addresses women’s long-term needs for safety, economic stability, and healthcare.”

He further identified the pressing gaps which are the lack of gender-sensitive facilities and services in the emergency shelters and response mechanisms. For example, women often do not have access to separate, safe spaces for rest or hygiene needs. During crises, the absence of secure sanitation facilities, including private spaces for bathing and menstrual hygiene, exposes women to the risk of gender-based violence. Additionally, healthcare services are often insufficient, especially for women who may be pregnant or have small children. Post-disaster recovery efforts also tend to overlook women’s economic needs, which are critical for their long-term resilience. We need to ensure that women have access to financial support, livelihoods programmes, and skill-building initiatives so they can regain their independence. Moreover, women must be part of the decision-making process in the response and recovery phases, as they understand their own needs better than anyone else. Involving women in leadership roles in disaster management can help create more effective, inclusive solutions.

To better support women in the recovery phase, we need to adopt a more inclusive, participatory approach. First, local authorities should ensure that women are actively involved in disaster management committees and that their voices are heard in post-disaster decision-making processes. This can be done through organizing community consultations and ensuring that women’s needs are prioritized in recovery plans. Additionally, emergency shelters and temporary accommodations must be equipped with gender-sensitive facilities such as separate toilets, safe spaces for women, and accessible healthcare services. Financial support is another critical area, so there must be targeted programmes for women to help them rebuild their livelihoods. These programmes should be flexible enough to accommodate women’s diverse roles, from those who are primary breadwinners to those who need support in rebuilding small businesses or accessing credit. Lastly, there should be an emphasis on providing psychological support and counseling services to help women cope with trauma, especially those who may have been subjected to violence or who have lost family members. Overall, building a more inclusive, gender-responsive disaster recovery framework will not only help women recover but also strengthen the resilience of the entire community (*KII with Upazila Women Affairs Officer Sharid bin Shafique in Shyamnagar*).

8.8.6 Emergency response of Union Parishad Chairman after disasters

Nazrul Islam, Chairman of Burigoalini Union Parishad, Shyamnagar, shared critical insights on the post-disaster emergency response efforts in his area, which is frequently impacted by cyclones and tidal surges. He described the immediate aftermath of a disaster as a crucial period marked by rapid assessment of damages and mobilization of resources. Local authorities, including the Union Parishad, work closely with the Cyclone Preparedness Programme (CPP), law enforcement, and NGOs to conduct damage assessments and determine the most affected communities. According to Islam, these assessments are vital in prioritizing relief distribution and identifying urgent needs such as food, water and medical supplies.

Following a disaster, the Chairman highlighted that ensuring access to basic necessities is the top priority. He explained that relief efforts focus on delivering emergency aid to the hardest-hit areas, where road access is often disrupted due to flooding and fallen debris. The Union Parishad collaborates with various partners, including government agencies and local volunteers, to distribute relief packages containing dry food, clean drinking water, and essential medical supplies. Nazrul Islam emphasized the importance of swift and efficient coordination during this phase, as delays can lead to severe health issues, particularly in vulnerable populations such as children and the elderly.

Shelter and healthcare also remain pressing concerns after a disaster. Mr. Islam pointed out that cyclone shelters, while providing refuge during the storm, often lack adequate facilities for extended stays. Overcrowding and the risk of disease outbreaks are common issues. He noted that the Union Parishad makes efforts to set up temporary medical camps in collaboration with local health services and NGOs to provide basic treatment and prevent the spread of waterborne diseases. The Chairman also stressed the importance of psychosocial support for those affected, as the trauma of losing homes and livelihoods can have long-lasting mental health impacts.

In the long-term recovery phase, the focus shifts towards rebuilding infrastructure and restoring livelihoods. Nazrul Islam shared that the local administration prioritizes repairing damaged embankments, restoring road access, and assisting fishermen and farmers in restarting their activities. The Chairman emphasized the critical need for community involvement in these efforts, particularly in embankment repairs and mangrove replanting, which help protect against future storms. He concluded by noting that while the resilience of the local population is strong, there is a pressing need for increased support from both the government and development partners to effectively rebuild and strengthen *(KII with Nazrul Islam, Chairman of the Burigoalini Union Parishad (UP) in Shyamnagar).*

8.8.7 Emergency response of Union Parishad Secretary after disasters

Burigoalini Union Parishad Secretary Riazul Islam said that after a disaster strikes, our immediate priority is to assess the damage and ensure that the most affected communities receive urgent relief. Once the storm or flood has passed, the Union Disaster Management Committee, along with local volunteers and agencies like the Red Crescent, starts conducting damage assessments. We identify areas that are severely impacted and work quickly to distribute essential supplies such as food, drinking water, hygiene kits, and clothing. Shelters are set up for those who have lost their homes, and we focus on reaching the most vulnerable groups, like children, the elderly, and those with disabilities. These initial relief efforts are vital to ensuring that the community can survive in the immediate aftermath of the disaster."

"After the immediate needs are addressed, the next step is to provide medical support and assist in the restoration of livelihoods. In Shyamnagar, many people rely on agriculture and fishing for their livelihoods, and disasters like cyclones and floods often destroy their homes and workplaces. We coordinate with local health facilities and the Red Crescent to set up mobile medical camps where people can get treatment for injuries or illnesses caused by the disaster. At the same time, we focus on restoring livelihoods by distributing tools, seeds, and fishing equipment to help families get back to work as quickly as possible. This is essential for the long-term recovery of the community, as many people here are heavily dependent on their daily income from fishing and farming."

"Despite our best efforts, we face several challenges when responding to the aftermath of disasters. One major issue is the limited infrastructure in some parts of Shyamnagar, which can make it difficult to deliver aid or reach certain areas, especially after heavy flooding or cyclones. The road networks are often severely damaged, and transportation of goods and people becomes a significant obstacle. Additionally, the scale of the disaster sometimes exceeds our capacity to respond, especially when the needs of displaced people are overwhelming. To improve our response in the future, we plan to enhance our communication systems to better inform and coordinate with affected communities. We also aim to strengthen partnerships with NGOs and government agencies to ensure that we can mobilize resources more efficiently and reach all affected areas in a timely manner" (*KII with Riazul Islam, Burigoalini Union Parishad Secretary in Shyamnagar*)

8.8.8 Emergency response of Press Club after disasters

Akbar Kabir, President of Shyamnagar Press Club stated that, "After a disaster hits Shyamnagar, the immediate response is crucial in preventing further loss of life and alleviating the suffering of the affected population. As the local media, we play a key role in ensuring that relief efforts are coordinated and that vital information reaches the community. We work closely with local authorities, NGOs, and community leaders to provide updates on where relief supplies, such as food, clean water, and medical assistance, are being distributed. In the aftermath of cyclones or floods, the most important task is to reach people in the hardest-hit areas, particularly those who are isolated due to damaged roads or flooded homes. Our media platforms help inform the public about these services, which is vital in reducing confusion and ensuring that no one is left behind."

"One of the biggest challenges we face after a disaster is the limited access to affected areas due to the damage to infrastructure. Roads are often impassable, and the telecommunications networks are down, making it difficult to coordinate relief efforts. Additionally, the scale of the damage often overwhelms local resources, with many people needing shelter, medical care, and basic necessities. In these situations, the media becomes a bridge between affected communities and the authorities. While we can report and amplify the needs of the people, we are also dependent on the timely delivery of resources. The lack of sufficient shelters and inadequate healthcare facilities further complicate the response, making it difficult for relief efforts to keep up with the high demand."

"Looking beyond immediate relief, the role of the media also extends to supporting long-term recovery and resilience-building. After the immediate response phase, we continue to report on the needs of the community, advocating for reconstruction efforts and the rebuilding of infrastructure like homes, schools, and healthcare centers. We also highlight the ongoing struggles of the people and the challenges they face in returning to normal life. The media can serve as a tool for accountability, ensuring that the government and NGOs deliver on their promises of support and

that resources are allocated fairly. Additionally, we focus on promoting disaster preparedness and resilience programmes to help the community become better equipped for future disasters. Ensuring that people are not only recovering but also prepared for the next event is a crucial part of the media's role in disaster management." (*KII with Akter Kabir, President of the Shyamnagar Press Club*).

8.8.9 Emergency response of NGO after disasters

SM Zakir Hossain representative of NGO Shushilon stated that, "After a disaster strikes, our primary focus is on delivering immediate relief to the affected communities in Shyamnagar. The area often faces severe damage due to cyclones, leaving many families displaced and without basic necessities. Our organization works quickly to distribute emergency food rations, drinking water, and essential hygiene kits. In the initial days following a disaster, access to clean water becomes critical due to the contamination caused by flooding. We also provide temporary shelter solutions for families whose homes have been destroyed, helping them find safety and protection until they can return or rebuild."

"Health services are a major component of our emergency response in Shyamnagar, especially given the region's limited healthcare infrastructure. Following a disaster, we set up mobile medical camps to offer first aid, basic treatment, and psychological support to the affected population. We often see an increase in cases of waterborne diseases like diarrhea, as well as respiratory infections, due to the crowded and unsanitary conditions in temporary shelters. Our medical teams work in coordination with local health authorities to ensure that essential medicines and services are provided promptly. However, the sheer number of people in need often overwhelms the available resources, making it difficult to reach everyone in time."

"Despite our extensive planning, delivering emergency services in Shyamnagar is fraught with challenges. The region's poor infrastructure, including damaged roads and limited transportation options, significantly hampers our ability to reach remote and isolated villages quickly. Additionally, communication breakdowns during and after a disaster make it hard to coordinate relief efforts effectively. There is also a shortage of well-equipped cyclone shelters, which leaves many families vulnerable during the immediate aftermath. To address these issues, we are working to strengthen our local partnerships, advocate for better infrastructure investments, and train community volunteers to assist in the emergency response. Building a resilient response system will require ongoing collaboration with government agencies and continued investment in disaster preparedness." (*KII with NGO representative of Shushilon SM Zakir Hossain*).

Challenges in disaster prevention measures

"One of the most significant issues we face in Shyamnagar is the lack of effective disaster prevention measures. The area is highly vulnerable to natural disasters, particularly cyclones, and despite efforts, many preventive strategies are either inadequate or not implemented at scale. There are limited flood barriers or coastal embankments, and erosion of the coastline has become a major concern, threatening both livelihoods and infrastructure. Many communities are still living in areas that are prone to flooding and storm surges. While some government and NGO efforts have been made, they are not enough to counter the scale of the threats posed by these frequent and intense disasters."

"Another issue is the lack of widespread preparedness and awareness programmes in Shyamnagar. While some communities are aware of the risks and basic precautions, many still do not have the

knowledge or resources to effectively protect themselves from the immediate and long-term impacts of disasters. There is also a shortage of early warning systems in some areas, and those who receive warnings may not have the means to evacuate safely, especially in remote villages. Despite the presence of organizations like the CPP, which provide training, the scale of disaster prevention needed here requires much more significant investment in education and infrastructure, as well as stronger community engagement."

"Ultimately, the lack of disaster prevention in Shyamnagar is a systemic issue that needs to be addressed through integrated disaster risk management. While humanitarian aid plays an important role during and after disasters, prevention should be the focus to reduce loss of life" (*KII with NGO representative of Shushilon SM Zakir Hossain*).

8.8.10 Emergency response of fishermen after disasters

Fisherman Abul Hossain said that "After a disaster, the first thing we do as fishermen is check on our own families and make sure they are safe. But then, it's all about helping the community. Since we know the local waterways and flood-prone areas better than anyone, we quickly organize to rescue people stranded by the rising waters. Many of us use our boats to reach areas where roads are submerged or destroyed. After rescuing people, we often take them to cyclone shelters or higher ground. There's a lot of work to be done, and we work together, helping each other where we can. We also help transport emergency supplies—like food, water, and medicines—to those who need it, especially to the elderly and disabled who are harder to reach."

The recovery process is tough, especially when it comes to rebuilding our livelihoods. Many of us rely on fishing, and after a disaster, our boats, nets, and equipment are often damaged or destroyed. It can take weeks or even months before we can resume our work. During that time, the community comes together to help rebuild homes and restore fishponds, but there's always a shortage of resources. The government and NGOs provide some support, but it's never enough to fully cover our losses. We also face challenges with the damaged infrastructure - roads are often washed away, and communication networks break down, which makes it hard to get timely information about relief or recovery plans. The hardest part is the psychological toll it takes on us. Many fishermen have lost their homes or boats multiple times, so it's emotionally draining, too.

There's definitely a need for more proactive support, both during and after a disaster. First, the government and NGOs should focus on quicker and more efficient distribution of relief supplies. In our area, the response is often delayed, and by the time aid arrives, it's not enough to meet the full needs of everyone. In terms of long-term resilience, we need better infrastructure—stronger cyclone shelters, better roads, and more robust communication systems to keep everyone informed. Financial support for fishermen to repair or replace damaged boats and equipment would go a long way. Additionally, more training in disaster preparedness and recovery could help us recover faster and reduce losses. Lastly, strengthening local networks and collaboration between the community, government, and NGOs would help ensure that resources are used efficiently, and that we're better prepared for the next disaster (*KII with fisherman Abul Hossain*).

Box 8. 7 Summary of the emergency response of various stakeholders during disasters

Cyclone Preparedness Programme (CPP) - Emergency Response

- Immediate Action: Deploys trained local volunteers for search and rescue, damage assessments, and relief distribution.
- Coordination Role: Works closely with local authorities and communities to support emergency operations.
- Challenges: Poor infrastructure, communication breakdowns, and limited access to remote areas.
- Future Focus: Strengthening volunteer networks, expanding shelter capacity, and improving preparedness mechanisms.

Red Crescent Society – Emergency Response

- Immediate Action: Provides emergency food, water, medical aid, and hygiene kits.
- Community Role: Supports families in rebuilding homes and restoring livelihoods.
- Challenges: Limited infrastructure and overwhelming needs during major disasters.
- Long-term Focus: Promotes mental health support, infrastructure rebuilding, and disaster risk reduction for resilience.

Public Information Officer (PIO) – Emergency Response

- Immediate Action: Coordinates communication about damage, relief efforts, and public instructions.
- Coordination Role: Works with government and media to ensure accurate and timely information.
- Challenges: Misinformation, resource limitations, and damaged communication systems.
- Future Focus: Training, improved resource allocation, and enhanced inter-agency collaboration.

Upazila Nirbahi Officer (UNO) – Emergency Response

- Immediate Action: Leads coordination of government and NGO relief operations.
- Coordination Role: Bridges communication between communities, agencies, and service providers.
- Challenges: Funding shortfalls, poor infrastructure, and remote area access.
- Long-term Focus: Advocates for improved disaster frameworks, infrastructure upgrades, and inclusive planning.

Department of Women Affairs – Emergency Response

- Immediate Action: Identifies and addresses the needs of women and girls post-disaster.
- Community Role: Promotes safe spaces, gender-sensitive healthcare, and economic support.
- Challenges: Lack of women-friendly shelters, limited access to resources, and exclusion from planning.
- Long-term Focus: Empowering women in recovery leadership and integrating gender-sensitive strategies in disaster planning.

Union Parishad Chairman (Nazrul Islam) – Emergency Response

- Immediate Action: Conducts damage assessments and organizes urgent relief (food, water, medicine).
- Coordination Role: Works with CPP, NGOs, and law enforcement to manage post-disaster operations.
- Challenges: Limited access due to flooding/debris, health risks in overcrowded shelters.

- Long-term Focus: Infrastructure repairs, livelihood restoration, and community-based resilience building.

Union Parishad Secretary (Riazul Islam) – Emergency Response

- Immediate Action: Coordinates relief efforts for vulnerable groups and assesses community-level damage.
- Community Role: Supports health and livelihood recovery through medical camps and distribution of materials.
- Challenges: Poor road conditions, limited capacity, and weak communication systems.
- Future Focus: Enhancing communication, building partnerships, and ensuring timely aid distribution.

Press Club (Akbar Kabir) – Emergency Response

- Immediate Action: Disseminates essential information about relief services and emergency updates.
- Coordination Role: Acts as a communication bridge between affected communities and authorities.
- Challenges: Infrastructure damage, limited healthcare access, misinformation.
- Long-term Focus: Advocates for reconstruction, monitors accountability, and promotes disaster education and preparedness.

NGO (Shushilon – SM Zakir Hossain) – Emergency Response

- Immediate Action: Distributes food, water, hygiene kits, and temporary shelter materials.
- Health Support: Operates mobile clinics for basic care and psychological support.
- Challenges: Poor infrastructure, delayed coordination, lack of adequate cyclone shelters.
- Long-term Focus: Improve infrastructure, empower communities through training, and build resilient systems.
- Prevention Needs: Strengthen embankments, raise awareness, and expand early warning systems.

Fisherman (Abul Hossain) – Emergency Response

- Immediate Action: Conducts rescues using personal boats; delivers aid to isolated areas.
- Community Role: Assists in shelter operations and rebuilding homes and fishponds.
- Challenges: Loss of boats/equipment, delayed relief, poor infrastructure and communications.
- Support Needs: Faster and larger-scale aid, improved roads/shelters, financial recovery help, and disaster training.

8.9 Overview of Disaster Preparedness, Early Warning Systems, and Post-Disaster Support

The chapter explores disaster preparedness, early warning systems, and post-disaster support among vulnerable groups in coastal Bangladesh. It focuses on how different community members including men, women, and children from various backgrounds such as persons with disabilities, the elderly, widows, and heads of households respond to and prepare for disasters like cyclones and floods. It highlights that most disaster preparedness is rooted in indigenous knowledge and past experiences, particularly during recent major cyclones like *Amphan* and *Yaas*.

The study finds significant variation in preparedness levels across different categories of respondents. Men and women with disabilities are generally the most proactive in taking

preparatory measures such as storing food and medicine, saving money, purifying water, and modifying housing structures. In contrast, elderly individuals, widows, and household heads both male and female tend to show lower levels of preparation, often due to limited resources, physical constraints, or social marginalization. Children's involvement in preparedness activities is limited overall but is more noticeable in households with persons with disabilities, indicating the importance of household dynamics and awareness.

The findings emphasize that traditional forms of disaster warnings, especially through loudspeaker announcements (miking) and mosque notifications, are the most trusted and widely accessed. Community-based systems also play a significant role in disseminating warnings, while digital tools like mobile text alerts are moderately used. Social media and radio are the least utilized, largely due to accessibility issues among older or more vulnerable groups.

Community volunteers emerge as the most critical agents in early warning dissemination, underscoring the importance of trusted, local communication channels. While mobile phone operators and local government figures like upazila chairmen are also recognized, formal institutional sources are less frequently cited, revealing a gap in public trust and reach.

In terms of post-disaster support, food aid is the most common form of assistance, followed by shelter, clean water, and medicine. People with disabilities tend to receive more comprehensive aid, while widows and widowers appear to be less supported, particularly in terms of shelter and medical care. The overall findings point to significant disparities in preparedness, warning access, and relief distribution, reinforcing the need for more inclusive, localized, and equity-focused disaster risk management strategies.

Chapter 9

Strategies and Suggestions to Face the Challenges of Disasters

The chapter is on strategies and initiatives taken by the respondents and other actors to encounter disasters. The respondents also provided some suggestions for facing the future disasters. Strategies were mainly to save themselves as well as their family members from any forthcoming disasters. In addition, emphasis was also given to initiatives for Disaster Risk Reduction (DRR) in coastal Bangladesh mainly Shyamnagar upazila under Satkhira district. Respondents also provided their suggestions for reducing the negative impacts of climate change and disasters.

9.1 Strategies to Counter the Impacts of any Forthcoming Disaster

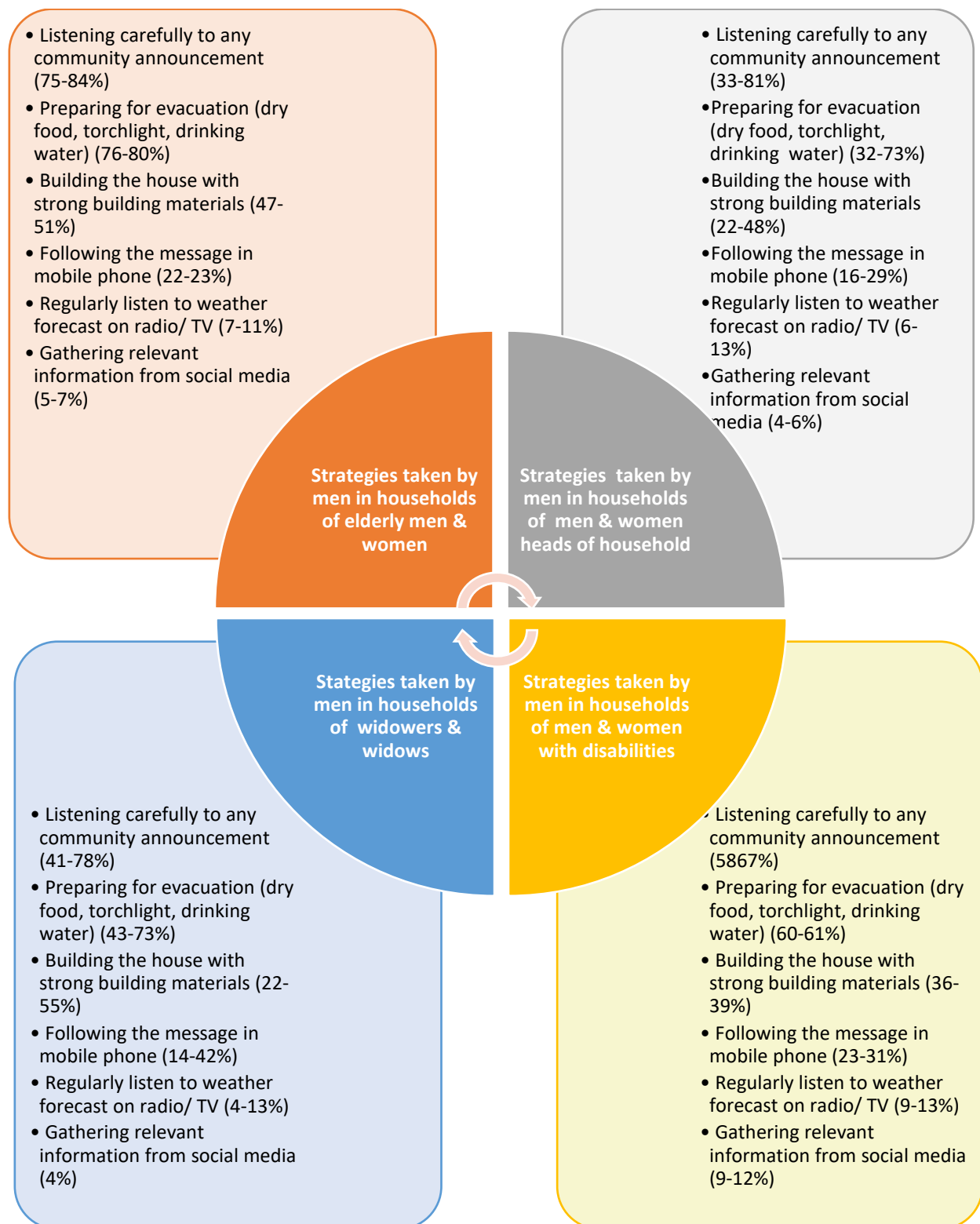
Coastal regions like Shyamnagar upazila are highly vulnerable to disasters such as cyclones, tidal surges, salinity intrusion, and severe floods. Given the increasing frequency and intensity of these hazards due to climate change, communities have developed a variety of coping strategies to safeguard their lives and livelihoods. These strategies vary across gender, age, and socio-economic status, reflecting diverse experiences and adaptive capacities. The following section highlights the key actions undertaken by men, women, and children across different respondent categories to reduce their risk and enhance resilience against future disasters.

9.1.1 Strategies being taken by men to counter disaster impacts

Men across different household categories adopted a range of proactive strategies to protect themselves and their families from the impacts of potential disasters. A common and widely practiced approach was listening carefully to community announcements, with particularly high awareness among elderly households (75-84%) and households of widowers and widows (41-78%), demonstrating the value placed on locally disseminated information during emergencies. Closely linked to this was the strategy of preparing for evacuation, including stocking dry food, torchlights, and clean water which was notably adopted by 60-80 percent across all groups, reflecting growing community-level disaster preparedness. Strengthening housing structures was another significant, though varied, measure. While 47-51 percent of elderly households emphasized building with stronger materials, the rate dropped slightly among other groups (22-55%), possibly due to financial constraints. Monitoring messages on mobile phones and checking weather forecasts on TV or radio were more moderately adopted (ranging from 6-42%), highlighting the increasing yet still uneven role of digital and broadcast media in early warning communication. Interestingly, gathering information through social media saw lower adoption overall (4-12%), but was slightly higher among households with persons with disabilities (9-12%), indicating a gradual shift toward digital platforms in disaster risk awareness.

The findings suggest that while traditional communication channels like community announcements remain central, digital tools are increasingly supplementing early warning systems. However, disparities in strategy adoption - especially those requiring financial investment like house strengthening, under the socioeconomic limitations faced by vulnerable communities. Strengthening local disaster communication infrastructure, supporting resilient housing, and expanding access to digital technologies could significantly enhance preparedness across all groups.

Figure 9. 1 Strategies taken by men to save themselves and their family from the impacts of any forthcoming disaster



9.1.2 Strategies being taken by women to save themselves and their family from the impacts of any forthcoming disaster

The strategies adopted by women to protect themselves and their families from forthcoming disasters reflect both traditional and evolving modes of preparedness, with distinct variations across household categories.

Among households of elderly men and women, a strong emphasis was placed on evacuation preparedness with 86-92 percent of women preparing dry food, water, and essential supplies indicating a high level of risk awareness and practical readiness. This group also relied heavily on community announcements (74-76%) and took steps to strengthen housing (38-53%).

Similarly, widowed households showed significant attention to evacuation preparation (62-84%) and community announcements (54-74%), reflecting learned experiences from past disasters.

However, a different pattern emerged among households headed by men and women and those with disabilities. Women in these groups relied less on physical preparedness and more on digital and broadcast sources for early warning.

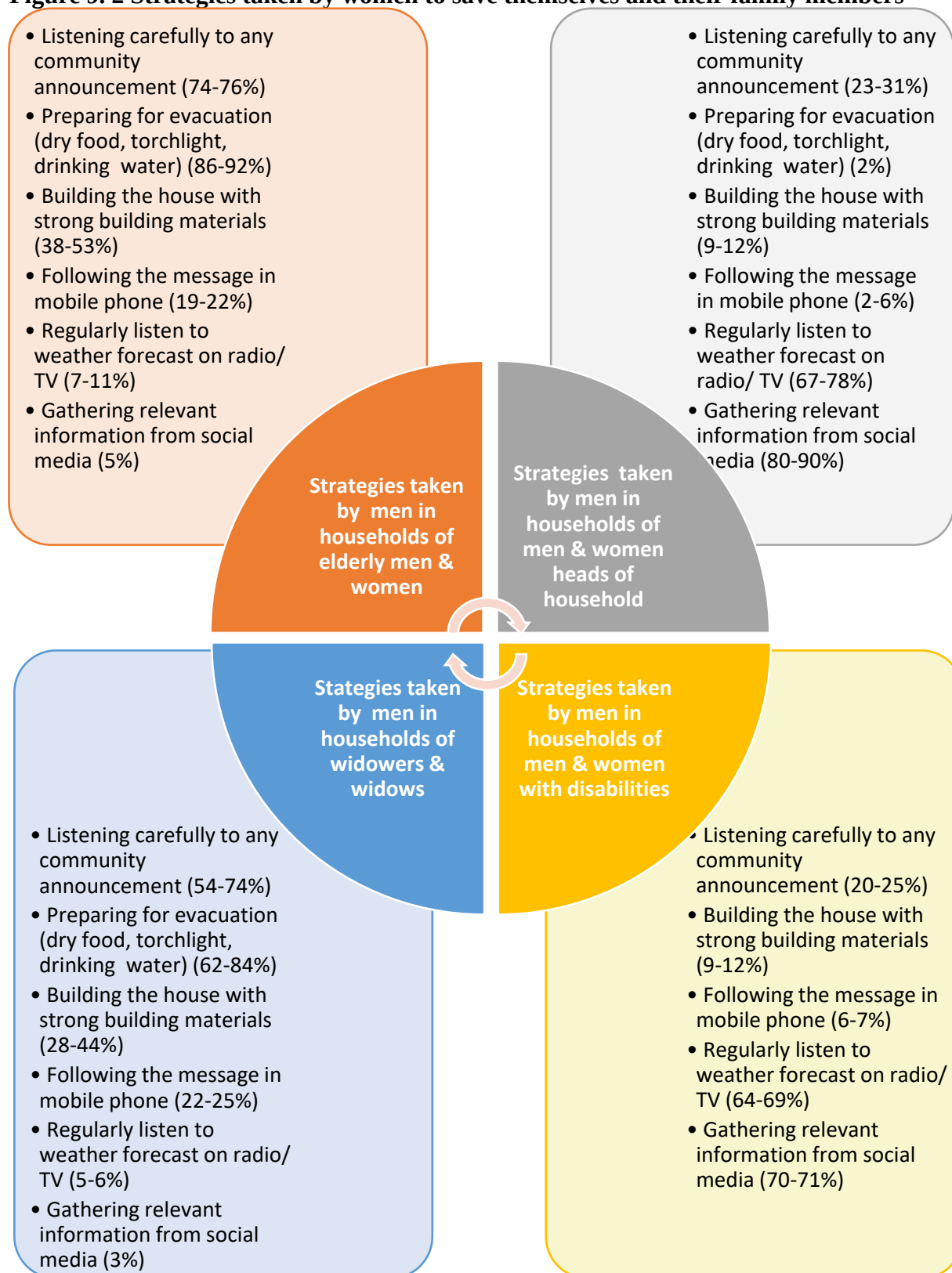
Particularly notable is the high use of social media (80-90%) and radio/TV forecasts (67-78%) among women in male- and female-headed households, as well as those with disabilities, where social media usage ranged from 70-71 percent.

These groups reported low levels of evacuation preparation (as low as 2%) and minimal investment in strong building materials (as low as 9-12%), which may be attributed to socioeconomic barriers or digital dependency.

This analysis underscores a dual approach to disaster preparedness among women: while some groups prioritize practical, experience-based measures, others lean heavily on digital information channels, suggesting shifting trends in risk communication.

However, the low rate of physical preparation and structural safety investments among several vulnerable groups raises concerns about their actual resilience. Bridging these gaps through targeted awareness, capacity building, and infrastructure support is crucial to ensuring that all women regardless of their household category-are equally equipped to withstand future disasters.

Figure 9. 2 Strategies taken by women to save themselves and their family members



9.1.3 Strategies being taken by children to save themselves and their family from the impacts of any forthcoming disaster

Children's strategies to protect themselves and their families from the impacts of forthcoming disasters remain limited, reflecting both their age-specific capacities and the dependency on adult-led actions.

Across all household categories, listening to community announcements was the most common response, though still relatively low, ranging from 10-27 percent with the highest percentage reported by children in widowed households (26-27%), possibly due to a greater sense of responsibility in the absence of both parents.

Similarly, checking mobile messages was more common among children in widowed and elderly households (16-18%), indicating an increasing role of digital awareness even among younger demographics.

Evacuation preparedness (packing dry food, water, torches, etc.) remained notably low, peaking at only 18 percent among children in widowed households, and dipping as low as 5-7 percent elsewhere. Efforts to build stronger houses, a more resource-intensive task, were predictably minimal (as low as 3-4%), suggesting that children's contribution to infrastructural preparedness is constrained by their physical and financial limitations.

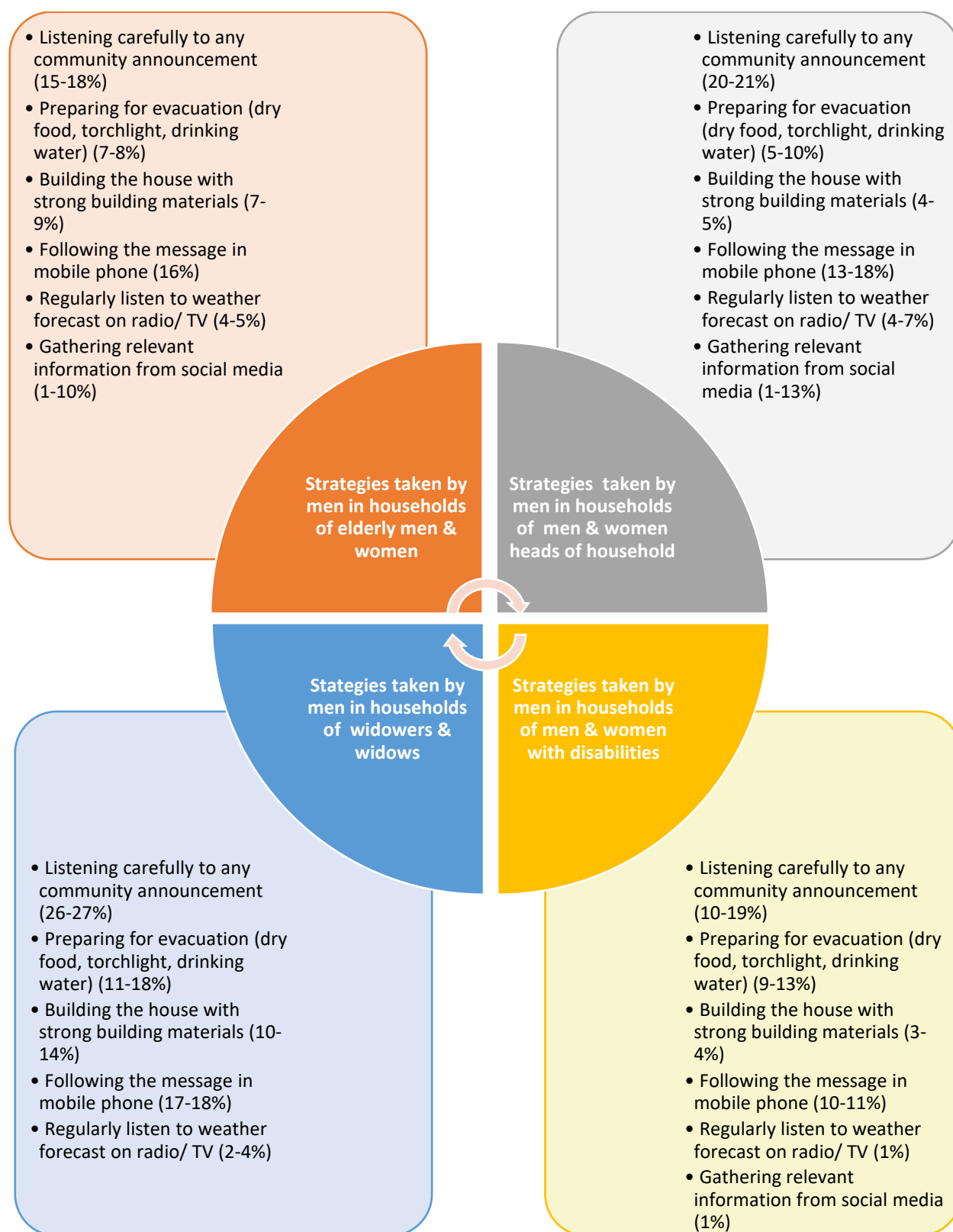
Similarly, engagement with weather forecasts on radio/TV and social media was marginal -mostly below 7 percent, with only a few exceptions again pointing to limited access or awareness.

