

**Ripples of Change: Climate Variability and Changing Livelihoods among
River Gypsies (Bede) of Bangladesh**

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Abstract

The Bede community, traditionally known as "river gypsies" in Bangladesh, faces unprecedented challenges as climate change intersects with socioeconomic transformations to reshape their centuries-old way of life. This study looks at the generational dynamics of climate adaptation within the community, which have been found to take different patterns across three age groups through Focus Group Discussion (FGD): elders (51-80 years), middle generation (26-50 years), and youth (15-25 years). This research also underlines the generational divide in adaptation strategies as respondents in their responses to environmental challenges of changed river patterns, erosion, and habitat loss. The younger members have increasingly taken to mainstream employment with much better economic stabilizations, while elders struggle over the continuance of the traditional river-based livelihoods and cultural practices. It further documents shifting gender dynamics where women are expanding beyond traditional roles into diverse economic activities. The findings indicate that adaptations so far have been insufficient in terms of institutional support that matches the community's specific needs. This research concludes that economic integration, while stability is gained, comes with losses, such as cultural erosion. There is an urgent call for interventions that balance climate resilience with cultural preservation. It explores how traditional communities navigate this complicated interplay between environmental change and economic pressure with cultural identity at risk in contemporary Bangladesh.

Keywords: Bede Community, Climate change, Generational transition, River gypsies, Changing livelihoods.

Chapter One: Introduction

1.1 Background of the Study

Bangladesh is a land characterized by its deltaic geography, with the majority of its territory being produced by the accumulation of sediment from three powerful rivers: The Brahmaputra, the Padma, and the Meghna. There are about 700 rivers, tributaries, and distributaries that traverse the entire nation. The cumulative length of all rivers, encompassing all tributaries and distributaries, amounts to approximately 24,140 kilometers. Rivers are crucial for various aspects of our society, including agriculture, economy, communication, trade, commerce, and our overall way of life (River - Banglapedia, n.d.).

Bangladesh is one of the most vulnerable countries to climate change because of geographic exposure, low income, and increasing reliance on climate-sensitive sectors, particularly agriculture. People, exposed to the most severe climate-related dangers are often least able to cope with the accompanying repercussions due to their poor adaptive ability and according to Islam et al. (2011), will become even more sensitive in the future. According to Sikder and Xiaoying (2014), Bangladesh experiences many forms of natural disasters practically every year because of global warming as well as climate change consequences, these are Floods / Flash Floods (Almost 80% of the total land of the country is prone to flooding). Cyclones and Storm Surges (South and South-eastern Parts of the country were impacted by Tropical Cyclones during the last several years). Salinity Intrusion (Almost the whole Coastal Belt in the Bay of Bengal is experiencing Salinity issues). Extreme Temperature and Drought (North and North-western portions of the country are suffering because of the Extreme Temperature problem).

Bede is a disenfranchised Muslim minority of Bangladesh, also known as 'Water gypsy' or 'River gypsy' in Bangladesh; 'Montong tribe' in Myanmar, and 'Bedouin' in Arab nations. They mostly live a nomadic existence, migrating from place to place to earn a living. An estimated 0.5 million nomadic Bedes dwell in Bangladesh (Maksud, 2006; Beurden, 2007a). Every year Bedes come in groups to congregate in around 65 different places in Bangladesh and on average each group stays 2 months in any single area save those living on the land (Maksud, 2002). According to the Ministry of Social Welfare (2013), Bede is divided into eight tribal groups. These tribes are Malbede, Sapuria, Bajikar, Sandar, Tola, Mirshikari, Burial Sanda and Gain Bede. Many Bede people live in the Savar region, 15 Kilometers distant from the capital city Dhaka, around the year. Due to a weak socio-economic position, Bedes are to depend largely on traditional ethno-medicine practice. This group of individuals also performs

numerous other occupations like snake-charming, magic-showing, snake-selling, spiritual healing, etc, for their living.

According to Rashid and Sultana (2024a), In 1638, upon his arrival in this land with King Ballal Sen of Arakan, Bede founded their inaugural town in Bikrampur in the Munshiganj area. Subsequently, they disseminated from that location to the secluded regions of Bangladesh, West Bengal, and Assam in India. The Bede community resides in Bogra, Pabna, Mymensingh, Bakerganj, and Noakhali in Bangladesh. Savar, Munshiganj, Sunamganj, Joydevpur in Gazipur, Hathazari in Chittagong, Mirsrai, Tunturi, Chouddagram in Comilla, Chandina, Enayetganj, Sonagazi in Feni, and several locations in North Bengal are recognized as the residence of the Bede community. The ancient name of the Bede is Mantang. The name Bede is derived from the negative Baidya (hammered doctor), modified 'Baidya' (physician). Since most of the Bede are connected with medicine. The Bede are an expatriate section of the Mantang ethnic tribe in Arakan State. Consequently, they have a greater inclination to identify as Mantang. Bede is exceptionally talented in fighting and hunting. Their skin and structure are mostly identical to Bengalis.

The river gypsy community is one of the ancient communities of the southwestern part of Bangladesh. Almost 0.5 million Bede people live on the rivers having no land for living. Usually, they roam around from one place to another every few months (Ahmed, 2015). River gypsies, sometimes referred to as Bede, are a nomadic group that mostly reside aboard boats and rely on river water for their daily needs. The gypsy population experiences significant deprivation in essential aspects of life, such as education, healthcare, civic amenities, and financial assistance. The ongoing battle for the survival and existence of the gypsy in the country is exacerbated by the added peril of climate change. The Bedey people are distinctive in their traditional lifestyles, they traverse many locations by means of waterways, traveling in familial clusters. The Bedeys use boats as both their residence and means of transportation. The houseboats belonging to the Bedeys are well organized, with designated spaces for clothing, bedding, kitchenware, and other items. Each boat accommodates a family comprising two or three youngsters and a few elderly Bedeys. They live their whole existence afloat. The Bedey women are the major breadwinners for the household while males traditionally stay at the boats. They travel in groups for 10 months every year. The other two months are for rest, marriage, and other social events. In winter many of the water bodies dry up when the Bedeys return to the mainland and live in make-shift semi-tubular-shaped tents, covered by polyethylene or other sheets, on the exposed river banks (Haq, 2015).

The communities also known as River Gypsies or Mollas are the Bede, a nomadic and semi-nomadic ethnic group that live in the riverine of Bangladesh. The Bede are thought to be descendants of several indigenous groups who have adapted to the changing riverine environments found in Bangladesh. This article studies the mobility of these communities and their reliance on riverine resources which enabled each of them to develop a distinct cultural identity over centuries. They are indeed nomadic (Brandt, 2018) and the basis of their nomadic lifestyle is to follow the seasonal fluctuations of water levels, sediment deposition, fishing, and foraging. Bede usually travels the major rivers Jamuna, Padma, Meghna, and Brahmaputra, especially during the seasonal rise and fall of the rivers. This migratory behavior is not just about survival; it is a cultural practice that has been inherited from generation to generation. According to historical records, their movements are interconnected with the monsoon cycles, which determine the accessibility of diverse regions during specific times of the year (Lasker et al., 2019). Bede's have adapted to the socio-economic structure of the riverine ecosystem. The craft of boat-building and net-making suggests a species-specific skill set within the finitude in the species environment (Samadder, 2011). Kinship-based social organization and communal decisions and cooperation are vital to the Bede nomadism and lifestyle (Khatun, 2022).

