

Exploring the Impact of Community based Adaptation Measures on building Gender Responsive Resilience to Climate Change: A Study in the selected areas of Southern Bangladesh

Submitted By

Raisa Imran Chowdhury

ID: 2231640

Submitted To

K. A. Rabbani, PhD

Associate Professor

Department of Environmental Science and Management

School of Environment and Life Sciences

Independent University, Bangladesh (IUB)

Contents

Chapter 1: Introduction	1
1.1 Background of the study.....	1
1.2 Motivation of the study	3
1.3 Rationale of the Study	4
1.4 Implication of the study.....	6
1.5 Existing Literatures and Research Gap	7
1.6 Theoretical Framework	10
1.7 Research Questions	12
1.8 Objectives	12
Chapter 2: Literature review	13
2.1 Contextualization of Community Based Adaptation to Climate Change.....	13
2.1 Gender based Social Vulnerabilities	16
2.3 Gender Responsive Resilience	20
2.4 Insights on CCP (Climate Change Programme).....	21
2.5 Forecast based preparedness/ Emergency Response	23
2.6 Challenges	25
Chapter 3: Methodology	26

3.1 Research Setting	26
3.2 Research Design	27
3.3 Sampling Techniques	27
3.4 Data Collection Techniques	28
3.5 Data Analysis	29
3.6 Ethical Considerations.....	29
Chapter 4: Findings.....	30
4.1 Contextualization of Community Based Adaptation (CBA) to Climate Change (Practice)	30
4.2 Gender based Social Vulnerabilities	35
4.3 Gender Responsive Resilience	36
4.4 Insights on CCP (Climate Change Programme) – Interventions of Sajida Foundation.....	38
4.5 Forecast based preparedness/ Emergency Response	39
4.6 Challenges	40
4.7 Policy gaps, Insights and Recommendations	42
4.7.1 Gaps in existing national and international drivers.....	43
4.7.2 Governance Mechanism.....	46
4.7.3 Major recommendations for policymakers & practitioners	46
4.7.4 Way forward	47

Chapter 5: Discussion & Conclusion.....	48
5.1 Concept versus practice: What counts as “gender-responsive CBA”?	48
5.2 Mechanisms: Social capital, resource access, and protection risks.....	49
5.2.1 Gendered resource access and decision-making	49
5.2.2 Social capital as a double-edged mechanism.....	50
5.2.3 Protection and GBV risks.	50
5.3 What is measured and what is not?	50
5.3.1 KAP and practice.	50
5.3.2 Concrete resilience.....	51
5.3.3 GBV/protection.....	51
5.3.4 Equity and inclusion.	51
5.4 Comparative knowledge: Points of convergence and divergence.....	51
5.4.1 Convergence:	51
5.4.2 Divergence:	52
5.5 Policy recommendations	52
5.7 Limitations of the evidence base and implications for future researches.....	54
5.8 Conclusion: From plausible pathways to proven impact	54
References.....	55
References.....	65

Reference	78
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Table of Figure

Figure 1: Theoretical Framework of GRR to CC using CBA measures	11
--	----

Figure 2: Study Area.....	26
----------------------------------	----

List of Table

Table 1: Summary of FGD Participants	27
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Table 2: Summary of KII Participants	28
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Table 3: Quotes from the community	30
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Table 4: Review of existing national and international drivers.....	43
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Chapter 1: Introduction

1.1 BACKGROUND OF THE STUDY

Around 80% of women are being displaced by climate change, resulting in a rise in gender-based violence (United Nations, 2022). Due to escalation of climate stressed hazards, girls are being forced into child marriages in exchange for food amid climate-induced starvation worldwide, making climate change not just an environmental issue but a deepening social injustice crisis (UNICEF, 2022). The unyielding floods also deprived eight million girls and women of essential menstrual hygiene products and access to toilets for managing their menstruation (UNICEF, 2024). Women from coastal areas due to increased salinity in water are halting their menstruation cycle by taking contraceptive pills (FES Asia, 2023). As climate change exacerbates weather-related hazards and disrupts ecosystems and livelihoods, there is a pressing need to prioritize the involvement of women and girls in urgent climate action (UN Women, 2022).

Climate change, which involves long-term shifts in temperatures and weather patterns primarily caused by human activities such as burning fossil fuels, is widely recognized as a major global issue (Leal Filho et al., 2022; Pielke, 2004). Gender, in this context, refers to the roles, behaviors, activities, and attributes that a given society considers appropriate for men, women, and other gender identities. These roles have a significant impact on how individuals experience and are vulnerable to the impacts of climate change (Leal Filho et al., 2022; UN Women, 2022). The well-documented relationship between climate change and social vulnerability is widely recognized. Climate change exacerbates existing social, economic, and environmental vulnerabilities, disproportionately affecting marginalized groups. These groups often lack the resources and capacity to cope with and recover from climate-related disasters. For instance, in Southern Bangladesh, frequent flooding and cyclones have intensified, impacting agricultural productivity, housing, and access to clean water, which in turn exacerbate poverty and social inequality (UN Women's Gender and Climate Data Works, 2024). This highlights the crucial need to understand how various groups are affected by and react to these climate changes.

Identifying gender-based social vulnerabilities is crucial because men and women experience and respond to climate change differently due to their distinct roles and responsibilities in society (Masson, 2016). Amid disasters, women are particularly vulnerable yet resilient, often facing double labor that exceeds their responsibilities compared to men (Nasreen, 2012a). Women, often responsible for water collection, agriculture, and household management, face increased burdens during climate crises, such as longer distances to fetch water or reduced agricultural yields (Nasreen, 2012a; UN Women's Gender and Climate Data Works, 2024). Moreover, climate change can exacerbate gender-based violence and reduce women's access to education and health services, thereby hindering their ability to respond to and recover from climate impacts (Masson, 2016). These gender-specific challenges necessitate targeted approaches in adaptation measures. In this study, inclusivity means ensuring that all community members, regardless of gender, age, socioeconomic status, or other intersecting identities, are included in climate adaptation strategies (UN Women, 2022).

Intersectionality is a framework that recognizes how various social identities intersect to shape an individual's experiences and vulnerabilities (Crenshaw, 1994). This approach acknowledges that women's experiences of climate change are not homogeneous and can vary widely based on factors such as age, disability, ethnicity, and socioeconomic status (Carbado et al., 2013; Crenshaw, 1994). Acknowledging these intersections is essential for developing effective adaptation strategies. Linking inclusivity and intersectionality is crucial for developing effective adaptation measures that address the diverse needs of the community. Taking into account the intersectional vulnerabilities can make policies and practices more focused and efficient, guaranteeing fair distribution of adaptation benefits and preventing any group from being marginalized (Cho et al., 2013; UN Women's Gender and Climate Data Works, 2024). This comprehensive approach can enhance the resilience of the entire community (Masson, 2016).

Connecting inclusivity and intersectionality is crucial for creating effective adaptation measures that cater to the diverse needs of the community (Al-Faham et al., 2019). Considering the intersectional nature of vulnerabilities can help policies and practices become more targeted and effective, ensuring equitable distribution of adaptation benefits and inclusion of all groups (Al-Faham et al., 2019; Carbado et al., 2013). This holistic approach can strengthen the

resilience of the entire community. For example, community-based adaptation (CBA) measures are specific strategies implemented at the local level, engaging community members in planning and executing actions to address climate risks. These measures leverage local knowledge and capacities to enhance resilience. In Southern Bangladesh, CBA measures might include the construction of raised houses to prevent flood damage, community-led mangrove reforestation projects to protect against storm surges, or the development of early warning systems for cyclones (FES Asia, 2023; Masson, 2016; UNICEF, 2024). These practical solutions are essential for immediate and long-lasting adaptation efforts.

Gender-responsive resilience improves communities' capacity to anticipate, prepare for, respond to, and recover from climate impacts, while acknowledging and meeting the diverse needs and contributions of all genders (IPCC, 2022; UN Women, 2022). This approach ensures that women and men are both active participants and beneficiaries in resilience-building efforts. Enacting gender-responsive community-based adaptation measures can empower women, diminish gender gaps, and bolster the community's resilience to climate change (UN Women's Gender and Climate Data Works, 2024; United Nations, 2022). This approach promotes a balanced and inclusive method of adaptation. This study explores current grassroots approaches to climate change and their gender considerations, analyzes gender-based vulnerabilities to climate-induced disasters, and assesses knowledge, attitudes, and practices in building gender-responsive resilience through community-based adaptation (CBA). By adopting an inclusive and intersectional approach, the research aims to ensure effective and equitable adaptation strategies, fostering sustainable and resilient communities in Southern Bangladesh. Furthermore, this emphasis on local, gender-sensitive solutions highlights the crucial role of tailored approaches in tackling the diverse challenges presented by climate change.

1.2 MOTIVATION OF THE STUDY

Climate change presents multifaceted challenges, particularly for vulnerable communities. According to the "Gender and Resilience Research Report" by Care International, integrating gender considerations into climate adaptation strategies is essential for enhancing community resilience (Care International, 2016). The findings of the

"Bangladesh State of Gender Equality and Climate Change Report" highlight that women disproportionately bear the brunt of climate impacts due to socio-economic disparities and limited access to resources (UN Women and IUCN, 2022). The "Community-Based Adaptation in Practice" report by Care Int. highlights the significant economic benefits of Community-Based Adaptation (CBA) programs (Care International, 2014a).

Investing in Community-Based Adaptation (CBA) not only generates substantial returns but also improves health, education, and inclusive decision-making, particularly benefiting women (Care International, 2014a). For instance, in Kenya, every £1 invested in Community-Based Adaptation (CBA) yields between £1.45 and £3.03 in returns, emphasizing the economic viability and benefits of such initiatives (Care International, 2014a). This financial rationale is compelling for Bangladesh, where economic vulnerabilities are compounded by environmental challenges. Localized adaptation strategies are critical in managing the adverse effects of climate variability, as emphasized in the recent reports (UN Women, 2022). Increased frequency and intensity of natural disasters severely impact water security, agricultural productivity, and public health (UNICEF, 2024).

In Bangladesh, these effects are more pronounced, underscoring the need for robust adaptation measures to mitigate risks and enhance resilience (UN Women and IUCN, 2022). Promoting gender equality through climate adaptation is also crucial. The findings of the "Gender-Based Climate Adaptation in Indonesia" report by Islamic Relief demonstrate that empowering women and including them in decision-making processes significantly improve community resilience (Islamic Relief, 2022). Women bring unique perspectives and solutions, which are vital for effective adaptation strategies. This study focuses on gender-responsive measures to build resilience and foster greater gender equity in climate adaptation efforts in Southern Bangladesh (Care International, 2016; UN Women and IUCN, 2022).

1.3 RATIONALE OF THE STUDY

The association between gender and climate change have garnered attention especially due to the several studies pointing out women's vulnerability to climate change impacts (Angula et al., 2021; Neumayer & Plümper, 2007; Ngigi et al., 2017; Sekine et al., 2009). Moreover, it is widely recognized that the consequences of climate change and variability are

not gender-neutral. In fact, women are seen to fall into worsening cases of poverty as the majority of world's impoverished are women (Ngigi et al., 2017). Momsen (2010) (Momsen, 2010) notes that research indicates societies that tolerate gender-based discrimination experience higher poverty levels, slower economic growth, and lower living standards, whereas promoting gender equality boosts development. In addition to that, women's unequal participation in decision-making processes and labor markets exacerbates inequalities and often hinders their full contribution to climate-related planning, policymaking, and implementation process. Though there have been several studies relating to community-based climate change adaptation, there exists limited thorough insights on how each gender is adapting especially in Bangladesh (Masud-All-Kamal & Nursey-Bray, 2021; Rowlani & Sovacool, 2011; R. Roy, 2018; Younus, 2017). Particularly, the southern part of Bangladesh which is vulnerable to climate change adversities due to its diverse ecosystem that exists due to discharge of many rivers, typically the Ganges-Brahmaputra-Meghna River system. Moreover, Khulna, Bagherghat and Sathkhira region also goes through the brunt of cyclone and storm surge every year that is aggravated by poor standard of living conditions of those areas (Ali & Hossen, 2022). Climate change is no doubt increasing these disasters added with sea level rise, salinity intrusion and weather extremes such as extreme heat or extreme cold (IPCC, 2014). Here, integrating indigenous knowledge and community empowerment along with government, non-government or private interventions have shown to have some degree of positive results (McNamara & Buggy, 2017). But the exponential growth of these results can only be ensured by scrutinizing the marginalized or disadvantaged people whose vulnerabilities when remains unaddressed, weighs down the effectiveness of any policies or interventions (Care International, 2014a).

Since, women and girls have already been identified as such groups, it has become a dire necessity to evaluate their needs, lacking and the grounds of deprivation (UNICEF, 2022). At the same time, their role in disaster situations—such as discussing upcoming disasters with neighbors, going to shelters, protecting children and the elderly, assisting in rehabilitation, earning cash, and ensuring safe drinking water etc. should be recognized as it rather marks their huge potentiality in resilience (Nasreen, 2012b). However, when it comes to resilience, there lack studies that focuses solely on building gender resilience considering the gender gaps. Our study tended to synthesis the efficacy of existing community adaptation techniques and

understand how these measures can build resilience through gender responsiveness and integrity of the marginalized communities of southern Bangladesh. Besides, the study would create a horizon for concerted efforts dedicated to formulating gender-neutral policies and practices.

1.4 IMPLICATION OF THE STUDY

The study focuses on how community-based adaptation (CBA) measures in southern Bangladesh enhance community resilience by considering gender in climate adaptation strategies. It emphasizes addressing the unique challenges women face in climate change contexts to ensure successful adaptation efforts. Key implications involve empowering women economically, implementing localized adaptation strategies, promoting gender equality, developing capacities, and strengthening social networks. Establishing community-led committees with equal representation of women and men fosters inclusive decision-making processes, which are essential for the sustainability and acceptance of adaptation measures. Inclusive governance, using diverse perspectives and experiences, results in more comprehensive and effective solutions by harnessing the community's collective strengths to tackle climate challenges.

