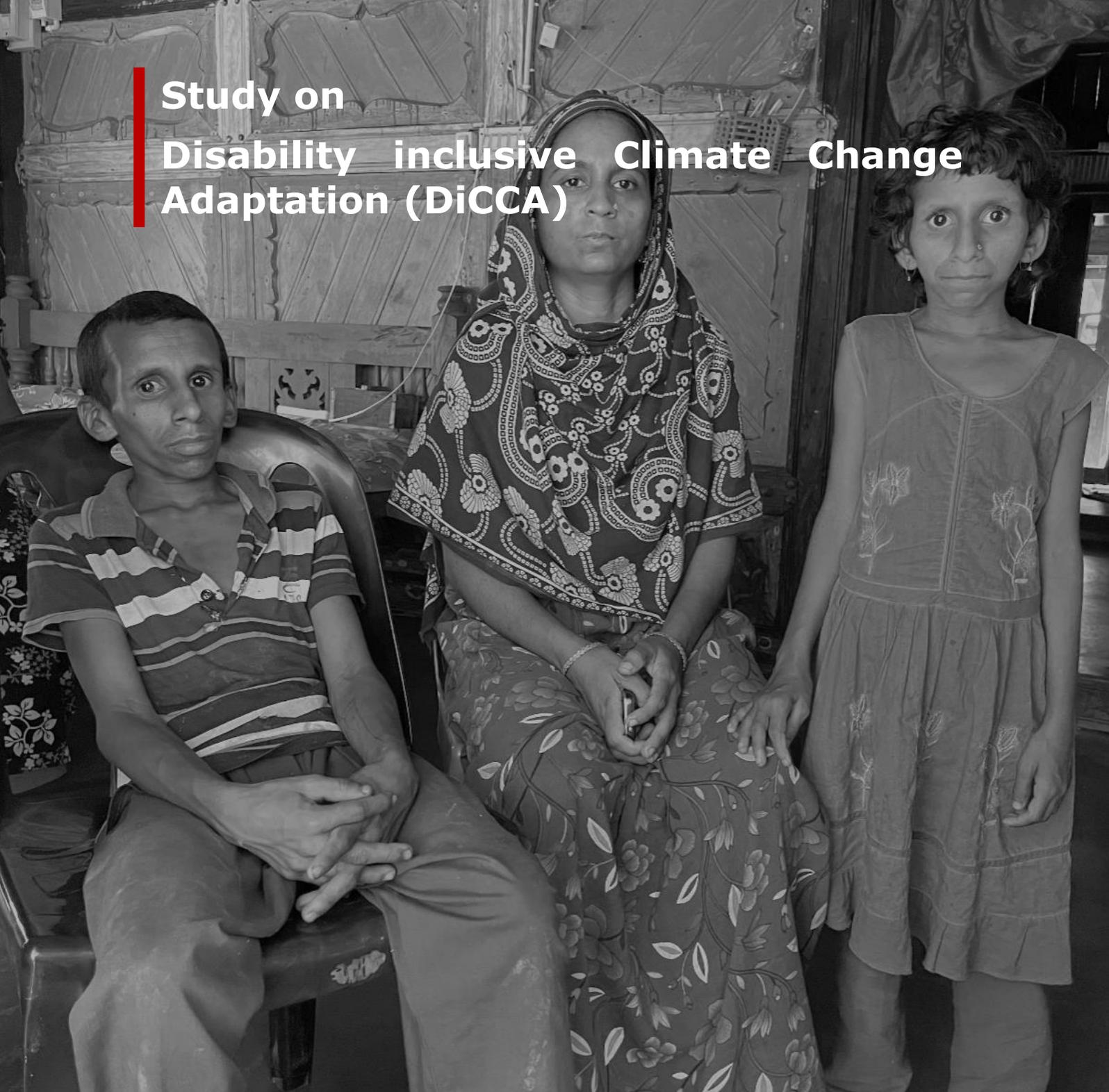


Study on Disability inclusive Climate Change Adaptation (DiCCA)



Understanding the impacts of climate change-induced hazards and disaster in the Southkhali Union, with a special focus on persons with disabilities and their inclusion in climate change adaptation measures

FINAL REPORT

Submitted To
Centre for Disability in Development (CDD) and CBM

Submitted by
Centre for Climate Change and Environmental Research
(C3ER), BRAC University

Disclaimer:

This report was produced at the request of CDD and CBM. It was prepared independently by the study team of C3ER, BRAC University. The views expressed in this report are those of the author(s) and do not necessarily reflect the position of CBM, CDD or any other party. Nor do these entities accept any liability for claims arising from the report's content or reliance on it.

FOREWARD

Centre for Disability in Development (CDD), in partnership with CBM launched a three (3) years project titled "Community Driven Disability inclusive Disaster Risk Management and Climate Change Adaptation" (CDDiDRM & CCA) in 2020. The project initiative seeks to improve societies' resilience and respond to the consequences of climate-induced disasters holistically. The initiative will directly reach 12,000 people, including persons with disabilities, and aim to enhance the most at-risk community's resilience through sustainable disaster-inclusive disaster risk management (DiDRM) and disability-inclusive climate change adaptation (DiCCA) in rural and urban areas of Bangladesh.

One of the components Disability Inclusive Climate Change Adaptation (DiCCA) is being implemented by CDD in Southkhali Union under Sarankhola sub-district of Bagerhat district in the coastal zone of Bangladesh. The components further aim to enable rural communities to benefit from DiDRM and DiCCA and practices.

This study tried to understand the impacts of climate change-induced hazards and disaster in the Southkhali Union, focusing on persons with disabilities. The study also explored the gaps in inclusion of persons with disabilities in adaptation measures and the scope and opportunities for inclusion of persons with disabilities in adaptation measures to Climate Change.

Centre for Climate Change and Environmental Research (C3ER), BRAC University is pleased to disclose that the final report is ready for dissemination. C3ER expects that the report would be useful for decision-makers of CDD and CBM and development partners as a quick overview of how to include persons with disabilities in adaptation measures and build climate resilience among the communities through a holistic approach.

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The study titled "Disability Inclusive Climate Change Adaptation (DiCCA)" was conducted by the team of Centre for Climate Change and Environmental Research (C3ER), BRAC University. A series of consultation, field visits, data collection, and analysis was conducted to attain the objective of the study. CDD and CBM management officials, experts, and project focal supported the study team while collecting data from the study location and preparation of the final report. At the outset, C3ER would like to express their gratitude to all of them for their precious time and guidance in preparing the enriched report.

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Finally, we would like to gratefully acknowledge the contributions of all the study team members, technical expert Group and field survey team for providing their input in preparing the final version of the report. My gratefulness extends to the study area's local people for their spontaneous participation in documenting and finalizing the study findings.

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ABBREVIATION

BARI	Bangladesh Agricultural Research Institute
BBS	Bangladesh Bureau of Statistics
BCC	Behavior Change Communication
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BINA	Bangladesh Institute of Nuclear Agriculture
BRII	Bangladesh Rice Research Institute
C3ER	Centre for Climate Change and Environmental Research (C3ER)
CBO	Community Based Organizations
CCA	Climate Change Adaptation
CDD	Centre for Disability in Development
CPP	Cyclone Preparedness Programme
DiCCA	Disability inclusive Climate Change Adaptation
DiDRM	Disability inclusive Disaster Risk Management
DRM	Disaster Risk Management
FGD	Focus Group Discussion
FYP	Five Year Plan
GHG	Green House Gas
GoB	Government of Bangladesh
IEC	Information, Education and Communication
INGO	International Non-Governmental Organisation
IPCC	Intergovernmental Panel on Climate Change
KII	Key Informant Interview
MoU	Memorandum of Understanding
NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action
NGO	Non-Governmental Organisation
NPDM	National Plan for Disaster Management
SDG	Sustainable Development Goals
SFDRR	Sendai Framework for Disaster Risk Reduction
SHG	Self Help Group
UN	United Nations
UNCRPD	United Nations Convention on the Rights of Persons with Disabilities
UNFCCC	United Nations Framework Convention on Climate Change
WASH	Water, Sanitation and Hygiene

EXECUTIVE SUMMARY

Bangladesh has been at the forefront of national and international climate change discourses, given its extreme vulnerability to the impacts of climate change. One of the world's largest deltaic systems with a 710 km long coastal stretch, it exposes approximately 40 million people to frequent cyclones, tidal surges, flood, and sea-level rise. Researches show the overall frequency, intensity and variance of these disasters have increased significantly over the past decade. According to several research, Bangladesh is a pioneer in adapting to climate change impacts with the country's people having remarkable ability to cope with natural disasters. However, regardless of their abilities, these disaster events affect marginalized groups such as people living in poverty and persons with disabilities disproportionately. These groups bear the most severe brunt of climate change along with battling multidimensional inequalities. Yet, there is minimal inclusion of persons with disabilities in national planning, disaster risk management planning and climate change adaptation measures.

