

# ICH SAFEGUARDING AND DISASTER RISK MANAGEMENT IN BANGLADESH

## A STUDY ASSESSING THE POTENTIAL RISKS AND EFFECTIVENESS OF ICH IN THE DRM CONTEXT

Saifur Rashid<sup>1</sup>

### OBJECTIVE OF THE CASE STUDY

This case study aims to understand the dynamics of relationship between climate change-induced hazards and the intangible cultural heritage (ICH) practice in the Northeast Haor Basin, southwest coastal and south-central region of Bangladesh. To supplement this general objective, the present case study focuses on the following issues:

- a. What are the general cultural heritage practices in the regions?
- b. How have climate change and climatic hazards affected different ICH practices in the regions?
- c. How do different ICH practices help different disaster risk reductions?

### METHODOLOGY

The methodology of this study is anthropological in nature, with the goal of understanding the relationship between cultural heritage practices and climate change in three different ecological regions out of six climate hotspots of Bangladesh: Sunamganj Upazila in the Northwest Haor Basin, Shyamnagar Upazila in the southwest coastal region, and Tungipara and Nazirpur Upazila in the south-central Region. The study's major data-collection methods include focused ethnographic observation, key informants' interviews/in-depth interviews, and focus group discussions.

The first stage of the study has entailed observing and documenting the region's diverse living and cultural heritage practices, such as traditional knowledge and customary behaviors that are used to cope with the effects of climate change. Based on ethnographic observations, the study team have conducted in-depth interviews with residents of the selected areas during the second field trip to learn how people perceive and experience the effects of climate change on their cultural heritage practices. The focus group discussions have facilitated the researchers to get better understanding how climate change has been influencing cultural heritage practices and how communities have been responding to these impacts. To validate the data, all data gathered during the study, including recordings, images, videos, and observation notes, have been transcribed and triangulated among different tools and respondents. Finally, the researchers have categorized and thematically analyzed the filtered data to see the interrelationships between the relevant themes and patterns.

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1 Department of Anthropology, University of Dhaka

## FINDINGS AND DISCUSSION

We have discussed different ICH practices in Sunamganj of northwest region, Shyamnagar of southeast coastal region, and Tungipara and Nazirpur Upazila of south-central region. Based on our fieldwork in these three regions, we have discussed how different ICH practices have historically helped people to respond to different climatic hazards.

### **The Case of Sunamganj Upazila**

Flash floods, erosion, and hailstorms are the most common climatic catastrophes in Sunamganj Upazila in the northeast Haor Basin. The distinctive natural character of this region includes one of the largest back swamp lakes in Asia. During summer and winter, this basin-like topographical depression is usually dry. However, during monsoon, the entire area gets submerged due to heavy rainfall and flooding and transforms into a large wetland (Oxbow Lakes) (Suvra, 2021). But the rapid changing climatic conditions and natural disasters, such as an unprecedented flash flood of last few consecutive years, has been posing challenges to the ICH practices of Sunamganj. However, some of the ICH practices also have been found effective in responding to some of the challenges of climate change (Table 1).

### ***Traditional performing arts***

This region is considered very rich for its number of oral and performance based cultural practices. These are the major source of entertainment for the Haor people and convey various art forms: mythology, folklore, and traditional knowledge systems. *Baul Gaan*, *Jatrapala*, *Palagaan*, *Ghatugaan*, *Puthipath*, and *Bhatiyali Gaan* are the most notable cultural traditions in this region (Wahab, 2007). A major part of the folk literature collection *Moimonshingho Geetika* is associated with the Haor of Sunamganj. *Jatrapala* is a genre of folk theatre in which local performers play historical and mythological dramas. *Palagan*, on the other hand, is a traditional style of singing combat that is remarkably similar to western rap songs. *Puthipath* describes myths and stories from ancient scrolls and scriptures. *Bhatiyali Gaan* is another essential cultural heritage component of the Haor people of Sunamganj, which translates to 'song of the downstream'. *Bhatiyali Gaan* reflects the inner desires of the Haor people. The rise and fall of the water level are inextricably linked to these performing arts. The regular practice of these art forms is hindered by the long time stay of uncertain flashflood water.

*Baula or Baul gaan* of Sunamganj area is one type of musical genre based on the sense of identity, a way of recreation based on the philosophy of humanity, solidarity, and mental peace. Some of the local *Bauls* share valuable insights into the traditional performing arts of the region, including some of which are dying and those that have been revived. According to them, *Baul Gaan*, a genre of traditional folk song plays a significant role to create a joyous atmosphere in the hamlet, foster social cohesiveness and carry themes of love, peace, and devotion to God that purify the soul and keep people from doing evil. They also discuss the demise of the performing arts, citing religious fundamentalism and a lack of patronage as reasons. Another local leader also sheds light on the diverse performing arts of Sunamganj and expresses his

