


## A BASELINE STUDY ON

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# Resilience Strengthening of Vulnerable Population in Northern, Western And Eastern Bangladesh Through A Network Approach of 5 Partner Organizations

Submitted By

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Recently Programme for Helpless And Lagged Societies (PHALS) is implementing a project “Resilience strengthening of vulnerable populations in northern, western and eastern Bangladesh through a network approach of 5 partner organizations” from December 2022 to July 2025, technical and financial supported by Malteser International (MI), Germany in Khuruskul and Chowfaldandi unions under Sadar Upazila, Cox’s Bazar district, Bangladesh.

The journey towards building resilience and sustainable development requires a deep understanding of the challenges faced by vulnerable communities. As the Dean of the Faculty of Graduate Studies (FGS) at Daffodil International University, I take the pleasure in the comprehensive research and analysis carried out for this project's baseline study. This study serves as a crucial foundation, guiding the project's initiatives and interventions to empower the vulnerable populations in in Khuruskul and Chowfaldandi unions under Sadar Upazila, Cox’s Bazar district, Bangladesh.

By collaborating with PHALS and Malteser International, we have embraced the power of partnerships and cooperation, recognizing that our collective efforts can make a meaningful difference in the lives of those in need. The resilience of vulnerable populations is paramount, especially in the face of various environmental, social, and economic challenges. This project is committed to providing these communities with the necessary tools, resources, and supports to not only cope with adversities but also to thrive and grow stronger. Furthermore, I commend the visionary leadership of PHALS and the generous support of Malteser International (MI), Germany. Their unwavering commitment to uplifting vulnerable populations demonstrates a shared mission to create a more equitable and resilient society. As we embark on this transformative journey, I encourage all stakeholders to actively engage with this project. Together, we can forge a path towards a more resilient and sustainable future for the vulnerable populations in Bangladesh.

I look forward to witnessing the impact and progress of this project as we strive to make a positive and lasting difference in the lives of those most in need.



**Dr. Md Kabirul Islam**

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## Acknowledgement

We extend our heartfelt gratitude to the Almighty for His divine grace, which played a pivotal role in the successful completion of this research entitled **"Resilience Strengthening of Vulnerable Population in Northern, Western, and Eastern Bangladesh Through a Network Approach of 5 Partner Organizations."**

We would like to express our sincere appreciation to the Honorable Pro-Vice-Chancellor, DIU, Prof. Dr. S.M. Mahbub Ul Haque Majumder, and Member of BoT, DIU, Prof. Dr. Mohamed Emran Hossain, for their unwavering support, valuable suggestions, and encouragement throughout this endeavor. Their precious time and guidance enriched the final report of this study.

Our gratitude also extends to the study participants, especially persons with disabilities, vulnerable women, community members, and other stakeholders, whose cooperation was integral to the successful execution of this research.

We are deeply thankful to the management officials, experts, and supporting staff at PHALS, particularly Akhyai Mong Marma, Chief of Programmes, for their indispensable assistance, from data collection in the study locations to the preparation of the final report. Nevertheless, we also thank Mr Shaheedul Islam, Project Coordinator, Malteser International for his invaluable technical inputs throughout the study process.

Lastly, we would like to acknowledge and thank all the dedicated members of the study team, who devoted countless sleepless nights to ensure the successful completion of this report. Without their commitment and hard work, this research would not have been possible.

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## Table of Content

Foreword.....	02
Acknowledgement.....	03
Study Team.....	04
Abbreviation.....	06
Executive Summary.....	07
<b>Chapter 01</b> Introduction and Background.....	10
1.1. Justification of the Study.....	14
1.2. Objective of the Study.....	17
<b>Chapter 02</b> Literature Review.....	19
<b>Chapter 03</b> Methodology.....	27
3.1. Study Design and Settings.....	27
3.2. Target Population and Sampling.....	29
3.3. Data Collection Instruments and Sources.....	29
3.4. Data Collectors' Training.....	30
3.5. Quality Control Mechanism.....	30
3.6. Information and Data Analysis.....	31
3.7. Statistical Analysis.....	32
3.8. Compliance With Policies and Ensuring Quality.....	32
3.9. Ethical Considerations.....	32
3.10. Gender Consideration In the Study.....	33
3.11. Child and Vulnerable Adult Safeguarding Issues.....	33
3.12. Study Limitations.....	33
<b>Chapter 04</b> Results and Findings.....	35
4.1. Participants' Demographic Information.....	35
4.2. Participants' Occupation and Livelihood.....	40
4.3. Women's freedom, participation, decision-making power in the family....	46
4.4. Participants' knowledge and understanding of climate change.....	50
4.5. Participants' awareness and access of social safety net programs.....	59
4.6. Information on disaster risk reduction, damage mitigation and adaptation .....	61
<b>Chapter 05</b> Recommendations.....	63
<b>Chapter 07</b> Photos From the Field.....	70
<b>References</b> .....	73

## Abbreviation

BCCSAP	Bangladesh Climate Change Strategy and Action Plan
CCA	Climate Change Adaptation
DIU	Daffodil International University
DPOs	Disabled People's Organizations
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
FGD	Focus Group Discussion
FGS	Faculty of Graduate Studies
KII	Key Informant Interview
MI	Malteser International
NGO	Non-Governmental Organization
PHALS	Programme for Helpless and Lagged Societies
SDGs	Sustainable Development Goals
SRG	Self Reliant Group

## Executive Summary

This executive summary presents the findings of a baseline study for the project titled “Resilience Strengthening of Vulnerable Populations in Northern, Western and Eastern Bangladesh through A Network Approach of 5 Partner Organizations. This project is implementing by PHALS (Programme for Helpless and Lagged Societies) which is supported by Malteser International (MI), Germany. This baseline study conducted in Khuruskul and Chowfaldandi unions under Sadar Upazila, Cox’s Bazar district, Bangladesh. A comprehensive survey and qualitative data collection methods were employed to gather information from the participants. The baseline study highlighted a significant lack of awareness and understanding of climate change among the marginalized and impoverished participants in Khuruskul and Chawfaldandi unions of Cox's Bazar. Many respondents exhibited limited knowledge about the concept of climate change, its causes, and potential impacts on their livelihoods and overall well-being. This knowledge gap poses a considerable challenge to implementing effective climate adaptation and mitigation strategies in the region. The study revealed that the majority of participants were not self-reliant and heavily relied on domestic chores, day labours, small business and some on traditional livelihoods such as agriculture and fishing, which are highly susceptible to the adverse effects of climate change. Increased instances of extreme weather events, changing precipitation patterns, and rising sea levels have negatively impacted their livelihoods activities. Moreover, the lack of access to market, knowledge, skills and capacity further hindered the adoption of alternative income-generation options, perpetuating their vulnerability to different risks and adversity. Poor market accessibility emerged as a significant barrier to improving economic conditions for the participants. The lack of adequate opportunity, accessibility and value chains restricted their ability to access broader markets, thereby limiting their income opportunities and economic growth. This issue is exacerbated by the remoteness of the study area and inadequate linkages to regional and national markets, preventing participants from harnessing their full economic potential. The study findings indicated a persistent gender disparity in the study locations, where women faced numerous challenges regarding their freedom, participation, and decision-making power in both family and community matters. Women's empowerment remained



low, and their limited involvement in decision-making processes hindered the adoption of alternative livelihood strategies that could positively impact their economic and social well-being. Addressing gender inequality is essential to fostering sustainable development and resilience in the face of climate change. Climate change has had adverse effects on income and economic activities among the participants. Irregular weather patterns, increased temperature, sea level rise and increased frequency of natural disasters have disrupted income-generating activities, leading to financial instability and insecurity. As a consequence, participants have faced challenges in sustaining their livelihoods and meeting their basic needs, perpetuating the cycle of poverty. The study also highlighted the tangible impacts of climate change on health, water, and sewage systems in the study area. According to the participants, rising sea levels and extreme weather events have detrimental effects on sewage systems, causing overflow and breaches that contaminate water bodies and nearby lands. This not only pollutes the environment but also enhances the risk of waterborne diseases, affecting both human and aquatic life. The participants were asked to indicate how they use different healthcare providers in this adversities, the majority of participants, numbering 85, frequently seek healthcare support from government hospitals. The second most frequently utilized healthcare provider is the Union Health Service Centre, with 18 participants reporting regular visits. Following closely are community clinics, with 8 participants seeking healthcare there on a regular basis. A smaller number of participants, 6 in total, access healthcare services from NGOs. Lastly, 9 participants mentioned using other healthcare providers regularly. This data provides valuable insights into the preferences and utilization patterns of healthcare services in the surveyed population, indicating the prominence of government hospitals as the primary source of healthcare support. Despite the existence of social safety net programs, the study revealed limited awareness and access among the participants. Many eligible individuals remained unaware of these programs, leading to low participation and uptake. Bureaucratic and political complexities, lack of information dissemination, and limited outreach efforts have contributed to the underutilization of these crucial social support mechanisms, thereby hindering the potential for poverty reduction and increased resilience against climate-related shocks. This baseline study shed light on the significant

challenges faced by the poor and marginalized communities in Khuruskul and Chawfaldandi unions of Cox's Bazar. The study emphasized the urgent need for targeted interventions addressing climate change awareness, livelihood diversification, market development, women's empowerment, climate-resilient infrastructure, and improved access to social safety net programs. By implementing evidence-based strategies and interventions, the project can enhance the participants' socio-economic conditions, foster resilience to climate development in the region.

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## INTRODUCTION AND BACKGROUND

Climate change vulnerabilities of developing and underdeveloped countries are increasing day by day. Among them, Bangladesh is facing severe impacts of climate change due to a paucity of economic, social, technological, and institutional resources. Climate change will influence many driving factors of risk and vulnerability, impacting the most vulnerable communities. Many resource-poor households already have recognized the impacts of climate change on their livelihoods and resources (Alam, M, 2021). Coastal areas face extreme risk due to the increase of climate change-induced vulnerability and other social, economic, and environmental factors. However, an overemphasis on technological innovations, critical cultural factors, exclusion of informal communities, and a breakdown in interaction and cooperation with institutional communities remain barriers to adaptation strategies (Rahman, M. S., & Chowdhury, M. S, 2020).

Coastal communities of Bangladesh such as persons with disabilities, ethnic communities, widowed, unmarried, divorced/separated, and landless, fisher folk and climate refugee are facing much more vulnerability. Anthropogenic stress in terms of over exploitation of biodiversity, fisheries and land based activities (i.e., shrimp and agriculture intensification) already increased stress in natural system of the coasts. Climate change adds to lower recovery or resilience of the natural system for human well-being and livelihoods. Various nature and impacts of climate change shocks affect coastal livelihoods differently and govern vulnerability and adaptive capacity. Some of the disasters are fast in coastal areas in terms of its sudden affects to coastal life and livelihoods like tropical cyclone and storm surges, where others are slow in events like salinity or inundation increase, but these have long-term impacts on social and economic functions (Huq, S., Rahman, A., & Konate, M. 2020). The tropical cyclone of 2007 caused loss of valuable mangroves, social and physical resources and livelihood bases that post-disaster recovery has not yet been possible in Bangladesh. With changing frequency of cyclonic wind and storm surges and inundation coastal agriculture, domestic fisheries and open fishing have been highly

affected which are significant livelihoods sources to majority coastal people. Salinity level is slowly increasing over the time and causing serious threats to traditional agriculture farming and mangrove ecosystems (Ahmed, A. U., & Suphachalasai, S., 2020).

High climate sensitive livelihood characteristics and different socio-economic level and access of community and households to assets determine adaptive capacity. Large local coastal population particularly climate refugee and ethnic minority is less capable to share the majority of the natural resources effectively in livelihood practices due to lack of effective coastal zone policy and regulation, collaborative resource management and local institutional capacity (Adger, W. N., 2021). Adaptation to climate change in coastal areas of Bangladesh especially Cox's Bazar is complex because of an amalgamation of different climate variabilities, geographical dynamics, and the involvement of different stakeholders. A crucial aspect of formulating adaptation programs and projects is to understand the impacts of climate change, practical adaptation practices, and implementation challenges faced in the real world. To ensure sustainable adaptation, it is essential to identify the barriers (Hossain, M. S., & Ahmed, A. U., 2021).

The specter of climate change has emerged as one of the most critical challenges facing humanity. Characterized by rising temperatures, extreme weather events and changing precipitation patterns, climate change has far-reaching consequences that permeate all aspects of life and livelihoods. Among its most profound impacts are the increasing frequency and intensity of natural disasters, which have a devastating effect on communities (Paul, S. K., & Routray, J. K., 2015). The intersection of climate change, disasters, livelihoods, and community dynamics has become an urgent topic of concern for policymakers, development professionals, researchers, and citizens alike. Disasters triggered by climate change are disrupting critical economic sectors, such as agriculture, fisheries, and tourism, which are often the lifeblood of many local communities. The destruction of livelihoods not only leads to immediate suffering but also creates long-term repercussions, forcing people to migrate, lose cultural identities, and deepen existing inequalities (Islam, M. R., & Haque, C. E., 2022).

This comprehensive exploration aims to delve into the complex relationship between climate change, disasters, livelihoods, and community resilience. By analyzing information from diverse local and cultural backgrounds, it uncovers the specific challenges faced by different local communities and the strategies they have employed to cope with the

changing environment. In this way, addressing climate change and its cascading effects on disasters and livelihoods requires a multi-faceted and inclusive approach. Only by fostering a deeper understanding of the interconnectedness of these key elements can devise effective solutions to safeguard communities from the perils of a changing climate.

In the low-lying coastal regions of Bangladesh, the alarming impact of climate change has become an inescapable reality, redefining the very essence of community life. With rising sea levels, intensifying cyclones, and erratic monsoons, the country finds itself at the frontline of climate-induced disasters. In this context, the intersection of climate change, disasters, livelihoods, and community dynamics in coastal Bangladesh presents a poignant and pressing challenge that demands innovative solutions to safeguard the well-being of its resilient inhabitants. Climate change has profoundly altered the coastal landscape of Bangladesh, threatening the survival of millions of people who depend on its fertile deltas and abundant marine resources for their livelihoods (Das, N. C., & Sobhan, I., 2021). Rising sea levels have led to the inundation of farmlands, salinization of freshwater sources, and displacement of communities. The once-predictable monsoons have become erratic, leading to prolonged periods of drought or devastating floods, both of which severely impact agriculture and fisheries (Haque, C. E., & Rahman, M. M, 2021).

Amidst this climate-induced uncertainty, natural disasters like cyclones and storm surges have emerged as increasingly frequent and severe events that shake the very foundation of coastal communities. With poorly constructed infrastructure and limited access to resources, these communities are particularly vulnerable to the destructive forces of such disasters, leading to loss of life, property, and livelihoods. Despite these daunting challenges, the resilience of coastal communities in Bangladesh remains a testament to human adaptability (Chowdhury, M. S., & Rahman, M. S, 2019). Drawing upon traditional knowledge passed down through generations, local inhabitants have developed coping mechanisms to mitigate the impacts of climate change and disasters. Efforts to build resilient livelihoods in the coastal regions have also been bolstered by collaborations with NGOs and governmental initiatives. This comprehensive exploration aims to delve into the unique challenges faced by coastal communities in Bangladesh due to climate change and disasters. By examining the context-specific strategies employed by local populations and the effectiveness of various adaptation and mitigation measures, we hope to uncover valuable insights to inform future policies and practices (Alam, M., & Dominey-Howes, D, 2021).

The complex relationship between climate change, disasters, livelihoods, and community dynamics in coastal Bangladesh demands urgent attention and collaborative action. As we navigate an uncertain future, it is essential to support the resilience of these communities, empowering them to withstand the impacts of climate change while securing sustainable livelihoods. By weaving traditional knowledge with modern innovations and inclusive governance, we can work towards building a stronger and more resilient coastal Bangladesh that stands firm in the face of climate adversity (Rahman, M. M., & Saint Ville, A. S, 2019). In the light of the thoughts discussed above, this study aims to understand, explore and document the livelihood adaptation in the face of changing climate for coastal based community people especially climate refugee and ethnic minority and local surrounding vulnerable community in Khuruskul and Chowfaldandi area under Sadar Upazila in Cox's Bazar district, Bangladesh.