Overall, the data suggest that children's disaster preparedness actions are largely passive or informational, and heavily reliant on adult guidance. While some are increasingly utilizing mobile phones and social media, the actual preparedness measures remain minimal.

This underscores the need for child-inclusive disaster education programmes that build basic awareness, encourage active participation, and integrate child-friendly communication strategies into early warning systems.

Enhancing children's preparedness not only empowers them but also contributes to the broader resilience of families and communities.

Figure 9. 3 Strategies taken by children to save themselves and their family from the impacts of any forthcoming disaster



9.1.3 Responses of UNO of Shyamnagar upazila

Box 9. 1 Strategies taken by community people to save themselves from any forthcoming disaster

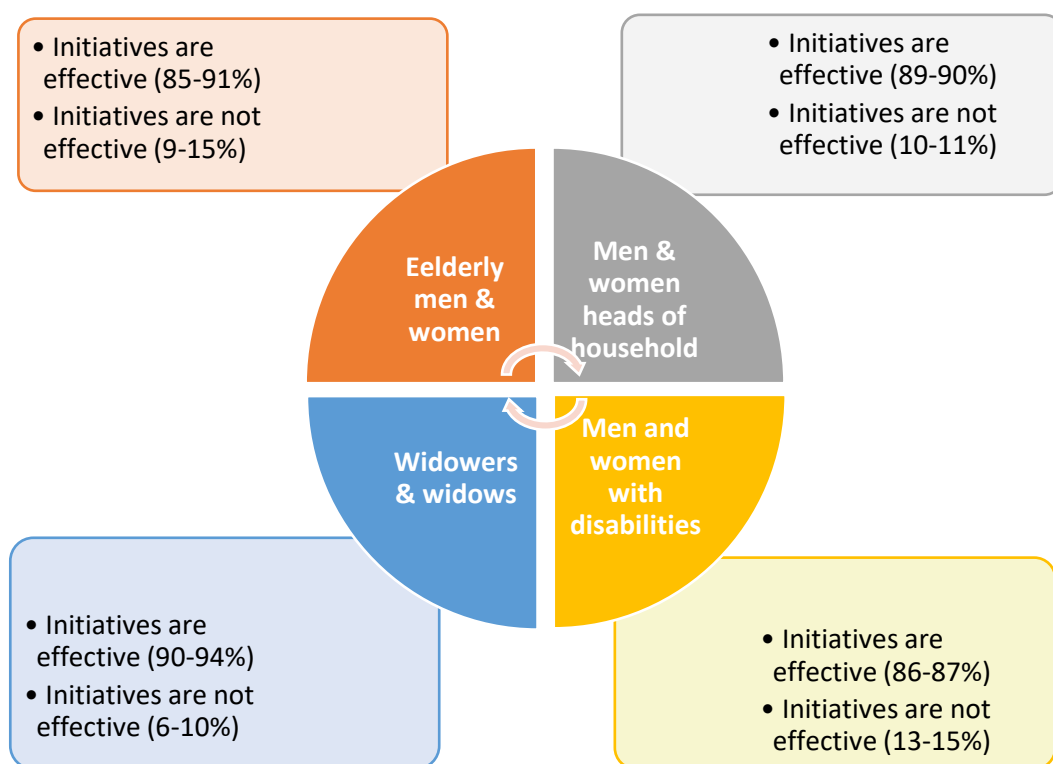
People who are living in the same location or area face the same intensities of a disaster but they experienced different impacts based on their level of vulnerability and capacities. Most of the rural people use local or indigenous knowledge to cope with disasters and climate change.

-KII with the UNO of Shyamnagar Upazila

9.2 Government and Non-Government Initiatives for Disaster Risk Reduction (DRR) in Coastal Bangladesh

An overwhelming majority of respondents agreed on the effectiveness of initiatives taken by government and non-government organizations for disaster risk reduction in coastal Bangladesh.

Figure 9. 4 Whether government and non-government initiatives are effective for Disaster Risk Reduction (DRR) in coastal Bangladesh



Among them, 91 percent of elderly men and 85.1 percent of elderly women expressed confidence in these interventions, suggesting a generally positive perception within this demographic. This trend continued across other groups as well: 89-90 percent of men and women heads of household, 90-94 percent of widows and widowers, and 86-87 percent of persons with disabilities also acknowledged the effectiveness of such efforts. These initiatives may include early warning

systems, embankment constructions, cyclone shelters, livelihood support, and awareness programmes.

However, a minority across all groups expressed reservations. Between 6 percent and 15 percent of elderly respondents, heads of household, widows/widowers, and persons with disabilities believed that the initiatives were not effective. Their concerns may stem from gaps in accessibility, inclusiveness, or consistency in implementation particularly for marginalized and vulnerable communities.

Overall, while the perception of effectiveness is notably high, the presence of dissent highlights the need for continued evaluation, community feedback mechanisms, and targeted improvements especially to ensure that disaster risk reduction efforts are inclusive, sustainable, and responsive to the unique vulnerabilities of different groups in coastal regions.

Box 9. 2 Initiatives for Disaster Risk Reduction (DRR)

The Union Parishad has a committee on disaster management. They call meetings regularly and make different strategic and contingency plans for disaster risk reduction during and after disaster.

-KII with Union Parishad Chairman

There is a committee in the Upazila for monitoring everything during the disaster. To reduce the risk of disasters, the Upazila administration takes various initiatives and consultation with civil societies, NGOs and community people.

The plan for Disaster Risk Reduction includes a book on inclusion of women and person with disabilities. But in reality, no plan is made based on their opinion.

-KII with the President of Shamnagor Press Club

The needs of women, children and person with disabilities get prioritised in DRR planning and implementation level. Each disaster management committee has women representatives so that they can voice their demand at the policy, planning and implementation level. There is no special provision for person with disabilities while forming any disaster management committee. That's why most of the time they are not getting included in the committee. It is imperative that policies must address this exclusion and uphold mainstreaming DRR.

Upazila Disaster Management Committee (UDMC) is the focal at the local level to mainstream Disaster Risk Reduction activities among all structural and non-structural projects of the government. Building embankment, barrage, HBB roads, bridges and Mujib Kella etc. are the most common projects that are implemented to reduce disaster risk while increasing community resilience.

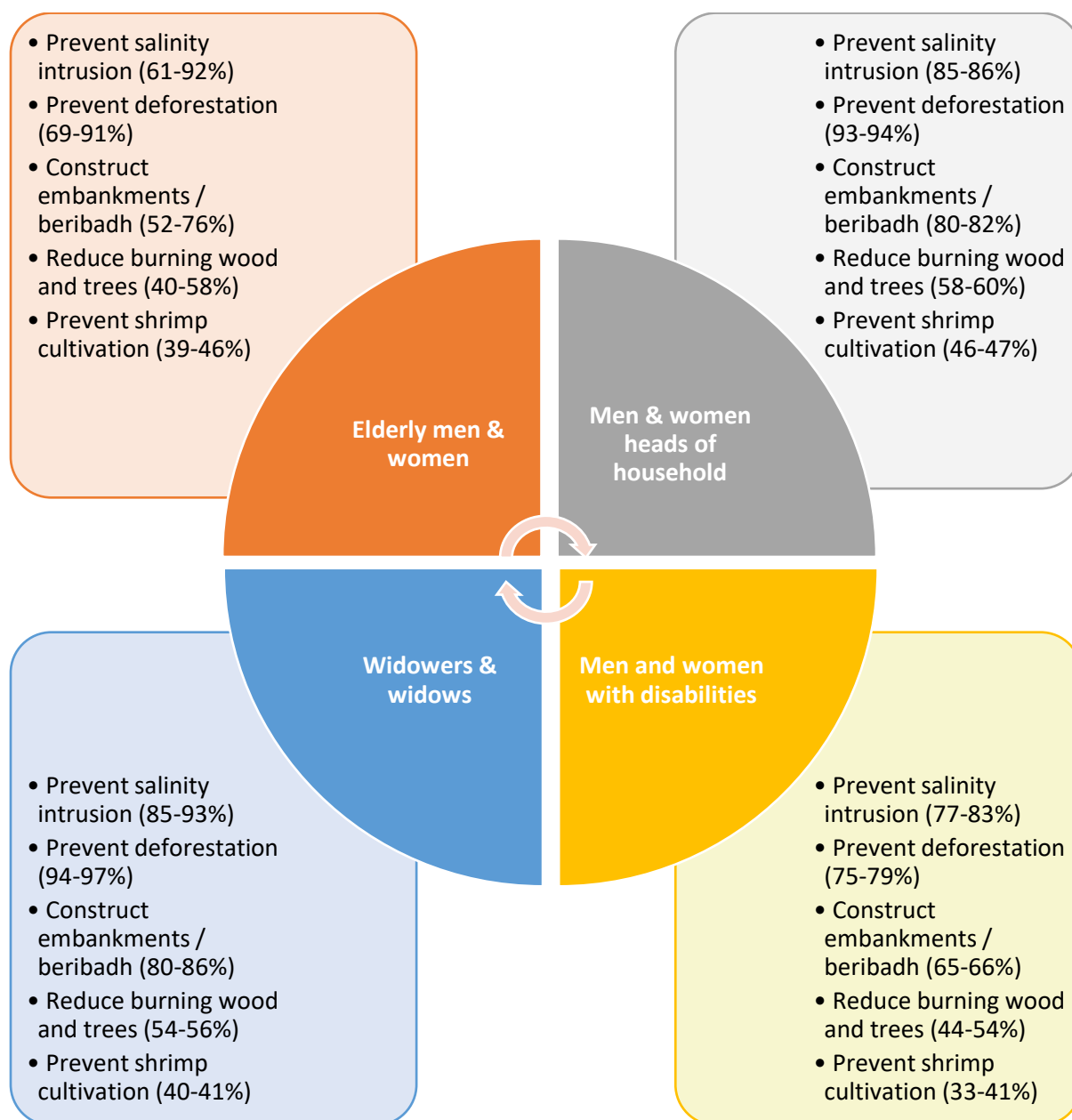
-KII with UNO

9.3 Suggestions for Reducing the Negative Impacts of Climate Change

Respondents across all category expressed a range of practical and environmentally-focused suggestions for reducing the negative impacts of climate change, with notable alignment in priorities. The most widely emphasized measure was preventing deforestation, supported by 69-97 percent of participants across categories - particularly by widows/widowers (94-97%) and men and women heads of household (93-94%) highlighting a strong collective awareness of the link between tree cover and climate resilience.

Similarly, preventing salinity intrusion was another key concern, especially among widows/widowers (85-93%) and household heads (85-86%), suggesting a shared understanding of the severe agricultural and freshwater challenges posed by saline water incursion. The construction of embankments or “beribadh” was seen as a necessary physical adaptation, with the highest support among widows/widowers (80-86%) and household heads (80-82%), reflecting their heightened vulnerability to flooding and tidal surges.

Figure 9. 5 Suggestions for reducing the negative impacts of climate change



In contrast, elderly and disabled respondents showed slightly lower but still significant support (52-76% and 65-66%, respectively), possibly due to reduced mobility or differing priorities. Reducing the burning of wood and trees also featured prominently, especially among heads of households (58-60%) and elderly groups (40-58%), reflecting both environmental and health

concerns. Lastly, there was a moderate but consistent call to prevent shrimp cultivation (33-47%), which is often linked with salinity and ecological degradation. While this suggestion received relatively lower percentages compared to others, its presence across all groups indicates awareness of the long-term environmental trade-offs of commercial aquaculture.

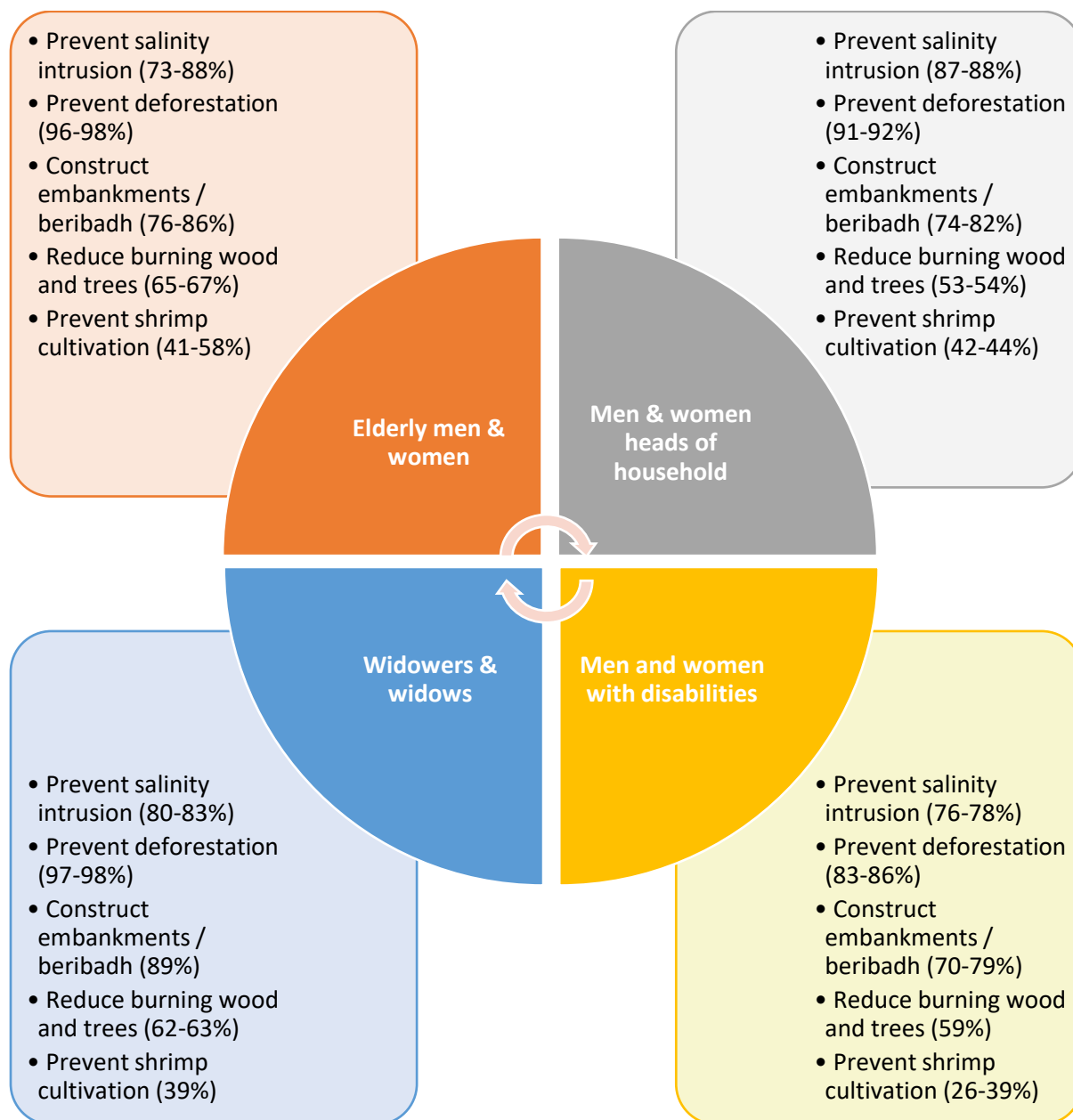
In summary, the suggestions reflect a balanced mix of ecological preservation and structural resilience, rooted in lived experience and local environmental knowledge. The data suggest that community-based interventions-particularly around afforestation, salinity control, and sustainable land use - would find strong support across diverse population segments. These insights could serve as a foundation for inclusive, community-led climate adaptation policies in coastal regions.

9.4 Suggestions for Reducing the Negative Impacts of Disasters

Respondents across all category proposed a range of strategies to reduce the negative impacts of disasters, with strong emphasis on environmental protection and infrastructure development. A majority of respondents suggested preventing salinity intrusion (ranging from 73% to 88%) and deforestation (83% to 98%) as critical measures, recognizing their direct links to disaster vulnerability. The construction of embankments or *beribadh* was also widely recommended (70% to 89%), highlighting the urgent need for physical barriers against tidal surges and flooding.

Additionally, many advocated for reducing the burning of wood and trees (53% to 67%) a common practice that exacerbates environmental degradation. Interestingly, a notable portion of respondents, particularly elderly people and heads of households, emphasized the need to prevent shrimp cultivation (26% to 58%), likely due to its contribution to salinity and ecological imbalance. These responses reflect a community-level understanding of the interplay between environmental mismanagement and disaster risk, calling for both preventive and adaptive measures grounded in local realities.

Figure 9.4 Suggestions for reducing the negative impacts of disasters



Box 9. 3 Family members understanding of disaster strategies and suggestions

Most of the participants asserted that government and relevant organizations should increase the number of shelter centres and have to develop communication facilities before the disasters to strengthen the capacities to cope with. They also suggested that providing sufficient aid, interest free loans, creating employment, and proper treatment after disasters may be effective strategies to reduce the impacts and also increase resilience.

-FGD with family members of men with disabilities

An overwhelming majority of the participants said that increasing social safety net programme, providing pacca house from govt expenses, providing food, medicine from govt/NGO etc should be increased. In addition, they also identified easy access to micro credits or loan facilities form both government and non-government organization for running small business as an effective strategy for ensuring economic resiliency.

-FGD with family members of women with disabilities

9.5 Overview of the Strategies to Counter the Impacts of any Forthcoming Disaster

In disaster-prone coastal regions like Shyamnagar upazila, communities have developed a variety of strategies to cope with the increasing frequency and severity of climate-induced disasters such as cyclones, tidal surges, salinity intrusion, and floods. These strategies are shaped by social roles, gender, economic conditions, and access to resources, reflecting different levels of preparedness and resilience among men, women, and children.

Men across various household types actively engage in disaster preparedness, focusing on both traditional and modern risk reduction methods. Listening to community announcements is a widely practiced strategy, particularly among elderly and widowed households, underscoring the importance of trusted local communication channels. A significant portion of men also prepares for evacuation by storing dry food, water, and essential supplies. Strengthening homes using durable materials is another key approach, though financial limitations restrict its widespread adoption. Mobile messages and weather updates via radio and TV are also used to monitor disaster alerts, while social media is gaining traction, especially among persons with disabilities. These patterns suggest that while traditional methods remain central, digital tools are becoming more integrated into preparedness efforts. However, unequal access and economic barriers continue to hinder the full adoption of resource-intensive strategies.

Women's strategies reflect both practical preparedness and a growing reliance on digital communication. Elderly and widowed women show high levels of evacuation readiness and responsiveness to community announcements, indicating deep experiential knowledge and caution. In contrast, women in male- and female-headed households and those with disabilities show a stronger reliance on digital platforms such as social media and TV/radio forecasts for disaster information. However, their engagement in physical preparation, such as storing supplies or improving housing, is significantly lower. These differences may reflect limitations in mobility, income, and access to physical resources. The reliance on digital alerts highlights the shift in risk communication, but also points to gaps in tangible preparedness that require targeted interventions and structural support to ensure comprehensive resilience.

Children exhibit limited engagement in disaster preparedness, which is expected given their dependency on adults. Their main contribution is through passive awareness, such as listening to announcements or checking mobile alerts, particularly in elderly and widowed households where children may take on more responsibility. Physical preparedness actions, such as packing emergency items or contributing to home strengthening, remain minimal due to age-related constraints. Use of TV, radio, and social media for disaster alerts is also low, reflecting limited access. These findings emphasize the need to enhance child-centered disaster education and

integrate age-appropriate communication methods to empower children in disaster-prone communities.

Government and non-government initiatives in disaster risk reduction are viewed positively by the majority of respondents, with particularly strong approval from elderly individuals, household heads, widows, and persons with disabilities. These initiatives include early warning systems, cyclone shelters, embankment construction, and livelihood support. While most groups recognize the effectiveness of such programmes, a small proportion express dissatisfaction, pointing to issues of inclusivity, accessibility, or uneven implementation. This feedback highlights the importance of continuous community engagement and context-sensitive planning in disaster management programmes.

Suggestions to reduce the impacts of climate change and disasters reflect community-level environmental awareness and practical resilience measures. Preventing deforestation and salinity intrusion are the most widely supported actions, indicating recognition of their critical role in ecosystem stability and disaster mitigation. Embankment construction is also heavily emphasized as a necessary adaptation to protect against tidal flooding. Reducing the burning of trees and curbing shrimp cultivation are mentioned across all groups, particularly by elderly and household heads, who link these practices with ecological damage and increased vulnerability. These recommendations show that local communities possess a nuanced understanding of environmental degradation and its consequences and are ready to support interventions that align with sustainable development and disaster resilience goals.

Overall, the chapter demonstrates that while communities in coastal Bangladesh are actively engaging in disaster preparedness and environmental protection, there are significant disparities in capacities and strategies across different demographic groups. Building inclusive, well-resourced, and locally informed disaster risk reduction systems is essential to support equitable and sustainable resilience in the face of future climate challenges.

Chapter 10

Case Studies of Vulnerable Men and Women Affected by Disasters

Satkhira, located in the southwestern part of Bangladesh, is a coastal district prone to worst disasters such as cyclones, floods, and salinity intrusion. In the study area of Shymnagar upazila, the community faces significant challenges, particularly from cyclones and severe floods, which threaten lives and livelihoods. The case studies examine the experiences of vulnerable elderly men and women, widowers and widows, men and women heads of households and men and women with disabilities. The actual names were used in the case studies after taking prior consent of the respondents.

10.1 Abdul Rashid Ghazi: An Elderly Man's Experience of Disasters

Background

Abdul Rashid Ghazi, an elderly man of 62 year old from Gobindopur, a coastal village in Shymnagar upazila had suffered from various challenges due to the increasing frequency and intensity of disasters in his area. His life, like many others in the region bears shared testament to the human suffering of climate change and onset disasters.

Abdul Rashid Ghazi, a man weathered by years of toil and the relentless forces of nature, has spent his entire life in a small coastal village like a tapestry woven with resilience and hardship, a reflection of the challenges faced by millions in his community.

The village, nestled amidst the Sundarbans, a vast mangrove forest, has always been at the mercy of the sea. Tidal surges, cyclones, and river erosion have been an integral part of life here, shaping the landscape and the lives of its inhabitants. However, in recent years, the frequency and intensity of these disasters have intensified, leaving a trail of destruction and despair.

Abdul, a seasoned fisherman, has witnessed the changing tides, both literally and figuratively. As a young man, he could easily navigate the intricate waterways of the Sundarbans, his knowledge of the tides and currents as sharp as his fishing nets. But now, the unpredictable weather patterns, the rising sea levels, and the increasing salinity of the water have made his livelihood increasingly precarious. The once abundant fish stocks have dwindled, forcing him to venture further and risk his life to sustain his family.

Livelihood challenges

Abdul, a seasoned fisherman, has witnessed the changing tides, both literally and figuratively. As a young man, he could easily navigate the intricate waterways of the Sundarbans, his knowledge of the tides and currents as sharp as his fishing nets. But now, the unpredictable weather patterns, the rising sea levels, and the increasing salinity of the water have made his livelihood increasingly precarious. The once abundant fish stocks have dwindled, forcing him to venture further and risk his life to sustain his family.

His wife, Amina, a skilled weaver, has also been affected by the changing climate. The raw materials for her craft, sourced from local plants and trees, are becoming scarce due to the erosion of the coastal land. The salt laden winds have also damaged her looms and other tools, making it difficult to maintain the quality of her work.

Impact on family and children

Their children, once hopeful and ambitious, now face a bleak future. The increasing frequency of cyclones and floods has disrupted their education, forcing them to miss school and work as laborers to support their family. The erosion of the coastal land has also reduced the availability of fertile land for agriculture, limiting their opportunities for a better life.

Adaptation and community involvement

Despite the hardships, Abdul and his family remain resilient. They have adapted to the changing circumstances, diversifying their livelihoods, and seeking alternative sources of income. They have also become active participants in community-based initiatives to mitigate the impact of climate change, planting mangroves, building embankments, and raising awareness about environmental conservation.

Food security

Before the intensification of disasters, Abdul's family enjoyed a relatively balanced diet, primarily consisting of rice, fish, vegetables, and pulses.

- **Rice:** As the staple food, rice formed the foundation of their meals, providing essential carbohydrates.
- **Fish:** Being a coastal region, fish was a common protein source, often caught fresh from local rivers and ponds.
- **Vegetables:** A variety of vegetables, such as spinach, okra, and eggplant, were cultivated in their homestead gardens or purchased from local markets.
- **Pulses:** Lentils and beans were important sources of protein and fiber, especially during lean seasons.

During disasters, such as cyclones and floods, Abdul's family faced severe food shortages. The destruction of crops, damage to fishing boats, and disruption of supply chains led to a significant decline in food availability such as:

- **Reduced food Intake:** Due to limited access to food, the family often had to reduce their meal portions or skip meals altogether.
- **Dependence on emergency food aid:** In many cases, they relied on emergency food aid provided by government and NGOs to meet their basic nutritional needs.
- **Consumption of less nutritious foods:** As fresh food production became scarce, the family often resorted to consuming less nutritious, processed foods, which could have long-term health implications.

The recovery period after a disaster was often challenging for Abdul and his family. While they gradually rebuilt their livelihoods, their food consumption patterns remained vulnerable to fluctuations in income and food availability.

- **Debt driven consumption:** To meet their immediate needs, he like many other families were forced to borrow money, leading to a cycle of debt and food insecurity.
- **Dependence on seasonal crops:** The availability of fresh produce was often tied to the agricultural seasons, leading to periods of food scarcity.
- **Malnutrition and health issues:** The prolonged periods of food insecurity and poor dietary intake lead to malnutrition, weakened immunity system and various health problems, especially among children and the elderly family members.

Water scarcity

Abdul and his family faced significant challenges of clean water shortage during disasters. Their primary water source was often contaminated, forcing them to rely on alternative methods. They collected water from nearby ponds or rivers, treating it with chlorine tablets or boiling it to minimize the risk of waterborne diseases. Water usage was strictly monitored, with each family member allocated a limited amount for drinking, cooking, and basic hygiene. The scarcity of clean water during these times highlighted the vulnerability of communities in disaster-prone areas and the urgent need for sustainable water solutions.

Recommendations

Abdul's story is a stark reminder of the human cost of climate change. His life, and the lives of millions like him, are a testament to the resilience of the human spirit in the face of adversity. However, it is also a call to action, urging us to address the root causes of climate change and work towards a sustainable future for all.

10.2 Fatema Begum: An Elderly Woman

Background

Fatema Begum, a 60 years old woman of village Shahebkhalī of Shymanaga upaizila was married and lived with her family of 2 members. She is illiterate but can only sign her name. She is involved in poultry farming for contributing to the family income.

Livelihood challenges

She has experienced the impact of disasters in various ways:

- **Destruction of home and livelihood:** The powerful winds and storm surge from cyclone completely destroyed Fatema's mud and bamboo house several times. Her crops were also wiped out, leaving her family without food or income.
- **Loss of essential infrastructure:** Disasters damaged the local schools, health centers, and roads, hindering access to basic services.
- **Psychological trauma:** Fatema and her family suffered from significant emotional distress due to the loss of their house, belongings, and community members.

Moreover, she identified the long-term consequences which were:

- **Economic hardship:** The destruction of her livelihood forced Fatema to seek alternative income sources, such as daily labour, which provided meager earnings.
- **Food insecurity:** The loss of crops and livestock led to food shortage, affecting the family's nutritional intake and overall health condition.
- **Delayed recovery:** The slow pace of reconstruction and limited government support hindered Fatema's family's recovery process.

Food security

Fatema and her family experienced a drastic shift in food consumption patterns before, during, and after a disaster. Before the disaster, their diet was a mix of locally grown rice, vegetables, and fish from the nearby rivers. However, the disaster disrupted their food supply chains. During the crisis, they relied on whatever they could salvage or receive from relief efforts, often consisting of limited

and less nutritious food items. This led to reduced food intake and potential malnutrition. In the aftermath, as they struggled to rebuild their lives and livelihoods, their food choices were further constrained by economic hardships. They had to resort to cheaper, less nutritious food by compromising with their overall health and well-being.

Health challenges

Fatema said that she and her family had to suffer from various health problems like cold and fever, stress and trauma, mental health problems, including anxiety and depression during disaster. For solving those health problem, they usually went to the local village doctor and nearby medicine shop after disaster. During disaster they took the medicines they had stored before the disaster.

Water scarcity

Moreover, they faced clean water challenges during disasters. Their primary water source was often contaminated, forcing them to rely on alternative sources. They collected water from nearby ponds or rivers, treating it with chlorine tablets or boiling it to minimize the risk of waterborne diseases. Water usage was restricted with each family member allocated a limited amount of water for drinking, cooking, and basic hygiene. The scarcity of clean water during these times highlighted the vulnerability of communities in disaster-prone areas and the urgent need for sustainable water solutions.

Gender-based violence and safety issues

Fatema and her family faced a myriad of hardships during disaster. Aside from the immediate threats of the storm and flooding, they were also vulnerable to various forms of violence. Women and girls were at increased risk of sexual assault and harassment, as they often had to venture out for essential supplies or seek shelter. Limited access to basic necessities like food and clean water led to heightened tensions and disputes within families and communities, sometimes escalating to physical violence. The breakdown of law and order during the the disaster crisis created an environment where opportunistic individuals could exploit the situation, further endangering the safety of women and girls.

Support and assistance

However, in the face of despair, she and her family got support from various sources such as government, non-government organizations, local volunteers and also local community people. They provided the essential food, water, shelter, medicine etc. which they needed the most during disaster. Also, after disaster they got support from them for recovering their livelihood.

Recommendations

Regarding suggestions to reduce the negative effects of disaster, she urged “Preventing deforestation and salinity intrusion, reducing fuel wood consumption etc.”

10.3 Sheikh Abdur Sattar: A Widower

Background

Sheikh Abdur Sattar, a resilient 57-year-old man from a coastal village Majhhat in Shymanagar upazila of Satkhira district, has faced a lifetime of challenges, exacerbated by the increasing frequency and intensity of natural disasters. His life, like many others in the region, is a poignant testament to the human cost of climate change and environmental degradation.

Abdur Sattar, a man weathered by years of toil and the relentless forces of nature, has spent his entire life in a small coastal village in Satkhira. His life, a tapestry woven with resilience and hardship, is a poignant reflection of the challenges faced by millions in the region.

The village, nestled amidst the Sundarbans, a vast mangrove forest, has always been at the mercy of the sea. Tidal surges, cyclones, and river erosion have been an integral part of life here, shaping the landscape and the lives of its inhabitants. However, in recent years, the frequency and intensity of these natural disasters have intensified, leaving a trail of destruction and despair.

Livelihood challenges

Abdur Sattar, a seasoned fisherman, has witnessed the changing tides, both literally and figuratively. As a young man, he could easily navigate the intricate waterways of the Sundarbans, his knowledge of the tides and currents as sharp as his fishing nets. But now, the unpredictable weather patterns, the rising sea levels, and the increasing salinity of the water have made his livelihood increasingly precarious. The once abundant fish stocks have dwindled, forcing him to venture further and risk his life to sustain his family.

Impact on family and children

His children, once hopeful and ambitious, now face a bleak future. The increasing frequency of cyclones and floods has disrupted their education, forcing them to miss school and work as labourers to support their family. The erosion of the coastal land has also reduced the availability of fertile land for agriculture, limiting their opportunities for a better life.

Adaptation and community involvement

Despite the hardships, Abdur Sattar and his family remain resilient. They have adapted to the changing circumstances, diversifying their livelihoods, and seeking alternative sources of income. They have also become active participants in community-based initiatives to mitigate the impact of climate change, planting mangroves, building embankments, and raising awareness about environmental conservation.

Abdur Sattar's story is a stark reminder of the human cost of climate change. His life, and the lives of millions like him, are a testament to the resilience of the human spirit in the face of adversity.

However, it is also a call to action, urging us to address the root causes of climate change and work towards a sustainable future for all.

Food security

Before the intensification of natural disasters, Abdur Sattar's family enjoyed a relatively balanced diet, primarily consisting of rice, fish, vegetables, and pulses.

- **Rice:** As the staple food, rice formed the foundation of their meals, providing essential carbohydrates.
- **Fish:** Being a coastal region, fish was a common protein source, often caught fresh from local rivers and ponds.
- **Vegetables:** A variety of vegetables, such as spinach, okra, and eggplant, were cultivated in their homestead gardens or purchased from local markets.
- **Pulses:** Lentils and beans were important sources of protein and fiber, especially during lean seasons.

During disasters, such as cyclones and floods, Abdur Sattar's family faced severe food shortages. The destruction of crops, damage to fishing boats, and disruption of supply chains led to a significant decline in food availability. They suffered from:

- **Reduced food intake:** Due to limited access to food, the family often had to reduce their meal portions or skip meals altogether.
- **Dependence on emergency food aid:** In many cases, they relied on emergency food aid provided by government agencies and NGOs to meet their basic nutritional needs.
- **Consumption of less nutritious foods:** As fresh produce became scarce, the family often resorted to consuming less nutritious, processed foods, which could have long-term health implications.

The recovery period after a disaster was often challenging for Abdur Sattar and his family. While they gradually rebuilt their livelihoods, their food consumption patterns remained vulnerable to fluctuations in income and food availability. They resort to:

- **Debt-driven consumption:** To meet their immediate needs, many families were forced to borrow money, leading to a cycle of debt and food insecurity.
- **Dependence on seasonal crops:** The availability of fresh produce was often tied to the agricultural seasons, leading to periods of food scarcity.
- **Malnutrition and health issues:** The prolonged periods of food insecurity and poor dietary intake lead to malnutrition, weakened immunity, and various health problems, especially among children and the elderly.

Water scarcity

Abdur Sattar and his family faced significant fresh water supply challenges during disasters. Their primary water source was often contaminated, forcing them to rely on alternative methods. They collected water from nearby ponds or rivers, treating it with chlorine tablets or boiling it to minimize the risk of waterborne diseases. Water usage was strictly monitored, with each family member allocated a limited amount for drinking, cooking, and basic hygiene. The scarcity of clean water during these times highlighted the vulnerability of communities in disaster-prone areas and the urgent need for sustainable water solutions.

10.4 Nurjahan Khatun: A Widow

Background

Nurjahan Khatun, a 73 year old widow from Bannotola, a coastal village in Shymanagar upazila of Satkhira district has faced a lifetime of miseries and challenges, exacerbated by the increasing frequency and intensity of disasters. Her life, like many others in the region, is an example of the human cost of climate change, frequent disasters and environmental degradation.

Livelihood challenges

Nurjahan's life has been marked by a series of devastating events. Her childhood was overshadowed by poverty and the constant threat of river erosion. The mighty Poshur river, once a source of sustenance, has gradually eroded the land, swallowing homes and livelihoods. Nurjahan's family was forced to relocate multiple times, each move a source of upheaval and uncertainty.