**Table 1** Impact of climate change on the ICH practices of Sunamganj

ICH Domain and practice	Impact of Climate Change
<p><b>Oral traditions and expressions</b> Folklore; Myth; <i>Biyer Geet</i>; <i>Hason Geet</i>; <i>Kiccha Shiluk</i></p>	<p>Myths and folklore are related to indigenous knowledge systems and the natural environment. Climate change’s detrimental impacts on the local ecology make it harder to connect environmental folklore and mythology. Again, due to climate change migration, the number of individuals carrying on these oral traditions is declining in certain locations.</p>
<p><b>Performing arts</b> <i>JatraPala/ Pala</i>; <i>Palagan</i>; <i>Ghetugan</i>; <i>Puthipath</i>; <i>Bhatiyali Gan</i>; <i>Baula gan</i>; <i>Ghatugan</i>;</p>	<p>The performers of <i>Jatrapala</i>, <i>Palagan</i>, and other performing arts in this area make their living mostly from agriculture and other natural resource-based professions. However, climate risks, such as exceptional floods and rains, have had a negative influence on these people’s overall well-being, making it difficult for them to simply make a living, let alone conduct creative acts. As a result, the <i>Jatrapala/Pala</i> practise is in danger.</p> <p>These performing arts have traditionally been staged at different times of the year as part of the Haor people’s creativity and entertainment. However, the yearly calendars have become harder to manage due to frequent seasonal fluctuations.</p> <p><i>Bhatiyaligan</i> is a folk music type peculiar to this region’s ecosystem. Therefore, environmental difficulties undoubtedly hamper the spontaneity of this folk song.</p> <p><i>Baula Gaan</i> is a musical practice that represents sense of identity and serves as a form of recreation grounded in a philosophy centered on the principles of humanity, solidarity, and mental peace. It also embodies a call for collective unity and prosperity. Despite that <i>Ghatugan</i> is no longer a thriving practice among the Haor community, it has significant historical roots in their tradition and culture. <i>Ghatugan</i> involves a collection of musical groups that used to provide entertainment to the Haor community during extended periods of flooding with their songs and dances.</p>
<p><b>Social practices, rituals, and festive events</b> <i>Nabanna Utshab</i> (local harvest celebration)</p>	<p>The <i>Baishakhi Mela</i> and the <i>Nabanna Utshab</i> are associated with New Year celebrations and harvesting the first crop of the year. However, inhabitants have gotten accustomed to having their crops ruined by abrupt floods due to the Haor basin’s uneven and unpredictable water flow in recent decades. As a result, the festivities are hampered.</p>
<p><b>Knowledge and practices concerning nature and the universe</b> Fishing knowledge</p>	<p>Climate change has influenced the Haor region’s floral and faunal resources. Furthermore, many fishing communities are abandoning fishing as a result of the extinction of several fish species in this area. This situation reduces the number of people who can pass on fishing-related traditional knowledge.</p> <p>On the other hand, Ethnomedical approaches such as <i>Kabiraji</i> rely primarily on the floral resources and plants available in the area. Ethnomedical techniques like <i>Kabiraji</i> and <i>Boiddi</i> have been affected due to the extinction of numerous therapeutic plants.</p>
<p><b>Traditional craftsmanship</b> Boat making; <i>Alpona</i> Painting; <i>Jaal</i> (net weaving)</p>	<p>Boats are traditionally built from wood obtained from neighboring forests. On the other hand, inadequate wood supplies have had an influence on traditional boatbuilding craftsmanship. As a result, several boat makers have stopped building boats and switched to constructing steel-body boats. The change in traditional boat-making has affected related practices such as ceremonies, <i>Alpona</i> painting, and many others.</p> <p>Fishing technologies and waterbodies account for a significant portion of traditional Haor handicraft. The Haor people are finding it difficult to retain their traditional fishing techniques due to the tremendous ecological effect of climate change. There aren’t as many fish in Haor as there previously were. Many of the fish species have become extinct. This shortage has had a severe influence on the region’s fishing practices and, as a result, related craftsmanship such as <i>Polo</i>, <i>Kuin</i>, and <i>Jaal</i> making.</p>

concern about its disappearance day by day. He mentions some of the extinct performing arts, such as *Ghetu gaan* (traditional performance unique to Haor region), and others that are on the verge of becoming extinct, such as *Bulabuli*, *Baghai Shinni*, and *Puthipath*. He also talks about the heritage festival of *Pona Tirther Mela* (fair of *Pona Tirtho*), which has been going on for ages and attracts hundreds of thousands of people for the holy bath. However, some performing arts have been revived with the support of the government and local cultural activists. *Dhamail* (a ritualistic song and dance performed by women) is one such example, which was on the verge of extinction but has now been patronized by the government and actively promoted countrywide.

It is emphasized that *Baul Gaan* has a power to motivate people to live in harmony within the local environment and help to minimize the threat of climate change with its themes of love, peace, and devotion to God. Some of the traditional performing arts are still helping people to stay together and to provide solace during times of catastrophe, such as floods or storms. Indigenous knowledge and technology including the use of natural building materials and water management techniques can provide essential knowledge and skills for adapting to climate change.

#### ***Challenges faced by boat makers and their quest for alternative livelihoods***

The relationship between people and boats is as old as the settlement history in this area. Different beliefs, rituals, and practices are associated with boats among various communities in this area. However, climate change has affected the region's unique ecology, directly influencing the territory's cultural heritage traditions. For example, the boat making tradition in Sunamganj is based on woods, yet boat making woods are difficult to come by owing to severe climate change consequences. As a result, the number of traditional boat builders is decreasing daily, as is the knowledge system supporting them. Many other cultural heritage activities are linked to boat building; for example, painting *Alpona* (consisting of colored motifs, patterns, and symbols that are painted on walls or floors with paints) on the body of the boat is an essential component of beautifying transport vessels, and as traditional boatbuilding declines, so does this traditional art.

Different sorts of boats are designed for transporting sand, stones, fishing, and tourist and passenger crossing. Everyone in the hamlet is familiar with the boat-building process, which they inherited as a skill. This low-lying area known as Haor region is close to the Surma river and is very prone to flooding during the monsoon, resulting in a high demand for boats.