As a climatic sensitive region, Cox's Bazar faces significant challenges due to climate change and the increasing frequency and intensity of natural disasters. With a high population density and a large proportion of its population engaged in agriculture, fisheries and coastal livelihoods, the country is highly susceptible to the impacts of climate change, including sea-level rise, cyclones, floods, and droughts. Understanding community-level vulnerabilities, assessing their adaptation strategies, evaluating resilience efforts, and analyzing capacity-building initiatives are critical in addressing the climate change and natural disaster challenges faced by Cox's Bazar (Akter, S., & Mallick, B, 2021).

This baseline study focuses on local surrounding vulnerable community under Khuruskul and Chowfaldandi area, Cox's Bazar district and aims to provide an in-depth analysis of community-level vulnerabilities to climate change and natural disasters, with a specific emphasis on adaptation strategies, resilience measures, and capacity-building initiatives. By adopting an academic approach, this study seeks to enhance the understanding of the complex interplay between households, communities, climate change, and natural disasters in the unique context of Cox's Bazar district, thereby enabling policymakers, researchers, and practitioners to develop evidence-based strategies tailored to the region's needs. Also this baseline study will examine the interactions between social, economic, and environmental factors to identify the most vulnerable communities and the specific challenges they face, enabling policymakers to prioritize resources and interventions effectively.

Adaptation strategies adopted by communities in the study areas to cope with climate change and natural disasters will be a significant focus of this baseline study. It will investigate a range of adaptation measures, including resilient infrastructure development, early warning systems, community-based disaster risk reduction, and climate-smart agricultural practices. The effectiveness and limitations of these strategies will be evaluated, considering factors such as affordability, scalability, and social acceptance. The research will identify successful adaptation practices that can be replicated and scaled up in vulnerable communities across Bangladesh. Resilience is a key factor in building the capacity of communities to withstand and recover from climate-related impacts. This study will analyze the role of social cohesion, local institutions, and governance structures in enhancing community resilience can develop targeted interventions and strategies that enhance adaptive capacity and reduce vulnerabilities. This will assess the effectiveness of capacity-building programs in improving knowledge, skills, and resources at the community level. It will examine educational and training programs, community-based participatory approaches, and the involvement of local institutions in enhancing capacity. The analysis will identify gaps and opportunities in current capacity-building efforts, providing insights for policymakers and practitioners to develop more effective and context-specific interventions. This baseline study aims to contribute to the development understanding of households and community-level climate change and natural disaster vulnerabilities by examining adaptation strategies, resilience measures, and capacity-building initiatives in the local context, this study seeks to inform policymakers, development partners, researchers, and practitioners, enabling them to develop evidence-based strategies to mitigate the impacts of climate change and enhance community resilience in Cox's Bazar regions.

### **1.1. Justification of the study**

Studies have confirmed that climate change is already happening, and local communities must take the necessary steps to prepare for and adjust to the impacts. From the beginning of climate negotiations and development projects, it has been accepted that adaptation has some role to play in responses to climate change. While it has been difficult to define precisely what role adaptation should play, it has become increasingly apparent that all countries will need to develop thorough and sustainable adaptation strategies if the impacts of climate change are to be effectively addressed (Rahman, M. M., & Rahman, M. S., 2019).

Much of the work on adaptation focused on identifying potential impacts of future climate change using different General Circulation Models (GCMs). But the models proved to be extremely limited in telling us about impacts of climate change and therefore did not really provide a basis for catalyzing immediate and practical action on local level adaptation. Moreover, the prevailing emphasis in adaptation assessment and planning was, and to a certain degree continues to be, on large- scale, centralized, technical measures. While these will undoubtedly figure prominently in many national adaptation strategies, they are often removed from local realities and therefore may not be able to yield the sort of vulnerability reduction that is most needed by marginalized, high risk groups – i.e. the poor, climate refugee and ethnic minority (Rahman, M. S., & Hossain, M. M, 2020).

If reducing current vulnerabilities is the starting point of adaptation, then poverty reduction with climate resilient sustainable adaptation livelihoods is essential to the process, since adaptation livelihood is both a condition and determinant of vulnerability. Yet adaptation livelihood requires an understanding of how local livelihoods are conducted and sustained, as the assets and capabilities that comprise peoples' livelihoods often shape poverty and the ability to reduce it. By understanding the dynamics of local people's livelihoods, we can begin to understand how they will be affected by climate change impacts, how they might respond with the resources they have, and how these conditions can be reflected and built upon for successful adaptation strategies (Rahman, M. M., & Islam, M. S., 2019).

Recently PHALS is implementing a project “Resilience strengthening of vulnerable populations in northern, western and eastern Bangladesh through a network approach of 5 partner organizations” from December 2022 to July 2025, technical and financial supported by Malteser International (MI), Germany in Khuruskul and Chowfaldandi unions under Sadar Upazila, Cox's Bazar district, Bangladesh. Under this project, PHALS plans to conduct a baseline study of the project to meet the project goal “Vulnerable households are more resilient to climate change impacts through community organizing, advocacy, alternative livelihood development, localization, and emergency preparedness that project is being implemented by PHALS through local surrounding vulnerable community under Khuruskul and Chowfaldandi area, Cox's Bazar district.

The Cox's Bazar face unique and severe climate change impacts, making it crucial to study community-level vulnerabilities, adaptation, resilience, and capacity in this context. With rising sea levels, increased intensity of cyclones, and saltwater intrusion, local communities



are particularly vulnerable to climate-related hazards (Paul, B. K., & Routray, J. K., 2018). This baseline study provides a justification for studying households and community-level climate change and natural disaster vulnerabilities in Khuruskul and Chowfaldandi area, Cox's Bazar district, with a focus on social and institutional network, governance, knowledge and awareness, adaptation, resilience, and capacity. Investigating vulnerabilities in these areas helps identify specific challenges, such as increased flooding, coastal erosion, and salinity intrusion. This knowledge is essential for developing targeted adaptation measures and policies that address the unique needs of local communities.

In the regions of Cox's Bazar heavily rely on tourism, agriculture, fisheries, and aquaculture for livelihoods and food security. Climate change impacts, such as increased frequency of cyclones, sea-level rise, and changing rainfall patterns, significantly affect these sectors. Through this baseline study on community-level vulnerabilities helps identify the risks and constraints faced by local vulnerable communities, enabling the development of climate-resilient livelihood practices, sustainable livelihood management, and alternative livelihood options. In this way, local communities often experience socio-economic inequalities, with marginalized groups facing higher vulnerabilities (Hoque, M. A., & Hassan, Q. K., 2021). So this baseline study allows for the identification of underlying social, economic, and gender-based disparities. It provides insights into the differential impacts of climate change and natural disasters on various social groups, allowing for the development of inclusive adaptation strategies that address these inequities.

This baseline study helps to identify and evaluate existing adaptation strategies employed by local communities that contribute to successful adaptation. It also highlights gaps and barriers in adaptation efforts, informing targeted interventions and capacity-building initiatives. Enhancing the resilience of coastal communities is critical to reduce the impacts of climate change and natural disasters. This study will identify the key factors that contribute to or hinder resilience, such as social capital, community cohesion, and access to resources. This knowledge informs the development of strategies that strengthen community resilience, including the establishment of community-based disaster management committees, improved infrastructure, and diversified livelihood options. Engaging communities in this baseline study process fosters ownership, local knowledge integration, and the co-creation of solutions can catalyze community-driven initiatives, enhancing their capacity to respond effectively to climate change and natural disasters, while preserving their cultural heritage and

traditional knowledge. This baseline study will contribute to equitable and evidence-based policymaking, empowering local communities of Khuruskul and Chowfaldandi area, Cox's Bazar district to enhance their resilience and secure their livelihoods in the face of climate-related challenges.

## **1.2. Objectives of the study**

Adaptation to climate change is one of the approaches considered likely to reduce the impacts

of long-term changes in climate variables. Adaptation is a process by which strategies to moderate and cope with the consequences of climate change, including climate variability, can be enhanced, developed and implemented. Obviously, many countries already are adapting to current climatic events at national, state, district and local levels in short-, medium- and long-term time frames (Ahmed, A. U., & Neelormi, S, 2019). However, in the past, many structural, physical and institutional adaptation mechanisms, implemented through conventional top-down approaches, lacked community participation and livelihood focus. So appropriate adaptation strategies is required balancing the need to reduce climate change impact with any constraints in local sustainable adaptation livelihoods systems (Huq, S., Karim, Z., & Asaduzzaman, M, 2021).

Considering this framework for action, the PHALS is endeavoring in designing and promoting livelihood adaptation strategies among climate refugee and ethnic minority and local surrounding vulnerable community in Khuruskul and Chowfaldandi area, Cox's Bazar Sadar, Cox's Bazar that may help reduce vulnerability to climate change. To understand this timely issues, the PHALS called for a baseline study related to climate change and disaster impact assessment and adaptation livelihoods that also demonstrates viable adaptation practices to improve the adaptive capacity of the local livelihoods. Additionally, the study is an attempt to understand the project implementing area's climate change and livelihood adaptation for local based community specially persons with disabilities, ethnic communities, widowed, unmarried, divorced/separated, landless, fisher folk and climate refugee. However, the specific objectives of the study are to:

- Understand the importance of DRR & CCA in intervention areas and explore the potential stakeholders in designing the project process
- Identify the climate and disaster risk and impacts and local perceptions of climate hazards including assessment and analysis of capacities and coping strategies.

- Identify the sequences of the climate changes and probability of impact and adaptation livelihood of the local vulnerable community;
- Identify the effectiveness opportunity of Climate Resilience Group members and livelihood sustainability,
- Identify the alternative job opportunity during the lean period;
- Documentation of viable adaptation practices and options for livelihood adaptation; and
- Explore the knowledge and practice on climate smart livelihoods among targeted communities
- Investigate the current practices of climate change adaptation in the community and knowledge level on DiDRR and leadership capacity of Ethnic communities (Rakhine, climate refugee), widowed, unmarried, divorced/separated, and landless and fisher folk in the project location
- Explore and understand of women and persons with disabilities about accessing social safety net program and capacity level of stakeholders on inclusion of ethnic communities, persons with disabilities, widowed, unmarried, divorced/separated, and landless and fisher folks
- Comprehend the present scenario of functionality and inclusion of different disaster management committees in the project location and how effectively women including persons with disabilities, ethnic communities, widowed, unmarried, divorced/separated, and landless and fisher folk are contributing in different disaster management committees and decision-making process. And degree different disaster management committee is organized to manage crisis in an inclusive manner during disaster
- Find out the status of union Parishad regarding inclusion in DRM and CCA initiatives
- Reveal the present status of voices of communities including ethnic communities, persons with disabilities, widowed, unmarried, divorced/separated, and landless and fisher folk in different committees of local government and coordination committees
- Investigate about understandings of target participants for issue-based advocacy to the policy makers at the local and national level

# CHAPTER 2

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## LITERATURE REVIEW

Climate change is one of the most pressing global issues of the 21st century, with profound implications for disasters, livelihoods, and communities. The impact of climate change on disasters is a well-researched area (Islam, M. S., & Wahab, M. A, 2019). A multitude of studies demonstrate that the frequency and intensity of natural disasters are escalated by climate change. Rising global temperatures contribute to the increased instance of floods, droughts, storms and cyclones. Similarly, warmer oceans augment the severity of tropical storms, hurricanes, and floods. Climate change-induced disasters have significant implications for livelihoods. For instance, agricultural and fishing communities are particularly vulnerable to changes in weather patterns and sea-level rise. Communities dependent on these industries face reduced productivity, food insecurity, and potential displacement (Rahman, A., & Alam, M., 2021).

Furthermore, the literature also emphasizes the differential impact of climate change on communities. Vulnerability to climate change is not evenly distributed, with disadvantaged and marginalized communities bearing the brunt of its effects due to their limited capacity to adapt (Hossain, M. S., & Roy, K., 2021). This inequity calls for climate justice, a concept gaining momentum in contemporary climate discourse. The intersection of climate change, disasters, livelihoods, and community is complex. Climate change aggravates disasters, which in turn threaten livelihoods and put communities at risk. However, it also brings opportunities for community resilience. Communities are adapting and innovating to mitigate the impacts of climate change on their livelihoods and to reduce disaster risk (Reaz, S. A., & Saint Ville, A. S., 2019).

The scientific literature portrays a stark reality – climate change is already influencing livelihood sectors. In agricultural regions, changing precipitation patterns, rising temperatures, and erratic monsoons are altering crop yields and harvest cycles. Coastal communities are grappling with rising sea levels, leading to saltwater intrusion and endangering traditional fishing practices. These changes disrupt livelihoods and create a

ripple effect, amplifying food insecurity and economic instability among vulnerable populations (IPCC, 2014). The increasing frequency and intensity of climate-induced disasters are taking a toll on local communities. Hurricanes, cyclones, droughts, and floods have escalated, leading to extensive damage to infrastructure, loss of lives, and displacement of populations. Disasters disproportionately affect low-income communities with limited resources and infrastructural resilience, exacerbating social inequalities and poverty levels (Islam, M. S., & Sallu, S. M., 2021). Community-based approaches have emerged as an effective way to build resilience against climate change and disasters. These approaches emphasize the involvement of local communities in planning, decision-making, and implementation. Participatory methods, such as vulnerability mapping and community action plans, empower individuals to identify risks and devise context-specific adaptation measures (Akhter, M., 2019). While community-based approaches show promise, they are not without challenges. Limited access to resources, lack of technical expertise, and social inequities can impede the effective implementation of resilience-building initiatives. Additionally, communities often face obstacles in accessing external support, hindering their capacity to cope with the multifaceted impacts of climate change and disasters (Ali, A., 2020).

The role of policy and governance is critical in shaping community resilience. National and international policies that integrate climate change adaptation and disaster risk reduction strategies are essential. Effective governance ensures that resources and support are channeled appropriately to vulnerable communities, enabling them to overcome barriers and implement community-driven solutions (Adger et al., 2011). Collaboration between researchers, policymakers, and communities can strengthen community resilience efforts. Participatory research, where scholars and practitioners co-produce knowledge, fosters a deeper understanding of local contexts, leading to more effective interventions. Knowledge exchange platforms facilitate sharing best practices, lessons learned, and innovations among diverse stakeholders, fostering collective learning and problem-solving (Huq, S., Rahman, A., & Konate, M., 2018).

Scientific research confirms that coastal Bangladesh is experiencing the consequences of climate change. Rising sea levels have led to coastal erosion and salinization of agricultural lands, leaving farmers with diminished yields and reduced income. Inundation of coastal areas during cyclones disrupts fishing practices, impacting the income and food

security of thousands who rely on marine resources for survival (Kabir, M. R., & Endlicher, W., 2020). Coastal Bangladesh is frequently battered by cyclones, floods, and storm surges, exacerbating the vulnerabilities of communities living in the region. Disasters disrupt livelihoods and displace populations, increasing poverty and intensifying socio-economic disparities. Studies highlight the disproportionate impacts of disasters on women and marginalized groups, further exacerbating gender and social inequalities (Ahmed, A. U., Neelormi, S., 2019).

Coastal communities in Bangladesh have demonstrated resilience and adaptability in the face of climate change-induced adversities. Drawing upon their traditional knowledge, they have developed adaptive measures to cope with changing conditions. Innovative practices, such as floating gardens and bamboo structures, enable communities to sustain livelihoods during floods and salinity intrusions. Moreover, indigenous fishing communities have developed strategies for early warning and timely evacuation during cyclones (Alam, M., 2019). Community-based approaches have gained traction as effective strategies to build resilience in coastal Bangladesh. Participatory vulnerability assessments empower communities to identify risks and develop context-specific adaptation plans. Local institutions, such as women-led self-help groups and village committees, play a crucial role in implementing resilience-building initiatives, ensuring ownership and sustainability (Ali, A. G. M. S., & Rahman, M. M., 2018).

Coastal communities face formidable challenges in implementing community-based resilience initiatives. Limited financial resources, inadequate technical expertise, and lack of access to information hinder their capacity to adapt. Furthermore, social hierarchies and gender norms can impede the participation of marginalized groups, constraining the effectiveness of resilience-building efforts (Chowdhury, M. S. H., & Koike, M., 2019). To mitigate the impacts of livelihood insecurity, coastal communities have developed various coping mechanisms. Seasonal migration to cities or nearby regions for casual labor and non-farm activities during lean seasons becomes a means of survival for some households. Others resort to the sale of productive assets, such as land and cattle, to meet immediate needs during crises. Informal credit systems, though helpful in times of distress, often lead to indebtedness and perpetuate vulnerabilities. However, these coping strategies have limitations and rarely offer sustainable solutions for long-term livelihood security (Das, I., & Huq, S., 2018).