Considering the context above, this study for Disability Inclusive Climate Change Adaptation (DiCCA) was undertaken which aimed to identify the impact of climate change on the coastal community people including persons with disabilities in Southkhali Union, Sarankhola, Bagerhat. The study provides a clear understanding on impacts of climate change vulnerabilities in the study area and gaps of inclusion of persons with disabilities in adaptation measures. A proper strategy, need based plan, specific guidelines and action plan for DiCCA have been suggested from this study. In order to achieve the objectives, the study used a mixed-method approach combining both quantitative and qualitative data collection methods and analytical tools. Data has been collected from primary sources such as household survey, Focus Group Discussions (FGD), Key Informant Interviews (KII) and Expert consultations. The secondary sources include extensive review of relevant national and international literature, peer-reviewed journals, policy plans and frameworks and development reports, etc.

The study's overall findings indicate that the study area is extremely vulnerable to climate change-induced events, particularly cyclone and storm surge. The impacts of climate change in Southkhali are significant when considering vulnerable sectors such as physical, economic, social and environmental. The study has found that climate-induced disasters recurrently damage already weak infrastructure in the area and damage agricultural land, leading to loss of income and increased unemployment. Social conflicts over fresh water and food are also quite common in the area, especially after severe cyclones and floods. In addition to that, child labor and child marriage are also concerning issues in the area as their prevalence increases after disasters. Environmental impacts of climate change were found to be increased salinity in soil and water, leading to decreased availability of cultivable land. Increased temperatures and hydrological changes due to climate change also have decreased the availability of fish.

Considering the above issues, the study has found that persons with disabilities and their organisations are disproportionately impacted due to lack of accessibility, lack of livelihood opportunities and training on climate adaptation measures, and overall low adaptive capacity. Along with multi-dimensional inequalities and poverty, they still face social exclusion and discrimination, especially in times of disasters when resources such as food and water become scarcer. The majority of

persons with disabilities are involved in the agriculture sector, which is highly sensitive to climate change impacts. This has a causal effect on their food security and livelihoods as food production decreases and loss of income sources leads to decreased purchasing power as well. Increased temperatures and intake of saline water also have adverse health impacts. Persons with disabilities also have mentioned that injuries during evacuation efforts to shelters in times of cyclones and barely getting any medical services there. Lack of drinking water availability and low rainfall lead to poor hygiene maintenance, especially causing health issues for women with disabilities. In addition to these, climate change impacts also hamper their education and have adverse implications on their protection and safety. Furthermore, lack of accessibility to resilient climate livelihoods, proper health care services, humanitarian support from Non-Government Organization (NGOs) and the Government, resilient housings and adaptation measures have a significant impact on the adaptive capacity of persons with disabilities.

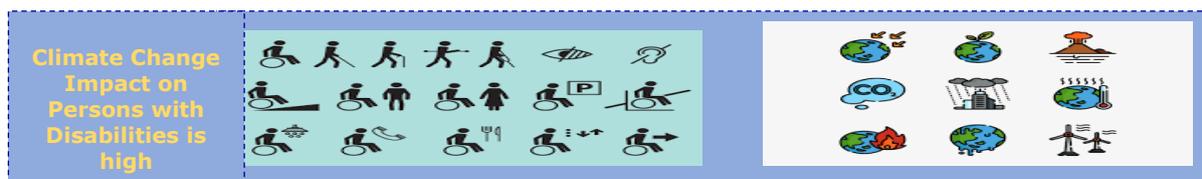
Some specific guidelines and action plan for DiCCA have been suggested from this study to improve impact analysis for risk and vulnerability, engage communities in preparedness actions, and strengthen institutional and community capacity. Overall, the significant recommendations from the community and expert consultation to identify risks and vulnerability include developing a comprehensive database segregating data by type of disability, gender and vulnerability and compiling existing knowledge on CCA measures in local, accessible languages. In order to reduce barriers in inclusion of persons with disabilities, awareness programmes can bring positive attitudinal change within the community.

Furthermore, coordination among Community-based organizations (CBOs) and Self-Help Groups (SHGs) and building their capacity are have been highlighted as crucial for advocating for the rights of persons with disabilities in CCA. Involving persons with disabilities in climate adaptation project formulation, implementation and monitoring will give them a platform to voice their needs and empower them.

The study has identified scopes in policies related to climate change such as National Adaptation Plan of Action (NAPA), National Health Policy, National Agriculture Policy and National Water Policy, where persons with disabilities can be more specifically addressed. Therefore, policy advocacy is needed for developing strategies for action to align the national policies with international convention and frameworks such as the UNCRPD, Paris Agreement, the SDGs and SFDRR. In addition, policy advocacy for effective implementation of the policy and legal framework also can be done.

Capacity-building among health service providers is highly required to ensure appropriate health services such as physiotherapy, counselling, occupational therapy etc., for persons with disabilities in Southkhali. Lastly, to strengthen community capacity, various climate-smart livelihood options, methods and techniques such as handicrafts; resilient fruit cultivation like jujube cultivation (Apple Kool); Sack gardening and Nutri-gardening in the homestead, Duck (Khaki kamble) rearing; case-based crab culture, and other resilient fish cultivation (Koi, Nilotika) etc. have been recommended. These methods or techniques can be introduced through effective training and proper facilitation for persons with disabilities to ensure their food and economic security during and after climate change-induced disasters.

1 OBJECTIVE AND METHODOLOGY



1.1 Objective of the Study

The objective of the study was to identify the climate change-related vulnerabilities and the impacts of climate change on the coastal community people including persons with disabilities in Southkhali Union. This study also identified the gaps of inclusion of persons with disabilities in adaptation measures to climate change.

1.2 Study Area

The study area selected is Southkhali Union, which is a Union of Sarankhola Upazila under Bagerhat district. The area is a high disaster-prone zone with more than 70% of its population living below the poverty line. The Union is situated in the southernmost part of Bagerhat district (See Annex A, Table 1 and Figure 2). On the south and the west, Southkhali is bounded by the largest mangrove forest in the world the Sundarbans (GoB, 2014).

1.3 Study Design

In order to achieve the objectives, the study used a mixed-method approach combining both quantitative and qualitative data collection methods and analytical tools. Data has been collected from both primary and secondary sources such as household survey, Focus Group Discussions (FGD), Key Informant Interviews (KII), Expert consultations and documents review.

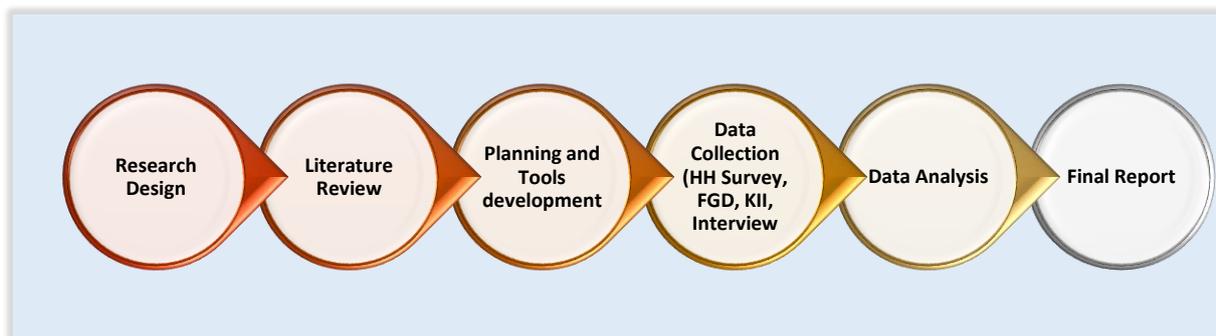


Figure 1: Methodological Framework

1.3.1 Sources of Data

The study team collected qualitative and quantitative data and information from both primary and secondary sources for conducting the study. The primary data source includes a face-to-face interview or household survey using a structured questionnaire, FGDs, KIIs, and direct observation. Secondary data and information were collected from literature review of several peer-reviewed

journals, case study reports, national and international policies and frameworks relevant to DiCCA.

1.3.2 Sampling and Data Collection

Household-level data were collected from all the 9 wards of Southkhali Union using a structured questionnaire (See Annex B). The total household survey done for the study was 670, out of which 335 or 50% were households with persons with disabilities (See Annex A and Annex C). A total of 17 FGDs were conducted to learn the impact of climate change on the community people including persons with disabilities and their capacity and knowledge to deal with these impacts. A total of 30 interviews with different stakeholders, were conducted to identify the existing policy gaps for inclusion of persons with disabilities and learn about the scope and opportunities for inclusion of persons with disabilities in adaptation measures to climate change (See Annex B for detailed FGD and KII checklists and distribution list).