Bede or Baidya (feminine: Bedeni) / Manta Bede are a neglected and backward nomadic Indo-Aryan people of Bangladesh since ages. For the overall development of the country and to bring them into the mainstream of the society, it is highly imperative to protect the basic rights of these neglected and backward sections of the society by means of social justice, developed socio-economic conditions, good educational system, permanent habitation, modern health services and all the social security programs provided by the government. To uplift the living standards of Bede community, a particular programme has been introduced by the government of Bangladesh, named "Livelihood Development Program for Bede Community (Rashid & Sultana, 2024b)

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capital city Dhaka, around the year. Due to a weak socio-economic position, Bedes are to depend largely on traditional ethno-medicine practice. This group of individuals also performs numerous other occupations like snake-charming, magic-showing, snake-selling, spiritual healing, etc, for their living.

Changes in climate and environmental stresses have significantly undermined the means of livelihood of Bangladeshi coastal people, especially river gypsies and small-scale fishers. Affected communities experience floods, cyclones, riverbank erosion and droughts, which destroy agriculture land, crops, and properties (Ayeb-Karlsson et al., 2016). Bedey, or river gypsies, struggle with water and sanitation issues, education, and poverty (Lasker et al., 2019). Levels of vulnerability of fishery-based livelihoods are determined by exposure, sensitivity, and capacity to adapt against climatic variability (Islam et al., 2014). In response to these challenges, different communities adopt various strategies such as changing farming practices, switching livelihoods, and migrating (Ayeb-Karlsson et al., 2016). Diverse livelihood strategies are often employed by small-scale fishermen adapting the approach to lead a difficult and complex life process against an uncertain social system depending on skills, socio-cultural issues, and learning through experience (Deb & Haque, 2016). However, some ways of adaptation may be ineffective, highlighting the importance of integrated approaches to reduce risk to livelihoods (Islam et al., 2014). This research highlighted the dynamic transformation in the livelihood of Bede communities by climate change and the policy advancement for the river gypsy community.

1.2 Research Objectives

1. Investigating the dynamic transformations in livelihoods induced by climate change;
2. Assessing policy implementations towards the advancement of the river gypsy community.

1.3 Rationale of the Research

This research is conducted to explore the complex issues experienced by marginalized and vulnerable communities as climate change. Bangladesh, one of the most climate change-prone countries in the world, is also exposed to a variety of environmental issues, including floods, riverbank erosion, sea level rise, and rainfall pattern change (IPCC, 2021). A total of three generational changes within the community of the Bede, in which climate change is used as the context were discussed. Despite being semi-nomads and living a riverine livelihood based on seasonal migration, the Bede communities in Bangladesh would be prominent communities as they have a distinct socio-economic life combined with a strong identification with the rivers. The Bede communities are among those marginalized communities of Bangladesh like the Bede who remain distant or secluded from the mainstream economic, social, and political system of the country. Their contributions to the local economy, particularly in the fields of fishing and boat-making, are substantial, but their nomadic way of life and lack of land ownership make them susceptible to both economic and social exclusion (Hossain, 2010).

Cultural and ethnic variety has formed several diverse groups in Bangladesh. Among them, the Bede people, known as the River Gypsy, are the only large nomadic community living scattered in different regions of the nation. Bede is a disadvantaged Muslim minority in Bangladesh (Arefeen, 1992). An estimated 98% of the Bede people live below the poverty level and 95% are uneducated. While the average household size in Bangladesh is 4.2 individuals, among the Bede it is 7.5 (Das, 2013). Poverty and desperate endeavors for survival lead them to transfer from their traditional occupation to conventional. In 2021, the estimated population was 17 lakh or 1.7 million (Daize & Lima, 2021a).

This study aims to fill those gaps with two major objectives: One is, to analyze the livelihood transformation processes of river gypsies impacted by climate change; and another is, to evaluate the effectiveness of the policies designed for the welfare of the river gypsy community. Through exploration of these domains, this investigation seeks to capture a more detailed picture of the interactions between environmental changes and socio-economic adaptations among this disadvantaged group.

The United Nations Sustainable Development Goal 11 (SDG 11) calls for making cities and human settlements inclusive, safe, resilient, and sustainable. This goal plays a critical role in overcoming the challenges of rapid urbanization, environmental degradation, and climate change, ensuring that all people have access to adequate housing, transport, and other services

within sustainable communities (United Nations, 2015). Bangladesh, a nation comprised of rivers with high exposure to climate risks, SDG 11 is of extraordinary importance for marginalized communities like river gypsies.

River gypsies, who are also known as the Bede community, live in the fluid and stress-driven riverbanks floodplains of Bangladesh (Nayeem, 2020). Climate change threatens their traditional lifestyles and economic security. SDG 11's goals on resilient infrastructure and sustainable communities directly relate to these vulnerabilities. The goal addresses four underlying objectives including by making human settlements resilient to disasters and climate-related hazards (United Nations, 2015). For river gypsies, this means building up strong flood management systems, sustainable housing solutions and adaptive infrastructure to withstand climate change. This study investigates how climate change is contributing to dynamic transformations in the livelihoods of rural populations and contributes to SDG 11, aiming to balance and reduce the adverse effects of environmental shocks to vulnerable people.

The younger generation of river gypsies is increasingly pursuing education and prospects beyond conventional employment. Youth are more flexible to embracing new technology and education that plays a crucial part in climatic and societal development. Adult encounters the deteriorating reliability of conventional livelihoods embracing other income-generating pursuits. Elders are often less active in economic diversification, their experiences and resilience to prior environmental changes offer vital insights for present adaptation efforts. The youth's participation in contemporary education and technology brings new cultural aspects, while the preservation efforts by adults and elders preserve continuity with old values. Recognizing the varied needs and contributions of each age group is vital for establishing effective policy. Tailored interventions that meet the educational and job requirements of the youth, assist the economic diversification efforts of adults, and conserve the cultural legacy upheld by elders can strengthen the overall resilience of the river gypsy communities.

The study provides evidence-based recommendations to improve policy frameworks for the welfare of river gypsies by evaluating policy frameworks designed to address the welfare of river gypsies. Understanding the generational dynamics and livelihood transformations offers valuable insights into how communities adapt to climate variability. It recommends integrated approaches taking into consideration socio-economic, cultural, and environmental dimensions. It emphasizes the urgency of mainstreaming the voices and experiences of vulnerable communities in the process of climate adaptation planning and policy development.

Chapter Two: Review of the Literature

2.1 Literature Review

Climate change in Bangladesh is a critical issue, and according to National Geographic, Bangladesh is ranked as the most vulnerable nation to the effects of climate change in the next decades. On investigation, a favorable trend is present in rainfall with increasing ranges of 24-147 mm/year in different Upazillas of Bangladesh. This means that over 42 years it has been trending toward more rain in the country. Humidity too recorded a positive trend, with a rise ranging from 0.16% to 0.47%, similar to rainfall. That indicates the air has become increasingly moist. In contrast, a temperature regression to negative was found in the present study with variation between -0.03 and 0.00 °C in some Upazilla. This suggests areas that have cooled somewhat during the study period (Reshma et al., 2024). Bangladesh has been facing severe climatic abnormality in the form of a 2°C warming trend, and a yearly decrease in total precipitation of 607.26 mm throughout 1901-2020. Climate projections suggest rising temperatures and regional shifts in precipitation, putting agricultural systems and ecosystems under increased pressure (Jihan et al, 2024). In the northwestern hydrological zone of Bangladesh, spatiotemporal variability of the precipitation system due to climate change is being reported with the potential to have seasonal effects on agriculture systems and agricultural planning management (Shariot et al., 2024).