Furthermore, the study highlights the importance of economic empowerment programs that offer financial resources and training to women, enabling them to establish and manage climate-resilient businesses, improving their economic stability and community resilience. Implementing localized adaptation strategies like raised houses, mangrove reforestation, and early warning systems helps reduce risks and strengthen community resilience. Integrating gender equality into policies and communities, including providing education and healthcare services tailored to women's needs, ensures their ongoing involvement in climate adaptation efforts. Training sessions on sustainable practices and disaster risk reduction empower women to lead community initiatives and promote collective action for resilience. Backing women's groups improves social cohesion and collective action, enhancing community resilience to climate impacts and creating a supportive environment for addressing shared challenges.

1.5 EXISTING LITERATURES AND RESEARCH GAP

The concept of Community-based adaptation (CBA) evolved as a response to the limitations of top-down approaches, emphasizing the value of local knowledge and the human dimensions of climate impacts. Emerging in the early 2000s, CBA integrates adaptation with local development, enhancing resilience through participatory approaches and leveraging existing community coping mechanisms (Kirkby et al., 2017). The 2007 IPCC report highlighted the necessity of adaptation alongside mitigation (IPCC, 2007). Recent discussions focus on integrating CBA with natural resource management, disaster risk reduction, and sustainable development, advocating for scalable and sustainable strategies that combine local actions with broader policy support (Care International, 2014b). Early literature on CBA focused on the core components of adaptation: vulnerability, adaptive capacity, and resilience (Kirkby et al., 2017; McNamara & Buggy, 2017). Vulnerability was defined as the ability of individuals and social groups to cope with and adapt to external stresses, emphasizing social issues such as disadvantage, marginalization, poverty, and access to resources (Chisty et al., 2021; Eriksen et al., 2021). Adaptive capacity was recognized as place-, culture-, and context-specific, highlighting the need to work with local communities to develop relevant solutions (Gallopín, 2006). This bottom-up approach values local knowledge and capabilities, ensuring that adaptation efforts are practical and effective (Conway et al., 2019).

Given the increasing focus on CBA and the recognition of local knowledge as crucial, several studies advocate for the active participation of local communities in designing and implementing adaptation measures (Ali & Hossen, 2022; Basel et al., 2020; Clarke et al., 2019; Ebi & Semenza, 2008; Reid, 2009; Soltesova et al., 2014; Uitto & Shaw, 2006; Wright et al., 2021). Participatory tools such as vulnerability assessments and community-based research are emphasized to help communities identify and prioritize effective adaptation strategies (Adger et al., 2003; Dumarú, 2010). These tools enable local people to be active agents in resilience building, enhancing their understanding and involvement in climate change adaptation (Gidley et al., 2009). However, this engagement of local people would not come to fruition as long as certain groups are marginalized and their decision-making power is shackled.

In Bangladesh, researches show that the country's CBA initiatives focus on leveraging local knowledge and participatory methods to address specific climate challenges such as cyclones, floods, and salinity intrusion (Naz et al., 2018; Younus, 2017). Various projects, including the construction of cyclone shelters, rainwater harvesting systems, and climate-resilient agricultural practices, highlight the effectiveness of CBA in reducing vulnerability and promoting sustainable development (Ayers & Forsyth, 2010; Ayers & Huq, 2009). However, challenges persist in scaling up these localized approaches to broader policy frameworks and ensuring genuine community participation (Piggott-McKellar et al., 2019). The community-based adaptation (CBA) in Bangladesh is anchored in several key policies, including the National Adaptation Programme of Action (NAPA), Bangladesh Climate Change Strategy and Action Plan (BCCSAP), and National Plan for Disaster Management (NPDM) (Ministry of Disaster Management and Relief, 2020; MoEF, 2005, 2011). These policies emphasize participatory planning and local engagement, aiming to enhance community resilience through sustainable livelihoods and resource management. However, the effectiveness of these policies faces critical challenges such as inconsistent funding, inclusivity issues, gender disparities, limited institutional capacity, and the need for extensive capacity building at the local level (Dodman & Mitlin, 2013; Guijt & Shah, 1998; Piggott-McKellar et al., 2019; Uddin et al., 2020). While policies like the National Water Policy (NWP) and Coastal Zone Policy (CZP) provide a robust framework for adaptive practices, their implementation often lacks coherence and integration across sectors. Additionally, the Bangladesh Delta Plan 2100's long-term vision needs to be more effectively translated into immediate, actionable strategies that communities can adopt (Chan et al., 2016; Government of the People's Republic of Bangladesh, 2018). Overall, while Bangladesh's policy framework for CBA is comprehensive, its success depends on overcoming these practical and institutional barriers to ensure sustained community engagement and resilience.

Now to address the issue of gender and intersectionality in climatic impacts and strategy formulation, few studies have been formulated in home and abroad. Venkatasubramanian and Ramnarain (2018) highlighted those participatory methods, such as the community-based approaches often fail to address internal community differences like gender, age, and economic status. The oversimplified concept of 'community' ignores complexities and power dynamics. They argue for gender-responsive approaches, emphasizing the need to understand and include

women's perspectives to achieve equitable development. Improved methodologies, conceptual clarity, and institutional support are necessary for meaningful participation and empowerment for all community members (Venkatasubramanian & Ramnarain, 2018). Research on Samburu East District, Kenya revealed that women are more vulnerable to climate change due to their culturally defined roles but also show remarkable adaptability through small-scale businesses and social networks. Men, on the other hand, are more resistant to changing their traditional roles despite the increasing challenges posed by climate change. The research also suggested that to effectively address climate change, policies must mainstream gender considerations, ensuring both men and women participate fully in adaptation and resource management for sustainable development (Ongoro & Ogara, 2012). But Patnaik (2021) (Patnaik, 2021) argued that women's participation varies widely, from passive to active and empowered, influenced by factors such as existing social networks and intrahousehold power dynamics. She added that devolving decision-making to the community level alone is insufficient to ensure meaningful participation for women.

In Bangladesh, a decent number of studies have been conducted on community-based adaptation but very few studies have been conducted dissecting the gender aspect of it (Ayers & Huq, 2009; Masud-All-Kamal & Nurse-Bray, 2021; Rabbani et al., 2018; Rashid et al., 2013; Rawlani & Sovacool, 2011; R. Roy, 2018; Younus, 2017). Roy et. al (2022) (S. Roy et al., 2022) studied the climate change adaptation in southwest coastal area and found that while both men and women are capable of adapting to climate change, men's adaptive capacity is generally stronger due to greater access to resources and decision-making power, highlighting the need for more gender-sensitive and culturally sustainable adaptation strategies to improve the resilience of all community members. Kamal (2021) (Masud-All-Kamal et al., 2021) derived evidence from the rural coastal communities that CBA should consider gender through an intersectional lens, rather than reducing it to a simple 'male-versus-female dichotomy,' in order to effectively build community capacities by empowering female-led enterprises. However, our study seeks to understand the knowledge, attitudes and practices towards the gender-resilience aspect of climate change by delineating the vulnerabilities that gender discrimination and intersectionality brings toward any adaptation efforts within the at-risk communities.

1.6 THEORETICAL FRAMEWORK

This study utilizes an inclusive, intersectional, and participatory approach as the theoretical framework to comprehensively address the complex and multifaceted challenges posed by climate change, ensuring equitable, effective, and reflective adaptation measures for all community members.

Inclusive Approach(UNRWA, 2013)

An inclusive approach to climate adaptation emphasizes the participation and consideration of all community members, regardless of gender, age, socioeconomic status, or other intersecting identities. This approach is crucial, as it ensures the equitable distribution of adaptation benefits and addresses the needs of the most vulnerable populations. Involving a diverse range of stakeholders in the decision-making process enhances the creation of more comprehensive and sustainable solutions. For instance, by leveraging local knowledge and experiences, inclusive adaptation strategies can acknowledge and address the unique challenges faced by different community members. This holistic involvement cultivates a sense of ownership and commitment among all participants, thereby fostering more resilient and adaptive communities.

Intersectional Approach(Crenshaw, 1994)

Multiple, overlapping social identities such as gender, age, ethnicity, disability, and socioeconomic status shape individuals' experiences and vulnerabilities to climate change, as recognized by the intersectional approach. This framework, introduced by Kimberlé Crenshaw, is crucial for understanding the complex and varied impacts of climate change on different groups. An intersectional approach tailors adaptation measures to the unique needs of various groups within a community, avoiding a one-size-fits-all approach (United Nations Network on Migration, 2024). By acknowledging and addressing these intersecting vulnerabilities, policies and practices can be more targeted and effective in meeting the diverse needs of the community. For instance, women in Bangladesh's coastal areas may encounter distinct climate challenges from men, with their economic status or health conditions further shaping

these challenges. Recognizing these nuances is essential for developing robust and equitable climate adaptation strategies.

Participatory Approach(United Nations, 2003)

The participatory approach is a cornerstone of positive governance and sustainable development, facilitating public involvement in the decision-making process. This approach increases the likelihood that public agencies' actions or services reflect the actual needs and preferences of the people. Participatory methods ensure that all concerned parties, including affected individuals, actively participate in planning and executing adaptation measures. Directly engaging community members through participatory approaches can result in solutions that are more effective and widely accepted. For example, community-led initiatives such as the construction of raised houses or the development of early warning systems for cyclones in southern Bangladesh benefit from local knowledge and ensure that the solutions are practical and sustainable. This method empowers communities and enhances the resilience and adaptability of the entire population when facing climate-induced challenges.

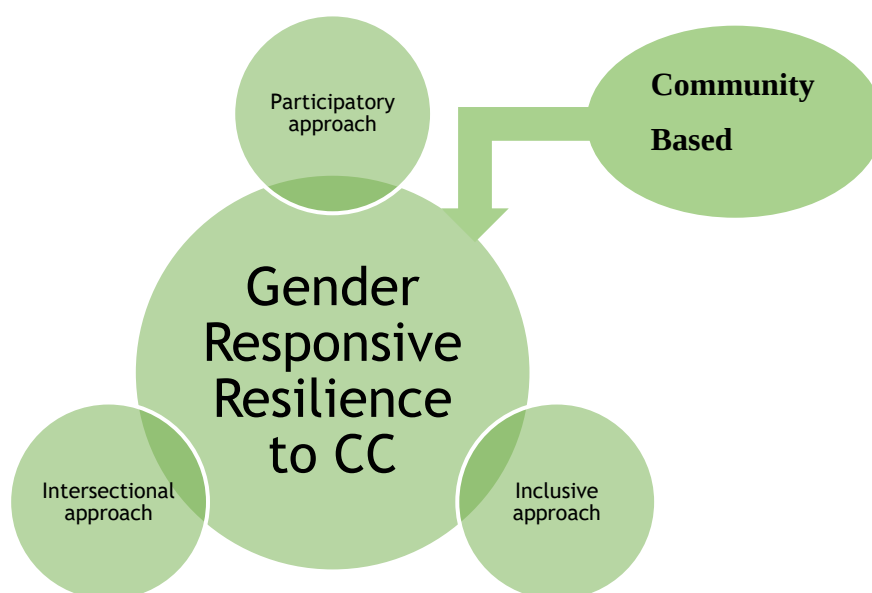


Figure 1: Theoretical Framework of GRR to CC using CBA measures

1.7 RESEARCH QUESTIONS

For an in-depth understanding on how gender might influence climate change risks and vulnerabilities and the essence of directing community-based adaptation measures in building gender resilience to the aggravating climatic impacts in Bangladesh, our literature review prompted the following questions:

1. How knowledge, attitude and practices of building gender-responsive resilience is influenced by current approaches and practices of community-based adaptation?
2. How gender-neutral CBA measures can build gender resiliency by reducing gender based social vulnerabilities?

The study would take into consideration the knowledge, attitude and practice of communities both with and without CBA interventions and compare the existing gender-based social vulnerabilities of those communities. It would work as an attempt to necessitate laws and policies that would address gender specific needs in ensuring gender responsive resilience and equitable growth of the society.

1.8 OBJECTIVES

The current study aimed-

- To explore current approaches and practices which deal with climate change and the way they conceive gender at the grassroots level.
- To analyze the gender based social vulnerabilities to climate-induced disasters.
- To assess knowledge, attitude and practices of building gender-responsive resilience to climate change through community-based adaptation (CBA) measures.

Chapter 2: Literature review

2.1 CONTEXTUALIZATION OF COMMUNITY BASED ADAPTATION TO CLIMATE CHANGE

The term "community-based adaptation" (CBA) refers to a bottom-up, strengths-based strategy for enhancing adaptive capacity at the community level that targets vulnerable communities. According to Reid & Huq, (2007), Community-based adaptation is a 'vital approach to the threat climate change poses to the poor'. This approach also focuses on improving local adaptive capacity through participatory processes tailored to specific cultural context (Kirkby et al., 2017). It has gained attention globally, with numerous organizations adopting it. However, CBA still lacks concrete conceptual clarity, leading to varied interpretation (Kirkby et al., 2017). Shammin et al. (2022) talked about CBA to be more People centric, process oriented, community led, knowledge oriented, empowerment focused, and accountability driven in order to be more effective within the community. They also stressed on the barriers like sociopolitical, resource, and physical systems CBA faces for successful implementation despite its growing popularity.