Social networks and traditional knowledge are pivotal resources that communities draw upon to address livelihood insecurity. During times of crisis, community solidarity enables the sharing of resources and support among neighbors, reinforcing social bonds and fostering mutual aid. Additionally, indigenous knowledge passed down through generations provides valuable insights into sustainable resource management, climate-resilient agricultural practices, and effective disaster preparedness strategies. The role of women in managing livelihood diversification and coping with environmental stress is particularly noteworthy, highlighting their resilience in the face of adversity (Hoque, M. A., Ahmed, R., & Haque, M. A., 2020).

Several challenges impede the enhancement of livelihood resilience in coastal Bangladesh. Limited access to financial resources and technical expertise hampers the adoption of climate-smart practices. Many communities lack the infrastructure necessary to access markets and sell their produce, limiting their economic opportunities. Furthermore, existing gender disparities often restrict women's participation in decision-making processes related to livelihood resilience, hindering the full potential of community-based interventions (Hossain, M. S., & Abid, M., 2019).

Livelihood insecurity in coastal Bangladesh is a complex and urgent issue that requires comprehensive and collaborative action. The literature reviewed here underscores the multifaceted impacts of climate change and disasters on coastal livelihoods and communities. Through community-based approaches, harnessing traditional knowledge, and empowering social networks, coastal communities can navigate the challenges of livelihood insecurity and build resilience. Collaborative efforts among researchers, policymakers, and local communities are essential in fostering sustainable livelihoods and enabling coastal Bangladesh to thrive despite the adversities posed by climate change and disasters. By prioritizing equitable and context-specific interventions, the nation can forge a path towards a more resilient and secure future for its coastal communities (Islam, M. M., & Ali, A., 2020).

Cox's Bazar, a coastal district in Bangladesh, presents a highly complex situation concerning livelihood insecurity due to the intricate interplay of climate change and disasters. As one of the most vulnerable regions globally, Cox's Bazar grapples with rising sea levels, cyclones, and erratic monsoons, which significantly impact its livelihood sectors.

This comprehensive literature review delves into the multifaceted dimensions of livelihood insecurity in the context of climate change and disasters in Cox's Bazar. It explores the adaptive responses of communities and the critical role of community-based approaches in fostering resilience and sustainable livelihoods amidst this challenging environment (Karim, Z. A., & Mimura, N, 2018).

Cox's Bazar is at the forefront of climate change-induced consequences. Rising sea levels threaten not only the livelihoods of farmers but also the very existence of coastal communities. Sea-level rise leads to the gradual erosion of sandy beaches and the intrusion of saltwater into agricultural lands, rendering once fertile fields infertile. As a result, farmers grapple with decreasing crop yields and reduced agricultural productivity. Moreover, changes in rainfall patterns and increasing temperature further compound the difficulties faced by farmers, affecting the timing and duration of planting and harvest seasons (Khatun, K., & Rahman, M. M., 2019).

The geographical location of Cox's Bazar makes it prone to climate-induced disasters, with cyclones and storm surges posing a significant threat. Disasters of this magnitude cause extensive damage to homes, infrastructure, and livelihood assets, resulting in substantial economic losses for communities. Agricultural lands and fishing boats, essential for the livelihoods of many, are often destroyed, leading to immediate and prolonged disruption of livelihood activities. The aftermath of disasters triggers mass displacement, further exacerbating livelihood insecurity and pushing communities deeper into poverty and vulnerability (Sarker, A. H., & Das, I., 2019).

Livelihood insecurity drives communities in Cox's Bazar to employ various coping mechanisms. Seasonal migration to urban centers becomes a common practice during lean seasons when agricultural activities are limited. Men, women, and youth from these communities seek casual labor and non-farm employment opportunities in cities to sustain their families. For fisherfolk, alternative income-generating activities, such as small-scale trading or boat repairing, provide a lifeline during restricted fishing periods. However, these coping strategies often lead to a cycle of vulnerabilities, perpetuating poverty and dependence (Selim, M. R., & Rahman, M. M., 2018).

Community-based approaches play a central role in addressing the complex challenges of livelihood insecurity in Cox's Bazar. Participatory vulnerability assessments are instrumental in understanding the unique vulnerabilities of different livelihood sectors and designing



tailored adaptation plans. These assessments involve community members in data collection, analysis, and decision-making processes, fostering ownership and ensuring that interventions are context-specific and responsive to the needs of local communities.

Community-based organizations and local institutions facilitate the implementation of resilience programs, effectively linking communities with resources and support (Shamsuddoha, M., & Shaw, R., 2019).

Social networks and traditional knowledge are critical resources that communities draw upon to address livelihood insecurity in Cox's Bazar. In times of crises, community solidarity enables the sharing of resources and support among neighbors, fostering collective resilience. Indigenous knowledge passed down through generations helps communities develop climate-adaptive practices, such as water management techniques and sustainable fishing practices. Women play essential roles in managing livelihood diversification and contribute significantly to disaster preparedness efforts, showcasing their resilience in times of adversity (Rahman et al., 2021).

Enhancing livelihood resilience in Cox's Bazar is met with several formidable challenges. Limited access to financial resources and technical expertise hampers the adoption of climate-smart practices. The district's isolation and lack of market linkages further restrict economic opportunities, limiting livelihood diversification. Moreover, the influx of Rohingya refugees places additional pressure on local livelihood resources, necessitating innovative solutions to promote coexistence and sustainable livelihoods for both host and refugee populations (Sultan, M. B., & Islam, M. R., 2022).

Addressing livelihood insecurity in Cox's Bazar requires strong policy and governance measures. National policies that prioritize climate change adaptation and disaster risk reduction are critical in supporting resilience-building efforts. Strengthening local institutions and empowering community leaders, particularly women, enhances the effectiveness and sustainability of resilience programs. Gender-inclusive policies that address the specific needs and vulnerabilities of women and marginalized groups are vital for fostering an inclusive and resilient society (Uddin, M. N., & Halim, M. A., 2021).

Cox's Bazar is prone to frequent climate-induced disasters, including cyclones and floods, which have severe implications for livelihoods and poverty. The devastation caused by disasters disrupts livelihood activities, leading to the loss of productive assets and income

sources. Fisherfolk lose their boats, nets, and fishing grounds, while farmers face destruction of crops and agricultural infrastructure. The aftermath of disasters pushes vulnerable communities deeper into poverty, affecting their capacity to recover and rebuild livelihoods (Zaman, M. W., 2020).

Livelihood insecurity creates a vicious cycle of poverty in Cox's Bazar. Insecure livelihoods result in reduced incomes and limited access to essential resources such as food, education, and healthcare. As families struggle to meet basic needs, they become more susceptible to future shocks and risks. This vulnerability traps them in poverty, making it difficult to invest in activities that could break the cycle and improve their livelihood prospects (Zaman, R., & Rahman, M. S., 2019). Given the complexities of livelihood insecurity and poverty in Cox's Bazar, targeted livelihood support is imperative. Interventions should focus on building resilience, diversifying income sources, and enhancing access to resources. Climate-smart agricultural practices, such as salt-tolerant crops and water management techniques, can help farmers adapt to changing environmental conditions. For fisherfolk, support in the form of improved fishing equipment and training in sustainable fishing practices can enhance their resilience to marine ecosystem changes (Akter, T., & Mallick, B, 2020).

Livelihood support programs should empower local communities to take charge of their own development. Participatory approaches, such as community-driven development projects, enable communities to identify their specific needs and priorities. By involving community members in the decision-making process, these initiatives foster ownership, ensuring that interventions align with the realities and aspirations of local livelihoods (Rahman et al., 2021). Breaking the cycle of livelihood insecurity and poverty requires a holistic approach that addresses the underlying vulnerabilities and challenges faced by communities in Cox's Bazar. This approach involves promoting education and skill development to increase income-earning opportunities, providing access to financial services to enable investment in livelihood activities, and enhancing social protection measures to provide a safety net during crises (Islam, M. M., & Sikder, M. S., 2019).

Livelihood insecurity in Cox's Bazar is a complex and urgent issue that demands nuanced and collaborative solutions. The literature reviewed here underscores the profound impacts of climate change and disasters on coastal livelihoods and communities. Through community-based approaches, harnessing traditional knowledge, and strengthening social

networks, Cox's Bazar can navigate the complexities of livelihood insecurity and build resilience. Collaborative efforts among researchers, policymakers, and local communities are essential in fostering sustainable livelihoods and enabling Cox's Bazar to thrive despite the adversities posed by climate change, disasters, and the additional pressures of refugee influx. By prioritizing equitable and context-specific interventions, the district can forge a path towards a more resilient and secure future for its coastal communities.

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## **METHODOLOGY**

An initial consultation meeting was conducted with the PHALS team to determine the necessary methods, such as study tools, sample size, study area, and study participants, to effectively carry out the baseline study assignment. The Faculty of Graduate Studies (FGS) at Daffodil International University aimed to prioritize its tasks to address all the concerns raised by PHALS, especially related to survey questionnaire. It was crucial that the recommendations, suggestions, and information provided were firmly grounded in the reality of the context and circumstances, emphasizing a realistic and pragmatic approach. To achieve the desired outputs and outcomes, as specified by PHALS, the baseline study's approach was designed to be highly specific. The FGS committed to ensuring that the outputs will be relevant, efficient, effective, impactful, and avoiding unnecessary discussions or storytelling that deviate from the central focus.

To do so, our approach for this baseline study was therefore to strictly follow the objectives and responsibilities of the team following the SMART (Specific, Measurable, Attainable, Realistic and Timely) indicators. The strategies employed included a series of well-defined steps and activities to achieve the set goals effectively.

### **3.1. Study Design and Settings**

In this study, a multi-participatory concurrent mixed-method research design was adopted to gain insights into the current situation before implementing a project by PHALS. The study was conducted between 13<sup>th</sup> July and 18<sup>th</sup> July, 2023 at in Khuruskul and Chowfaldandi unions under Sadar Upazila, Cox's Bazar district, Bangladesh (see Figure 1). Here, the main objective was to understand the impact of climate change on project participants (vulnerable women) and their resilience. The research design was carefully chosen to ensure a comprehensive, valid, and contextually grounded understanding of the subject matter. To achieve this objective, the study involved active participation from various stakeholders, including project participants, community members, and other relevant parties. By incorporating different perspectives, this approach aimed to ensure inclusivity and

empowerment while gathering valuable input. The research design integrated both qualitative and quantitative methods concurrently to provide a holistic understanding of the impact of climate change on vulnerable women. Qualitative methods were used to delve into individual experiences and gather contextual insights, while quantitative methods facilitated statistical analysis. Various aspects or indicators were measured, such as socio-demographic information of beneficiary women, their current occupation and livelihood, independence, participation, decision-making power (both in society and family), knowledge about climate change, disaster risk management and the effects of climate change on their income, economic activities, health, water, and sanitation.

To enhance the validity of the findings, data triangulation was conducted, which involved cross-referencing information from different sources to strengthen the overall reliability of the study. Moreover, the research adopted a longitudinal perspective to track progress over time, particularly for the end-line study. This approach allowed for a comparison between the end-line project survey and the baseline survey, enabling an assessment of the project's goal achievement.



**Figure 1.** Study Location

### 3.2. Target Population and Sampling

The key target population of this study is the 185 project participants who are person with disable/Person with disable family members, ethnic minority, widow or women headed family. Among 185 participants, 75 are climate refugees in Khuruskul unions, 60 participants from Rakhaine community and 50 participants from Chowfaldandi union those who are living in coastal area, Cox's Bazar Sadar, Cox's Bazar.

However, as per the need of the study, the participants of the study also included community people, UDMC, WDMC and Municipal Disaster Management Committee, DRR & CCA practicing organizations, local governmental agencies, and other relevant stakeholders. Following convenient purposive sampling technique, primary data source included a survey questionnaire (N=175), Focus Group Discussions (Participants = 32 (3 FGDs)), and Key Informant Interviews (N=3).

### 3.3. Data Collection Instruments and Sources

Both primary and secondary data were collected to fulfil the study goal. The primary data collection instruments (DCIs) used in this study were survey questionnaire, Focus Group Discussions (FGD), and Key Informant Interviews (KII) designed by both quantitative and qualitative research experts. Following the recommendation of the study (Ahmmed et al. , 2022, Haynes et al. , 1995), content validity was ensured by the judgment method where a panel of domain experts used a 5-point rating scale to evaluate DCIs on dimensions such as relevance, representativeness, specificity, and clarity. To quantify the expert agreement, Cohen's coefficient kappa (k) was used as suggested in the study (Boaten et al. , 2018). The average kappa (k) value of the DCIs were .87 (significance < 0.05\*\*) showing a substantial level of agreement (Ahmmed et al.,2022). Besides, to ensure the reliability and trustworthiness of the DCIs, triangulation was ensured for getting more in-depth and unbiased set of findings. On the other hand, secondary data and information were collected from peer-reviewed journals, conferences, book chapters, case study reports, national and international policies relevant to study matter. Overall study process and management procedure are presented in Figure 2.

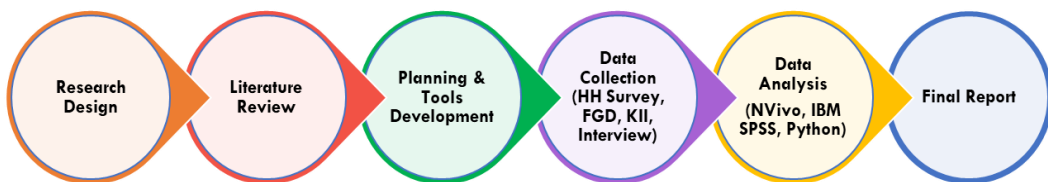


Figure 2. Step by step Study Process

### **3.4. Data Collectors' Training**

A total of seven data collectors (DCs) were hired for the project, with five selected from the local community based on their previous experience, and two from DIU graduate students. The decision to hire local DCs was made to ensure that study participants would be comfortable with the use of local languages. Prior to the data collection, two of our experts conducted a comprehensive day-long training on July 13th, 2023, to prepare the DCs for gathering valuable insights. The training program encompassed various aspects, including lectures on understanding the survey questionnaire, conducting Focus Group Discussions (FGDs), Key Informant Interviews (KIIs), and mock interviews. These activities allowed the trainees to practice asking relevant questions and develop their interviewing skills.

Following the training, the DCs were evaluated based on their performance, and three groups were formed. Each group consisted of one moderator and two data collectors, ensuring a well-rounded team for effective data collection.

### **3.5. Quality Control Mechanism**

The associate team lead of the FGS study team was present in the field to monitor the data collection in order to ensure that standard quality control procedures were followed. The team Leader and other specialists were in constant touch with the field team and test administrators. All members of the team undertook monitoring of field study activities at selected places to oversee the study activities to ensure quality. A team of specialists undertook field visits in selected areas at random to verify and confirm the study findings with the actual situation. However, a dedicated quality control and project management expert were engaged to ensure the overall output quality of the project including reporting. In addition, quality of data collection of the investigators was monitored over mobile communication to the team as well as the supervisor. To ease the data collection activities, the FGS, DIU arranged necessary letter and identity card. To ensure a quality study, the following steps were followed:

**A. Use of Interviewers and Supervisors Manual:** A manual describing the explanation of each question of each of the questionnaires was prepared and distributed to the DCs. This manual was also include the sample selection explanations and a consent paper. DCs were also given an assignment sheet describing his/her specific duties.

- B. Field Monitoring & Supervision:** The assigned supervisors were responsible for assuring quality of survey. The supervisor could choose to re-interview any specific respondent if there is any doubt about the quality of responses. Moreover, the PHALS team and the representative from Malteser International, Germany did random visits to field for monitoring the field activities.
- C. Other Measures of Quality Control:** In addition to the field supervision, random visits by management, some quality control mechanism were taken in data cleaning stage. The survey data were cross- checked to identify any possible miss matches.