Ahmed et al. (2023) emphasized in their study that the effects of climate change are not gender-neutral; women are generally more vulnerable to its effects. This is especially pronounced in the context of environmental disasters when women encounter increased risks and adversities. Climate change is a threat to women's health security and economic livelihoods, the paper notes. Climate change impacts, such as heat waves, flooding, and drought, take a heavy toll on women living in vulnerable areas that have been given over to land grabs, mine construction, or unsustainable agriculture, and that makes them even less able to take profitable economic opportunities. These evidences indicate climate change is a strong force of internal migration of women. Climate change, as we know, can be an environmental and social disruptor as women have to move when things get worse, and they are also being uprooted from their social connectivity and economic status. The region of Khulna also emerged as the most severely affected region, demonstrably changing in 12 climatic indices. They were followed by Jessore and Faridpur with 10 and 9 indexes respectively. A significant reduction in the minimum value of TNn and maximum temperatures and wider cold spells was identified at Khulna station. Precipitation indices showed a trend of higher spatial heterogeneity than temperature indices, with the highest departure from others occurring in Mongla and Ishwardi (Tasnima et al.,

2023). climate change in Bangladesh causes drastic environmental variability that significantly affects the fragile food system through changes in temperature, rainfall, flash floods, droughts, and saline water intrusion which threatens food security and sustainability with potential agricultural losses at USD7.7 billion annually (Chowdhury, 2022).

In Bangladesh, these river dwellers are called Bede, who are dependent on water-based businesses like fishing, magic shows, and serpent charms as a traditional lifestyle and socio/culture, they are struggling to uphold their socio-culture behaviors against the modern economic pressure and environmental obstacles (Mahmud et al., 2024). Meanwhile, in Bangladesh, the River Gypsies or Bedes have long traded their snake charming and ethnic medicine for temporary land settlements and informal work or begging as traditional beliefs fall out of favor. Primarily fishing and snake charming, which has alienated them from this cultural identity. Due to economic pressures, many Bedes are moving away from their traditional occupations and settling in one place there is less interest in traditional occupations for younger generations (Shawon et al., 2022). They employ a diverse range of plants to provide therapeutic functions, with traditional healers, known as Dhanantari Vaidyas, recommending multiple or even numerous plant species for health benefits (Rahmatullah et al., 2011). Huge threats are taking place for their livelihoods like climate changes and riverbank erosion which make them displaced and vulnerable (Hossain et al., 2024).

A study completed by Rahman et al. (2011) found that Bede communities are engaged in diverse activities like farming, handloom, older women fishing, etc. to make a living. These regions exhibit stark income inequality among those who are employed. This suggests that there is income inequality in the char communities, with a very small percentage of the workforce getting a large percentage of the total income. Such experiments based on the availability of fertile land, water resources, and livestock govern the economic activities people get involved in because soil quality differs among chars, with some chars being more agriculturally viable than others. Women are also never appreciated or rewarded at the social and economic levels. Because few people now want their traditional services, many Bede have had to find other ways to earn a living. This entails taking on jobs such as rickshaw pulling, factory work and small business. This transition demonstrates their flexibility but also reinforces the economic pressures they are under. Bede community members continue to be illiterate while some strive for education and finding job in urban cities. The case of the Bede community encapsulates the struggle of cultural preservation, economic hardship, and the reclaiming of identities (Rahaman et al., 2024)

Muenuddin et al. (2022) found in their study that Bede people, though they belong to Islamic faith, are mostly marginalized and not accepted by the majority of Muslim society. This exclusion leads to their continued plight, further institutionalizing them as an "untouchable" section of the wider Bangladeshi population. Non-business methods and occupations are the main source of living for the Bedes but these are limited in scope and income generation is not enough, so they are living under poverty level. Stable jobs are few, forcing many into menial work. Limited healthcare provisions enhance the vulnerabilities of their overall situation and living conditions, pushing them further away from the mainstream society.

River gypsy's livelihoods, health and social indices are above all influenced by climate change effects on river basin communities. More frequent extreme events create challenges like evacuation and migration, with major physiological, psychological, social and economic impacts (Amin & Gupta, 2022). Climate change more seriously threatens the livelihoods of River Gypsies in the Gangatic Plain's riparian region, affecting water availability, disrupting fishing, and increasing vulnerability to extreme weather events, which threatens their way of life and economic stability (Das et al., 2022). Climate change impacts River Gypsy livelihoods negatively by changing water availability, disrupting fish patterns, and endangering traditional practices so adaptive strategies are needed to ensure their lifestyle through environmental changes (Thakur & Bajagain, 2019).

Although the river gypsies of Bangladesh, known as the Bede, have traditionally made their way through a variety of occupations, from fishing to running magic shows, to the anthropologists who study them, their story is one of adaptation in response to environmental changes and social stigma. Cultural dynamics, as well as the reality of adapting to modern economic requirements, play a part in their resilience (Mahmud et al., 2024b). One of the resilience strategies employed by Bede communities over generations: is absorptive, adaptive, and transformative (Paszkowski et al., 2024)

Resilience, defined as the capacity of a socio-ecological system to cope and persist alongside disruptions such as riverbank erosion, was highlighted in the study. They found that riverbank erosion has a material impact on households, resulting in displacement for many. The devastating loss of land and property compels many families to leave, making it imperative to encourage effective coping strategies. Coping strategies involve shelters and support from relatives, neighbors, and local community members. This network of support is crucial in assisting displaced families to cope with the immediate effects of erosion (Rahman et al., 2021)

A study conducted by Sarker et al. (2020) highlights how riverine island dwellers have employed distinct strategies for local adaptation to climate change threats, which is also heavily determined by their social networks and collective efforts. In case of climate-related hurdles, community members also share resources and knowledge which boosts their capacity to adapt. The research indicates that designers of interventions and policymakers need to take into account the culturally defined adaptations that riverine island dwellers have developed to this environmental uncertainty. Specific policies that can aid these communities help to improve their resilience and sustainability.

Environmental refugees are one of the most burning issues right now all over the world. A riverine country, Bangladesh is bearing the brunt of the acquired riverbank, displacing millions of her population from their place of origin. Accordingly 473 spots, 85 towns, and development focuses 2400 kilometers of riverbank line in Bangladesh are liable to erosion. Every year, the large rivers e.g., the Padma, the Jamuna, and the Meghna, wash away several thousand hectares of floodplain land leaving thousands of people landless and homeless. Involuntary relocation from the original place of abode renders the riverbank erosion displaced into a condition of substantial socio-economic impoverishment and marginalization (Islam & Rashid, 2011).

The Bangladesh Planning Commission recognizes the Bede's marginalization, highlighting the need for access to health and education. It teaches them to search for participatory action research so that the Bede make their participations, which allows them to produce their needs of development and their rights which is the need of the time in front of the government by National Manta Samiti and RIB (Beurden, 2007).

A study conducted by Sayadat (2021) emphasized that effective process management is crucial for the success of PPP initiatives. The research shows that to succeed, PPPs need to be structured as long-term contracts that create a stable partnership between the public and private sectors. Such long-term commitment is key to building trust and making sure that both parties can benefit from each other. The findings reveal a favorable relationship between the types of processes used for PPP projects and the outcome. In outlier projects, good communication and collaboration led to success, while poor communication and collaboration led to failure.

A study by Rashid and Sultana (2024b) covered that programs related to social security offered by Department of Social Services (DSS) haven't played a crucial role in enhancing the living standard of Bede people. Despite the various allowances, education stipends, and training programs these have not directly addressed the needs of the Bede people as they seem to

provide limited benefit in their lives. The government must increase its financial support for the Bede community. However, the meager monthly allowance of BDT 500 needs to be increased by BDT 2000-3000 so that it can assist in meeting their basic needs. The Bede students definitely do not receive a sufficient education stipend. The current figures do not even cover education costs, so many students are taking the current amount for essentials instead of studying. They have to deal with serious discrimination and social stigma, which affects their social life.