1.3.3 Literature Review

The study team reviewed several relevant national and international research publications, case study reports, peer-reviewed journal articles, databases, fact sheets, and essential policies and frameworks. The literature review helped the study team to prepare a set of primary assumptions. These assumptions were finally be verified based on the field data analysis.

1.3.4 Compliance with policies and ensuring quality

Standard procedure to comply with and maintain Code of Conduct, Child Safeguarding and Data Security Policies was ensured by the study team. BRAC's Code of Conduct on Child Protection, BRAC Safeguarding Policy, Child and Vulnerable Adult Code of Conduct of CDD and CBM Picture Consent for Children and Adult were followed. C3ER also maintained their Data Security Policy. The data collection team was led by C3ER, who guided and trained the enumerators. C3ER also monitored and managed the entire process of the data collection. The expert guidance and suggestions from Disability Expert of the study team were taken into account for every step of the study process, including fieldwork, developing data collection tools and report writing.

1.3.5 Limitations of the study

The study team identified a few limitations related to the study such as small sampling size and limited study area. Future research could be done over more extended periods and expanded over 3-4 hazard zones (cyclone, flood, flash flood and drought) in Bangladesh.

1.3.6 Preparation of the Final Report

After analyzing the primary and secondary data and thus completing the assessment, the final report was prepared. Data was analysed and discussed thoroughly and this report highlights the major findings of the study. All detailed study findings including tables and matrixes can be found in the Annexures of the report.

2 CLIMATE CHANGE ADAPTION IN BANGLADESH: BASIC CONCEPT



United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.”

2.1 Introduction

Climate Change is a looming reality; it’s not a myth anymore. The sign of climate change has already started to appear in many countries worldwide, and Bangladesh is not an exception.

Bangladesh is one of the most vulnerable countries globally to climate change impacts because of its long coast, flat topography, the abundance of rivers, large deltas, high population density and low level of development.

Natural disasters, i.e. flood, cyclone, riverbank erosion

and drought, are common events in the country. However, the changing behavior of the climate of Bangladesh combined with other socio-economic and environmental constraints places the country prominently in global discussions of climate change impacts as millions of the poor living in the low-lying deltaic region are already exposed to severe climate change induced hazards. Due to climate change, the vulnerability of different sectors in Bangladesh is increased such as Agriculture, Energy Sector, Water Resources and WASH (Water supply and sanitation), Public Health, Forest & Biodiversity, Industries and Infrastructure, etc.

The country’s coastal region is especially vulnerable among all regions because of its geophysical characteristics and the disadvantaged socio-political conditions that often limit people's access to resources (Hossain et al., 2018). The region is also regularly and recurrently damaged by several climate induced disasters like cyclones, tidal surges, inundation, saltwater intrusion, sea-level rise and riverbank erosion (Abir and Xu, 2019).

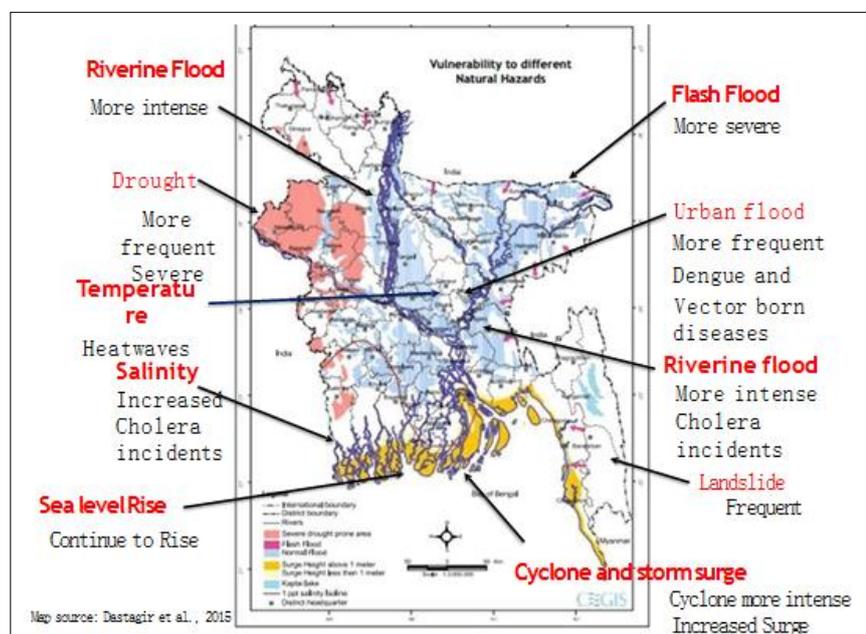


Figure 2: Climate Change Induced Hazards in Bangladesh
Source: Dastagir et al., 2015

2.2 Climate Change: Key Concept

Climate change is a significant change in global or regional climate pattern over time due to anthropogenic activity. According to Intergovernmental Panel on Climate Change (IPCC) "Climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity" (IPCC, 2007).

The IPCC- IV Assessment Report (2007) concluded, and IPCC-V Assessment Report (2013/2014) confirmed that global warming is **unequivocally** the result of human activities

Climate change may be due to natural internal processes or external forcing such as modulations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use. Apart from that, the anthropogenic reasons behind climate change can be divided into three main categories: **a. Deforestation:** Due to deforestation, natural absorption of Carbon dioxide (CO₂), one of the main Green House Gas (GHGs), is being hampered and increases GHG content in atmosphere. **b. Technologies:** Use of different new technologies such as different type of vehicles, tools, AC, refrigerators, use of chemical fertilizers etc. increase GHGs emissions. **c. Industry and fossil fuels:** Fossil fuels and industry (textile, steel, cement, chemical, food industry, etc.) emit large amount of GHGs.

2.3 Climate Change Adaptation: Key Concept

According to IPCC, "Climate Change Adaptation refers to adjustments in environmental, social or economic systems in response to climate change impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to increase benefit from opportunities associated with climate change". Like many other countries of the world, the Government of Bangladesh has taken several sectoral adaptation initiatives to make climate-resilient community. The adaptation priorities according to *Third National Communication* of the country are shown in Box 1 (Source: (MoEFCC, 2018)).

Box 1: Adaptation Priorities in Bangladesh

- Improved early warning systems for tropical cyclones, floods, flash floods and drought; Disaster preparedness and construction of flood and cyclone shelters; Protection against tropical cyclones and storm surge; Inland monsoon flood-proofing and protection
- Climate resilient infrastructure and communication; Climate resilient housing; Repair and rehabilitate existing infrastructure (including coastal embankments, river embankments and drainage systems, urban drainage systems)
- Plan, design and construction of urgently needed new infrastructure (various types of shelters, low-cost disaster resilient housing, protection schemes, water management structures, etc.); Improvement of urban resilience through improvement of drainage systems to address urban flooding
- River training and dredging (including excavation of water bodies, canals and drains); Development and dissemination of stress tolerant (salinity, drought and flood) varieties of rice; improved varieties of livestock and fisheries
- Adaptation based on local-level perspectives; Adaptation to climate change impacts on health; Biodiversity and ecosystem conservation
- Research and knowledge management; Capacity building at individual and institutional level to plan and implement adaptation programmes and projects in Bangladesh

3 PERSONS WITH DISABILITIES: BASIC CONCEPT



According to the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), “persons with disabilities include those who have long-term physical, mental, intellectual, or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others” (United Nations, 2008)

3.1 Introduction

Disability Information System has registered 2,277,491 people in Bangladesh who have a disability (1,399,472 men, 875,373 women, and 2646 who are described as third gender with disabilities) (DIS, 2021). The census from 2011 in Bangladesh reported disability prevalence to be 1.4% (1.3% female, 1.5% male) (The Disability Alliance on SDGs, Bangladesh, 2019). However, the Household Income and Expenditure Survey (2010) conducted by the Bangladesh Bureau of Statistics (BBS) found the disability prevalence rate to be 9.07% (BBS, 2014). However, existing data on persons with disabilities is not adequate, reliable, or comprehensive.

Bangladesh has ratified the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) and adopted several disability-related laws and policies, including the Rights and Protection of Persons with Disability Act 2013. The Act has listed 12 types of disabilities: autism spectrum disorder, physical disability, mental illness, visual disability, speech disability, intellectual disability, hearing disability, deaf-blindness, cerebral palsy, Down syndrome, multiple disability, and other disability (Legislative and Parliamentary Affairs Division, 2013). This Act gives persons with disabilities the opportunity to lead their lives like other people without facing any obstacles. However, several issues are left unaddressed to reduce the gap between adoption and implementation of the law.

