

# Women's Lived Experience of Flood and Coping Strategies: A Study in Bangladesh

Kamrun Nahar 

Institute of Social Welfare and Research, University of Dhaka, Dhaka, Bangladesh

Email: Kamrun85du@gmail.com

**How to cite this paper:** Nahar, K. (2025). Women's Lived Experience of Flood and Coping Strategies: A Study in Bangladesh. *Open Journal of Social Sciences*, 13, 434-453. <https://doi.org/10.4236/jss.2025.133030>

**Received:** January 28, 2025

**Accepted:** March 17, 2025

**Published:** March 20, 2025

Copyright © 2025 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0). <http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

In Bangladesh, frequent flooding occurrences have a detrimental effect on women, who are disproportionately affected. Due to sociocultural restrictions that society perpetuates, women are less adaptive and more vulnerable than men during flood catastrophes. This study aims to investigate women's experiences during floods and to know the coping mechanisms they employ to stay alive. A qualitative research approach was used to achieve this goal, which included conducting in-depth interviews with thirty participants and performing focus groups with six distinct groups. The study demonstrates how rural areas and flood catastrophes exacerbate women's vulnerability issues because of their inability to adapt. The patriarchal culture that permeates rural Bangladesh is primarily to blame for this, as it makes it difficult to acquire the required resources, knowledge, skills, and adaptability. Therefore, this article makes the case for the government's steadfast dedication to fully utilizing women's potential to improve their capacity for adaptation and integration into society at large, thereby fostering positive societal progress by lessening their vulnerability.

## Keywords

Women, Flood, Coping, Bangladesh

## 1. Introduction

Climate change constitutes a significant and daunting challenge to humanity. It jeopardizes global ecological stability and the ongoing existence and advancement of human civilization (He, 2015). The rising frequency and intensity of weather-related extremes, along with gradual alterations in the average temperature, will intensify these effects. Bangladesh is among the most susceptible nations to numerous risks. Flooding is a prevalent danger that occurs annually in varying mag-

nitudes throughout the country (Ariyabandu, 2005). The frequency and severity of catastrophic events such as floods have intensified, disproportionately affecting the most impoverished populations, particularly women, due to inequitable gender dynamics in rural undeveloped societies (Memon et al., 2018). These catastrophes are natural phenomena; yet the rising frequency of disasters and their severe effects on specific communities, such as women, the elderly, and individuals with disabilities, are exacerbated by social actions.

It is critical to identify the people who are most vulnerable to fully comprehend the causes of this vulnerability, as well as those who have a limited ability to adapt (Naz et al., 2017). Women are considered the most susceptible to flooding due to various factors, including psychological disposition, physical attributes, and socio-cultural issues. Men and women possess distinct capacities and vulnerabilities concerning information dissemination, attributable to their differing roles and circumstances. Mileti and Sorensen (1990) assert that individuals with literacy, numerical proficiency, and general skills like abstract reasoning gained through formal education are more adept at understanding and interpreting risk information, including weather forecasts and warning messages. Due to low literacy or illiteracy, women struggle to understand the warning message of an imminent threat which increases their vulnerability. Consequently, they experience the impacts of disasters differently (Hamid, 1992). It is recognized that the effects of climate change extend beyond geographical, religious, caste, creed, and gender boundaries. However, it is crucial to understand that different stakeholders in various regions may possess unique perspectives on these environmental calamities (Yadav & Lal, 2017).

Gender has a crucial role in adaptive ability, since it is shaped by gender norms and the gender-based division of work. This separation results in gender-specific opportunities for livelihoods, along with distinct gender perceptions of risk and the ensuing environmental consequences (Phan et al., 2019). Eastin (2018) contends that gendered divisions of domestic labor, including child-rearing, house-keeping, elder care, cooking, and water collecting, are widespread in developing nations. These divisions disproportionately subject women to the effects of climate change, as women prioritize their obligations before seeking assistance or protection. The vulnerability of women intensifies when swift evacuation during floods is obstructed, as they must procure vital survival resources and significant household items while safeguarding their children and other family members, as noted in Afghanistan and Pakistan (Hamidazada et al., 2019; Memon et al., 2018). Individuals of diverse genders worldwide demonstrate unique strategies of adaptation in reaction to the effects of climate change and natural calamities, including floods. Impoverished wives are regarded as an economic burden following the disaster (UNDP, 2008). For post-flood disaster, women are more inclined to depend on their own economic resources compared to the period preceding the disaster (UNISDR, 2007).

Recently, the role of women in sustainable disaster management has garnered

significant attention from relevant scientists for an in-depth examination of women's contributions across the disaster management cycles. Women in Bangladesh are disproportionately impacted by recurrent flooding occurrences, which adversely affect them. This prompted us to conduct a thorough search for gender vulnerability and gender-specific coping initiatives related to disaster risk reduction and climate change adaptation particularly during flood.

## 2. Literature Review

Natural disasters, which provide a global concern due to their extensive and severe repercussions, can be distinguished from both hazards and risks. Cutter (2003) asserts that the manifestation of a disaster can be attributed to the presence of risk, hence posing significant challenges in the precise prediction of geographical hazards. Natural disasters are frequently characterized as events that lie outside human control. Understanding the risk and disaster scenarios, together with the vulnerability scenario, is crucial. Natural calamities do not invariably lead to disastrous outcomes. A flood, as a natural disaster, can have dire repercussions for a group with restricted access to resources, diminished social status, and limited social networks, such as women (Banford & Froude, 2015). Research indicates that, worldwide, although natural hazards pose a risk to all individuals, their effects are frequently associated with gender (Asian Development Bank, 2014). Various research has repeatedly demonstrated that, in most worldwide disasters, females experience a greater impact than males (Abid et al., 2018; Eastin, 2018; Hamidazada et al., 2019; Naz & Saqib, 2021). This tendency endures globally, as women encounter heightened vulnerability stemming from social inequality and supplementary obstacles.