Snakebite is a major public health problem in the world, and Bangladesh has one of the highest rates of snakebite cases in this regard, with the Bede community which works with snakes particularly vulnerable. Snakebite treatment mainly relies on ethno-medicinal practitioners among the Bede. Risk of death was not reflected in efficacy data; little evidence exists for the traditional treatments, which raises the question of whether their use in a lifesaving therapeutic context is adequate. There is a great potential for this partnership highlighted in the study of the Bede community and the public health sector. These collaborations could lead to more effective and widely accessible treatments and a reduction in snakebite morbidity and mortality in Bangladesh (Yoshimura et al., 2023).

Based on the Livelihood Vulnerability Index (LVI), the most vulnerable village identified was Galna Adarshapara. This vulnerability is due to a combination of socio-demographic factors, food security issues, health aspects, and climate-sensitivity. Research revealed that communities utilize different strategies to combat climate change. Irrigation, crop diversification, zero tillage, and double-platform tube wells are some of the common strategies. The results show that the need to alleviate the vulnerabilities identified should be addressed through a myriad of strategies that encompass not just short-term coping mechanisms but also long-term reliance on services such as infrastructure, education, and health (Omi et al., 2024).

The theoretical frameworks of adaptation to climate change and sustenance of livelihoods highlight the need to mainstream climate change in development planning as a cross-cutting issue in Bangladesh (Ayers et al., 2017). Rahman and Hickey (2020) propose a sustainable rural livelihoods approach for context-specific vulnerability assessment and adaptation planning. This includes assessing livelihood exposure to climate impacts, characterizing capital assets available, and evaluating institutional responses. Climate change is expected to impact coastal areas, and the Sustainability Livelihood Approach (SLA) model has been applied to assess disaster preparedness and resilience in coastal areas of Bangladesh (Rahman & Li,

2018). In contrast, despite some institutional progress, Bangladesh remains challenged by its low socio-economic development, high poverty, and vulnerable infrastructure. Islam and van Amstel (2018) recommended a policy-oriented approach to make a disaster and climate-risk-resilient income-generating system in Bangladesh. Nonetheless, a good strategy is obstructed by poor coordination, insufficiency of resources, and lack of accountability.

In Bangladesh, the Bede community is an underprivileged ethnic minority that lives a nomadic lifestyle and traditionally works as fishers, boatmen, or street performers, which renders them socio-economically excluded and vulnerable (Daize & Lima, 2021). As the indigenous people, they are poorest and most vulnerable groups and live without the basic fundamental rights and resources (Sarkara et al., 2013). Factors such as environmental changes, politico-economic dynamics, and socio-cultural aspects influence socio-ecological vulnerability and resilience of communities (Flint, 2008). Communities' ability to engage in stressors from a standpoint of ownership and diversify productive endeavors is necessary for adaptation to environmental constriction challenges like flooding (Flint, 2008; Mmom, 2013). Nevertheless, vulnerability and resilience are not mutually exclusive, so individuals can be both vulnerable and resilient at the same time, emphasizing the need for policies that further build on strengths, rather than only looking at weaknesses (Mmom, 2013).

Recent studies of climate change impact and community vulnerability demonstrate some gaps in knowledge and potential avenues for future research. Research highlights the importance of more comprehensive health risk assessments, including measures of morbidity and disability-adjusted life years (Bi et al., 2020). There is a need for better ways to assess future vulnerability and to make research more relevant to decision-making (McDowell et al., 2016). It is essential for researchers to do studies in other parts of the world where this seems understudied (Africa, Caribbean, and parts of Asia) (Eise et al., 2020). Watershed management and other community-based measures were highlighted as effective climate change adaptation and mitigation strategies and, in particular, in the case of developing countries (Ikhlas & Ramadan, 2023). Future research should focus on both mitigation and adaptation studies, including exploring health co-benefits, identifying vulnerable populations, and developing tailored risk communication strategies (Bi et al., 2020; McDowell et al., 2016).

Chapter Three: Methodology

3.1 Research Design

A qualitative, exploratory research design is employed to explore the complex climate variability and the livelihood of the Bede community known as river gypsies in Bangladesh. In light of the complexity, nuance, and interconnections among socio-cultural elements that shape livelihood dynamics the qualitative approach was deemed most appropriate. By engaging with participants in this way, it is possible to gather rich and contextualized data to create a deeper understanding of the issues being explored.

3.2 Study Area

Rivers are life for river gypsies. For hundreds of years, they have wandered along intricate waterways, charming snakes, training monkeys, selling trinkets, performing magic, and healing people (Al Jazeera, 2013). A significant number of climate-vulnerable Bede people have established residency in Savar Municipality, adjacent to the Bangshi River, namely in Ward No. 1. They reside in Porabari, Omorpur, Boktarpur, Kanchanpur, and Arapara. These locations combined are known as Bede Para, where only the Bede community resides in great numbers. The precise population of Bede is difficult to ascertain, as some residents relocate for business purposes for three to four months. There are more than 14,000 Bede People residing in the Savar area, of which 1700+ families are permanent residents. Their settlement has resulted in a reconfiguration of their social structure. They own a designated area of land for habitation, own private property, and benefit from contemporary recreational facilities. Permanent residents engage in voting and provide taxes for services. They are attempting to integrate into mainstream society and pursue a conventional lifestyle, although not yet receiving an enthusiastic welcome.

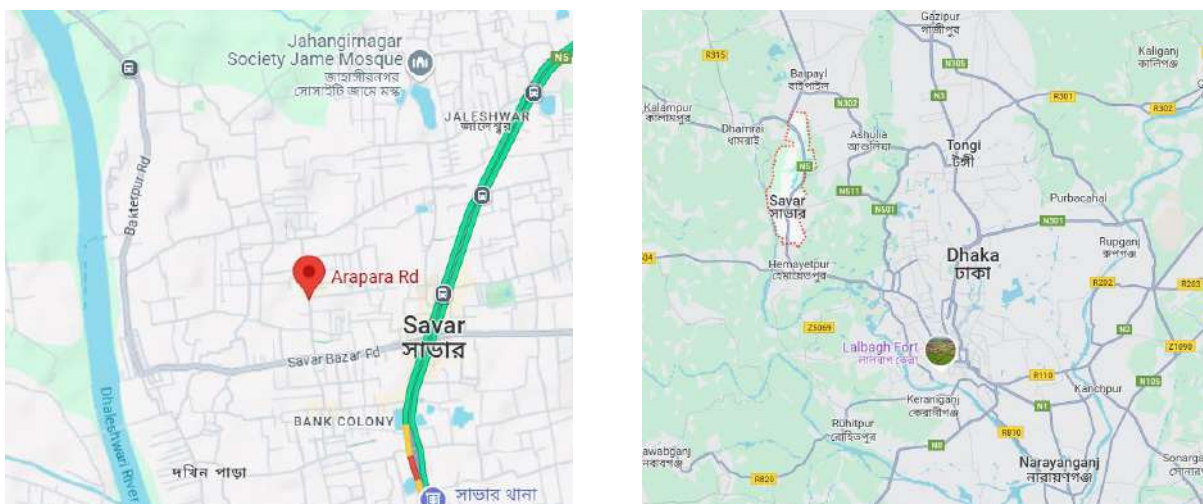


Figure 1: Study Area

3.3 Sampling Strategy

3.3.1 Population and Sample

The target group for this study included members of the Bede community dwelling near the Bangshi River in Savar Municipality, ward no. 1, on the outskirts of Dhaka city. From this population, individuals were selected from five villages—Porabari, Omorpur, Boktarpur, Kanchanpur, and Arapara.