In 2007, Cyclone Sidr, one of the most powerful cyclones to hit Bangladesh, brought destruction to Nurjahan's village. The storm surge inundated her home, destroying her meager belongings and wiping out her family's rice fields. The cyclone's aftermath left her family destitute and vulnerable to various diseases.

The impact of climate change has further compounded Nurjahan's struggles. Rising sea levels have led to increased salinity intrusion, making the once fertile land barren. The saline water has contaminated the freshwater sources, affecting both health and agriculture. Nurjahan's family had to adapt to these changing conditions, switching to less productive crops or seeking alternative livelihoods.

Despite the numerous challenges, Nurjahan has shown remarkable resilience. She has learned to adapt to the changing environment, acquiring new skills and seeking alternative sources of income. She has also become an active member of her community, participating in disaster preparedness initiatives and advocating for the rights of vulnerable populations.

Disaster related challenges faced by Nurjahan and her community:

- **River erosion:** The relentless erosion of the river has displaced communities and destroyed fertile land.
- **Cyclones:** Powerful cyclones like Sidr have caused widespread destruction, including loss of life, property, and livelihoods.
- **Salinity intrusion:** Rising sea levels have led to the intrusion of saltwater into freshwater sources and agricultural land, affecting both human health and agricultural productivity.
- **Poverty and inequality:** Poverty and inequality exacerbate the impact of disasters, limiting people's ability to cope and recover.
- **Lack of infrastructure:** Inadequate infrastructure, such as cyclone shelters, embankments, and drainage systems, increases vulnerability to disasters.

Food security

Before disaster, food consumption in her family is largely dependent on local agriculture and fishing. Residents have access to a diverse diet, including fresh fish, vegetables, and rice. However, during a disaster, food access becomes significantly disrupted. Flooding and storm surges damage crops, contaminate water sources, and destroy fishing grounds. This leads to food shortages, price hikes, and limited dietary options. They resort to consuming less nutritious foods or reducing meal intakes. In the aftermath of a disaster, food security remains a major challenge. Relief efforts may provide emergency food aid, but long-term recovery requires rebuilding livelihoods and restoring agricultural production. The process of returning to pre-disaster food consumption patterns can be slow and arduous, with many individuals and communities facing ongoing food insecurity.

Challenges in disaster shelters

Nurjahan and her family's experience in the disaster shelter in Satkhira was marked by a lack of safety and privacy. The shelter was overcrowded, with families packed closely together, leaving little personal space. Sanitation facilities were inadequate, leading to unhygienic sanitary conditions and increased risk of diseases. The limited lighting and lack of security measures created an environment of fear and vulnerability, particularly for women and girls. Nurjahan and her family faced the constant threat of harassment, verbal abuse, and even physical assault from

others in the shelter. The lack of separate sleeping arrangements for families further compounded their distress, making it difficult to maintain a sense of dignity and security.

Health challenges

When it comes to health problems, Nurjahan said that she and her family had to suffer from cold and fever, stress and trauma, mental health problems, including anxiety and depression during disaster. For solving these health problems, they went to the local village doctor and nearby medicine shop after disaster. During disaster they did not take any help from doctor or any medicines because these were not easily available.

Support and assistance

Nurjahan and her family got support from various sources during and after disasters such as government, non-government organization, local volunteers and also local people. They helped them by giving food, water, shelter, medicine etc. Because of those support they got the most essential things they needed. Also after disaster they got support from them for recovering their livelihood.

Recommendations

To reduce the negative effects of disaster, she suggested various means like, “Preventing deforestation and salinity intrusion, destroying unnecessary dams and embankments, reducing fuel consumption especially wood fuels etc.” Moreover she added that these are also the main causes for disasters.

Nurjahan's story is a stark reminder of the human face of climate change. Her resilience and determination, however, offer hope for the future. By sharing her experiences, she inspires others to take action and build a more sustainable and equitable world.

10.5 Mizanur Gazi: Male Head of Household

Background

Mizanur Gazi, a 42-year-old farmer, has lived in a coastal village named Jogindonagar in Satkhira his entire life. He inherited a small plot of land from his father, which has been the primary source of income for his family. However, in recent years, the increasing frequency and intensity of natural disasters have significantly disrupted his livelihood.

Impact of disasters

- **Cyclone Sidr (2007):** Cyclone Sidr, one of the most devastating cyclones in Bangladesh's history, caused widespread destruction in Satkhira. Mizanur's home was severely damaged, and his crops were completely wiped out. The cyclone left Mizanur and his family without a stable income source. They were forced to rely on loans and aid to rebuild their lives.
- **Salinity Intrusion:** Rising sea levels and increased salinity intrusion have made it increasingly difficult to cultivate crops. Mizanur's land has become saline, reducing its fertility and affecting the yield of his crops. As agricultural productivity declines, many farmers in Satkhira are forced to migrate to urban areas in search of work. Mizanur, however, is determined to stay on his ancestral land, despite the challenges.

- **River Erosion:** River erosion is another major problem in the region. Mizanur's land has been gradually eroded by the nearby river, reducing its size and productivity.

Coping mechanisms and resilience

Despite the numerous challenges, Mizanur has demonstrated remarkable resilience. He has adopted several strategies to cope with the impacts of climate change:

- **Diversification:** He has started cultivating salt-tolerant crops like vegetables and shrimp farming to supplement his income.
- **Community-Based Adaptation:** He actively participates in community-based adaptation initiatives, such as mangrove plantation and embankment construction.
- **Government Support:** He relies on government support programmes, including disaster relief and agricultural subsidies.

Food security

Mizanur's family, like many others, experienced a significant shift in their food consumption patterns before, during, and after disasters. Prior to a disaster, their meals were typically diverse, including rice, fish, vegetables, and sometimes meat. However, during a disaster, their food options drastically reduced. They often resorted to limited supplies like rice and lentils, sometimes supplemented with wild plants or whatever they could find. After the disaster, as they struggled to rebuild their lives, their diet remained limited, focusing on affordable staples like rice and bread, with occasional protein sources if available. This pattern highlights the vulnerability of communities in Satkhira to food insecurity, especially during and after disasters.

Water scarcity

Before a disaster strikes, they rely on rivers, ponds, and tube wells for their daily needs. During a disaster, like a cyclone or flood, these sources often become contaminated or inaccessible. People resort to unsafe water sources, risking waterborne diseases. After the disaster, the focus shifts to restoring safe water supply. Organizations like Solidarités International work to provide clean drinking water, repair damaged water infrastructure, and promote hygiene practices to prevent the spread of diseases. The journey towards water security in Satkhira is a continuous struggle, requiring both community resilience and external support.

Violence and safety issues

Mizanur faced domestic violence due to his wife's frustration with their precarious financial situation. During the cyclone, he witnessed an increase in looting and sexual harassment in the evacuation shelters. Post-disaster, he struggled to rebuild his livelihood, leading to further tensions within his family and community. His story highlights the complex interplay of pre-existing vulnerabilities, disaster-induced stressors, and the potential for violence to escalate in the aftermath of such events.

Recommendations

Mizanur's story is emblematic of the challenges faced by millions of people in coastal Bangladesh. Climate change is not just an environmental issue; it is a humanitarian crisis that is disproportionately affecting vulnerable communities. To address this crisis, it is crucial to implement comprehensive adaptation and mitigation strategies, including climate-resilient infrastructure, early warning systems, and sustainable livelihood programmes. By supporting

individuals like Mr. Islam, we can help build a more resilient and sustainable future for coastal communities.

10.6 Hamida Khatun: Woman Head of Household

Background

Satkhira, a coastal district in Bangladesh, is particularly vulnerable to climate-induced disasters such as cyclones, floods, and river erosion. These recurrent events have devastating impacts on the lives and livelihoods of its inhabitants, especially women. This case study delves into the experiences of a woman head of household Hamida, who has endured multiple disasters and exemplifies the resilience of women in this region.

Hamida, a 49 year old women lived in a small village Chadnimukha in Shyamnagar upazila. Her family primarily relied on agriculture, particularly rice cultivation, for their sustenance. However, the increasing frequency and intensity of cyclones and river erosion have severely disrupted their farming activities.

Impact on family

- **Cyclone Sidr (2007):** Cyclone Sidr, one of the most devastating cyclones to hit Bangladesh, caused widespread destruction in Satkhira. Hamida's family lost their livestock and agricultural land. The storm surge inundated their village, leaving them stranded and without basic necessities.
- **River erosion:** The relentless erosion of the nearby river has further eroded their land, making it increasingly difficult to cultivate crops. The loss of fertile land has significantly reduced their income and food security.
- **Salinity intrusion:** The intrusion of saltwater into freshwater sources has contaminated their drinking water and affected their agricultural productivity. This has led to health issues and reduced crop yields.

Livelihood challenges

Despite facing these challenges, Hamida has demonstrated remarkable resilience. She has actively participated in community-based disaster preparedness and response initiatives. She has learned basic first aid and emergency response skills, enabling her to assist her family and neighbors during disasters.

Hamida has also embraced alternative livelihood options to cope with the impacts of climate change. She has started a small-scale fish farming business, utilizing the available water bodies. Her initiatives provided her family with additional income and food security.

Hamida's food consumption patterns are significantly impacted by disasters. She and her family member often experienced reduced dietary diversity, with a shift towards more readily available, less nutritious foods. These were mainly due to factors like disrupted supply chains, damaged crops, and limited access to markets.

Food security

Hamida who was responsible for household food security, resorted to coping strategies like reducing meal sizes, skipping meals, or substituting staple foods with less nutritious alternatives. Additionally, increased caregiving responsibilities during disasters further limited her and her

families' access to food and adequate nutrition, exacerbating existing vulnerabilities and potentially leading to malnutrition.

Water scarcity

Hamida and her families faced immense challenges regarding water access during disasters. With infrastructure damaged and water sources being contaminated, they often relied on unsafe water sources like ponds or rivers, increasing the risk of waterborne diseases. Long queues for limited clean water supplies become a daily ordeal, further burdening women who are traditionally responsible for household water management. These challenges exacerbated existing gender inequalities, as women's health and well-being are disproportionately affected.

Social challenges during disasters

Hamida and her family members faced significant challenges regarding medication access and use during and after disasters. Disruptions in supply chains, damaged healthcare facilities, and limited transportation options hindered access to essential medicines. During disasters they used the medicines they have stored for their future use. However, after the disaster they went to nearby medicine shop for buying the essential medicines.

Hamida faced unique challenges during and after disasters. Societal norms and gender roles often limited her mobility and decision-making power. She was responsible for household chores, childcare, and elderly care, which hindered her ability to participate in disaster preparedness and recovery efforts.

Recommendations

Hamida's story is a testament to the strength and resilience of women in the face of adversity. By empowering women through education, training, and access to resources, we can enhance their capacity to cope with climate-induced disasters and build more resilient communities. It is imperative to address the specific needs and vulnerabilities of women to ensure their full participation in disaster risk reduction and sustainable development.

10.7 Sovvoshochi Mondol: A Man with Disabilities

Background

A coastal village named Jelekhali is frequently battered by natural disasters, including cyclones, floods, and river erosion. These events disproportionately affect vulnerable populations, including persons with disabilities. Sovvoshochi case study delves into the experiences of a man with disabilities to highlight the unique challenges faced by this marginalized group during disasters.

Sovvoshochi, a 40 years man resident of a coastal village named Jelekhali in Satkhira, has been visually impaired since birth. Despite his disability, he has always been a resilient individual, finding ways to contribute to his community. However, his vulnerability increases significantly during natural disasters.

Impact of disasters

- **Impaired mobility:** Sovvoshochi's visual impairment hinders his ability to navigate unfamiliar or damaged terrain. During cyclones and floods, roads become impassable, and debris can obstruct pathways. This makes it difficult for him to evacuate to safer locations or seek help.

- **Communication barriers:** In emergency situations, information is often disseminated through visual media like television or posters. Sovvoshochi, unable to access this information, is excluded from crucial updates and warnings.
- **Limited access to aid:** Relief efforts often prioritize the immediate needs of the general population. People with disabilities, like Sovvoshochi, may not be easily identified or prioritized for assistance, leading to delays in receiving essential supplies and support.
- **Psychological distress:** Disasters can be traumatic for anyone, but for persons with disabilities, the experience can be particularly distressing. The fear of the unknown, the uncertainty of the future, and the added challenges of navigating a chaotic environment can exacerbate their mental health issues.

Adaptation and community involvement

Sovvoshochi, like many other persons with disabilities has developed coping mechanisms to mitigate the impact of disasters. He relies heavily on his family and neighbours for assistance, especially during emergencies. However, community support can be limited, particularly in the aftermath of severe disasters.

Before disasters, Sovvoshochi relies on community support for early warning information, often relayed through verbal communication. However, during emergencies, the absence of accessible information in braille or audio formats hinders his ability to prepare and evacuate safely. Additionally, the lack of accessible shelters and relief distribution points further compounds his challenges. In the aftermath of disasters, his limited mobility restricts his access to essential supplies and services, exacerbating his dependence on others.

Food security

Sovvoshochi faced significant challenges accessing food before, during, and after disasters. Prior to disasters, he relied on his purchase groceries, often limiting his choices to easily recognizable items. During disasters, shops are closed, and the limited food supply became even harder to obtain. He struggled to navigate through damaged markets, and often resorted to sharing limited rations with neighbours. In the aftermath, accessing relief aid was difficult due to long queues and lack of accessible information. Sovvoshochi's experience highlights the vulnerability of disabled persons during disasters, emphasizing the need for inclusive disaster response and recovery efforts.

Water scarcity

Before any disaster, Sovvoshochi relies on his family or neighbours to collect water from the pond or tube well, as his disability prevents him from doing it by himself. During a disaster, like a cyclone or flood, water sources can become contaminated or inaccessible, leaving his family vulnerable to waterborne diseases. After a disaster, the situation worsens as water sources may be damaged or depleted. Then he and his family often faces difficulties in finding clean drinking water and water for sanitation, further compromising their health and well-being.

Violence and discrimination

Before disasters, Sovvoshochi often encounter discrimination in disaster preparedness plans and lack access to crucial information due to communication barriers. During disasters, his mobility limitations and reliance on assistive devices hindered evacuation efforts, leaving him trapped in

dangerous situations. After disasters, he faced further discrimination in accessing relief aid and rehabilitation services.

Sovvoshochi's story is a stark reminder of the unique challenges faced by persons with disabilities during disasters. By addressing these challenges and implementing inclusive disaster management practices, we can build a more resilient and equitable society for all.

Recommendations

Inclusive Disaster Preparedness Plans: Local authorities and disaster management agencies should develop inclusive disaster preparedness plans that consider the specific needs of persons with disabilities.

- **Accessibility in shelters:** Emergency shelters should be accessible to persons with disabilities, with ramps, tactile paving, and other assistive devices.
- **Accessible communication:** Information dissemination should be multi-modal, including audio and tactile formats, to ensure that persons with disabilities can receive timely updates and warnings.
- **Disability-inclusive relief efforts:** Relief organizations should prioritize the needs of persons with disabilities and ensure that aid distribution is equitable.
- **Mental health support:** Psychological support services should be made available to persons with disabilities who may be experiencing trauma or distress.

10.8 Asma: A Woman with Disabilities

Background

Asma, a 36-year-old woman with disabilities, lives in Manikpur village in Shyamnagar upazila of Satkhira district, a coastal region highly vulnerable to natural disasters. Her life, already marked by challenges due to her disability, has been further complicated by the increasing frequency and intensity of disasters like cyclones, floods, and river erosion.

Impact of disasters on livelihood and daily life

Satkhira is particularly vulnerable to cyclones, floods, and river erosion. These disasters have devastating consequences for the entire community, but for persons with disabilities like Asma, the impact is often magnified. Given following are the various challenges:

- **Evacuation challenges:** During cyclone warnings, the entire village mobilizes to move to safer shelters. However, for Asma, evacuation can be a daunting task. She relies on her family and neighbours for assistance, but their own anxieties and the chaotic nature of evacuations can leave her feeling isolated and vulnerable.
- **Accessibility barriers:** Many shelters, even those designated as "disaster shelters" are not accessible to persons with disabilities. Steps, narrow doorways, and lack of ramps can hinder their entry and movement within the shelter.
- **Limited information access:** In times of crisis, timely and accurate information is crucial. However, traditional communication channels like radio and television are often inaccessible to people with visual impairments.

- **Healthcare disruptions:** Disasters can disrupt healthcare services, making it difficult for people with disabilities to access essential medications and treatments.

Food security

Asma, faced significant challenges regarding food consumption before, during, and after disasters. Before a disaster, Asma relied on her family and neighbors to assist her with grocery shopping and meal preparation. However, during a disaster, these support systems often became disrupted, leaving her vulnerable to food shortages and malnutrition. Her limited mobility and inability to independently assess food safety further compounded the issue. After a disaster, Asma faced additional difficulties in accessing relief aid due to her disability. The distribution process often overlooked the specific needs of individuals with disabilities, resulting in delayed or inadequate food assistance

Water scarcity

Asma face significant challenges accessing water, particularly during and after disasters. Before disasters, she may rely on family members or neighbors for assistance in fetching water, but this support often diminishes during emergencies. Water sources can become contaminated or inaccessible, making it even harder for her to meet their basic needs. During cyclones and floods, their mobility restrictions and potential reliance on assistive devices further compound the difficulties. After disasters, the rebuilding process can be slow, leaving them without adequate water supply for extended periods. This lack of access to clean water can lead to severe health consequences, exacerbating existing vulnerabilities and hindering their recovery.

Violence and safety issues

Asma faced heightened vulnerability before, during, and after disasters. Her disability made her more susceptible to violence as she relied on others for information and assistance. Before disasters, she often experienced neglect and discrimination, limiting her access to resources and support systems. During disasters, her lack of mobility and situational awareness made her an easy target for exploitation and abuse. Evacuation shelters, often overcrowded and lacking accessibility, further compromised her safety. In the aftermath, the breakdown of social structures and increased economic stress exacerbated the risk of violence against her. Asma's story highlights the urgent need for inclusive disaster preparedness and response plans that prioritize the safety and well-being of women with disabilities

Challenges during disasters

She faced numerous health challenges before, during, and after natural disasters. Before disasters, she struggled with inadequate healthcare access due to limited mobility and lack of accessible facilities. During disasters, her condition worsened as she was unable to evacuate safely and timely, leading to exposure to harsh weather conditions and potential injuries. After disasters, she faced difficulties in accessing essential medications and rehabilitation services, further exacerbating her health issues. These experiences highlight the vulnerability of disabled women in disaster-prone regions and the urgent need for inclusive disaster preparedness and response plans.

Asma's resilience

Despite these challenges, Asma demonstrates remarkable resilience. She has learned to adapt to her circumstances and has become a strong advocate for the rights of persons with disabilities. She

actively participated in community meetings and disaster preparedness activities, ensuring that her voice is heard and the needs of the disabled community are addressed.

Recommendations

To support individuals like Asma, a multi-faceted approach is necessary:

- **Inclusive disaster preparedness:** Disaster preparedness plans should explicitly consider the needs of persons with disabilities, including accessible evacuation routes, evacuation procedures, and communication strategies.
- **Accessible shelters:** Shelters should be designed to accommodate people with diverse disabilities, with features like ramps, accessible toilets, and Braille signage.
- **Disability-inclusive information dissemination:** Information about impending disasters and emergency response measures should be disseminated through accessible channels, such as audio recordings, tactile maps, and sign language interpreters.
- **Social support and rehabilitation:** Community-based organizations can play a vital role in providing social support, rehabilitation services, and livelihood opportunities for people with disabilities.

By addressing these issues, we can empower individuals like Asma to build resilience and thrive, even in the face of adversity.

10.9 Overview of the Gendered Impacts of Climate Induced Disasters

This chapter offers a detailed exploration of how climate-induced disasters unequally affect women, girls, and marginalized populations, especially in vulnerable low- and middle-income countries like Bangladesh. It situates the discussion within the broader context of escalating global climate-related disasters, noting the increasing frequency, intensity, and devastating economic and human costs they entail. While wealthier nations incur larger financial losses in absolute terms, less developed countries endure profound developmental disruptions due to their heightened exposure and limited adaptive capacity.

Crucially, the chapter underscores those disasters are not gender-neutral. Women and girls disproportionately face higher mortality, injury, and displacement risks particularly in regions where gender inequalities are pronounced. Deep-rooted cultural norms, restricted mobility, lower levels of education, and unequal access to resources exacerbate women's vulnerability. These structural barriers are compounded in post-disaster contexts, where women bear the brunt of increased caregiving and domestic burdens, often resulting in time poverty and curtailed educational opportunities for girls.

The discussion further delves into the intersectionality of gender, poverty, and social exclusion. It emphasizes how elderly women, persons with disabilities, and marginalized communities suffer disproportionately and face systemic challenges in recovery. Disasters not only deepen existing inequalities but also fuel increases in gender-based violence, displacement, and insecurity around food and water. Women's access to critical health services especially sexual and reproductive care is frequently hindered by logistical, cultural, and financial obstacles during crises.

A significant portion of the chapter is dedicated to gender dynamics in agriculture, forestry, and food security. Despite their central role in food production and natural resource stewardship, women are often sidelined due to discriminatory laws and norms that limit their access to land,

credit, training, and technology. Nevertheless, women exhibit remarkable resilience and innovation, from managing household gardens and preserving local biodiversity to leading reforestation and conservation initiatives.

The narrative also recognizes how disasters can catalyze shifts in gender roles. Women often emerge as heads of households and primary breadwinners when men migrate or perish. While this may present avenues for empowerment, it simultaneously increases their responsibilities and exposure to harm. Inadequate planning in post-disaster shelters frequently results in unsafe conditions, heightening the risk of exploitation and sexual violence.

Importantly, the chapter moves beyond portraying women solely as victims, highlighting their agency and vital contributions to resilience building. Their intimate knowledge of local ecosystems, community networks, and informal support systems makes them key actors in disaster preparedness and response. However, their participation is often overlooked in formal decision-making structures.

To address these disparities, the chapter advocates for gender-responsive disaster risk reduction and climate adaptation policies. It calls for inclusive legal reforms, equitable access to information and services, gender-sensitive infrastructure, and targeted investments in women's leadership and capacity-building. Recognizing and institutionalizing women's roles, voices, and expertise is essential to fostering just, resilient, and sustainable communities in disaster-prone regions like Bangladesh.

Chapter 11

Conclusion and Policy Recommendations

11.1 Conclusion

Climate induced disasters affect all segments of population but most severely the vulnerable and marginalized groups of the coastal areas. Respondents of all categories namely elderly men and women; men and women as heads of household; widowers and widows; and men and women with disabilities living in the coastal belt have clear understanding of climate change and disaster and its related causes as they have experienced various types of disasters during their lifetime such as cyclone, lightning and thunder storm, salinity intrusion, severe floods and tidal surge. The adverse impacts of disaster had been in health, food consumption, water, sanitation, livelihood activities, gender violence, displacement, migration etc. On the other hand, they had taken various disaster preparedness activities, identified warning system and response mechanisms in place. Given below the brief of the major findings:

Understanding of climate change and its causes

Respondents of all categories have extensive knowledge about climate change and had given various explanation what they understood by climate change given the geographical location. The most pertinent issue is that they are aware of climate change where an overwhelming majority of respondents stated that climate transformation characterized by the changes in the usual climate of the planet usually caused by human activities followed by climate change involves not only rising temperatures, but also extreme weather events, rising sea levels, shifting wildlife population and habitats, and a range of other impacts. They clearly articulated that climate change is real and humans are responsible such as global warming. Moreover, climate change will continue to harm all of us and its impacts are serious and government should take appropriate action. Respondents further indicated that the effects of climate change are likely to be much more pronounced for certain groups for example, community dependent on agricultural or coastal livelihoods like them who are most vulnerable.

Regarding the various cause of climate change being identified by the different categories of respondents, an overwhelming majority stated the environment factors such as deforestation and salinity intrusion. They also stated that there were human induced factors like shrimp cultivation which is the most profitable business in the area but has adverse consequences as well as overpopulation.

Understanding of disasters and its causes

Respondents' understanding of disasters and their different ways of explaining what they understood by disasters they frequently encountered were varied. Satkhira district has been identified as one of the worst disaster prone district and the most vulnerable are those living in the coastal belt. As such, respondents of all categories witnessed various kinds of disasters. An overwhelming majority of respondents stated their understanding of disasters which include weather phenomena such as tropical storms, extreme heat or extreme cold, winds, floods, earthquakes, landslides and earthquakes. They narrated that at the community level, it could be a flood, a fire, collapse of buildings due to an earthquake, destruction of livelihoods, an epidemic or

displacement through conflict whereas at the household level, a disaster could result in a major illness, death, a substantial economic or misfortune.

Of the various cause of disasters being identified by the different categories of respondents, an overwhelming majority stated environment factors such as deforestation and river erosion which is a continuous process. They categorically stated that there were also human induced factors like poor construction of dams and embankments as well as its destruction in the area which has adverse consequences like river erosion during severe floods and cyclones.

Changes in climate and experiences

Regarding the climate changes that had been noticed by the respondents in their lifetime, an overwhelming majority stated that they had noticed thunder storm, high and low temperature and salinity. Some respondents said they noticed either no rainfall or unpredictable rainfall.

With regard to the various disaster experienced in their lifetime, an overwhelming majority stated that they experienced cyclone, lightning and thunder storm and salinity intrusion. Some respondents said that they also experienced severe floods and tidal surge.

Disasters that are more frequent

An overwhelming majority of respondents stated that lightning and thunder storm, cyclones, salinity intrusion, severe floods and tidal surge are more frequent disasters. However, with regard to which disasters that have recently experienced in their area, an overwhelming majority of respondents stated cyclones, lightning and thunder storm, salinity intrusion, severe floods and tidal surge.

Category of people most affected by disaster

With regard to which category of people were most affected by disasters in their area, most of the respondents said that elderly men and women, children below 12 years and persons with disabilities were most affected by the disasters compared to adolescent boys (13-18 years) while men and adolescent girls (13-18 years) were moderately affected by the disasters.

Damages incurred due to recent disaster

With regard to the damages incurred due to recent disaster in the area, an overwhelming majority of the respondents said that they lost their employment. However, majority lost their assets while some respondents said that they had to go through mental shock and lost their livestock such as goats and cows because of recent disaster.

Challenges faced due to the recent disaster

There were many challenges faced by respondents due to disasters. An overwhelming majority of respondents stated that lack of food was the main problem which relates to cooking problems because their homes were devastated, there were scarcity of dry firewood and place to cook. Moreover, a handful of respondents from all categories said that they could not find local employment or a viable livelihood option in their area. In addition, there was scarcity of safe drinking water although there were water everywhere but unsafe for drinking or cooking. On the other hand, some of the respondents faced various kinds of health problems in their families due to the adverse effect of disaster when they had to live in crowded shelter facilities or temporary makeshift arrangements on roadsides.

Measures taken to reduce the losses

Respondents took various measures to reduce the losses incurred by the recent disaster in the area. An overwhelming majority of respondents borrowed money from various sources like well-to-do relatives, neighbours or money lenders except widows who could not manage to borrow money. Moreover, a handful of respondents from all categories migrated to other areas in search of a viable livelihood option with the exception of widows. On the other hand, some of the respondents tried to plant salinity resistant plants for their immediate need to feed the family.

Impacts of disasters

Impacts of disasters were on health, household food consumption, livelihood activities, water, sanitation, health, gender violence, displacement and migration.

Health of family members

Health problems of family members during disasters are varied. Men mostly suffered from depression and anxiety followed by fever and cough compared to most women who suffered from fever and cough followed by depression and anxiety. However, mostly children suffered from fever, cough and diarrhoea.

Various measures were taken by respondents to reduce the health impacts during disasters such as they went mostly to the pharmacy and brought medicines followed by going to the local/village doctor. On the other hand, after disaster, respondents mostly went to the local/village doctor followed by going to the pharmacy to buy medicines.

Food consumption of family members

Before the onset of disasters, mostly men consumed meat and fish, however, food consumption patterns of men dependent on unequal food distributed to men and women family members. During disaster, mostly men faced hunger and food insecurity while others reduced their number of meals. After disaster men mostly consumed meat and fish although food consumption patterns of men dependent to some extent on unequal food distributed to men and women family members.

Before the onset of disasters, mostly women consumed meat and fish which moreover depended on unequal food distributed to men and women family members. However, during disaster women mostly faced hunger and food insecurity and unequal food distributed to men and women family members. Respondents stated that even after disaster, mostly women consumed meat and fish while food consumption patterns of women dependent on unequal food distributed to men and women family members.

Food consumption patterns of children before, during and after disaster also varies depending on the situation and food availability. Respondents stated that before disaster, mostly children consumed meat and fish, moreover, food consumption patterns of children dependent on unequal food distributed to boys and girls as family members. However, during disaster, children went hungry and suffered food insecurity. After disaster, mostly children consumed meat and fish but it depended on unequal food distribution to boys and girls.

Livelihood activities of men and women after disasters

After disasters, men worked as day labourer for mud or construction work. Other livelihood activities were: sharecropper in agriculture; day labourers in shrimp and crab cultivation; homestead gardening; livestock rearing; and fishing.

Women hardly had any livelihood options. Nevertheless, women were involved in: poultry farming; livestock rearing of goats and cows; agricultural day labourer; and fishing to a certain extent.

On the other hand, most alternative livelihood options for men are small trading, animal husbandry, fish cultivation, and shrimp cultivation and for women are animal husbandry and small trading.

Water

There are various sources of water used by respondents before disasters such as: pond, while some use pressure sand filter. During disasters, water was collected from various sources such as: pond, while some had pressure sand filter. However, they also collected water from government, NGOs and community people during disaster. After disasters, water was mostly collected from sources such as pond, while some respondents had pressure sand filter.

Regarding the condition of water before disasters, most respondents stated that they had pure drinking water available but had to fetch the water from long distance while some said that there was salinity intuition also in the water. Most respondents stated that during disasters, they had no pure drinking water due to salinity intuition while some of them said that they had pure drinking water but they had to fetch the water from long distance. However, some had no pure drinking water available for them.

Regarding the condition of water after disasters, most respondents stated that they had pure drinking water available for them but also said that they had to fetch the water from long distance. Some of them said that there was salinity intuition also in the water.

Sanitation

Regarding the condition of toilets before disasters, most respondents stated that they had slab latrine at home and sanitary latrine with water system. As such, even after disasters, most respondents stated that they used slab latrine at home.

Gender based violence

Gender based violence was suffered by women especially during disasters inside the house, outside the house and also in the disaster shelters. Majority of women family members suffered from gender violence inside their house. However, very few women suffered gender violence outside the house and inside the disaster shelter or in other places such as schools used as shelter.

Displacement and Migration

There were very few men and women who migrated and left their home or village during disaster.

Disaster preparedness

There were various types of disaster preparedness activities taken in previous disasters by all categories of respondents. Men mostly stored dry food, while very few kept essential things underground and saving money as disaster preparedness activities taken by their family members during previous disasters. On the other hand, women took less interest in disaster preparedness activities except in families of men and women with disabilities. Women mostly stored dry food while some kept essential things underground and saved money as disaster preparedness activities taken during previous disasters.

The most effective disaster preparedness activities taken by both men and women from all categories of respondents are storing dry food, saving money while very few kept essential things underground and storing of essential medicines.

Disaster warning systems

The most effective disaster warning systems stated by all categories of respondents are announcement by *miking*, announcement from the mosques and local community warning system. In the study area, not all modes of early warning dissemination to the community people are homogeneous or effective before disasters. Multiple factors determine the effectiveness of early warning such as risk communication, warning channel and network, communities' perception on disaster warning, awareness among community people, disaster type with occurrence, time and geographical condition etc. An overwhelming majority of respondents identified disaster warning providers like community volunteers while some identified mobile phone operators, announcements from mosques and Upazila chairman warning system.

Disaster responses from various actors

After disaster, support was received from various sources namely government agencies, non-government organizations, relatives and neighbours after disasters. These are mainly food, pure water, shelter facilities and monetary supports.

Strategies taken by men and women

Various strategies were being taken by both men and women to save themselves and their families from the impacts of any forthcoming disaster. An overwhelming majority of men from all categories listened carefully to any community announcements about forthcoming disaster and accordingly preparedness for evacuation, collecting dry food, torchlight, drinking water bottles. Likewise, an overwhelming majority of women preparedness for evacuation, collecting dry food, torchlight, drinking water bottle etc. and listened carefully to any community announcements.

Suggestions to reduce the impacts of climate change and disasters

With regard to reducing the negative impacts of climate change and disasters, an overwhelming majority of respondents suggested preventing salinity intrusion, deforestation, construction of embankments/beribadh while a handful of respondents suggested preventing or reducing burning wood in brick fields.

11.2 Policy Recommendations

The policy recommendations were mainly to build community resilience through targeted interventions in livelihood restoration, health, water and sanitation, gender safety, and disaster preparedness, with a strong focus on women, children, and other marginalized groups. Given below are the recommendations based on the vulnerabilities of the marginalized groups:

Safety Net Programmes for Providing Old Age Allowance, Widow Allowance, Disability Allowance etc.

- Expand coverage by increasing outreach to climate-affected and displaced communities such as

- Improve beneficiary selection to include the most vulnerable to poverty and shocks
- Ensure greater allocation for women-headed households, widows, and women with disabilities by combining financial support with integrated livelihood opportunities, helping them move beyond short-term relief
- Ensure greater allocation for women-headed households, widows, and women with disabilities by combining financial support with integrated livelihood opportunities, helping them move beyond short-term relief.
- Make safety nets flexible and shock-responsive so they can quickly scale up during disasters such as cyclones and floods, reducing delays in delivering emergency relief.
- Link cash or food transfers with skills training, access to microcredit, and job placement to promote long-term economic resilience and sustainable poverty reduction.