The presence of socially constructed gender roles and corresponding household responsibilities, referred to as reproductive work, has rendered women disproportionately vulnerable relative to men (Marron et al., 2020; Eastin, 2018; Hamidazada et al., 2019; Naz & Saqib, 2021; Masson et al., 2016). This susceptibility, along with restricted mobility for women, presents a considerable risk to their capacity to adapt and cope with challenges. Bangladesh's vulnerability to flooding is worsened by its unstable socioeconomic situation and little capacity for adaptation strategies. The flood risk for individuals in India and Pakistan is affected by several socio-economic and demographic factors, such as age, gender, education, income, construction materials of their residences, flood experience, and social networks (Shah et al., 2020). Women perceive a moral and social obligation to prioritize the care of children and families more than males, a perspective shaped by cultural indoctrination during their formative years. Following natural catastrophes, women are crucial in aiding the survival and recovery of other at-risk populations, including children and the elderly. This presents a considerable difficulty for policymakers and disaster management service providers in recognizing and addressing the distinct difficulties and demands confronting women. Men frequently seek relief or employment during flood circumstances, hence exacerbating the challenge of

addressing women's issues (Ahmed, 2019).

Consequently, they experience the impact of disasters in distinct ways. In numerous circumstances, men possess superior connectivity to contemporary facilities and early warning systems, attributable to their mobility in public spaces and access to diverse communication channels, including radio, television, informal community networks, and interactions with officials. Women possess restricted access to information and knowledge concerning disaster risks within their communities due to their predominant engagement in domestic responsibilities, resulting in diminished mobility and a reduced comprehension of hazards (Hamid, 1992). Women's perspectives are seldom acknowledged in risk reduction policy and decision-making processes, necessitating attention to their issues (Ahmed, 2019).

Women in rural communities of India and Nigeria are particularly vulnerable to environmental degradation and natural disasters due to their economic disadvantage (Onwutuebe, 2019; Dankelman, 2002). The relationship between increased poverty levels and a greater vulnerability to disasters is clear. Individuals facing poverty are particularly vulnerable and acutely sensitive to the effects of disasters due to restricted options for housing and nourishment. Generally, women possess less wealth than males (True, 2013). The achievement of economic independence is essential for advancing women's empowerment, as empowered women have increased autonomy in decision-making and self-expression. Individuals have increased agency in society, allowing them to exert greater decision-making authority. Moreover, they demonstrate enhanced adaptability and reduced susceptibility to vulnerability. The opposite scenario has divergent results, since the repercussions of a disaster intensify vulnerability. It is impossible to overestimate the importance of adaptation in the context of disaster management. In its most recent report on keeping global warming to 1.5 degrees Celsius, the IPCC stressed the significance of strengthening adaptation and decreasing vulnerability to floods (IPCC, 2018).

The process of adaptation in human systems seeks to both capitalize on favorable conditions and lessen or avoid unfavorable outcomes. Some natural systems may benefit from human interventions to help adapt to predicted climate change and its effects (IPCC, 2014). The ability of the vulnerable community to adapt is the main factor influencing the success of adaptation. The ability of a system to adapt to climate change (including climate variability and extremes) to mitigate possible harm, seize opportunities, or deal with the fallout is known as adaptive capacity (IPCC, TAR, 2001: p. 365). Socioeconomic status plays a major role in determining people's adaptive capacities and strategies. Inequalities in resource allocation and access can hinder women's ability to improve their adaptations to climate change as independent actors, leading to different adaptations among them (Nightingale, 2009). Ahmed and Fajber (2009) examined the gendered nature of adaptations in their study on climate variability adaptation in Gujarat, India. They also underlined how crucial it is that practitioners and policymakers

understand how climate crises affect marginalized people, especially poor and socially excluded men and women. Gender-specific vulnerabilities must be better understood to implement gender adaptation initiatives, and significant financial, technological, and humanitarian resources must be committed to addressing gender-related issues.

Men's and women's capacity for adaptation is frequently viewed differently. Although scholars studying climate change sensitivity and adaptation acknowledge the importance of indigenous knowledge in adaptation and coping with climate change susceptibility, women have a far greater potential for adaptation or the development of adaptation methods using their indigenous knowledge. Because of their complex interactions with natural resources and dependence on natural reserves, women have a wealth of local knowledge. For instance, women are responsible for the daily tasks of gathering and conserving water and making sure that their families have access to clean drinking water (Ajani et al., 2013). Women in Bangladeshi communities devastated by floods try to improve their coping mechanisms by using traditional knowledge. One such custom is building a bamboo structure in a certain area of their homes called a *macha* or *pataton*, or elevated platform. Its function is to protect household goods and food, fuel, and other commodities from the damaging impacts of flooding (Paul & Routray, 2010). The role of women as change agents is important. People must be fully and effectively involved to ensure the effectiveness and long-term sustainability of efforts to adapt to climate change and reduce the risks that come with it.

### 3. Methodology

A qualitative approach was taken to carry out research tasks and obtain a more thorough understanding of the social dynamics of rural communities that are vulnerable to flooding. Qualitative researchers look for workable answers to problems in the actual world. The qualitative approach provides a more comprehensive understanding of the social phenomenon by examining the multiple interpretations of individually created social phenomena. Qualitative research can offer a difficult-to-understand insight (Kandel, 2020).

Women in Bangladesh try to cope with the adverse situation posed by the flood by using their indigenous knowledge. To know their viewpoint qualitative methodology can provide valid information. Using a qualitative methodology, the study gathered data using textual information and narratives. Questions concerning experience, importance, and understanding from the viewpoint of the potential informant are occasionally addressed using qualitative methods (Hammarberg et al., 2016).