3.3.2 Sampling Methods

A multi-stage sampling approach was adopted. Initially, Quota sampling was undertaken based on age categorization to ensure generational diversity:

1. Age 15–25
2. Age 26–50
3. Age 51–80

Following this classification, purposive sampling was employed to identify information-rich individuals for both Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs). This method guaranteed that participants held firsthand experience and information relevant to climate-induced livelihood shifts and policy interventions.

3.4 Sample Size

- **Focus Group Discussions (FGDs):** Three FGDs were held, each with 9 participants, for a total of 27 FGD participants. Each FGD focused on a distinct age group cohort, assuring generational perspectives:
 - FGD 1: 9 Participants aged 15-25
 - FGD 2: 9 Participants aged 25-50
 - FGD 3: 9 Participants aged 51-80
- **Key Informant Interviews (KIIs):** Three KIIs were conducted to gain expert and policy-related insights:
 - KII 1: An academician from the University of Dhaka
 - KII 2: A government official from the social services sector
 - KII 3: An NGO official from Sajida Foundation

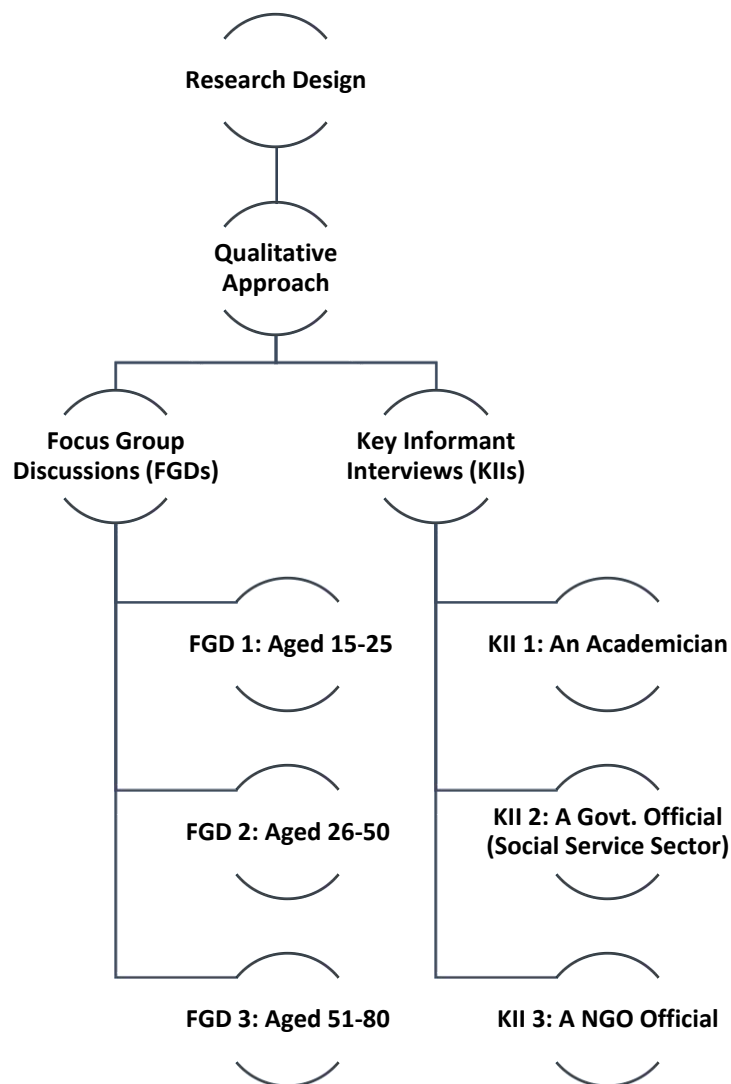


Figure 2: Study Design

3.4.1 Inclusion/Exclusion Criteria

Only participants belonging to the Bede community and ranging among the stated age categories (15–25, 26–50, and 51–80) were included. Individuals not matching these criteria were eliminated to preserve the study’s focus and relevance.

3.5 Data Collection Methods

3.5.1 Focus Group Discussions (FGDs)

FGDs were chosen to capture community-level dynamics and generational disparities in views, experiences, and strategies related to climate variability and livelihoods. Each FGD facilitated open-ended conversations on livelihood transitions, socio-economic climatic adjustments, and awareness and appraisal of policy.

3.5.2 Key Informant Interviews (KIIs)

KIIs provided expert viewpoints on the socio-cultural background and policy consequences. These interviews shared a macro-level insight into how existing policies are formed, executed, and perceived by stakeholders engaged in development, government, and academics.

3.6 Data Analysis

The study employed an inductive approach alongside thematic analysis to examine the data systematically. While the study goals drove the overall analytical approach, an inductive coding method was utilized to ensure that themes developed voluntarily from the data.

3.6.1 Coding and Thematic Analysis

1. Coding: Transcribed data from FGDs and KIIs were evaluated and coded inductively, enabling codes to develop from the participants' narratives.

2. Theme Development: Related codes were then grouped to build themes that encompassed major patterns, topics, and views.

3. Reviewing and Refining Themes: Themes were revised to ensure accuracy and relevance, keeping closely connected with the study goals.

3.7 Triangulation

The outcomes of FGDs and KIIs were triangulated with information from previous studies and pertinent literature on the impacts of climate change, livelihoods, and the policy landscape of Bangladesh. Cross-referencing data from multiple sources further supported the credibility and robustness of the analysis.

3.8 Ethical Considerations

1. Informed Consent: We obtained verbal informed consent from all subjects before data collection. I clearly explained to participants the study's purpose, the measures taken to ensure their confidentiality, and that their participation in this study was completely voluntary.

2. Confidentiality: All data were coded and confidentiality was maintained. All identifying information was removed and participants were referenced with anonymous ID numbers for their anonymity. Access to data was limited to the research team and stored securely on the researcher's local server.

3. Cultural Sensitivity: The research team followed the cultural practices and norms of the Bede people. Data collection was designed to be sensitive to social patterns within the community and does not interfere with normative community and social processes.

4. Credibility: The researcher interacted with the participants for a longer time to get a deep understanding of the data, and triangulated data sources (observation, interview) to ensure credible interpretations of the findings.

3.9 Limitations

As with any qualitative study, possible biases may develop owing to the researcher's interpretation and participant self-selection. Additionally, due to time and monetary restrictions, this study concentrated on a specific geographic site. While the findings give significant insights, wider generalizations should be approached with caution.

Chapter Four: Result

The river gypsy community of Bangladesh, which was traditionally known for their unique style of living, has undergone a drastic change due to environmental and socio-economic compulsions. Climate vulnerability has seriously affected the livelihood strategy of this subaltern group, whose consequences are transmitted between generations. The study discusses the generational changes in livelihood patterns among the river gypsies, the major challenges they face, and how such transformations are remolding their cultural identity and survival strategies.

4.1 Intergenerational Shifts in Traditional Practices

This study found that the elderly people aged 51 to 80 in the Bede community traditionally relied on river-based livelihoods and cultural incentives as their source of income. Other important roles were snake charmers, monkey trainers and performers, herbal medicine preparation, petty trading, and magic display. These were traditionally family-oriented jobs, handed down from generation to generation, based on specific skills and seasonal work. These roles were key to the community's economic well-being and cultural identity, with a deep relationship to the river ecosystem and the old ways of healing. The traditional occupations of the Bede community are inherited through methodical and uninterrupted systems of inheritance which are entangled in family traditions. Knowledge transfer starts from a very young age where children follow their parents around to learn what they do for a living. Skills are passed down through generations through observation, experimentation, and hands-on participation, all of which ensure techniques are learned accurately and effectively.