Livelihood Resilience and Economic Recovery

- Introduce climate-resilient livelihood schemes such as:
 - Promotion of salinity-tolerant crops and home gardening
 - Expansion of small-scale livestock and poultry farming, especially for women
 - Skill development in alternative income sources like fish processing, handicrafts, and eco-friendly enterprises (e.g., solar repair, tailoring)
- Access to microfinance and social safety nets:
 - Establish interest-free revolving funds or soft loans for disaster-hit families, prioritizing widows and women-headed households
 - Ensure inclusion in public works programmes and cash-for-work schemes post-disaster

Health and Nutrition

- Strengthen mobile health units and community health workers for timely access to basic healthcare during and after disasters
- Stock emergency medicine kits in disaster-prone villages
- Launch nutritional support programmes for women and children during disaster periods, including mid-day meals and food vouchers
- Create gender-sensitive mental health support systems, including community counseling

Gender-Based Violence (GBV) Prevention and Protection

- Establish safe spaces for women and children within disaster shelters
- Train local volunteers and shelter managers on GBV prevention and referral pathways
- Ensure confidential reporting mechanisms and legal support for victims

Water, Sanitation, and Hygiene (WASH)

- Expand access to deep tube wells and community water filters, especially in saline-affected areas

- Promote household and community rainwater harvesting systems
- Construct and maintain disaster-resilient sanitary toilets, including mobile latrines for shelters
- Raise awareness on safe water handling and hygiene practices

Disaster Preparedness and Early Warning Systems

- Develop localized, multilingual early warning systems using radio, mobile alerts, mosque announcements, and community volunteers
- Organize community-based disaster preparedness training, particularly involving women, persons with disabilities, and youth
- Promote emergency kits preparation with dry food, torches, medicines, and water storage
- Conduct school and community drills for timely evacuation and safety

Ecosystem Restoration and Climate Adaptation

- Construct and maintain embankments (*beribadh*) with community participation to prevent flooding and salinity intrusion
- Implement mangrove afforestation and reforestation programmes to reduce erosion and storm surge
- Regulate and monitor brick kiln activities to minimize deforestation and carbon emissions

Migration and Displacement Management

- Create a database of displaced families to ensure they are included in aid and resettlement programmes
- Support temporary relocation shelters with proper facilities
- Promote urban livelihood integration programmes for those who migrate to nearby towns

Inclusive Governance and Community Engagement

- Ensure women's participation in Union Disaster Management Committees and decision-making bodies
- Create community-based monitoring systems to ensure accountability of aid and service delivery
- Partner with local NGOs and youth groups for grassroots implementation and feedback loops

In conclusion, it is essential to provide a multi-sectoral, gender-inclusive, and community-driven approach for long-term resilience. Policies must not only address immediate post-disaster needs but also build adaptive capacities to cope with future climate-related challenges. Special attention must be given to marginalized voices, particularly women, widows, and children to ensure that recovery is equitable and sustainable.

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Annex A: Tables of the Chapters

Chapter 5: Socio-economic profile of the respondents

5.1 Age group of respondents

Table 5.1 Elderly men and women by age group

Age group (in years)	Elderly men		Elderly women	
	n	%	n	%
56 - 60	9	4.8	12	10.5
61 - 65	80	42.3	53	46.5
66 & above	100	52.9	49	43.0
Total	189	100.0	114	100.0

Table 5.2 Men and women heads of household by age group

Age group (in years)	Men heads of household		Women heads of household	
	n	%	n	%
30 – 35	14	8.9	35	22.9
36 - 40	35	22.2	35	22.9
41 – 45	52	32.9	36	23.5
46 - 50	25	15.8	25	16.3
51 - 55	21	13.3	18	11.8
56 - 60	9	5.7	2	1.3
61 - 65	2	1.3	1	.7
66 & above	-	-	1	.7
Total	158	100.0	153	100.0

Table 5.3 Widowers and widows by age group

Age group (in years)	Widower		Widow	
	n	%	n	%
30 – 35	1	1.4	10	5.7
36 – 40	1	1.4	11	6.3
41 – 45	6	8.5	18	10.2
46 – 50	7	9.9	30	17.0
51 – 55	15	21.1	23	13.1
56 - 60	16	22.5	18	10.2
61 – 65	10	14.1	43	24.4
66 & above	15	21.1	23	13.1
Total	71	100.0	176	100.0

Table 5.4 Men and women with disabilities by age group

Age group (in years)	Men with disabilities		Women with disabilities	
	n	%	n	%
30 – 35	18	25.7	23	33.3
36 - 40	5	7.1	12	17.4
41 – 45	7	10.0	11	15.9
46 - 50	10	14.3	11	15.9
51 - 55	15	21.5	5	7.3
56 - 60	7	10.0	4	5.8
61 - 65	4	5.7	2	2.9
66 & above	4	5.7	1	1.5
Total	70	100.0	69	100.0

5.2 Level of education of respondents

Table 5.5 Elderly men and women by level of education

Level of education	Elderly men		Elderly women	
	n	%	n	%
Illiterate	30	15.9	37	32.5
Can sign only	63	33.3	47	41.2
Class 1-4	43	22.8	22	19.3
Class 5-8	37	19.6	7	6.1
Class 9-10	10	5.3	1	0.9
SSC/equivalent	5	2.6		
Graduate	1	0.5		
Total	189	100.0	114	100.0

Table 5.6 Men and women heads of household by level of education

Level of education	Men heads of household		Women heads of household	
	n	%	n	%
Illiterate	20	12.7	22	14.4
Can sign only	49	31.0	76	49.7
Class 1-4	39	24.7	24	15.7
Class 5-8	35	22.2	23	15.0
Class 9-10	10	6.3	4	2.6
SSC/equivalent	2	1.3	1	0.7
HSC/equivalent	-	-	3	2.0
Graduate	2	1.3	-	-
Masters	1	0.6	-	-
Total	158	100.0	153	100.0

Table 5.7 Widowers and widows by level of education

Level of education	Widower		Widow	
	n	%	n	%
Illiterate	16	22.5	55	31.3
Can sign only	12	16.9	74	42.0
Class 1-4	21	29.6	22	12.5
Class 5-8	14	19.7	18	10.2
Class 9-10	5	7.0	2	1.1
SSC/equivalent	1	1.4	4	2.3
HSC/equivalent	2	2.8	1	0.6
Total	71	100.0	176	100.0

Table 5.8 Men and women with disabilities by level of education

Level of education	Men with disabilities		Men with disabilities	
	n	%	n	%
Illiterate	7	10.0	13	18.8
Can sign only	21	30.0	22	31.9
Class 1-4	15	21.4	17	24.6
Class 5-8	18	25.7	10	14.5
Class 9-10	4	5.7	4	5.8
SSC/equivalent	3	4.3	-	-
HSC/equivalent	-	-	2	2.9
Graduate	2	2.9	1	1.5
Total	70	100.0	69	100.0

5.3 Marital status of respondents

Table 5.9 Elderly men and women by marital status

Marital status	Elderly men		Elderly women	
	n	%	n	%
Married	189	100	110	96.5
Abandoned	-	-	3	2.6
Separated	-	-	1	0.9
Total	189	100.0	114	100.0

Table 5.10 Men and women heads of household by marital status

Marital status	Men heads of household		Women heads of household	
	n	%	n	%
Married	158	100.0	11	7.2
Abandoned	-	-	65	42.5
Divorcee	-	-	43	28.1
Separated	-	-	34	22.2
Total	158	100.0	153	100.0

Table 5.11 Men and women with disabilities by marital status

Marital status	Men with disabilities		Women with disabilities	
	n	%	n	%
Single	6	8.6	16	23.2
Married	63	90.0	40	57.9
Divorcee	1	1.4	4	5.8
Abandoned	-	-	4	5.8
Separated	-	-	2	2.9
Widow	-	-	3	4.4
Total	70	100.0	69	100.0

5.4 Primary occupation of respondents

Table 5.12 Elderly men and women by primary occupation

Primary occupation	Elderly men		Elderly women	
	n	%	n	%
Agriculture labourer	46	24.3	6	5.3
Government allowance	44	23.3	1	0.9
Fishing	31	16.4	5	4.4
Day labourer other than agriculture	17	9.0	7	6.1
Rickshaw or van puller	8	4.2		
Shrimp cultivation (own)	7	3.7		
Agricultural related activities like farming own land, share cropper, homestead gardening,	5	2.6		
Shrimp & crab cultivation labourers	4	2.1	2	1.8
Selling forest produce like fuel wood	4	2.1		
Selling fishing net	4	2.1		
Business	4	2.1		
Selling handicrafts	2	1.1		
Other occupations like carpenter, mason, barber	4	2.1		
Religious leaders	2	1.1		
Water vendor	1	0.5	1	0.9
Shopkeeper	1	0.5	2	1.8
Boatman	1	0.5		
Son gives money for household expenses	1	0.5		
Religious leader serving in mosque	2	1.0		
Homemaker			52	45.6
Domestic helper			15	13.2

Selling poultry and eggs			13	11.4
Selling of goats & cows			10	8.8
Total	189	100.0	114	100.0

Table 5.13 Men and women heads of household by primary occupation

Primary occupation	Male headed household		Female headed household	
	n	%	n	%
Day labourer (other than agriculture)	54	34.2	48	31.4
Agricultural day labourer	52	32.9	37	24.2
Fishing	20	12.7	28	18.3
Rickshaw or van puller	14	8.9		
Shrimp cultivation (own)	4	2.5	3	2.0
Water vendor	2	1.3		
Tailoring	2	1.3	1	.7
Collecting crabs in the forest	1	.6	3	2.0
Shrimp & crab cultivation labourer	1	.6		
Honey collector	1	.6		
Religious leader	1	.6	2	1.3
Cobbler	1	.6	1	.7
Share cropper	1	.6		
Mason	1	.6		
Barber	1	.6		
Rearing and selling of goats & cows			5	3.3
Poultry rearing and selling			2	1.3
Domestic helper			18	11.8
Small business like selling coconuts	2	1.2	5	3.3
Total	158	100.0	153	100.0

Table 5.14 Widowers and widows by primary occupation

Primary occupation	Widower		Widow	
	n	%	n	%
Agricultural day labourer	30	42.3	38	21.6
Day labourer (other than agriculture)	8	11.3	33	18.8
Fishing	7	9.9	11	6.3
Small business	5	7.0	48	27.3
Shrimp cultivation (own)	3	4.2	4	2.3
Shrimp & crab cultivation labourers	3	4.2		
Receiving government allowance	3	4.2	2	1.1

Farmer (own land)	2	2.8	1	.6
Mason	2	2.8		
Rickshaw or van puller	2	2.8		
Unemployed	2	2.8	1	.6
Homemaker	1	1.4	3	1.7
Poultry rearing and selling	1	1.4	9	5.1
Fish seller	1	1.4	2	1.1
Ayurvedic practitioner	1	1.4	1	.6
Domestic helper			12	6.8
Total	71	100.0	176	100.0

Table 5.15 Men and women with disabilities primary occupation

Primary occupation	Men with disabilities		Women with disabilities	
	n	%	n	%
Receiving government disability allowance	33	47.2	32	46.4
Rickshaw, van puller & bike rider	11	15.7	1	1.4
Day laborer	8	11.4	6	8.7
Fishing and fish vendor	7	10.0	3	4.5
Small trading	5	7.2	1	1.4
Shrimp cultivation	3	4.3	-	-
Livestock rearing and poultry farming	1	1.4	14	20.3
Collector of forest products	1	1.4	-	-
Hawker	1	1.4	1	1.4
Homemaker	-	-	2	2.9
Domestic helper	-	-	9	13.0
Total	70	100	69	100

5.5 Water related issues

Table 5.16 Elderly men and women by source of water

Source of water before disaster*	Elderly men		Elderly women	
	n	%	n	%
Pond	129	68.3	80	70.2
Tube-well	72	38.1	41	36.0
Tap water	32	16.9	16	14.0

*Multiple response

Table 5.17 Men and women heads of household by their source of water

Source of water before disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Tube-well	53	33.5	54	35.3
Pond	102	64.6	104	68.0
River	-		2	1.3
Tap water	17	10.8	17	11.1

*Multiple response

Table 5.18 Widowers and widows by source of water

Source of water before disaster*	Widower		Widow	
	n	%	n	%
Pond	52	44.8	128	43.4
Tube-well	21	18.1	61	20.7
Tap water	9	7.8	23	7.8
River			1	0.3

*Multiple response

Table 5.19 Men and women with disabilities by source of water

Source of water before disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Pond	51	72.9	48	69.6
Pressure Sand Filter (PSF)	29	41.4	27	39.1
Tube-well	27	38.6	30	43.5
Tap water	8	11.4	8	12.0

*Multiple response

Table 5.20 Elderly men and women by distance of water source

Distance of water source	Elderly Men		Elderly Women	
	n	%	n	%
Nearby	52	27.5	21	18.4
Within 2 kilometers	49	25.9	26	22.8
Within 1 kilometer	42	22.2	36	31.6
Within half a kilometer	33	17.5	25	21.9
Very far away	13	6.9	6	5.3
Total	189	100	114	100

Table 5.21 Men and women heads of household by their distance of water source

Distance of water source	Men heads of household		Women heads of household	
	n	%	n	%
Nearby	26	16.5	14	9.2
Within half a kilometre	33	20.9	44	28.8
Within 1 kilometre	44	27.8	58	37.8
Within 2 kilometres	36	22.8	30	19.6
Very far away	19	12.0	7	4.6
Total	158	100	153	100

Table 5.22 Widowers and widows by distance of water source

Distance of water source	Widower		Widow	
	n	%	n	%
Within half a kilometer	22	31.0	42	23.9
Within 1 kilometer	19	26.8	51	29.0
Within 2 kilometers	14	19.7	37	21.0
Nearby	11	15.5	32	18.1
Very far away	5	7	14	8.0
Total	71	100	176	100

Table 5.23 Men and women with disabilities by distance of water source

Distance of water source	Men with disabilities		Women with disabilities	
	n	%	n	%
Nearby	10	14.3	14	20.3
Within half a kilometre	21	30.1	14	20.3
Within 1 kilometre	22	31.4	23	33.3
Within 2 kilometres	12	17.1	14	20.3
Very far away	5	7.1	4	5.8
Total	70	100	69	100

5.6 Toilet facilities

Table 5.24 Elderly men and women by type of toilet facilities

Type of toilet facilities	Elderly men		Elderly women	
	n	%	n	%
Slab latrine at home	153	81.0	92	80.7
Sanitary latrine with water system	14	7.4	5	4.4
Open latrine with makeshift wall	14	7.4	8	7.0
No slab latrine	4	2.1	5	4.4
No latrine at all	4	2.1	4	3.5
Total	189	100	114	100

Table 5.25 Men and women heads of household by type of toilet facilities

Type of toilet facilities	Men heads of household		Women heads of household	
	n	%	n	%
Slab latrine at home	129	81.6	116	75.8
Open latrine with makeshift wall	12	7.6	14	9.2
No latrine at all	11	7.0	16	10.4
Sanitary latrine with water system	4	2.5	4	2.6
No slab latrine	2	1.3	3	2.0
Total	158	100	153	100

Table 5.26 Widowers and widows by type of toilet facilities

Type of toilet facilities	Widower		Widow	
	n	%	n	%
Slab latrine at home	58	81.7	145	82.4
Sanitary latrine with water system	8	11.2	6	3.4
Open latrine with makeshift wall	4	5.7	13	7.4
No latrine at all	1	1.4	9	5.1
No slab latrine			3	1.7
Total	71	100	176	100

Table 5.27 Men and women with disabilities by type of toilet facilities

Type of toilet facilities	Men with disabilities		Women with disabilities	
	n	%	n	%
Slab latrine at home	55	78.6	55	79.7
Sanitary latrine with water system	5	7.2	7	10.1
No slab latrine	4	5.7	3	4.4
Open latrine with makeshift fence	4	5.7	1	1.4
No latrine at all	1	1.4	3	4.4
Other's toilet	1	1.4	-	-
Total	70	100	69	100

5.7 Toilets for persons with disabilities

Table 5.28 Elderly men and women by toilets for persons with disabilities

Whether toilets are friendly for persons with disabilities	Elderly Male		Elderly Female	
	n	%	n	%
Yes	26	13.8	22	19.3
No	163	86.2	92	80.7
Total	189	100.0	114	100.0

Table 5.29 Men and women heads of household by toilets for persons with disabilities

Whether toilets are friendly for persons with disabilities	Men heads of household		Women heads of household	
	n	%	n	%
Yes	25	15.8	28	18.3
No	133	84.2	125	81.7
Total	158	100.0	153	100.0

Table 5.30 Widowers and widows by toilets for persons with disabilities

Whether toilets are friendly for persons with disabilities	Widowers		Widows	
	n	%	n	%
Yes	9	12.7	27	15.3
No	62	87.3	149	84.7
Total	71	100.0	176	100.0

Table 5.31 Men and women with disabilities by toilets for persons with disabilities

Whether toilets are friendly for persons with disabilities	Men with disabilities		Women with disabilities	
	n	%	n	%
Yes	12	17.2	14	20.3
No	58	82.8	55	79.7
Total	70	100	69	100

Chapter 6: Perception of climate change and experience of natural disasters

6.1 Understanding of climate change of respondents

Table 6.1 Elderly men and women by their understanding of climate change

Understanding of climate change*	Elderly men		Elderly women	
	n	%	n	%
It is climate transformation characterized by the changes in the usual climate of the planet (regarding temperature, precipitation and wind) that are usually caused by human activities.	154	81.5	96	84.2
Involves not only rising temperatures, but also extreme weather events, rising sea levels, shifting wildlife population and habitats, and a range of other impacts.	109	57.7	72	63.2
Climate change is real and humans are responsible such as global warming is mostly human made.	84	44.4	38	33.3
Climate change is and will continue to harm all of us unless government take action.	64	33.9	36	31.6
Impacts of climate change are serious and we must act now.	48	25.4	22	19.3
The effects of climate change are likely to be much more pronounced for certain groups- for example, community dependent on agricultural or coastal livelihoods.	46	24.3	26	22.8

*Multiple responses.

Table 6.2 Men and women heads of household by their understanding of climate change

Understanding of climate change*	Men heads of household		Women heads of household	
	n	%	n	%
It is climate transformation characterized by the changes in the usual climate of the planet (regarding temperature, precipitation and wind) that are usually caused by human activities.	131	82.9	118	77.1
Involves not only rising temperatures, but also extreme weather events, rising sea levels, shifting wildlife population and habitats, and a range of other impacts.	89	56.3	93	60.8
Climate change is and will continue to harm all of us unless government take action.	68	43.0	62	40.5
Impacts of climate change are serious and we must act now.	54	34.2	50	32.7
The effects of climate change are likely to be much more pronounced for certain groups- for example, community dependent on agricultural or coastal livelihoods.	39	24.7	34	22.2
Climate change is real and humans are responsible such as global warming is mostly man made.	35	22.2	34	22.2

*Multiple responses.

Table 6.3 Widowers and widows by their understanding of climate change

Understanding of climate change*	Widower		Widow	
	n	%	n	%
It is climate transformation characterized by the changes in the usual climate of the planet (regarding temperature, precipitation and wind) that are usually caused by human activities	55	77.5	136	77.3
Involves not only rising temperatures, but also extreme weather events, rising sea levels, shifting wildlife population and habitats, and a range of other impacts.	43	60.6	92	52.3
Climate change is real and humans are responsible such as global warming is mostly man made.	29	40.9	58	32.9
Climate change is and will continue to harm all of us unless government take action.	25	35.2	56	31.8
The effects of climate change are likely to be much more pronounced for certain groups- for example, community dependent on agricultural or coastal livelihoods.	21	29.6	35	19.9
Impacts of climate change are serious and we must act now.	12	16.9	38	21.6

*Multiple responses.

Table 6.4 Men and women with disabilities by their understanding of climate change

Understanding of climate change*	Men with disabilities		Women with disabilities	
	n	%	N	%
It is climate transformation characterized by the changes in the usual climate of the planet (regarding temperature, precipitation and wind) that are usually caused by human activities.	52	74.3	52	75.4
Involves not only rising temperatures, but also extreme weather events, rising sea levels, shifting wildlife population and habitats, and a range of other impacts.	40	57.1	48	69.6
Climate change is real and humans are responsible such as global warming is mostly man made.	29	41.4	28	40.6
Climate change is and will continue to harm all of us unless government take action.	29	41.4	26	37.7
Impacts of climate change are serious and we must act now.	23	32.8	20	28.9
The effects of climate change are likely to be much more pronounced for certain groups- for example, community dependent on agricultural or coastal livelihoods.	21	30.0	16	23.2

*Multiple responses.

6.2 Causes of climate change as perceived by respondents

Table 6.5 Elderly men and women by causes of climate change

Causes of climate change*	Elderly men		Elderly women	
	n	%	n	%
Environmental factors				
Salinity intrusion	181	95.8	106	92.9
Deforestation by cutting down trees	180	95.2	104	91.2
Human induced factors				
Shrimp cultivation	145	76.7	91	79.8
Over population	84	44.4	46	40.4
Air and water pollution	81	42.8	43	37.7
Burning coal, oil & gas	60	31.7	41	35.9
Unplanned industrialization	51	26.9	22	19.3
Increasing livestock farming	20	10.6	6	5.3

*Multiple responses.

Table 6.6 Men and women heads of household by causes of climate change

Causes of climate change*	Men heads of household		Women heads of household	
	n	%	n	%
Environmental factors				
Deforestation	154	97.5	148	96.7
Salinity intrusion	152	96.2	146	95.4
Human induced factors				
Shrimp cultivation	115	72.8	108	70.6
Over population	75	47.5	88	57.5
Air and water pollution	72	45.6	55	35.9
Burning coal, oil & gas	59	37.3	46	30.1
Unplanned industrialization	56	35.4	36	23.5
Increasing livestock farming	17	10.8	17	11.1

*Multiple responses.

Table 6.7 Widowers and widows by causes of climate change

Causes of climate change*	Widower		Widow	
	n	%	n	%
Environmental factors				
Deforestation by cutting down trees	69	97.2	171	97.2
Salinity intrusion	69	97.2	171	97.2
Human induced factors				
Shrimp cultivation	52	73.2	121	66.8
Over population	33	46.5	79	44.9
Air and water pollution	33	46.5	50	28.4
Burning coal, oil & gas	28	39.4	37	21.0
Unplanned industrialization	27	38.0	34	19.3
Increasing livestock farming	3	4.2	13	7.4

*Multiple responses.

Table 6.8 Men and women with disabilities by causes of climate change

Causes of climate change*	Men with disabilities		Women with disabilities	
	n	%	n	%
Environmental factors				
Deforestation	64	91.1	67	97.1
Salinity intrusion	64	91.1	67	97.1
Human induced factors				
Shrimp cultivation	50	71.4	52	75.4
Over population	39	55.7	37	53.6
Air and water pollution	34	48.6	27	39.1
Burning of coal, oil & gas	22	31.4	21	30.4
Unplanned industrialization	17	24.3	14	20.3
Increasing livestock farming	4	5.7	7	10.1
Brickfields	1	1.4	1	1.4
Lack of proper drainage system	1	1.4	-	-
Due to solar system	-	-	1	1.4

*Multiple responses.

6.3 Understanding of disasters by respondents

Table 6.9 Elderly men and women by their understanding of disasters

Understanding of disasters*	Elderly men		Elderly women	
	n	%	n	%
Natural disasters include weather phenomena such as tropical storms, extreme heat or extreme cold, winds, floods, earthquakes, landslides and earthquakes.	182	96.3	43	37.7
Disaster implies a sudden overwhelming and unforeseen event.	105	55.6	65	57.0
Disasters caused by humans have included road accidents, industrial accidents, hazardous materials and collapse of buildings.	82	43.4	22	19.3
At the community level, it could be a flood, a fire, a collapse of buildings in an earthquake, the destruction of livelihoods, an epidemic or displacement through conflict.	77	40.7	38	33.3
At the household level, a disaster could result in a major illness, death, a substantial economic or social misfortune.	63	33.3	39	34.2
A disaster is a serious disruption occurring over a short or long period of time that causes widespread human, material, economic or environmental loss which exceeds the ability of the affected community or society to cope using its own resources.	62	32.8	27	23.7
Disasters are still widely thought of as sudden onsets of cataclysmic events. However, disasters such as famine and global climate change could be considered 'slow-onset' disasters.	56	29.6	27	23.7
There is no single measure that can capture the full scope of a disaster but a common measure is the number of people killed or affected.	22	11.6	113	99.1
Most disasters result in the inability of those affected to cope without outside assistance.	3	1.6	2	1.8
At the household level, disaster could mean getting the support and help from neighbors.	3	1.6	7	6.1

*Multiple responses.

Table 6.10 Men and women heads of household by their understanding of disasters

Understanding of disasters*	Men heads of household		Women heads of household	
	n	%	n	%
Natural disasters include weather phenomena such as tropical storms, extreme heat or extreme cold, winds, floods, earthquakes, landslides and earthquakes.	155	98.1	147	96.1
Disaster implies a sudden overwhelming and unforeseen event.	91	57.6	79	51.6

Disasters caused by humans have included transportation accidents, industrial accidents, release of hazardous materials and the collapse of buildings.	85	53.8	56	36.6
At the household level, a disaster could result in a major illness, death, a substantial economic or social misfortune.	61	38.6	52	34.0
A disaster is a serious disruption occurring over a short or long period of time that causes widespread human, material, economic or environmental loss which exceeds the ability of the affected community or society to cope using its own resources.	57	36.1	48	31.4
Disasters are still widely thought of as sudden onsets of cataclysmic events. However, disasters such as famine and global climate change could be considered 'slow-onset' disasters.	50	31.6	33	21.6
At the community level, it could be a flood, a fire, a collapse of buildings in an earthquake, the destruction of livelihoods, an epidemic or displacement through conflict.	48	30.4	61	39.9
There is no single measure of a disaster that can capture the full scope of a disaster. A common measure is the number of people killed or affected.	10	6.3	12	7.8
Most disasters result in the inability of those affected to cope with outside assistance.	5	3.2	4	2.6
At the household level, this could mean getting the support and help from neighbours.	1	0.6	3	2.0

*Multiple responses.

Table 6.11 Widowers and widows by their understanding of disasters

Understanding of disasters*	Widower		Widow	
	n	%	n	%
Natural disasters include weather phenomena such as tropical storms, extreme heat or extreme cold, winds, floods, earthquakes, landslides and earthquakes.	68	95.8	67	38.1
Disaster implies a sudden overwhelming and unforeseen event.	42	59.1	100	56.8
Disasters caused by humans have included transportation accidents, industrial accidents, release of hazardous materials and the collapse of buildings.	41	57.7	45	25.6
A disaster is a serious disruption occurring over a short or long period of time that causes widespread human, material, economic or environmental loss which exceeds the ability of the affected community or society to cope using its own resources.	26	36.6	48	27.3
At the household level, a disaster could result in a major illness, death, a substantial economic or social misfortune.	25	35.2	43	24.4

Disasters are still widely thought of as sudden onsets of cataclysmic events. However, disasters such as famine and global climate change could be considered 'slow-onset' disasters.	22	31.0	2	1.1
At the community level, it could be a flood, a fire, a collapse of buildings in an earthquake, the destruction of livelihoods, an epidemic or displacement through conflict.	21	29.6	54	30.6
There is no single measure of a disaster that can capture the full scope of a disaster but a common measure is the number of people killed or affected.	5	7.0	174	98.9
Most disasters result in the inability of those affected to cope with outside assistance.	3	4.2	4	2.3
At the household level, this could mean getting the support and help from neighbours.	1	1.4	11	6.2

*Multiple responses.

Table 6.12 Men and women with disabilities by their understanding of disasters

Understanding of disasters*	Men with disabilities		Women with disabilities	
	n	%	n	%
Natural disasters include weather phenomena such as tropical storms, extreme heat or extreme cold, winds, floods, earthquakes, landslides and earthquakes.	67	95.7	63	91.3
At the community level, it could be a flood, a fire, a collapse of buildings in an earthquake, the destruction of livelihoods, an epidemic or displacement through conflict.	38	54.3	21	30.4
Disaster implies a sudden overwhelming and unforeseen event.	38	54.3	34	49.3
At the community level, it could be a flood, a fire, a collapse of buildings in an earthquake, the destruction of livelihoods, an epidemic or displacement through conflict.	33	47.1	28	40.6
At the household level, a disaster could result in a major illness, death, a substantial economic or social misfortune.	31	44.2	34	48.6
A disaster is a serious disruption occurring over a short or long period of time that causes widespread human, material, economic or environmental loss which exceeds the ability of the affected community or society to cope using its own resources	29	41.4	26	37.1
Disasters are still widely such as sudden onsets of cataclysmic events while disasters such as famine and global climate change could be considered 'slow-onset' disasters	21	30.0	22	31.9
Most disasters result in the inability of those affected to cope with outside assistance	4	5.7	-	-

There is no single measure of a disaster that can capture the full scope of a disaster; however, a common measure is the number of people killed or affected	3	4.3	4	5.8
At the household level, this could mean support and help from neighbours.	2	2.8	2	2.9

*Multiple responses.

6.4 Causes of disasters as perceived by respondents

Table 6.13 Elderly men and women by causes of disasters

Causes of disasters*	Elderly men		Elderly women	
	n	%	n	%
Environmental factors				
Deforestation	183	96.8	114	100
River erosion	146	77.2	87	76.3
Global warming	65	34.4	25	21.9
Geographical location	4	2.1	3	2.6
Human induced				
Destruction of dam/beribandh	140	74.1	76	66.7
Poor construction of dams/embankment	135	71.1	54	47.4
Overpopulation	99	52.3	51	44.7
Destruction of agricultural land	37	19.6	14	12.3
Unplanned urbanization	29	15.3	20	17.5
Harmful farming practices	23	12.2	11	9.6
Politics of neighboring country	2	1.0	1	0.9
Beliefs and superstitions				
Allah/God's will	112	59.2	72	63.2
Increased misdeeds of people	87	46.0	69	60.5

*Multiple responses.

Table 6.14 Men and women heads of household by causes of disasters

Causes of disasters*	Men heads of household		Women heads of household	
	n	%	n	%
Environmental factors				
Deforestation	156	98.7	147	96.0
River erosion	126	79.7	116	75.8
Global warming	51	32.3	36	23.5
Geographical location	6	3.8	4	2.6
Human induced factors				
Destruction of dam/beribandh	122	77.2	114	74.5
Poor construction of dams/embankment	114	72.2	116	75.8
Overpopulation	79	50.0	81	52.9
Destruction of agricultural land	34	21.5	23	15.0
Unplanned urbanization	36	22.8	21	13.7
Harmful farming practices	24	15.2	20	13.1

Politics of neighboring countries	9	5.7	2	1.3
Superstitions and beliefs				
Allah's will	88	55.7	92	60.1
Increased misdeeds of people	77	48.7	80	52.3

*Multiple responses.

Table 6.15 Widowers and widows by causes of disasters

Causes of disasters*	Widower		Widow	
	n	%	N	%
Environmental factors				
Deforestation	68	95.8	173	98.3
River erosion	59	83.1	134	76.1
Global warming	18	25.3	34	19.3
Geographical location	1	1.4	1	0.5
Human induced factors				
Destruction of dam/beribandh	54	76.0	123	69.9
Poor construction of dams/embankment	53	74.6	131	74.4
Overpopulation	36	50.7	80	45.4
Unplanned urbanization	23	32.4	26	14.8
Destruction of agricultural land	15	21.1	22	12.5
Harmful farming practices	10	14.1	16	9.0
Politics of neighboring countries	2	2.8	4	2.2
Superstitions and beliefs				
Allah/God's will	39	54.9	106	60.2
Increased misdeeds of people	31	43.7	76	43.2

*Multiple responses.

Table 6.16 Men and women with disabilities by causes of disasters

Causes of disasters*	Men with disabilities		Women with disabilities	
	n	%	n	%
Environmental factors				
Deforestation	69	98.6	67	97.1
River erosion	59	84.3	54	78.3
Global warming	23	32.9	23	33.3
Geographical location	3	4.3	4	5.8
Human induced factors				
Poor construction of dams/embankment	51	72.9	48	69.6
Destruction of dam/beribandh	53	75.7	55	79.7
Overpopulation	38	54.3	36	52.2
Politics of neighbouring countries	26	37.1	24	34.8
Destruction of agricultural land	14	20.0	16	23.2
Unplanned urbanization	11	15.7	10	14.5
Harmful farming practices	9	12.9	6	8.7
Superstitions and beliefs				
Allah's will	43	61.4	41	59.4
Increased sins of people	30	42.9	29	42.0

*Multiple responses.

6.5 Changes in climate noticed during the lifetime of respondents

Table 6.17 Elderly men and women by changes in climate they have noticed

Changes in climate that they have noticed*	Elderly men		Elderly women	
	n	%	n	%
Lightning/ Thunder storm	187	98.9	111	97.4
Too hot	186	98.4	111	97.4
Salinity	178	94.2	98	85.9
Too cold	144	76.2	83	72.8
No rainfall	122	64.5	58	50.9
Unpredictable rainfall	118	62.4	49	43.0
Drought	79	41.8	36	31.6
Air pollution	66	34.9	35	30.7
Water pollution	48	25.4	22	19.3
Crop failure	41	21.7	17	14.9
Water logging	23	12.2	20	17.5
Arsenic contamination	3	1.6	2	1.8

*Multiple responses

Table 6.18 Men and women heads of household by changes in climate they had noticed

Changes in climate that they had noticed*	Men heads of household		Women heads of household	
	n	%	n	%
Too hot	158	100.0	151	98.7
Lightning/thunder storm	154	97.5	54	35.3
Salinity	145	91.8	141	92.2
Too cold	127	80.3	122	79.7
Erratic/unpredictable rainfall	108	68.4	83	54.2
No rainfall	88	55.7	28	18.3
Change of season	86	54.4	74	48.4
Drought	66	41.8	84	54.9
Air pollution	65	41.1	52	34.0
Crop failure	38	24.1	17	11.1
Water logging	15	9.5	1	0.7

*Multiple responses

Table 6.19 Widowers and widows by changes in climate they had noticed

Changes in climate that they had noticed*	Widower		Widow	
	n	%	n	%
Lightning/ Thunder storm	69	97.2	176	100
Too hot	68	95.8	174	98.9
Salinity	60	84.5	159	90.3
Too cold	58	81.7	147	83.5
Erratic/unpredictable rainfall	46	64.8	100	56.8
No rainfall	41	57.7	83	47.1
Change of season	33	46.5	80	45.4

Drought	33	46.5	45	25.6
Air pollution	32	45.1	48	27.3
Water pollution	19	26.8	30	17.0
Water logging	16	22.5	15	8.5
Crop failure	13	18.3	23	13.1

*Multiple responses

Table 6.20 Men and women with disabilities by changes in climate they had noticed

Changes in climate that they had noticed*	Men with disabilities		Women with disabilities	
	n	%	n	%
Lightning/ thunder storm	70	100.0	69	100.0
Too hot	69	98.5	68	98.5
Salinity	61	87.1	65	94.2
Too cold	56	80.0	51	73.9
No rainfall	46	65.7	38	55.1
Erratic/unpredictable rainfall	43	61.4	41	59.4
Change of season	32	45.7	31	44.9
Air pollution	24	34.2	21	30.4
Water pollution	27	38.5	12	17.4
Crop failure	15	21.4	20	28.9
Water logging	14	20.0	8	11.6
Arsenic contamination	3	4.2	-	-

*Multiple responses.

6.6 Experience of disaster in the lifetime of respondents

Table 6.21 Elderly men and women by type of disaster experienced in their lifetime

Type of disaster experienced*	Elderly men		Elderly women	
	n	%	n	%
Lightning/ Thunder storm	185	97.9	112	98.2
Cyclones	184	97.3	114	100.0
Salinity intrusion	175	92.6	100	87.7
Severe floods	151	79.9	86	75.4
Tidal surge	107	56.6	51	44.7
Water logging	27	14.3	22	19.3
Arsenic contamination	3	1.6	114	100.0

* Multiple responses.

Table 6.22 Men and women heads of household by type of disaster experienced in their lifetime

Type of disaster experienced*	Men heads of household		Women heads of household	
	n	%	n	%
Cyclones	158	100.0	153	100.0
Lightning/ Thunder storm	158	100.0	150	98.0
Salinity intrusion	151	95.6	143	93.5
Severe floods	127	80.4	116	75.8
Tidal surge	71	44.9	83	54.2
Water logging	19	12.0	15	9.8
Others	37	23.4	153	100.0

*Multiple responses.