According to Rights and Protection of Persons with Disability Act 2013, “Disability” refers to any person who is physically, psychologically, and/or mentally not functioning properly due to social/environmental barriers; and “Persons with Disabilities” refers to any person who cannot take part actively in the society; and “Rights of Persons with Disabilities” refers that person with disabilities have rights equal to all citizens, including fundamental basic human rights.

3.2 Barriers of Persons with Disabilities

Barriers are such factors that hamper participation and create disability. These barriers limit access of persons with disabilities to and inclusion in society. The barriers may be; (i) attitudinal involving discrimination, prejudice, ignorance, stigma and bias, (ii) environmental barriers that include physical obstacles in the natural or built environment; or (iii) institutional barriers, which include discrimination against persons with disabilities in laws and policies (IASC, 2019).

Individually or collectively, these barriers make it more likely that persons with disabilities will face more significant threats and vulnerabilities than others, especially when facing a crisis. The frequency, duration and intensity of climate-induced disasters have increased in the study area and other parts of Bangladesh, posing persons with disabilities at high risk. Some of the significant barriers specific to climate change-induced disasters (Box 2) identified from the literature review and field survey are as follows-

Box 2: Major Barriers Specific to Climate Change-induced Disaster

- Persons with disabilities tend to be among the most at-risk group in their communities and, therefore, face barriers in accessing proper healthcare, livelihood and transportation, etc.
- Persons with disabilities face challenges during every stage of emergency preparedness and disaster management due to inaccessible early warnings signals, evacuation and response (including cyclone or flood shelters and humanitarian assistance), etc.
- Persons with disabilities do not have adequate knowledge of climate change, tackling climate-induced disasters, or adopting changing climate behavior.
- Waterlogged roads due to heavy rainfall or flooded roads hamper the movement of persons with disabilities to a great extent.
- In terms of accessibility to the cyclone and flood shelter, persons with disabilities face many problems as these shelters are not disability friendly. Most of the shelters do not have ramp facilities for wheelchair users and have no accessible water and sanitation facilities for person with disabilities.
- The distance and poor road conditions, lack of cooperation and support needed to go to the shelter are also hampers safe and effective evacuation of persons with disabilities during the disaster, etc.
- Lack of awareness among the local government and community people about the specific needs and rights of persons with disabilities also act as barriers in inclusive climate change adaptation activities.

3.3 Discrimination to Persons with Disabilities

According to the Guidelines on Inclusion of Persons with Disabilities in Humanitarian Sector 2019- "Discrimination on the basis of disability refers to any distinction, exclusion or restriction on the basis of disability that has the purpose or effect of impairing or nullifying the recognition, enjoyment or exercise, on an equal basis with others, of human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field".

Persons with disabilities regularly battle multidimensional inequalities ranging from inaccessible infrastructure, non-compliant communication systems, poverty, and discrimination in government positions to access to health care facilities. These inequalities are exacerbated during and after disasters related to climate change (Leong, 2020).

Despite constituting about 15% of the world's population (WHO, 2011), representations of the interests of persons with disabilities are low or absent from climate change discourses. Disability is considered both a cause and consequence of poverty, yet policy-makers and stakeholders have not fully prioritised this issue within development plans and strategies.

In Bangladesh, discriminations against persons with disabilities prevail in disaster-prone areas of the country, and Southkhali Union is not an exception. Several insights of such discriminations (Box 3) in terms of humanitarian assistance, accessible warning system and inclusive climate change adaptation activities, etc. explored from literature review, field survey, FGDs and KIIs, which is as follows-

Box 3: Major Discrimination to Persons with Disabilities

- ❖ Due to the social stigma and miss conception, people do not believe that persons with disabilities can equally contribute towards any development initiatives.
- ❖ While drafting policies and implementing projects, persons with disabilities or their representatives rarely consulted and involved. Hence, their specific needs and rights are left unaddressed.
- ❖ The discrimination against persons with disabilities in society and activities related to climate change adaptation is quite prevalent. The lack of the effective implementation of existing laws and policies plays a significant role in this issue.
- ❖ The persons with disabilities are not consulted or involved in climate change-related initiatives. However, they are the worst victims of climate change rather than a person without disabilities.
- ❖ Among persons with disabilities, women, elderly people with disabilities; persons with neurodevelopmental disabilities; persons with speech and hearing impairment, and persons with multiple disabilities are the most marginalized and prone to discrimination in terms of evacuation, receive of humanitarian assistance and accessible warning system, etc.

4 LEGAL AND POLICY FRAMEWORKS RELATED TO PERSONS WITH DISABILITIES



The **Paris Agreement** refers that “when taking action to address climate change, respect, promote and consider their respective obligations on human rights,” including all rights related to persons with disabilities

4.1 Synthesis of International Policy Framework

In recent decades, persons with disabilities are increasingly being recognized to be disproportionately vulnerable to the impacts of climate change. To that end, the rights and climate change vulnerability, etc., of the persons with disabilities were articulated by some international policies and legal framework. The brief synthesis of major international policies and legal framework is as follows-

The **United Nations Convention on the Rights of Persons with Disabilities (UNCPRD)** is one of the core international human rights treaties. Article 11 on situations of risk and humanitarian emergencies calls on all State parties to take “all necessary measures to ensure the protection and safety of persons with disabilities in situations of risk, including situations of armed conflict, humanitarian emergencies and the occurrence of natural disasters”. The UNCPRD does not refer to climate change or its impact directly. Still, it does address issues related to climate change, such as mobility, food and water security, health, education, and employment opportunities (UN, 2008). The **Paris Agreement** is a landmark international accord that calls on Parties to aim to limit global warming to well below 2 degrees Celsius compared to pre-industrial levels. In the agreement, the Parties acknowledged that they should, “when taking action to address climate change, respect, promote and consider their respective obligations on human rights,” including all rights related to persons with disabilities (UNFCCC, 2015).

The **Sendai Framework for Disaster Risk Reduction (SFDRR)** aims to achieve a significant reduction of disaster risk and loss of lives, livelihoods and health considering economic, physical, social, cultural and environmental assets. The SFDRR highlights the specific needs of people with disabilities to a much greater extent. The SFDRR guiding principle states that “A gender, age, disability and cultural perspective should be integrated into all policies and practices.” Furthermore, priorities 3 and 4 in SFDRR cover issues related to accessibility and inclusion. Priority 3 emphasizes the “Principles of Universal Design” when discussing investments in critical facilities and physical infrastructure, and Priority 4 addresses that “Empowering women and persons with disabilities to publicly lead and promote gender-equitable, and universally accessible response, recovery, rehabilitation and reconstruction approaches is key” to enhancing disaster preparedness and “build back better” (UN, 2015). The **Sustainable Development Goals (SDGs)** aim to end poverty, protect the planet and create a more sustainable future for all. Persons with disabilities are explicitly referenced in the SDGs, and disaggregation of data by disability is a core principle. Goal 13: Climate Action promotes mechanisms for raising capacity for effective climate change-related planning and management focusing on women, youth, local and marginalized communities (UN, 2021).

4.2 Synthesis of National Policy Framework

Bangladesh has signed and ratified the UNCRPD and have adopted many policies, Acts and national plans considering the issues related to persons with disabilities, including the Bangladesh National Building Code 2006, Cyclone Shelter Construction, Maintenance and Management Policy, Disaster Management Act 2012, Dhaka Declaration 2015+, National Plan for Disaster Management (NPDM) 2021-2025 and most importantly, the Persons with Disabilities Rights and the Protection Act 2013. Besides, other sectoral national policies also emphasized ensuring the rights of persons with disabilities in accessing food and health services. The brief synthesis of major national policies and legal framework is as follows-

Persons with Disabilities' Rights and the Protection Act 2013 is meant to guarantee educational, physical and mental improvement of persons with disabilities and to support their participation in social and state activities by removing barriers and all sorts of discrimination. The Act further mentions that the "Government will take necessary steps towards ensuring safety and security of persons with disabilities in the case of natural disasters, humanitarian emergencies and occurrences of violence" (Legislative and Parliamentary Affairs Division, 2013). The **National Plan for Disaster Management (NPDM) 2021-2025** adopted an inclusive approach for prioritizing persons with disabilities and highlighted the importance of building capacity by embracing their leadership in DRM strategies and plans. The NPDM also put importance on the No One Left Behind policy and implement psycho-social care in Disability inclusive Disaster Risk Management (DiDRM) (MoDMR, 2020). The **Bangladesh Climate Change Strategy and Action Plan (BCCSAP)** is built on 6 pillars. Pillar 1: Food security, social protection and health emphasizes that persons with physical and mental disabilities are more vulnerable to the impacts of climate change thus may need support to maintain their livelihoods (MoEFCC, 2009).