Land use change is becoming increasingly relevant due to its strong association with global climate change and food security (Tong et al., 2003). In Bangladesh, 62% of the labor force is employed in agriculture, which is the main source of revenue, accounting for 23.5% of total national income (MoA, 2008). Over the last four decades, the primary focus of national policies has been on adapting agriculture through rapid technological advances to keep up with the growing population. High yielding varieties (HYV) of rice and wheat were developed and disseminated with the help of modern inputs like chemical fertilizers, pesticides, irrigation infrastructure and equipment, institutional credit, product procurement, storage, and marketing facilities. As a result, farmers concentrated on producing modern types of rice throughout the year, covering three production seasons (Azad et al., 2008; Wahiduddin et al., 1994). Land productivity has increased dramatically, but the increasing effects of fertilizers and pesticides pose ongoing concerns about the sustainability of agricultural growth. Additionally, the production was negatively impacted by the widespread depletion of soil nutrients that occurred

in many Agroecological regions (S. Rahman, 2010). In coastal Bangladesh, the effects of climate change have resulted in deteriorating community livelihoods, changing agricultural landscapes, and declining community capacity. Communities were forced to switch from rice farming to shrimp cultivation, increasing the coastal communities' future vulnerability. This change was perceived as a forced adaptation by the populations. They emphasized that they could have returned to regular agricultural production in two seasons if there had not been any major disaster. Cumulative and ongoing form of vulnerabilities of the entire livelihood system gradually weaken the adaptability capacities of the communities (Huq, 2015). Increase in temperature, extreme weather events, soil toxicity, excessive rainfall, and limited irrigation water were experienced by farmers. On-farm adaptation strategies were duly adopted included growing new crops, dredging trenches, altering planting dates, and utilizing salinity-reducing technologies (Kabir et al., 2017).

The adaptive capacity is influenced by factors such as knowledge about climate change, assets, access to appropriate technology, institutions, policies (Adger et al., 2003). Increasing impacts of climate change & variety on agriculture have been associated with various adaptation and coping mechanisms (Majule, 2013). Indigenous knowledge, which encompasses a wide range of abilities acquired outside of the formal educational system, serves as the primary foundation of adaptation (UNFCCC, 2003). Indigenous knowledge is the result of ongoing experimentation, adaptation, and innovation, combining many knowledge systems to address regional issues (Barua & Rahman, 2018). Community people use location and community-specific adaptive technologies, strategies, methods, and processes based on their own knowledge and abilities to reduce or prevent the devastating effects of climate change. Based on their own traditional knowledge and contacts with the community, households in Bangladesh's coastal areas employ a variety of livelihoods and adaptation techniques to deal with climate change (Barua & Rahman, 2018). This adjustment evolved from long-term local knowledge and perceptions about the climate. Community based adaptation practices include: adoption of new crop varieties, changing plantation time, cultivation of pulses, cultivation of spices and oil seeds, homestead gardening, tree plantation, irrigation techniques, using savings and harvesting rainwater, and migration. Households can mitigate the impact of climate change on income and production by implementing agricultural adaptations (G. M. Alam et al., 2018).

Gaydon et al. (2014) found large and medium farmers adopting the HYV rice and wheat varieties as part of their response to the changing climatic conditions. They further stressed that landless people have limited access to financial institutions and extension services. They were undertaking small businesses such as grocery shops, tea stalls and vending that required less capital. Many of them had taken up driving as their occupation in the face of diminishing employment in farming (Gaydon et al., 2014). Government organizations and NGOs can play an enabling role in improving their livelihoods by providing training and financial support. The government and NGOs have implemented various programs to help the local communities adapt to climate change, but these efforts have some weaknesses such as corruption and lack of transparency (M. Rahaman, 2023). Increased use of irrigation was ranked first among other adaptation strategies in a study by (Anzum et al., 2023). They addressed this as a vital strategy for farmers because it makes the nutrients available for the plants. Other adaptation strategies were; crop diversification, use of drought and saline tolerant varieties, zero tillage etc. Migration, both seasonal and permanent, was also found to be an important adaptation strategy, especially for the small and the landless farmers (G. M. Alam et al., 2018). Households with limited agricultural land used to migrate in search of alternative livelihoods for a few months. This temporary migration is very common in the southern region of Bangladesh, especially during the rainy seasons when there is limited scope for farming and non-farming employment. This local level knowledge of adaptation is crucial for policy makers to support and promote adaptation strategies, and to turn them into effective and sustainable action.

Saroar et al. (2019) talked on the challenges in the community-based adaptation measures; (i) Cultural norms that cause people to gather in places where extreme events happen (such as riverbank and coastal areas); (ii) Insufficient funding to carry out adaptation measures, particularly those linked to infrastructure; (iii) Insufficient access to technologies for adaptation; and (iv) A lack of a policy framework to carry out adaptation measures in a sustainable manner.

A Study by K. M. Hossain & Zaman, (2018) pointed out the limitation imposed towards a woman, they found that women's ability to adapt is seriously compromised by their limited access to capital. They suggested that the government take up specific programmes to enhance their adaptation capacity through increasing income generating activities and credit

opportunities. Conversely M. Hossen et al. (2022) mentioned, Government adaptation activities in Bangladesh reflect a top-down, limited approach rather than a proactive, community-participatory approach to climate change adaptation. Sultana & Luetz (2022) called for an integration of existing local and indigenous knowledge with government policies and programs to ensure a proactive community-based adaptation.

2.1 GENDER BASED SOCIAL VULNERABILITIES

Climate change is a worldwide phenomenon that is already having an influence on people. According to the IPCC (2007), adaptation methods are especially needed for those who are already the most marginalized and vulnerable, as they face the worst effects of changing weather patterns and the environmental phenomena. But the most disadvantaged and vulnerable people have the least ability or chance to participate in mitigation initiatives or prepare themselves for the effects of a changing climate. These changes disproportionately affect women, who make up the majority of the world's poorest people (Cannon, 2002). The most susceptible are frequently children and young people, particularly females, as well as older women.

Women's and men's disparities in access to social and physical resources is one of the primary dimensions of gender inequality. Because of their social positioning, women are typically expected to play roles that are supporting and reproductive, focused on the household and local community rather than the public sphere (Garai, 2016).

The unique vulnerability of women and girls arises from a number of causes, including socialization distinctions that cause girls to lack the skills their brothers possess, such as swimming and tree climbing. For instance, it has been reported (Röhr, 2005) that because of traditional limitations on women's mobility, they did not leave their homes during floods, and those who did were unable to swim in the floodwaters. In Bangladesh, the death rate for women was over five times higher than that of men after the 1991 flood and cyclone. Warning information was spread by men to men in public spaces, but rarely conveyed to the rest of the family and, as many women were not allowed to leave the house without a male relative, they passed away waiting for their relatives to return home and take them to a safe place. In addition,

as in many other Asian countries, most Bengali women have never learned swimming, which significantly reduces their survival capacity in flood events.

Similarly, Jerin et al. (2022) mentioned women are more vulnerable than men to climate-induced floods due to social roles and inequality. They further stressed that Women are more vulnerable than men in regards to sanitation, health, food security, agricultural production, socio-demographic characteristics, and perception of climate change in the community. The vulnerability of women is rooted in the patriarchal social structure that leads to their economic and social dependence on men (B. M. R. Hossain et al., 2017). The role of women is limited within the boundaries of the house further increasing a dimension of vulnerability (Sams, 2019).

A variety of factors including physiological, socio-demographic, cultural, gender inequity, and disaster exposure play a vital role in affecting women's health before and after natural disasters (K. Alam & Rahman, 2014). They are often the ones left at home to take care of children, other family members, and household assets (Goodman, 2016). Women may also find it harder to reach safe places (such as disaster shelter homes) during disasters because of their responsibility to evacuate children and older family members (Neumayer & Plümper, 2007). Furthermore, rural women impacted by natural disasters often miss out on pre-disaster warnings, and do not have access to gender-focused awareness programmes designed for women at home (M. Rahman, 2013). Another crucial determinant of health seeking among rural women is the accessibility of medical care and barriers to care that may develop due to factors like location, financial constraints, administrative attitudes to the patient, social distance between the patient and the doctor (Md. A. Hossen & Westhues, 2011). They also raised concern on the lack of female providers in the hospital that decreases the access of female patients. In rural Bangladesh, economic status, health risk communication, and accessibility to medical services are important determinants of healthcare utilization among cyclone survivors (Uddin & Mazur, 2014). Women's access to healthcare services was also impacted by variables like education, and access to information.

Women in rural Bangladesh are negatively impacted by floods but are not involved in disaster preparedness and response (Khondker, 1996). This Lack of attention towards community and women's participation in disaster planning and response adds dimension to the

vulnerability of women both before and after disasters. In 2009, a study of Ikeda (2009) called for a need of 'community-based disaster risk management' policy to take a "whole community approach" by engaging a variety of stakeholders, including traditional leaders, women, and poor community members. Women in coastal areas face greater difficulties during disasters, especially women from poor families, who are primarily responsible for domestic roles due to cultural norms and gender divisions of labor but their voices remain unheard. Ashraf & Azad (2015) found the gap in the assessment of women's needs and activities during disaster planning and management. Though gender-related needs, assurance of gender-based income opportunities, and equal participation in decision-making are moderately addressed in the legal frameworks, there is still a lack of implementation at the local level (Hasan et al., 2019). Study by Fatema et al. (2023) described the needs to address the socio-cultural needs of rural women in disaster preparedness and post-disaster facilities by collaboration of policymakers and disaster aid organizations.

Natural disaster vulnerability is a multifaceted concept that is influenced by gender; women are more vulnerable than men due to factors like infrastructure, preparedness, and socioeconomic level (Juran & Trivedi, 2015). They emphasized how social vulnerabilities and gender inequality create barriers for women to take leadership roles in disaster management. The opportunities and barriers for women in leadership roles have received a little attention in research.

The risk of abuse for women begins with disaster warnings and continues in a number of ways, regardless of whether they choose to move (Fatema et al., 2023). They feel unsafe due to overcrowding in shelters. In crowded shelters with no partitions, women and girls are at high risk of harassment. There is also little light at night, making them more vulnerable. Resulting in an increase in Gender Based Violence (GBV). It becomes challenging for young girls to be separated from their families due to this increased violence. In some areas, robbers cause havoc by stealing and abusing young girls when there is a flood.

Some of the victims of abuse mentioned;

“Recently in the shelter at night when I went to the toilet, I heard a male voice calling me in a bad gesture and also knocked on the door! I was so scared that I stayed in the toilet until my sister came to call me.”

“At day time, I kept my daughter-in-law with me in the school but before night I sent her to someone's house, far from the riverside, in fear of robbers! Robbers used to abuse beautiful women, and sometimes kidnap them for 1 or 2 days.” (Fatema et al., 2023).

Women who move into shelters or other people's homes frequently worry about feeling ashamed. In Bangladesh, moving to someone else's home is viewed badly and is not regarded as a societal or cultural standard (Rezwana & Pain, 2021). They avoid moving during disasters for this reason, especially young and single women. They were unable to express their discomfort and harassment to others, despite the fact that many participants encountered bad experiences when living in shelters or at someone's home. For fear of social disgrace and criticism from family and neighbors, young women typically kept these experiences secret.

To reduce the vulnerability of the community people, there remains no other option rather than building resilience within the community. On the other hand, women lag behind in disaster resilience compared to men, indicating a need for a gender-based resilience enhancement program (Chisty, 2021). Likewise, B. Ahmed (2016) found sustainable livelihoods (i.e. Poultry and livestock rearing, retail business, courtyard plants, and selling home-made clothes) played a significant role in improving the community resilience in the coastal region through the V2R program. Another study by Sharmin (2024) describes the community-led climate adaptation initiatives in Teknaf which included rainwater harvesting, livelihood diversification, and community participation that enhance the resilience of women and vulnerable groups. Interventions like mangrove rehabilitation, freshwater availability, agricultural productivity, and women's empowerment were suggested based on a Resilience framework by Amin (2021). Existing literature shows scarcity relating to ongoing awareness programs on gender and climate change issues highlighting a disproportionate impact on women during and after the disaster (M. B. Alam & Rahman, 2017; Garai, 2016; M. A. Hossen

et al., 2021). Ashrafuzzaman (2022) highlighted the urgency of gender-specific adaptation programs and policies which can empower and aware women within the community.

2.3 GENDER RESPONSIVE RESILIENCE

Coastal people in Bangladesh have implemented a number of adaptation strategies to deal with rising salinity, including changes in land use, the use of modern agricultural technology, crop diversification, rainwater harvesting, change in income, and the use of savings but women's ability to adapt is seriously compromised by their limited access to capital (Jordan, 2018). A study by Das (2015) highlighted a few resilience strategies used by women like elevating homesteads, using '*Macha*', selling livestock, and lending money from NGOs. He also found few women headed families were forced to migrate as a resilience strategy considering their vulnerable livelihood.

Hoque et al. (2013) found an innovative and sustainable agricultural technique of sowing seeds into a mud tower with an organic fertilizer mixture. Kais & Islam (2021) found some resilience strategies at the household level, alternative income-generating activities such as vegetable cultivation in courtyards, and off-farm employment to contribute household income in post climatic extremes. A major concern was highlighted as strategy; marrying off daughters without reaching a certain age to ensure economic balance.

Women had significantly lower levels of disaster resilience compared to men across various components of the resilience assessment framework (Chisty, 2021; Kadir, 2021). They stressed on the need for a gender-based approach in assessing and enhancing community resilience. M. A. Islam et al. (2022) think the main challenge in building gender-responsive resilience in southern Bangladesh is the lack of adequate infrastructural and integrated facilities and institutions for livelihood diversification and capacity building of vulnerable rural coastal women. Monterroso et al. (2021) addressed the challenge regarding the security of women's land rights to enhancing their adaptive capacities and building climate resilience. Tanjeela (2023) highlighted the unequal social relations and hierarchies that enforce gendered vulnerabilities for women.