The base of a boat is made of Kuma tree wood, and the side is made of Mango tree wood. After the boat's framework is completed, it is transported to *aalong*, a specialized house for shaping and processing boats. This is a tin-shed house with no sides. Boats are sent there and positioned in the middle of the home, with bamboo or wood poles placed on top and fastened to the roof. It is kept there for a while (Figure 1).

Boats are in high demand for three to four months of the year, making it a seasonal



**Figure 1**  
Boat making in Sunamganj  
(Photo: Mustafizur Rahman Rahaat)

industry. As a result, after the peak season, most of the boat makers get out of work for the rest of the year, struggling to support their families. Due to this situation, some of the traditional boat makers are trying to find alternative livelihoods when the situation changes.

### ***Climate change and the disappearance of traditional fishing practices and craftsmanship***

Besides boat making, fishing has been historically playing a significant role in the life and livelihood of the Haor people of Sunamganj Upazila. To catch fish, people have devised fishing gears/equipment including *jaal*, *bagura*, *kucha*, *polo*, *aour*, and *kuin*. These gadgets are still manufactured in rural areas. However, these devices require wood, bamboo, canes, threads, and other materials, and these natural resources are becoming increasingly difficult to get from the locality. Climate change has an impact on the abundance of fish in the river as well as the water levels in the *haor* (wetland ecosystem) on which the fishermen rely for a living during the monsoon season. It is also leading to a loss of catch and a reduction in income.

### ***The role of oral tradition: kiccha and shiluk***

The decline in interest in *kiccha* (folk tales) and *shiluk* (riddle) among younger generations could be potentially related to climate change. Flooding is common in the Haor region. The customary way of life in this region is being interrupted by the increased frequency and intensity of floods caused by climate change. Many families are compelled to relocate or migrate to other locations in search of work, which might result in the extinction of cultural traditions and practices such as *kiccha* and *shiluk*.

Furthermore, the younger generation may be more engaged in dealing with the immediate climate change issues, such as floods, rather than engaging in conventional storytelling or riddle-solving activities. As a result, the Haor region's cultural heritage, including *kiccha* and *shilluk*, is at risk of extinction as younger generations become estranged from their traditional roots. These *kiccha* and *shiluks* convey knowledge on environment in the forms of proverbs. For example, one of the *kiccha* conveys message that, if water arrives early in the *haor* and destroys all the crops, there is a high probability of flood in that year.

Traditional cultural traditions such as *kiccha* and *shiluk* must be preserved in order to protect the region's cultural heritage and maintain a sense of identity and community resilience in the face of climate change. As the Haor region continues to feel the effects of climate change, efforts should be made to sustain and promote traditional cultural traditions in order to strengthen community relationships and foster a sense of cultural continuity and pride.

Furthermore, the elders can use *kiccha* and *shiluk* to pass on essential flood preparation, response, and recovery information and guidance. They can use these traditional mediums to teach the next generation about their community's history and culture, as well as key life values. During times of crisis, *kiccha* and *shiluk* can enhance community togetherness and social peace. These activities have the potential to bring people together and give a sense of shared cultural identity and belonging, which can be beneficial in developing resilience and coping with the effects of floods and other climate-related disasters.

### **The Case of Shyamnagar Upazila in Satkhira**

Cyclones and tidal surges are frequent in Shyamnagar Upazila of Satkhira district in the coastal zone of Bangladesh and are frequently affecting the people's lives and livelihoods. Salinity intrusion significantly impacts people's livelihoods, followed by temperature rise and drought. High tides, riverbank erosion, and waterlogging also have wreak havoc on the local lives and livelihoods (Figure 2).

Climate change has significant impacts on the Gabura Union's traditional farming and other ICH practices in Shyamnagar Upazila. The primary occupations of farming and fishing families of this area are also frequently hampered by rising salinity, soil



**Figure 2**  
Gabura Union Shyamnagar.  
Upazila  
(Photo: S.K. Abdullah Al Mamun)



degradation, and river erosion. As a result, traditional crops and indigenous knowledge associated with farming are gradually disappearing, forcing the community to shift to other means of subsistence. Boat making, which is also an important part of Gabura’s culture, is facing difficulties because of resource scarcity, making it difficult for boat makers to continue their traditional practices. In contrast, the region’s vernacular architecture is evolving and adapting to environmental conditions, providing a sustainable alternative for the community. These situations highlight the need for long-term disaster response strategies that address the community’s specific needs and preserve cultural heritage while adapting to changing environmental conditions. Without such safeguards, the community’s way of life and ICH practices will perish (Table 2).