Several sections of the **8th Five Year Plan (FYP)-2021-2025** addresses persons with disabilities. The plan mentions strategies for expanding the social protection system for persons with disabilities. The specific needs of this group would also be addressed within Bangladesh's human development and economic development agenda and emphasize the implementation of the Persons with Disabilities Rights and the Protection Act 2013. In terms of climate change adaptation measures, the 8th Five Year Plan highlights providing climate-resilient infrastructure in natural disaster-prone areas which will be disability-friendly (GED, 2021). **Bangladesh Delta Plan 2100** emphasizes sustainable and inclusive livelihoods to ensure food and nutrition security for all vulnerable groups (GED, 2018). Some sections of the **Bangladesh Country Investment Plan for Environment, Forestry and Climate Change (2016 – 2021)** emphasizes formulating disaster risk reduction measures or disaster risk management practices considering the needs of women and men who have disabilities (MoEFCC, 2017).

Some section of the **National Coastal Zone Policy 2005** mentions special safety measures related to cyclone shelters, multi-purpose embankments, killas, road system and disaster warning system for persons with disabilities in reducing vulnerabilities (MoWR, 2005). **Cyclone Shelter Construction, Maintenance and Management Policy 2011** addresses, "Ramp facilities on the ground floor; Separate room for persons with disabilities and most at-risk group people and

Separate toilet facilities for the pregnant women, the separate room has to be kept for women“(MoDMR, 2011). **Dhaka Declaration 2015+** emphasizes the representation of persons with disabilities that are gender and age responsive at all Disaster Risk Management Committees levels and develop inclusive and accessible multi-hazard early warning systems, etc. (GoB and UNISDR, 2018).

4.3 Bridging National Policy with International Framework

The DRM, climate change adaptation strategies and other national disaster-related plans of Bangladesh has aligned with the UNCRPD, SFDRR, SDGs and UN Climate Agreement. In order to advance the implementation of UNCRPD, SFDRR and other international policy and legal frameworks, the national policy and legislative framework focus on an integrated approach which is required to ensure that persons with disabilities are not left behind in disaster response and recovery. Therefore, adhering to the commitments made through the UNCRPD, SFDRR, Paris Agreement and SDGs to some extent. However, there are still some limitations (Box 4) that prevail in implementing national policy and legal framework of the country on ensuring the rights of persons with disabilities in disaster times and reducing the climate change-induced vulnerability, focusing on disability-inclusive climate change adaptation. Hence, policy advocacy needs to be initiated among the respective authorities by NGOs, International Non-Governmental Organisation (INGOs), and disability-specific organisations to make disability-inclusive national policy and the country's legislative framework. Moreover, advocacy also needs to be done for the effective implantation of such national documents. The major limitations in bridging with the international framework are as follows-

Box 4: Limitations in Bridging with International Framework

- The BCCSAP only states that persons with disabilities are more vulnerable to climate change impacts but do not provide a clear time-bound action plan or projects to address this issue. Nevertheless, the Paris Agreement emphasizes it.
- National Adaptation Plan of Action (NAPA) does not address persons with disabilities in the context of climate change adaptation. However, the ongoing Formulation and Advancement of the National Adaptation Plan (NAP) Process can consider the rights and protection of persons with disabilities.
- The Cyclone Shelter Construction, Maintenance and Management Policy address the accessibility of persons with disabilities by providing ramp facilities, separate room for women and disabled people and separate toilet facilities for pregnant women while constructing cyclone shelter. However, the facilities of accessible toilets were not mentioned by the policy though SFDRR emphasizes universal design practice while constructing physical infrastructure.
- National Food Policy addresses the rights of persons with disabilities in accessing food, nutrition and social safety net. However, these rights are not being ensured adequately though Paris Agreement clearly emphasizes this issue.
- Two most important national policies, like National Agriculture Policy and National Water Policy, don't directly or specifically address specific measures that could reduce the vulnerability of persons with disabilities related to agriculture and water issues. However, several international documents, i.e., UNCRPD, Paris Agreement, SDG and SFDRR, emphasize this matter.

5 CLIMATE CHANGE IMPACTS IN COASTAL AREAS



Coastal areas in Bangladesh are at the front line of the climate change crisis as they are regularly and recurrently damaged by several calamities like cyclones, tidal surges, inundation, saltwater intrusion, sea level rise and riverbank erosion (Abir and Xu, 2019)

5.1 Introduction

The coastal region of Bangladesh is comprised of 19 districts and consists of several ecosystem types, including mangroves, wetlands, and floodplains (Nandy et al., 2013). The southeast region includes Chittagong, Cox's Bazar, and St. Martin's Island. Chandpur, Bhola, Patuakhali, Noakhali, and Barguna make up the southcentral region, and the southwest region encompasses Khulna, Bagerhat, and Satkhira.

Approximately 40 million people in Bangladesh live along the 710 km long coastal stretch (World Bank, 2015). The maximum number of inhabitants of the coastal areas are poor (Ahmad, 2019).

The country's coastline is experiencing a wide range of climate change impacts through changes in temperature, rainfall and sea levels, and changes in frequency and severity of extreme events like cyclones, storm surge, flooding, etc. Along with these, the coastline is also susceptible to increased salinity due to frequent cyclone and their associated storm surges and sea-level rise. These extreme events or disasters cause damage to crops, fisheries, livestock, rural housing, educational institute, embankment, and road network, etc., which in turn impact people's financial stability in the coastal areas and hampers the nation's economic growth also (Alam, Momtaz, Uddin, & Baby, 2018) (Islam & M, 2004).

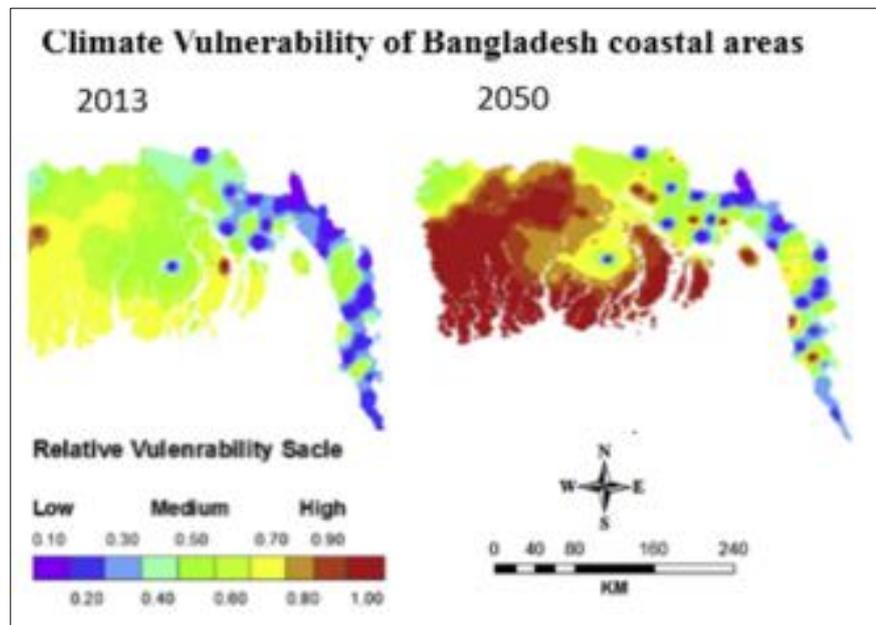


Figure 3: 2013 and future (2050) climate vulnerability in coastal areas of Bangladesh. Source: (Uddin, et al., 2019)

Box 5: Impacts of Climate Change in Southkhali Union

The adverse impact of climate change-induced disaster is also apparent in the Southkhali Union of Sarankhola Upazila of Bagerhat District. The community people of this area experiences more frequent and intensified cyclone, storm surge and other climatic disasters compare to the past (See Box 6-9 for overall impacts). For instance, Sarankhola upazila was identified as the worst affected coastal upazila by Cyclone Sidr in 2007 (Siddik et al., 2014). The cyclone killed more than 800 people in Southkhali Union from Bogi, Gabtola and Southkhali villages, leaving thousands of homeless and displaced people as their settlements were destroyed (The New Humanitarian, 2008).

5.2 Physical Impacts

Nearly 70% of the population of Bangladesh live in rural areas, and many of these poor populations occupy remote and ecologically fragile areas of the country, such as the coastal zones (Walsham, 2010). More frequent and intensified climate change-induced disasters affect the coastal infrastructure, i.e. embankment, bridges, rural housing, educational institute, road network, water supply network, electricity network, other physical infrastructures, etc. Research indicates that global warming is predicted to cause an annual temperature rise of 0.4 degree Celsius in Bangladesh, resulting in more frequent and intense cyclone (Minar et al., 2013). The coastal region is already evidencing intensified cyclones due to increasing temperature resulting from global warming. Moreover, other climate-induced disasters, i.e., recurrent and intensified floods, coastal erosion and riverbank erosion, also destroy the houses of the rural community along with other physical infrastructure due to changing climate behavior. A study conducted in 2010 also projected that a rise in sea level of 62 cm by the year 2080 could result in a loss of 13% of Bangladesh's coastal land area and lead to consequent flooding of 20% more land (Yu et al., 2010) which also could destroy rural settlement and infrastructure.