### **3.6. Information And Data Analysis**

The preliminary analysis was conducted in the field throughout the comparative study process. All data, including surveys, FGDs, KII outcomes, were continuously reviewed and validated, whenever possible, in collaboration with the PHALS team.

The analytic process incorporated the following key features:

- A. Grounded and Inductive Approach:** The data collection process was driven by original findings and observations, developing deductively from the aims, purposes, and specific study objectives set out in the ToR (by PHALS).
- B. Participatory and Transparent:** The analytic process involved active participation from relevant stakeholders, ensuring transparency. Raw data was made accessible to the PHALS team for their insights and inputs.

TRIANGULATION was the main stepping-stones used by the study team to ensure the validity and reliability of the data collection and analysis. We used the following forms of Triangulation in the assessment study:

- A. Methodological Triangulation:** Comparing the results used in different methods/tools for analysis (analysis & criteria variables) as well as methods/tools used for field data collection (e.g. secondary data, Survey questionnaire, KII, FGD, Observation, Document review, meeting/consultation with the project team, briefing with PHALS team ).
- B. Data /Source Triangulation:** Comparing information directly gathered from different stakeholder sources including staff of the program.
- C. Environmental/Geographic Triangulation:** Comparing the programs in (Project Area) diversified program locations. This highlights whether information were limited to a specific context.



Analyzing the strengths, weaknesses, opportunities and constraints of field and secondary data collection were raised many interesting issues and challenges, which were duly solved in consultation with PHALS team. Using a multiple indicative framework and qualitative methods allows verification of data gathered and increases the validity of the assessment through TRIANGULATION.

### **3.7. Statistical Analysis**

The gathered data throughout the DCIs were analyzed by IBM SPSS Statistics 26. Descriptive analysis was carried out for quantitative data. On the other hand, further analysis was performed as required. Qualitative data were coded thematically and analyzed manually. Besides, frequencies and percentages analyses were performed for further knowledge exploration.

### **3.8. Compliance With Policies and Ensuring Quality**

Standard procedure to comply with and maintain Code of Conduct, Gender and Child Safeguarding and Data Security Policies was censured by the study team. DIU's Code of Conduct on Child Protection, Safeguarding Policy, Child and Vulnerable Adult Code of Conduct as well as Consent for Children and Adult were followed. The FGS, DIU also maintained their Data Security Policy. The data collection team was led by the FGS, who guided and trained the enumerators. The FGS also monitored and managed the entire process of the data collection. The expert guidance and suggestions from domain experts of the study team were taken into account for every step of the study process, including fieldwork, developing data collection tools and report writing.

### **3.9. Ethical Considerations**

Most authors who discuss research design address the importance of ethical considerations (Locke et al., 1982; Marshall & Rossman, 1989; Merriam, 1988; Spradley, 1980). First and foremost, the researcher has an obligation to respect the rights, needs, values, and desires of the informant(s). This is of particular concern in this study where the informant's position and institutions are highly visible. The following safeguards were employed to protect the informant's rights; the research objectives were articulated verbally and in writing so that they were clearly understood by the informants (including a short description of how data are used), oral or written permissions to proceed with the study were taken from the informants where necessary. The informants were informed of all data collection devices and activities, verbatim transcriptions, and written interpretations, and reports made

available to informants as per instruction of PHALS. The informant's rights, interests and wishes considered first when choices were made regarding reporting the data, and the final decision regarding informant anonymity rested with the informant.

### **3.10. Gender Consideration in the Study**

This study sincerely considered gender aspects of the local community and their culture and, prepare report in this way. Data collected were disaggregated according to gender. The methodology followed that the voices of both men and women were heard equally and considered. For each of the enquiry of study exploration, it was useful for our study to consider the participation of women and how factors were influenced these changes. Our study applied a participatory community-led approach that is founded on two main principles: 1) Ensuring full and meaningful participation and influencing of all processes by gender balance consideration; and 2) Vulnerable community people particularly persons with disability are experts in their contexts and know how best to address issues. This drove the need to leverage expertise through collaborative, reflective and mutual learning processes to ensure the study project did not embody a top down or one-size-fits-all approach. This approach is grounded in addressing social norm and culture of their communities by exercising their creativity, innovation and enthusiasm. From the beginning to end, all activities of this study project were implemented by the active participation and consideration of the community people.

### **3.11. Child and Vulnerable Adult Safeguarding Issues**

The study considered child and vulnerable adult safeguarding aspects and report on this accordingly. Followed the child and vulnerable adult safeguarding in the project location as per instruction of the PHALS.

### **3.12. Study Limitations**

Despite our sincere efforts, this study faced several limitations. One of the primary challenges was building rapport with the community members and individuals with disabilities to facilitate in-depth data collection. Time constraints often made it difficult for the study team to establish strong connections with the respondents. To address this issue, we employed data triangulation, using multiple methods and sources to cross-validate the information collected. When any doubts arose about specific issues or respondent-provided data, the team marked them and consulted with other members to verify from alternative sources

The second major limitation was related to the data collection process. The data collectors encountered difficulties while gathering information from participants, as some individuals provided misleading information in hopes of gaining benefits or relief. This posed a challenge to obtaining accurate and reliable data.

Working with a substantial amount of data also proved to be a daunting task for the researchers. Collecting, synchronizing, and analyzing the data was exceptionally challenging. In qualitative research, data gathering and analysis occur simultaneously, requiring close coordination among the ten-member research team, which was particularly demanding due to time constraints.

Another significant hurdle was obtaining written consent from participants. Many were hesitant to provide consent due to low literacy levels, making the process very challenging. Despite these limitations, the study team diligently employed various strategies to mitigate potential biases and drawbacks, ensuring the research's overall integrity and credibility.

## RESULTS AND FINDINGS

The project has a total of 185 female participants who belong to various marginalized groups, including persons with disabilities, individuals with disabled family members, ethnic minorities, widows, and women-headed families. Among these participants, 75 are climate refugees residing in Khuruskul unions, while 60 participants come from the Rakhaine community. Additionally, there are 50 participants from Chowfaldandi union, which is located in the coastal area of Cox's Bazar Sadar, Cox's Bazar. Table 1 presents the Participants reached by baseline survey.

**Table 1** Participants reached by baseline survey

Total Project Participants	Participants by Geographic Area	Participants Reached by Baseline Survey
<b>N=185</b>	Khuruskul (75)	67
	Rakhaine community (60)	59
	Chowfaldandi union (50)	49
	<b>n= 175</b>	

### 4.1. Participants' Demographic Information

#### 4.1.1. Age Distribution

The age distribution showcases a diverse and multifaceted gathering of women, each contributing their unique perspectives and experiences to the project participants (see Table 2). In the female-only age group, a negligible 0.9% are under 18 years old, representing a very small portion of the group. The largest segment falls within the 25-34 age bracket, comprising 33.9% of the participants, highlighting the prevalence of young adults in the cohort. Close behind are women aged 35-44, constituting 36.6% of the group, indicating a significant presence of individuals in their prime adult years. The 18-24 age category accounts for 17% of the participants, suggesting a sizeable population of young women in transition to adulthood. A smaller but still notable 8% falls within the 45-54 age range, indicating a substantial representation of middle-aged women. Finally, women aged 55 and

above make up 3.6% of the participants, indicating a minority but still notable presence of more mature individuals.

**Table 2** Participants' age group wise percentage

Age Group	% (N=175)
<18	0.9%
18-24	17%
25-34	33.9%
35-44	36.6%
45-54	8%
55=>	3.6%

#### 4.1.2 Ethnic group

The ethnic group data shows the presence of two groups within the project participants (see Table 3). The Bengali ethnic group comprises the majority with a frequency of 117 individuals, accounting for 66.9% of the total sample. On the other hand, the Rakhine ethnic group is a minority, consisting of 58 individuals, making up 33.1% of the population. While the Bengali ethnic group is more prevalent, both groups represent important components of the studied population, each contributing to its cultural diversity and richness.

**Table 3** Participants according to ethnic group

Ethnic group	Frequency (N=175)	%
Bengali	117	66.9%
Rakhine	58	33.1%

#### 4.1.3 Religion

The participants' religious affiliations were categorized into three types. The majority of participants (66.90%) identified as Muslims. Following closely behind, 30.90% identified as Buddhists. While a smaller percentage (2.20%) fell under the less common religious affiliations (see Table 4)

**Table 4** Participants according to religion

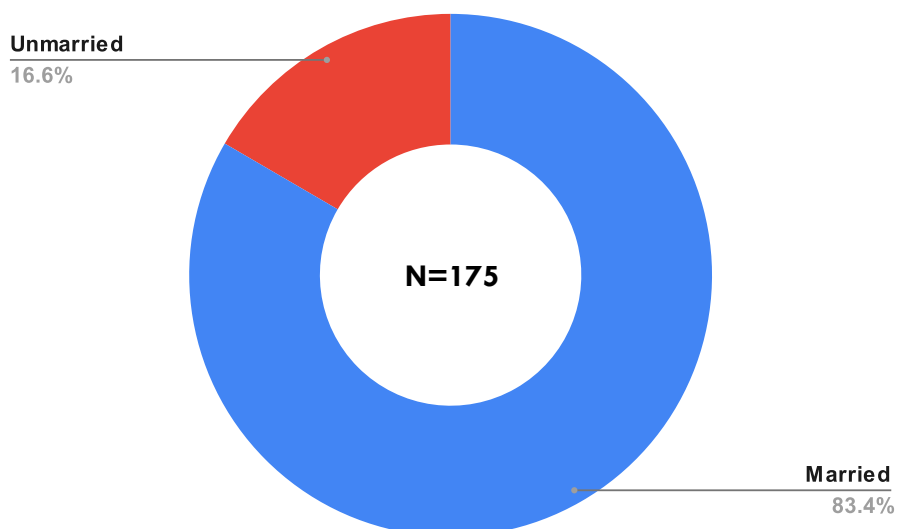
Religion	Frequency (N=175)	%
Islam	117	66.9%
Buddhist	54	30.9%
Others	4	2.2%

#### 4.1.4. Marital Status

Among the participants, majority of the women were married (83.4%). While 16.6% were unmarried (see Figure 3). Table 5 presents data on the distribution of individuals based on their marital status in two study areas. In Khuruskul, 8 individuals (11.90% of the total) are unmarried, while 59 individuals (88.10% of the total) are married. On the other hand, in Chowfaldandi, 21 individuals (19.40% of the total) are unmarried, and 87 individuals (80.60% of the total) are married. The table provides an overview of the marital status distribution in these two areas, highlighting a higher percentage of married individuals in both regions, particularly in Khuruskul where the proportion of married individuals is significantly greater compared to Chowfaldandi.

**Table 5** Participants' area wise- marital status

Area	Marital Status	N	%
Khuruskul	Unmarried	8	11.9%
	Married	59	88.1%
Chowfaldandi	Unmarried	21	19.4%
	Married	87	80.6%



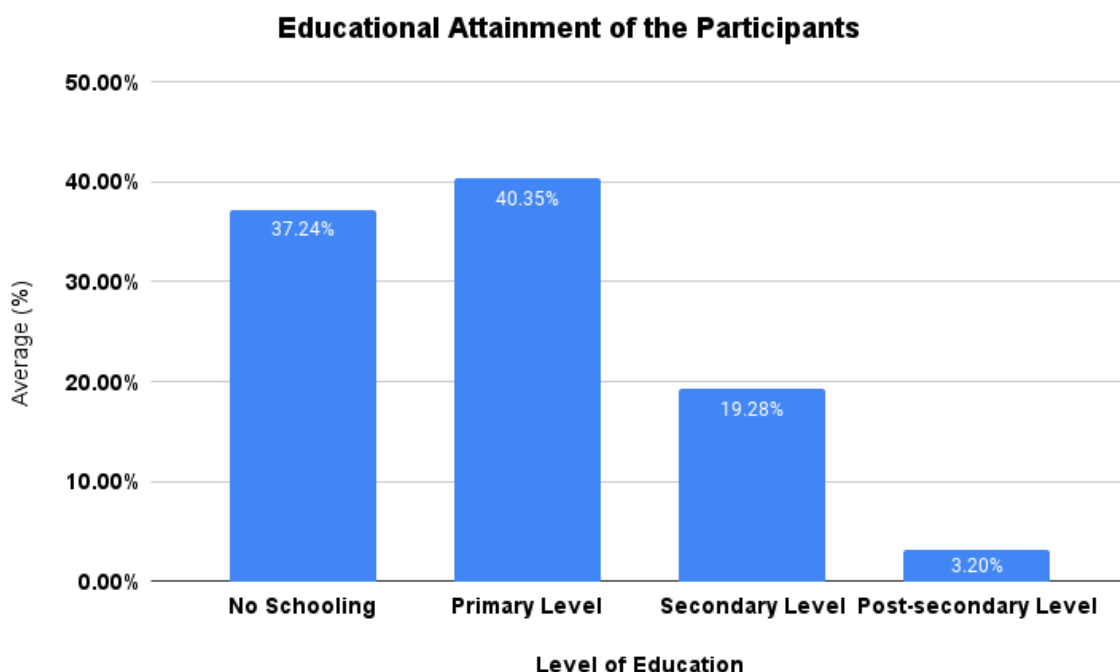
**Figure 3.** Marital status (overall)

#### 4.1.5. Educational Attainment

The educational attainment of women participants is diverse, with the majority having completed no schooling or only reached the primary level (see Figure 4). The data reveals that a significant proportion of the population (37.24%) lacks formal education, whereas this figure is considerably higher in Chowfaldandi, with 49.1% of individuals falling into the "No Schooling" category. On the contrary, Khuruskul exhibits a greater percentage (41.80%) of individuals educated at the Primary Level compared to Chowfaldandi's 38.9%. At the Secondary Level, Khuruskul reports 28.36% of its populace, while Chowfaldandi registers a lower proportion of 10.2%. Moreover, the data indicates a relatively minor presence of individuals with Post-secondary education in both regions, with percentages standing at 4.5% for Khuruskul and 1.9% for Chowfaldandi (see Table 6 ).

**Table 6** Participants' level of education

Level of Education	Khuruskul (%)	Chowfaldandi(%)	Average
No Schooling	25.37%	49.1%	37.24%
Primary Level	41.80%	38.9%	40.35%
Secondary Level	28.36%	10.2%	19.28%
Post-secondary Level	4.50%	1.9%	3.20%



**Figure 4.** Educational attainment of the participants (overall)

#### 4.1.6. Types of the Participants

The study participants were divided into seven distinct types. Table presents a comparative analysis of the distribution of various types of individuals across two regions, Khuruskul and Chowfaldandi, with a computed average (Avg.) percentage for each category. The data is centered around six distinct categories: Widow, Helpless, Family member of the person with disability, Divorced, Family member of widow, Person with disability, and Others. Notably, the highest proportion of widows is observed in Chowfaldandi (34.30%), followed by Khuruskul (22.40%), while the category with the lowest percentage in both regions is Divorced, with 0.00% in Khuruskul and 12.0% in Chowfaldandi. Family members of the person with a disability, on the other hand, account for 7.50% in Khuruskul and 13.90% in Chowfaldandi. It is interesting to note that Chowfaldandi has a significantly higher percentage of individuals who are family members of widows (11.10%) compared to Khuruskul (34.30%). Additionally, the data reveals a substantial disparity in the representation of persons with disabilities in the two regions, with Khuruskul exhibiting a higher proportion of 19.40% in comparison to Chowfaldandi's mere 1.90% (see Table 7).

**Table 7.** Participants by types

Type	Khuruskul	Chowfaldandi	Avg.
Widow	22.4%	34.3%	28.3%
Helpless	11.9%	18.5%	15.2%
Family member of the person with disability	7.5%	13.9%	10.7%
Divorced	0.0%	12.0%	6.0%
Family member of widow	34.3%	11.1%	22.7
Person with disability	19.4%	1.9%	10.6%
Others	4.5%	8.3%	6.4%

We also asked the participants whether any disabled, female headed, elderly, separated, divorced, widowed person in their family. Majority of the participants answered yes (90.29% ) while few said no (9.71%).