Climate change policies generally recognize women as vulnerable but operational responses are not established which do not allow proper inclusion of women (Shabib & Khan, 2014). New approaches to gender responsive resilience need to focus on the implementation rather than planning. A project by the Fisheries Department named ‘Kakra-Kuchia’ promotes crab and mud eel cultivation, engaging women in sustainable livelihoods. Another project named Emergency Cyclone Reconstruction and Rehabilitation Program (ECRRP) designing shelters consisting of gender-sensitive features. Widespread implementation can enhance the resilience of women within the community. For ensuring water security and reducing time and effort of women, an initiative by the Public Health Engineering Office was suggested which includes; rainwater harvesting systems, PSFs, and Managed Aquifer Recharge (MAR) (S. H. Rahman, 2017).

Hoque et al. (2013b) pointed out a short-term resilience strategy of cultivating saline tolerant vegetables around ‘*ghers*’ for financial stability of women. Improved stoves can help in cutting CO₂ emissions and saving up to 40% firewood (MetMatters, 2021). He also mentioned that it can help to maintain the long-term climate change resilience strategy.

2.4 INSIGHTS ON CCP (CLIMATE CHANGE PROGRAMME)

Cultural scalability of adaptation in coastal areas is lower than in other areas of the country (Roy et al., 2022). NGOs have assisted people in developing peoples’ adaptive capacity by providing necessary skills and capacity building training as well as offering microcredit loans. However, in order to develop effective climate change adaptation plans and risk management strategies, the GOB must work with local and non-governmental organizations in a collaborative approach. According to M. R. Islam (2018) Rainwater Harvesting Systems (RHS) was proposed as a potential solution to address freshwater scarcity. Unfortunately, it lacked implementation and remained understudied. There is a need for long term, community-based solutions and improved governance systems, supported by governmental financial and technical assistance (Md. S. Islam et al., 2023). Successful interventions relating to mental health include Crisis Preparedness for Mental Health (CPM-MH) program focusing on post trauma stabilization and building resilience (Byron & Hossain, 2022). Still, challenges including limited knowledge on health protection measures and inadequate mental health

services in disaster-prone areas remain (R. Kabir et al., 2014). Eaton et al. (2022) thinks increasing awareness, providing targeted support for vulnerable groups, integrating mental health care into existing disaster preparedness programs can help the coast dwellers. Apart from improving water supplies, green skills development within short sphere livelihood intervention shows lacking (Reza et al., 2017). Ayeb-Karlsson et al. (2016) stressed on disasters causing substantial income losses and livelihood disruptions pushing peoples to adapt by modifying agricultural practices, alternative livelihoods, or migration. Future interventions should address specific needs required for livelihoods across different disasters (M. N. Amin et al., 2018). Nature based Solution (NbS) is considered as one of the effective tools to increase the resilience of the socio-ecological system. Mangrove afforestation has been effective in reducing exposure to natural disasters, adapting to climate change, and supporting local economies (Mahmood et al., 2023). They found a significant positive relationship between the increase of mangroves and stable lands. Nearly 448,011 ha of agricultural land was stabilized due to the NBS intervention resulting in an economic value around 18,837 million USD. But, the concept of NBS is still in the development stage and lack of study remains a challenge. To maximize NbS benefits, key enabling factors include supportive governmental policies, participatory delivery, strong governance, and secured finance and land tenure (Smith et al., 2021). Successful approaches in disaster response mechanisms include; comprehensive disaster management programs, climate change adaptation initiatives, improved early warning systems, and social safety nets (Md. N. Islam et al., 2021; Sony et al., 2023). Lack of awareness and illiteracy among the coastal residents still remain as challenges in comprehensive disaster response mechanisms (Islam et al., 2021). Integrating both new and traditional disaster-coping activities into DRR strategies along with bottom-up approaches can better result in disaster response mechanisms (Sony et al., 2023).

Bangladesh, a country known to be extremely susceptible to climate change, has developed its strategy for addressing this pressing issue. To strengthen adaptation strategies, the government, non-governmental organizations and international organizations have worked together on a number of projects relating to the Climate Change Programme (Roy et al., 2022). Short term interventions include community-based adaptation approaches and integration of climate change considerations into development programs (S. T. Islam et al., 2020). However, inadequate long term adaptation intervention, limited integration of diversity in policies across

sectors and ecosystems, and lack of implementation persist as challenges (Alauddin & Rahman, 2013). Some existing small-scale programs supporting vulnerable communities include Char livelihood programme which has integration with social safety nets (Awal, 2013). There exist no alternative to increased research, technological innovation and improved coordination among the stakeholders in corroborating collective advocacy. Considering the vulnerabilities relating to climate change impacts, Bangladesh has recognized the value of linking mitigation and adaptation strategies, projects like waste-to-compost that reduce emissions, improve soil quality, and contribute to sustainable developments (Ayers & Huq, 2009). However, implementation of policies often falls short due to complex administrative structures and bureaucratic politics (M. S. Rahman et al., 2020).

2.5 FORECAST BASED PREPAREDNESS/ EMERGENCY RESPONSE

Many do not tend to respond to cyclone warnings proactively because of poor road networks, long distances between home and cyclone shelters, low capacity of cyclone shelters, fear of burglary and stealing of household assets and goods, disbelief and misinterpretation of warning information (Majumder et al., 2017). There is also a higher degree of fatalism among the people. There are other reasons why people don't respond to official warnings, such as poor understanding of cyclone warnings, past experience of the failure of warnings, no or limited income-earning opportunities during and after the cyclone if people decide to evacuate, pressure from employers to go fishing.

Risk knowledge among the community people varies across locations and level of education (Perry, 1983). The study by Paul (2012) found a significant lack of understanding about the official cyclone signals among the people of island, shoreline, and inland. He mentioned the efforts of CPP in educating people on warning signals. Access to forecasting remained limited in rural areas, with low radio ownership where many relied on neighbors to stay informed about cyclone events (S. A. Khan, 2008). Both access and risk communication among the Island communities experience weaker dissemination, highlighting differences based on location and remoteness (E. Haque, 1995). Many studies discussed the inconsistent understanding of warnings and translating them into actions. Paul's (2012) findings showed,

about half of Inland fishermen, 12.5% of Shoreline fishermen, and 17.4% of Island fishermen continued fishing after warnings. These actions highlight the intersection of economic vulnerability and negative risk response. Mileti (1995) stressed on this influence of risky behavior due to poverty, lack of alternative income, and pressure of debt.

R. Hossain et al. (2008) discussed the indigenous knowledge on structural (planting trees, house structure) and non-structural (symptoms of animal behavior, weather pattern, river pattern etc.) preparedness by the coastal community but found gaps regarding organizational support and warning dissemination. Their findings also stressed on a need for a comprehensive cyclone preparedness team involving community people and developing modern strategies in dissemination including local language.

The cyclone preparedness programme involves communities, poor and socially disadvantaged in cyclone in disaster preparedness, evacuation, and risk reduction (Singh, 2010). Ahsan et al. (2024) found DMC members more active in the disaster response network after the disasters and CPP tried to enhance the knowledge and capacity of households, which improved their resilience, helped them avoid disaster damages on occasions.

GoB has taken massive steps towards disaster preparedness by initiating comprehensive policies and programs to mitigate the effects of these disasters. Still, even after these rigorous preparedness programmes within the country, limitations appear due to lack of implementation, coordination, transparency, and accountability (Md. M. Rahman & Li, 2018). Such limitations can disrupt the effectiveness of disaster preparedness and resilience efforts. S. Hossain et al. (2020) highlighted there is a need for capacity development at the local community level to improve understanding of the probabilistic forecasts disseminated by DMCs and CPP members.

Chakma et al., (2022) stressed on a large-scale awareness program among the locals, capacity building of the responsible authorities, and increasing the facilities provided to vulnerable groups that can bring a change in the current scenario and lead to the emergence of disaster-resilient communities.

2.6 CHALLENGES

Community-based adaptation (CBA) initiatives in Bangladesh face significant challenges in building gender-responsive resilience to climate change. CBA aims to empower vulnerable groups, particularly women, through group-based interventions. But existing sociocultural norms and gender inequalities often hinder these efforts (Masud-All-Kamal et al., 2021; Masud-All-Kamal & Nursey-Bray, 2024). Women in Bangladesh experience disproportionate vulnerabilities due to unequal social relations and limited access to resources, which impede their adaptive capacity (Tanjeela, 2023). Women's challenges aren't just due to biology but are shaped by unfair systems within the society, and these issues often go unaddressed. Women, especially small-scale farmers, face more difficulty than men in accessing resources or adapting to changes. To help landless families cope better, we need a broad shift in farming and the environment that supports them without taking advantage of women working in agriculture, ensuring they can meet their basic needs. Gender differences play a significant role in adaptation strategy of farmers to climate challenges, with female-headed households often facing more barriers to adopting off-farm solutions (S. Ahmed & Kiester, 2021). Efforts to include women in adaptation strategies, though well-intentioned, can sometimes increase their struggles if they do not fit within existing societal and cultural norms (Masud-All-Kamal & Nursey-Bray, 2024). To tackle these issues, future Community-Based Adaptation (CBA) programs need to go beyond surface-level solutions. They should use intersectional approaches that recognize how factors like gender, culture, and economic status interact (Dev & Fliert, 2023; M. A. Hossen et al., 2021). Gender-transformative strategies should also aim to change harmful social norms and empower women to better cope with the impacts of climate change.

Chapter 3: Methodology

3.1 RESEARCH SETTING

The coastal region of Bangladesh is considered as one of the most geographically vulnerable locations across the country. Especially, at the northern edge of the Sundarbans, the largest mangrove forest in the world, human settlements are constantly battered with drastic & intensive changes in the climatic conditions i.e. extreme temperature, erratic rainfall, high tides etc. as well as frequent disasters including cyclones, storm surges, floods and increasing salinity. The research was conducted in two of such locations; Paikgacha Sadar Upazila (sub-district) of Khulna district and Shyamnagar Sadar Upazila of Satkhira district. Both the districts cause similar geographical characteristics. Deluti union of Paikgacha and Gabura union of Shyamnagar upazila were selected as the study locations. The map below shows the study locations in more details:

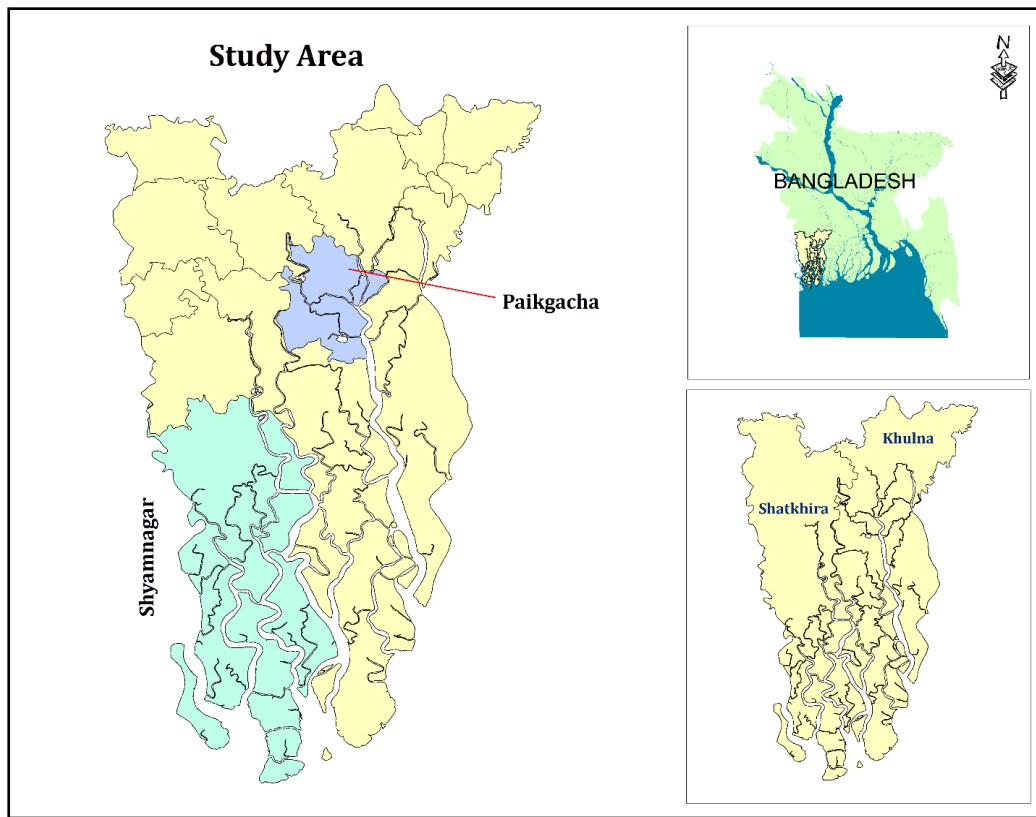


Figure 2: Study Area

3.2 RESEARCH DESIGN

The study employed a qualitative methodology for data collection and followed thematic analysis adopting an inductive research approach. Qualitative designing involves a comprehensive examination of a phenomenon to thoroughly understand its complexities, providing a detailed and nuanced description (Sarantakos, 1998). While a mixed method approach could have enhanced the quality of the study through numerical findings on some critical issues, the study found that a qualitative approach was the most effective for achieving an in-depth understanding of the research objectives. To gather primary data, the study utilized focus group discussions (FGDs), a common technique for exploring people's attitudes, behaviors, and knowledge through group interactions along with key informant interviews (KIIs). Typically, the group discussions involve six to twelve participants and are moderated over a 90-minute session to elicit extensive information (Djamba & Neuman, 2002). The data collected from these focus group discussions were then analyzed to support the study's objectives.

3.3 SAMPLING TECHNIQUES

The research employed a nonprobability sampling approach (Djamba & Neuman, 2002) to establish the sample size. Participants for the focus group discussions (FGDs) were selected using purposive sampling. This approach is very efficient in focusing on particular demographics to collect the most relevant data (Djamba & Neuman, 2002). Five (05) FGDs were conducted in each location, totaling 10 FGDs with different segments of intersectional groups. The groups were determined based on their gender, age, occupation, disability, ethnicity etc.