(Participant 19 aged 51-80 said “I spent my whole life being a snake charmer. Over 40 years, I traveled along the rivers, performing different types of snake games and selling traditional medicines in villages. This was our main livelihood.”

Similarly, participant 21 aged 51-80 mentioned, “My expertise was to prepare herbal medicine for rheumatism and toothache. My father taught me, his father taught him. We would gather herbs along specific locations in the riverbanks.”

Participant 16 aged 26-50 said “My father was a snake charmer, and I learned some of his skills, but never professionally. Times were already changing when I grew up.”

Participant 17 aged 26-50 mentioned, “The younger generation has entirely different aspirations. They're more educated and prefer stable sources of income over traditional practices.”

Also, participant 2 of younger age group aged 15-25 said, “I haven't seen the traditional occupations with my own eyes but I have heard stories from my grandmother that their occupations were fishing, making medicines from snake's poison and showing snake game.”)

Notably, the livelihood dynamics in the last decade in Bede community have also changed snake charmers, monkey trainers, magic show people and traditional healers are now disappearing. These traditional practices were once widespread in the community, but many have transitioned to small businesses or work elsewhere to adapt to modern times according to the age group of 26 to 50.

Interestingly, the study finds put that the younger generation aged 15 to 25 marked transition from traditional river-dependent occupations to alternative livelihood strategies as a result of environmental factors, particularly climate change and flooding. It also shows how occupations are changing through the generations, with each younger generation more disaffected with the old ways of doing things more turned towards steady jobs with the city.

4.2 Impact of Environment and Climate on Community's Livelihood

Environmental changes have deeply impacted the traditional livelihoods of the Bede community. New river formations and increased erosion have rendered traditional routes of transportation and resource gathering unsafe or unusable. Irregular storms and more powerful ones have disrupted conventional preparation methods while the loss of medicinal plants and snake habitats has threatened traditional skill-based practices of healing and snake charming. Moreover, extreme weather has made it impossible to live a nomadic life by boat and river erosion has devastated places where they performed culture.

The community has seen a significant decline in traditional occupations such as snake charming, monkey shows, magic performances, and traditional healing. Government regulations, environmental changes, ethical concerns, and the younger generation's lack of interest all lead to this decline. Traditional livelihoods became less feasible over time while original practices were times changed by modern entertainment and medicine. Moreover, the loss of specific knowledge and moving to a semi-permanent way of life have been others major reasons for the decline of these cultural trades.

On the other hand, the age group 26-50 focuses on the decline of traditional jobs for climate change. Mainly Climate Change and river problems shifted traditional occupations River pattern transformation and related disasters such as erosion and flood have had a tremendous impact on some vital livelihood activities including boat rides, traditional theater performances, and trading routes. Herbal medicines have also become more scarce, and altered snake ecologies have made snake charming increasingly impractical. Climate change and extreme

weather are no longer predictable, and uncertainty has made river-based livelihoods less predictable and riskier.

(Participant 19 from age group 51-80 opined, “The rivers have changed so much. Many channels we used to navigate have either dried up or become too dangerous, making our traditional travel routes impossible. In the past, we knew the river like the back of our hand. It was our lifeline for transportation, fishing, and even for gathering resources. Now, with the change in weather patterns, the flow of the river has changed, and places that we used to frequent are now inaccessible or dangerous.”

Participant 22 aged 51-80 mentioned, “Modern medicines have replaced the traditional way of healing. The young generation doesn’t have the patience and interest in learning about these plants, and soon lots of this ancient wisdom will be forgotten.”

Participant 10 aged 26-50 said, “Traditional boat routes are no longer easily accessible due to changes in the river patterns. I have seen the dramatic changes in the rivers within my lifetime.”

Similarly, participant 11 aged 26-50 said, “Unpredictable weather has made it impossible to maintain regular performance schedules like we used to.”

Such as participant 5 aged 15-25 said, “I think that over the last ten years, we started to rely less on the traditional ways. People are not so much into selling fish or working with boats anymore. It is like everyone tries to find some more stable job, be it construction work or selling goods at the market. The floods became really unpredictable; therefore, it is difficult to live off the river as we used to.”)

But the younger age group (15-25) reported drastic changes in traditional occupations due to climate and river conditions (e.g., unpredictable floods, declining fishing resources) and others saw no changes. This group is more interested in different sources of income available in the community are falling under these categories such as retail businesses (grocery, clothing, saree stores), skill-based occupations (sewing), and food-related ventures (tea-stalls).

The KII also brought out how the climate is making the livelihoods of this community more vulnerable. While in the last decade the youth is making a shift from traditional practice of snake charming and herbal medicine that would, over the generations, be passed on to the next to a more mainstream work sector, the changes in availability of quality of education system or the inherent uncertainties relating to traditional livelihoods, both of which are influenced by climate variability practices.

(According to the academician, “The basic needs of this community is affected by climate change as their income sources change. Domestic migration also happens.”

Also, NGO official uttered, “Climate change is a factor for them to change their livelihoods. Earlier all of them used to have a boats of their own and they used to do business with it. Now there is river erosion thus the people living beside the rivers are decreasing as well as

their Bede community's businesses. Now they go village to village by walking and try to run their traditional businesses.”)

4.3 Climate Change and Economic Resilience of the Community

Age group 51 to 80 believes that increasing livelihood diversification brought better economic conditions and income to the Bede community. But this comes at great social and cultural costs. Families may have more stable incomes and better living conditions now, but they have surrendered their special social status, traditional skills, and cultural identities. People these days make more money than before but have more stress and aren't healers and entertainers anymore. In sum, the community faces a trade-off between the financial benefits of being escorted and the loss of their culture and sociocultural network. stark differences in incomes across the traditional (soft fishers) and burgeoning (net and beach fishers) occupations in the Bede community. Traditional means of sustenance are seasonal and irregular, with high income during festivals and much leaner periods during monsoons. Although these patterns necessitated flexibility and adaptation, they suited the community's lifestyle. Modern careers, on the other hand, are far more consistent and organized, bringing in stable income but rarely reaching traditional special seasons like earning big bucks.

Climate change has paved the way for the community to leave traditional jobs in favor of stable, modern jobs, believe the age group 26-50. While this transition was painful, it has resulted in more stable and predictable incomes, increased economic security, and improved long-term planning for the generations to come. But this progress has also meant a loss of traditional roots and culture, lost on some in the community amid the financial benefits.

(Participant 19 aged 51-80 said, “We received respect along with our income in our time. Though people are earning more nowadays, we have lost our special status in society.”)

participant 11 aged 26-50 stressed, “We lost our traditional identity somewhat, but our economic condition has improved with modern occupations.”)

participant 1 aged 15-25 said, “Previously, I heard that the community doesn't earn a stable income every day. It's had to mouth income. But now due to doing different types of business and jobs the people of the community have a stable economic situation which also helps the children and growing adults to get better scope in life and career.”)

participant 3 aged 15-25 mentioned, “Now that people are engaged in different jobs- either in construction or shops- we have more stability. It's good, because the kids now have a chance to go to school and look for better opportunities.”)

Primarily fishing and snake charming, which has alienated them from this cultural identity. Due to economic pressures, many Bedes are moving away from their traditional occupations

and settling in one place there is less interest in traditional occupations for younger generations (Shawon et al., 2022). Moreover, the younger generation (15-25) believe the community has significantly improved socio-economic conditions, a process of positive evolution in which many members have reframed to more stable and diversified occupations, largely in urban areas, small businesses, and agriculture. As a result, incomes have stabilized, children have had the opportunity for better education and a higher quality of life.