**Table 2** Impact of climate change on the ICH practices of Gabura union in Shyamnagr Upazila

ICH Domain and practice	Impact of Climate Change
<b>Oral traditions and expressions</b> <i>Pachu bibir kahini; Bilkis Porir kahini; Nantu Paloaner kahini</i>	Indigenous knowledge systems and the natural environment are linked through myths and folklore. The negative effects of climate change on local ecosystems make it more difficult to connect environmental folklore and mythology. Again, owing to climate change migration, the number of people who keep these oral traditions alive is dwindling in some areas.
<b>Social practices, rituals and festive events</b> Tree plant; Sandbag piling; Sacred Ponds; <i>Mahfil</i> ;	Tree plantation and sandbag piling are community practices to reduce river erosion. Gabura people protect some ponds and consider them sacred as they provide them resources throughout the year. <i>Mahfil</i> mostly has religious grounding. It helps people reduce tension and anxiety.
<b>Knowledge and practices concerning nature and the universe</b> <i>Bonbibi ritual; Gazi, Kalu and Champabati ritual; Fishing Knowledge</i>	Indigenous knowledge practices are linked to several ecological components, which have been impeded in recent decades. Inland water bodies have become saline as a result of rising salinity, reducing the quantity of inland fish. Unfortunately, soil salinity has increased as well, affecting traditional saline-sensitive herbs, crops, and medicinal plants. This predicament has put fishing knowledge and traditional healthcare systems that rely on indigenous medicinal plants in danger. Massive river erosion has driven traditional knowledge keepers to leave their locations.
<b>Traditional craftsmanship</b> Boat making; <i>Golpatar Ghor</i>	Due to rising salinity, there has been a decline in the production of natural raw materials, affecting crafts such as bamboo and wood-work and boat making. Massive river erosion has harmed potter villages and their ability to acquire specific clayed soil for artistic purposes. Many craftsmen have shifted to other regions and abandoned their conventional livelihood tactics as a result of river erosion.

### **Climate change impact on traditional farming and ICH practices**

Gabura is located in the Sundarbans area of Bangladesh (the world’s largest mangrove forest). It is a semi-island Union Parishad in Shyamnagar Upazila. The main agricultural crop of this area is rice. Three types of rice are cultivated in Gabura. Changes due to climate change in the Sundarbans area have significant impacts on the culture of this region.

Traditionally, people in this area have relied on agriculture, fishing, and the

Sundarbans forest's resources. However, locals can no longer produce traditional crops due to rising salt levels in the soil, since they are extremely sensitive to salinity. Also, increased salinity in water bodies limits inland fishing. Moreover, many people are moving to other areas due to river erosion and facing hardship to maintain traditional subsistence strategies. Because these local people are the major bearers of cultural practices, this outmigration poses a significant danger to the region's traditional knowledge system and many other ICH activities (Rashid and Hasan, 2020).

In 2007 and 2009, Bangladesh was hit by Cyclone Sidr and Cyclone Aila, causing widespread saline water flooding and increased soil salinity. This made it difficult for farmers to grow traditional crops, leading to a decrease in traditional farming. The government introduced salinity-tolerant rice, but many locals couldn't afford it. As a result, rice cultivation has become limited to certain areas such as Gainbari, Chandnimukh, and Dumuria in Gabura Union.

Consequently, the residents of Gabura are facing challenges in farming traditional inland fish due to increased salinity and river erosion, leading to a decrease in arable land. Many are moving away from farming and migrating from the area. In response to climate change, a different indigenous knowledge-based farming method of floating agriculture, known as *dhap* or *baira*, has been reintroduced in some villages of the region, where it has been used for over 300 years. It has been noted that many villages in this area are currently reintroducing this approach to cultivate paddy in areas that are susceptible to salinity (Rashid, in press). While the people of Gabura have yet to adopt this technique, there is growing awareness of its benefits, and many are eager to implement it in their region.

There are two significant consequences of climate change on the ICH practice in the area. First, most traditional knowledge associated with nature and cultivation is becoming extinct. During our field study, we have found only one person under twenty-five aware of the traditional farming and cultivation methods. The second impact is on the festivities associated with harvesting. It was a tradition in Gabura, like many other places in Bangladesh; *Nobanno*, or the festival for the new harvest, has been a long-practiced traditional festival that is not observed anymore in Gabura.

### ***Boat making in the face of climate change and resource scarcity***

In recent years, fishing in the Kholpetua river has been the primary source of income for Gabura Union people, with over 70% of the population engaging in this industry. Fishing is primarily concerned with catching various species of shrimp and prawns, which are then sold in local markets. Boat-making is an essential traditional practice in Gabura related to fishing, and each person typically uses their little boat to catch fish in the river. However, climate change has resulted in the extinction of long-lasting trees formerly used for boat building. The prohibition on cutting trees from the Sundarbans, a protected mangrove forest, has made it difficult for boat makers to acquire wood (Figure 3).

To overcome the scarcity of suitable wood for boat building, boat makers in Gabura are now predominantly using easily accessible woods, notably rain trees. These boats,





**Figure 3**  
Fishing in Kholpetura River  
(Photo: S.K. Abdullah Al Mamun)



**Figure 4**  
Boat making in Gabura  
(Photo: S.K. Abdullah Al Mamun)

however, are less sustainable than traditional ones, posing a big challenge to the boat-building community. Furthermore, the widespread use of power boats has been worsening the situation. Some of the community's master boat builders are now too old to continue building boats (Figure 4).

A professional boat builder in the neighborhood, voices concern about the scarcity of suitable wood for boat construction. He emphasizes that, once there was no restriction on taking wood from the forest in the past, it is now prohibited, but they must continue to make boats for a living because it is their only expertise. He also remarks that they try to protect the forest so that it may provide them with wood and food in exchange. The community recognizes the importance of protecting the forest for future generations and appreciates the decision to restrict forest cutting.

It is important to note that boats are critical to the community's survival during storms when the area gets submerged for days. There is an urgent need to investigate alternate, sustainable livelihood methods and encourage responsible boat-building practices to safeguard the community's indigenous ways of life.

### ***Adaptation and evolution of vernacular architecture in response to environmental conditions***

*Golpatar ghor*, also known as nipa palm homes, is a type of indigenous vernacular style found in the coastal region of Gabura Union in Shyamnagar Upazila. These dwellings are constructed using flexible nipa palm, also known as *golpata* locally



**Figure 5**  
Golpatar Ghor in Gabura  
(Photo: S.K. Abdullah Al Mamun)

providing natural insulation that keeps the houses cool in summer and warm in winter. This trait is especially essential in the coastal region's tropical environment (Figure 5).