## 4.2. Participants' Occupation and Livelihood

### 4.2.1. Self-Reliant Status of Participants

When focusing on participants' self-reliance, it is observed that a significant disparity between self-reliant and dependent women. The data reveals the proportion of individuals who affirm their self-reliant status ("Yes") and those who do not ("No"). In Khuruskul, a mere 8.9% of respondents claim self-reliance, whereas the majority, accounting for 91.01%, admit to lacking self-reliance. In comparison, Chowfaldandi exhibits slightly higher numbers of individuals embracing self-reliance, with 5.6% responding positively, and a substantial 94.4% disclosing their reliance on external support. The average across both regions suggests a prevailing trend of limited self-reliance, with only 7.25% of the respondents asserting independence, while the overwhelming majority of 92.70% depend on external assistance (see Table 8).

**Table 8.** Self-reliant status of participants

Self-Reliant Status	Khuruskul	Chowfaldandi	Avg.
Yes (Self-reliant)	6 (8.9%)	6 (5.6%)	7.25%
No (Dependent)	61 (91.01%)	102 (94.4%)	92.7%

### 4.2.2. Occupation of Participants

The participants' occupations were diverse, with the majority (57.50%) engaged in "Household chores," primarily handling domestic responsibilities. On the other hand 18.60% involved in daily wage labor or temporary work. A smaller proportion (9.40%) pursued entrepreneurial endeavors, such as operating small tea shops, tailoring, or oyster garland making. These individuals either owned their businesses or assisted family members in running theirs. The remaining 14.40% were classified as "Others," with occupations like fishing, begging, etc. (see details in Table 9). The data highlights the varied livelihoods among the participants, ranging from household duties and laborer roles to independent business ventures and other diverse pursuits.

**Table 9.** Participants' occupation

Type	Khuruskul	Chowfaldandi	Avg.
Domestic chores	56.7%	58.3%	57.5%
Day laborer	10.4%	26.9%	18.6%
Small business	10.4%	8.3%	9.4%
Others	22.4%	6.5%	14.4%

### 4.2.3. Participants' Monthly Income

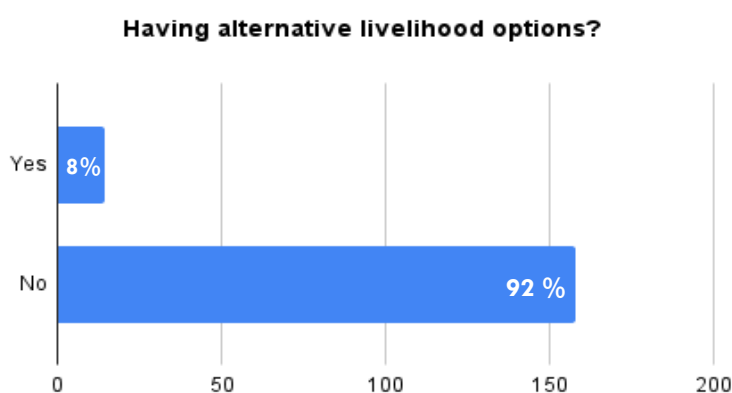
Table 10 provides information on the monthly income of project participants in Khuruskul and Chowfaldandi unions. It was observed that the daily income of women participants in both Khuruskul and Chowfaldandi unions varied between 350-450 BDT. However, most women only had this income opportunity for 10-15 days in a month. In Khuruskul, there are 44 individuals with no earnings, indicating that they do not have any monthly income (0 earning). On the other hand, 23 individuals in Khuruskul have earnings, and the average monthly earning for this group is 4370 BDT (BDT). In Chowfaldandi, there are 68 individuals with no earnings, while 40 individuals have earnings, with an average monthly earning of 4175 BDT.

**Table 10.** Participants' monthly income

Area	Marital Status	N	Average Monthly Earning
Khuruskul	Individuals with 0 Earnings	44	0
	Individuals with Earnings	23	4370 BDT
Chowfaldandi	Individuals with 0 Earnings	68	0
	Individuals with Earnings	40	4175 BDT

### 4.2.4. Alternative livelihood or alternative income-generation options

We asked participants regarding their alternative livelihood options. Only 8.0% of the participants have embraced alternative livelihood or income-generation options (e.g., cooking, fishing, Ngapi (Shrimp & Fish Paste), Making baskets, sewing hats, etc., while the majority, constituting 92.0%, have not explored these opportunities yet. This indicates a potential need for greater awareness and support in encouraging participants to diversify their income sources and explore alternative livelihood options.



**Figure 5.** Alternative livelihood options

#### 4.2.5. Household size and monthly income

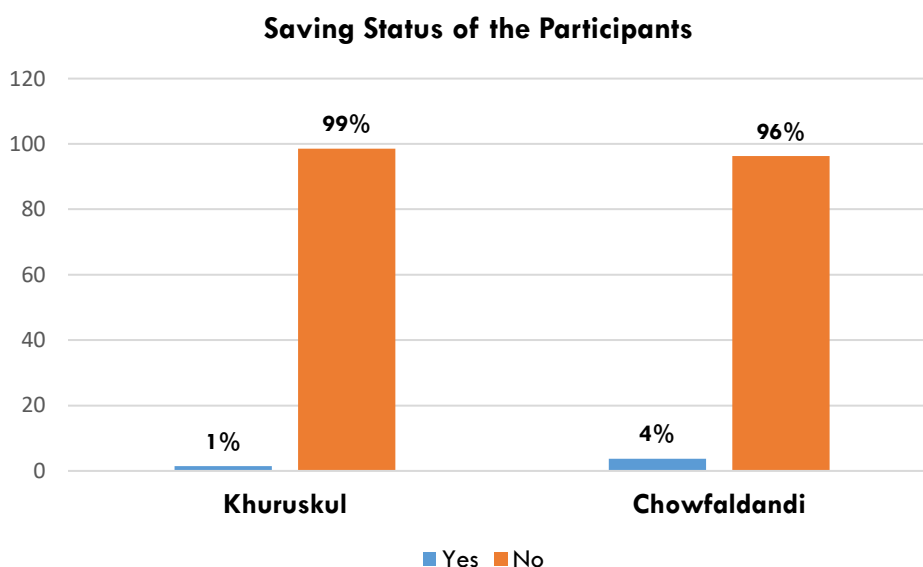
Table 11 presents data on the household size and monthly income of project participants. In the Khuruskul union, the average household size was found to be 5.6 members, and the participants reported an average monthly income of 8152 BDT. Conversely, in Chowfaldandi, data was collected from 108 households, revealing an average household size of 4.95 members. The participants in this area reported a slightly higher average monthly earning of 8278 BDT.

**Table 11.** Participants' household size and monthly income

Area	Number of Households	Average Household size	Area wise Avg. Monthly Earning (BDT)	Overall Avg. Monthly Earning (BDT)
Khuruskul	67	5.6	8152	8215
Chowfaldandi	108	4.95	8278	

#### 4.2.6. Savings Status of Participants

In Khuruskul, only 1% participants have savings, while a majority of 99% of participants do not have any savings or saving account. In contrast, in the Chowfaldandi area, there are 4% participants who have savings or saving accounts, while a larger number of 96% of participants do not possess any savings or savings accounts.

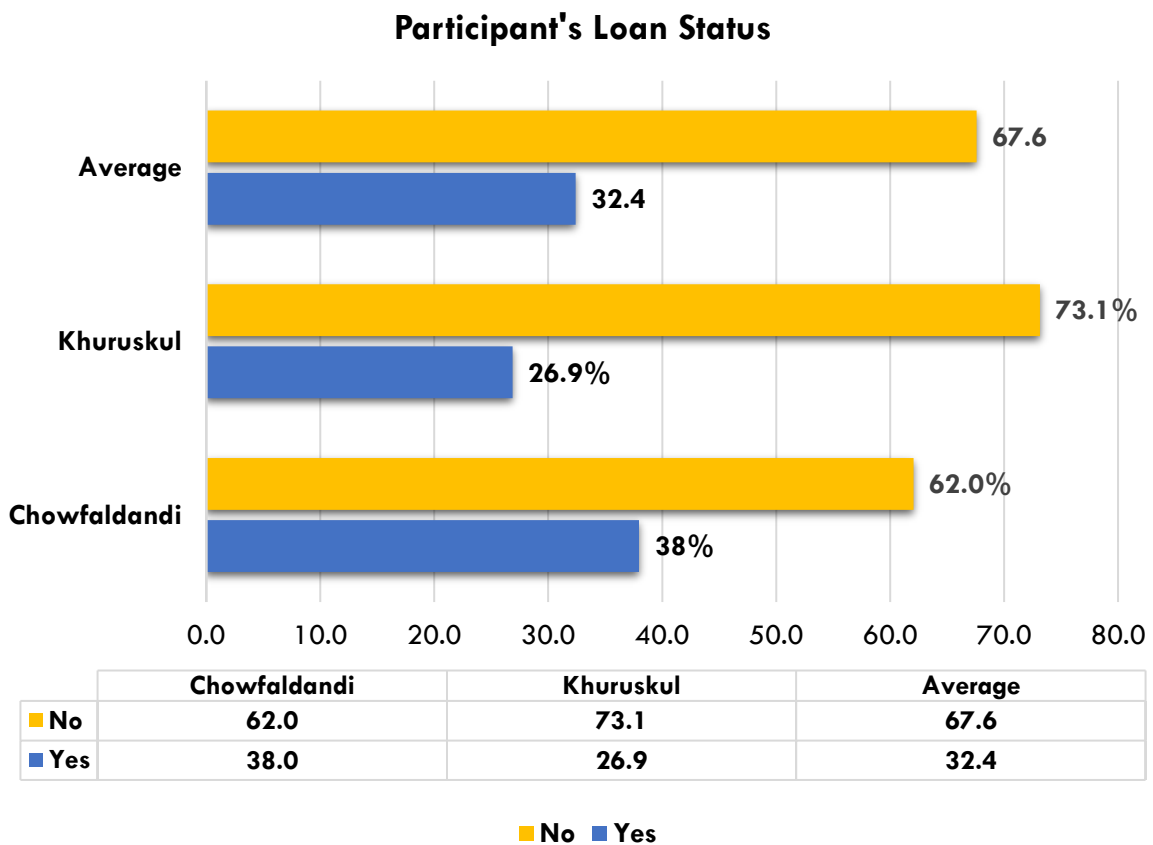


**Figure 6.** Saving status of the participants

#### 4.2.7. Participant's Loan Status

Figure 7 illustrates the percentage distribution of participants' loan status, with "Yes" indicating those who have taken loans and "No" representing those without loans. In the locality of Chowfaldandi, 38.0% of participants have availed loans, while the remaining 62.0% have not taken any loans. In Khuruskul, 26.9% of participants have chosen loans, while the majority, comprising 73.1%, have not opted for any loans. The "Average" row represents the overall average across both locations, indicating that approximately 32.4% of participants have loans, while 67.6% do not. Generally, take loans from various sources Microfinance Institutions (MFIs), NGOs and banks.

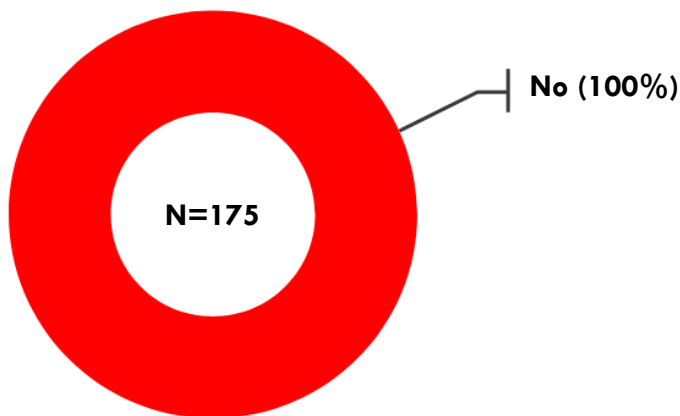
During our research, we discovered a concerning trend among a significant portion of participants who are trapped in a cycle of debt for prolonged periods (e.g., 20 years or more). Many of them take out additional loans before fully paying off their existing ones, perpetuating their financial struggles and inability to break free from the vicious cycle of debt. This highlights a significant issue that requires attention and intervention to support those struggling with debt management.



**Figure 7.** Participant's Loan Status

#### 4.2.8. Existence of Self-Reliant Groups (SRGs)

During the baseline study, it was evident that no Self-Reliant Groups (SRGs) were present or operational in the study locations. Despite the diligent efforts made by the study team to identify and engage with community-based organizations promoting self-sufficiency and empowerment, no evidence of SRGs emerged. The team actively inquired with project participants about their affiliations with any SRGs or their knowledge of such groups, and all participants responded negatively, stating that they were not attached to any SRGs (see **Figure 8**). The absence of SRGs highlights a potential gap in community development initiatives, particularly those focused on fostering economic and social empowerment. The finding suggests that the community might not have benefited from the advantages that SRGs can offer, such as access to microfinance, skill development, and peer support.

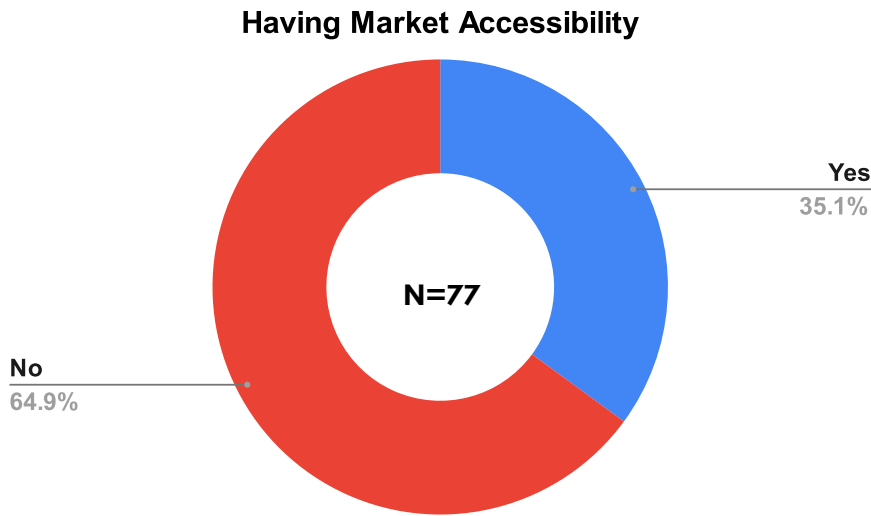


**Figure 8.** Existence of Self-Reliant Groups (SRGs)

#### 4.2.9. Participants' Market Accessibility

During our survey, we extensively inquired about the market accessibility experienced by our participants when selling their products, and the responses were diverse. However, a notable majority of the participants expressed significant concerns about facing limited market accessibility due to several challenging constraints (see Figure 9). These obstacles encompassed various issues, such as gender discrimination, the impacts of climate change on their livelihoods, difficulties in obtaining fair prices for their products, lack of government support, limited access to resources, conflicts between the local population and refugees, a dearth of networking opportunities, considerable distances to markets from their homes, and insufficient unity within their communities. These collective limitations have had an adverse

effect on their ability to reach broader markets for their products, hindering their economic prospects and potential for growth.



**Figure 9.** Market accessibility

We had chance to talk to some male counterparts in the study areas, most of them expressed reluctance towards the idea of women engaging in income-generating activities beyond their domestic roles, despite displaying positive attitudes towards such activities. Their unwillingness stemmed from the belief that it could diminish a man's status, as others might criticize him for not being able to provide for his family's basic needs. However, it was observed that nowadays, men have become more accepting of such participation. Nonetheless, they still uphold the notion that women should primarily focus on their household responsibilities, while men take charge of earning money and managing the outside world. The majority of men, with only a few exceptions, hold the view that women's income should be controlled by their male counterparts or used for the family's welfare. Interestingly, women's opinions in this matter align closely with those of men derived from Khuruskul and Chawfaldandi.

For poor female participants, their husbands consider their work in other households as helping aid or domestic labor, which they find humiliating and degrading for the family's social status. Even in times of hardship, men generally oppose the idea of their wives or daughters working in other households. The poor female participants, who have no choice but to work for their family's needs, face challenges as negative attitudes from neighbors deter them from seeking employment outside.