#### A) Data Collection

Sariakandi Upazilla was chosen as the study area of this research. Sariakandi is one of the most flood-prone areas of northern Bangladesh. Research frequently avoided Sariakandi since, aside from the coastline region, it was the most flood- and river-erosion-affected location in North Bangladesh. Bhelabari, Bohail, Cha-

luabari, Chandanbaisha, Fulbari, Hat Sherpur, Kamalpur, Karnibari, Kazla, Kutubpur, Narchi, and Sariakandi were the names of the twelve unions of Sariakandi Upazilla. Narchi, Kutubpur, and Chondonbaisha were selected as the best data sources to achieve the research's objective. Purposefully, data gathering units were selected. Prior to selecting the data collecting area, the researcher visited the study location and gathered information from various residents, government officials, and relevant authorities to choose the appropriate area for data collection. Emphasize that the area is more adversely affected by flooding than other regions. Focus group discussions and in-depth interviews were the two methods employed to acquire qualitative data from the study region. For in-depth interviews, thirty flood-affected women from three Unions were specifically selected.

The following criteria were used to choose the informants for an in-depth interview.

1) Female, 2. Between the ages of 15 and 50, and 3. Affected by floods.

All informants were housewives with little social power. In-depth interviews using an open-ended interview schedule were used to gather the primary data. This study involved a total of six focus group discussions. The selection criteria were like in-depth interviews, with the exception that the study included both genders. For FGD only one male and one female group participated in each Union's. There were at least six to eight people in each FGD.

Purposive sampling was used to select informants for both in-depth interviews and focus group discussions. Since it was expected that most interviewees were either illiterate or just able to write their names, the interview schedule was presented through in-depth interviews. Despite being an expensive and time-consuming method of gathering data, in-depth interviews help the researcher efficiently extract the relevant information. It also allowed the interviewer to ensure that the interviewee fully comprehended the study questions and gave more intelligent responses.

In addition, Focus Group Discussions were held with the women who had been affected by the flood as well as their counterparts. It was important to do these focus group discussions to get the males perspective on the matter and to learn about their attitudes about women, as patriarchy is a major barrier to women's empowerment and is linked to social and cultural conceptions of a society. Focus groups are useful for gaining a thorough grasp of participants' experiences and values as well as for learning about common beliefs and the meanings that support them.

#### B) Data Analysis

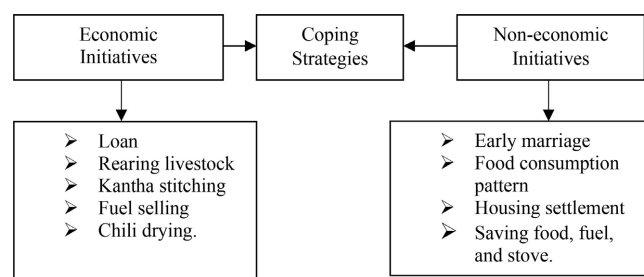
A thematic approach was used to analyze the data. An outline was created using Creswell's data analysis spiral. Following a rigorous data collection process, the gathered field data was meticulously organized and then translated with the assistance of a qualified translator. This process began with the meticulous compilation of relevant papers and field notes. Focus groups and in-depth interviews were used to augment field notes. Transcribed data were read and reread to fully com-

prehend women's experiences and barriers during floods to cope with the adverse situation posed by floods. The interview transcripts were then processed for editing, rechecking, and verification to gain an understanding of their contents. The methodical organizing and arrangement of different types of data, such as transcripts and images, for analysis is part of the data analysis process in qualitative research. This entails coding and condensing the codes to refine the data into themes, after which the data is represented in tables, figures, or a discussion (Creswell, 2007). Following the research question, the raw data was manually coded. These codes help researchers avoid circumstances where they may otherwise impose their preconceived frames and ideas on the data by directly matching the terms used by participants. After the codes were categorized and arranged, themes were produced. These produced themes were used to present the data.

#### 4. Result

Bangladesh is vulnerable to flooding due to its unique location on the South Asian subcontinent and its tropical-monsoon climate. Their means of survival are either directly or indirectly dependent on the land because a significant section of the population lives in rural areas. As a result, flooding endangers people's lives and means of survival. Over the years, Bangladesh has made great strides toward strengthening its capacity for climate change adaptation and resilience. This has been accomplished by developing and putting into effect the relevant laws and regulations that promote sustainable climate change (Ministry of Environment, Forest, and Climate Change, 2022). Since women are the most vulnerable, it is crucial to ensure that they participate in decision-making to impact planning, policy, and the ranking of local adaptation needs. It should also be a priority to improve their talents. Women's capability development is hampered by the patriarchal sociocultural environment, which also makes them less adaptive and more susceptible to flooding. Still women of flood affected rural area apply some sort of coping strategy employing their own local knowledge gained from their experience.

Every informant was asked about the challenges they faced during flood period for being a female and about the coping techniques they use for survival. The collected data has been used to develop many themes which are displayed in **Figure 1**.



**Figure 1.** Coping strategies of the informants.

Several problems, including social, institutional, and economic ones, prevented the women of Sariakandi from becoming more adaptive. Nevertheless, to survive and support themselves, the women tried to deal with the disastrous situation by applying their scant local knowledge and participating in economic endeavors. The key to lowering vulnerability, taking the right action for coping, and boosting adaptive capability is economic power. As seen in the next sections, the women's ability to adjust was progressively diminished since they lacked the financial means to take adaptive initiative.

- Loan

In anticipation of the day when their husbands would be unemployed due to flooding, the impoverished ladies made it a point to save some money during the year. They nevertheless survived on a pitiful salary that was insufficient to cover their basic needs daily. Although it was difficult for them to save money for the future, they tried to do so by cutting back on their daily spending. According to the informants, when their savings ran out during the disaster, they turned to loans for financial support.

To live or deal with the circumstances of the flood, informants typically took out loans. Food was the primary purchase made with the funds because they needed more than relief supplies to last the duration. The researcher was curious as to why they were taking out the loan. One participant focuses on the purpose and application of borrowed funds in one of the interviews:

“My husband works on other's land as a day labor. By using his everyday income, he manages the family expenses. But during the flood, all the land went underwater, and he became jobless. At that time, we had to depend on loans to meet our daily needs, mainly food. However, we get some relief goods that are not sufficient for us (In-depth interview: Kutubpur 10/02/2022).”