Table 6.23 Widowers and widows by type of disaster experienced in their lifetime

Type of disaster experienced*	Widower		Widow	
	n	%	n	%
Lightning/ Thunder storm	70	98.6	176	100.0
Cyclones	69	97.2	176	100.0
Salinity intrusion	65	91.5	160	90.9
Severe floods	61	85.9	132	75.0
Tidal surge	45	63.4	84	47.8
Others	18	25.3	27	15.3
Water logging	17	23.9	15	8.5

*Multiple responses.

Table 6.24 Men and women with disabilities by type of disaster experienced in their lifetime.

Type of disaster experienced*	Men with disabilities		Women with disabilities	
	n	%	n	%
Lightning/ thunder storm	70	100.0	69	100.0
Cyclones	70	100.0	69	100.0
Salinity intrusion	61	87.1	67	97.1
Severe floods	50	71.4	52	75.3
Tidal surge	36	51.4	41	59.4
Drought	19	27.1	16	23.2
Water logging	14	20.0	8	11.6

* Multiple responses.

6.7 Disasters that are more frequent as perceived by respondents

Table 6.25 Elderly men and women by disasters that are more frequent

Disasters that are more frequent*	Elderly men		Elderly women	
	n	%	n	%
Lightning/ thunder storm	185	97.7	114	100
Cyclones	175	92.6	108	94.7
Salinity intrusion	168	88.9	93	81.6
Severe floods	152	80.4	89	78.1
Tidal surge	114	60.3	56	49.1
Water logging	25	13.2	21	18.4

*Multiple responses.

Table 6.26 Men and women heads of household by disasters that are more frequent

Disasters that are more frequent*	Men heads of household		Women heads of household	
	n	%	n	%
Cyclones	158	100	153	100
Lightning/ Thunder storm	157	99.4	153	100
Salinity intrusion	148	93.7	142	92.8
Severe floods	127	80.4	119	77.8
Tidal surge	73	46.2	84	54.9
Water logging	18	11.4	14	9.2

*Multiple responses.

Table 6.27 Widowers and widows by disasters that are more frequent

Disasters that are more frequent*	Widowers		Widows	
	n	%	n	%
Cyclones	71	100	174	98.9
Lightning/ Thunder storm	69	97.2	175	99.4
Salinity intrusion	65	91.5	162	92.0
Severe floods	61	85.9	132	75.0
Tidal surge	43	60.6	87	49.4
Water logging	16	22.5	15	8.5

*Multiple responses.

Table 6.28 Men and women with disabilities by disasters that are more frequent

Disasters that are more frequent*	Men with disabilities		Women with disabilities	
	n	%	n	%
Cyclones	70	100	68	98.5
Lightning/thunder storm	64	91.4	68	98.5
Salinity intrusion	64	91.4	65	94.2
Severe floods	51	72.8	52	75.4
Tidal surge	37	52.8	40	58.0
Water logging	14	20.0	8	12.0

*Multiple responses.

6.8 Type of disasters experienced recently in the area by respondents

Table 6.48 Men and women with disabilities by challenges faced due to disasters

Challenges faced due to disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Lack of food	69	98.6	69	100.0
Scarcity of fuel wood	60	85.7	54	78.3
Cooking problem	58	82.8	61	88.4
Health problems	48	68.6	49	71.0
Reduction of local employment opportunities	47	67.1	46	66.7
Scarcity of safe water	41	58.6	43	62.3
Disruption of communication & transportation	34	48.6	31	44.9
Domestic violence	29	41.4	27	39.1
Closing of schools	14	20.0	18	26.1
Unable to move to safer places due to physical disabilities	15	21.4	6	8.7

*Multiple responses.

6.13 Measures taken by respondents and their families to reduce the losses incurred by recent disaster in the area

Table 6.49 Elderly men and women by measures taken to reduce the losses

Measures take. to reduce the losses*	Elderly men		Elderly women	
	n	%	n	%
Borrowed money	163	86.2	89	78.9
Changed occupation	105	55.6	58	50.9
Planted salinity resistant plants	67	35.4	37	32.4
Sold hens & ducks	47	24.9	31	27.2
Sold cows & goats	37	19.6	9	7.8
Migrated to other area	29	15.3	11	7.6
Sold jewellery	7	3.7	5	4.4
Started floating cultivation	1	0.5	2	0.8
Sold land	1	0.5	2	0.8

*Multiple responses.

Table 6.50 Men and women heads of household by measures taken to reduce the losses

Measures taken to reduce the losses*	Men heads of household		Women heads of household	
	n	%	n	%
Borrowed money	145	91.8	122	79.7
Changed occupation	107	67.7	88	57.5
Planted salinity resistant plants	60	38.0	56	36.6
Sold hens & ducks	36	22.8	37	24.8
Sold cows & goats	26	16.5	21	13.7
Migrated to other area	22	13.9	11	7.1
Sold jewellery	6	3.8	3	2.0
Sold utensils	-	-	3	2.0
Mortgaged land	2	1.3	1	0.6
Started floating agriculture	1	0.6	-	-
Sold lands	1	0.6	-	-

*Multiple responses.

Table 6.51 Widowers and widows by measures taken to reduce the losses

Measures taken to reduce the losses*	Widower		Widow	
	n	%	n	%
Borrowed money	61	87.1	2	1.1
Changed occupation	35	50.0	1	0.6
Planted salinity resistant plants	26	37.1	63	35.8
Sold hens & ducks	15	21.4	151	85.8
Sold cows & goats	10	14.3	16	9.1
Migrated to other area	5	7.1	102	57.9
Sold jewellery	5	7.1	1	0.6
Sold utensils	2	2.9	2	1.1

*Multiple responses.

Table 6.52 Men with disabilities and with women with disabilities by measures taken to reduce the losses

Measures taken to reduce the losses*	Men with disabilities		Women with disabilities	
	n	%	n	%
Borrowed money	59	84.3	60	87.0
Changed occupation	30	42.9	40	58.0
Planted salinity resistant plants	27	38.6	23	33.3
Sold hens & ducks	14	20.0	13	18.8
Sold cows & goats	12	17.1	9	13.0
Migrated to other area	12	17.1	4	5.8
Sold jewellery	1	1.4	3	4.3
Mortgaged lands	1	1.4	-	-

*Multiple responses.

Chapter 7

Impacts of disaster on the lives of respondents

7.1 Impact of disaster on health of family members of respondents during and after disasters

7.1.1 Health problems of family members of respondents during disasters

Table 7.1 Health problems suffered by men, women and children during disasters in the households of elderly men and women

Health problems suffered by men during disaster*	Households of elderly men		Households of elderly women	
	n	%	n	%
Depression and anxiety	164	86.8	42	36.8
Fever and cough	51	27.0	5	4.4
Diarrhoea	34	18.0	19	16.7
Accidents and injuries	27	14.3	2	1.8
Memory loss	5	2.6	1	0.9
Jaundice	5	2.6	27	23.7
Skin diseases	4	2.1	5	4.4
Post-traumatic stress disorder	4	2.1	4	2.1
Health problems suffered by women during disaster*	Households of elderly men		Households of elderly women	
	n	%	n	%
Depression and anxiety	162	85.7	56	49.1
Fever and cough	64	33.9	42	36.8
Diarrhoea	56	29.6	33	28.9
Reproductive health related problems	24	21.1	99	86.8
Skin diseases	15	7.9	5	4.4
Memory loss	11	5.8	6	5.3
Accidents and injuries	9	4.8	33	28.9
Jaundice	1	0.5	1	0.9
Post-traumatic stress disorder	1	0.5	7	6.1
Health problems suffered by children during disaster*	Households of elderly men		Households of elderly women	
	n	%	n	%
Fever and cough	42	22.2	20	17.5
Diarrhoea	37	19.8	24	21.1
Depression and anxiety	28	14.8	2	1.8
Accidents and injuries	3	1.6	2	1.8
Skin diseases	2	1.1	19	16.7
Post-traumatic stress disorder	1	0.5	15	13.2

*Multiple responses.

Table 7.2 Health problems suffered by men, women and children during disasters in the households headed by men and women

Health problems suffered by men during disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Depression and anxiety	135	85.4	134	87.6
Fever and cough	32	20.3	50	32.7
Diarrhoea	21	13.3	37	24.2
Accidents and injuries	16	10.1	12	7.8
Post-traumatic stress disorder	6	3.8	5	3.3
Memory loss	5	3.2	8	5.2
Jaundice	1	0.6	1	0.7
Skin disease	-	-	14	9.2
Malaria	-	-	1	0.7
Health problems suffered by women during disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Depression and anxiety	134	84.8	120	78.4
Fever and cough	50	31.6	43	28.1
Diarrhoea	37	23.4	30	19.6
Skin diseases	14	8.9	5	3.3
Accidents and injuries	12	7.6	1	0.7
Memory loss	8	5.1	1	0.7
Post-traumatic stress disorder	5	3.2	-	-
Malaria	1	0.6	-	-
Jaundice	1	0.6	1	0.7
Reproductive health related problems	-	-	1	0.7
Health problems suffered by children during disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Fever and cough	42	26.6	43	28.1
Diarrhoea	34	21.5	30	19.6
Depression and anxiety	16	10.1	20	13.1
Memory loss	4	2.5	1	0.7
Skin diseases	2	1.3	5	3.3
Post-traumatic stress disorder	1	0.6	-	-
Accidents and injuries	1	0.6	1	0.7
Jaundice	-	-	1	0.7
Reproductive health related problems	-	-	1	0.7

*Multiple responses.

Table 7.3 Health problems suffered by men, women and children during disasters in the households of widowers and widows

Health problems suffered by men during disaster*	Widowers		Widows	
	n	%	n	%
Depression and anxiety	61	85.9	66	37.5
Fever and cough	20	28.2	26	14.8
Diarrhoea	15	21.1	15	8.5

Accidents and injuries	6	8.5	5	2.8
Jaundice	3	4.2	-	-
Memory loss	2	2.8	-	-
Skin diseases	2	2.8	5	2.8
Post-traumatic stress disorder	1	1.4	-	-
Health problems suffered by women during disaster*	Widowers		Widows	
	n	%	n	%
Depression and anxiety	38	53.5	136	77.3
Fever & cough	21	29.6	64	36.4
Diarrhoea	15	21.1	36	20.5
Malaria	1	1.4	1	0.6
Reproductive health related problems	1	1.4	1	0.6
Post-traumatic stress disorder	1	1.4	7	4.0
Memory loss			3	1.7
Skin diseases			12	6.8
Accidents and injuries			8	4.5
Health problems suffered by children during disaster*	Widowers		Widows	
	n	%	n	%
Fever and cough	22	31.0	1	0.6
Depression and anxiety	20	28.2	27	15.3
Diarrhea	19	26.8	37	21.0
Memory loss	1	1.4	1	0.6
Skin diseases	1	1.4	1	0.6
Jaundice	-	-	48	27.3
Reproductive health related problems	-	-	3	1.7
Post-traumatic stress disorder	-	-	1	0.6
Accidents and injuries	-	-	2	1.1

*Multiple response.

Table 7.4 Men and women with disabilities by health problems suffered of men, women and children during disasters

Health problems suffered by men during disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Depression and anxiety	63	90.0	48	69.6
Fever and cough	22	31.4	18	26.1
Accidents and injuries	8	11.4	3	4.3
Diarrhea	7	10.0	16	23.2
Post-traumatic stress disorder	4	5.7	1	1.4
Memory loss	-	-	1	1.4
Jaundice	-	-	4	5.4
Health problems suffered by women during disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Depression and anxiety	59	84.3	56	81.2
Fever and cough	26	37.1	27	39.1
Diarrhea	17	24.3	23	33.3
Skin diseases	4	5.7	9	13.0

Reproductive health related problems	3	4.3	-	-
Memory loss	2	2.9	1	1.4
Post-traumatic stress disorder	2	2.9	1	1.4
Accidents and injuries	1	1.4	8	11..6
Health problems suffered by children during disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Diarrhoea	20	28.6	20	29.0
Fever and cough	19	27.1	20	29.0
Depression and anxiety	8	11.4	8	11.6
Skin diseases	1	1.4	-	-
Accidents and injuries	-	-	1	1.4

*Multiple response.

7.1.3 Health problems of family members of respondents after disasters

Table 7.5 Health problems suffered by men, women and children after disasters in the households of elderly men and women

Health problems suffered by men after disaster*	Households of elderly men		Households of elderly women	
	n	%	n	%
Depression and anxiety	112	59.3	55	48.2
Fever and cough	111	58.7	56	49.1
Diarrhea	53	28.0	30	26.3
Skin diseases	21	11.1	13	11.4
Memory loss	12	6.3	6	5.3
Jaundice	4	2.1	3	2.6
Accidents and injuries	4	2.1	1	0.9
Post-traumatic stress disorder	3	1.6	1	0.9
Health problems suffered by women after disaster*	Households of elderly men		Households of elderly women	
	n	%	n	%
Fever and cough	142	75.1	84	73.7
Depression and anxiety	109	57.7	63	55.3
Diarrhea	82	43.4	51	44.7
Skin diseases	27	14.3	23	20.2
Memory loss	3	1.6	8	7.0
Post-traumatic stress disorder	3	1.6	1	0.9
Accidents and injuries	2	1.1	2	1.8
Jaundice	1	0.5	1	0.9
Health problems suffered by children after disaster*	Households of elderly men		Households of elderly women	
	n	%	n	%
Fever and cough	92	48.7	55	62.7
Diarrhea	60	31.7	35	30.7
Depression and anxiety	17	9.0	10	8.8
Skin diseases	16	8.5	12	10.5
Memory loss	3	1.6	9	4.8

* Multiple response

Table 7.6 Health problems suffered by men, women and children after disasters in the households headed by men and women

Health problems suffered by men after disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Depression and anxiety	93	58.9	27	17.6
Fever and cough	88	55.7	38	24.8
Diarrhoea	45	28.5	21	13.7
Skin diseases	19	12.0	7	4.6
Jaundice	6	3.8	2	1.3
Accidents and injuries	4	2.5	3	2.0
Post-traumatic stress disorder	3	1.9	1	1.7
Memory loss	1	0.6	1	1.7
Health problems suffered by women after disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Fever and cough	109	69.0	116	75.8
Depression and anxiety	86	54.4	67	43.8
Diarrhoea	69	43.7	71	46.4
Skin diseases	37	23.4	19	12.4
Post-traumatic stress disorder	4	2.5	2	1.3
Memory loss	2	1.3	7	4.6
Jaundice	1	0.6	35	22.9
Reproductive health related problems	1	0.6	84	54.9
Malaria	-	-	1	0.7
Health problems suffered by children after disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Fever and cough	105	66.5	91	59.5
Diarrhoea	75	47.5	63	41.2
Jaundice	24	15.2	6	3.9
Memory loss	1	0.6	5	3.3
Post-traumatic stress disorder	1	0.6	-	-
Skin diseases	-	-	21	13.7
Depression and anxiety	-	-	7	4.6
Malaria	-	-	2	1.3

*Multiple response.

Table 7.7 Health problems suffered by men, women and children after disasters in the households of widowers and widows

Health problems suffered by men after disaster*	Widowers		Widows	
	n	%	n	%
Depression and anxiety	45	63.4	50	28.4
Fever & cough	38	53.5	13	7.4
Diarrhea	20	28.2	19	10.8
Skin diseases	12	16.9	-	-
Memory loss	3	4.2	52	29.5
Jaundice	2	2.8	5	2.8

Post-traumatic stress disorder	1	1.4	-	-
Accidents and injuries	1	1.4	-	-
Health problems suffered by women after disaster*	Widowers		Widows	
	n	%	n	%
Fever & cough	32	45.1	122	69.3
Depression and anxiety	29	40.8	102	58.0
Diarrhea	27	38.0	78	44.3
Reproductive health related problems	10	14.1	1	0.6
Memory loss	1	1.4	9	5.1
Skin diseases	1	1.4	34	19.3
Post-traumatic stress disorder			5	2.8
Accidents and injuries			1	0.6
Health problems suffered by children after disaster*	Widowers		Widows	
	n	%	n	%
Fever & cough	44	60.6	95	54.0
Diarrhea	28	39.4	73	41.5
Jaundice	2	2.8	1	0.6
Skin diseases	11	15.5	18	10.2
Depression and anxiety	10	14.1	19	10.8
Malaria	-	-	2	1.1
Memory loss	-	-	2	1.1
Post-traumatic stress disorder	-	-	1	0.6

*Multiple response

Table 7.8 Health problems suffered by men, women and children in the households of men and women with disabilities after disasters

Health problems suffered by men after disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Fever & cough	32	51.6	35	60.3
Depression and anxiety	31	50.0	5	8.6
Diarrhea	15	24.2	18	31.0
Skin diseases	7	11.3	4	6.9
Accidents and injuries	6	9.7	1	1.7
Jaundice	1	1.6	22	37.9
Post-traumatic stress disorder	1	1.6	28	48.3
Memory loss	3	4.8	-	-
Malaria	1	1.6	-	-
Health problems suffered by women after disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Fever & cough	47	67.1	54	78.3
Depression and anxiety	37	52.9	46	66.7
Diarrhea	23	32.9	32	46.4
Skin diseases	16	22.9	15	21.7
Memory loss	1	1.4	3	4.3
Jaundice	1	1.4	1	1.4
Reproductive health related problems	1	1.4	-	-
Post-traumatic stress disorder	1	1.4	1	1.4

Accidents and injuries	-	-	2	2.9
Health problems suffered by children after disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Fever & cough	38	55.3	57	82.6
Diarrhea	30	42.9	27	39.1
Skin diseases	8	11.4	12	17.4
Depression and anxiety	5	7.1	4	5.8
Memory loss	1	1.4	-	-

*Multiple response

7.2 Measures taken by respondents and their families to reduce the health impacts during and after disasters

Table 7.9 Elderly men and women by measures taken to reduce the health impact during and after disaster

Measures taken to reduce the health impacts during disaster*	Elderly men		Elderly women	
	n	%	n	%
Went to the pharmacy and brought some medicines	41	21.7	21	18.4
Went to the local/village doctor	39	20.6	21	18.4
Went to the nearby hospital	32	16.9	19	16.7
Went to Community Clinic	25	13.2	12	10.5
Measures taken to reduce the health impact after disaster*				
Went to the local/village doctor	143	75.7	79	69.3
Went to the pharmacy and brought some medicine	109	57.7	70	61.4
Went to Community Clinic	65	34.4	41	36.0
Went to the nearby hospital	40	21.2	20	17.5
Took traditional medicine (<i>Kobiraji</i>)	8	4.2	7	6.1
Did not go to the hospital or doctors and did not take any medicine	1	0.5	2	1.8

*Multiple responses.

Table 7.10 Men and women heads of household by measures taken to reduce the health impact during and after disaster

Measures taken to reduce the health impact during disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Went to the local/village doctor	34	21.5	26	17.0
Went to the nearby hospital	30	19.0	23	15.0
Went to the pharmacy and brought some medicine	20	12.7	22	14.4
Went to Community Clinic	11	7.0	14	9.2
Took traditional medicine (<i>Kobiraji</i>)	1	0.6	1	0.7
Measures taken to reduce the health impact after disaster*				

Went to the local/village doctor	106	67.1	103	67.3
Went to the pharmacy and brought some medicine	91	57.6	84	54.9
Went to Community Clinic	58	36.7	60	39.2
Went to the nearby hospital	36	22.8	38	24.8
Took traditional medicine (<i>Kobiraji</i>)	8	5.1	4	2.6
Did not go to the hospital or doctors and did not take any medicine	3	1.9	3	2.0

*Multiple response.

Table 7.11 Widower and widow by measures taken to reduce the health impact during and after disaster

Measures taken to reduce the health impact during disaster*	Widowers		Widows	
	n	%	n	%
Went to the pharmacy and brought some medicine	19	26.8	18	10.2
Went to the local/village doctor	16	22.5	31	17.61
Went to the nearby hospital	14	19.7	28	15.9
Went to Community Clinic	8	11.3	17	9.7
Took traditional medicine (<i>Kobiraji</i>)	-	-	3	1.7
Measures taken to reduce the health impact after disaster*				
Went to the local/village doctor	52	73.2	126	71.6
Went to the pharmacy and brought some medicine	44	62.0	99	56.3
Went to the nearby hospital	20	28.2	40	22.7
Went to Community Clinic	18	25.4	51	29.0
Took traditional medicine (<i>Kobiraji</i>)	3	4.2	12	6.8
Did not go to the hospital or doctors and did not take any medicine	1	1.4	3	1.7

*Multiple response

Table 7.12 Men and women with disabilities by measures taken to reduce the health impact during and after disaster

Measures taken to reduce the health impact during disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Went to the nearby hospital	14	20.0	12	17.4
Went to the local/village doctor	14	20.0	11	15.9
Went to the pharmacy and brought some medicine	10	14.3	17	24.6
Went to Community Clinic	6	8.6	7	10.1
Took traditional medicine (<i>Kobiraji</i>)	-	-	1	1.4
Measures taken to reduce the health impact after disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Went to the local/village doctor	48	68.6	37	53.6
Went to the pharmacy and brought some medicine	35	50.0	35	50.7

Went to Community Clinic	19	27.1	25	36.2
Went to the nearby hospital	12	17.1	20	29.0
Took traditional medicine (<i>Kobiraji</i>)	1	1.4	6	8.7
Did not go to the hospital or doctors and did not take any medicine	-	-	1	1.4

*Multiple response

7.3 Food consumption patterns of men family members of respondents

Table 7.13 Elderly men and women by food consumption patterns of men before, during and after disaster

Consumption patterns of food by men before disaster*	Elderly men		Elderly women	
	n	%	n	%
Consumption of meat and fish	170	89.9	101	88.6
Unequal food distributed to men and women family members	97	51.3	40	35.1
Consumption of fruits	48	25.4	17	14.9
Hunger and food insecurity	25	13.2	11	9.6
Reducing the number of meals	2	1.1	1	0.9
Consumption patterns of food by men during disaster*				
Hunger and food insecurity	131	69.3	76	66.7
Reducing the number of meals	106	56.1	73	64.0
Unequal food distributed to men and women family members	61	32.3	29	25.4
Consumption of meat and fish	8	4.2	2	1.8
Consumption of fruits	1	0.5	2	1.8
Consumption patterns of food by men after disaster*				
Consumption of meat and fish	156	82.5	93	81.6
Unequal food distributed to men and women family members	87	46.0	38	33.3
Reducing the number of meals	59	31.2	33	28.9
Hunger and food insecurity	36	19.0	28	24.6
Consumption of fruits	29	15.3	10	8.8

*Multiple responses.

Table 7.14 Men and women heads of households by food consumption patterns of men before, during and after disaster

Consumption patterns of food before disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Consumption of meat and fish	140	88.6	69	45.1
Unequal food distributed to men and women family members	86	54.4	29	19.0
Normal food	37	23.4	17	11.1
Consumption of fruits	34	21.5	16	10.5
Food was available	31	19.6	17	11.1
Hunger and food insecurity	9	5.7	15	9.8

Reducing the number of meals	3	1.9	-	-
Dry food	1	0.6	2	1.3
Consumption patterns of food during disaster*				
Hunger and food insecurity	120	75.9	61	39.9
Reducing the number of meals	95	60.1	43	28.1
Dry food	75	47.5	27	17.6
Unequal food distributed to men and women family members	55	34.8	17	11.1
Consumption of fruits	2	1.3		
Consumption of meat and fish	1	0.6	1	0.7
Normal food			7	4.6
Food was available			11	0.7
Consumption patterns of food after disaster*				
Consumption of meat and fish	123	77.8	61	39.9
Unequal food distributed to men and women family members	71	44.9	29	19.0
Reducing the number of meals	68	43.0	33	21.6
Normal food	29	18.4	17	11.1
Consumption of fruits	28	17.7	8	5.2
Hunger and food insecurity	26	16.5	20	13.1
Food was available	17	10.8	10	6.5
Dry food	1	0.6	1	0.7

*Multiple responses.

Table 7.15 Widower and widow by food consumption patterns of men family members before, during and after disaster

Consumption patterns of food before disaster*	Widowers		Widows	
	n	%	n	%
Consumption of meat and fish	61	85.9	91	51.7
Unequal food distributed to men and women family members	34	47.9	43	24.4
Consumption of fruits	17	23.9	16	9.1
Food was available	16	22.5	12	6.8
Normal food	11	15.5	13	7.4
Hunger and food insecurity	3	4.2	14	8.0
Dry food	1	1.4	1	0.6
Consumption patterns of food during disaster*				
Hunger and food insecurity	45	63.4	76	43.2
Reducing the number of meals	44	62.0	41	23.3
Dry food	30	42.3	50	28.4
Unequal food distributed to men and women family members	23	32.4	22	12.5
Consumption of meat and fish	3	4.2		
Consumption of fruits	2	2.8	1	0.6
Consumption patterns of food after disaster				
Consumption of meat and fish	54	76.1	81	46.0

Unequal food distributed to men and women family members	32	45.1	37	21.0
Reducing the number of meals	22	31.0	46	26.1
Food was available	14	19.7	7	4.0
Consumption of fruits	12	16.9	14	8.0
Hunger and food insecurity	8	11.3	22	12.5
Normal food	9	12.7	11	6.3
Dry food	2	2.8	1	0.6

*Multiple response

Table 7.16 Men and women with disabilities by food consumption patterns of men family members before, during and after disaster

Consumption patterns of food before disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Consumption of meat and fish	59	84.3	49	71.0
Three times normal food	33	47.1	9	13.0
Unequal food distributed to men and women family members	33	47.1	28	40.6
Consumption of fruits	14	20.0	7	10.1
Hunger and food insecurity	7	10.0	11	15.9
Consumption of dry food	2	2.9	13	18.8
Unavailability of food	-	-	11	15.9
Consumption patterns of food during disaster*				
Hunger and food insecurity	47	67.1	46	66.7
Reducing the number of meals	43	61.4	33	47.8
Consumption of dry food	29	41.4	24	34.8
Unequal food distributed to men and women family members	20	28.6	20	31.9
Consumption of meat and fish	1	1.4	3	4.3
Consumption of fruits			1	1.4
Consumption patterns of food after disaster*				
Consumption of meat and fish	54	77.1	42	60.9
Unequal food distributed to men and women family members	28	40.0	25	36.2
Three times normal food	23	32.9	5	7.2
Reducing the number of meals	22	31.4	19	27.5
Hunger and food insecurity	13	18.6	16	23.2
Consumption of fruits	9	12.9	5	7.2
Consumption of dry food	6	8.6	6	11.6
Unavailability of food	-	-	6	11.6

*Multiple response

7.4 Food consumption patterns of women family members of respondents

Table 7.17 Elderly men and women by food consumption patterns of women family members before, during and after disaster

Consumption patterns of food before disaster*	Elderly men		Elderly women	
	n	%	n	%
Consumption of meat and fish	171	90.5	106	93.0
Unequal food distributed to men and women family members	160	84.7	78	68.4
Consumption of fruits	47	24.9	18	15.8
Hunger and food insecurity	25	13.2	11	9.6
Reducing the number of meals	2	1.1	2	1.8
Consumption patterns of food during disaster*				
Hunger and food insecurity	131	69.3	81	71.1
Unequal food distributed to men and women family members	125	66.1	61	53.5
Reducing the number of meals	108	57.1	76	66.7
Consumption of meat and fish	8	4.2	2	1.8
Consumption patterns of food after disaster				
Consumption of meat and fish	158	83.6	98	86.0
Unequal food distributed to men and women family members	146	77.2	74	64.9
Reducing the number of meals	62	32.8	36	31.6
Hunger and food insecurity	39	20.6	29	25.4
Consumption of fruits	29	15.3	12	10.5

*Multiple response.

Table 7.18 Men and women heads of household by food consumption patterns of women family members before, during and after disaster

Consumption patterns of food before disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Consumption of meat and fish	140	88.6	135	88.2
Unequal food distributed to men and women family members	129	81.6	107	70.0
Normal food	37	23.4	19	12.4
Consumption of fruits	34	21.5	33	21.6
Food was available	30	19.0	13	8.5
Hunger and food insecurity	9	5.7	32	20.9
Reducing the number of meals	4	2.5	3	2.0
Dry food	1	0.6	3	2.0
Consumption patterns of food during disaster*				
Hunger and food insecurity	118	74.7	117	76.5
Unequal food distributed to men and women family members	96	60.8	83	54.2
Reducing the number of meals	95	60.1	87	56.9
Dry food	75	47.5	61	39.9
Consumption of fruits	2	1.3	3	2.0
Consumption of meat and fish	-	-	4	2.6

Consumption patterns of food after disaster*				
Consumption of meat and fish	123	77.8	123	80.4
Unequal food distributed to men and women family members	115	72.8	102	66.7
Reducing the number of meals	68	43.0	59	38.6
Normal food	29	18.4	17	11.1
Consumption of fruits	27	17.1	19	12.4
Hunger and food insecurity	26	16.5	42	27.5
Food was available	16	10.1	7	4.6
Dry food	1	0.6	5	3.3

*Multiple response.

Table 7.19 Widower and widow by food consumption patterns of women family members before, during and after disaster

Consumption patterns of food before disaster*	Widowers		Widows	
	n	%	n	%
Consumption of meat and fish	50	70.4	159	90.3
Unequal food distributed to men and women family members	44	62.0	128	72.7
Food was available	14	19.7	27	15.3
Consumption of fruits	12	16.9	39	22.2
Normal food	9	12.7	33	18.8
Hunger and food insecurity	4	5.6	22	12.5
Dry food	1	1.4	5	2.8
Reducing the number of meals	-	-	2	1.1
Consumption patterns of food during disaster*				
Hunger and food insecurity	36	50.7	138	78.4
Reducing the number of meals	35	49.3	87	49.4
Unequal food distributed to men and women family members	35	49.3	98	55.7
Normal food			3	1.7
Food was available			2	1.1
Dry food	27	38.0	79	44.9
Consumption of fruits	2	2.8	1	0.6
Consumption of meat and fish	-	-	8	4.5
Consumption patterns of food after disaster				
Consumption of meat and fish	44	62.0	146	83.0
Unequal food distributed to men and women family members	41	57.7	115	65.3
Reducing the number of meals	19	26.8	75	42.6
Food was available	11	15.5	21	11.9
Hunger and food insecurity	9	12.7	35	19.9
Consumption of fruits	8	11.3	33	18.8
Normal food	8	11.3	34	19.3
Dry food	1	1.4	6	3.4

*Multiple response.

Table 7.20 Men and women with disabilities by food consumption patterns of women family members before, during and after disaster

Consumption patterns of food before disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Consumption of meat and fish	58	82.9	58	84.1
Unequal food distributed to men and women family members	54	77.1	51	73.9
Three times normal food	32	45.7	16	23.2
Consumption of fruits	13	18.6	9	13.0
Hunger and food insecurity	7	10.0	12	17.4
Consumption of dry food	2	2.9	2	2.9
Unavailability of food			13	18.8
Consumption patterns of food during disaster*				
Hunger and food insecurity	48	68.6	46	66.7
Reducing the number of meals	41	58.6	33	47.8
Unequal food distributed to men and women family members	40	57.1	35	50.7
Consumption of dry food	30	42.9	21	30.4
Consumption of meat and fish	2	2.9	3	4.3
Consumption patterns of food after disaster*				
Consumption of meat and fish	53	75.7	28	40.6
Unequal food distributed to men and women family members	46	65.7	15	21.7
Reducing the number of meals	22	31.4	44	63.8
Three times normal food	20	28.6	6	8.7
Consumption of fruits	10	14.3	40	58.0
Hunger and food insecurity	10	14.3	17	24.6
Consumption of dry food	7	10.0	11	15.9
Unavailability of food	3	4.3	11	15.9

*Multiple response

7.5 Food consumption patterns of children as family members of respondents

Table 7.21 Elderly men and women by food consumption patterns of children before, during and after disaster

Consumption patterns of food before disaster*	Elderly men		Elderly women	
	n	%	n	%
Consumption of meat and fish	116	61.4	71	62.3
Unequal food distributed to boys and girls	73	38.6	31	27.2
Consumption of fruits	29	15.3	12	10.5
Hunger and food insecurity	10	5.3	3	2.6
Reducing the number of meals	1	0.5	2	1.8
Consumption patterns of food during disaster*				
Hunger and food insecurity	74	39.2	43	37.7
Reducing the number of meals	64	33.9	43	37.7
Unequal food distributed to boys and girls	51	27.0	22	19.3
Consumption of meat and fish	5	2.6	35	30.7
Consumption of fruits	1	0.5	5	4.4

Consumption patterns of food after disaster*				
Consumption of meat and fish	108	57.1	62	54.4
Unequal food distributed to boys and girls	69	36.5	27	23.7
Reducing the number of meals	27	14.3	18	15.8
Consumption of fruits	22	11.6	9	7.9
Hunger and food insecurity	18	9.5	12	10.5

*Multiple response

Table 7.22 Men and women heads of household by food consumption patterns of children before, during and after disaster

Consumption patterns of food before disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Consumption of meat and fish	130	82.3	113	73.9
Unequal food distributed to boys and girls	75	47.5	59	38.6
Consumption of fruits	36	22.8	32	20.9
Normal food	21	13.3	36	23.5
Food was available	14	8.9	22	14.4
Hunger and food insecurity	4	2.5	16	10.5
Reducing the number of meals	3	1.9	1	0.7
Dry food	2	1.3	1	0.7
Consumption patterns of food during disaster*				
Hunger and food insecurity	61	38.60	75	49.0
Dry food	56	35.4	74	48.4
Reducing the number of meals	43	27.2	60	39.2
Unequal food distributed to boys and girls	17	10.8	41	26.8
Food was available	7	4.4		
Normal food	6	3.8		
Consumption of meat and fish	1	0.6	3	2.0
Consumption of fruits	-	-	2	1.3
Consumption patterns of food after disaster*				
Consumption of meat and fish	112	70.9	105	68.6
Unequal food distributed to boys and girls	63	39.9	55	35.9
Reducing the number of meals	41	25.9	31	20.3
Consumption of fruits	30	19.0	23	15.0
Normal food	20	12.7	28	18.3
Hunger and food insecurity	14	8.9	23	15.0
Food was available	7	4.4	15	9.8
Dry food	2	1.3	1	0.7

*Multiple response

Table 7.23 Widower and widow by food consumption patterns of children before, during and after disaster

Consumption patterns of food before disaster*	Widower		Widow	
	n	%	n	%
Consumption of meat and fish	51	71.8	132	75.0
Unequal food distributed to boys and girls	28	39.4	73	41.5
Consumption of fruits	15	21.1	34	19.3
Food was available	12	16.9	20	11.4
Normal food	8	11.3	30	17.0
Dry food			1	0.6
Hunger and food insecurity	2	2.8	10	5.7
Reducing the number of meals			1	0.6
Consumption patterns of food during disaster*				
Hunger and food insecurity	33	46.5	98	55.7
Reducing the number of meals	31	43.7	60	34.1
Normal food			67	38.1
Food was available			2	1.1
Dry food	25	35.2	3	1.7
Unequal food distributed to boys and girls	17	23.9	50	28.4
Consumption of fruits	5	7.0	5	2.8
Consumption of meat and fish	2	2.8	7	4.0
Consumption patterns of food after disaster				
Consumption of meat and fish	43	60.6	122	69.3
Unequal food distributed to boys and girls	24	33.8	64	36.4
Reducing the number of meals	17	23.9	48	27.3
Consumption of fruits	11	15.5	28	15.9
Food was available	10	14.1	15	8.5
Hunger and food insecurity	8	11.3	20	11.4
Normal food	7	9.9	31	17.6
Dry food			4	2.3

*Multiple response.