The use of nipa palm also reduces building costs and makes reconstruction simple and inexpensive after a disaster. Skilled artisans called *ghoramis* play a vital role in preserving and passing down this ancient architectural practice. Additionally, *golpatar ghor's* design elements make it resilient to coastal climatic threats, such as cyclones and seawater infiltration, due to its height, material, and construction. The dwellings, for example, are typically twelve feet high and six feet wide, letting air circulate easily and lowering wind pressure during a cyclone. The walls and floors are built with mangrove trees and mud, making them resistant to coastal salinity.

*Golpatar ghor's* roof, made of nipa palm lasts 12–16 months, making maintenance and replacement simple when needed. The use of nipa palm is environmentally beneficial as it is a renewable resource abundant in the region. This traditional architectural practice has evolved to adapt to the region's climate and has become an essential element of the community's identity, providing a unique heritage and practical solution to climate concerns.

Moreover, *ghoramis'* use of asbestos sheets for house construction in Gabura represents a shift in vernacular design methods in response to changing environmental conditions. While this deviates from traditional building procedures, the use of asbestos sheets improves building resilience and contributes to community sustainability by lessening the negative effects of climate change. Additionally, the use of asbestos sheets enables rainwater retention, a departure from traditional practices, showcasing how modifications in vernacular architecture methods can help preserve ICH. This shift in building approaches demonstrates the ability of these ICH practices to adapt and evolve in response to changing environmental conditions, ultimately contributing to community sustainability and cultural continuity.

### ***ICH and resource management***

Gabura residents rely on rainwater and surrounding ponds for drinking water due to the high salinity of deep tube-well water. They collect rainwater during the monsoon and store it in large drums, tanks, and asbestos roofs for consumption throughout the year. Large households typically use saved water for four months, while small families

can rely on it for six months before resorting to gathering water from freshwater ponds, such as Drishti Nandan in Gabura's Sora area, where precautions are taken to maintain water quality. The installation of a protective fence by local villagers demonstrates their recognition of the pond's significance and their efforts to conserve it. This reliance on rainwater and ponds can be seen as a form of traditional ecological knowledge emphasizing the balanced use and conservation of natural resources. The ponds also hold social and cultural value, serving as gathering places for the community and hosting various cultural events.

Additionally, the area is rich in cultural heritage, with folklore, myths, and rituals connected to the Sundarbans mangrove forest. Sundarbans-dependent people have some common rituals, such as the belief in *Bonbibi*<sup>2</sup>, a sacred forest deity. The locals consider *Bonbibi* to be the Sundarbans' guardian spirit. When honey collectors, wood collectors, or fishers visit the jungle searching for protection from Royal Bengal Tiger, they call on *Bonbibi*. Besides *Bonbibi*, people dependent on the Sundarbans seek protection from *Gazi*, *Kalu*, and *Chompabati*; three other forest deities. The legend of *Gazi*, *Kalu*, and *Chompabati* is well-known in the southwestern coastal area. *Pachu Bibir Kahini* (Story of *Pachu Bibi*), *Bilkis Porir Kahini* (Story of *Bilkis Pori*), and *Nantu Paloaner Kahini* (Story of *Nantu Paloan*) are three well-known Shyamnagar's folk myths in the region.

#### ***Indigenous knowledge and community traditions as resilience building strategies***

Gabura is regularly hit by cyclones and other climate-related disasters. Gabura's people have established traditional indigenous knowledge that has been passed down from generation to generation and is used to foretell upcoming cyclones. Elders of Gabura rely on observing the movement of different fish in the river and unusual bird movements to predict impending storms and cyclones. Additionally, the inhabitants make efforts to alleviate the impact of rising water levels on river erosion. They participate in tree planting and sandbag construction along the riverbank. These community-driven activities aid in reducing the impact of natural catastrophes on the community (Figure 6).

During major natural disasters, the government provides a nearby shelter for the Gabura people. The shelter is a critical response mechanism that plays a significant part in disaster response. Gabura residents seek safety in this government shelter and try to stay close to one another (Figure 7).

Before a disaster, religious institutions such as mosques play a key role in notifying people about government-issued warnings about impending calamities. Most warnings are broadcasted through the mosque's microphone. Gabura is predominantly occupied by Muslim inhabitants who have integrated religious practices with cultural heritage practices. One such practice is the *Tafsirul Quran Mahfil*, which entails congregations from neighboring villages listening to speeches delivered by religious leaders. Central to these gatherings is the act of praying to God for protection against impending environmental disasters. These gatherings provide the Gabura community with a

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2 *Bondurga* and *Bondevi* are two alternate names for *Bonbibi*.



**Figure 6**  
Sandbags for mitigating river erosion  
(Photo: S.K. Abdullah Al Mamun)



**Figure 7**  
Cyclone shelter in Gabura  
(Photo: S.K. Abdullah Al Mamun)



**Figure 8**  
Gathering in *Tafsirul Quran Mahfil*  
(Photo: S.K. Abdullah Al Mamun)

means of reducing tension and anxiety associated with past and future disasters (Figure 8).

### **The Case Study of Tungipara Upazila in Gopalganj and Nazirpur Upazila in Pirojpur**

The country experiences heavy monsoon rains along with frequent tropical storms in its southern coastal zone that cause frequent occurrence of floods every year. The extent of flooding for all areas of the country is likely to increase by 2050.