Table 1 provides a summary of the participants' details:

Table 1: Summary of FGD Participants

Location	FGDs	Groups	Number of Participants
Paikgacha	FGD – 1	CPP Volunteers	8
	FGD – 2	Adult Male	8

	FGD – 3	Adult Female	8
	FGD – 4	Elderly	8
	FGD – 5	Persons with Disabilities	8
Shyamnagar	FGD – 6	CPP Volunteers	8
	FGD – 7	Adult Male	8
	FGD – 8	Adult Female	8
	FGD – 9	Elderly	8
	FGD – 10	Persons with Disabilities	8

To ensure views from both the policy level as well the implementation level, the KII Participants were not only chosen at the local level, rather a few KII were conducted with the national level government officials under pertinent ministries. A total of 10 KIIs were conducted, details of which are presented in Table 2.

Table 2: Summary of KII Participants

KII	Quantity	Location/Department
Upazila Social Services Officer	2	Paikgacha & Shyamnagar
Upazila Chairman	2	Paikgacha & Shyamnagar
Senior Assistant Director	1	Cyclone Preparedness Program (CPP)
Local Volunteer	2	CPP at both the study locations
Government Official	1	Ministry of Disaster Management & Relief
Government Official	1	Ministry of Women and Children Affairs
Government Official	1	Ministry of Social Welfare

3.4 DATA COLLECTION TECHNIQUES

The participants were brought together for FGDs by the local volunteer of Cyclone Preparedness Program (CPP) in respective study locations. A topic guide of semi-structured and open-ended questions was used to conduct the FGDs. The KII participants were also selected purposively at both the local and national level. The interviews were conducted using

a similar topic guide. Each interview was recorded by a digital recorder and then transcribed, translated by research team members which were carefully supervised and checked by other assigned team members.

3.5 DATA ANALYSIS

The data was analyzed using a thematic network analysis technique. This technique is a widely recognized qualitative analysis method that condenses field data into results by establishing connections among them (Attride-Stirling, 2001). The data analysis consisted of three parts. In the first stage, known as the basic theme, the study coded the field data to condense the extensive discussions and identify similarities in the responses. During the second stage, the data were further refined and organized according to the organizing theme. Ultimately, at the final stage, the findings were all integrated, and conclusions were derived in accordance with the research objectives.

3.6 ETHICAL CONSIDERATIONS

The well-being of the beneficiaries was a key consideration in the evaluation, ensuring that the process promoted their welfare (Good, 2005). Additionally, the research maintained the highest professional, legal, and ethical standards, with a focus on avoiding any harmful consequences. Respect for each respondent's dignity, anonymity, privacy, equality, and diversity was integrated into the evaluation design and process, ensuring that all ethical considerations were upheld (Farrelly, 2004).

Chapter 4: Findings

Community voices has been reflected through this research to elicit the on ground realities.

Table 3: Quotes from the community

Section	Quotes	Source
Contextualization of community based adaptation (cba) to climate change (practice)	“The cyclones are far worse; heatwaves have become unbearable. All the disasters are aggravated due to climate change.”	FGD participant.
	“Climate change poses significant risks to the population in our region, particularly for persons with disabilities. The frequency of cyclones is increasing, and it is consistently impacting the lives and means of support for those with disabilities. The primary occupations in this region are agriculture, shrimp farming, and day labor. The high temperatures are adversely impacting the well-being of individuals employed in these industries, including adults with minor disabilities. The impact of climate change in my area is quite destructive, especially for the persons with disabilities.”	KII participant.
	“During cyclones, we struggle because there's only one shelter that's far away, and with the bad roads and poor transportation, it takes too long to get there. By the time we arrive, it's often too late since the households nearby get to move there first and quick. It clearly cannot accommodate all of us.”	KII participant- Deluti union.

	“Can you drink water from this pond? Order me, I will instantly start drinking from it. Most of us get dyspepsia due to drinking this water.”	Elderly male, FGD.
Gender based Social Vulnerabilities	“When you are unsure about your basic needs and livelihoods, there will be quarrels in your house. But it is not always violent.”	Man, FGD.
	“When poverty hits the family, everything ferments in the house. Especially after disasters, the quarrel and beating rise in the family.”	Woman, FGD.
Gender Responsive Resilience	“Homestead farming is very helpful for women and their families. Recently, one of the beneficiaries of Sajida Foundation has repaid a big amount of financial claim on behalf of her husband. This has surely, alleviated her position and agency in the family and society. The total amount was paid through the money and resources gained through the domestic farming including gardening, and poultry rearing.”	NGO representative, KII.
Insights on CCP (Climate Change Programme) – Interventions of Sajida Foundation	“We have been more aware and informed after the Sajida Foundation came to our vicinity. They have trained us, taught us, and provided pecuniary help to adopt techniques that would make our lives a bit bearable at this tumultuous time. Now we know that all these shifts in the seasonal patterns of rainfall and temperature are the consequences of climate change. And the future is more dreadful. But we can take measures to bear with it.”	Participants, FGD.

Forecast based preparedness/ Emergency Response	“We start miking from the WDMC, at the advent of a disaster, but people don't leave for the shelter until the 10-no. warning is declared.”	CPP volunteer, Man, FGD.
	“Whenever I hear that a cyclone is coming, I am the first to leave the house with my child with disabilities.”	Woman, FGD.
Challenges	“When we can’t do any other work, we go to rivers in the night and catch the shrimp fry to sell them to the shrimp cultivators. Due to low light conditions, most of our eyesight are weakened.”	Male, FGD.
	“We have no work most of the time. All the fields are saline and the shrimp cultivators don’t take local people. We’ve no other source except the river and the forest. But the government occasionally employs bans on those. Our lives are extremely hard during those days.”	Male, FGD.
	“The women don’t speak in front of the male doctor about their health problems. The male members of their family strictly forbade such actions. They only talk to female field implementers about their health problems.”	NGO representative, KII
Policy gaps, Insights and Recommendations	“Our locality is in a very hostile place. If the government builds a proper road in our area that would be very helpful for us.”	Male, FGD
	“I have a very precarious house, if I get a strong house to live in, that would mean a lot for me.”	Women, FGD

4.1 CONTEXTUALIZATION OF COMMUNITY BASED ADAPTATION (CBA) TO CLIMATE CHANGE (PRACTICE)

The local population is aware of the detriments of climate change, especially since they reported the rise of cyclones, tidal surges, and rising temperatures. The male group exhibited high awareness and knowledge about climate change, consequential weather extremes, and impacts.

“The cyclones are far worse; heatwaves have become unbearable. All the disasters are aggravated due to climate change”-FGD participant.

Since cyclones have become common occurrence for the coastal residents of Bangladesh over the last couple of decades with increased frequency and often in intensity as well, it’s only likely that they, especially households with persons with disabilities are impacted by these cyclones and consequently the surges & floodings. In the words of a KII participant,

“Climate change poses significant risks to the population in our region, particularly for persons with disabilities. The frequency of cyclones is increasing, and it is consistently impacting the lives and means of support for those with disabilities. The primary occupations in this region are agriculture, shrimp farming, and day labor. The high temperatures are adversely impacting the well-being of individuals employed in these industries, including adults with minor disabilities. The impact of climate change in my area is quite destructive, especially for the persons with disabilities.”

According to the respondents, community-based adaptation (CBA) strategies are still lacking in most of the vulnerable regions of Southern Bangladesh, especially when it comes to disaster preparedness and response, in order to ensure gender-responsive resilience. There is only one operational cyclone shelter available for all nine wards in Deluti Union, one of the study locations, indicating a serious scarcity of shelter during emergencies. Households are at greater risk because of this structural limitation, particularly women, children, and the elderly, who are

disproportionately impacted by such extreme events. As a local Key Informant Interview (KII) participant from Deluti Union explained:

“During cyclones, we struggle because there's only one shelter that's far away, and with the bad roads and poor transportation, it takes too long to get there. By the time we arrive, it's often too late since the households nearby get to move there first and quick. It clearly cannot accommodate all of us.”

These observations highlight the absence of regional planning and inclusivity in current CBA projects, especially when it comes to inclusive access to infrastructure that can save lives. Their vulnerability is exacerbated by the lack of gender-sensitive strategies, such as offering shelters that address the unique safety, privacy, and caregiving requirements of women and adolescent girls. This highlights the necessity of including localized, participatory planning and infrastructure development into future adaption measures and highlights a significant gap in the operationalization of gender-responsive climate resilience.

The only source of potable water is the preserved community pond, which is used by the community for their intake. But drinking from this open water source causes health problems in their digestive system. During an emergency, people don't have the provision for preserving and purifying the water which is a major cause of health-related impacts of disaster.

“Can you drink water from this pond? Order me, I will instantly start drinking from it. Most of us get dyspepsia due to drinking this water”- Elderly male, FGD.

Most of the males were laborers. Despite some of their educational capacity, they pursued no other livelihood option. A large group worked seasonally in the brick fields, others worked in road construction and other works.

The adaptation at community level is limited within the existing resources available in the community. Despite increased NGO presence in the area, sustainable community-based adaptation is absent. Moreover, the aid dependency of the area is to some extent hampering the

self-reliance of the community. Lack of CBA to climate change abase the community's resilience. The vulnerability of the community is exacerbated by increased salinity intrusion and maladaptive shrimp cultivation.

4.2 GENDER BASED SOCIAL VULNERABILITIES

Though the participants reported participation in decision-making, field observation revealed how their male counterparts silenced their voices during the discussion. Participants reported a rise in domestic violence during and after each emergency, they indicated the uncertainty and frail food safety to the deterioration of the conditions. While the male participants insinuated the economic and livelihood lassitude-driven mental pressures increase the discontent among the male head of the house resulting in a rise in gender-based violence.

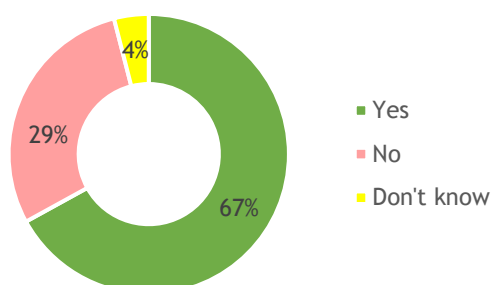
“When you are unsure about your basic needs and livelihoods, there will be quarrels in your house. But it is not always violent.”- man, FGD.

Women bear the consequences of disasters. They are the one who contribute the most in after disaster phase. They work to repair the damaged houses. They have the responsibility take care of their family and also take care of the livestock.

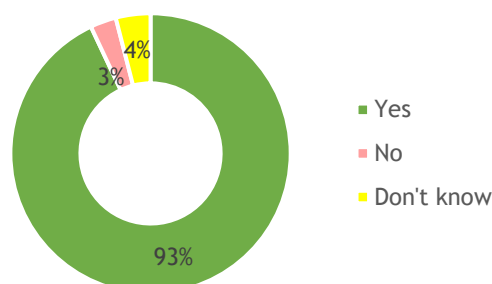
“When poverty hits the family, everything ferments in the house. Especially after disasters, the quarrel and beating rise in the family.”- woman, FGD.

In most of the cases, voice of the women remains unheard. But it is opposite in educated families. Educated husband listen to the voice of the female members of the family. But in case of decision making in social issues, voice of the women is not valued. The social vulnerability of women is protracted here due to rife poverty and entrenched patriarchal social construction. Gender based vulnerabilities like lower literacy rate and school dropout rate, cultural restrictions, limited access to healthcare and reproductive services, gender-based violence are undermining the adaptation capacity of women.

Participation in
Community Decision
Making



Enhanced Participation in
Community Activities



The participation of women and persons with disabilities has been progressing steadily in both community activities and community decision making. This evidence is reflective of the micro and macro level social vulnerabilities of the community. There is community consensus that women are badly affected due to disasters at household level. However, increased NGO activities have enhanced the community level participation of women and persons with disabilities.

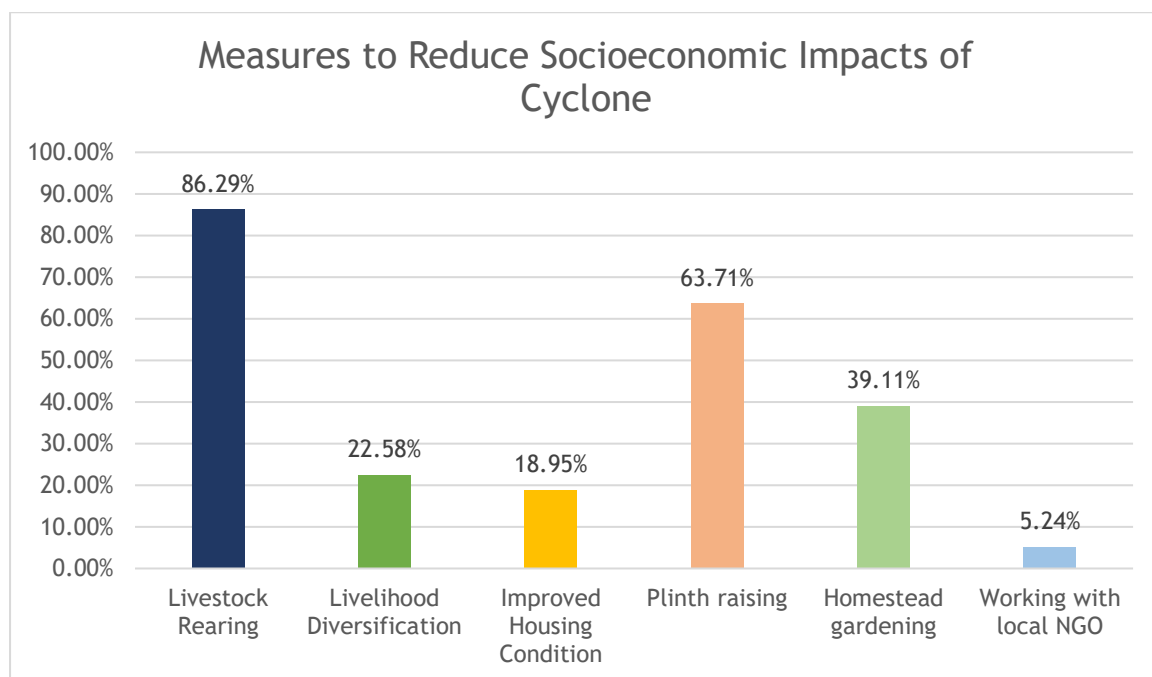
4.3 GENDER RESPONSIVE RESILIENCE

Homestead gardening is the most pronounced CBA among the women of the area. NGOs provide them with training and monetary support for CBA. There are income opportunities for women. They can work in Shrimp farms. Also, there are several NGOs that work for women empowerment which help to increase resilience of women to some extent.