Table 7.24 Men and women with disabilities by food consumption patterns of children before, during and after disaster

Consumption patterns of food before disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Consumption of meat and fish	49	70.0	47	68.1
Three times normal food	25	35.7	10	14.5
Unequal food distributed to boys and girls	22	31.4	22	31.9
Consumption of fruits	13	18.6	11	15.9
Hunger and food insecurity	5	7.1	5	7.2
Consumption of dry food	2	2.9	-	-
Unavailability of food	1	1.4	11	15.9
Consumption patterns of food during disaster*				
Reducing the number of meals	33	47.1	26	37.7

Hunger and food insecurity	27	38.6	30	43.5
Consumption of dry food	23	32.9	15	21.7
Unequal food distributed to boys and girls	16	22.9	14	20.3
Consumption of meat and fish	3	4.3	20	29.0
Consumption of fruits	2	2.9	3	4.3
Unavailability of food	2	2.9	5	7.2
Consumption patterns of food after disaster*				
Consumption of meat and fish	45	64.3	40	58.0
Unequal food distributed to boys and girls	21	30.0	20	29.0
Three times normal food	20	28.6	6	8.7
Reducing the number of meals	10	14.3	14	20.3
Consumption of fruits	9	12.9	8	11.6
Hunger and food insecurity	8	11.4	6	8.7
Consumption of dry food	6	8.6	1	1.4

*Multiple response.

7.6 Livelihood activities before disasters and impacts after disasters of respondent families

7.6.1 Livelihood activities before disasters

Table 7.25 Elderly men and women by livelihood activities of men, women and children before disaster

Livelihood activities of men before disaster*	Elderly men		Elderly women	
	n	%	n	%
Agricultural day labourer	74	39.2	42	36.8
Livestock rearing (goats, cow etc.)	50	26.5	9	7.9
Day labourer for mud or construction work	25	13.2	21	18.4
Fishing	16	8.5	17	14.9
Shrimp and crab cultivation day labourers	14	7.4	3	2.6
Shrimp cultivation (own)	12	6.3	-	-
Homestead gardening	10	5.3	17	14.9
Rickshaw or van puller	7	3.7	42	36.8
Agriculture in own land	4	2.1	1	0.9
Collector of fuel wood from forest for selling	3	1.6	6	5.3
Honey collector	3	1.6	9	7.9
Share cropper in agriculture	2	1.1	1	0.9
Poultry farming	1	0.5	1	0.9
Mason	1	0.5	1	0.9
Livelihood activities of women before disaster*				
Poultry farming	107	56.6	72	63.2
Livestock rearing of goats and cows	77	40.7	43	37.7
Agricultural day labourer	5	2.6	9	7.9
Fishing	5	2.6	5	4.4
Shrimp and crab cultivation day labourers	2	1.1	2	1.8
Day labourer for mud or construction work	1	0.5	4	3.5

Homestead gardening	-	-	1	0.9
Livelihood activities of children before disaster*				
Day labourer for mud or construction work	7	3.7	1	0.9
Agricultural day labourer	3	1.6	1	0.9
Livestock rearing of goats and cows	2	1.1	1	0.9
Fishing	2	1.1	1	0.9
Poultry farming	1	0.5	1	0.9
Shrimp and crab cultivation day labourers	1	0.5	3	2.6

*Multiple responses.

Table 7.26 Men and women heads of household by livelihood activities of men, women and children before disaster

Livelihood activities of men before disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Agricultural day labourer	70	44.3	65	42.5
Day labourer for mud or construction work	53	33.5	11	7.2
Livestock rearing of goats and cows	28	17.7	7	4.6
Fishing	28	17.7	4	2.6
Rickshaw or van puller	12	7.6	1	0.7
Shrimp and crab cultivation day labourers	9	5.7	4	2.6
Small business	6	3.8	-	-
Homestead gardening	3	1.9	-	-
Poultry farming	3	1.9	-	-
Agriculture in own land	3	1.3	25	16.3
Mason	3	1.9	-	-
Shrimp cultivation by owner	2	1.3	-	-
Collector of forest produce like fuel wood for selling	2	1.3	-	-
Share cropper in agriculture	1	0.6	-	-
Honey collector	1	0.6	-	-
Livelihood activities of women before disaster*				
Poultry farming	90	57.0	91	59.5
Livestock rearing of goats and cow	57	36.1	50	32.7
Agricultural day labourer	8	5.1	53	36.4
Homestead gardening	2	1.3	2	1.3
Shrimp cultivation by owner	2	1.3	4	2.6
Tailor	2	1.3	5	3.3
Day labourer for mud or construction work	2	1.3	33	
Shrimp and crab cultivation day labourers	1	0.6	5	3.3
Fisherman	-	-	25	16.3
Domestic worker	-		10	6.5
Agriculture in own land	-	-	1	0.7
Livelihood activities of children before disaster*				
Agricultural day labourer	3	1.9	-	-

Fisherman	2	1.3	1	0.7
Agriculture in own land	1	0.6	1	0.7
Homestead gardening	1	0.6	-	-
Poultry farming	1	0.6	-	-
Day labourer for mud or construction work	1	0.6	1	0.7

*Multiple response.

Table 7.27 Widower and widow by livelihood activities of men, women and children before disaster

Livelihood activities of men before disaster*	Widower		Widow	
	n	%	n	%
Agricultural day labourer	28	39.4	46	26.1
Livestock rearing (goats, cow etc.)	14	19.7	15	8.5
Day labourer for mud or construction work	11	15.5	18	10.2
Shrimp and crab cultivation day labourers	8	11.3	-	-
Fishing	7	9.9	4	2.3
Small business	6	8.5	5	
Homestead gardening	5	7.0	-	-
Agriculture in own land	4	5.6	1	0.6
Shrimp cultivation by owner	4	5.6	3	1.7
Poultry farming	3	4.2	3	1.7
Mason	2	2.8	-	-
Rickshaw or van puller	2	2.8	3	1.7
Livelihood activities of women before disaster*				
Poultry farming	23	32.4	105	59.7
Livestock rearing of goats and cow	21	29.6	60	34.1
Agricultural day labourer	2	2.8	50	28.4
Day labourer for mud or construction work	-	-	28	15.9
Fishing	-	-	16	9.1
Domestic worker			8	4.6
Agriculture in own land	1	1.4	1	0.6
Shrimp and crab cultivation day labourers	1	1.4	3	1.7
Livelihood activities of children before disaster*				
Shrimp and crab cultivation day labourers	2	2.8	2	1.1
Day labourer for mud or construction work	2	2.8	1	0.6
Agricultural day labourer	1	1.4	4	2.3
Shrimp cultivation in family own land	1	1.4	1	0.6
Rickshaw or van puller	1	1.4	1	0.6
Fishing	1	1.4	1	0.6

*Multiple response.

Table 7.28 Men and women with disabilities by type of livelihood activities by men, women and children before disaster

Livelihood activities of men before disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Agricultural day laborer	15	21.4	23	33.3
Fisherman and fish seller	12	17.1	4	5.8
Livestock rearing (goats, cow etc.)	10	14.3	11	15.9
Day laborer for mud or construction work	8	11.4	11	15.9
Grocery shops	4	5.7	2	2.9
Poultry farming	2	2.9	3	4.3
Homestead gardening	1	1.4	1	1.4
Shrimp cultivation by owner	2	2.9	1	1.4
Shrimp and crab cultivation day laborer	1	1.4	1	1.4
Collector of forest produce (fuel wood for selling)	1	1.4	-	
Rickshaw or van puller and bike rider	1	1.4	3	4.3
Tuition	-	-	1	1.4
Livelihood activities of women before disaster*				
Poultry farming	35	50.0	41	59.4
Livestock rearing of goats and cows	23	32.9	22	31.9
Agricultural day labourer	4	5.7	-	-
Domestic workers	2	2.9	9	13.0
Day labourer for mud or construction work	2	2.9	4	5.8
Agriculture in own land	1	1.4	4	5.8
Homestead gardening	1	1.4	1	1.4
Fisherman	1	1.4	3	4.3
Grocery shops	-	-	2	2.9
Tailoring	-	-	2	2.9
Quack	-	-	1	1.4
Livelihood activities by children before disaster*				
Shrimp and crab cultivation labourers	2	2.9	2	2.9
Agricultural day labourer	1	1.4	1	1.4
Livestock rearing of goats and cow	-	-	1	1.4
Poultry farming	-	-	1	1.4
Day labourer for mud or construction work	-	-	2	2.9

*Multiple response

7.6.3 Impact of livelihood activities after disasters among respondent families

Table 7.29 Elderly men and women by whether there were changes in their livelihood activities due to disasters

Whether there were changes in livelihood activities due to disaster	Elderly men		Elderly women	
	n	%	n	%
Yes	126	66.7	79	69.3
No	63	33.3	35	30.7
Total	189	100	114	100

Table 7.30 Elderly men and women by livelihood activities by men, women and children after disaster

Livelihood activities of men after disaster*	Elderly men		Elderly women	
	n	%	n	%
Day labourer for mud or construction work	29	15.3	25	21.9
Fisherman	26	13.8	9	7.9
Agricultural day labourer	17	9.0	4	3.5
Livestock rearing of goats and cow	16	8.5	3	2.6
Homestead gardening	7	3.7	1	0.9
Shrimp and crab cultivation day labourers	6	3.2	-	
Rickshaw or van puller	4	2.1	12	10.5
Poultry farming	3	1.6	2	1.8
Shrimp cultivation by owner	3	1.6	-	
Mason	3	1.6	10	8.8
Share cropper in agriculture	1	0.5	10	8.8
Collector of forest produce (fuel wood for selling)	1	0.5	-	-
Livelihood activities of women after disaster*				
Poultry farming	25	13.2	15	13.2
Livestock rearing of goats and cow	20	10.6	10	8.8
Day labourer for mud or construction work	5	2.6	5	4.4
Fisherman	5	2.6	6	5.3
Agricultural day labourer	4	2.1	3	2.6
Homestead gardening	1	0.5	2	1.8
Shrimp cultivation by owner	1	0.5	2	1.8
Shrimp and crab cultivation day labourers	1	0.5	-	
Livelihood activities of children after disaster*				
Day labourer for mud or construction work	8	4.2	4	3.5
Rickshaw or van puller	2	1.1	-	
Fisherman	2	1.1	-	
Agricultural day labourer	1	0.5	3	2.6
Livestock rearing of goats and cow	1	0.5	2	1.8
Shrimp and crab cultivation day labourers	1	0.5	3	2.6
Mason	1	0.5	1	0.9

*Multiple responses.

Table 7.31 Men and women heads of household by whether there were changes in livelihood activities due to disasters

Whether there were changes in livelihood activities due to disaster	Men heads of household		Women heads of household	
	n	%	n	%
Yes	116	73.4	100	65.4
No	42	26.6	53	34.6
Total	158	100.0	153	100.0

Table 7.32 Men and women heads of household by livelihood activities by men, women and children after disaster

Livelihood activities of men after disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Day labourer for mud or construction work	39	24.7	15	9.8
Rickshaw or van puller	17	10.8	8	5.2
Shrimp and crab cultivation day labourers	16	10.1	1	0.7
Agricultural day labourer	15	9.5	-	-
Fishing	10	6.3	5	3.3
Livestock rearing of goats and cow	10	6.3	1	0.7
Small business	6	3.8	-	-
Share cropper in agriculture	5	3.2	4	2.6
Homestead gardening	4	2.5	-	-
Poultry farming	3	1.9	-	-
Agriculture in own land	3	1.9	1	0.7
Mason	2	1.3	2	1.3
Tailor	2	1.3	-	-
Shrimp cultivation by owner	2	1.3	-	-
Collector of forest produce (fuel wood for selling)	1	0.6	-	-
Honey collector	1	0.6	-	-
Livelihood activities of women after disaster*				
Poultry farming	17	10.8	24	15.7
Livestock rearing of goats and cow	11	7.0	19	12.4
Homestead gardening	4	2.5	3	2.0
Domestic worker			10	6.5
Shrimp and crab cultivation day labourers	2	1.3	17	11.1
Day labourer for mud or construction work	2	1.3	25	16.3
Agricultural day labourer	2	1.3	20	13.1
Fisherman	1	0.6	17	11.1
tailor			5	3.3
tutor			2	1.3
Cook in hotel			2	1.3
Livelihood activities of children after disaster*				
Day labourer for mud or construction work	15	9.5	7	4.6
Agricultural day labourer	2	1.3	2	1.3
Shrimp and crab cultivation day labourers	2	1.3	2	1.3
Shrimp cultivation by owner	1	0.6	-	-
Rickshaw or van puller	1	0.6	1	0.7
Fishing	1	0.6	1	0.7
Poultry farming	-	-	1	0.7

*Multiple response.

Table 7.33 Widowers and widows by whether there were changes in livelihood activities due to disasters

Whether there were changes in livelihood activities due to disaster	Widower		Widow	
	n	%	n	%
Yes	46	64.8	128	72.7
No	25	35.2	48	27.3
Total	71	100	176	100

Table 7.34 Widower and widow by livelihood activities by men, women and children after disaster

Livelihood activities by men after disaster*	Widower		Widow	
	n	%	n	%
Day labourer for mud or construction work	14	19.7	4	2.3
Agricultural day labourer	9	12.7	13	7.4
Shrimp and crab cultivation day labourers	7	9.9	1	0.6
Fisherman	7	9.9	7	4.0
Livestock rearing of goats and cow	4	5.6	5	2.8
Rickshaw or van puller	4	5.6	17	9.7
Small business	2	2.8	3	1.7
Share cropper in agriculture	2	2.8	1	0.6
Homestead gardening	2	2.8	2	1.1
Poultry farming	2	2.8	1	0.6
Shrimp cultivation by owner	2	2.8	3	4.2
Honey collector	2	2.8	1	0.6
Livelihood activities by women after disaster*				
Agricultural day labourer	2	2.8	18	10.2
Domestic worker	-	-	13	7.4
Homestead gardening	2	2.8	4	2.3
Agriculture in own land	1	1.4	1	0.6
Livestock rearing of goats and cow	1	1.4	17	9.7
Poultry farming	1	1.4	24	13.6
Shrimp and crab cultivation day labourers	1	1.4	16	9.1
Day labourer for mud or construction work	1	1.4	21	11.9
Fisherman	1	1.4	11	6.3
Livelihood activities by children after disaster*				
Shrimp and crab cultivation day labourers	3	4.2	1	0.6
Rickshaw or van puller	3	4.2	1	0.6
Mason	2	2.8	1	0.6
Agricultural day labourer	1	1.4	3	1.7
Livestock rearing of goats and cow	1	1.4	2	1.1
Poultry farming	1	1.4	1	0.6
Shrimp cultivation by owner	1	1.4	1	0.6
Day labourer for mud or construction work	1	1.4	11	6.3
Boatman	-	-	2	1.1

*Multiple response.

Table 7.35 Men and women with disabilities by whether there were changes in livelihood activities due to disasters

Whether there were changes in livelihood activities due to disaster	Men with disabilities		Women with disabilities	
	n	%	n	%
Yes	42	60	47	68.1
No	28	30	22	31.9
Total	70	100	69	100

Table 7.36 Men and women with disabilities by livelihood activities by men, women and children after disaster

Livelihood activities of men after disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Boatman	13	18.6	-	-
Day laborer for mud or construction work	7	10.0	17	24.6
Share cropper in agriculture	6	8.6	1	1.4
Shrimp and crab cultivation day labourers	6	8.6	3	4.3
Homestead gardening	5	7.1	1	1.4
Livestock rearing of goats and cows	4	5.7	1	1.4
Fishing	4	5.7	2	2.9
Shrimp cultivation by owner	3	4.3	2	2.9
Agriculture in own land	2	2.9	-	-
Agricultural day labourer	2	2.9	2	2.9
Grocery shops	2	2.9	1	1.4
Poultry farming	1	1.4	1	1.4
Rickshaw or van puller and auto bike	1	1.4	1	1.4
Service holder	1	1.4	-	-
Tailoring	-	-	2	2.9
Livelihood activities of women after disaster*				
Poultry farming	8	11.4	7	10.1
Livestock rearing of goats and cow	7	10.0	2	2.9
Agricultural day labourer	4	5.7	1	1.4
Fishing	2	2.9	3	4.3
Tailoring	2	2.9	3	4.3
Grocery shops	2	2.9	-	-
Agriculture in own land	1	1.4	-	-
Shrimp and crab cultivation day labourers	1	1.4	11	15.9
Day labourer for mud or construction work	3	4.3	1	1.4
Shrimp cultivation by owner	1	1.4	-	-
Homestead gardening	-	-	3	4.3
Domestic worker	-	-	4	5.8
Livelihood activities of children after disaster*				
Day labourer for mud or construction work	6	8.6	1	1.4
Shrimp and crab cultivation day labourers	2	2.9	2	2.9
Grocery shops	1	1.4	-	-
Livestock rearing of goats and cow	-	-	1	1.4
Poultry farming	-	-	2	2.9
Fishing	-	-	3	4.3

*Multiple response.

7.7 Alternative livelihood options in the area perceived by respondents

Table 7.37 Elderly Men and Women by existing alternative livelihood options in the area for men, women and adolescents

Existing alternative livelihood options in the area for men*	Elderly men		Elderly women	
	n	%	n	%
Small trading	187	98.9	113	99.1
Animal husbandry	182	96.3	109	95.6
Fish cultivation	182	96.3	107	93.9
Van pulling	181	95.8	109	95.6
Shrimp cultivation	178	94.2	99	86.8
Vending	82	43.4	49	43.0
Migration	76	40.2	48	42.1
Crab cultivation	72	38.1	44	38.6
Nursery	28	14.8	16	14.0
Floating gardening	10	5.3	8	7.0
Existing alternative livelihood options in the area for women *				
Animal husbandry	180	95.2	111	97.4
Small trading	154	81.5	101	88.6
Migration	43	22.8	24	21.1
Vending	17	9.0	17	14.9
Fish cultivation	5	2.6	5	4.4
Floating gardening	4	2.1	3	2.6
Shrimp cultivation	4	2.1	4	3.5
Nursery	3	1.6	4	3.5
Van pulling	1	0.5	2	1.8
Crab cultivation	1	0.5	4	3.5
Existing alternative livelihood options in the area for adolescents*				
Small trading	110	58.2	79	69.3
Van pulling	107	56.6	70	61.4
Animal husbandry	52	27.5	34	29.8
Vending	40	21.2	22	19.3
Fish cultivation	22	11.6	3	2.6
Shrimp cultivation	17	9.0	7	6.1
Crab cultivation	15	7.9	13	11.4
Migration	7	3.7	9	7.9

*Multiple response.

Table 7.38 Male headed household and Female headed household by existing alternative livelihood options in the area for men, women and adolescents

Existing alternative livelihood options in the area for men*	Men heads of household		Women heads of household	
	n	%	n	%
Small trading	158	100.0	152	99.3
Van pulling	155	98.1	151	98.7
Fish cultivation	153	96.8	146	95.4
Animal husbandry	150	94.9	143	93.5
Shrimp cultivation	144	91.1	135	88.2

Vending	71	44.9	68	44.4
Crab cultivation	62	39.2	60	39.2
Migration	59	37.3	59	38.6
Tailor	33	20.9	19	12.4
Fisherman	20	1.7	18	11.8
Nursery	17	10.8	20	13.1
Floating gardening	10	6.3	5	3.3
Handicraft	5	3.2	2	1.3
Honey Collector	4	2.5	15	9.8
Floating seller			39	25.5
Existing alternative livelihood options in the area for women *				
Animal husbandry	150	94.9	145	94.8
Small trading	131	82.9	128	83.7
Tailor	44	27.8	42	27.5
Migration	36	22.8	40	26.1
Vending	20	12.7	17	11.1
Fisherman	18	11.4	15	9.8
Floating gardening	6	3.8	2	1.3
Fish cultivation	5	3.2	8	5.2
Shrimp cultivation	5	3.2	4	2.6
Handicraft	5	3.2	2	1.3
Honey Collector	2	1.3	6	3.9
Nursery	2	1.3	1	0.7
Van pulling	1	0.6	1	0.7
Crab cultivation	-	-	2	1.3
Floating seller			26	17
Existing alternative livelihood options in the area for adolescents*				
Van pulling	96	60.8	88	57.5
Small trading	89	56.3	91	59.5
Animal husbandry	49	31.0	44	28.8
Vending	37	23.4	31	20.3
Tailor	33	20.9	32	20.9
Fish cultivation	20	12.7	16	10.5
Shrimp cultivation	15	9.5	13	8.5
Fisherman	15	9.5	18	11.8
Crab cultivation	14	8.9	9	5.9
Migration	6	3.8	3	2.0
Handicraft	5	3.2	2	1.3
Honey Collector	3	1.9	10	6.5
Nursery	2	1.3	2	1.3
Floating gardening	1	0.6	1	0.7
Floating seller			35	22.9

*Multiple response.

Table 7.39 Widower and widow by existing alternative livelihood options in the area for men, women and adolescents

Existing alternative livelihood options in the area for men*	Widower		Widow	
	n	%	n	%
Small trading	70	98.6	174	98.9
Fish cultivation	67	94.4	171	97.2
Van pulling	66	93.0	174	98.9
Animal husbandry	66	93.0	169	96.0
Shrimp cultivation	64	90.1	157	89.2
Vending	31	43.7	63	35.8
Migration	29	40.8	57	32.4
Crab cultivation	28	39.4	74	42.0
Nursery	10	14.1	26	14.8
Floating gardening	4	5.6	7	4.0
Existing alternative livelihood options in the area for women*				
Animal husbandry	65	91.5	166	94.3
Small trading	60	84.5	139	79.0
Migration	16	22.5	33	18.8
Vending	9	12.7	12	6.8
Nursery	3	4.2	2	1.1
Fish cultivation	3	4.2	4	2.3
Floating gardening	1	1.4	1	0.6
Crab cultivation	1	1.4	1	0.6
Shrimp cultivation	1	1.4	3	1.7
Existing alternative livelihood options in the area for adolescents*				
Small trading	44	62.0	99	56.3
Van pulling	38	53.5	91	51.7
Vending	18	25.4	28	15.9
Animal husbandry	15	21.1	39	22.2
Fish cultivation	10	14.1	1	0.6
Shrimp cultivation	8	11.3	11	6.3
Crab cultivation	7	9.9	17	9.7
Migration	3	4.2	15	8.5

*Multiple response.

Table 7.40 Men and women with disabilities by existing alternative livelihood options in the area for men

Existing alternative livelihood options in the area for men*	Men with disabilities		Women with disabilities	
	n	%	n	%
Small trading	70	100.0	69	100.0
Van pulling	67	95.7	65	94.2
Animal husbandry	68	97.1	65	94.2
Fish cultivation	66	94.3	67	97.1
Shrimp cultivation	62	88.6	63	91.3
Crab cultivation	31	44.3	28	40.6
Migration	30	42.9	28	40.6

Vending	24	34.3	24	34.8
Tailoring	13	18.6	11	15.9
Nursery	13	18.6	8	11.6
Handicraft	4	5.7	4	5.8
Honey collection	2	2.9	2	2.9
Fisherman	3	4.3	4	5.8
Day labourer	2	2.9	2	2.9
Floating seller	4	5.7	3	4.3
Agriculture in own land	2	2.9	3	4.3
Begging	1	1.4	2	2.9
Carpentry	1	1.4	-	-
Existing alternative livelihood options in the area for women *				
Animal husbandry	66	94.3	67	97.1
Small trading	63	90.0	52	75.4
Tailoring	20	28.6	15	21.7
Migration	16	22.9	18	26.1
Vending	6	8.6	10	14.5
Handicraft and <i>katha</i> stitching	4	5.7	5	7.2
Shrimp cultivation	3	4.3	-	
Fisherman	3	4.3	1	1.4
Fish cultivation	2	2.9	1	1.4
Crab cultivation	2	2.9	-	
Day labour	2	2.9	2	2.9
Van pulling	1	1.4	-	
Nursery	1	1.4	3	4.3
Wood collection	1	1.4	-	
Vegetable cultivation	3	4.3	2	2.9
Begging	1	1.4	2	2.9
Existing alternative livelihood options in the area for adolescents*				
Small trading	48	64.6	41	59.4
Van pulling	38	54.3	34	49.3
Animal husbandry	22	31.4	16	23.2
Tailoring	17	24.3	13	18.8
Vending	7	10.0	14	20.3
Shrimp cultivation	6	8.6	5	7.2
Handicraft	4	5.7	4	5.8
Fish cultivation	4	5.7	5	7.2
Crab cultivation	4	5.7	5	7.2
Nursery	2	2.9	-	
Migration	2	2.9	3	4.3
Fisherman	2	2.9	-	
Honey collector	1	1.4	1	1.4
Carpentry	1	1.4	-	
Day labour	1	1.4	1	1.4

*Multiple response.

7.8 Water sources before, during and after disasters

Table 7.41 Elderly men and women by source of water before, during and after disaster

Source of water before disaster*	Elderly men		Elderly women	
	n	%	n	%
Pond	129	68.3	80	70.2
Tube-well	72	38.1	41	36.0
Tap water	32	16.9	16	14.0
Source of water during disaster*				
Pond	78	41.3	54	47.4
Tube-well	44	23.3	23	20.2
Tap water	12	6.3	9	7.9
Source of water after disaster*				
Pond	127	67.2	78	68.4
Tube-well	70	37.0	42	36.8
Tap water	33	17.5	52	45.6
Well	1	0.5	1	0.9
River	1	0.5	16	14.0

*Multiple response.

Table 7.42 Men and women heads of household by source of water before, during and after disaster

Source of water before disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Pond	102	64.6	104	68.0
Pressure sand filter (PSF)	88	55.7	82	30.3
Tube-well	53	33.5	54	35.3
Tap water	17	10.8	17	11.1
Reverse osmosis	2	1.3	1	0.6
Rain Water	1	0.6	-	-
River	-	-	2	1.3
Source of water during disaster*				
Bottle water being provided by government organizations, NGOs and community people	84	53.2	83	54.2
Pond	64	40.5	60	39.2
Pressure sand filter (PSF)	46	29.1	41	26.8
Tube-well	26	16.5	20	13.1
Tap water	11	7.0	9	5.9
Rain water	9	5.7	19	12.4
Reverse osmosis	8	5.1	10	6.5
River	-	-	1	0.7
Source of water after disaster*				
Pond	100	63.3	41	26.8
Pressure sand filter (PSF)	78		83	
Tube-well	53	33.5	62	40.5
Tap water	20	12.7	34	22.2

Reverse osmosis	3		3	
Bottle water being provided by government organizations, NGOs and community people	1		8	
Rain water	1			

*Multiple response.

Table 7.43 Widower and widow by source of water before, during and after disaster

Source of water before disaster*	Widower		Widow	
	n	%	n	%
Pond	52	73.2	128	72.7
Pressure sand filter (PSF)	33	46.5	78	44.3
Tube-well	21	29.6	61	34.7
Tap water	9	12.7	23	13.1
Reverse osmosis	2	2.8	1	0.6
Rain water	1	1.4		
River	-	-	1	0.6
Bottle water being provided by government organizations, NGOs and community people			3	1.7
Source of water during disaster*				
Water supplied by government/NGOs	45	63.8	103	58.5
Pond	31	43.7	30	17.0
Pressure sand filter (PSF)	13	18.3	28	15.9
Tube-well	11	15.5	44	25.0
Rain Water	9	12.7	6	3.4
Reverse osmosis	7	9.9	7	4.0
Tap water	4	5.6	1	0.6
River	-	-	85	48.3
Source of water after disaster*				
Pond	48	67.6	125	71.0
Pressure sand filter (PSF)	32	45.1	77	43.7
Tube-well	22	31.0	63	35.8
Tap water	8	11.3	25	14.2
Reverse osmosis	2	2.8	2	1.1
Well	1	1.4	1	0.6
Bottle water being provided by government organizations, NGOs and community people	1	1.4	4	2.3
River	-	-	2	1.1

*Multiple response.

Table 7.44 Men and women with disabilities by source of water before disaster

Source of water before disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Pond	51	72.9	48	69.6
Pressure sand filter (PSF)	29	41.4	27	39.1
Tube-well	27	38.6	30	43.5
Tap water	8	11.4	8	11.6
Source of water during disaster*				
Pond	32	45.7	28	40.6
Bottle water being provided by government organizations, NGOs and community people	31	44.3	17	24.6
Tube-well	20	28.6	18	26.1
Pressure sand filter (PSF)	13	18.6	15	21.7
Tap water	4	5.7	5	7.2
Buying bottle water	3	4.3	16	23.2
Reverse Osmoses	3	4.3	-	-
Rain water	5	7.1	5	7.2
Source of water after disaster*				
Pond	49	70.0	46	66.7
Tube-well	28	40.0	29	42.0
Pressure sand filter (PSF)	25	35.7	25	36.2
Tap water	10	14.3	2	2.9
Bottle water being provided by government organizations, NGOs and community people	3	4.3	1	1.4
Buying bottle water	2	2.9	1	1.4
Reverse osmoses	1	1.4		

*Multiple response.

7.9 Condition of water before, during and after disasters for respondents

Table 7.45 Elderly men and women by condition of water before, during and after disaster

Condition of water before disaster*	Elderly men		Elderly women	
	n	%	n	%
Pure drinking water was available	141	74.6	93	81.6
Drinking water was available but had to fetch water from long distance	125	66.1	73	64.0
Salinity in the water was unacceptable for consumption	91	48.1	49	43.0
Water was scarce but accessible	32	16.9	22	19.3
No pure drinking water was available	6	3.2	2	1.8
Arsenic contamination in the water	1	0.5	2	1.8
Non-functional tube well	1	0.5	-	-
Condition of water during disaster*				
Salinity in the water was unacceptable for consumption	138	73.0	72	63.2
Drinking water was available but had to fetch from long distance	81	42.9	48	42.8
No pure drinking water was available	62	32.8	1	0.9
Pure drinking water was available	57	30.2	39	34.2

Water was scarce but accessible	17	9.0	14	12.3
Non-functional tube well	1	0.5	27	23.7
Condition of water after disaster*				
Drinking water was available but had to fetch reverse osmosis from long distance	135	71.4	76	66.7
Salinity in the water was unacceptable for consumption	117	61.9	63	55.3
Pure drinking water was available	113	59.8	82	71.9
Water was scarce but accessible	28	14.8	21	18.4
No pure drinking water was available	7	3.7	1	0.9
Non-functional tube well	1	0.5	3	2.6

*Multiple response.

Table 7.46 Male and female headed household by condition of water before, during and after disaster

Condition of water before disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Drinking water was available but had to fetch water from long distance	111	70.3	104	68.0
Pure drinking water was available	98	62.0	109	71.2
Salinity in the water was unacceptable for consumption	87	55.1	78	51.0
Water was scarce but accessible	25	15.8	27	17.6
No pure drinking water was available	6	3.8	6	3.9
Arsenic contamination in the water	2	1.3		
Non-functional tube well	2	1.3	1	0.7
Condition of water during disaster*				
Salinity in the water was unacceptable for consumption	116	73.4	103	67.3
Drinking water was available but had to fetch water from long distance	80	50.6	75	49.0
No pure drinking water was available	46	29.1	45	29.4
Pure drinking water was available	44	27.8	43	28.1
Water was scarce but accessible	23	14.6	21	13.7
Arsenic contamination in the water	3	1.9		
Non-functional tube well	2	2.5		
Condition of water after disaster*				
Drinking water was available but had to fetch water from long distance	119	75.3	113	73.9
Salinity in the water was unacceptable for consumption	112	70.9	99	64.7
Pure drinking water was available	81	51.3	92	60.1
Water was scarce but accessible	26	16.5	27	17.6
No pure drinking water was available	7	4.6	7	4.6
Arsenic contamination in the water	2	1.3		
Non-functional tube well	2	1.3		

*Multiple response.

Table 7.47 Widower and widow by condition of water before, during and after disaster

Condition of water before disaster*	Widower		Widow	
	n	%	n	%
Pure drinking water was available	54	76.1	131	74.4
Drinking water was available but had to fetch water from long distance	42	59.2	119	67.6
Salinity in the water was unacceptable for consumption	33	46.5	98	55.7
Water was scarce but accessible	10	14.1	27	15.3
No pure drinking water was available	3	4.2	4	2.3
Non-functional tube well	-	-	2	1.1
Condition of water during disaster*				
Salinity in the water was unacceptable for consumption	54	76.1	135	76.7
Drinking water was available but had to fetch water from long distance	28	39.4	72	40.9
Pure drinking water was available	22	12.5	71	40.3
No pure drinking water was available	18	10.2	43	24.4
Water was scarce but accessible	5	7.0	17	9.7
Non-functional tube well	-	-	2	1.1
Condition of water after disaster*				
Pure drinking water was available	46	64.8	114	64.8
Drinking water was available but had to fetch water from long distance	46	64.8	126	71.6
Salinity in the water was unacceptable for consumption	46	64.8	124	70.5
Water was scarce but accessible	10	14.1	24	13.6
No pure drinking water was available	2	2.8	3	1.7
Well water was not available	-	-	1	0.6
Non-functional tube well	-	-	2	1.1

*Multiple response.

Table 7.48 Men and women with disabilities by condition of water before, during and after disaster

Condition of water before disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Drinking water was available but had to fetch long distance	51	72.9	43	62.3
Pure drinking water was available	43	61.4	50	72.5
Salinity in the water was unacceptable for consumption	32	45.7	29	42.0
Water was scarce but accessible	8	11.4	8	11.6
No pure drinking water was available	3	4.3	1	1.4
Non-functional tube well	2	2.9	-	-
Arsenic contamination in the water	-	-	2	2.9
Condition of water during disaster*				

Drinking water was available but had to fetch long distance	51	72.9	43	62.3
Pure drinking water was available	39	55.7	41	59.4
Salinity in the water was unacceptable for consumption	37	52.6	33	47.8
Water was scarce but accessible	8	11.4	8	11.6
No pure drinking water was available	5	7.1	6	8.7
Non-functional tube well	2	2.9	-	-
Condition of water after disaster*				
Drinking water was available but had to fetch long distance	50	71.4	49	71.0
Salinity in the water was unacceptable for consumption	43	61.4	41	59.4
Pure drinking water was available	39	55.7	43	62.3
Water was scarce but accessible	9	12.9	8	11.6
Non-functional tube well	2	2.9	-	-
No pure drinking water was available	1	1.4	1	1.4

*Multiple response.