Major challenges due to climate change are: floods, drought, river-bank erosion,



sea-level rise and salinity intrusion, cyclones and storm surges, and increase in the magnitude and frequency of mega floods. These issues of climate change have made the life of rural people extremely challenging. The people affected by climate change have taken various measures for their survival and are trying to adapt to the situation. Tungipara and Nazirpur are demonstrating an outstanding example of climate change management through the practice of floating agriculture.

### ***Impact of Climate Change on ICH***

Impact of climate change on ICH is summarized on Tables 3 and 4. Climate change has drastically impacted agriculture in the south-central region, submerging land for seven to eight months annually and increasing salinity levels, affecting traditional crops and environment in Tungipara and Nazirpur. This has disrupted environmental narratives, mythology, and oral traditions, leading to a shift in livelihoods and cultural heritage. Furthermore, climate-induced migration is resulting in a decrease in the number of people who are maintaining the oral traditions such as *Jaari Gaan*, *Shari Gaan* (native operas) and performing arts such as *Jatrapala* (a form of theater) and Puppetry. Due to the changing climate and ecological situation, some of the traditional arts of these areas are becoming less relevant. The changing livelihood patterns, influenced by climate change, have led the artisans of this performing art to switch to different occupations.

This alteration in cultivation methods has not only transformed the agricultural landscape but also has disrupted cultural practices associated with rice cultivation. The celebratory tradition of *Nabanna*, marking the harvest season and the arrival of new rice, has waned in the absence of abundant rice cultivation. Furthermore, the customary creation of various rice-based cakes, known as *pitha*, during the harvesting season, has become a rare occurrence. The scarcity of new rice cultivation has led to the extinction of these vibrant cultural practices. Despite these challenges, certain ICHs are helping the community to build resilience against the climate-related issues.

### ***Impact of ICH practice to resilience in the context of climate change***

In the last few years, flood water has been clogged for almost seven to eight months in Gopalganj and almost ten months in Nazirpur because of climate change. This changing climate situation and environment lead to changing the conventional way of farming and agricultural processes of Nazirpur people. Compounding the challenge, escalating salinity levels have disrupted the cultivation of traditional crops. Though this area is not so close to coastal areas, according to the farmers, salinity is increasing slowly here. So, the conventional monsoon vegetables are not growing now. In response to these adversities, farmers have turned to age-old traditional knowledge, embracing floating agriculture as an innovative solution to grow crops and vegetables. Basically, they use water hyacinth to make a bed on clogged water and grow vegetables here. They even sell floating beds in neighboring districts because of the availability of water hyacinth. Floating agriculture was basically practiced on a small scale before but now almost every farmer in these areas practices floating agriculture (Figure 9).

**Table 3** Impact of climate change on the ICH practices of Tungipara Upazila in Gopalganj

ICH Domain and practice	Impact of Climate Change
<p><b>Oral traditions and expressions</b> Folklore, myth, <i>jari gaan</i> (native opera), <i>shari gaan</i> (native opera)</p>	<p>Climate change is causing a disturbance to the traditional knowledge of indigenous communities that is linked to myths and folklore about the natural environment. The negative impacts on local ecosystems are disrupting the relationship between environmental narratives and mythology. Furthermore, climate-induced migration is resulting in a decrease in the number of people who are maintaining these oral traditions in certain areas.</p>
<p><b>Performing arts</b> <i>Jatrapala</i>, Puppet Dance</p>	<p>The people in the area used to take pleasure in <i>Jatrapala</i> and Puppet Dance. However, due to the changing climate and ecological shifts, some of these traditions are becoming less relevant. The changing livelihood patterns, influenced by climate change, have led the artisans of this performing art to switch to different occupations.</p>
<p><b>Social practices, rituals, and festive events</b> Agricultural practices, <i>Nabanna Utshab</i>, special prayers (<i>milad/ dua mahfil</i>)</p>	<p>Climate change has significantly altered the agricultural dynamics, leaving vast expanses of land submerged for approximately 7-8 months each year. Compounding the challenge, escalating salinity levels have disrupted the cultivation of traditional crops. In response to these adversities, farmers have turned to age-old traditional knowledge, embracing floating agriculture as an innovative solution to grow crops and vegetables. This shift has had profound implications on the staple crop, rice, as farmers are no longer able to cultivate it in the waterlogged lands. Instead, they have adopted cultivating plants on floating beds. This alteration in cultivation methods has not only transformed the agricultural landscape but also has disrupted cultural practices associated with rice cultivation. The celebratory tradition of <i>Nabanna</i>, marking the harvest season and the arrival of new rice, has waned in the absence of abundant rice cultivation. Furthermore, the customary creation of various rice-based cakes, known as <i>pitha</i>, during the harvesting season has become a rare occurrence. The scarcity of new rice cultivation has led to the fading away of these once vibrant cultural practices. In the face of unpredictable harvests and changing ecological phenomena, farmers have incorporated special prayers into their rituals. Events such as <i>dua mahfil</i> or <i>milad</i> are organized before the commencement of cultivation or during periods of unexpected yield fluctuations. These prayers signify the profound connection between the farming community and the natural environment, seeking divine intervention for improved agricultural production. The evolving ecological challenges have not only necessitated changes in agricultural techniques but also have prompted a reevaluation of longstanding cultural practices. The resilience of farmers in adopting floating agriculture demonstrates their ability to adapt to the changing climate. Simultaneously, the modification of social rituals underscores the profound impact of ecological shifts on the cultural fabric of the community.</p>
<p><b>Traditional craftsmanship</b> Boat making, fishing equipment</p>	<p>The persistent impact of climate change has led to a situation where the area is submerged for a significant duration, necessitating a shift in transportation methods. In response to increased flooding, boats and small trollers have emerged as the primary modes of transport for the local population. Recognizing the need for alternative transportation, residents have begun crafting and selling boats and small trollers within the local market. Historically, the community relied on the manual creation of fishing nets (<i>Jaal</i>) and bamboo fishing traps to sustain their livelihoods. In the face of escalating water levels, there has been a noticeable transition from traditional methods to contemporary solutions. Electric nets have become a prevalent choice among the local people.</p>