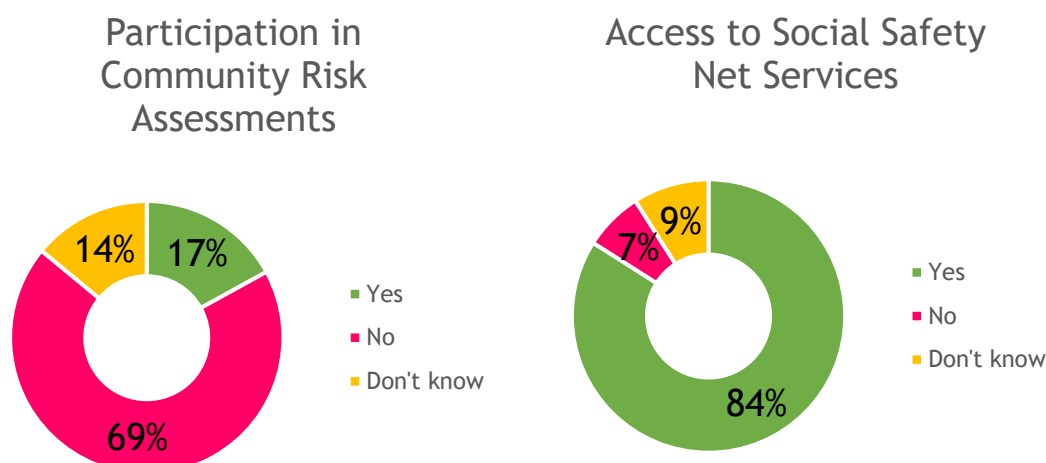
“Homestead farming is very helpful for women and their families. Recently, one of the beneficiaries of Sajeda Foundation has repaid a big amount of financial claim on behalf of her husband. This has surely, alleviated her position and agency in the family and society. The total amount was paid through the money and resources gained through the

domestic farming including gardening, and poultry rearing.”-NGO representative, KII.

Rainwater harvesting has been another rife intervention aimed to enhance women’s ownership and agency in the household which ultimately translates into gender responsive resilience building effort but the change in power balance is not evident yet. The disaster afflicted coastal community experienced entrenched marginalization and power imbalance disproportionately depriving women of their right to wellbeing.



Noticeably, livestock rearing is the most prevalent measure taken to meet the impacts of disasters like cyclone. Homestead gardening convers a significant population (39.11%). These measures enhance the community resilience where specific policy interventions play key part in shaping gender responsive resilience out of that.



The access to social safety net for women and persons with disabilities has expanded to about 84% but the effective participation of these intersectional groups remains significantly lower (17%). This is germane to the social constructionist view of keeping these intersectional groups at the service receiver ends on the contrary to designing and participating in community resilience building and decision making in relation to risk management.

4.4 INSIGHTS ON CCP (CLIMATE CHANGE PROGRAMME) – INTERVENTIONS OF SAJIDA FOUNDATION

Participants acknowledged their awareness and knowledge about climate change increased after the Sajida Foundation came to them in 2023. Sajida Foundation arranges monthly physician consultation meetings. Sajida Foundation organized training on alternative vegetable cultivation. For instance: Community people have been trained to cultivate vegetable in sack.

“We have been more aware and informed after the Sajida Foundation came to our vicinity. They have trained us, taught us, and provided pecuniary help to adopt techniques that would make our lives a bit bearable at this tumultuous time. Now we know that all these shifts in the seasonal patterns of rainfall and temperature are the consequences of

climate change. And the future is more dreadful. But we can take measures to bear with it.”- Participants, FGD.

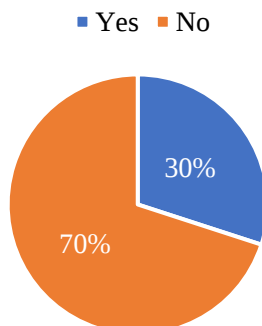
The interventions of Sajida Foundation had been positively alleviating the gender responsive resilience in the area, but the sustainability of interventions is uncertain. In most of the cases, donor dependency of the organizations and aid dependency of the community appeared to be the nemesis of sustained resilience and long-term resilience.

4.5 FORECAST BASED PREPAREDNESS/ EMERGENCY RESPONSE

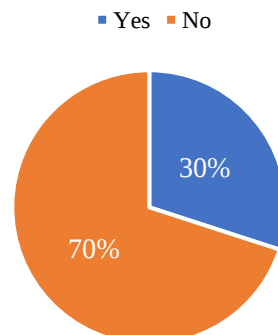
CPP is active there. They disseminate the warnings and people get ready for the upcoming cyclone. Early warning reaches all irrespective of gender but they don't leave for the shelter until the danger signal 10 is declared. Few of the participants reported not leaving their house in the latest cyclone Remal.

“We start miking from the WDMC, at the advent of a disaster, but people don't leave for the shelter until the 10-no. warning is declared.”- CPP volunteer, Man, FGD.

Went to Shelter During the Last Cyclone



Received cash/kind based assistance after a disaster

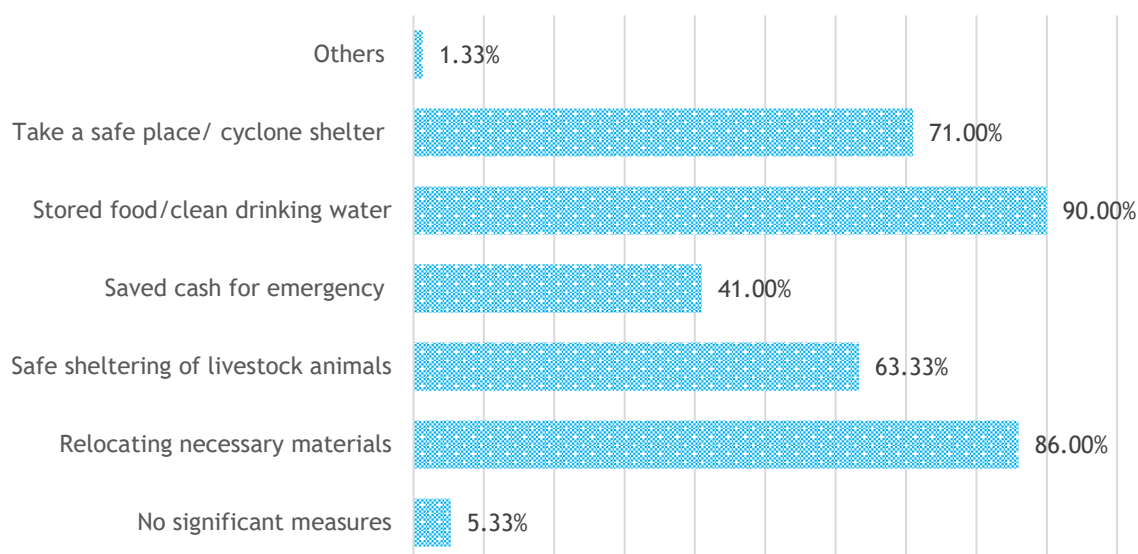


Instead, community people take measures to prepare well against the impending disaster. They tighten their tins of the roof so that speedy wind cannot damage it. Preserving dry food is a common practice in the community. They also preserve their important documents (Dolil) before a cyclone.

“Whenever I hear that a cyclone is coming, I am the first to leave the house with my child with disabilities.” (Woman, FGD).

Due to long term exposure of NGO interventions in the area, the community have been indirectly affected and that indirect impacts drove some behavioral and attitudinal changes in the community.

Measures Taken after Receiving Cyclone Signals



The response to cyclone signal has seen rising trend of anticipatory actions lead by food and water storing (90%), followed by necessary materials relocation (86%) among women and the persons with disabilities.

4.6 CHALLENGES

Main problem of the area is the absence of sustainable livelihood. Apart from the resources of the river and forest, there is no other source of livelihood for the people. That is

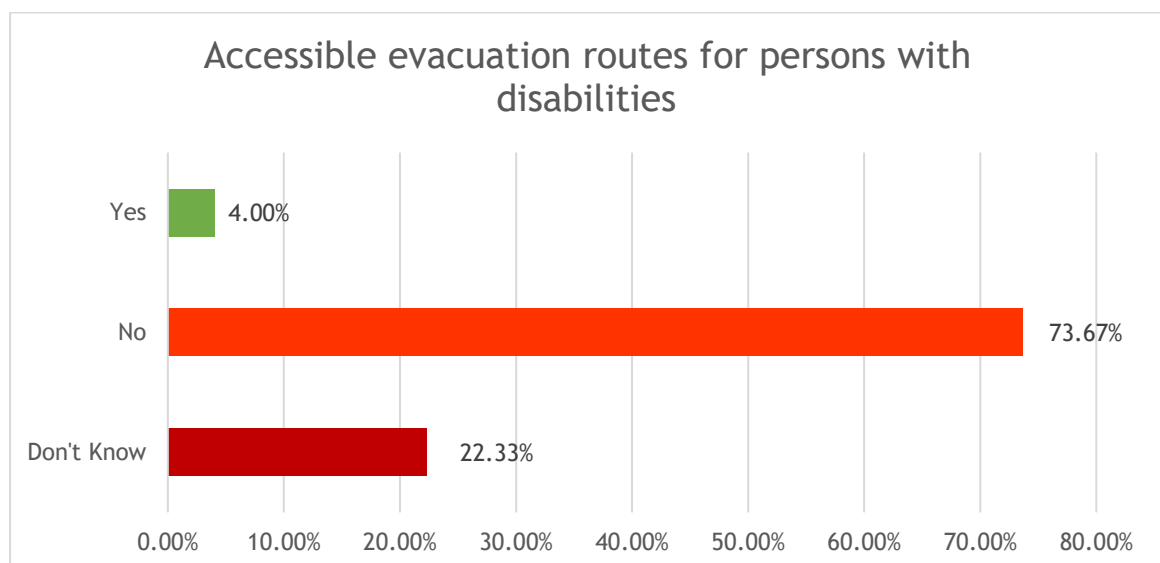
too often interrupted by governmental impositions and embargos, that's why they have to depend on the nighttime ventures in the rivers costing them their eyesight.

“When we can't do any other work, we go to rivers in the night and catch the shrimp fry to sell them to the shrimp cultivators. Due to low light conditions, most of our eyesight are weakened.”- Male, FGD.

There is no arable land in the area, all are used for shrimp cultivation. The shrimp cultivation doesn't support the local livelihoods as the laborers aren't from the local community. Local people collect alevin/fry from the river and sell that to the shrimp cultivators.

“We have no work most of the time. All the fields are saline and the shrimp cultivators don't take local people. We've no other source except the river and the forest. But the government occasionally employs bans on those. Our lives are extremely hard during those days.”-Male, FGD.

Transportation facilities are almost nonexistent. Most of the roads are damaged. Moving from one place to another in the rainy season becomes very difficult. Gabura is detached from the mainland. Going to the mainland becomes difficult during night and cyclone times. There are incidents when patients have died because they failed to move to go to a hospital in the mainland.



The community is extremely conservative in terms of women's health; the women are only allowed to talk about their health problems with women doctors. Adding to the complexity, shelter facilities in the area are very poor and inadequate. People are not eager to take female household members to the shelters. They find it easier to stay at home instead of going to a shelter.

“The women don't speak in front of the male doctor about their health problems. The male members of their family strictly forbade such actions. They only talk to female field implementers about their health problems.”
- NGO representative, KII

4.7 POLICY GAPS, INSIGHTS AND RECOMMENDATIONS

The community suffers from health and livelihood problem. Both of these problems are aggravated by lack of proper health and communication infrastructure. As a result, their primary ask was infrastructural development. They wanted help in infrastructure construction. In particular, their road communication was mired by the absence of road construction. Some of the women participants expressed the need for strong housing facilities. For livelihood sustainability, community recommended that shrimp cultivation should be interdicted as it reduces the agriculture-based livelihood and increases unemployment.

“Our locality is in a very hostile place. If the government builds a proper road in our area that would be very helpful for us.”-Male, FGD

The disaster management committees are not active enough, but NGO activities are prevalent in the community. Disaster response and evacuation also needs the same level of structural development. Link road from community to shelter should be constructed. Otherwise, people will not be eager to go to shelters. Finally, health facilities in community clinics should be developed so that it can meet the emergency health need within the community.

“I have a very precarious house, if I get a strong house to live in, that would mean a lot for me.”-Women, FGD

However, previous investigations pointed out the gaps in the existing policies. Policies and national and international level and existing governance mechanisms are especially criticized for its lack of gender disaggregated data framework and lack of coordination along with other limitations.