7.10 Sanitation and toilet facilities before, during and after disasters

Table 7.49 Elderly men and women by toilet facilities before, during and after disaster

Toilet facilities before disaster	Elderly men		Elderly women	
	n	%	n	%
Slab latrine at home	137	72.5	80	70.1
Open latrine with makeshift wall	32	16.9	19	16.7
Sanitary latrine with water system	9	4.8	5	4.4
No slab latrine	7	3.7	5	4.4
No latrine at all	4	2.1	5	4.4
Total	189	100	114	100
Toilet facilities during disaster				
Sanitary latrine with water system	59	31.2	36	31.6
Slab latrine at home	48	25.3	29	25.4
No latrine at all	31	16.4	18	15.8
Open latrine with makeshift wall	30	15.9	16	14.0
Toilet in cyclone shelter	14	7.4	9	7.9
No slab latrine	2	1.1	1	0.9
Neighboring toilet	2	1.1	1	0.9
Total	189	100	114	100
Toilet facilities after disaster				
Slab latrine at home	152	80.5	94	82.5
Sanitary latrine with water system	15	7.9	5	4.4
Open latrine with makeshift wall	14	7.4	7	6.1
No slab latrine	4	2.1	4	3.5
No latrine at all	4	2.1	4	3.5
Total	189	100	114	100

Table7.50 Men and women heads of household by toilet facilities before, during and after disaster

Toilet facilities before disaster	Men heads of household		Women heads of household	
	n	%	n	%
Slab latrine at home	117	74.1	113	73.9
Open latrine with makeshift wall	22	13.9	19	12.4
No latrine at all	11	6.9	14	9.1
No slab latrine	6	3.8	6	3.9
Sanitary latrine with water system	2	1.3	1	0.7
Total	158	100	153	100
Toilet facilities during disaster				
Sanitary latrine with water system	44	27.8	45	29.4
Open latrine with makeshift wall	33	20.9	26	17.0
Slab latrine at home	32	20.3	32	20.9
No latrine at all	26	16.4	25	16.3
No slab latrine	17	10.8	11	7.2
Shelter home	6	3.8	14	9.2
Total	158	100	153	100
Toilet facilities after disaster				
Slab latrine at home	128	81.0	118	77.1
Open latrine with makeshift wall	13	8.2	14	9.2
No latrine at all	10	6.4	16	10.4
Sanitary latrine with water system	4	2.5	3	2.0
No slab latrine	3	1.9	2	1.3
Total	158	100	153	100

Table7.51 Widower and widow by condition of toilet before, during and after disaster

Toilet facilities before disaster	Widower		Widow	
	n	%	n	%
Slab latrine at home	55	77.5	137	77.8
Open latrine with makeshift wall	8	11.3	24	13.6
Sanitary latrine with water system	3	4.2	1	0.6
No latrine at all	4	5.6	13	7.4
No slab latrine	1	1.4	1	0.6
Total	71	100	176	100
Toilet facilities during disaster				
Slab latrine at home	24	33.8	53	30.1
No latrine at all	17	23.9	35	19.9
Sanitary latrine with water system	15	21.2	33	18.8
Open latrine with makeshift wall	8	11.3	27	15.3
At shelter home	3	4.2	16	9.1
Neighboring toilet	2	2.8	6	3.4
Relative toilet	2	2.8	6	3.4
Total	71	100	176	100
Toilet facilities after disaster				

Slab latrine at home	56	78.9	143	81.3
Sanitary latrine with water system	10	14.1	6	3.4
Open latrine with makeshift wall	4	5.6	5	2.8
No latrine at all	1	1.4	22	12.5
Total	71	100	176	100

Table 7.52 Men and Women with disabilities by condition of toilet before disaster

Toilet facilities before disaster	Men with disabilities		Women with disabilities	
	n	%	n	%
Slab latrine at home	54	77.1	52	75.4
Open latrine with makeshift wall	7	10.0	8	11.6
No slab latrine	5	7.1	3	4.3
Sanitary latrine with water system	2	2.9	2	2.9
No latrine at all	2	2.9	4	5.8
Total	70	100	69	100
Toilet facilities during disaster				
Slab latrine at home	21	30.0	20	29.0
Sanitary latrine with water system	19	27.1	22	31.9
No latrine at all	13	18.6	11	15.9
Open latrine with makeshift wall	11	15.7	12	17.4
No slab latrine	6	8.6	4	5.8
Total	70	100	69	100
Toilet facilities after disaster				
Slab latrine at home	56	80.0	56	81.2
Sanitary latrine with water system	4	5.7	7	10.2
No slab latrine	4	5.7	2	2.9
Open latrine with makeshift wall	4	5.7	1	1.4
No latrine at all	2	2.9	3	4.3
Total	70	100	69	100

7.11 Gender Based Violence inside and outside the house, in disaster shelters and other places like school used as shelter

7.11.1 Gender Based Violence inside the house

Table 7.53 Elderly men and women by violence suffered by men, women and children inside the house

Violence suffered by men*	Elderly men		Elderly women	
	n	%	n	%
Mental abuse	44	23.3	18	15.8
Verbally abused	41	21.7	19	16.7
Physical violence	9	4.8	-	-
Battering	2	1.1	2	1.8
Violence suffered by women*				
Verbally abused	113	59.8	70	61.4

Mental abuse	62	32.8	33	28.9
Battering	12	6.4	12	10.5
Physical violence	9	4.8	9	7.9
Sexual harassment	1	0.5	-	-
Violence suffered by children*				
Verbally abuse	27	14.3	20	17.5
Mental abuse	11	5.8	4	3.5
Physical violence	5	2.6	1	0.9
Battering	-	-	1	0.9

*Multiple responses.

Table 7.54 Elderly men and women by violence suffered by men, women and children outside the house

Type of violence suffered by men*	Elderly men		Elderly women	
	n	%	n	%
Mental abuse	23	12.7	12	10.5
Verbally abused	16	8.5	10	8.8
Physical violence	6	3.2	5	4.4
Battering	4	2.1	3	1.6
Sexual harassment	1	0.5	-	-
Type of violence suffered by women*				
Verbally abused	36	19.1	22	11.6
Mental abuse	19	10.1	10	8.8
Physical violence	14	7.4	10	8.8
Sexual harassment	10	5.3	4	3.5
Battering	5	2.6	5	4.4
Type of violence suffered by children*				
Verbally abused	22	11.6	12	10.5
Mental abuse	14	7.1	3	1.6
Physical violence	2	1.1	3	1.6

*Multiple responses.

Table 7.55 Elderly men and women by type of violence suffered by men, women and children of respondents' family in disaster shelter

Type of violence suffered by men*	Elderly men		Elderly women	
	n	%	n	%
Verbally abused	18	9.5	21	18.4
Mental abuse	17	9.0	14	12.3
Battering	1	0.5	2	1.8
Physical violence	1	0.5	2	1.8
Type of violence suffered by women*				
Verbally abused	23	12.2	81	71.1
Mental abuse	18	9.5	47	24.9
Sexual harassment	4	2.1	9	7.9
Physical violence	3	1.6	10	8.8
Battering	2	1.1	6	5.3

Type of violence suffered by children*				
Mental abuse	11	5.8	23	20.0
Verbally abused	10	5.3	35	30.7
Sexual harassment			3	2.6
Battering			4	3.5
Physical violence			3	2.6

*Multiple response.

Table 7.56 Elderly men and women by type of violence suffered by men, women and children of respondents' family in other places like school as shelter, etc.

Type of violence suffered by men *	Elderly men		Elderly women	
	n	%	n	%
Mental abuse	50	26.5	27	23.7
Verbally abused	46	24.3	27	23.7
Battering	7	3.7	2	1.7
Physical violence	3	1.6	2	1.7
Type of violence suffered by women*				
Verbally abused	77	40.7	46	40.3
Physical violence	14	7.4	4	3.5
Sexual harassment	8	4.2	2	1.7
Battering	8	4.2	3	2.6
Mental abuse			31	27.2
Type of violence suffered by children*				
Verbally abused	29	15.3	16	14.0
Mental abuse	20	10.6	10	8.8
Physical violence	3	1.6	2	1.7
Battering	2	1.1	1	0.9

*Multiple response

7.11.2 Men and women heads of household by prevalence of gender based violence inside the house

Table 7.57 Men and women heads of household by type of violence suffered by male, female and children of respondents' family inside the house

Type of violence suffered by men*	Men heads of household		Women heads of household	
	n	%	n	%
Verbally abused	36	22.8	8	5.2
Mental abuse	29	18.4	10	6.5
Physical violence	2	1.3	-	-
Battering	1	0.6	-	-
Type of violence suffered by women*				
Verbally abused	91	57.6	74	48.4
Mental abuse	53	33.5	44	28.8
Physical violence	17	10.8	12	7.8
Battering	14	8.9	8	5.2

Sexual harassment	1	0.6	-	-
Type of violence suffered by children*				
Verbally abused	27	17.1	19	12.4
Mental abuse	9	5.7	9	5.9
Physical violence	3	1.9	1	0.7

*Multiple response.

Prevalence of gender based violence outside the house

Table 7.58 Men and women heads of household by type of violence suffered by men, women and children of respondents' family members outside the house

Type of violence suffered by men*	Men heads of household		Women heads of household	
	n	%	n	%
Mental abuse	21	13.3	6	3.9
Verbally abused	18	11.4	4	2.6
Battering	5	3.2	4	2.6
Physical violence	3	1.9	1	0.7
Type of violence suffered by women*				
Verbally abused	38	24.1	32	20.9
Mental abuse	13	8.2	15	9.8
Physical violence	12	7.6	17	11.1
Sexual harassment	7	4.4	7	4.6
Battering	5	3.2	8	5.2
Abducted	1	0.6	-	-
Type of violence suffered by children*				
Verbally abused	19	12.0	17	11.1
Mental abuse	4	2.5	7	4.6
Physical violence	1	0.6	1	0.7

*Multiple response.

Prevalence of gender based violence in the disaster shelter

Table 7.59 Men and women heads of household by type of violence suffered by men, women and children of respondents' family in disaster shelter

Type of violence suffered by men*	Men heads of household		Women heads of household	
	n	%	n	%
Mental abuse	44	27.8	12	7.8
Verbally abused	33	20.9	14	9.2
Battering	4	2.5	-	-
Physical violence	3	1.9	-	-
Type of violence suffered by women*				
Verbally abused	65	41.1	73	47.7
Mental abuse	45	28.5	46	30.1
Physical violence	12	7.6	8	5.2
Sexual harassment	7	4.4	8	5.2
Abducted	1	0.6	-	-

Battering	4	2.5	5	3.3
Type of violence suffered by children*				
Verbally abused	32	20.3	31	20.3
Mental abuse	19	12.0	21	13.7
Battering	2	1.3	1	0.7
Raped	-	-	1	0.7

*Multiple response.

Prevalence of gender based violence in the other places like schools used as shelters

Table 7.60 Men and women heads of households by type of violence suffered by men, women and children of respondents' family in other places (school as shelter, etc.)

Type of violence suffered by men *	Men heads of household		Women heads of household	
	n	%	n	%
Verbally abuse	6	3.8	2	1.3
Type of violence suffered by women*				
Verbally abuse	26	16.5	22	14.4
Sexual harassment	6	3.8	-	-
Physical violence	7	4.4	3	2.0
Mental abuse	7	4.4	8	5.2
Type of violence suffered by children*				
Verbally abuse	4	2.5	4	2.6
Mental abuse	4	2.5	7	4.6
Sexual harassment	1	0.6	-	-

*Multiple response.

7.11.3 Widowers and widows by prevalence of gender based violence

Prevalence of gender based violence inside the house

Table 7.61 Widowers and widows by type of violence suffered by male, female and children of respondents' family inside the house

Type of violence suffered by men*	Widower		Widow	
	n	%	n	%
Verbally abused	16	22.5	10	5.7
Mental abuse	15	22.1	14	8.0
Physical violence	3	4.2	1	0.6
Type of violence suffered by women*				
Verbally abused	23	32.4	83	47.2
Mental abuse	19	26.8	65	36.9
Battering	5	7.0	6	3.4
Physical violence	2	2.8	11	6.3
Sexual harassment	1	1.4	1	0.6
Type of violence suffered by children*				
Verbally abused	8	11.3	24	13.6

Mental abuse	3	4.2	11	6.3
Battering	1	1.4	2	1.1
Physical violence	1	1.4	6	3.4
Sexual harassment			1	0.6

*Multiple response.

Prevalence of gender based violence outside the house

Table 7.62 Widowers and widows by type of violence suffered by men, women and children of respondents' family members outside the house

Type of violence suffered by men*	Widower		Widow	
	n	%	n	%
Verbally abused	5	7.0	11	6.3
Mental abuse	5	7.0	10	5.7
Battering	4	5.6	5	2.8
Physical violence	1	1.4	6	3.4
Type of violence suffered by women*				
Verbally abused	8	11.3	28	15.9
Battering	5	7.0	6	3.4
Sexual harassment	4	5.6	6	3.4
Physical violence	4	5.6	12	6.8
Mental abuse	1	1.4	14	8.0
Type of violence suffered by children*				
Verbally abused	4	5.6	15	8.5
Mental abuse	2	2.8	5	2.8
Physical violence	1	1.4	1	0.6
Battering			1	0.6

*Multiple response.

Prevalence of gender based violence in disaster shelter

Table 7.63 Widower and widow by type of violence suffered by men, women and children of respondents' family in disaster shelter

Type of violence suffered by men*	Widower		Widow	
	n	%	n	%
Verbally abused	18	25.4	21	11.9
Mental abuse	17	23.9	14	8.0
Battering	1	1.4	2	1.1
Physical violence	1	1.4	2	1.1
Type of violence suffered by women*				
Verbally abused	23	32.4	81	46.0
Mental abuse	18	25.4	47	26.7
Sexual harassment	4	5.6	9	5.1
Physical violence	3	4.2	10	5.7
Battering	2	2.8	6	3.4
Type of violence suffered by children*				
Mental abuse	11	15.5	23	13.1
Verbally abused	10	14.1	35	19.9

Sexual harassment			3	1.7
Battering			4	2.3
Physical violence			3	1.7

*Multiple response.

Prevalence of gender based violence in other places like schools used as shelters

Table 7.64 Widower and widow by type of violence suffered by men, women and children of respondents' family in other places (school as shelter, etc.)

Type of violence suffered by men *	Widower		Widow	
	n	%	n	%
Mental abuse	7	9.9	2	1.1
Verbally abused	3	4.2	2	1.1
Type of violence suffered by women*				
Verbally abused	9	12.7	35	19.9
Mental abuse	7	9.9	4	2.3
Sexual harassment			3	1.7
Physical violence			4	2.3
Type of violence suffered by children*				
Verbally abused	4	5.6	5	2.8
Mental abuse			2	1.1

*Multiple response.

7.11.4 Men and women with disabilities by prevalence of gender based violence

Prevalence of gender based violence inside the house

Table 7.65 Men and women with disabilities by type of violence suffered by men family members inside the house

Type of violence suffered by men family members inside the house*	Men with disabilities		Women with disabilities	
	n	%	n	%
Verbally abused	20	28.6	7	10.1
Mental abuse	16	22.9	9	13.0
Physical violence	2	2.9	-	-
Type of violence suffered by women family members outside the house*				
Verbally abused	30	42.9	39	56.5
Mental abuse	25	35.7	20	29.0
Physical violence	4	5.7	6	8.7
Battering	3	4.3	3	4.3
Sexual harassment	-	-	1	1.4
Type of violence suffered by children family members inside the house*				
Verbally abused	4	5.7	3	4.3
Mental abuse	3	4.3	2	2.9
Physical violence	2	2.9	-	-
Battering	-	-	1	1.4

*Multiple response.

Prevalence of gender based violence outside the house

Table 7.66 Men and women with disabilities by type of violence suffered by men family members outside the house

Type of violence suffered by men family members outside the house*	Men with disabilities		Women with disabilities	
	n	%	n	%
Verbally abused	4	5.7	5	7.2
Physical violence	4	5.7	5	7.2
Mental abuse	4	5.7	7	10.1
Battering	3	4.3	2	2.9
Type of violence suffered by women family members outside the house*				
Verbally abused	9	12.9	14	20.3
Physical violence	9	12.9	14	20.3
Mental abuse	5	7.2	6	8.7
Sexual harassment	3	4.3	5	7.2
Battering	3	4.3	4	5.8
Type of violence suffered by children family members outside the house*				
Verbally abused	3	4.3	6	8.7
Mental abuse	1	1.4	-	
Physical violence	-	-	3	4.3

*Multiple response.

Table 7.67 Men and women with disabilities by type of violence suffered by men family members in disaster shelter

Type of violence suffered by men family members in disaster shelter*	Men with disabilities		Women with disabilities	
	n	%	n	%
Verbally abused	24	34.3	15	21.7
Mental abuse	20	28.6	16	23.2
Physical violence	2	2.9	3	4.3
Battering	-	-	2	2.9
Type of violence suffered by women family members in disaster shelter*				
Verbally abused	28	40.0	34	49.3
Mental abuse	25	35.7	15	21.7
Physical violence	6	8.6	7	10.1
Sexual harassment	5	7.1	5	7.2
Battering	-		2	2.9
Type of violence suffered by children family members in disaster shelter*				
Verbally abused	21	30.0	17	24.6
Mental abuse	7	10.0	7	10.1
Battering	-	-	2	2.9
Physical violence	-	-	3	4.3

*Multiple response.

Prevalence of gender based violence in other places like schools used as shelters

Table 7.68 Men and women with disabilities by type of violence suffered by men family members in other places (school as shelter, etc.)

Type of violence suffered by men family members other places (school as shelter, etc.)*	Men with disabilities		Women with disabilities	
	n	%	n	%
Verbally abused	1	1.4	1	1.4
Mental abuse	1	1.4	2	2.9
Type of violence suffered by women family members in other places (school as shelter, etc.)*				
Verbally abused	10	14.3	8	11.6
Physical violence	4	5.7	3	4.3
Sexual harassment	2	2.9	-	
Mental abuse	1	1.4	2	2.9
Type of violence suffered by children in other places (school as shelter, etc.)*				
Verbally abused	3	4.3	1	1.4
Mental abuse	1	1.4	4	5.8

*Multiple response.

7.12 Displacement and migration during disasters of family members

Table 7.69 Elderly men and women by whether their family members moved from their place of residence due to disaster

Whether their family members moved from their place of residence due to disaster	Elderly men		Elderly women	
	N	%	n	%
Yes	35	18.5	22	19.3
No	154	81.5	92	80.7
Total	189	100	114	100

Table 7.70 Elderly men and women by place where men and women have moved or migrated

Where men moved or migrated	Elderly men		Elderly women	
	n	%	n	%
Dhaka city	16	45.7	8	36.4
Neighbouring village	6	17.0	4	18.2
Urban/city within Satkhira district	3	8.3	3	13.7
Far away village	1	2.9	4	18.2
Neighbouring country India	1	2.9	1	4.5
Khulna	1	2.9	1	4.5
Jashore	1	2.9	-	95.5
Cox's bazar	1	2.9	-	-
Mymensingh	1	2.9	-	-
Foridpur	1	2.9	-	-
Gopalganj	1	2.9	-	-
Sylhet	1	2.9	-	-
Where women moved or migrated				
Dhaka city	1	2.9	1	4.5

Table 7.71 Men and women heads of household by whether their family members moved from their place of residence due to disaster

Whether their family members moved from their place of residence due to disaster	Men heads of household		Women heads of household	
	n	%	n	%
Yes	35	22.1	14	9.1
No	123	77.9	139	90.9
Total	158	100	153	100

Table 7.72 Men and women heads of household by where men and women have moved or migrated

Where men moved or migrated	Men heads of household		Women heads of household	
	n	%	n	%
Dhaka city	15	42.8	5	35.7
Urban/city within Satkhira district	7	20.0	-	-
Far away village	6	17.1	3	21.5
Neighboring village	3	8.5	3	21.5
Jashore	1	2.9	1	7.1
Khulna	1	2.9	1	7.1
Chattogram	-	-	1	7.1
Madaripur	1	2.9	-	-
Barishal	1	2.9	-	-
Where women moved or migrated				
Neighboring village	-	-	1	7.1
Far away village	-	-	1	7.1
Dhaka city	1	2.9	1	7.1
Khulna	-	-	1	7.1

Table 7.73 Widower and widow by whether their family members moved from their place of residence due to disaster

Whether their family members moved from their place of residence due to disaster	Widower		Widow	
	n	%	n	%
Yes	33	46.5	8	4.5
No	38	53.5	168	95.6
Total	71	100	176	100

Table 7.74 Widower and widow by where men and women have moved or migrated

Where men moved or migrated	Widower		Widow	
	n	%	n	%
Urban/ city within Satkhira district	14	42.5	-	-
Far away village	7	21.2	-	-
Neighbouring village	6	18.2	4	50
Same village	3	9.1	-	-
Dhaka city	1	3.0	4	50
Neighbouring country India	1	3.0	-	-
Gopalganj	1	3.0	-	-
Where women moved or migrated				
Neighbouring village	-	-	6	75.0
Dhaka city	-	-	1	12.5
Migrated in to other countries	-	-	1	12.5

Men and women with disabilities by displacement and migration**Table 7.75** Men and women with disabilities by whether their family members moved from their place of residence due to disaster

Whether their family members moved from their place of residence due to disaster	Men with disabilities		Women with disabilities	
	n	%	n	%
Yes	9	12.9	12	18.8
No	61	87.1	57	81.2
Total	70	100	69	100

Table 7.76 Men and women with disabilities by where men and women had moved or migrated

Where men moved or migrated*	Men with disabilities		Women with disabilities	
	n	%	n	%
Far away village	2	22.2	5	41.7
Neighboring village	2	22.2	1	8.3
Dhaka city	2	22.2	3	25.0
Urban/city within Satkhira district	1	11.1	1	8.3
Deep forest	1	11.1	1	8.3
Where women moved or migrated*				
Same village	1	11.1	1	8.3

Chapter 8: Disaster Preparedness and Support Services

8.1 Disaster preparedness activities taken in previous disasters by respondents

Table 8.1 Elderly men and women by disaster preparedness activities taken by men, women and children in their family

Disaster preparedness activities taken by men in the family*	Elderly men		Elderly women	
	n	%	n	%
Storing of essential medicines	47	24.8	16	14.0
Storing dry food	44	23.3	17	14.9
Saving money	23	12.2	9	7.9
Keeping essential things underground	16	8.5	4	3.5
Raising the beds	14	7.4	6	5.3
Making the plinth of the house high	9	4.8	2	1.7
Purifying of drinking water	2	1.1	1	0.9
Disaster preparedness activities taken by women in the family*				
Storing dry food	25	15.8	16	14.0
Keeping essential things underground	10	6.3	6	5.3
Purifying of drinking water	8	5.1	14	12.3
Storing of essential medicines	8	5.1	6	5.2
Raising the beds	4	2.5	3	2.6
Saving money	3	2.0	5	4.4
Making the plinth of the house high	1	0.6	13	11.4
Disaster preparedness activities taken by children in the family*				
Saving money	4	2.5	2	1.7
Storing dry food	2	1.3	2	1.7
Storing of essential medicines	2	1.3	1	0.9

*Multiple response.

Table 8.2 Men and women heads of household by disaster preparedness activities taken by men, women and children in the family

Disaster preparedness activities taken by men in the family*	Men heads of household		Women heads of household	
	n	%	n	%
Storing dry food	34	21.5	9	5.9
Storing of essential medicines	27	17.1	7	4.6
Keeping essential things underground	17	10.8	7	4.6
Saving money	16	10.1	4	2.6
Raising the beds	7	4.4	3	2.0
Making the plinth of the house high	6	3.8	3	2.0
Purifying of drinking water	3	1.9	1	0.6
Disaster preparedness activities taken by women in the family*				
Storing dry food	24	15.2	50	32.7
Purifying of drinking water	12	7.6	18	11.8
Storing of essential medicines	10	6.3	34	22.2

Keeping essential things underground	7	4.4	17	11.1
Saving money	5	3.2	14	9.1
Raising the beds	4	2.5	12	7.8
Making the plinth of the house high	1	0.6	5	3.3
Disaster preparedness activities taken by children in the family*				
Storing money	1	0.6	1	0.6
Keeping essential things underground	-	-	2	1.3
Storing of essential medicines	-	-	1	0.6
Making the floor of the house high	1	0.6	-	-
Raising the beds	1	0.6	-	-

*Multiple response.

Table 8.3 Widowers and widows by disaster preparedness activities taken by men, women and children in the family

Disaster preparedness activities taken by men in the family*	Widower		Widow	
	n	%	n	%
Storing dry food	18	23.7	9	5.1
Saving money	14	19.7	4	2.3
Storing of essential medicines	14	19.7	7	4.0
Keeping essential things underground	6	8.4	7	4.0
Raising the beds	6	8.4	3	1.7
Purifying of drinking water	4	5.6	1	0.6
Making the plinth of the house high	2	2.8	3	1.7
Disaster preparedness activities taken by women in the family*				
Storing dry food	8	11.3	60	34.1
Purifying of drinking water	3	4.2	14	7.9
Storing of essential medicines	3	4.2	33	18.7
Saving money	1	1.4	20	11.4
Keeping essential things underground	1	1.4	15	8.5
Raising the beds	1	1.4	5	2.8
Making the plinth of the house high	-	-	4	2.3
Disaster preparedness activities taken by children in the family*				
Storing dry food	2	2.8	3	1.7
Saving money	2	2.8	7	4.0
Storing of essential medicines			2	1.1`

*Multiple response.

Table 8.4: Men and women with disabilities by disaster preparedness activities taken by men, women and children in the family

Disaster preparedness activities taken by men in the family	Men with disabilities		Women with disabilities	
	n	%	n	%
Storing dry food	41	58.6	46	66.7
Saving money	24	34.3	21	30.4
Storing of essential medicines	21	30.0	26	37.7
Keeping essential things underground	18	25.7	22	31.9
Purifying of drinking water	18	25.7	15	21.7
Raising the beds	12	17.1	19	27.5
Making the plinth of the house high	6	8.6	8	11.6
Storing electric lights in a safe place	-	-	1	1.4
Storing clothing	-	-	1	1.4
Disaster preparedness activities taken by women in the family*				
Storing dry food	54	77.1	52	75.4
Purifying of drinking water	22	31.4	19	27.5
Keeping essential things underground	19	27.5	20	29.0
Storing of essential medicines	19	27.5	27	39.1
Raising the beds	17	24.3	17	24.6
Saving money	13	18.6	19	27.5
Preserving clothing	8	11.4	4	5.8
Making the plinth of the house high	7	10.0	4	5.8
Keeping torch light	2	2.9	1	1.4
Improving housing structure	1	1.4	-	-
Storing drinking water	1	1.4	2	2.9
Disaster preparedness activities taken by children in the family*				
Storing dry food	11	15.7	7	10.1
Saving money	2	2.9	5	7.2
Making the plinth of the house high	2	2.9	4	5.8
Raising the beds	2	2.9	3	4.3
Keeping essential things underground	1	1.4	1	1.4
Purifying of drinking water	1	1.4	5	7.2

*Multiple response

8.2 Most effective disaster preparedness activities by respondents

Table 8.5: Elderly men and women by most effective disaster preparedness

Most effective disaster preparedness *	Elderly men		Elderly women	
	n	%	n	%
Saving dry food	175	92.3	95	83.3
Storing of essential medicines	101	53.4	67	58.8
Saving money	85	45.0	58	50.8
Purifying of drinking water	69	36.5	42	36.8
Raising the beds	59	31.2	35	30.7
Keeping essential things underground	58	30.6	29	25.3
Making the plinth of the house high	31	27.0	13	11.4

*Multiple response.

Table 8.6: Men and women heads of household by most effective disaster preparedness

Most effective disaster preparedness *	Male headed household		Female headed household	
	n	%	n	%
Saving dry food	152	96.2	148	96.7
Saving money	70	44.3	66	43.1
Keeping essential things underground	48	30.4	38	24.8
Making the floor of the house high	17	10.8	18	11.8
Purifying of drinking water	63	39.9	67	43.8
Storing of essential medicines	74	46.8	72	47.1
Raising the beds	39	24.7	39	25.5

*Multiple response.

Table 8.7: Widowers and widow by most effective disaster preparedness

Most effective disaster preparedness *	Widower		Widow	
	n	%	n	%
Saving dry food	69	97.2	170	96.6
Saving money	44	60.0	75	42.6
Storing of essential medicines	37	52.1	80	45.5
Purifying of drinking water	30	42.1	68	38.6
Keeping essential things underground	21	29.6	59	33.5
Raising the beds	17	23.9	37	21.0
Making the plinth of the house high	6	8.5	14	8.0

*Multiple response

Table 8.8: Men and women with disabilities by most effective disaster preparedness

Most effective disaster preparedness *	Men with disabilities		Women with disabilities	
	n	%	n	%
Storing dry food	65	92.9	65	94.2
Saving money	32	45.7	31	44.9
Storing of essential medicines	28	40.0	39	56.5
Purifying of drinking water	27	38.6	22	31.9
Keeping essential things underground	21	30.0	25	36.2
Making the plinth of the house high	11	15.7	10	14.5
Raising the beds	13	18.6	24	34.8
Preserving clothes	6	8.6	4	5.8
Keeping torch light	2	2.9	1	1.4
Improving housing structure	1	1.4	-	-
Keeping of livestock in safe place	-	-	1	1.4
Storing drinking water	1	1.4	2	2.9

*Multiple response.

8.3 Most effective disaster warning system identified by respondents

Table 8.9 Elderly men and women by most effective disaster warning system

Most effective disaster warning information*	Elderly men		Elderly women	
	n	%	N	%
Announcement through miking	187	98.9	110	96.5
Announcement from the mosque	134	70.9	79	69.3
Local community warning system	100	52.9	69	60.5
Danger siren	73	38.6	39	34.2
Text message through mobile phone	42	22.2	31	27.2
Radio announcement	12	6.3	8	7.0
Social media	12	6.3	9	7.9

*Multiple response.

Table 8.10: Men and women heads of household by most disaster warning system

Most effective disaster warning information*	Men heads of household		Female headed household	
	n	%	n	%
Announcement through miking	156	98.7	151	98.7
Announcement from the mosque	104	65.8	115	75.2
Local community warning system	74	46.8	86	56.2
Danger siren	56	35.4	51	33.3
Text message through mobile phone	44	27.8	47	30.7
Social media	12	7.6	12	7.8
Radio announcement	9	5.7	6	3.9

*Multiple response.

Table 8.11: Widowers and widows by most effective disaster warning information effective

Most effective disaster warning information*	Widower		Widow	
	n	%	n	%
Announcement through miking	70	98.6	173	98.3
Announcement from the mosque	44	62.0	123	69.9
Local community warning system	43	60.6	84	47.7
Danger siren	24	33.8	67	38.1
Text message through mobile phone	20	28.2	52	29.5
Radio announcement	4	5.6	7	4.0
Social media	4	5.6	12	6.8

*Multiple response.