We found from the most of participants opinions that there is tension and conflicts between project participants (who migrated to special housing scheme and Rakhaine communities) which hindering them in initiating the access to market of women participants. All of their voices echoed –

*“The tensions between with the locals have turned our access to the market into a lurid. It's not just about disagreements; it's about our safety and dignity. These local people who have control over the market often resort to eve-teasing, harassment, and so on. I've seen some women who initiated to have market access gave up because they couldn't bear the situation anymore. It's just not fair. We wish there was more understanding and support from the authorities to tackle this issue. We deserve the right to educate ourselves, work and earn a living without fear. We hope someone takes notice of what we're going through and helps us find a solution. We deserve respect and the chance to contribute to the market like anyone else. It's about time things change for the better, for all of us women who just want a fair shot at success.”*

### 4.3. Women’s freedom, participation, decision-making power in the family

#### 4.3.1. Women’s freedom in family

The participants were asked whether they experience freedom. In Chowfaldandi, 56% of the women responded positively, indicating that they feel a sense of freedom, while a significant part 44% reported feeling restricted. On the other hand, in Khuruskul, a higher percentage of women, 67%, expressed having a sense of freedom, while 33% felt limited in their freedom (see Figure 10)

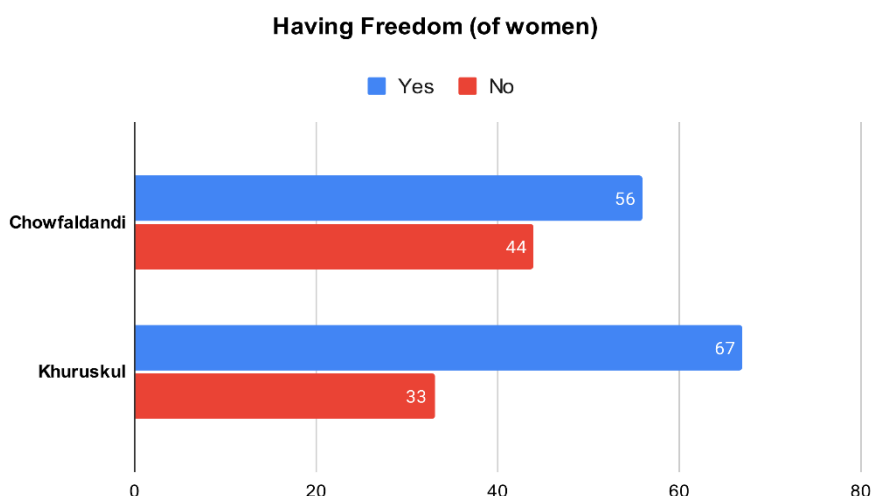


Figure 10. Having freedom in family (of women)

### 4.3.2. Women's participation in family

The participants were also asked whether they have participation in family. In Chowfaldandi, 77% women indicated that they participate, while 23% reported not participating. Similarly, in Khuruskul, 69% women whereas 39% women stated that they do not participate (see Figure 11)

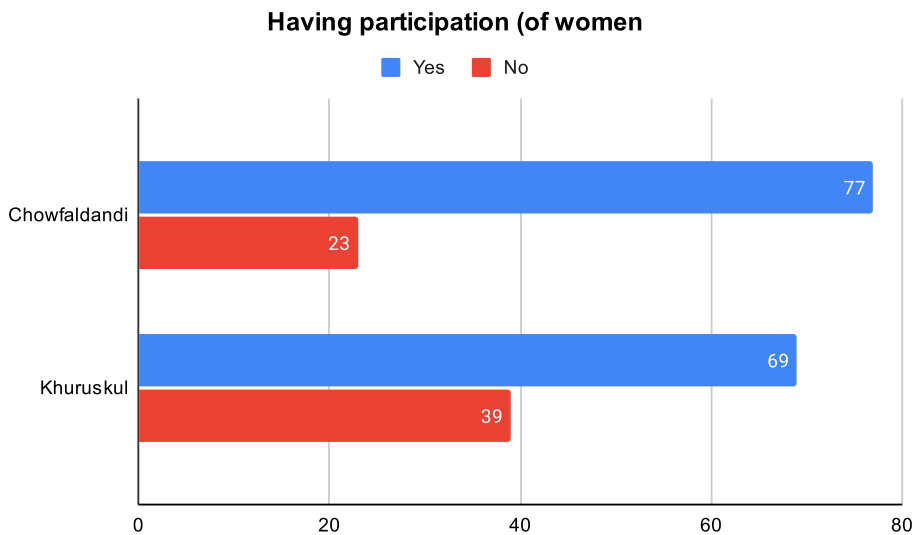


Figure 11. Having participation in family (of women)

### 4.3.3. Women's decision-making power in family

Finally, the participants were asked whether they have decision-making power in family. In Chowfaldandi, 46% of women responded that they have decision-making power, while the remaining 54% do not. In contrast, in Khuruskul, a higher percentage of women, 55%, have decision-making power, while 45% do not.

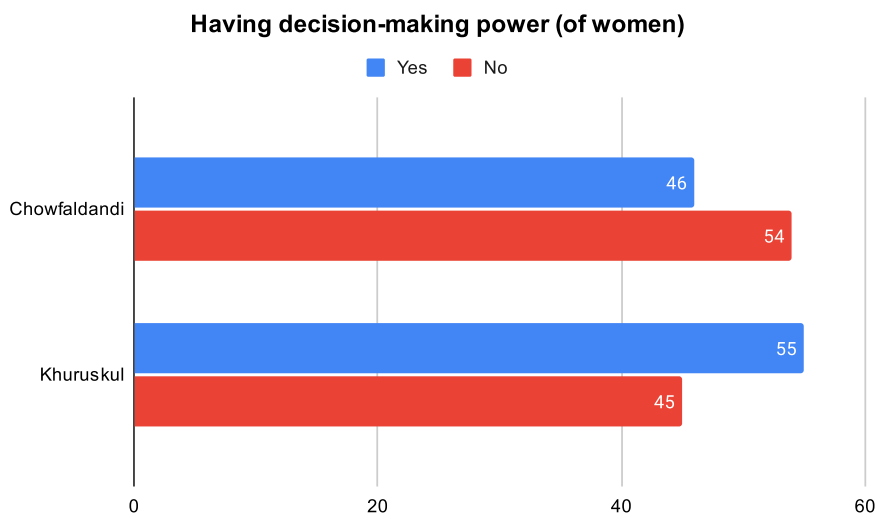


Figure 12. decision-making power in family (of women)



Despite the quantitative findings suggesting that women have a degree of freedom, participation, and decision-making power within the family, our conversations with the participants in the field revealed a different reality. We have found that men are consistently regarded as the ultimate decision makers and the primary "breadwinners" in the households, even if women contribute economically. Women's influence in matters concerning the maintenance of household resources, farming, buying or selling of crops, and other significant issues is minimal, if any. These decisions are predominantly made by the husbands.

Even in situations where women are given opportunities to express their preferences, the final decisions still rest with the men. Some women participants reported that when asked for their opinions, the manner in which they were approached actually influenced what they felt compelled to say. In only a few instances, they felt they could offer different opinions, even if they wanted to do so. This highlights the prevailing gender dynamics that hinder women from having an equal say and full agency in decision-making processes within their families and communities. According to some participants, in certain situations such as deciding their daughter's marriage, selling materials, or selling cattle, husbands may consult with their wives. However, more often than not, husbands make decisions without informing their wives. In the majority of cases covered in the study, when a woman earns, her income is used for the welfare of the family. Rather than spending on personal items, women usually invest their earnings in their children's education or buying essential items like food, clothing, or medicine. Generally, it is women who make these kinds of decisions. Therefore, the findings of the quantitative survey are unlikely to cause confusion in this regard, as most respondents agreed that men do involve their wives in family decisions and allow them to participate in such matters.

In the study area, resources are exclusively controlled and accessed by men without discrimination. Whether its husbands or other male counterparts, they hold the responsibility of managing household properties. Since households primarily rely on the earnings of husbands, wives are often excluded from owning newly acquired resources. The main reason behind this biased behavior towards women is the fear of losing economic and social power if women gain control over property. Regardless of whether the resources are owned by the husband or wife, men always seek to maintain explicit or implicit control over them. Generally, husbands have the final say on whether their wife's

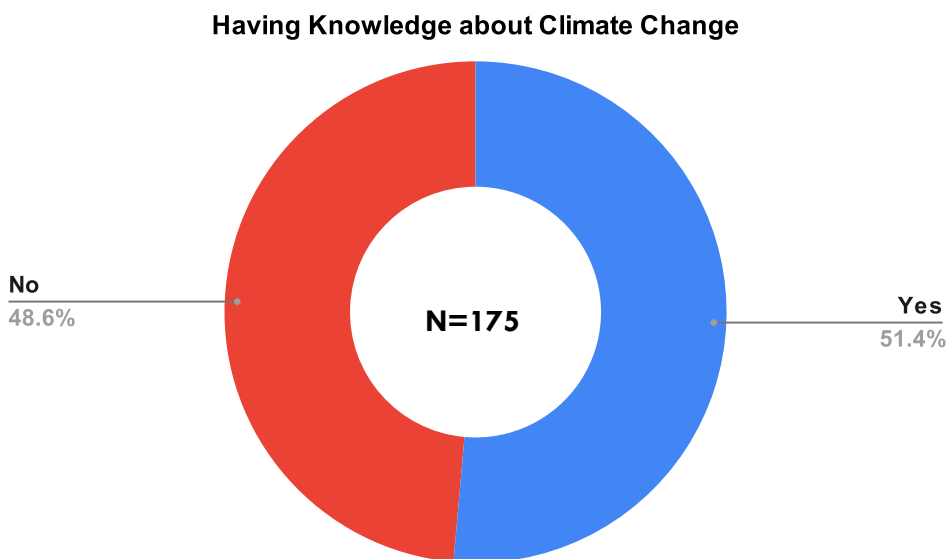
assets should be sold or used for family needs. During various crises, like food scarcity or illness, women are often compelled to sell their assets to support the family. While some women may temporarily keep the money from the sold resources until there's a need to invest it, this occasional access doesn't ensure their lasting control over resources.

According to this study, women's mobility has significantly increased in recent times due to economic hardships. Many participants mentioned during focus group discussions (FGDs) that the rising cost of living has made it difficult for their income alone to support their families. Additionally, the increasing expenses of hiring labor for seasonal work led them to accept their wives' help in such tasks, even in what is considered public spaces. Some men admitted that while others from affluent backgrounds criticized them for this, they paid no heed as long as economic difficulties persisted. Conversely, women participants shared that they occasionally faced criticism from other women, mostly from well-off families. Nevertheless, since they usually worked alongside their husbands or other male family members in fields close to their homes, they did not pay much attention to such criticism.

#### 4.4. Participants' knowledge and understanding of climate change

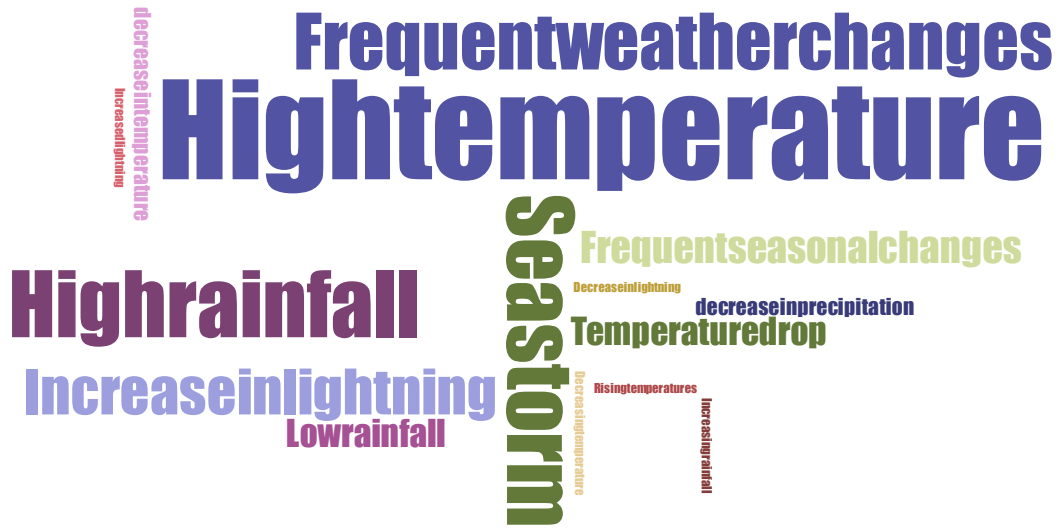
##### 4.4.1. Participants knowledge about climate change

Bangladesh has shed its denial of climate change's existence and is now recognized as one of the world's most vulnerable countries to its effects. In the last decade, the nation has endured frequent and severe repercussions of climate change, including cyclones, floods, tidal surges, tornadoes, river erosion, rising temperatures, excessive rainfall, and drought. The coastal regions, given their geographical location, are particularly susceptible to these impacts. As a result, the coastal communities are well aware of the consequences of climate change. To gauge their understanding, respondents were asked whether they possessed knowledge about climate change, with 51.40% responding affirmatively and 48.60% answering negatively (see Figure 13). Though they may not be familiar with the intricate definitions, it is evident from their conversations that they recognize the adverse effects climate change has on their lives. This data signifies a substantial portion of the population being aware of climate change, but there remains a significant percentage that still lacks comprehensive knowledge on the subject.



**Figure 13.** Having knowledge of climate change

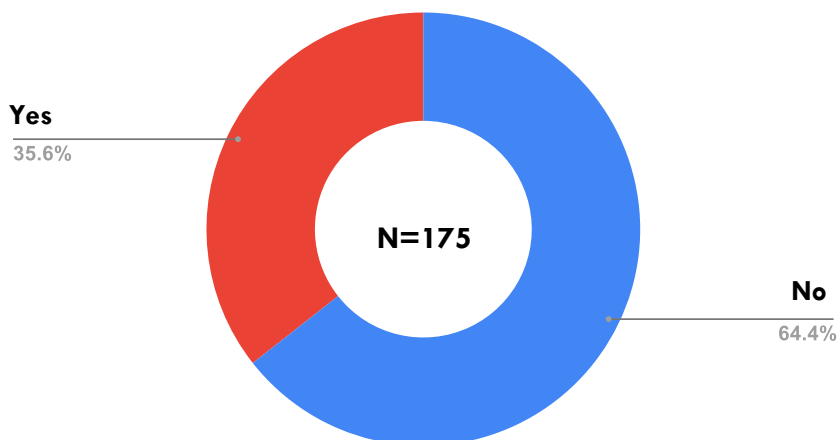
During our survey, we inquired about the types of climate change-related disasters that are most likely to occur in the participants' area. The responses highlighted several significant concerns, with many participants mentioning higher temperatures, increased rainfall, lightning, and low rainfall as the primary climate change-related disasters they anticipate in their region (see Figure 14).



**Figure 14.** Climate change-related disasters

During survey, we specifically inquired about the participants' understanding of the reasons behind climate change. Regrettably, the majority of the participants (64.4%) were unable to provide any specific answers, indicating a lack of awareness on this critical issue. Only a few participants (35.6%) mentioned a few reasons (e.g., cutting down trees, carbon-dioxide), which highlights that the majority of the participants have limited knowledge about the causes of climate change (see Figure 15). This finding underscores the importance of raising awareness and providing education on climate change and its underlying factors to foster a better understanding among the general population.