4.7.1 Gaps in existing national and international drivers

Many policies superficially acknowledge gender disparities in climate vulnerability but lack enforcement mechanisms (Ahmad, 2012; Dev et al., 2024; Shabib & Khan, 2014). Funding mechanisms (e.g., BCCTF) do not mandate gender inclusion or performance tracking ((Ahmad, 2012; Geary & Scheffran, 2024). The following table summarizes the gaps in existing national and international drivers.

Table 4: Review of existing national and international drivers

POLICY/FRAMEWORK	GAPS IN EXISTING NATIONAL & INTERNATIONAL DRIVERS	GOVERNANCE MECHANISM	MAJOR RECOMMENDATIONS FOR POLICYMAKERS & PRACTITIONERS	WAY FORWARD	REFERENCES
COUNTRY-WIDE CLIMATE CHANGE GENDER ACTION PLAN (CCGAP)	Lacks binding mechanisms to ensure gender integration; Implementation remains weak due to low financial and institutional capacity. It was first launched in 2013 to ensure gender equality and inclusion in climate change related policies, strategies, and interventions as a follow-up of the Bangladesh Climate Change Strategy and Action Plan (BCCSAP). Though the policy is about gender action plans, still it lacks integration of gender consideration in natural resource management laws, sufficient gender-disaggregated data.	No legal enforcement; Linked to international frameworks like UNFCCC Gender Action Plan but lacks national accountability.	Establish a national regulatory body to oversee gender-responsive adaptation strategies.	Strengthen integration with national policies like NAP & BCCSAP, ensuring mandatory gender outcome reporting.	(Shabib & Khan, 2014), (Humayra et al., 2024)
BANGLADESH CLIMATE CHANGE STRATEGY AND ACTION PLAN (BCCSAP) (2009)	Recognizes gender but lacks operational frameworks; No gender-specific budgeting or accountability mechanisms (Ahmad, 2012; Debnath, 2022; Dev et al., 2024; Shabib & Khan, 2014). In literature (Ogra et al., 2021), it's seen to have inadequate integration of gender responsive strategies in action plans. Also, for measuring progress, weak monitoring and evaluation framework is a concern (A. Islam et al., 2013).	Governed by MoEFCC; Limited sectoral coordination for gender mainstreaming ((Dev et al., 2024; Shabib & Khan, 2014).	Introduce gender-inclusive budgeting and enforceable mandates for women's participation in adaptation planning.	Revise and update to enhance gender integration with mandatory reporting.	(Shabib & Khan, 2014), (Debnath, 2022), (Dev et al., 2024), (Ahmad, 2012), (Ogra et al., 2021), (A. Islam et al., 2013).
NATIONAL ADAPTATION	Gender considerations are minimal; No formal mechanisms to track gender-	Overseen by MoEFCC;	Develop gender-disaggregated	Transition from short-term	(Shabib & Khan, 2014),

PROGRAMME OF ACTION (NAPA) (2005, UPDATED 2009)	responsive implementation ((Ahmad, 2012; Shabib & Khan, 2014). It has a limited focus on ecosystem-based adaptation and also it provides less attention to indigenous knowledge integration and has a weak connection with sectoral development (Perspective Plan 2041).	Some projects include women's participation but lack institutionalization ((Dev et al., 2024; Zamudio & Parry, 2016).	adaptation target-setting and resource allocation.	donor-driven projects to institutionalized gender-inclusive adaptation in the NAP.	(Dev et al., 2024), (Zamudio & Parry, 2016), (Ahmad, 2012)
RENEWABLE ENERGY POLICY OF BANGLADESH (2008)	Gender aspects completely absent; No recognition of women's role in clean energy transitions. In 2023 UN Bangladesh published an article on its official website which shows the gap between aspiring targets & actual application. It also lacks capacity building & public awareness programs.	Implemented by SREDA; No gender-responsive inclusivity in policy design.	Mainstream gender into energy access through subsidies for women entrepreneurs.	Include gender targets within the Renewable Energy Master Plan.	(Debnath, 2022), (Ahmad, 2012)
BANGLADESH CLIMATE CHANGE TRUST FUND (BCCTF) (2010)	No gender mainstreaming in financing projects; Funds are often allocated without gender-specific criteria (Ahmad, 2012). In 2019, Razzak et al. (2019) conducted the AJHSSR where it came up that though it's a policy related to funding but it has issues with transparency & administration in those fund management.	Managed by the Climate Change Trust Board under MoEFCC; Weak Monitoring and Evaluation (M&E) for gender equity.	Allocate a portion of BCCTF funds for women-led, gender-transformative adaptation projects.	Implement mandatory gender audits and data collection frameworks.	(Ahmad, 2012), (Humayra et al., 2024), (Razzak et al., 2019)
COASTAL ZONE POLICY (2005)	Minimal recognition of gender-differentiated vulnerabilities; No formal mechanisms ensuring women's representation in coastal planning. A research paper authored by Al-Amin & Gm (2019), showed inadequate mechanisms for effective community involvement and is urgently in need of more comprehensive climate change adaptation strategies in coastal zones.	Managed by BWDB under MoWR; Weak enforcement at the local level.	Integrate gender-responsive planning into coastal livelihoods, especially in salinity-affected zones.	Improve coordination with community-based adaptation initiatives.	(Zamudio & Parry, 2016), (Kamal & Bray, 2022), (Al-Amin & Gm, 2019)
NATIONALLY DETERMINED CONTRIBUTIONS (NDCS) - UPDATED VERSION	Lacks clear gender mainstreaming; No gendered climate resilience indicators. A document of the World Bank, named 'CLIMATE-SMART AGRICULTURE INVESTMENT PLAN of BANGLADESH' shows that there are some insufficient integrations of the NDC targets all over other sectors. It needs more improved transparency mechanisms & data collection.	MoEFCC-led, influenced by UNFCCC; Weak enforcement mechanisms.	Strengthen gender-disaggregated adaptation reporting in NDC tracking.	Align future NDCs with gender-responsive adaptation targets.	(Shabib & Khan, 2014), (Dev & Fliert, 2023)
BANGLADESH DELTA PLAN 2100 (BDP 2100) (2018)	Largely technocratic; Lacks integration of gender or community-based adaptation (Geary & Scheffran, 2024). In Bangladesh Delta Plan 2100, disorder is seen between the long term and short-term actions of the plan. Ineffective cross sectoral coordination is also a concern of the BDP 2000.	Managed by the General Economic Division (GED); Weak intersectionality between gender, resilience, and infrastructure projects.	Mandate gender impact assessments in long-term water & agriculture projects.	Expand capacity-building for women's roles in water governance.	(Geary & Scheffran, 2024)
NATIONAL ENVIRONMENT POLICY (2018)	Gender remains a secondary consideration; No active mechanism to assess gender-climate linkages. According to Bangladesh Delta Plan 2100, though it's an environmental policy, it has limited focus on green technology adoption as a part of it. Also, it has a weak collaboration between development & environmental policies.	Falls under MoEFCC; Weak integration with SDG 5 (gender equality).	Develop frameworks linking gender with pollution, conservation, and resource management.	Implement environmental policies with explicit gender-sensitive indicators.	(Zamudio & Parry, 2016), (Ahmad, 2012)
SUSTAINABLE DEVELOPMENT GOALS (SDG) LOCALIZATION (2016-2030)	SDG 5 commitments lack localization in rural resilience programs (Humayra et al., 2024). Considering local socio-economic conditions, it does not have enough	Led by PMO, General Economics Division; Weak local government	Strengthen gender indicators within SDG 13 (Climate Action).	Require district-level gender-sensitive adaptation plans.	(Zamudio & Parry, 2016), (Humayra et al., 2024)

	tailored strategies and also in localization of the efforts, limited stakeholder engagement is observed.	implementation .			
NATIONAL PLAN OF DISASTER MANAGEMENT (NPDM) (2021-2025)	No gender-specific disaster resilience strategies; Women's leadership in DRR remains underrepresented ((Ahmad, 2012; Tanjeela, 2023). It does not cover all types of possible hazards and represents not enough risk communication strategies. It has also a gap in aligning with some other international frameworks like the Sendai Framework.	Implemented by MoDMR; Weak institutional gender capacity for disaster recovery.	Bolster gender-responsive early warning systems and recovery financing.	Redesign DRR policies with cultural and gender-specific considerations.	(Ahmad, 2012), (Tanjeela, 2023)
MUJIB CLIMATE PROSPERITY PLAN (MCPP)	Gender issues not institutionalized; Remains macroeconomic and technology-driven. In the Mujib Climate Prosperity Plan (2022-2041) document, it does not include indigenous communities at all levels. It has also fragile integration with all the existing climate policies of ours.	Managed by the Bangladesh Climate Development Forum; Limited details on gender integration.	Emphasize gender-equitable access to climate-smart livelihoods.	Ensure climate finance funds explicitly support women-led adaptation.	(Debnath, 2022), (Kamal & Bray, 2022)
NATIONAL ADAPTATION PLAN (NAP) (UPCOMING RELEASE)	Current drafts lack mechanisms to explicitly integrate gender-responsive adaptation (Geary & Scheffran, 2024). Limited gender responsive approaches in any adaptation strategies are the barriers of the NAP (Roy et al., 2022). Lack of financial mechanisms and resource mobilization are also creating critical gaps of this plan (M. A. Rahaman & Rahman, 2020)	Led by MoEFCC; Requires Green Climate Fund alignment.	Develop enforceable gender indicators in adaptation finance.	Enhance policy coordination to operationalize gender in adaptation planning.	(Shabib & Khan, 2014), (Dev et al., 2024), (Geary & Scheffran, 2024), (Roy et al., 2022), (M. A. Rahaman & Rahman, 2020)
IPCC ASSESSMENT REPORT (COP OUTCOMES)	IPCC calls for gender-responsive policies are not effectively incorporated into Bangladesh's adaptation planning. Implementation of global climate projection to local level is one of the biggest challenges of this plan (Hassan et al., 2022). There is a significant gap between finding and local policy implementation (Khan & Rahman, 2023).	MoEFCC engages with IPCC findings but lacks clear national execution.	Convert IPCC recommendations into measurable gender-inclusive adaptation strategies.	Establish a permanent task force on gender-sensitive climate adaptation.	(Evertsen, 2024), (Dev & Fliert, 2023), (Hassan et al., 2022), (Khan & Rahman, 2023)
8TH FIVE-YEAR PLAN	Gender inclusion in climate resilience lacks detailed implementation (Geary & Scheffran, 2024). In 2023 Islam & Ahmed stated that Insufficient collaboration in climate resilience in sectoral planning is one of the barriers of the plan. And according to Rahman et al. (2022), less alignment between the objectives of climate and economic development is also found as a gap.	Implemented by the Planning Commission but lacks gender-responsive oversight.	Integrate climate resilience into women's livelihood programs.	Develop localized resilience financing for women-led businesses.	(Dev et al., 2024), (Geary & Scheffran, 2024), (Islam & Ahmed, 2023), Rahman et al. (2022)
PERSPECTIVE PLAN	Gender-mainstreaming methods remain aspirational rather than concrete steps. Z. Ahmed (2023), stated that limited integration of emerging climate risks in strategic planning is found here. Apart from that according to Rahman et al., (2022), cross-cutting gaps like resource constraints, poor coordination between monitoring & evaluation framework across all the segments of planning documents is also noticed.	Overseen by the Planning Commission; Does not enforce gender-impact tracking.	Establish gender-inclusive governance across climate finance investments.	Increase cooperation between gender-focused ministries & climate planning agencies.	(Zamudio & Parry, 2016), (Humayra et al., 2024), (Z. Ahmed, 2023), (Rahman et al., 2022)

4.7.2 Governance Mechanism

Capacity building is seen as the most important element of governance in the new paradigm (Md. M. Rahman, 2023). The BCCSAP specifies the ways to build local capacity that could withstand the consequences of climate change actions (Yasmin, 2018). It refers to engaging in capacity-building activities for women and less privileged groups being a major policy for getting them out of their problems of adaptability. Also, ccGAP mentioned the importance of Integrating gender responsive budgeting and ensuring capacity building for stakeholders in climate response. Besides the governance tools, community-based adaptation strategies, like NAPA, have also been mentioned. The Sendai Framework for Disaster Risk Reduction (2015-2030) has, at its core, the call of the society to introduce structures of governance that include all and empower local communities to participate in decision-making processes towards climate resilience. The governance mechanisms that were outlined have also included the call for gender mainstreaming in all climate policies. Lack of inter-ministerial coordination between MoEFCC, MoDMR, and economic planning bodies weakens gender-mainstreamed adaptation (Dev et al., 2024; Humayra et al., 2024). Implementation bodies lack gender-disaggregated data frameworks, preventing evidence-based policymaking (Geary & Scheffran, 2024).

4.7.3 Major recommendations for policymakers & practitioners

Arfanuzzaman (2024) identified some recommendations for policymakers and practitioners such as the BCCSAP should be updated to reflect the inclusion of gender-specific strategies that emphasize the role of women in climate adaptation and disaster management. Along with that ccGAP recommends the increase in women's participation in planning and decision making across sectors like; forestry, agriculture, urban planning etc. NAPA should be the first one to propose a gender-disaggregated data collection system in its assessments. This will be useful in discerning the impacts of climate change on different groups in the community. The latest Local Government (Union Parishad) Act will be used as a tool to build the capacity of local governments to involve community members, especially women, in climate resilience design. The Sendai Framework underlines the necessity of multi-stakeholder involvement in disaster risk reduction, which, in turn, should be used to beef up community-based resilience projects. With regard to the IPCC Assessment Reports, Kundu et al., (2020) stressed the

significance of quality data for the success of climate policy implementation. Policymakers should enhance existing policies through comprehensive research and implement existing policies effectively. This can be done by establishing legal mandates for integrating gender-responsive adaptation planning, introducing gender audits for policy implementation and financing mechanisms, and by ensuring local women's participation in climate adaptation decision-making.