Table 8.12: Men and women with disabilities by most effective disaster warning system

Most effective disaster warning information*	Men with disabilities		Women with disabilities	
	n	%	n	%
Announcement through miking	70	100	67	97.1
Announcement from the mosque	47	67.1	48	69.6
Local community warning system	41	57.7	40	58.0
Danger siren	23	32.9	21	30.4
Text message through mobile phone	21	30.0	19	27.5
Social media	7	10.0	6	8.7
Radio announcement	3	4.3	3	4.3

*Multiple response

8.4 Providers of early warning identified by respondents regarding forthcoming disasters**Table 8.13:** Elderly men and women by providers of early warning

Providers of early warning *	Elderly men		Elderly women	
	n	%	n	%
Community volunteers	172	91.0	107	93.9
Mobile phone operators	77	40.7	48	42.1
Upazila chairman	75	39.7	49	43.0
Upazila Disaster Management Committee	67	35.4	39	34.2
Upazila weather forecast office	27	14.3	12	10.5
Television	17	9.0	9	7.9
Local radio station	14	7.4	8	7.0

*Multiple response

Table 8.14: Men and women heads of household by providers of early warning

Providers of early warning *	Men heads of household		Women heads of household	
	n	%	n	%
Community volunteers	141	89.2	139	90.8
Mobile phone operators	74	46.8	67	43.8
Upazila chairman	53	34.0	61	39.9
Upazila Disaster Management Committee	46	29.5	50	32.7
Upazila weather forecast office	20	12.8	27	17.6
Local radio station	8	5.1	10	6.5
Television	14	9.0	9	5.9

*Multiple response

Table 8.15: Widowers and widows by providers of early warning

Providers of early warning *	Widower		Widow	
	n	%	n	%
Community volunteers	63	88.7	157	89.2
Mobile phone operators	40	56.3	70	39.8
Upazila chairman	30	42.3	59	33.5
Upazila Disaster Management Committee	23	32.4	58	32.5
Upazila weather forecast office	7	9.9	23	13.1
Local radio station	5	7.0	8	4.5
Television	4	5.6	6	3.4

*Multiple response

Table 8.16: Men and women with disabilities by providers of early warning

Providers of disaster warning *	Men with disabilities		Women with disabilities	
	n	%	n	%
Community volunteers	62	88.6	63	91.3
Mobile phone operators	29	41.4	30	43.5
Imam of mosque	30	42.9	35	50.7
Upazila chairman	27	38.6	30	43.5
Upazila Disaster Management Committee	21	30.0	23	33.3
Upazila weather forecast office	11	15.7	9	13.0
Television	4	5.7	6	8.7
Local radio station	4	5.7	5	7.2
Local people	3	4.3	-	-
UP Members	2	2.9	2	2.9
CPP volunteers	1	1.4	3	4.3
Mobile hotline	-	-	1	1.4
Relatives	-	-	1	1.4

*Multiple response

8.6 Support received from various sources identified by respondents after disasters

Table 8.17 Elderly men and women by support received from government, NGOs and relative/neighbours after disaster

Support received from government after disaster*	Elderly men		Elderly women	
	n	%	n	%
Food	134	70.9	74	64.9
Shelter	71	37.6	53	46.5
Water	61	32.3	33	28.9
Medicine	51	27.0	17	14.9
Medical treatment	37	19.6	5	4.4
Monetary support	33	17.5	25	21.9
Housing materials	3	1.6	6	5.3
Clothing	1	0.5	31	27.2
Support received from non-government organizations after disaster*				
Water	84	44.4	45	39.5
Food	62	32.8	2	1.8
Monetary support	56	29.6	47	41.2

Medicine	11	5.8	8	7.0
Medical treatment	10	5.3	5	4.4
Housing materials	5	2.6	5	4.4
Clothing	1	0.5	49	43.0
Support received from relatives and neighbours after disaster*				
Food	26	13.8	22	19.3
Water	22	11.6	9	7.9
Shelter	20	10.6	14	12.3
Monetary support	9	4.8	7	6.1
Medicine	8	4.2	3	2.6
Bedding	7	3.7	2	1.8
Housing materials	4	2.1		
Clothing	1	0.5	3	2.6
Medical treatment	1	0.5	1	0.9

*Multiple response

Table 8.18: Men and women heads of household by support received from government, NGOs, relatives and neighbours after disaster

Support received from government after disaster*	Men heads of household		Women heads of household	
	n	%	n	%
Food	115	72.8	98	64.1
Shelter	58	36.7	58	37.9
Water	52	32.9	55	35.9
Medicine	34	21.5	49	32.0
Monetary support	29	18.4	31	20.3
Medical treatment	25	15.8	26	17.0
Housing materials	2	1.3	4	2.6
Clothing	-	-	1	0.7
Bedding	1	0.6	1	0.7
Support received from non-government after disaster*				
Water	60	38.0	56	36.6
Food	55	38.8	49	32.0
Monetary support	54	34.2	60	39.2
Medicine	13	8.2	9	5.9
Medical treatment	10	6.3	2	1.3
Housing materials	8	5.1	11	7.2
Shelter	2	1.3	2	1.3
Clothing	1	0.6		
Support received from relatives/neighbours after disaster*				
Food	32	20.9	35	22.9
Shelter	25	16.3	25	16.3
Water	25	16.3	22	14.4
Monetary support	10	6.3	18	11.8
Bedding	7	4.4	9	5.9
Medicine	6	3.8	9	5.9
Housing materials	2	1.3	4	2.6
Clothings	1	0.6	3	2.0
Medical treatment	1	0.6		

*Multiple response

Table 8.19: Widowers and widows by support received from government, NGOs, relatives and neighbours after disaster

Support received from government after disaster*	Widower		Widow	
	n	%	n	%
Food	45	63.4	112	63.6
Shelter	22	31.0	60	34.1
Water	19	26.8	46	26.1
Medicine	18	25.4	42	23.9
Monetary support	16	22.5	22	12.5
Medical treatment	14	19.7	35	19.9
Clothing	-	-	2	1.1
Housing materials	-	-	6	3.4
Support received from non-government after disaster*				
Water	28	39.4	72	40.9
Food	21	29.6	53	30.1
Monetary support	14	19.7	60	34.1
Medicine	6	8.5	18	10.2
Housing materials	3	4.2	5	2.8
Medical treatment	2	2.8	8	4.5
Bedding	1	1.8	2	1.1
Shelter	-	-	2	1.1
Clothing	-	-	1	0.6
Support received from relatives and neighbours after disaster*				
Shelter	11	15.5	29	16.5
Water	10	14.1	27	15.3
Food	9	12.7	41	23.3
Bedding	8	11.3	10	5.7
Monetary support	2	2.8	14	8.0
Medicine	1	1.8	6	3.4
Clothings			4	2.3
Medical treatment			1	0.6

*Multiple response

Table 8.20: Men and women with disabilities by support received from government, NGOs, relatives and neighbours after disaster

Support received from government agencies after disaster*	Men with disabilities		Women with disabilities	
	n	%	n	%
Food	50	71.4	58	84.1
Shelter	28	40.0	36	52.2
Medicine	23	32.9	20	29.0
Monetary support	21	30.0	26	37.7
Water	18	25.7	28	40.6
Medical treatment	11	15.7	4	5.8
Housing materials	3	4.3	5	7.2
Clothing	1	1.4	20	29.0

Support received from non-government organizations after disaster*				
Water	34	48.6	31	44.9
Food	33	47.1	26	37.7
Monetary support	23	32.9	26	37.7
Medicine	9	12.9	4	5.8
Medical treatment	6	8.6	2	2.9
Housing materials	4	5.7	5	7.2
Clothing			1	1.4
Support received from relatives and neighbours after disaster*				
Food	14	20.0	12	17.4
Water	10	14.3	7	10.1
Shelter	9	12.9	7	10.1
Monetary support	5	7.1	10	14.5
Medicine	5	7.1	3	4.3
Clothing	-	-	2	2.9
Bedding	-	-	1	1.4
Housing materials	-	-	1	1.4

*Multiple response

Chapter 9

Strategies and Suggestions by respondents

9.1 Strategies to reduce the impacts of forthcoming disasters

Table 9.1 Elderly men and women by strategies being taken by men, women and children to save themselves and their family from the impacts of any forthcoming disaster

Strategies being taken by men in the family*	Elderly men		Elderly women	
	n	%	n	%
Listen carefully to any community announcement	158	83.6	85	74.6
Preparing for evacuation (dry food, torchlight, drinking water bottle)	151	79.9	87	76.3
Building the house with strong building materials	89	47.1	58	50.9
Look at the text message in mobile phone	44	23.3	25	21.9
Regularly listen to weather forecast on radio/TV	21	11.1	8	7.0
Gathering relevant information from social media	14	7.4	6	5.3
Strategies being taken by women in the family*				
Preparing for evacuation (dry food, torchlight, drinking water bottle)	162	85.7	105	92.1
Listen carefully to any community announcement	143	75.7	84	73.7
Building the house with strong building materials	72	38.1	60	52.6
Look at the text message in mobile phone	35	18.5	25	21.9
Regularly listen to weather forecast on radio/TV	20	10.6	8	7.0
Gathering relevant information from social media	10	5.3	6	5.3
Strategies being taken by children in the family*				
Look at the text message in mobile phone	30	15.9	18	15.8
Listen carefully to any community announcement	28	14.8	21	18.4
Building the house with strong building materials	16	8.5	8	7.0
Preparing for evacuation (dry food, torchlight, drinking water bottle)	15	7.9	8	7.0
Regularly listen to weather forecast on radio/TV	10	5.3	5	4.4
Gathering relevant information from social media	1	0.5	11	9.6

*Multiple response.

Table 9.2 Men and women heads of household by strategies being taken by men, women and children to save themselves and their family from the impacts of any forthcoming disaster

Strategies being taken by men in the family*	Men heads of household		Women heads of household	
	n	%	n	%
Listen carefully to any community announcement	128	81.1	51	33.3
Preparing for evacuation (dry food, torchlight, drinking water bottle)	115	72.8	49	32.0
Building the house with strong building materials	76	48.1	34	22.2
Look at the text message in mobile phone	46	29.1	24	15.7
Regularly listen to weather forecast on radio/TV	20	12.7	9	5.9
Gathering relevant information from social media	9	5.7	6	3.9
Strategies being taken by women in the family*				
Information in social media	127	80.4	137	89.5
Regularly listen to weather forecast on radio/TV	106	67.1	120	78.4
Listen carefully to any community announcement	37	23.4	47	30.7
Building the house with strong building materials	19	12.0	13	8.5
Look at the text message in mobile phone	3	1.9	9	5.9
Preparing for evacuation (dry food, torchlight, drinking water bottle)	3	1.9	-	-
Strategies being taken by children in the family*				
Listen carefully to any community announcement	32	20.2	32	20.9
Look at the text message in mobile phone	29	18.3	20	13.1
Preparing for evacuation (dry food, torchlight, drinking water bottle)	15	9.5	7	4.6
Building the house with strong building materials	7	4.4	7	4.6
Regularly listen to weather forecast on radio/TV	7	4.4	10	6.5
Gathering relevant information from social media	1	0.6	20	13.1

*Multiple response.

Table 9.3 Widowers and widows by present strategies being taken by men, women and children to save themselves and their family from the impacts of any forthcoming disaster

Strategies being taken by men in the family*	Widowers		Widows	
	n	%	n	%
Listen carefully to any community announcement	55	77.5	72	40.9
Preparing for evacuation (dry food, torchlight, drinking water bottle)	52	73.2	76	43.2
Building the house with strong building materials	39	54.9	39	22.2
Look at the text message in mobile phone	30	42.2	25	14.2
Regularly listen to weather forecast on radio/TV	9	12.7	7	4.0
Gathering relevant information from social media	3	4.2	7	4.0
Strategies being taken by women in the family*				
Preparing for evacuation (dry food, torchlight, drinking water bottle)	44	62.0	147	83.5
Listen carefully to any community announcement	38	53.5	130	73.9
Building the house with strong building materials	20	28.2	77	43.7
Look at the text message in mobile phone	18	25.3	38	21.6
Regularly listen to weather forecast on radio/TV	4	5.6	9	5.1
Gathering relevant information from social media	2	2.8	6	3.4
Strategies being taken by children in the family*				
Listen carefully to any community announcement	19	26.8	46	26.1
Look at the text message in mobile phone	12	16.9	32	18.2
Building the house with strong building materials	10	14.1	17	9.7
Preparing for evacuation (dry food, torchlight, drinking water bottle)	8	11.3	31	17.6
Regularly listen to weather forecast on radio/TV	3	4.2	4	2.3

*Multiple response.

Table 9.4 Men and women with disabilities by strategies being taken by men, women and children to save themselves and their family from the impacts of any forthcoming disaster

Strategies being taken by men in the family*	Men with disabilities		Women with disabilities	
	n	%	n	%
Listening carefully to any community announcement	47	67.1	40	58.0
Preparing for evacuation (dry food, torchlight, drinking water bottle)	42	60.0	42	60.9
Rebuilding the house with strong materials	25	35.7	27	39.1
Viewing of text message in mobile phone	22	31.4	16	23.2
Listening regularly to weather forecast on radio/television	6	8.6	9	13.0
Gathering relevant information from social media	6	8.6	8	11.6
Strategies being taken by women in the family*				
Gathering relevant information from social media	49	70.0	49	71.0
Listening regularly to weather forecast on radio/television	48	68.6	44	63.8
Listening carefully to any community announcement	17	24.7	14	20.3
Building the house with strong building materials	6	8.6	8	11.6
Look at the text message in mobile phone	5	7.1	4	5.8
Strategies being taken by children in the family*				
Viewing of text message in mobile phone	8	11.4	7	10.1
Listen carefully to any community announcement	7	10.0	13	18.8
Preparing for evacuation (dry food, torchlight, drinking water bottle)	6	8.6	9	13.0
Building the house with strong building materials	2	2.9	3	4.3
Regularly listen to weather forecast on radio/TV	1	1.4	1	1.4
Gathering relevant information from social media	1	1.4	1	1.4

*Multiple response.

9.2 Government and non-government initiatives for Disaster Risk Reduction (DRR) in coastal Bangladesh

Table 9.5 Elderly men and women by whether government and non-government initiatives are effective enough for Disaster Risk Reduction (DRR) of coastal Bangladesh

Whether government and non-government initiatives are effective	Elderly Male		Elderly Female	
	n	%	n	%
Yes	172	91.0	97	85.1
No	17	9.0	17	14.9
Total	189	100.0	114	100.0

Table 9.6 men and women heads of household by whether government and non-government initiatives are effective enough for Disaster Risk Reduction (DRR) of coastal Bangladesh

Whether government and non-government initiatives are effective	Men heads of household		Women heads of household	
	n	%	n	%
Yes	141	89.2	138	90.2
No	17	10.8	15	9.8
Total	158	100.0	153	100.0

Table 9.7 Widowers and widows by whether government and non-government initiatives are effective enough for Disaster Risk Reduction (DRR) of coastal Bangladesh

Whether government and non-government initiatives are effective	Widower		Widow	
	n	%	n	%
Yes	64	90.1	165	93.7
No	7	9.9	11	6.3
Total	71	100.0	176	100.0

Table 9.8 Men and women with disabilities by whether government and non-government initiatives are effective enough for Disaster Risk Reduction (DRR) of coastal Bangladesh

Whether government and non-government initiatives are effective	Men with disabilities		Women with disabilities	
	n	%	n	%
Yes	62	87.3	59	85.5
No	9	12.7	10	14.5
Total	71	100.0	69	100.0

9.2 Suggestions for reducing the negative impacts of climate change and disasters

Table 9.9 Elderly men and women by top suggestions for reducing the negative impacts of climate change

Top suggestions for reducing the negative impacts of climate change*	Elderly men		Elderly women	
	n	%	n	%
Prevent salinity intrusion	173	91.5	93	60.8
Prevent deforestation	171	90.5	105	68.6
Construct embankments/beribadh	144	76.2	79	51.6
Reduce burning wood and trees (e.g. brick field)	109	57.7	62	40.2

Prevent shrimp cultivation	86	45.5	60	39.2
Environment sensitive industrialization	28	14.8	10	6.5
Reduce fuel consumption (e.g. transport)	22	11.6	19	12.4
Prevent water logging	9	4.7	10	6.5
Alternative cooking fuel	6	3.2	6	3.9
Alternative product for furniture	4	2.1	2	1.3
Prevent arsenic contamination	3	1.6	2	1.3

*Multiple response.

Table 9.10 Men and women heads of household by their top suggestions for reducing the negative impacts of climate change

Top suggestions for reducing the negative impacts of climate change*	Men heads of household		Women heads of household	
	n	%	n	%
Prevent deforestation	149	94.3	142	92.8
Prevent salinity intrusion	134	84.8	132	86.3
Construct embankments/ <i>beribadh</i>	126	79.7	126	82.3
Reduce burning wood and trees (e.g. brick field)	95	60.1	89	58.2
Prevent shrimp cultivation	74	46.8	70	45.7
Reduce fuel consumption (e.g. transport)	40	25.3	23	15.0
Environment sensitive industrialization	33	20.9	16	10.4
Prevent water logging	11	7.0	9	5.9
Alternative cooking fuel	6	3.8	8	5.2
Alternative product for furniture	2	1.3	-	-
Prevent arsenic contamination	2	1.3	2	1.3

*Multiple response.

Table 9.11 Widowers and widows by top suggestions for reducing the negative impacts of climate change

Top suggestions for reducing the negative impacts of climate change*	Widower		Widow	
	n	%	n	%
Prevent deforestation	67	94.4	171	97.2
Prevent salinity intrusion	65	92.8	149	84.7
Construct embankments/ <i>beribadh</i>	61	85.9	141	80.1
Reduce burning wood and trees (e.g. brick field)	38	53.5	99	56.2
Prevent shrimp cultivation	29	40.8	71	40.3
Environment sensitive industrialization	17	23.9	20	11.4
Reduce fuel consumption (e.g. transport)	12	16.9	20	11.4
Prevent water logging	5	7.0	7	4.0
Alternative cooking fuel	4	5.6	11	6.2
Alternative product for furniture	1	1.4	4	2.3

*Multiple response.

Table 9.12 Men and women with disabilities by top suggestions for reducing the negative impacts of climate change

Top suggestions for reducing the negative impacts of climate change*	Men with disabilities		Women with disabilities	
	n	%	n	%
Prevent deforestation	55	78.6	52	75.4
Prevent salinity intrusion	54	77.1	57	82.6
Construct embankments/beribadh	46	65.7	45	65.2
Reduce burning wood and trees (e.g. brick field)	31	44.3	37	53.6
Prevent shrimp cultivation	23	32.8	28	40.6
Reduce fuel consumption (e.g. transport)	11	15.7	9	13.0
Environment sensitive industrialization	7	10.0	9	13.0
Alternative cooking fuel	6	8.6	1	1.4
Prevent water logging	5	7.1	2	2.9
Alternative product for furniture	2	2.9	-	-
Prevent arsenic contamination	1	1.4	-	-

*Multiple response.

Table 9.13 Top Suggestions for reducing the negative impacts of disasters

Top suggestions for reducing the negative impacts of disasters*	Elderly Men		Elderly Women	
	n	%	n	%
Prevent deforestation	186	98.4	109	95.6
Prevent salinity intrusion	167	88.4	83	72.8
Construct embankments/beribadh	163	86.2	87	76.3
Reduce burning wood and trees (e.g. brick field)	123	65.1	76	66.7
Prevent shrimp cultivation	77	40.7	66	57.9
Reduce fuel consumption (e.g. transport)	20	10.6	14	12.3
Environment sensitive industrialization	19	10.1	8	7.0
Prevent water logging	9	4.8	49	43.0
Alternative cooking fuel	8	4.2	7	6.1
Alternative product for furniture	3	1.6	2	1.7
Others	1	0.5	10	8.8

*Multiple response.

Table 9.14 Men and women heads of household by top suggestions for reducing the negative impacts of disasters

Top suggestions for reducing the negative impacts of climate change*	Male headed household		Female headed household	
	n	%	n	%
Prevent deforestation	144	91.1	142	91.5
Prevent salinity intrusion	137	86.7	135	88.2
Construct embankments/beribadh	126	81.6	113	73.9
Reduce burning wood and trees (e.g. brick field)	85	53.8	81	52.9
Prevent shrimp cultivation	69	43.7	64	41.8
Reduce fuel consumption (e.g. transport)	40	25.3	35	22.9
Environment sensitive industrialization	31	19.6	19	12.4
Prevent water logging	10	6.3	9	8.5

Alternative cooking fuel	5	3.2	8	5.2
Alternative product for furniture	2	1.3	-	-
Prevent arsenic contamination	1	0.6	2	1.3

**Multiple response.*

Table 9.15: Widower and widow by top suggestions for reducing the negative impacts of disasters

Top suggestions for reducing the negative impacts of disasters*	Widower		Widow	
	n	%	n	%
Prevent deforestation	69	97.2	173	98.3
Construct embankments/beribadh	63	88.7	156	88.6
Prevent salinity intrusion	59	83.1	141	80.1
Reduce burning wood and trees (e.g. brick field)	44	62.0	110	62.5
Prevent shrimp cultivation	28	39.4	68	38.6
Environment sensitive industrialization	14	19.7	17	9.7
Reduce fuel consumption (e.g. transport)	13	18.3	15	8.5
Alternative cooking fuel	5	7.0	10	5.7
Prevent water logging	5	7.0	6	3.4
Alternative product for furniture	2	2.8	3	1.7
Prevent arsenic contamination	1	1.4	2	1.1

**Multiple response.*

Table 9.16 Men and women with disabilities by top suggestions for reducing the negative impacts of disasters

Top suggestions for reducing the negative impacts of disasters*	Men with disabilities		Women with disabilities	
	n	%	n	%
Prevent deforestation	60	85.7	57	82.6
Construct embankments/beribadh	55	78.6	48	69.6
Prevent salinity intrusion	53	75.7	54	78.3
Reduce burning wood and trees (e.g. brick field)	41	58.6	41	59.4
Prevent shrimp cultivation	18	25.7	27	39.1
Reduce fuel consumption (e.g. transport)	10	14.3	9	13.0
Environment sensitive industrialization	7	10	9	13.0
Alternative cooking fuel	6	8.6	1	1.4
Prevent water logging	2	2.8	2	2.9
Alternative product for furniture	1	1.4	-	-

**Multiple response.*

Annex B: Interview Schedule

Interview Schedule for Household Study of Marginalized Community of Shymanagar upazila

Households will be purposively selected:

- Elderly men/women above the age of 60 years
- Men/women heads of households
- Widows/widower
- Adult men/women with disabilities

A. Demographic information

Name of the village:

Union:

Thana:

Upazila:

District:

1. Name of the respondent:

2. Age (in years)

3. Sex: 1. Male 2. Female

4. Religion:

Code	Religion
1	Muslim
2	Hindu
3	Christian
4	Buddhist

5. Marital status

Code	Marital status
1	Married
2	Single
3	Divorcee
4	Abandoned
5	Separated
6	Widow
7	Widower

6. Education:

Code	Level of education
1	Can sign only
2	Class 1-4
3	Class 5-8
4	Class 9-10
5	SSC
6	HSC
7	Graduate
8	Masters

7. Present occupation:

Code	Primary occupation	Code	Secondary occupation
1	Agriculture (own land)	1	Agriculture (own land)
2	Share cropper	2	Share cropper
3	Agricultural day labourer	3	Agricultural day labourer
4	Homestead gardening	4	Homestead gardening
5	Livestock rearing (poultry, goats, cows etc.)	5	Livestock rearing (poultry, goats, cows etc.)
6	Shrimp cultivation (owner)	6	Shrimp cultivation (owner)
7	Shrimp & crab cultivation labourer	7	Shrimp & crab cultivation labourer
8	Crab cultivation	8	Crab cultivation
9	Collector of forest products (fuelwood for selling)	9	Collector of forest products (fuelwood for selling)
10	Honey collector	10	Honey collector
11	Mason	11	Mason
12	Day labourer for construction work	12	Day labourer for construction work

13	Rickshaw or van puller	13	Rickshaw or van puller
14	Fisherman	14	Fisherman
15	Boatman	15	Boatman
16	Others, specify	16	Others, specify

8. What are different sources of water?

Code	Different sources of water
1	Tube-well
2	Pond
3	Tap water
4	Pressure sand filter (PSF)

9. What is the distance of water sources?

Code	Distance of water sources
1	Nearby
2	Within 2 kilometers
3	Within 1 kilometer
4	Within half a kilometer
5	Very far away

10. What are the types of toilet facilities?

Code	Type of toilet facilities
1	Slab latrine at home
2	Sanitary latrine with water system
3	Open latrine with makeshift wall
4	No slab latrine
5	No latrine at all

11. Do you have a toilet that is friendly for persons with disabilities?

Yes ☐ No ☐

B. Climate change and experience of natural disaster

1. What do you understand by climate change?

2. What do you understand by disaster?

3. During your lifetime, have you noticed any changes in climate?

Yes ☐ No ☐

If yes, what changes have you noticed? (multiple responses)

Code	Changes you have noticed
1	Erratic/unpredictable rainfall
2	Too cold
3	Too hot
4	Change of season
5	Air pollution
6	Water pollution
7	Salinity
8	Water logging
9	Crop failure
10	No rainfall
11	Drought
12	Other, specify

4. What causes of climate change and disaster? (multiple responses)

Code	Causes of climate change	Code	Causes of disaster
1	Burning coal, oil & gas	1	Pollution (air, water)
2	Cutting down forests (deforestation)	2	Harmful farming practices using excessive
3	Increasing livestock farming (cows, sheep produce large amount of methane when they digest their food)	3	Unplanned industrialization
4	Unplanned industrialization	4	Deforestation
5	Over population	5	Over population
6	Global warming	6	Global warming
7	Do not know	7	Do not know

5. Have you experienced any disasters in your lifetime?

Yes ☐ No ☐

If yes, what type of disaster did you experience and how often?

Code	Type of disaster	Code	How often this occur
1	Cyclones	1	Every year
2	Tidal surge	2	About 2-4 years
3	Severe floods	3	About 5-9 years
4	Salinity intuition	4	About 10 years
5	Water logging	5	More than 10 years
6	Others, specify	6	

6. Which disaster have you faced recently in your locality?

Code	Type of disaster	Specify the year
1	Cyclones	
2	Tidal surge	
3	Severe floods	
4	Salinity intuition	
5	Water logging	
6	Others, specify	

7. Do you think the frequency of disasters such as cyclones, tidal surge, severe floods, salinity intuition, water logging have increased over time?

Yes ☐ No ☐

If yes, which disasters and why do you think these are more frequent?

Code	Type of disaster	Why?
1	Cyclones	
2	Tidal surge	
3	Severe floods	
4	Salinity intuition	
5	Water logging	
6	Others, specify	

8. Which category of people are most affected by disaster in your locality?

Code	Category of people	Code	Most affected	Code	Moderately affected	Code	Not at all affected
1	Children (0-12 yrs)	1		1		1	
2	Adolescent boys (13-18 yrs)	2		2		2	
3	Adolescent girls (13-18 yrs)	3		3		3	
4	Women	4		4		4	
5	Men	5		5		5	
6	Elderly	6		6		6	
7	Persons with disability	7		7		7	
8	All the family members	8		8		8	

9. What damages were caused due to the recent disaster to you and your family?

Code	Types of damages/losses	Approximate cost in Taka
1	Loss of assets	
2	Loss of livestock	
3	Loss of employment	
4	Economic loss	
5	Physical injuries	
6	Mental shock	
7	Others, specify	

10. What measures did you take or your family took to reduce the losses (multiple answer)

Code	Measures taken by you and your family
1	Planting of salinity resistant plants
2	Floating cultivation
3	Changing occupation
4	Selling of land
5	Mortgaging land
6	Migrated to other area
7	Borrowed money
8	Sold jewelry
9	Sold livestock
10	Sold poultry
11	Sold utensils
12	Others, specify

11. What are challenges faced by you and your family due to disaster?

Code	Challenges faced by you and your family
1	Scarcity of safe water
2	Lack of food
3	Lack of shelter
4	High price of essentials
5	Scarcity of fuelwood
6	Cooking problem
7	Disruption of communication and transportation
8	Feel insecure
9	Closing of schools/Dropout of children from school
10	Loss of employment opportunity
11	Health problems

12	Destruction of storage facilities
13	Others, specify

C. Livelihood impacts

1. Has there been any change in your livelihood due to disaster?

Yes ☐ No ☐

If yes, what are those?

Code	Type of livelihood activities	Code	Before disaster	Code	After disaster
1	Agriculture (own land)	1		1	
2	Share cropper	2		2	
3	Agricultural day labourer	3		3	
4	Homestead gardening	4		4	
5	Livestock rearing (poultry, goats, cows etc.)	5		5	
6	Shrimp cultivation (owner)	6		6	
7	Shrimp & crab cultivation labourer	7		7	
8	Crab cultivation	8		8	
9	Collector of forest products (fuelwood for selling)	9		9	
10	Honey collector	10		10	
11	Mason	11		11	
12	Day labourer for construction work	12		12	
13	Rickshaw or van puller	13		13	
14	Fisherman	14		14	
15	Boatman	15		15	
16	Others, specify	16		16	

2. What are the existing livelihood options in your area?

Code	Livelihood options	Code	Men	Code	Women	Code	Adolescents
1	Small trading	1		1		1	
2	Van pulling	2		2		2	
3	Vending	3		3		3	
4	Animal husbandry	4		4		4	
5	Nursery	5		5		5	
6	Floating gardening	6		6		6	
7	Fish cultivation	7		7		7	
8	Crab cultivation	8		8		8	
9	Shrimp cultivation	9		9		9	
10	Migration	10		10		10	
11	Others, specify	11		11		11	

3. Household and other activities by household members

Code	Activities	Code	Men	Code	Women	Code	Boys	Code	Girls
1	Cooking	1		1		1		1	
2	Cleaning	2		2		2		2	
3	Washing	3		3		3		3	
4	Homestead gardening	4		4		4		4	
5	Livestock rearing	5		5		5		5	
6	Handicraft production	6		6		6		6	
7	Sewing	7		7		7		7	
8	Marketing	8		8		8		8	
9	Others, specify	9		9		9		9	

F. Water and Sanitation

1. What is the source of your water before, during and after disaster?

Code	Source of water	Code	Before	Code	During	Code	After
1.	Tube-well	1.		1.		1.	
2.	Well	2.		2.		2.	
3.	Pond	3.		3.		3.	
4.	River	4.		4.		4.	
5.	Tap water	5.		5.		5.	
6.	Others, specify	6.		6.		6.	

2. What is the source of your water before, during and after disaster?

Code	Condition of water	Code	Before	Code	During	Code	After
1.	Pure drinking water was available	1.		1.		1.	
2.	Drinking water was available but had to fetch from long distance	2.		2.		2.	
3.	Water was scarce but accessible	3.		3.		3.	
4.	Salinity in the water was unacceptable for consumption.	4.		4.		4.	
5.	Arsenic in the water	5.		5.		5.	
6.	No pure drinking water was available	6.		6.		6.	
7.	Well water was not available	7.		7.		7.	
8.	Non-functional tube well	8.		8.		8.	
9.	Others, specify	9.		9.		9.	

3. Who collects drinking water?

Code	Who collects drinking water
1.	Women
2.	Men
3.	Girls
4.	Boys

4. Time required for fetching drinking water

Code	Time required for fetching drinking water
1.	Less than 15 minutes
2.	15 – 30 minutes
3.	30 – 60 minutes
4.	More than hour

5. Distance of water source

Code	Distance of drinking water source
1.	Nearby
2.	Within half a kilometer
3.	Within 1 kilometer
4.	Within 2 kilometers
5.	Very far away

6. What is the type of toilet you are presently using?

Code	Type of toilet
1.	Sanitary latrine with water system
2.	Slab latrine at home
3.	No slab latrine
4.	Open latrine with makeshift wall
5.	No latrine at all
6.	Others (specify)

7. What type of toilet do you use before, during and after disaster?

Code	Type of toilet	Code	Before disaster	Code	During disaster	Code	After disaster
1.	Sanitary latrine with water system	1.		1.		1.	
2.	Slab latrine at home	2.		2.		2.	
3.	No slab latrine	3.		3.		3.	
4.	Open latrine with makeshift wall	4.		4.		4.	
5.	No latrine at all	5.		5.		5.	
6.	Others (specify)	6.		6.		6.	

G. Food consumption

1. Consumption patterns related to food in different phases of disasters?

Code	Food and nutrition	Code	Before disaster	Code	During disaster	Code	After disaster
1.	Hunger & food insecurity	1.		1.		1.	
2.	Reducing the number of meals	2.		2.		2.	
3.	Unequal food distributed to male and female family members	3.		3.		3.	
4.	Consumption of fruits	4.		4.		4.	
5.	Consumption of meat and fish	5.		5.		5.	
6.	Others, specify	6.		6.		6.	

2. Frequency of food intake

Code	Frequency	Code	Before disaster	Code	During disaster	Code	After disaster
1.	3 Times meal a day	1.		1.		1.	
2.	2 Time meal a day	2.		2.		2.	
3.	1 Time meal a day	3.		3.		3.	
4.	Hunger and no meal even within a day	4.		4.		4.	
5.	No meal within 2 days	5.		5.		5.	

H. Health impacts

1. Have you suffered from any health problems due to disaster?

Yes ☐ No ☐

If yes, what are those?

Code	Health impacts	Code	Before disaster	Code	During disaster	Code	After disaster
1.	Type of diseases	1.		1.		1.	
2.	Diarrhea	2.		2.		2.	
3.	Malaria	3.		3.		3.	
4.	Diathermia	4.		4.		4.	
5.	Fever & cough	5.		5.		5.	
6.	Jaundice	6.		6.		6.	
7.	Skin diseases	7.		7.		7.	
8.	Depression and anxiety	8.		8.		8.	
9.	Post-traumatic stress disorder	9.		9.		9.	
10.	Accidents and injuries	10.		10.		10.	
11.	Others, specify	11.		11.		11.	

2. What measures did you take to reduce the health impact?

Code	Measures taken	Code	Before disaster	Code	During disaster	Code	After disaster
1.	Went to the nearby hospital	1.		1.		1.	
2.	Went to the local/ village doctor	2.		2.		2.	
3.	Went to the pharmacy and brought some medicine	3.		3.		3.	
4.	Took traditional medicine (Kobiraji)	4.		4.		4.	
5.	Did not go to the hospital or to the doctors and did not take any medicine	5.		5.		5.	
6.	Others, specify	6.		6.		6.	

I. Gender violence

1. Have you or any of your family members suffered from any gender based violence during or after disaster?

Yes ☐ No ☐

If yes, what type of violence and where:

Code	Type of violence	Code	Inside house	Code	Outside house	Code	Disaster shelter	Code	Other places (school as shelter, etc.
1.	Verbally abused	1.		1.		1.		1.	
2.	Sexual harassment	2.		2.		2.		2.	
3.	Abducted	3.		3.		3.		3.	
4.	Raped	4.		4.		4.		4.	
5.	Battering	5.		5.		5.		5.	
6.	Physical violence	6.		6.		6.		6.	
7.	Other, specify	7.		7.		7.		7.	

J. Migration

1. Have your family moved from their place of residence due to disaster?

Yes ☐ No ☐

2. Did any family member migrated or left the village in search of livelihood options?

Yes ☐ No ☐

K. Disaster Preparedness

1. Did you took any disaster preparedness?

Yes ☐ No ☐

If yes, what were the type of preparation?

Code	Type of disaster preparation	Code	Individual	Code	family
1.	Saving dry food	1.		1.	
2.	Saving money	2.		2.	
3.	Keeping essential things underground	3.		3.	
4.	Making the floor of the house high	4.		4.	
5.	Purifying of drinking water	5.		5.	
6.	Storing of essential medicines	6.		6.	
7.	Raising the beds	7.		7.	
8.	Others, specify	8.		8.	

3. Did the above disaster preparedness help you and your family members?

Yes ☐ No ☐

If yes, which ones are the most effective (multiple response)

Code	Most effective disaster preparation
1.	Saving dry food
2.	Saving money
3.	Keeping essential things underground
4.	Making the floor of the house high
5.	Purifying of drinking water
6.	Storing of essential medicines
7.	Raising the beds
8.	Others, specify

4. Did you receive any information of forthcoming disaster?

Yes ☐ No ☐

If yes, what type of information or disaster warning did you get and from whom?

Code	Type of disaster warning	Code	Who provided the warning
1.	Announcement through miking	1.	Upazila weather forecast office
2.	Announcement from the mosque	2.	Upazila chairman
3.	Local community warning system	3.	Upazila Disaster Management Committee (UDMC)
4.	Danger siren	4.	Mobile phone operators
5.	Radio announcement	5.	Local radio station
6.	Social media	6.	Television

7.	Text message through mobile phone	7.	Community volunteers
8.	Other, specify	8.	Other, specify

5. Which type of disaster warning information is most effective, please tick

Code	Type of disaster warning	Please tick
1.	Announcement through miking	
2.	Announcement from the mosque	
3.	Local community warning system	
4.	Danger siren	
5.	Radio announcement	
6.	Social media	
7.	Text message through mobile phone	
8.	Other, specify	

L. Type of Support

1. What types of support did you receive?

Code	Type of support	Code	Government	Code	Non-government (specify)	Code	Relations
1.	Monetary support	1.		1.		1.	
2.	Shelter	2.		2.		2.	
3.	Food	3.		3.		3.	
4.	Water	4.		4.		4.	
5.	Clothing	5.		5.		5.	
6.	Bedding	6.		6.		6.	
7.	Medicine	7.		7.		7.	
8.	Medical treatment	8.		8.		8.	
9.	Housing materials	9.		9.		9.	
10.	Others, specify	10.		10.		10.	

M. Strategies and Suggestions

1. What are the present strategies you are taking to save yourself and your family from the impacts of any forthcoming disaster?

Code	Present strategies
1	Building the house with strong materials
2	Regularly listen to weather forecast on radio/TV
3	Listen carefully to any community announcement
4	Look at the text messages in mobile phone
5	Social media
6	Preparing for evacuation (dry food, torchlight, drinking water bottle)
7	Others, specify

2. Do you think that government and non-government initiatives are effective enough for Disaster Risk Reduction (DRR) of Coastal Bangladesh?

Yes ☐ How?

No ☐ Why?

3. What are the 3 top suggestions for reducing the negative impacts of climate change and disasters?

Code	3 top suggestions
1	Reduce fuel consumption (e.g., transport)
2	Reduce burning wood and trees (e.g., for brick field)
3	Environmental sensitive industrialization
4	Alternative cooking fuel
5	Alternative product for furniture
6	Others, specify

4. What steps would you suggest for better management of disaster and climate change and who should take those steps?

Code	Who should take those steps	Code	What steps
1	Self	1	Early disaster warning
2	Family	2	Engaging of volunteers
3	Community	3	Engaging of community
4	NGOs	4	Engaging of NGOs
5	Government	5	More active participation of government departments
6	Others, specify	6	Capacity building of stakeholders
7		7	Others, specify