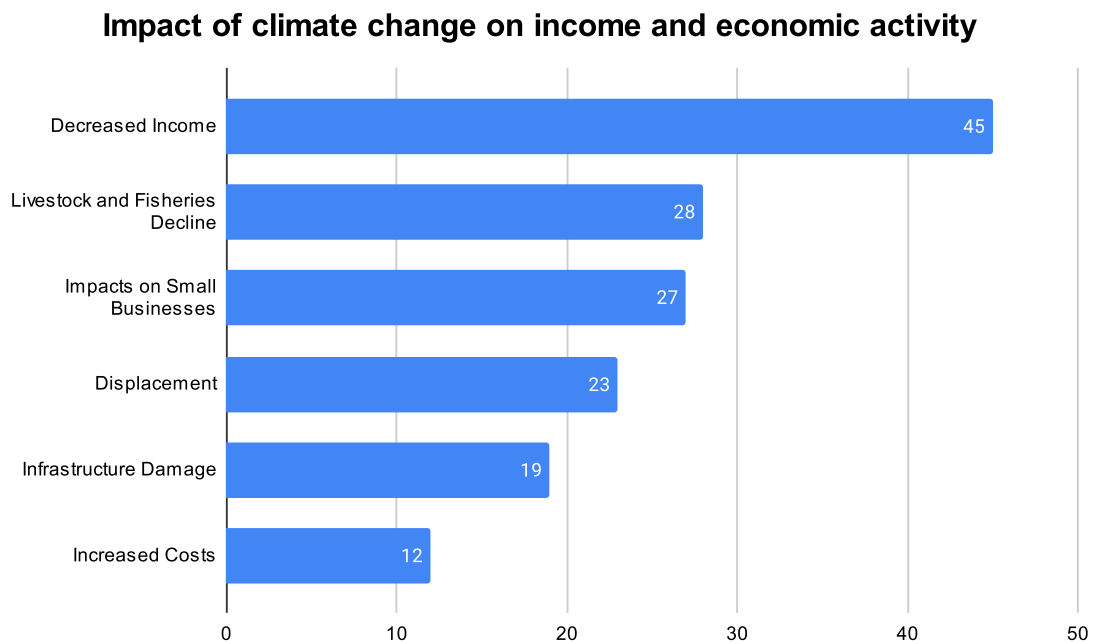
**Having knowledge about the causes of climate change**



**Figure 15.** Participants' knowledge about the causes of climate change

#### 4.4.2. Impact of climate change on income and economic activity

To better understand the multifaceted impact of climate change on income and economic activity, we have asked participants about the impacts of climate change on their income. A significant concern arises from the data (see Figure 16), indicating that 45 respondents reported a decrease in their income due to climate change-related factors. Among the challenges faced by various industries, the decline in livestock and fisheries, affecting 28 respondents, underscores the vulnerability of agricultural livelihoods to changing climate patterns. Moreover, 27 respondents reported adverse impacts on small businesses, indicating the potential threat to local economies and employment opportunities. The data also highlights that 23 respondents experienced displacement, disrupting communities and their economic activities. Furthermore, 19 respondents cited infrastructure damage as a consequence of climate change, which can lead to economic setbacks and reduced productivity. Additionally, 12 respondents noted increased costs due to climate change impacts, potentially burdening households and businesses. These figures collectively emphasize the pressing need for concerted efforts to address climate change challenges, safeguard livelihoods, and foster sustainable economic growth. Implementing effective adaptation and mitigation measures can mitigate the adverse effects and ensure a more



**Figure 16.** Impact of climate change on income and economic activity

In the FGD, the majority of the participants in the study were familiar with the term "climate change." However, their understanding of the term varied significantly. When asked to explain what they meant by "climate change," the respondents provided diverse responses which were associated with floods/heavy floods, storms/cyclones and some of the participants interpreted the term as indicating drought. Some of the participants expressed that climate change referred to "seasonal change." Similarly, another stated that climate change meant "temperature increase." The findings highlight the diverse perceptions and interpretations of climate change among the study's population and emphasize the need for targeted and comprehensive communication strategies to raise awareness and understanding of this critical global issue.

In the FGD session, it found that the majority of the study participants acknowledged having witnessed evidence of climate change over the past 10–30 years. Their observations regarding the impacts of climate change differed between those who depend on climate-sensitive livelihoods and those whose livelihoods were not affected by climate change. For instance, some participants directly affected by climate change believed that the impact would be greater in their area, and a similar opinion was shared by participants engaged in non-sensitive livelihoods. In the study regions, participants reported significant changes in weather patterns over the last 10–30 years, including irregular, insufficient, or heavy rainfall and an increase in temperature. These changes have already led to various adverse effects experienced by individuals in the study population. The most frequently mentioned effects included agricultural and fishery failures, heightened health hazards, and increased food and nutrient insecurity. The insights provided by the respondents highlight the critical role of climate-sensitive livelihoods and the tangible impacts of climate change on local communities. These findings underscore the urgency of addressing climate change issues and implementing targeted strategies to mitigate its effects on vulnerable populations.

The study population, as a whole, demonstrated familiarity with the term "climate change," but their understanding of its causes seemed limited and to some extent unclear. Interestingly, some of the participants attributed climate change to nature or God. However, during the FGD, a significant majority of participants pointed towards human activities as the primary cause. They specifically mentioned emissions from various

sources, such as vehicles, industries, and more, as contributing factors. Furthermore, human activities were identified as factors that exacerbate the impacts of climate change, indicating a growing concern among the participants about the consequences of our actions on the environment.

The focus group discussions brought to light a prevailing observation among participants that Bangladesh has experienced an increased frequency of floods in recent years, signifying a heightened awareness of climate change's effects on their local environment. These FGS findings highlighted the complexity of perceptions regarding the causes of climate change within the study population. The coexistence of beliefs in both natural and human influences demonstrates the need for comprehensive education and communication about climate science and the human impact on the environment. As Bangladesh continues to experience the effects of climate change, it becomes increasingly vital to engage in meaningful dialogue and empower communities to take collective action to address this pressing issue.

In exploring the qualitative perspectives (from FGD) of the study participants regarding climate change problems, intriguing variations in beliefs and opinions were uncovered. Among the respondents, majority of them expressed an optimistic stance, firmly believing that climate change problems can indeed be resolved. On the other hand, a considerable number of participants expressed skepticism, viewing these challenges as insurmountable and beyond easy resolution. Interestingly, an appreciable number of the participants appeared unsure or uninformed about the feasibility of solving climate change problems. This uncertainty reflects a need for further awareness and education on the subject, as many individuals seem to lack clarity on the potential for effective solutions.

Turning our attention to the strategies proposed for addressing climate change problems, a majority of the study participants identified the "government's safety net program" as a promising way forward. Notably, participants expressed even stronger support for this approach, with an impressive number embracing this viewpoint compared to other participants. In addition to the government's role, the respondents highlighted several other commonly mentioned approaches to tackle climate change problems. These included seeking assistance from their society or community, promoting self-resilience,

seeking support from international and local donors, and collaborating with non-governmental organizations (NGOs). This multifaceted array of solutions emphasizes the need for a holistic and collaborative approach to effectively combat the complex challenges posed by climate change.

This comprehensive exploration of qualitative perspectives from the FGD reveals a diverse landscape of beliefs and viewpoints concerning climate change problems. As we strive to address these pressing environmental issues, it becomes crucial to acknowledge and incorporate the insights of the respondents, especially considering the impact of gender and education levels on their perceptions. By fostering inclusive and informed discussions, we can forge a path towards sustainable solutions and a more resilient future for our planet.

The impact of climate change on income and economic activities in study areas was evident from FGD discussion. The changes in weather patterns, sea-level rise, flooding, cyclone and extreme events have had significant consequences on traditional livelihoods, trade, and the overall economic well-being of the study communities. Adapting to these challenges and finding sustainable solutions is crucial to secure the livelihoods and economic resilience of the affected communities. Most of participants from Chawfaldandi expressed –

*"Our income from fishing has drastically declined over the years because of unpredictable weather and stronger storms. It's becoming riskier to go out to sea, and our catch has diminished significantly. Climate change has disrupted the timing and patterns of fish migration, making it harder for us to catch fish. It's affecting the income of many fishing families."*

In addition, participants from Khuruskul stated –

*"Many young people are leaving our village to find better opportunities in the city. Climate change has disrupted our traditional livelihoods, and there's not much left for them here."*



All the participants from Khuruskul and Chawfaldandi echoed the same voice with concern –

*"Our lives here on the coast have never been easy, but now, with climate change breathing down our necks, it feels like we're fighting an endless battle. We see the impacts every day, and it's terrifying. The storms are getting stronger, and the floods more frequent. Our homes, our businesses, everything is at risk. Fishing used to be a reliable source of income, but now we can't predict the weather anymore. The sea is unpredictable, and it's getting harder to bring in a decent catch. We worry about the future of our fishing community. Our farmlands were once productive, but the saltwater intrusion is killing our crops. The soil has become so salty that it's almost impossible to grow anything. We try different methods, but it's a struggle to feed our families. We're trying our best to adapt, but it's not easy. We want to stay in our homes, in our communities, but the challenges are overwhelming. We're afraid for our children's future, and we wonder how long we can hold on. We need help, support, and solutions. We need our government and other organizations to step in and help us fight this battle. Climate change is affecting us deeply, and we can't do it alone. We need a plan, a way to protect our homes, our livelihoods, and our way of life."*

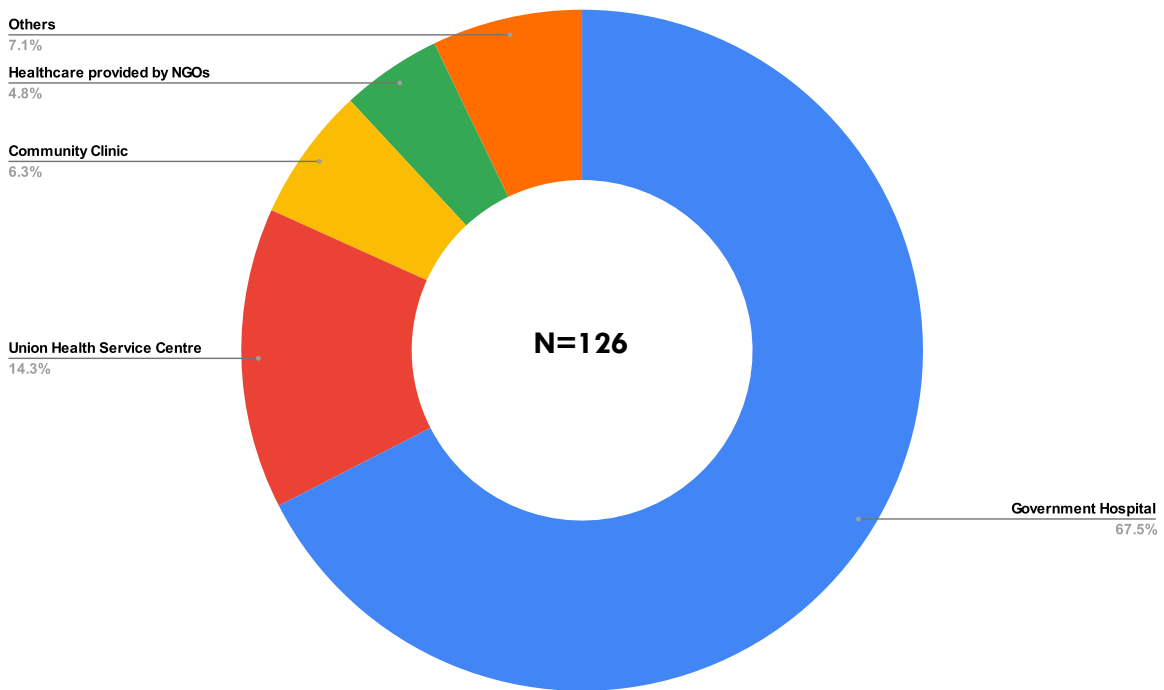
#### **4.4.3. Impacts of Climate Change on Health, Water, and Sewage Systems**

The coastal area of Bangladesh is one of the regions most vulnerable to the impacts of climate change, experiencing a multitude of challenges that significantly affect the health and well-being of its population, as well as the water and sewage systems crucial for sustainable living. While studying, it became evident that the most concerning consequences of climate change in this study areas is its impact on public health. As sea levels rise, it leads to saltwater intrusion into freshwater sources, resulting in the contamination of drinking water supplies. This has severe implications for the health of communities that rely on these water sources, as consuming saline-contaminated water can lead to various health problems, including hypertension, kidney disorders, and malnutrition due to decreased crop yields. Furthermore, changing weather patterns and increased temperatures foster the spread of infectious diseases, such as cholera, waterborne pathogens thrive in these conditions.

In addition to health impacts, climate change also poses significant challenges to water and sewage systems in the study areas, especially in the Rakhine para, Chowfaldandi. Increased rainfall and frequent cyclones lead to flooding and damage to infrastructure, disrupting water supply networks and contaminating water sources with sewage and other pollutants.

Furthermore, according to the participants, rising sea levels and extreme weather events have detrimental effects on sewage systems, causing overflow and breaches that contaminate water bodies and nearby lands. This not only pollutes the environment but also enhances the risk of waterborne diseases, affecting both human and aquatic life.

The participants were asked to indicate how they use different healthcare providers. According to the responses, the majority of participants, numbering 85, frequently seek healthcare support from government hospitals. The second most frequently utilized healthcare provider is the Union Health Service Centre, with 18 participants reporting regular visits. Following closely are community clinics, with 8 participants seeking healthcare there on a regular basis. A smaller number of participants, 6 in total, access healthcare services from NGOs. Lastly, 9 participants mentioned using other healthcare providers regularly. This data provides valuable insights into the preferences and utilization patterns of healthcare services in the surveyed population, indicating the prominence of government hospitals as the primary source of healthcare support (see Figure 17).



**Figure 17. Source of healthcare support**

Some insights we captured from the FGD sessions provide more extensive picture into the challenges and hardships faced by the project communities in Khuruskul and Chawfaldandi due to the impacts of climate change on health, water, and sewage systems. The changing climate is having profound and multifaceted effects on their daily lives, leaving them grappling with a myriad of problems that demand urgent attention and solutions.

All participants expressed their concerns in this way –

*"The frequent cyclones and floods are wreaking havoc on our homes, and the impact on our health is devastating. Every time a cyclone hits, we face the frightening prospect of losing everything. The rising floodwaters not only damage our property but also bring contaminated water, which leads to outbreaks of diseases like diarrhea and skin infections. We often have to seek shelter in overcrowded relief centers, and living in such close quarters puts us at higher risk of illnesses spreading. It feels like we're trapped in a vicious cycle, unable to break free from the clutches of climate change".*

Added to this, some participants showed their concerns in this manners –

*"The saltwater intrusion into our once-pure drinking water sources is making us sick. It's heartbreaking to see the ponds and wells we relied on for generations now turning saline. We used to have access to clean water right at our doorstep, but now we worry about waterborne diseases and have to walk long distances to find fresh water. Our children are falling ill more frequently, and the elderly struggle to cope with the increased health risks."*

Some of the participants revealed their concerns –

*"The heatwaves are becoming unbearable, especially for the vulnerable members of our community, like the elderly and young children. The scorching temperatures drain our energy, and we are constantly at risk of heat-related illnesses. Access to healthcare during emergencies is limited, and sometimes we have to travel long distances to find medical help. The changing climate has turned our lives into a constant struggle for survival, and it feels like we're fighting an invisible enemy."*

#### **4.5. Participants' awareness and access of social safety net programs**

Table 12 presents data on the awareness and access to social safety net programs provided by the government in two regions: Chowfaldandi and Khuruskul. In Chowfaldandi, 22% of the participants are aware of the government's social safety net programs, while the majority, 78%, are not aware. Additionally, only 6.50% of the participants in Chowfaldandi have benefited from these programs or services, while 93.50% have not availed them. On the other hand, in Khuruskul, a slightly higher percentage, 13.4%, are aware of the social safety net programs, while 86.60% are not aware. Moreover, 10.40% of the participants in Khuruskul have accessed the government's social safety net programs or services, leaving 89.60% who have not benefited from them. This data highlights the disparity in awareness and access to social safety net programs between the two regions, indicating the need for targeted efforts to improve access and knowledge of these crucial government initiatives.

**Table 12.** Participants’ awareness and access social safety net programs provided by the government

Awareness and Access of social safety net programs provided by the government	Chowfaldandi		Khuruskul	
	Yes	No	Yes	No
▪ Having awareness of the social safety net programs provided by the government.	22%	78%	13.4	86.6%
▪ Has the participant ever benefited from Social Safety Net Programs or union Council services?	6.5%	93.5%	10.4%	89.6%

Some participants received unconditional and non-contributory benefits provided by Government of Bangladesh for addressing the issues of poverty and disabilities, this amount is extremely small compared to the need. On the other hand, the vast majority of participants mentioned that ineligible candidates, rather than eligible candidates, often receive government’s benefits of social safety net programs for partisan reasons. Those who are able to assist local leaders at meetings, marches, and political conventions have an advantage over those who cannot (especially persons with disabilities).