For the informants, the loan application process is difficult. The informants first chose to borrow money from a wealthy family, then from relatives, then from NGOs, and last from a *mahajon*, a local money lender. They would only look to non-governmental groups for a loan after all other avenues had been explored. However, people are not required to pay interest if they choose to obtain a personal loan from family members. On the other hand, they must pay interest at a predetermined rate determined by the *mahajon* when they borrow money from them. However, people may be given an extension on the loan's repayment time if they personally appeal to the *mahajon*. However, if they received a loan from a non-governmental group, they were required to pay back the money plus interest within a specified period. The beneficiary is not allowed to ask the NGO authority to take the interest rate or the repayment period into consideration in such a situation.

Ahmad (2007) claims that although microcredit programs generated a significant amount of revenue for the Microcredit Institute (MCI), the borrowers did

not profit from them. Naturally, many people who took out microloans in the end ended up accruing more debt and extending the poverty cycle. Even while many non-governmental groups use financial loans to empower women and promote self-sufficiency, men are the ones who end up benefiting from these loans. Women must, however, have a spouse or an adult son who may serve as a guarantor for the borrowed funds to be eligible for a loan. This requirement is based on the belief held by NGOs that only men are capable of repaying loans, while women are deemed incapable of doing so. One of the informants shared that:

“I borrowed 50,000 Taka from Grameen Bank and provided it to my husband, who used it to produce paddy and taro root in *adi* land (a system of sharecropping) so that we could get some money to repay the loans and save the rest for use during the flood. Due to the flood that year, we could not make a profit as cultivable land was submerged and for that, my husband went for another source of money (In-depth interview: Narchi 03/03/2022).”

It was noted that the informants came from a lower socioeconomic group and that flooding made it difficult for them to survive. They had to borrow money from various sources to deal with the problem during flood times. They are also afraid of the possibility that they won't be able to pay back the debt. However, most of the informants preferred to take out high-interest loans from the *mahajon* to have the flexibility to return the money because they had no other way to cope. Additionally, it was discovered that the informants' husbands were using the loans they had taken out.

- Rearing livestock

In the field, it was observed that all the families were involved in raising cattle or other livestock. One of the most prevalent and well-liked economic coping strategies employed by women has been found to be the rearing of cattle. Every home has a few chickens, ducks, a goat, and a cow.

A sizable percentage of the interviewees stated that the animals they bought were for rearing, while others were raised as *adi*, which is a method of sharing the benefits of domestic animals, with restrictions. *Adi* was used to refer to both land and animals in those regions. According to the terms of the contract, the person who cared for a single animal until it was able to breed would be entitled to one calf once the animal had given birth. It meant that a goat's subsequent breeding would result in one calf for the person who nurtured it. The women in this area had demonstrated a strong preference for this method because they could sell their share and save some extra money to use during the hard times of the flooding period. Additionally, an informant revealed that during the difficult times, ducks and chickens were sold at a low price to prevent the spread of water-borne diseases and to earn money. Normally, a single goat or sheep could bear more than one calf at a time. If a cow gave birth to a calf, the person who oversaw the cow's care during the year would receive the first calf.

“In one interview one informant stated: I have two cows; one is mine and the

other is Adi. Taking care of the cow is my responsibility, just like all the other household chores. I receive some money from it each year, but I am unable to keep it. Because I must spend the money on our food and other purchases during floods when my husband is unable to work (In-depth interview: Chondonbaisha 27/3/2022)”.

The informants visited the bandh or shelter facility during the floods. Because there was water everywhere, the locations were unsuitable for keeping domestic animals. To pay for their daily expenditures during the flood, they used to sell the animals before it happened. To earn more money, they occasionally succeeded in keeping the animals for longer.

- Kantha stitching

In Bangladesh’s rural areas, kantha (blanket) stitching is a common craft and a source of income for local women. Women must discover alternative sources of revenue because they are not allowed to work outside the home; kantha stitching is one of the most popular. A kantha was made of cotton fabric and resembles a blanket. Three or four pieces of cotton fabric and thread would be needed for the kantha, depending on its size. In an interview with a respondent, it came out that:

“I stitch kantha to earn an income so that can use it during the flood. But most of the time my husband takes the money from me when he needs it. He thinks that it’s his right to take the decision about for what purpose the money should spend (In-depth interview: Chondonbaisha 23/3/2022).”

Because it doesn’t require any special training and they could make some money at it, most women tried stitching kantha. As a result, Sariakandi women were involved in the custom of producing kantha upon request for any affluent houses in return for cash. They didn’t, however, manufacture them commercially. As a token of respect, the family in Bangladesh customarily gives the husband’s parents kantha when a woman marries him. Those with exceptional aptitude who could make flowers or designs out of kantha would receive more taka than the typical person.

According to the information provided by one of the FGD informants:

“It takes at least one month to finish a kantha, and if it has a design, it takes even longer. We earned between 500 and 700 takas for a standard kantha, and between 1000 and 1200 taka (BDT) for a flower or design. We set the money aside so that we would have it available to use in the event of a flood because during that period our husbands were out of the home (FGD: Chondonbaisha 25/3/2022).”

In addition to being a source of revenue for women, kantha is a part of the society’s traditional culture. Women could use the money to lessen the negative effects of flood catastrophes. Due to their day jobs, their husbands were unable to save money, which they generally used for daily expenses. Women who worked as kantha stitchers attempted to conserve their earnings for use during the floods.

- Fuel selling

The impoverished ladies of Sariakandi sold dried tree branches and dried cow dung to raise money for emergency fuel. Since Sariakandi is a riverine area, a significant amount of char land appears in the river during the dry season. For a little time, people grow crops on this ground. To sell them later, the local ladies who lived near to the bandh collected dead tree branches off the *char* area and stored them. Conversely, as most of the informants were involved in animal breeding, they collected cow dung every day, shaped it into the shapes they wanted allowed it to dry, and then sold it for profit. When the food crisis worsened during the flood, they could use the money to provide food for their family members. Every house featured a *macha*, where the occupants kept cow dung and tree branches for later use.

One of the informants described the positive side of fuel selling as a source of income:

“Cow dung selling is a good source of income for us. Because we can use it as fuel in normal times and the rest of it can be sold to earn money which can be used during flood emergencies which helps my husband in running the expenses (In-depth interview: Narchi 10/03/2022).”