Box 6: Major Physical Impacts of Climate Change in Southkhali Union

Due to weak infrastructure and unplanned settlement patterns, all Southkhali union wards are highly vulnerable to climate change-induced events, especially cyclones, storm surges and floods, etc. The study revealed that frequent cyclones in the area have partially or fully damaged houses, roads, and other essential infrastructure such as embankments, schools, marketplaces, etc. As the hazards frequently appear now, the damages to the houses and infrastructures are also recurrent and hamper both the communities' and rural economy's growth.

5.3 Economic Impacts

Climate change is predominantly considered to adversely impact local infrastructures, energy supplies, agriculture, forestry and other crucial economic sectors. Along with other parts of Bangladesh, the coastal community is agriculture-dependent, which plays a vital role in income, employment generation, poverty reduction, and increasing living

Box 7: Economic Impacts of Climate Change in Southkhali Union

As Southkhali faces frequent climate change induced disasters, the overall economic impact is quite severe. Some of the major economic impacts of climate change in Southkhali identified in this study were damages to agricultural land caused by increased salinity, and loss of major livelihoods such as farming, livestock, fishing, vegetable gardening, etc. Loss of other kinds of work such as not being able to drive vans due to flooded roads, also means losing their income sources. Increased unemployment has adverse effects on the communities here as they become financially unstable to purchase necessities in times of disasters.

standards. However, every year, frequent climate change-induced disasters leave extensive damage to crop yields, employment, livelihoods, and the national economy (Hossain et al., 2018). For instance, cyclones such as Sidr and Aila caused noteworthy changes in living patterns of coastal inhabitants. As embankments were damaged and the saltwater intrusion was inevitable, it has affected crop production as agricultural lands are not suitable for growing crops anymore (Kabir et al., 2016) resulting in loss of livelihoods and increased unemployment. A loss in agricultural work has a significant adverse impact on the economic situation of coastal communities. Moreover, increased unemployment decreases the adaptive capacity of rural people to tackle climate-induced disaster impacts.

5.4 Social Impacts

Social impacts related to climate change include increased poverty, climate-change-induced

migration, increased gender inequality caused by extreme weather events, impacts on life expectancy and quality of life, as well as educational and cultural impacts (Safonov, 2019). Among all community people, certain social groups are predominantly susceptible to these

Box 8: Major Social Impacts of Climate Change in Southkhali Union

The community people of Southkhali face several social impacts directly or indirectly caused by climate change-induced hazards. The study has found that conflicts for fresh water and food are quite common in the area, especially after major cyclones and floods, which cause scarcity of these resources. Some people also have to send their under-aged children to work to gain an extra income source for the household after disaster periods. Besides, the rate of child marriage is also affected by these climatic disasters. After losing livelihood and other resources, sometimes family members use this approach to reduce their household expenditure. The shelters in Southkhali used during disasters were also unsafe for women and children identified from the field survey, raising safety concerns.

challenges or crises like children, older people, female-headed households,

indigenous peoples and ethnic minorities and persons with disabilities, migrant workers, landless tenants, sexual and gender minorities, and other socially marginalized groups etc. (World Bank, 2021). The coastal community of Bangladesh faces enormous challenges in terms of extreme events, livelihood, food security, water security, health effects and cultural individuality due to climate change. The challenges lead to increased poverty, social conflicts and forced migration in the coastal areas. Several types of research point out that climate change-induced migration is already evident in the coastal regions of Bangladesh (Ahsan et al., 2014; Bahauddin et al., 2015; Bernzen et al., 2019; Islam and Hasan, 2016). When people move from their land to other places, conflicts over resources could also occur at destination places.

5.5 Environment Impacts

The coastal areas of Bangladesh experience numerous adverse environmental effects due to changing nature of climate. High-intensity cyclonic storms cause severe damage to the forest, inhabitants, and resources (Braun and Bernzen, 2018). In addition, increasing salinity in the water and soil has severely endangered the health of mangrove forests and the quality and

Box 9: Major Environmental Impacts of Climate Change in Southkhali Union

The most prevalent climatic events in Southkhali Union includes; rise in temperature, heavy rainfall, flood, cyclone, storm surge, salinity intrusion, river erosion and sea-level rise, etc. causes significant damage to the agriculture sector. The loss of crops, decreased productivity, low yields, and damaged fruits and vegetables were identified from the field survey as consequences of these climatic disasters. Moreover, the hydrological changes due to climate change decrease the availability of fish in the rivers. The increase in fish diseases due to increased temperature and salinity issues was also prominent in the study area. In addition, water scarcity is one of the significant problems which hampers agricultural production. Additionally, scarcity of safe drinking water due to salinity intrusion leads to various health problems as well.

production of crops in the coastal region. Moreover, disturbances in hydrological parameters and changes in fishing patterns have resulted in disastrous consequences for fishermen (Mahadevia and Vikas, 2012). One of the likely adverse impacts of climate change is the loss of the Sundarbans, the coastal mangroves located in southwestern Bangladesh. However, this forest has been protecting the coastal areas from the severe impact of cyclone and storm surges. Researchers predicted that a 67 cm sea-level rise could inundate all of the systems, jeopardizing the livelihoods of about 3.5 million coastal inhabitants as salinity intrusion exacerbates (Agrawala et al., 2003; Braun and Bernzen, 2018).

6 CLIMATE CHANGE IMPACT ON PERSONS WITH DISABILITY AND THEIR ORGANIZATIONS IN STUDY AREA



6.1 Food Security and Nutrition

Climate change-induced disasters jeopardize the already fragile agricultural sector (crops, fisheries & Livestock) and elements of food security in coastal regions. In addition to this, inaccessibility to resources also has adverse implications on the food security of persons with disabilities. Moreover, households with disabilities are more likely to experience greater food insecurity, especially in disasters times, because they have fewer economic resources and require more health care services (IASC, 2019).

During the household survey in Southkhali Union, around 98% of the persons with disabilities mentioned that crops, 69% of them mentioned fisheries and 10% mentioned that livestock are adversely impacted due to climate change. They have revealed that cyclone and storm surge, flood, increased salinity in the soil and water, low rainfall, short durational heavy rainfall, drought, heavy fog, increased temperatures, etc. have resulted in the loss of crops, low yields, and damaged fruits/vegetables, loss of fish and livestock, decreased productivity and diseases of crops, fisheries and livestock, etc. This ultimately affects their income-generating options and their food security and nutrition as both food availability and their purchasing ability decreases during and after disasters. The outcome of FGDs conducted with persons with disabilities and Self-help Groups (SHG) also showed similar findings that disasters cause significant damages to crops, fisheries and livestock due to frequent and intensified climatic events caused by climate change. Moreover, they could not be involved with income-generating options during or immediately after the disaster. Therefore, it also affects their ability to purchase food. Besides, almost 99% of the persons with disabilities mentioned that women and children with disabilities do not have access to food supply measures during and after disasters. Additionally, only around 12% of them mentioned that women with disabilities have access to humanitarian support. Moreover, 14% of the persons with disabilities mentioned that they and their caregivers do not receive humanitarian support from NGOs or the Government (See Annex C). This exclusion happens because they receive a disability allowance from the government, which somehow creates the misconception that it would be enough to survive during disasters. Figure 3 represents the overall impact of climate change on persons with disabilities.

A KII with Ms. Rumi Begum, a caregiver of a person with disability in Southkhali brought to light how food and water security issues impact them

"Cyclones and floods often lead to scarcity of food. My son is autistic, and we barely have food for two meals a day especially after a disaster when our crops are damaged and food becomes more expensive to buy from the market."



Figure 4: Overall Impact of Climate Change on Persons with Disabilities

6.2 Livelihoods

During and after severe climate change induced disasters, loss of livelihood is one of the biggest impacts that a household can experience (IASC, 2019). The persons with disabilities engaged in different livelihood activities have already started experiencing this as extreme events caused by climate change affect their livelihood options regularly.