In this regard, all most all participants stated –

*“In most cases the public representatives give more priority to their own relatives and political activists thereby depriving us of fair dues. The Social Safety Net Program is broadly for the extreme poor but we cannot access to this smoothly. People with political links always get preference and priority. We must have to have skills of lobbying to attain our rights”*

Interestingly, some of the participants voiced –

*“We are often provided some rice, groceries and different relief materials, they are of course doing well for us but believe us it takes our self-respect to take these all the time. Don’t want to get hands on, it makes us depended to some extents. We don’t want to look for this when it will come, we don’t want to be burden of the society. We want something long-run from them by making us self-reliant and leading our lives in more dignified ways”.*

#### 4.6. Information on disaster risk reduction, damage mitigation and adaptation

Table 13 provides insights into disaster risk reduction, damage mitigation, and adaptation practices in Chowfaldandi and Khuruskul. In Chowfaldandi, 22% of the participants have knowledge of public/private organizations that have worked on disaster risk reduction in the area, while the majority (78%) do not possess this information. Notably, none of the participants in Chowfaldandi have received financial assistance from these institutions.

Regarding early warning systems, a significant percentage (79.60%) of participants in Chowfaldandi receive warnings of impending disasters from relevant sources, while a smaller proportion (19.40%) does not.

However, when it comes to disaster risk reduction training, none of the participants in Chowfaldandi have received any training on the subject, indicating a potential gap in preparedness efforts.

Now, shifting to Khuruskul, a smaller proportion (18%) of participants has knowledge of organizations working on disaster risk reduction in the area, and a vast majority (82%) lacks this knowledge. In contrast to Chowfaldandi, 4% of participants in Khuruskul have received financial assistance from these organizations.

Similarly, a high percentage (87%) of participants in Khuruskul receive early warnings of impending disasters, while only 13% do not.

Like Chowfaldandi, none of the participants in Khuruskul have received any Disaster Risk Reduction (DRR) training, indicating a lack of formal training in disaster preparedness.

**Table 13.** Information on disaster risk reduction, damage mitigation and adaptation

Disaster risk reduction, damage mitigation and adaptation	Chowfaldandi		Khuruskul	
	Yes	No	Yes	No
▪ Having knowledge on public/private organizations that have worked on disaster risk reduction in the area?	22%	78%	18%	82%
▪ Has the participant ever received any financial assistance from these institutions?	0%	100%	4%	96%
▪ Do you get any early warning of impending disaster from there?	79.6%	19.4%	87%	13%
▪ Have you received any training on Disaster Risk Reduction (DRR) from anywhere?	0%	100%	4.4%	95.6%
▪ Have you ever received any training on climate adaptation?	0%	100%	6%	94%

The statements we found from FGD sessions highlight the participants' perspectives of disaster risk reduction and adaptation efforts in their localities. While they recognize the impacts of climate change on their lives, there is a need for greater awareness, capacity-building, and practical support to effectively address the challenges they face. Collaborative efforts between local communities, authorities, and non-governmental organizations are crucial in fostering resilience and sustainable development in the face of climate change's threats.

Most of the participants from Chawfaldandi stated –

*"Our ancestors lived here for generations, but now, the changing climate is pushing us to the edge. We want to protect our homes and livelihoods, but we don't have the knowledge to do it effectively. We need guidance and investment in building our capacity to adapt to these new challenges."*

Interestingly, some of the participants from Khuruskul said –

*"We are resilient people by born, but climate change is testing the limits of our endurance. We need more than just relief aid after disasters; we need sustainable solutions to reduce risks and build a better future. Empower us with the knowledge and tools to become agents of change in our communities."*

All participants from Khuruskul and Chawfaldandi voiced their concerns and needs in this way –

*"In this ever-changing coastal landscape, we've witnessed the wrath of climate change first-hand. The storms seem fiercer, the sea encroaches further, and we know we can't ignore it any longer. But when it comes to disaster risk reduction and adaptation, it's like trying to unravel a mystery that no one fully understands. We need a guide, someone to show us the way through this labyrinth of challenges. It's not just about throwing us life jackets after the flood; we want to know how to build a sturdy ship that can weather the storm. We've heard of these big words like 'adaptation' and 'resilience,' but they feel distant and abstract. It's time to bridge that gap between the jargon and our reality. We need practical knowledge that we can put to use right here, right now. Teach us how to make our farms more robust, fishing more, profit the business, not just for today's need, but for the generations to come".*

# CHAPTER 5

## RECOMMENDATIONS

- **Market Opportunities Analysis:** Analyze local and regional markets to identify potential opportunities for local beneficiaries communities at Khuruskul and Chowfaldandi to engage in income-generating activities by exploring and highlighting niche markets, demand for specific products or services, and potential value chains that can be developed to benefit the communities.
- **Market Linkages and Value Chains:** Facilitate access to wider markets by establishing linkages between local producers and regional/national markets. Support the development of value chains that add value to local products, ensuring fair pricing and improved market competitiveness.
- **Traditional Practices and Indigenous Knowledge:** Identify the traditional practices and indigenous knowledge of local beneficiaries communities at Khuruskul and Chowfaldandi related to agriculture, crafts, and other livelihood activities. Understanding and preserving these practices can contribute to sustainable livelihood strategies.
- **Community-Based Eco-Tourism:** Explore the potential for community-based tourism initiatives in the localities. Identify the cultural assets, eco-tourism opportunities, and infrastructure required to engage the beneficiaries in sustainable tourism activities.
- **Fostering Self-sufficiency and Empowering Communities by the Formation of Self-Reliant Groups (SRGs):** In marginalized communities around the world, the formation of Self-Reliant Groups (SRGs) has emerged as a powerful and effective approach to empower individuals, foster social cohesion, and drive sustainable development. This project should form and foster the SRGs that are community-based entities composed of members who come together voluntarily to address common issues, pool resources, and collectively work towards self-sufficiency. The first step in forming an SRG is community mobilization by engaging with the local community to understand their



needs, aspirations, and existing challenges. This initial stage involves building trust and rapport with the community members and gaining their buy-in for the formation of SRGs. Once community mobilization has taken place, potential SRG members are encouraged to identify common interests and objectives. These could range from income generation, livelihood improvement, skill development, women's empowerment and so on. To ensure inclusivity and representativeness, the selection of SRG members is critical. Efforts are made to include individuals from various socio-economic backgrounds, genders, and age groups, with a special focus on involving women and marginalized sections of the community. To build a strong foundation, members participate in team-building activities, workshops, and bonding sessions that promote mutual understanding and cooperation. Once the SRG is formed, capacity-building workshops are conducted to enhance the members' skills and knowledge. Training programs may include financial literacy, entrepreneurship, leadership development, and sustainable practices. Group Governance should be adopted where members participate in decision-making processes and elect leaders. Transparent communication and accountability mechanisms are established to ensure the smooth functioning of the group. With newfound skills and resources, SRGs embark on income-generating activities tailored to their community's needs and available resources. These activities may include micro-enterprises, small-scale agriculture, handicrafts, or services that generate sustainable income for the group and its members. As the project areas are poverty stricken, this SRGs can enable members to access micro-credit, financial support, and capacity-building programs, providing them with opportunities to escape the clutches of poverty and improve their living standards. Here, SRGs can play a transformative role in empowering women within marginalized communities. By creating safe spaces for women to express themselves, develop skills, and engage in income-generating activities, SRGs help break gender barriers and promote women's economic independence and decision-making abilities. SRGs also can foster social cohesion by bringing people together and encouraging dialogue across diverse backgrounds. In marginalized communities, where social divisions can hinder progress, SRGs promote understanding and cooperation among different groups, strengthening community bonds. In this way, Self-Reliant Groups (SRGs) will be able to demonstrate remarkable resilience in the face of challenges, making them powerful instruments of

positive change and sustainable community development. Their ability to adapt, collaborate, and thrive under adverse conditions will be a testament to their inherent strength and significance in promoting resilience at the community level.

- **Forming and Promoting Saving Group:** In marginalized communities worldwide, Saving Groups have emerged as a powerful mechanism for financial inclusion and empowerment. This project may consider this in formation of Saving Group to bring together individuals with shared financial goals, allowing members to save and access credit collectively. The first step in forming Saving Groups should involve community mobilization to raise awareness about the benefits of collective savings and credit access. This stage is crucial to gain the trust and interest of potential group members. After community mobilization, efforts should be made to identify potential Saving Group members. These individuals may be selected based on common interests, geographical proximity, or existing social ties. Inclusivity is emphasized, ensuring representation from diverse socio-economic backgrounds. Once potential members are identified, Saving Groups will be formed. Groups typically consist of 10 to 30 members who agree to save regularly and participate actively in group activities. Saving Groups will establish regular savings and contribution mechanisms, usually in the form of weekly or monthly meetings. During these meetings, each member contributes a predetermined amount, building a collective pool of savings. Proper record-keeping is essential to track individual contributions and maintain transparency within the group. Many Saving Groups appoint a treasurer or record-keeper responsible for managing the group's financial transactions. As the savings pool grows, members gain access to credit facilities within the group. Loans can be provided to members at reasonable interest rates, enabling them to invest in income-generating activities, meet emergency needs, or improve their livelihoods. In the project areas where formal financial services may be scarce, Saving Groups offer a pathway to financial inclusion. Members, including women and vulnerable populations, gain access to basic financial services that would otherwise be unavailable to them. Here, Saving Groups can play a vital role in poverty alleviation. Regular savings enable members to accumulate funds over time, leading to increased financial stability and the ability to invest in income-generating ventures. This uplifts families from poverty and enhances their overall quality of life. For this project, Saving Groups can be a profound impact

on women's empowerment where they have limited access to financial resources and decision-making power. Saving Groups can provide a safe space for women to save, access credit, and gain financial independence, enabling them to take on more active roles in community development. By building a financial safety net, Saving Groups can enhance the resilience of members against economic shocks and emergencies. Access to credit also mitigates risks associated with external borrowings from informal sources with high-interest rates. In this way, the resilience of Saving Groups lies in their collective strength, financial discipline, adaptability, and social support. By empowering communities through financial stability and inclusive participation, Saving Groups will play a crucial role for this project in building resilient societies that can withstand any shocks and emerge stronger from adversities. The lasting impact of these groups extends beyond financial benefits, fostering social progress, gender equality, and sustainable development in marginalized communities.

- **Community-Based Cooperatives and Collective Enterprises:** Encourage the formation of community-based cooperatives and collective enterprises to pool resources, share knowledge, and create economies of scale. These structures can enhance the bargaining power of project beneficiaries and foster a sense of ownership and responsibility.
- **Develop Financial Literacy Programs:** Organize financial literacy sessions designed to enhance the beneficiaries understanding of financial concepts, budgeting, savings, and credit management. Workshops, training sessions, and educational materials can empower them with the knowledge to make informed financial decisions and improve their financial well-being.
- **Gender and Livelihoods:** Understand the gender dynamics within local communities concerning livelihood opportunities. Explore the roles and constraints faced by men and women in income-generating activities and propose strategies for promoting gender equality in livelihood initiatives.
- **Entrepreneurship and Business Development:** Targeted interventions to help project beneficiaries to identify viable business ideas, create business plans, and manage their enterprises effectively. Connect them with financial institutions or funding sources to support their ventures.

- **Women's Empowerment and Gender Equity:** Develop initiatives that promote gender equity and empower women in the community to participate actively in income-generating activities. Provide training and resources to become women entrepreneurs and support their access to markets and decision-making processes.
- **Advocacy and Policy Influence:** Advocate for policies that support livelihood development and address barriers faced by project beneficiaries at Khuruskul and Chowfaldandi. Engage with local policymakers and relevant authorities to influence policy changes that promote inclusive and sustainable economic growth in the intervention localities.
- **Livelihood Policy and Governance:** Identify the gaps of the existing policies and governance structures related to livelihoods in the region. Work on minimizing the gaps between policy and interventions towards promoting inclusive and sustainable livelihood development.
- **Community Engagement and Awareness:** Organize community meetings, workshops, and awareness campaigns to highlight the importance of women's participation and decision-making. Involve local leaders, community influencers, and religious figures to support and promote gender equality initiatives.
- **Promote Positive Role Models:** Celebrate and showcase successful women from the beneficiaries as role models to inspire others. Share success stories of women who have overcome barriers to participate in decision-making roles and empower herself.
- **Peer Support and Networking:** Establish support groups or networks where project beneficiaries can share experiences, learn from each other, and provide mutual support. Foster partnerships with women's organizations and networks to expand beneficiaries' access to resources and opportunities.
- **Engage Men and Boys:** Engage men and boys in discussions about gender equality and the benefits of women's participation in decision-making. Encourage male allies to support women's empowerment initiatives and challenge harmful gender norms. Involve community leaders and influencers to act as champions of women's empowerment and encourage positive changes in attitudes and behaviors.

- **Tailored Livelihood Support for Persons with Disabilities:** Offer livelihood support that is tailored to the abilities and interests of persons with disabilities, recognizing their diverse skills and talents. Provide specialized training and skill development sessions to enhance their employability and entrepreneurship opportunities. Ensure that project facilities and resources are physically accessible to persons with disabilities, including ramps, widened doorways, accessible toilets and so on.
- **Partnerships with Disabled People's Organizations (DPOs):** Collaborate with local DPOs to gain insights into the specific challenges faced by persons with disabilities and to ensure their active involvement in the project. Seek guidance from DPOs on the implementation of disability-inclusive practices.
- **Community Engagement and Capacity Building for Resilience building:** Organize sessions to build the capacity of project beneficiaries at Khuruskul and Chowfaldandi in disaster preparedness, response, and climate change adaptation strategies. Collaborate with local communities to develop disaster risk reduction plans tailored to their specific needs and vulnerabilities. Integrate traditional knowledge and practices of the community into the process. Identify climate change risks and potential impacts on the community, including extreme weather events, water scarcity, etc. Work with the community to design and implement climate adaptation strategies. Work with local authorities and NGOs to establish social safety nets schemes to protect vulnerable households during disasters and climate-related shocks.
- **Minimizing Local Tensions and Conflicts:** Understand the root causes of tensions between project beneficiaries and local communities and create a stakeholder session that identifies all relevant parties and their interests, grievances, and concerns. Ensure that the project incorporates the needs and priorities of both project beneficiaries and local people. Enabling a mediating environment of resolution mechanism that allows for the peaceful resolution of local disputes and grievances. Train project staff and community leaders in mediation and negotiation techniques to address conflicts promptly. Develop a clear and fair benefit-sharing mechanism that ensures the project's positive outcomes are equitably distributed among both beneficiaries and local people.

- **Cultivate a Sense of Ownership and Community Involvement:** Engage project beneficiaries throughout the project's lifecycle, encouraging their active participation and ownership. Encourage community leaders and local volunteers to take on roles in project management and implementation, fostering a sense of responsibility and commitment to the project's success.

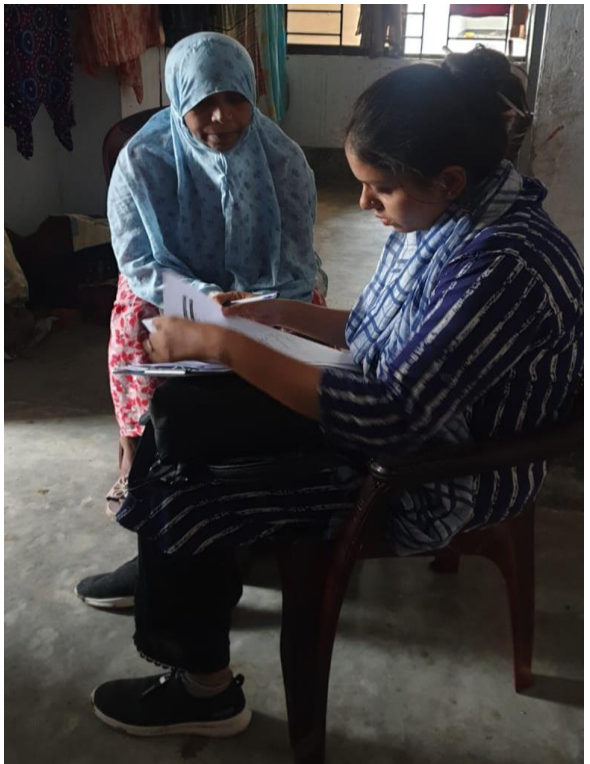
# CHAPTER 6

## PHOTOS FROM THE FILED









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