The KII also brought out how the climate issues has an impact on the economic stability of the community. Climate change has affected key livelihoods, including fishing and snake charming, and made people take up alternative jobs like hawking and day labor, which they have not been used to, thus bringing economic turmoil. Nowadays the economic stability is more than the previous traditional jobs as those works are more seasonal whereas modern jobs have more ways to earn and raise a family.

(The academician opined, “There needs to be a permanent economic opportunity for this community.”)

Additionally, the government official said, “Due to climate change they can’t fully explore their traditional livelihood scopes. Now they choose other profession making their economic stability shaky.”)

4.4 Modern Skill Acquisition and Challenges

Currently Bede community participants aged between 51-80 have little to no chance of learning new skills needed for modern day jobs. They are used to simple paper transactions based on trust and have real trouble understanding complex financial systems, how to deal with the mountains of paperwork, and the whole digital process. Many ask their younger relatives for help with technology and administrative tasks, and this puts them at risk of being frustrated, as well as feeling disconnected from current business techniques. Now this narrative contrasts sharply with the nostalgia about simpler times, lacking roles and the accompanying personal touch sadly missing in modern business dealings where generations of workers seen an impractical dream as business moves towards automating services.

(Participant 19 aged 51-80 said, “When we lived a long time ago, no systems confused our minds; we could trade things or count them on our brains. Today, one has to keep all those receipts and do all this accounting and the e-transactions that get very cumbersome to do. It's difficult to adapt to such an idea working with machines and numbers in that much detail. And quite often, I ask younger people in the family for help with those things; it's always a fight.”)

Participant 12 aged 26-50 said, "I learned customer service skills which I applied in my retail business."

Participant 15 aged 26-50 said, "For instance, banking and savings are one area that I did have to learn about, though."

Participant 2 aged 15-25 mentioned, "I had to learn how to manage a small business, including keeping records of money and the way to deal with customers. I also learned some basic skills in using the computer to manage sales and marketing."

As well as, participant 5 aged 15-25 said, "I have learned the use of smartphones and computers for running a business, such as keeping stock or talking to customers online. It is different from the old ways, but it is necessary.)"

In terms of new skill sets gained by incorporating new jobs, age group 26-50 reported skills such as accounting, customer service, inventory management, product sourcing, and financial literacy, all of which would also be transferable to business management. Such skills play an important role in running their day-to-day, managing their finances, working with their suppliers and making sure that their new ventures thrive.

The younger age group (15-25) demonstrated due to the new professions, members of the Bede community have acquired skills in a broad range of areas, such as technology, business management, farming techniques, construction, and safety. Shifting toward these new occupations has needed learning a lot, especially learning how to use technology in work processes.

4.5 Governance and Support Systems

The majority of the respondents in the aged 51-80 category state that there is a major absence of government, and NGO support based on their traditional livelihoods. Even if some get small amounts, such as old age allowance, in terms of financial aid to maintain their cultural practices or traditional knowledge, nothing significant is provided. NGO attempts to provide relief have largely failed because of an ignorance of the community's traditional way of life. Moreover, repressive government policies like encroachment on rivers have hampered them from continuing their traditional occupations. They feel that neglect from more broad, provincial or even national programs fails to encompass true support for keeping and carrying on traditional livelihoods within their community.

They also recognized the need for support to maintain their traditional knowledge and practices in fields such as protecting their healing methods and snake charming techniques. They speak of a need for the government to acknowledge and document their occupations, which are tied to preserving their heritage. Moreover, there exists great need for better shelter and housing in

times of floods, modern healthcare facilities and financial support to fulfil basic needs. To this end, education offering to teach the arts to younger generations and access to medical services from nearby facilities are also cited as critical to the welfare and preservation.

Age group 26-50 portrayed that the community has varied support needs, both economic and social. Support for businesses includes financial aid, training in modern business skills, and access to loans. Educational programs, vocational training, and the preservation of cultural heritage while transitioning to new forms of livelihood are considered to be of value. Enhancing health institutions and infrastructure, and advocating for financial literacy, are also considered essential for broader development.

(Participant 20 aged 51-80 mentioned, "We have never received any substantial support for continuing our traditional practices.")

Participant 19 aged 51-80 said, "We are in need of support to safeguard our traditional knowledge. The youngsters should know our methods of healing and the techniques of snake charming, which are going to be lost forever."

Participant 12 aged 26-50 said, "Access to low-interest loans would provide more stable businesses."

Furthermore, participant 10 aged 26-50 mentioned, "We do need some financial support to expand our businesses and to support the education of our children."

participant 1 aged 15-25 said, "If we get a more educational scope with allowance, we can build ourselves competent for the mainstream job opportunities. Also our community is underprivileged and carries social stigma we need more inclusive support created by the government.")

Focusing on the younger generation (15-25), they do not demonstrate that much presence of any government or NGO support to their livelihoods. This group indicated that individuals are looking for holistic support based on education, skill-training, financial assistance and social inclusion and they can benefit from some government or NGO initiative to help their community uplift. For instance,

The KII also brought out how this community can be helped with their traditional and changing livelihoods.

(Academician noted, "Joint actions can be taken. Moreover, non-returnable funds can be given to them to develop the Bede community's situation. NGOs must have a monitoring approach so that the individuals from the community don't waste the loan but rather use it for the betterment of their situation. The government can allocate a budget and continuously generate funds for them so that the community gets loans in a circular motion.")

NGO official also said, "Many NGO works for them. Govt. gives allowance to the community, mostly to the older people. Locally many NGOs work for the development of the

community. Furthermore, many NGOs work for their health and housing. But focus must be put on the fundamental rights of Bede community more.”)

4.6 Access to Basic Rights and Services

Age group 51 to 80 described that access to education has played a crucial role in shaping livelihood choices in the Bede community, resulting in the move away from traditional trades to modern careers including office work and white-collar professions. Although education opens new job opportunities and increases the general living standards of succeeding generations, the impact of that comes at the cost of straining traditional craft, skills and customs. As much as this generational shift has opened doors to modern opportunities, it also has created a trade-off as well, with some members of the community expressing concerns where they perceive that youth are forgetting traditional knowledge and respect for traditional ways of their ancestors.

Additionally, the rise in connectivity through mobile phones and the internet have brought major issues for the older generation of the Bede community. A lot of participants say it was difficult to adapt to digital technologies, they are overwhelmed and do not feel as human-centered as face-to-face meetings. Modern devices are so complicated that a whole segment of the population struggles to use technology, particularly those who lack digital literacy and those with emotional barriers, leading to feelings of frustration and inadequacy and a perceived exclusion from society.

Age group 26-50 described education is breaking traditional patterns of occupations. It not only offered new opportunities for more stable, better-paying jobs but also helped integrate the community into mainstream society, bringing along new skills and business acumen. This is resulting in economic stability and social mobility as the younger generation at least now at least more equipped to compete on the job market.

Focusing on the technological advancement, the same age group described that mobile phones and the internet are invaluable tools in business today, but many struggle to master these tools, especially social tools and online banking, so they use them as little as possible. Consequently, they depend significantly on the expertise of younger family members to handle online services like promotions, communicating with customers or selling online.

(Participant 20 aged 51-80 said, “Education has changed everything. Our knowledge of herbs and healing was passed down orally, but now children learn modern medicine from books.”

participant 24 aged 51-80 mentioned, “I see how everybody is using their phones and computers, and I'm feeling left out. I've tried to understand them, but just get the feeling it's not for me. I have lived my life without these devices, and it's hard to imagine just how they'd improve anything I do. I don't want to keep up with these changes because it feels like I'm losing my identity in the process.”

Participant 10 aged 26-50 said, “Education has given our children options we never had. They can now choose from a variety of careers, like healthcare, business, or technology. This has made them more independent.”