Another informant from Chondonbaisha shared that:

“I have no cow of my own but every day from the char land I collect cow dung, bring them home, and make fuel from that, dry it for selling to others to get money. I do not have a husband; my son does not take care of me. In flood time I can use the money to buy my necessary things and food which I get by selling fuel (In-depth interview: Chondonbaisha 05/04/2022).”

Women sell fuel as a means of managing with their financial situation. As previously indicated, cow dung is easily obtained because every home has domesticated animals, and women can readily create fuel from it. The remainder can be sold to other people, and they store it for later use in the event of a flood. During the flood, they can use the money they make from selling fuel in an emergency.

- Chili drying

Chili grows well in sandy soils, such as those associated with char land, and can be collected more quickly than other crops. A sizable amount of land in Sariakandi Char was used for chili growing, which resulted in the construction of enterprises for chili processing. These factories first gathered the chilies from the farmers, after which they were dried, sorted, and processed. They stretch the chilies out on a *bandh* for the whole day to dry them, and then they put them away at the end of the day so they may dry overnight.

In this stage of the procedure, women oversaw sorting the chilies, keeping an eye on them during the day, and helping to bag them each evening. The next morning, they carried out the same procedure once more and left the chilies on the bandh to dry completely. In the absence of a male in their household, most of the women who worked here on a regular basis were either widows or divorced

women, therefore their mobility was unrestricted. One of the informants was questioned by the researcher one evening about why they were working in the *bandh* at such a late hour.

One informant discussed her reason for working late hours in the *bandh*:

“My husband divorced me and married to another woman. I have a daughter. She stayed at home and took care of my goats (she had two goats). There is no one to bear our expenses. I work in the local chili factory. Every day I need to spread the chili beside the *bandh* in the morning and wait for the whole day to check whether it is ok. Then in the evening the chilis gather again for the next morning. The money I get from the factory is used to bear our daily necessities and save some money for use during floods. Because of flooding time, I must work less (In-depth interview: Narchi 23/02/2022).”

As an economic coping strategy, the women in the study area attempted to make money by performing various jobs around the house. Since widowed or divorced women oversaw providing for their own daily needs and had less restrictions than other women in the area, they participated in outdoor activities like chili drying.

- Early marriage

Promoting early marriage as a flood-coping strategy is one of the coping strategies in Sariakandi. While women are not held accountable for early marriage, they suffer the most from its effects: parents may decide to marry off their daughters at a young age to protect themselves during floods, or they may view daughters as a burden, which restricts their freedom of choice. Early marriages, however, may make it more difficult to obtain resources like training, education, and employment possibilities. Early marriages are used as a coping mechanism in communities affected by flooding and greatly increase women’s economic vulnerability.

Based on field data, the researchers determined that poverty, instability, cultural attitude, societal preconceptions, lack of awareness, lack of education, and coping mechanisms during floods are the main causes of child marriages.

In one interview, one informant explained:

“I arranged for my daughter’s marriage when she was 13 to get a good husband for her. Everyone believes that if she becomes more adult then her beauty will be lost. What will we do if our looks are lost? In flood time I need to take care of my daughter to ensure her safety, which creates extra pressure on our family. Moreover, my husband goes for alternative work during the flood. Mostly try to arrange our daughter’s marriage before the flood so that we can put our attention on surviving (In-depth interview: Narchi 6/3/2022).”

In Sariakandi, the informants were forced to hide behind a *bandh*, where they were harassed by either random bystanders or their neighbors. Schools and other institutions were used as shelter facilities during floods in this area as well as the nearby ones. Because they were afraid that their social status would suffer if they

told others about the incidents of sexual harassment at the bandh or refuge center, they chose not to disclose them.

Supporting this one informant expressed:

“When a girl becomes 10 - 12 years old, there is a lot of social pressure to marry her off as soon as possible. They show that having a girl child adds extra responsibility to the household. Every year we have a flood and if something happens to her, we cannot arrange marriage for her later. As flooding situations, girls need extra protection. They need to get married as quickly as is humanly possible (In-depth interview: Chondonbaisha 23/3/2022).”

They also thought that it would be difficult to find a suitable marriage partner for the single female in such a situation. Because of this, parents would want their daughters to get married before the flood.

- Food consumption pattern

Poor women frequently cut back on their food intake beyond what is necessary for survival during natural disasters, such as floods in Bangladesh. Significant socioeconomic and gender-based differences exist in the patterns of food intake, including frequency, quantity, and quality of food consumed, in Bangladeshi rural communities like Sariakandi. In this area, women’s acceptance of the reality that males were given better food in larger quantities is seen as quite normal. People lose their employment because of the flood scenario, and getting food becomes extremely tough. Mothers usually take on the duty of providing food for their families under such circumstances, utilizing whatever means were required. Historically, women have overseen gathering resources and providing meals.

Because women are expected to work hard during floods, the patriarchal system puts them at risk. For example, if a flood causes a man to lose his job, he will always assign his wife to take care of domestic duties like gathering rice or requesting loans. The ladies in this position believe that they can survive despite the challenges if they eat less since it will allow them to prepare food for others for a longer period.

Furthermore, the social environments in which women grew up perpetuated the ideas that males should eat first and women should prioritize taking care of others before thinking about themselves. Despite advancements brought about by educational ideas, these conventional viewpoints still come out during times of crisis.

During the FGD with women, one of the informants voiced her opinions as such:

“In normal times, we cannot have food before other members of the household because we are women, and it is part of the traditional laws of the community. When there is a flood and a food shortage, we must go through the day just partially fed or unfed since we must share our food with the other members of our family. We consume less food of a lower quality than other people do so that we can store it for a longer period (FGD: Kutubpur

4/2/2022).”

The researcher learned from locals that women’s reduced food intake has become a cultural norm, along with coping mechanisms. Women consume less food than males do throughout the year, not only during the flood. It is said that because women stay inside the house and males must work hard outside, they require less nourishment than men.