In Southkhali Union, the major livelihoods of persons with disabilities are paddy farming, homestead gardening, rearing poultry and livestock, fish cultivation/business, a small business-like owning tea shops, and auto-rickshaw driving, etc. Climate-induced disasters result in considerable loss and damage in the crops, fisheries, livestock and forest sector, where most people are involved or dependent on these livelihood options for income. Around 45% of persons with disabilities engaged with diverse livelihood groups mentioned during the household survey that they face challenges during and immediately after climate change-induced disasters due to loss/lack of work, 34% mentioned they face financial crisis, and 20% mentioned they change their livelihood due to loss/damage of livelihood options (See Annex C). Additionally, the FGDs with persons with disabilities and SHGs revealed that increased hailstorm, heavy fog and pest attack also destroy crops, fruits and vegetables, leading to financial and livelihood losses. Moreover, extreme heat and salinity intrusion increase livestock's death rate and disease incidence, resulting in loss of income and livelihood. Due to climate-induced extreme events like cyclone, storm surge, flood, short durational heavy rainfall, the fishermen also face challenges as these events wash away fish cultivated in ponds. The FGDs participants have also revealed that the increase in fish diseases due to increased temperature and salinity issues is a

significant issue for many families. Other livelihoods groups also face different challenges along with farmers and fishermen due to changing climate behavior.

During a Ruhul Chaprash, Gaptala Bazar, one participant shared how he has become unemployed after a cyclone hit their area

"I am a person with partial visual impairment and used to drive an auto-rickshaw for a living. My wife was injured during a cyclone and needed surgery. I had to sell my auto-rickshaw due to financial crisis and pay for her treatment and I have no source of income left anymore now. I need monetary support and training to be able to do other kinds of work."

Under this study, a livelihood calendar for Southkhali Union (See Annex C) was prepared by the persons with disabilities engaged in different livelihood activities. The calendar indicates that the time and occurrence of several climate-induced events have shifted and increased, which affects livelihood activities. Moreover, newly emerged events like heavy fog also hamper their livelihood activities. For example, in the past, persons with disabilities used to be involved in poultry rearing all year round. The timing of poultry rearing has changed, and they are avoiding the months of the winter season as they are losing poultry due to cold-related diseases. Moreover, the timing and cropping pattern has also changed due to changing climatic parameters like temperature, rainfall, and other extreme events.

6.3 Health

According to the household survey, around 46% of persons with disabilities mentioned that climate change-induced hazards affect their health. The survey further shows that 46% and 12% of persons with disabilities mentioned that cyclones and flood cause significant impacts on their health. Along with these events, salinity intrusion, increased temperature and heat waves, etc., also increase health-related problems of persons with disabilities.

A KII with Ms. Layli Begum from Southkhali village a caregiver of a person with speech impairment highlighted the struggles they face during disasters

"The persons with disabilities face many difficulties while going to the cyclone shelter before any disaster. As my husband cannot hear, it isn't easy to communicate quickly with him to move him to a shelter. During this sudden movement, often we would get severely injured while going to the shelter. At the shelters, there is a lack of proper treatment and barely anyone to take care of our injuries."

The study has also found through several KIIs that increased temperatures cause migraines and nausea among persons with disabilities, especially those who work in the field. Persons with disabilities who are entirely bed-ridden face difficulties due to extremely high temperature or heat waves by developing bedsores and skin irritation. Increased intake of saline drinking water in the area has also led to increased blood pressure, especially among pregnant women. Salinity is also linked to skin diseases and diarrhea, as mentioned by both persons with disabilities and caregivers. During FGDs, it has also been explored that some

children with disabilities get scared during cyclones due to sudden change in their surroundings and loud noises from storms. Thus, it isn't easy to handle them and calm them down to safely move them to shelters during the disaster period. As they do not have access to have psycho-social counselling, this may have severe implications for their mental well-being in the future.

Moreover, specialized doctors (Orthopaedic, Physiotherapist, Nutritionist, and Psychosocial Counsellor) for persons with disabilities are not available in their locality. In more vulnerable sub-groups, i.e., women with disabilities and children with disabilities, rehabilitation facilities after disasters are minimal. Only around 13% of the respondents mentioned the rehabilitation facilities were available for women with disabilities, and 7% mentioned these facilities were available for children with disabilities (See Annex C). Additionally, the FGDs with persons with disabilities and SHGs revealed a shortage of medicines and a lack of proper treatment at the health centres according to the needs of different types of disability. Moreover, the majority of the health centres are not accessible as well. These barriers have significant implications for the health of persons with disabilities, especially during and after disasters.

6.4 WASH

The WASH sector consists of proper hygiene, water supply, and sanitation, which is a basic human right. However, water scarcity is one of the most significant problems prevailing in Southkhali. The majority of FGDs and KIIs participants have mentioned that lack of drinking water availability after cyclones and floods and low rainfall lead to poor hygiene maintenance, especially causing health issues for women with disabilities and pregnant women with disabilities. Moreover, inaccessibility plays a significant role in availing WASH facilities for persons with disabilities. Waterlogging due to short durational heavy rainfall, flood, cyclone and storm surge hampers the accessibility to use tube wells, latrines, drinking water sources, etc.

A KII with Md. Shobur Mollah, a member of the shelter management committee in Southkhali highlighted how poverty is an engraved issue throughout all the impacts of climate change on persons with disabilities.

“Due to extreme poverty, persons with disabilities do not have access to PSFs, rain water harvesting systems or tube wells, which is an overarching factor in maintaining sanitation and hygiene. To include them in climate change adaptation, they need to be provided with rain water storage systems, installation of more tube wells is necessary and accessible toilets are needed at the shelters.”

Furthermore, almost all persons with disabilities in the survey mentioned that the cyclone shelters in the area do not have accessible toilets. According to the participants of persons with disabilities and SHGs, separate toilets for persons with disabilities are not available at the shelters. In a nutshell, water supply and sanitation systems remain the bare minimum for them, which causes health issues related to drinking less or contaminated water during and after climate-induced disasters.

6.5 Shelter and Settlements

Shelters and resilient housing play a key role in reducing vulnerability to climate change impacts and determining communities' resilience. The study's findings indicate that persons with disabilities experience disproportionate poverty levels, and most of them live in lower-quality housing. It often means their houses have weak infrastructure, are inaccessible, and are more vulnerable to climate-induced disasters like cyclones, storm surges, heavy rainfall, floods and extreme heat waves. The study has observed that the area has no climate and disaster-resilient housing for vulnerable communities, and neither are any resilient housing projects being implemented yet. The damage/loss of their housing caused due to major climate-induced disasters, i.e., Cyclone, storm surge, flood, riverbank erosion, heavy rainfall, and salinity intrusion, are mainly responsible for damage/loss of persons with disabilities. Around 56% of persons with disabilities mentioned that one of the significant damages caused by cyclone is the destruction of their houses and homestead areas. The results from the FGDs also show that cyclone is one of the most destructive disasters considering damages done to both livelihoods and infrastructure.

A KII with Md. Shobur Mollah also highlighted a story of how houses and settlements are impacted during cyclones

"We spent 3 days on the tin shed rooftop of our house during Sidr as our whole area flooded. We either needed to swim to a safer location or stay put, so we decided to wait it out. Everything from our house to our livestock barn was destroyed in the storm. It took us months to become financially stable enough through help of loans to rebuild our house."

6.6 Protection

Aligning with the IASC Guidelines, the study has observed that in Southkhali, climate change impacts the infrastructure, livelihoods and social networks, disrupting services, displacement, etc. These impacts are exacerbated by existing environmental, attitudinal and institutional barriers, which create increased risks for persons with disabilities.

Moreover, like other marginalized populations, many persons with disabilities experience social factors that lead to multidimensional inequalities and increased exposure. As discussed in the earlier sections, persons with disabilities face several barriers in accessing shelters and their facilities in Southkhali Union. Moreover, almost 100% of persons with disabilities have stated no separate rooms for persons with disabilities at the shelters. Therefore, this raises concerns for safety and security issues during climate-induced disasters, especially for women and children with disabilities. Almost 100% of the respondents also said the shelters did not consider or take any safety and protection measures for women and children. This issue has been further highlighted in the FGDs, where persons with disabilities and members of SHGs have shown a light on women with disabilities facing harassment at the shelters. Even within the families, social conflicts can also be a factor to consider to protect persons with disabilities. The survey shows that around 28% of the persons with disabilities mentioned they face social

conflicts, and 12% of them mentioned having arguments among the family, exacerbated during disasters (See Annex C).

A KII with Ms. Saleha Khanom from Rayenda shared an experience that highlights the importance of social protection.

“As the floodwaters started coming in during Sidr, I had to save my children. So, I left my paralyzed mother-in-law behind and went to the shelter. This was the most difficult choice I made and only I know the guilt and mental trauma I live with now because my mother-in-law survived the event. On the next day, we found her still lying-in bed with waters up to her bed.”

Apart from that, compounded by poverty and increased salinity, persons with disabilities also face significant difficulties during times of drought. In this scenario, social exclusion and discrimination also play a part in accessing proper water and sanitation facilities. Even though migration has been identified as one of the social impacts of climate change, not everyone can migrate or move to a safe shelter during a disaster. The ones left behind might belong to a much more vulnerable group like elder persons with disabilities.