ICH Domain and practice	Impact of Climate Change
<b>Knowledge and practices concerning nature and the universe</b> Fishing knowledge, floating agriculture, agricultural knowledge	<p>Due to climate change, many people have left farming and started rearing livestock and poultry, and fisheries.</p> <p>Floating agriculture, an ancient practice traditionally carried out on a small scale, has gained increased attention. This age-old technique, now widely adopted in the area, involves utilizing natural resources such as bamboo and water hyacinth to create floating beds for vegetable cultivation. Residents often sell these floating beds to neighboring districts like <i>Pirojpur</i>.</p> <p>As an alternative income source and a way to face the impacts of climate change impacts, people practice floating agriculture extensively nowadays.</p> <p>Since the water in the rivers and canals has severely increased, people often use trollers instead of boats to travel. The use of trollers has resulted in the erosion of riverbanks due to water flow and pressure of water. Therefore, land is decreasing day by day.</p>

**Table 4** Impact of climate change on the ICH practices of Nazirpur Upazila in *Pirojpur*

ICH Domain and practice	Impact of Climate Change
<b>Oral traditions and expressions</b> Folklore, myth	Climate change has impacted on the local ecology and the traditions.
<b>Performing arts</b> <i>Jatrapala</i>	People used to enjoy <i>Jatrapala</i> (a special kind of local drama) and <i>Kiccha</i> (special local stories) in winter. But these are no longer practiced and have been replaced by concerts.
<b>Social practices, rituals, and festive events</b> <i>Nabanna Utshab</i> (local harvest celebration), <i>Milad/ Dua mahfil</i> (special prayers arranged by a household or community), Baithakata floating market	<p>Due to climate change the agricultural land remain underwater almost the whole year. Therefore, farmers cannot grow rice in the lands for which they cultivate plants on floating beds. Since farmers do not grow plenty of rice, they do not celebrate the <i>Nabanna</i> now. Moreover, different kinds of cakes (<i>pitha</i>) made with new rice in the harvesting season is no longer seen in this area.</p> <p>Farmers often arrange special prayers (locally known as <i>dua mahfil/milad</i>) for better production before starting cultivation or when they do not get expected harvest.</p> <p>The locals arrange floating market on the Saturdays and Tuesdays and sell their products there. It has also been a site for tourism.</p>
<b>Traditional craftsmanship</b> Boat making, <i>Jaal making</i> (net weaving), Mat woven with <i>beti</i> (a type of tree used to make mats)	<p>Due to climate change, the area is underwater most of the time for which the main transport for this area has become boat or trollers. People make boats and small trollers and sell them in the local market. On Saturdays and Tuesdays, people sell boats in the floating market.</p> <p>People used to make fishing nets (<i>jaal</i>). Climate change has resulted in the increase of water in the locality for which people nowadays use electric nets imported from the capital Dhaka and hence, people do not make nets as much as they used to.</p>
<b>Knowledge and practices concerning nature and the universe</b> Fishing knowledge, floating agriculture, <i>atchala ghar</i> (special type of two-storied house made with tin)	<p>Due to climate change, many people have left farming and started rearing livestock and poultry, and fisheries.</p> <p>As an alternative income source and a way to face the climate change impacts, people practice floating agriculture extensively nowadays.</p> <p>One of the major attractions of the locality was <i>Atchala Ghar</i> made by the locals. <i>Atchala Ghar</i> is a two-storied house made of tin. The upper floor was generally used to store the grains. Because of climate change, the locality remains under water almost the whole year for which farmers cannot grow rice in the lands. Therefore, they do not need to store grains for which <i>Atchala Ghar</i> is now nothing but a hassle to them. So, they are now uninterested in making these types of houses.</p>



**Figure 9** Floating agriculture (left); newly made floating bed on clogged water using water hyacinth (right) (Photo: Tahsin Momin Antor)

### ***Impact of ICH ensuring food security, woman empowerment and economic stability in a changing climate situation***

Farmers in this region have turned to floating agriculture, an age-old ICH practice, due to the climate change disaster. The traditional agriculture in this region used chemical fertilizers, but floating agriculture, an ancient cultural practice, allows farmers to produce organic food without chemicals and ensuring food security. They also practice fish farming under the floating beds, producing both protein and vegetables in the same space. Various vegetables like gourd, bean, cucumber, lady finger, pumpkin, different types of radishes, cabbage, capsicum, broccoli, pepper are grown on the floating beds, and after harvest, they share their products with neighbors and relatives. Furthermore, the practitioners have recently introduced a new vegan feast celebration after the harvest, which has helped to strengthen their social bonds. In Nazirpur, farmers cultivate *sheola*, a type of green algae, as part of their floating farming practices.