- Housing settlement

In Sariakandi, residents utilize a particular pattern of home design as a coping mechanism. Bamboo, thin sheets of stainless steel (referred to as tin locally), and some woods are used to construct these homes. Because they are lightweight and portable during floods, they make use of these materials. People attempt to take their house with them to live in during the flood season to safeguard the women in the family, their possessions, and the household animals because they must travel to the bandh for an extended length of time.

Women regularly collaborate with their spouses to prepare the homes. The women move the building supplies and prepare the site for the construction of dwellings. To prevent erosion, they placed sandbags next to the house. This type of house construction is a coping mechanism, but not everyone can afford to build a home out of tin; instead, they construct their living area out of bamboo and hay.

One informant shared how she helped her husband to build their house:

“I helped my husband to make and to transfer our house. I prepared the ground, dig the soil to put the bamboo in the ground, carried the tin, put the sandbag around the ground, and held the tin when my husband bound them with bamboo. Also, during the flood, I helped to an untied different part of the house to transfer in the bandh (In-depth interview: Chondonbaisha 27/03/2022).”

Women regularly collaborate with their spouses to prepare the homes. The women move the building supplies and prepare the site for the construction of dwellings. To prevent erosion, they placed sandbags next to the house. This type of house construction is a coping mechanism, but not everyone can afford to build a home out of tin; instead, they construct their living area out of bamboo and hay.

- Saving food, fuel, and stove

One of the most significant coping strategies used by women in Sariakandi Upazilla was storing food, fuel, and stoves for use during floods. Because they were forced to stay in the area and cope with the situation, women, along with their children and elderly family members, were particularly vulnerable and the worst victims. Due to the high rates of poverty and hunger in the area, the ladies were likely to face severe challenges during floods. To address the obstacles they encounter, the women have devised innovative solutions.

To better handle the sudden destruction caused by the flood, women worked hard throughout the year to conserve some food, mostly dry goods, to utilize as nourishment during the flood season. Every day, they accumulate a supply of

musty *chal*, or fist rice. They keep *chira* (dry-pressed rice), flour, and puffed rice in addition to rice. Women's limited mobility and Purdah customs prevented them from collecting relief supplies.

In one interview, a woman shared:

"I saved some dry food like *chira* (pressed rice), and *muri* (puffed rice) before the flood, because during the flood, with water everywhere, we cannot cook every day. But this food can be eaten without cooking. Relief is not available, so for the emergency, it helps us to live (In-depth interview: Narchi 27/2/2022)."

The dish must be cooked using dry fuel. Women store gasoline in the *macha* in anticipation of the flood. Since they wouldn't be able to cook without fuel during the flood, this was essential. They stored the tree's dried-out branches and fuel made from cow dung. To graze their cows, those without animals had to pick up cow excrement from the char area where other people kept their cows during the day. They were found to store fuel in the *macha*. The researcher saw that dried cow dung was placed in front of each home. After giving it shape in the morning, they let it dry all day.

## 5. Discussion

According to research, sociocultural norms significantly influence and play a crucial role in making women more vulnerable and less able to adjust to flood events by placing different limitations on them. The flood affected individuals uniformly. However, since men are not subjected to the socio-economic or cultural barriers and restrictions that women face, their experiences differ significantly from those of women. A prevalent patriarchal cultural framework that imposes strict rules for women to abide by characterizes the studied location. The main system responsible for these problems is the patriarchal cultural paradigm, which is defined by male dominance and accountability for women's subordination. According to the study, several respondents attributed their vulnerability to the flood to the difficulties provided by a patriarchal culture. People's capacity to adapt to floods declines as their vulnerability increases. Women tend to cope with the adverse situation as their survival techniques.

The dominant position of women and nature have been compared throughout history. This can be linked to the patriarchal framework's cultural roots, which uphold gender subordination and the natural world's dominance. According to the argument, women may actively safeguard the environment and empower themselves if the oppression of women or nature is lessened or eliminated. They will build their coping skills once they are empowered.

In addition to making women more vulnerable to different types of violence during floods, cultural context also made it more difficult for them to build capacity and obtain the resources and skills they needed. According to earlier research by Bennett (1983), Hamidazada et al. (2019), and Onwutuebe (2019), pa-

triarchy plays a major role in maintaining the application of discriminatory gender norms that restrict women's prospects for advancement, much like in Sariakandi. In Nepal, Nigeria, and Afghanistan situation of women are quite like Bangladesh.

Women in this area are restricted in their mobility, required to wear purdah in all circumstances, including emergencies, have limited access to education, are prohibited from working outdoors, and are not allowed to participate in decision-making. Similar findings were demonstrated by Islam et al. (2009), who found that Pakistani women are more susceptible to the effects of climate change than their male counterparts. This, in turn, limits the effectiveness of their response and adaptation when disasters occur because of gender disparities in income, education, and access to resources, as well as human rights violations and unequal access to social and physical goods.

Socio-economic variables significantly influenced the coping mechanisms employed by women in Sariakandi. Mobility restrictions and strict adherence to purdah prevent them from working outside. Consequently, they opt to work within the home to support their families, as external employment is socially restricted for women, particularly in Sariakandi, especially among poorer families. Due to gender disparities in income, education, and access to resources, alongside human rights violations and unequal access to social and physical goods, individuals are unable to make decisions in various spheres, including flood evacuation decisions.

Since elements that increase susceptibility can also negatively affect one's capacity for adaptability, the concepts of vulnerability and adaptation are inextricably intertwined. More adaptive capacity is demonstrated by people with lower vulnerability than by those with higher vulnerability. It is evident that the ability of women affected by the flood has been coping rather than adapting. The people in question do not have access to a variety of resources, knowledge, educational opportunities, decision-making skills, or freedom of movement. We have already discussed the reasons why women in Sariakandi lack the capacities and the ways in which societal influences affect their lives. Power relations and women's responsibilities in several domains influence their capacity to make choices and adapt to the consequences of climate change (Dankelman, 2002).