Lastly, one of the core parts of protection is “ensuring persons with disabilities have access to assistance according to their requirements, without discrimination” (IASC, 2019). According to the study findings, many persons with disabilities do not receive any humanitarian support from NGOs or the Government. It is against their rights and risks their protection during disasters.

6.7 Education

Education is a crucial factor that is crucial to builds adaptive capacity among communities. The study has found that climate-induced disasters hamper education for one to two months in each and every year. Schools are used as safe shelters, and educational materials may also be damaged in floods and cyclones. In some instances, this may result in many children dropping out of school. A FGD conducted with students also revealed that they skip exams or their regular syllabuses are shortened to accommodate the disaster period crisis, resulting in poor academic performances of the students.

A KII with Ms. Nazmun Nahar from Southkhali, a female student with physical disability also highlighted some impacts on her education caused by climate change induced disasters.

“The most significant impact I as a student face is going to school when roads are blocked due to water logging after floods and heavy rainfall. Many times I had to skip classes because of this. Severe cyclones and floods also damage our books and materials, and then it becomes difficult to buy them again.”

The findings of this study further show that the enrollment of children with disabilities in schools is very poor. Poverty again plays a significant part here since climate change-induced disasters keep persons with disabilities in the poverty trap. With cyclones and floods leading to economic losses, many families cannot afford to continue their children's education with disabilities, therefore risking their overall growth and future development.

7 RECOMMENDATIONS FOR DISABILITY INCLUSIVE CLIMATE CHANGE ADAPTATION (DICCA)



7.1 Improve Impact Analysis for Risk and Vulnerability

An in-depth analysis is required to understand the actual scenario of the impacts of climate change in the study area. To identify risks and vulnerability, the following actions could be initiated as follows but are not limited to-

- A comprehensive database needs to be developed in Southkhali by segregating data by type of disability, gender, age and climate vulnerability. The model could be replicated in other parts of the country.
- Existing knowledge and best practices of Southkhali union in terms of combating climate-induced disasters can be compiled. The outcome of the compilation will be used for enhancing community resilience.
- Knowledge of persons with disabilities and local communities on the adverse impact of climate change needs to be increased through accessible information dissemination, training and awareness campaigns.
- Climate information services need to be strengthened, which needs to be developed in the local language. These services need to be accessible for farmers with disabilities to ensure climate-smart agriculture and livelihood in the study area.
- An information toolkit can be developed, and campaigns to bring positive attitudinal change within the community regarding the rights of persons with disabilities can be organized, which will help to decrease the barriers of including persons with disabilities in climate change adaptation measures.

7.2 Community Engagement in Preparedness Actions

Community engagement is vital in preparedness actions, including climate change adaptation and disaster risk management measures. Some of the initiatives could therefore be-

- Establish and coordinate with the community organizations/self-help groups in the community and bring them into a common platform to create synergy. The organizations collectively can raise their voices in favour of their constitutional rights and entitlements impacted by climate change.
- Community-based organizations (CBOs) within Southkhali need to be disability-inclusive and supported with the necessary knowledge and skills so that they could raise awareness and make their initiatives climate-informed and resilient.

- Information and procedural clarification on essential services, social safety, climate change impacts and resilience need to be provided to the persons with disabilities and relevant stakeholders through different Information, Education and Communication (IEC)/ Behavior Change Communication (BCC) materials in an easy and locally understandable language such as guideline/posters/flip chart/audio-video/billboard and inclusive early warning systems in an accessible and alternative format.
- Participation of persons with disabilities is required during the formulation of any climate change adaptation initiative/project in Southkhali and beyond.
- Carry out advocacy by engaging persons with disabilities and SHGs to ensure climate change-related adaptation and mitigation initiatives in Southkhali.
- Existing volunteer groups developed by Cyclone Preparedness Programme (CPP) need to be skilled and trained to ensure the safe evacuation of persons with disabilities and their caregivers during climate-induced disasters.
- Community knowledge practice in Southkhali on climate resilience WASH facilities (i.e., accessible toilets, water points, bathing and pure and safe drinking water) needs to be enhanced through training, orientation and input support.
- Disability-inclusive health facilities need to be strengthened, such as providing training, information, and inputs support to local health centers, community clinics and community health providers to combat climate-induced health hazards in Southkhali.

7.3 Strengthen Institutional and Community Capacity

To make a climate-resilient community, strengthening the institutional and capacity of community people needs to be ensured. Some of the interventions could be as follows but are not limited to-

- Policy advocacy needs to be done for making disability-inclusive law and policies in the context of climate change. Moreover, advocacy also needs to be done for effective implementation of the policy and legal framework.
- An inclusion checklist for accommodating disability-inclusive climate change initiatives/projects in Southkhali union can be developed.
- A network of CBO/SHG can be developed at the Upazila level with due representation of communities to be more vocal about climate change's adverse impacts.
- The exposure visit, knowledge exchange, and experience sharing workshops need to be arranged on climate change-related issues for persons with disabilities, CBOs, SHGs, community leaders, and local government representatives to get hands-on experience.
- Support needs to be provided for organizing public-facing events (i.e. Day Observation, Submission of Memorandum of Understanding-MoU etc.) for disability-inclusive climate change adaptation and mitigation initiatives taken by the Southkhali Union Parishad and Sarankhola sub-district Administration.
- Training needs to be provided to persons with disabilities who are farmers on climate-smart agricultural methods and techniques. The following

techniques and resilient rice crops, non-rice crops, vegetables and fruits varieties can be introduced in the study area like-

- Vegetable like BARI lalshak 1, Indianspinach- Local, Spinach-BARI palongshak 1, Batisak-BARI batisak 1, Okra-BARI dherosh 1, Turnip-Hybrid, Radidish-BARI mula 1,2, Tomato-BARI tomato-2, 3, 14, 15, BARI morich 1, Brinjal-BARI begun-4,5, etc. vegetable can be grown in sacks in the homestead. Moreover, nutri-gardening¹ can also be introduced, which will help in improving the nutritional status of their households but also generate a constant source of income. Besides, awareness and knowledge on floating cultivation and Sarjon cultivation method² can be increased to ensure vegetable production throughout the year.
- Cucurbits, brinjal and/or tomato cultivation using sex pheromone at homestead or dyke (embankment) of gher.
- Fruits like Sapota, lemon and mango (Amrapali), hybrid water melon, jujube cultivation (Apple Kool), Mixed fruit garden with Guava, and Jujube and Community based Coconut Garden, (Dwarf variety of Coconut), etc.
- Rice crops like BIRRI dhan -40, BIRRI dhan -41, BIRRI dhan -47, BINA dhan-8, BINA dhan-10, etc.
- Non-rice crops like sunflower: BARI Sunflower-2 and HI-sun, Wheat: BARI gom-25, Mustard: BARI Sarisha-11, BARI Sarisha-14, 15, 16, 10, etc.
- An inclusive year-round resilient aquaculture system can be adopted for sustained income of the persons with disabilities involved in fisheries sector. Therefore, training and financial/technical support can be provided to persons with disabilities to cultivate climate-resilient fish. The following actions can be undertaken-
 - Fish like Koi, Nilotika can be cultivated in homestead pond.
 - Fish like Bagda, bhetki, parse, pangas and tilapia can be cultivated in saline prone areas.
 - Re-excavation of small pond for rain water harvest, fish culture and irrigation (Species- Rui, grass carp, Galda shrimp/mrigal) can be done, etc.
- Climate-resilient livestock can be introduced in the study area like-Duck (Khaki kamble) rearing.
- An easy and accessible technology can be provided, including a salinity meter for farmers with disabilities, which will allow them to identify the cultivable saline free land for crop production in Southkhali.
- Knowledge of climate-smart alternative livelihood options needs to be disseminated, and support needs to be provided to persons with disabilities through engaging relevant stakeholders in Southkhali like-

¹ It is a low-cost sustainable approach for reducing malnutrition, and achieving food, nutrition and economic security through gardening vegetables in homestead which are rich in nutrients, and can be both consumed and sold for income generation.

² A variation on pyramid cropping - a system of tall beds for vegetable and crop production alternating with furrows, or trenches, planted with submergence tolerant plants or used for fish production.(CIAT; World Bank., 2017)

- Train and facilitate persons with disabilities to cultivate case-based crab, betel leaf cultivation, pigeon rearing, and bee culture, etc.
- Train and facilitate the women with disabilities for making handicraft and run business.
- Accessible compost and biogas production system can be designed and established in Southkhali. Therefore, training and support can be provided to use this technology.
- Necessary support can be provided to use and install rainwater harvesting technology.
- Capacity-building among health service providers is highly required to ensure appropriate health services such as physiotherapy, counselling, occupational therapy etc. for persons with disabilities in Southkhali.

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