4.7.4 Way forward

To be able to tackle the specific vulnerabilities that women face in such situations or circumstances, policymakers must understand how to include gender perspectives in climate change policies. Others argue that current frameworks, including that of the BCCSAP, need to be modified to address women's roles and concerns in climate change adaptation processes. Conceivably, research initiatives will be crucial in collecting and assessing data pertaining to the gender dimensions of climate change that will inform discrete actions in the framework such as the National Adaptation Programme of Action (NAPA). Consulting the Sendai Framework for Disaster Risk Reduction, local governments may adopt integrative approaches that incorporate local level participation in the adaptation planning process in which other stakeholders such as the government agencies, NGOs and community-based organizations work together. The work of Kundu et al. (2020) indicated that integration of agriculture, fisheries and water resources management requires cross sectoral collaboration in developing integrated resilience measures. It is also critical that without robust investment in climate resilient infrastructure including flood barriers and upgraded irrigation for these crucial areas in the coast, the efforts at adaptation will be weakened. Future endeavors should be made to strengthen gender-based funding mandates in national and international climate finance tools, to align national policies with global frameworks like the UNFCCC Gender Action Plan and IPCC recommendations and to develop intersectional adaptation models, addressing vulnerabilities across gender, ethnicity, disability, and socioeconomic status. Future studies should seek to understand how the vulnerabilities associated with gender and adaptation strategies can be better addressed.

Chapter 5: Discussion & Conclusion

This study found some on ground reality that despite continuous NGO intervention in the coastal community, the social patriarchal norms is still prevailing. Often we observed that the NGOs subsidies to the patriarchal imposition for the sake of maintaining harmony with the society. There is very slow progress which must be accelerated with comprehensive interventions coordinated by all stakeholders. The community conscience need to be informed and educated through technological penetration especially the information and communication technology like Television, mobile phone, which are prevalent in other region. Educational and awareness campaigns should be modified to fit in the mobile screen that has the power to reach the remotest of locations. The youth of the localities can be a significant driver for social change in the coastal region. Equity based employment, and livelihood sustenance is the platform for all other changes to take place. However, this discussion synthesizes what the current literature reveals—and obscures—about gender-responsive community-based adaptation (CBA) in Bangladesh’s southwest coastal saline belt. This discussion organizes the argument around four threads: (1) how “gender-responsive CBA” is conceptualized versus practiced; (2) which social mechanisms plausibly drive outcomes for women and equity groups; (3) methodological strengths and limitations across studies; and (4) implications for policy and for a next-generation evidence agenda. Throughout, it is critiqued how the field has often relied on descriptive or consultative accounts while lacking rigorous counterfactual evaluation—particularly for protection and gender-based violence (GBV) outcomes.

5.1 CONCEPT VERSUS PRACTICE: WHAT COUNTS AS “GENDER-RESPONSIVE CBA”?

Across the set, gender-responsive CBA is more a normative aspiration than an empirically substantiated practice. In principle, it should entail: (a) gender analysis that surfaces unequal risks and resources; (b) women’s meaningful leadership with decision authority in risk governance; (c) targeted resource shifts and service linkages (protection, WASH, SRH); and (d) accountability for gender-differentiated outcomes. Yet, critical scholarship finds that NGO-led CBA often reproduces top-down project logics, compresses

timelines, and emphasizes participation counts overpower redistribution, thereby jeopardizing social justice aims (Masud-All-Kamal & Nursey-Bray, 2021). Case work on integrating local knowledge similarly documents consultative practices but not necessarily accountable co-production with durable authority for women (Sultana & Luetz, 2022).

In contrast, the only study using a treatment–control structure in the Khulna–Satkhira corridor emphasizes livelihoods enhancement with high women’s participation, reporting higher climate awareness and willingness to take preventive measures in “treatment” communities (N. C. Roy et al., 2021). This study also found similar scenario in the community. NGO interventions in the study area prioritize women’s ownership of the interventions. However, it (N. C. Roy et al., 2021) neither documents a ≥ 24 -month CBA process with risk-governance reforms nor integrates protection linkages. As such, it exemplifies a prevalent slippage: interventions labeled “resilience” or “participatory” may not meet the standards of gender-responsive CBA as defined above. This is evident from this study as well, as it was observed the authority still lies with the men of the community despite the emphasis of the NGO interventions to promote participation of women.

Future evaluations should verify, rather than assume, the presence of gender-responsive design features. Process indicators—women’s decision authority, grievance use, and institutional responsiveness—must be measured alongside outcomes (Masud-All-Kamal & Nursey-Bray, 2021; Sultana & Luetz, 2022).

5.2 MECHANISMS: SOCIAL CAPITAL, RESOURCE ACCESS, AND PROTECTION RISKS

Literature converge on mechanisms that plausibly mediate outcomes for women and equity groups, though few studies test them causally.

5.2.1 Gendered resource access and decision-making.

Women frequently face constraints in land, finance, extension, and market access, as well as limited decision authority at household and community levels (Ahmed & Kiester, 2021; Assaduzzaman et al., 2023). Female-headed farms appear less likely to employ certain exit strategies (e.g., land sales or migration), which reshapes their adaptation portfolios (Ahmed &

Kiester, 2021). These constraints intersect with ethnicity to compound disadvantage in participation and capability (Assaduzzaman et al., 2023).

5.2.2 Social capital as a double-edged mechanism.

WHHs rely heavily on bonding capital (kin, neighbors) across cyclone phases; bridging and linking ties are thinner but crucial to preparedness and recovery (Rahman et al., 2025). Post-cyclone analyses of gender–social capital dynamics reinforce the idea that tie diversity and institutional linkages matter for timely, adequate assistance (Khalil et al., 2021). The key nuance is that bonding support can be reliable but resource-poor; without bridging/linking to institutions and markets, households may remain trapped in low-return coping.

5.2.3 Protection and GBV risks.

A Satkhira survey reports high experiences of discrimination/violence and low decision-making power among women (Moral et al., 2023). Still, none of the studies measure GBV prevalence with validated instruments within program evaluations or link outcomes to protection services. This is a significant blind spot, particularly given documented risks during evacuation, sheltering, and aid distribution in similar contexts.

Gender-responsive CBA should explicitly invest in and measure bridging/linking social capital, women’s leadership with decision authority, and protection linkages. Without these, interventions risk reproducing existing networks’ limitations and leaving GBV risks unaddressed (Assaduzzaman et al., 2023; Moral et al., 2023; Rahman et al., 2025).

5.3 WHAT IS MEASURED AND WHAT IS NOT?

A striking pattern in the existing literature is the dominance of perception-based, descriptive, or consultative methods and the scarcity of validated, outcome-oriented measurement, especially for concrete resilience and GBV.

5.3.1 KAP and practice.

Studies catalogue common practices (rainwater harvesting, homestead gardening/poultry, planting date adjustment, input optimization, and livelihood diversification) and report increases in awareness/willingness in “treatment” areas (Hossain & Zaman, 2018;

Khan et al., 2022; Moral et al., 2023; N. C. Roy et al., 2021). However, KAP modules often lack linkage to hazard-specific actions such as early-warning comprehension, shelter access, or protective WASH behaviors.

5.3.2 Concrete resilience.

Few studies quantify disaster loss amounts, time to service restoration, dry-season potable water access, livelihood diversification indices, or food security via standardized tools. Where reported, losses and disruptions are largely perception-based and not tied to intervention exposure (Hossain & Zaman, 2018; Khan et al., 2022).

5.3.3 GBV/protection.

Beyond Moral et al. (2023), which reports discrimination/violence experiences in a cross-section, there is no validated GBV measurement, no service-uptake tracking, and no shelter safety indicators—despite their centrality to “gender-responsive” claims.

5.3.4 Equity and inclusion.

WHHs are studied (Rahman et al., 2025); female-headed households are contrasted with male-headed farms (Ahmed & Kiester, 2021); and gender and ethnicity is examined together (Assaduzzaman et al., 2023). Yet adolescents and persons with disabilities are absent as systematically measured subgroups across the set.

Next-generation evaluation in Satkhira should use validated batteries for (a) early-warning and shelter use; (b) protective WASH practices; (c) disaster losses, recovery time, water/food security, livelihood diversity, and savings/insurance; and (d) GBV prevalence by type, controlling behaviors, help-seeking, service uptake, and safety at shelters/collection points, following ethical standards.

5.4 COMPARATIVE KNOWLEDGE: POINTS OF CONVERGENCE AND DIVERGENCE

5.4.1 Convergence:

Researchers agree that women face structural barriers to adaptation resources and decision-making, which shape their adaptation portfolios (Ahmed & Kiester, 2021;

Assaduzzaman et al., 2023; Hossain & Zaman, 2018; Moral et al., 2023). There is broad acknowledgement that local knowledge and participation are indispensable, though often practiced as consultation rather than shared authority (Sultana & Luetz, 2022). Studies recognize the importance of social capital, but emphasize different tie types and phases (Khalil et al., 2021; Rahman et al., 2025). Literature concur that hazard context matters: interior vs. exterior tidal floodplain and polder/drainage conditions shape both impacts and plausible adaptations (Khan et al., 2022).

5.4.2 Divergence:

The researched knowledge diverges in evidence strength. Only Roy et al. (2021) use a treatment–control design; others rely on descriptive cross-sections, PRA, or qualitative methods. Consequently, claims about effectiveness versus plausibility diverge sharply. Equity foci is diversified in this context. Some studies foreground WHHs (Rahman et al., 2025); others examine FHH vs. MHH farms (Ahmed & Kiester, 2021) or ethnicity (Assaduzzaman et al., 2023). These foci generate different policy emphases (e.g., social assistance targeting vs. market linkages). Two different governance stances are noticed in the literature. Critical perspectives argue that NGO-CBA often undermines justice goals via design and accountability failures (Masud-All-Kamal & Nursey-Bray, 2021), whereas practice-oriented pieces emphasize participatory planning without necessarily interrogating authority and accountability (Sultana & Luetz, 2022).

The field’s descriptive and critical strands are complementary. Mechanism-rich accounts (social capital, intersectionality) and governance critiques should inform the design and measurement in causal evaluations, rather than be treated as separate literatures.

5.5 POLICY RECOMMENDATIONS

Drawing on convergent findings and gaps, this study proposes policy directions that are feasible within Bangladesh’s coastal governance architecture and responsive to Satkhira’s interior-zone realities:

- **Institutionalize women’s decision authority in risk governance:** Move beyond “participation” to reserved leadership roles for women in polder O&M committees, disaster

management committees, and water user groups, with transparent mandates, quorum rules, and grievance redress tracking (Masud-All-Kamal & Nursey-Bray, 2021; Sultana & Luetz, 2022).

- **Build bridging and linking social capital by design:** Fund and measure network-building between WHHs/FHHs and formal institutions (LGIs, DDM, DPHE, agricultural extension, market actors). Include preparedness-phase linkages (early warning, shelter access protocols) and recovery-phase services (cash, protection, WASH), reflecting the phase-specific gaps identified in Gabura (Rahman et al., 2025).
- **Make protection integral to CBA:** Integrate GBV risk mitigation in shelter design and management, privacy-safe WASH, lighting, and safe aid distribution; establish and monitor referral pathways with confidentiality. Given the high reported discrimination/violence, this is non-optional (Moral et al., 2023).
- **Target equity groups with tailored financial and market instruments:** For WHHs/FHHs and minority groups, pair savings/credit with market access and skills aligned to salinity-resilient value chains; avoid burdening bonding networks alone with recovery financing (Ahmed & Kiester, 2021; Assaduzzaman et al., 2023; Rahman et al., 2025).
- **Shift donor/NGO accountability structures:** Require flexible timelines (≥ 24 months), fund monitoring of gendered outcomes, and enforce downward accountability (public dashboards, community scorecards). Avoid “pilotitis” that undermines institutional embedding (Masud-All-Kamal & Nursey-Bray, 2021).
- **Embed local knowledge in adaptive management cycles:** Use participatory risk mapping to co-prioritize investments and iterate with learning reviews tied to concrete indicators (Sultana & Luetz, 2022).

These recommendations are mutually reinforcing: institutional authority for women and bridging/linking capital increase the uptake and effectiveness of hazard-appropriate physical and livelihood measures, while integrated protection safeguards ensure benefits are not offset by heightened risk.

5.7 LIMITATIONS OF THE EVIDENCE BASE AND IMPLICATIONS FOR FUTURE RESEARCHES

Substantive gaps persist. Rigorous CBA impact evaluations meeting gender-responsive criteria with matched controls and validated outcomes are absent. Only one study employs a treatment–control design, and it is not a verified gender-responsive CBA of ≥ 24 months (N. C. Roy et al., 2021). Protection/GBV outcomes are largely unmeasured, equity groups beyond WHHs/FHHs are under-represented, and exposure/fidelity are rarely documented (Masud-All-Kamal & Nursey-Bray, 2021; Moral et al., 2023; Rahman et al., 2025).

Accordingly, future studies should be positioned to:

- Provide causal evidence by combining hazard-matched controls with pre/post measures or robust cross-sectional estimators where baselines are unavailable.
- Measure mechanisms (social capital, women’s authority, grievance use) jointly with outcomes (KAP, concrete resilience, GBV/protection).
- Deliver equity-stratified analyses that include adolescents and women with disabilities.
- Document dosage and fidelity to separate “labelled as CBA” from genuinely gender-responsive practice.

5.8 CONCLUSION: FROM PLAUSIBLE PATHWAYS TO PROVEN IMPACT

The literature offers rich, place-aware diagnoses of gendered constraints, social mechanisms, and governance pitfalls in coastal Bangladesh. Yet, it stops short of demonstrating which configurations of gender-responsive CBA reliably deliver concrete resilience and protection outcomes for women and equity groups. By centering hazard-matched counterfactuals, mechanism–outcome measurement, and institutional accountability, the field can move from plausible pathways to proven impact—closing a critical evidence gap that current policy debates urgently need filled.

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