In addition to their traditional duty of self-sustenance, the women informants of Sariakandi work in a variety of vocations because of their poverty and vulnerability to flooding. This comprehensive strategy complies with the dominant sociocultural norms of the area while acting as a preventative step to lessen the negative impacts of flooding.

Some of the ways flood-affected women are dealing with the aftermath of the disaster include adjusting their food consumption, such as consuming less food to feed their family members, trying to save food, fuel fodder, and other resources for use in the event of future flooding, trying to save some money, or taking out loans from people or organizations. The women try to pursue a range of revenue-generating pursuits, including the breeding and selling of animals, kantha stitch-

ing, chili drying, and fuel sales. Since this behavior complies with accepted societal norms, it is acceptable. It has been indicated before that coping is useful for short-term survival, however, it should be noted that frequent coping makes communities more susceptible to risk. But because women cannot adapt, they focus instead on simply maintaining their survival.

Like the study region, a community with a higher level of illiteracy also has a higher percentage of child marriage, which increases the rate of maternal and newborn mortality and puts children at greater risk. A girl who marries young becomes a child's mother, which can be detrimental to her. Furthermore, more girls are dropping out of school, which raises the number of illiterate and unskilled individuals. People are vulnerable to danger in the final stages of the natural extreme because they do not have the capacity to adjust. Nonetheless, countries with patriarchal cultural norms, like the one under study, favor making women reliant on them in every way. Additionally, they favor early marriage, which eventually weakens their abilities and makes them more vulnerable. It was discovered that child marriage increases vulnerability and serves as a coping mechanism. Women are unable to pursue alternate livelihood options such as electronic assembly, motorcycle maintenance, and fabric design which are available training in the study area for women due to obstacles, despite these being potential adaptation initiatives during floods. However, lacking the requisite adaptive capability, they choose to manage the adverse circumstances, so aiding both themselves and their dependent family members in survival. They utilize their indigenous wisdom to adapt and, via this expertise, cultivate their resilience under adverse circumstances.

Improving women's capacity for adaptation is essential to reducing vulnerability. Governments, non-governmental organizations (NGOs), and other groups must prioritize enhancing women's capacity for autonomous adaptation and response to achieve this. By creating favorable circumstances that promote adaptability, this can be accomplished. It will be ensured that women are included in decision-making processes to impact planning, policies, and the ranking of local adaptation needs. To promote adaptation, national governments must identify areas of weakness and set up standards for gauging improved adaptability. These findings emphasize how important it is to approach catastrophe research from a gender perspective, especially in a country like Bangladesh where patriarchal cultural norms are deeply embedded. The findings of the study can be generalized to other regions where populations reside near rivers, as this scenario is common in all riverine areas of Bangladesh.

## **6. Conclusion**

In Bangladesh, flooding happens frequently. Women are the most vulnerable group among the vulnerable population. Women should place a higher priority on adaptability because of their fragility to reduce their susceptibility and increase their developmental potential. However, because of sociocultural restrictions created by a patriarchal society, women are unable to engage in adaptive activities

and improve their capacity. The government of Bangladesh has attempted to increase women's participation in disaster management and their ability to be reintegrated into society, but numerous obstacles have made these attempts ineffectual. The riparian area where this study was carried out had been affected by flooding. The literature that is currently available indicates that research has primarily focused on coastal communities. It would be more beneficial to look at the comparative scenario of women's vulnerability and adaptation if both areas are covered in a study. The government and NGOs must give priority to removing the societal barriers that prevent women from accessing chances to improve their flexibility and advanced capacities. Women become less vulnerable as their level of adaptation rises. This study was carried out in a riparian area that had experienced flooding.

### Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

### References

- Abid, Z., Abid, M., Zafar, Q., & Mehmood, S. (2018). Detrimental Effects of Climate Change on Women. *Earth Systems and Environment*, 2, 537-551. <https://doi.org/10.1007/s41748-018-0063-9>
- Ahmad, Q. K. (2007). *Socio-Economic and Indebtedness-Related Impact of Micro-Credit in Bangladesh*. The University Press Limited (UPL).
- Ahmed, S. (2019). *A Gender-Sensitive Policy Framework for Disaster Management in Bangladesh*. Ph.D. Thesis, Victoria University.
- Ahmed, S., & Fajber, E. (2009). Engendering Adaptation to Climate Variability in Gujarat, India. *Gender & Development*, 17, 33-50. <https://doi.org/10.1080/13552070802696896>
- Ajani, E., Onwubuya, E., & Mgbenka, R. (2013). Approaches to Economic Empowerment of Rural Women for Climate Change Mitigation and Adaptation: Implications for Policy. *Journal of Agricultural Extension*, 17, 23-34. <https://doi.org/10.4314/jae.v17i1.3>
- Ariyabandu, M. (2005). Addressing Gender Issues in Humanitarian Practice: Tsunami Recovery. In: UNISDR (Ed.), *Special Issue for International Day for Disaster Risk Reduction* (pp. 1-15). UNISDR.
- Asian Development Bank (2014). *Gender-Inclusive Disaster Risk Management (Tip Sheet)*. <https://www.adb.org/sites/default/files/institutional-document/34130/files/gender-inclusive-disaster-risk-management-0.pdf>
- Banford, A., & Froude, C. K. (2015). Ecofeminism and Natural Disasters: Sri Lankan Women Post-Tsunami. *Journal of International Women's Studies*, 16, 170-187. <http://vc.bridgew.edu/jiws/vol16/iss2/11>
- Bennett, L. (1983). *Dangerous Wives and Sacred Daughters: Social and Symbolic Roles of High-Caste Women in Nepal*. California University Press.
- Creswell, J. W. (2007). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches* (2nd Ed.). SAGE Publications Ltd.
- Cutter, S. L. (2003). GI Science, Disasters, and Emergency Management. *Transactions in GIS*, 7, 439-446. <https://doi.org/10.1111/1467-9671.00157>
- Dankelman, I. (2002). Climate Change: Learning from Gender Analysis and Women's Ex-