Making a floating bed is a process where the participation of both male and female members of the family is needed. Male members of the family usually ready the beds, and female members prepare the seedlings and process the *meda* (small balls where seeds are sown at first) (Figure 10). For these tasks, they typically hire both male and female daily laborers from their local areas. This provides economic assistance to the local people in the face of changing climate conditions, leading to economic empowerment and ensuring gender equality and participation. Unlike other areas practicing floating agriculture, farmers in Gopalganj only grow and sell vegetables and spices on floating beds. In Nazirpur, farmers only grow plants and sell them in wholesale markets. It is called *charar byabsha* (wholesale plant business) locally (Figure 11).

### ***Impact of ICH in sustainable resource management and sustainable solution***

Floating agriculture, an ICH, serves as a resilience strategy amid changing climatic conditions. Despite disruptions in natural resource management due to climate change and prolonged floods, the increasing adoption of floating agriculture offers a sustainable solution. Water hyacinth, locally known as *kochuripana*, typically considered waste, becomes a vital element in creating floating beds. After six to eight months, when the floating bed expires, the decomposed *kochuripana* residue, known



**Figure 10** *Meda* where seeds are sown  
(Photo: Tasnim Khan Lamisa)



**Figure 11**  
Baithakata Floating Market  
(Photo: Tasnim Khan Lamisa)

as *pochla/pocha*, transforms into a valuable organic fertilizer. This residue is used on other farming lands, and a significant portion is preserved for the next year's floating agriculture. The creation of round balls called *meda*, incorporating *pochla/pocha* and other elements, establishes small seedbeds for sowing vegetable seeds. This innovative practice not only addresses environmental challenges but also contributes to efficient resource management within the community.

The introduction of floating agriculture in Tungipara and Nazirpur demonstrates a proactive and innovative approach to climate change mitigation and adaptation. Local farmers have adopted the practice based on their traditions and the community's culture and wisdom. This practice is now considered as environment-friendly, sustainable, and profitable in Bangladesh and also for other countries facing similar types of climate change conditions. This unique approach highlights Tungipara's and Nazirpur's significance in the broader context of climate change management, and also positions it as a model for other regions facing similar challenges. The focus on floating agriculture serves as evidence of the community's resilience and adaptive capacity in the face of climate-related adversities (Figure 12).

## KEY FINDINGS OF THE STUDY

The study in the above-mentioned three selected ecological regions has narrowly focused on various ICH elements belonging to the broad five domains categorized by UNESCO. Due to time and budget constraints, the study could not cover all the elements in each of the domains mentioned in the 2003 convention. But some of the domains that are covered by the present study have significant connections with multiple domains in terms of knowledge, technology, beliefs, rituals, and practices. Some of the key findings of this study are given below:



**Figure 12**  
*Atchala Ghar*  
(Photo: Tasnim Khan Lamisa)

- 1) Climate change and natural disasters pose significant challenges to the ICH practices of communities in Sunamganj, Sathkhira, Gopalganj and Nazirpur.
- 2) Some ICH practices are playing a vital role in responding to various climate change situations/challenges, while others are endangered and/or are going to be extinct due to adverse impacts of climate change.
- 3) Case study findings clearly show that some of the traditional performing arts have been helping to raise awareness of climate change and to promote sustainable practices, and motivating to adapt to the new situation developed due to climate change.
- 4) The ICH elements belonging to different domains have been playing different roles in the development of social and cultural spaces for building social harmony and peace during the crisis, disaster and other critical moments. Some of the performing arts, rituals and practices are significantly helping the communities of all these three locations to build strong social cohesion among the community members and giving motivation to help each other during the crisis.
- 5) Some of the elements are helping the local community to strengthen social bonding, helping each other, building resilience, and finding options for alternative livelihoods. Many of their indigenous technology have been already lost, or some new technologies have newly innovated to adapt to new situation.
- 6) The evolving vernacular architecture provides a sustainable alternative to



traditional farming and fishing practices that are no longer viable due to rising salinity, soil degradation, and river erosion.

It is important to note that the current study cannot be generalized to understand the overall scenario of Bangladesh as it was conducted in only three specific local areas of the country. However, the findings can be transferable to other similar contexts. Also, it was not possible for the researchers to conduct in-depth fieldwork during any ongoing climatic disaster due to limitation of time and budget, which could possibly draw a broader understanding of the research interest. To better understand the ongoing dynamics between ICH and climate change in these regions, a longitudinal ethnographic study is essential.

## CONCLUSION

In conclusion, we can say that both climate change and natural disasters are significantly posing challenges to the ICH practices of the communities in Bangladesh, such as those in Sunamganj, Shyamnagar, Tungipara, and Nazirpur Upazila. But at the same time, some of the long-lasting ICH elements are also helping to cope with the changing climatic conditions and to respond to various challenges caused by climate change and disaster. Some of the traditional performing arts are helping the local communities to raise awareness of climate change and promote sustainable practices. Innovation of saline friendly cropping, floating gardening, preserving rainwater for drinking, roof gardening, roof top food savings, traditional water cooling, boat building by local materials and others are helping the local people maintaining their life and livelihoods during floods, cyclones and other climatic disasters. The evolving vernacular architecture provides a sustainable alternative to traditional farming and fishing practices that are no longer viable due to rising salinity, soil degradation, and river erosion. To ensure the preservation of these ICH practices and the sustainability of these communities, there is a need for long-term disaster response strategies that can address their specific needs and can support alternative livelihoods. By doing so, we can help to create a more resilient and sustainable future for these communities and their ICH practices.

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