- periences of Organising for Sustainable Development. *Gender & Development*, 10, 21-29. <https://doi.org/10.1080/13552070215899>
- Eastin, J. (2018). Climate Change and Gender Equality in Developing States. *World Development*, 107, 289-305. <https://doi.org/10.1016/j.worlddev.2018.02.021>
- Hamid, S. (1992). Female-Headed Households. In Z. Rahman, & M. Hossain (Eds.), *Rethinking Rural Poverty: A Case for Bangladesh*, Institute of Development Studies, Dhaka, 118-130.
- Hamidazada, M., Cruz, A. M., & Yokomatsu, M. (2019). Vulnerability Factors of Afghan Rural Women to Disasters. *International Journal of Disaster Risk Science*, 10, 573-590. <https://doi.org/10.1007/s13753-019-00227-z>
- Hammarberg, K., Kirkman, M., & de Lacey, S. (2016). Qualitative Research Methods: When to Use Them and How to Judge Them. *Human Reproduction*, 31, 498-501. <https://doi.org/10.1093/humrep/dev334>
- He, J. (2015). China's INDC and Non-Fossil Energy Development. *Advances in Climate Change Research*, 6, 210-215. <https://doi.org/10.1016/j.accre.2015.11.007>
- IPCC (2001). *Climate Change 2001: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change*. The Press of the University of Cambridge. <https://www.ipcc.ch/report/ar3/wg2/>
- IPCC (2014). *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.
- IPCC (2018). Summary for Policymakers. In: V. Masson-Delmotte, P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P. R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, & T. Waterfield (Eds.), *Global Warming of 1.5°C* (pp. 3-24). Cambridge University Press. <https://doi.org/10.1017/9781009157940.001>
- Islam, S. U., Rehman, N., & Sheikh, M. M. (2009). Future Change in the Frequency of Warm and Cold Spells over Pakistan Simulated by the PRECIS Regional Climate Model. *Climatic Change*, 94, 35-45. <https://doi.org/10.1007/s10584-009-9557-7>
- Kandel, B. (2020). Qualitative versus Quantitative Research. *Marsyangdi Journal*, 1, 1-5.
- Marron, M. L., Fernandez, M. D., Rodriguez, P. M., & Arias, R. G. (2020). Social Vulnerability, Gender and Disasters. the Case of Haiti in 2010. *Sustainability*, 12, Article 3574. <https://doi.org/10.3390/su12093574>
- Masson, V. L., Lim, S., Budimir, M., & Podboj, J. S. (2016). *Disasters and Violence Against Women and Girls, can Disasters Shake Social Norms and Power Relations?* Working Paper ODI, Overseas Development Institute. <https://doi.org/10.13140/RG.2.2.34574.31045>
- Memon, M. H., Aamir, N., & Ahmed, N. (2018). Climate Change and Drought: Impact of Food Insecurity on Gender Based Vulnerability in District Tharparkar. *The Pakistan Development Review*, 57, 307-321. <https://doi.org/10.30541/v57i3pp.307-321>
- Mileti, D. S., & Sorensen, J. H. (1990). *Communication of Emergency Public Warnings: A Social Science Perspective and State-of-the-Art Assessment*. No. Report ORNL-6609, Federal Emergency Management Agency.
- Ministry of Environment, Forest, and Climate Change (MoEFCC) (2022). *National Adaptation Plan of Bangladesh (2023-2050)*. Ministry of Environment, Forest and Climate Change, Government of the People's Republic of Bangladesh.
- Naz, F., & Saqib, S. E. (2021). Gender-Based Differences in Flood Vulnerability among Men

- and Women in the Char Farming Households of Bangladesh. *Natural Hazards*, 106, 655-677. <https://doi.org/10.1007/s11069-020-04482-y>
- Naz, F., Doneys, P., & Saqib, S. E. (2017). Adaptation Strategies to Floods: A Gender-Based Analysis of the Farming-Dependent Char Community in the Padma Floodplain, Bangladesh. *International Journal of Disaster Risk Reduction*, 28, 519-530. <https://doi.org/10.1016/j.ijdrr.2017.12.016>
- Nightingale, A. J. (2009). Warming up the Climate Change Debate: A Challenge to Policy Based on Adaptation. *Journal of Forest and Livelihood*, 8, 84-90.
- Onwutuebe, C. J. (2019). Patriarchy and Women Vulnerability to Adverse Climate Change in Nigeria. *Sage Open*, 9, 1-7. <https://doi.org/10.1177/2158244019825914>
- Paul, S. K., & Routray, J. K. (2010). Flood Proneness and Coping Strategies: The Experiences of Two Villages in Bangladesh. *Disasters*, 34, 489-508. <https://doi.org/10.1111/j.1467-7717.2009.01139.x>
- Phan, L. T., Jou, S. C., & Lin, J. (2019). Gender Inequality and Adaptive Capacity: The Role of Social Capital on the Impacts of Climate Change in Vietnam. *Sustainability*, 11, Article 1257. <https://doi.org/10.3390/su11051257>
- Shah, A. A., Ye, J., Shaw, R., Ullah, R., & Ali, M. (2020). Factors Affecting Flood-Induced Household Vulnerability and Health Risks in Pakistan: The Case of Khyber Pakhtunkhwa (KP) Province. *International Journal of Disaster Risk Reduction*, 42, Article 101341. <https://doi.org/10.1016/j.ijdrr.2019.101341>
- True, J. (2013). Gendered Violence in Natural Disasters: Learning from New Orleans, Haiti and Christchurch. *Aotearoa New Zealand Social Work*, 25, 78-89. <https://doi.org/10.11157/anzswj-vol25iss2id83>
- UNDP (2008). *The Human Development Report 2008 on Environment*. United Nations Development Programme.
- UNISDR (2007). *Building Disaster Resilient Communities: Good Practices and Lessons Learned*.
- Yadav, S. S., & Lal, R. (2017). Vulnerability of Women to Climate Change in Arid and Semi-Arid Regions: The Case of India and South Asia. *Journal of Arid Environments*, 149, 4-17. <https://doi.org/10.1016/j.jaridenv.2017.08.001>