Participant 3 aged 15-25 said, “The fact is that education has greatly differentiated what people opt to do. More people nowadays have aimed at seeking stable jobs in towns and others have opened up their own businesses. To them, education is a means of progressing from fishing and trading in boats.”

participant 5 aged 15-25 said, “I do not have much access to the internet, but once I can use it, I learn new things from writing and digital marketing. I try a little freelancing, which is tough without my own phone or regular internet.”)

However, the younger generation (15-25) highlighted the benefit of education mentioned education has changed into a very important part of people's lives. The group also showed the obstacles of using new technology. Limited access to mobile phones, the internet, and technology are highlighted by responses as a significant challenge for individuals in the community, although some participants can leverage borrowed devices or partial internet access to pick up new skills or dabble in a little freelancing, the lack of access precludes them from fully taking advantage of digital work.

4.7 Gender Dynamics and Social Change

Ahmed et al. (2023) emphasized in their study that the effects of climate change are not gender-neutral; women are generally more vulnerable to its effects. Older generation have had a tendency towards the new way of life in the Bede community's livelihood activities. Age-old gender roles wherein men had more performative roles and women prepared the herbal medicines are obsolete. Women nowadays are involved in business activities and individual work just like men resulting into less inequality of gender and consigned economic freedom. Gender-neutral roles are being adopted by the younger generation, moving away from the defined boundaries more common in previous generations. This change is part of a wider trend away from men and women performing different types of income-generating activities and towards equal access to all means of livelihood.

Whereas the age group 26-50 insinuated a new era towards gender equality in livelihood work in the community. Gender roles were quite distinctive in yesteryears, where women were expected to heal and act, rather than the more current oriented, business and economics. This is indeed a sign of the times as more men and women now go into business together, suggesting a generational shift in balance and equality. This metamorphosis underlines the community's commitment to gender parity and the economic advancement of all its members.

(Participant 24 aged 51-80 mentioned, "Men and women both had separate roles in our traditional work. Modern generation does not follow these traditions.")

Participant 18 aged 26-50 said, "The shift toward modern livelihoods has made work quite gender-neutral."

Participant 2 aged 15-25 said, "I have heard that earlier, women used to do much work related to snake games and healing with snake venom. But now, men and women both are doing almost similar work: business and agriculture. More or less, there is a balance in the livelihood activities."

However, the younger generation aged 15-25 show there has been a remarkable change of work roles of men and women in household livelihood activities. Women used to be involved in specific roles such as snake games and healing, while men did others. However, in the following years, women also began to engage in business or farming and other income generation activities on par with men. This indicates a promising progression into the gender equality where both the genders are equally adult in sharing more jobs and getting equal opportunities in almost every livelihood sector.

(NGO official said, "Females are the main breadwinner of Bede community. In Bede community when a girl is born, parents become happy. Climate change is a factor for them to change their livelihoods. Earlier all of them used to have a boats of their own and they used to do business with it. Now there is river erosion thus the people living beside the rivers are decreasing as well as their Bede community's businesses. Now they go village to village by walking and try to run their traditional businesses.")

The Govt official also stressed the vulnerability as "Women and older population are vulnerable community due to discrimination. Also those who are totally illiterate they are also vulnerable because they can't raise their voice about their necessities.")

According to the KIIs, women are the main earning source of the traditional Bede community but now due to the touch of modernity and technology these gender roles are gradually shifting.

4.8 Climate Adaption Strategies

The older Bede community (51-80) has historically depended on ecological wisdom and natural signals to adjust to changes in weather and climate. But both are increasingly declining as younger generations struggle to interpret the signs from nature and place less reliance on

ancestral wisdom. Time-honored practices of securing boats before a storm, forecasting the weather through performance activities and reading natural indicators are increasingly ineffective or incomprehensible. The resulting loss of traditions and skills to withstand or recover from environmental changes limits the community's built-in sustainability, resilience against phenomena like invasive species, sea level rise, and an increase in extreme weather events.

(Participant 26 aged 51-80 said, "The living in the boats taught us everything about weather patterns. New generations don't have this experience.")

Participant 11 aged 26-50 mentioned, "Experience over the years helps us to read weather signs and prepare our businesses. We can tell by the sky or even from the behavior of some birds that a change in weather is about to take place, which helps us in preparing for storms or floods."

Participant 4 aged 15-25 said, "We change to higher elevations during the rainy season so as not to get flooded in our homes. We also monitor the water level of the river and other natural warnings, such as birds or insects, which could signal an oncoming bad weather." Also

Participant 8 aged 15-25 mentioned, "We now build houses on stilts or raised platforms to protect from floodwaters. Additionally, we rely on knowledge from elders who can tell us when the rainy season is about to begin based on changes in the river and surrounding environment.")

With partial agreement the age group 26 to 50 shows the community's use of both traditional knowledge and modern techniques to respond to climatic and weather changes. Strategies include forecasting floods and storms by observing the natural world, building resilient infrastructure and adapting business processes to seasonal changes. It also features a rigorous intergenerational transfer of knowledge, where younger generations inherit and continue to integrate traditional and new adaptation practices. The community is better equipped to protect their source of employment and infrastructure from the negative impact of environmental factors due to this combined approach.

Similar to age group 26 to 50, age group 15 to 25 emphasize the need for both modern and indigenous knowledge in adapting to work toward resilience and adaptation in the community toward environmental change. This group addressed few adaptation strategies.

KIIs addressed that the community is trying to adapt, in gradual ways, with some sustainable homes, sustainable infrastructure, but money is always the issue.

(Academician highlighted, "Bede community has taken steps by their own like how to build a sustainable houses and infrastructures. But due to lack of money they can't make much development. State must provide their housing facilities to this community. There needs to be local intervention with community based stakeholders to make a permanent solution of Bede

community's income generation. The biggest drawback of marginalized community is not having regular income which needs to be solved to develop their adaptation power. Climate prone area's Bede community must be given hands-in-training to fight any sort of climate change.")

4.9 Ancestral Knowledge and Modern Identity

Climate variability has dramatically transformed traditional roles in the Bede community according to older age group (51-80). More erratic and more intense storms, altered river patterns, and unexpected seasonal changes have thrown the community off its ability to plan and execute customary activities like travelling, performing, and trading. The reliable natural indicators and patterns of the river that sustained them are no longer stable enough to support their ways of life, leading some to leave their traditional roles behind and find new ones. These environmental changes have resulted in heightened uncertainty and risk around river-based activities, with a loss of traditional knowledge and the gradual erosion of practices dating back centuries.

In accordance with the older age group, another age group 26 to 50 agreed that climate change has impact on changing roles among this river gypsy community that have long been defined by fishing, traditional healing practices and hunting, but many have branched out to modern day equivalents of business and agriculture. Such an adaptation means leaving behind some traditional ways, adopting sustainable agricultural practices and increasing adaptability in community actions. Especially the young generation, who have turned to alternative livelihoods, as they seek food security and economic stability, in line with a wider trend of role diversification and modernization against an unstable climate and changing environment.

(Participant 21 aged 51-80 said, "the rivers behave differently now. "Our old knowledge about safe travel times doesn't work anymore. The river, once the lifeblood of our community, has changed so much. Whereas we used to know to the day when the currents would be calm enough to travel, now the water levels can change unexpectedly, and dangerous currents appear where there were none before. The riverbanks have eroded in places we never expected, and it's harder to predict when it will be safe to cross or perform."

Participant 10 aged 26-50 opined, "climate changes have necessitated us to abandon many practices passed down through generations. Changed weather patterns made it difficult for them to predict river cycles and seasons, so they started to adjust their traditional farming and fishing methods accordingly."

Participant 5 aged 15-25 said, "I have not seen the traditional roles of the community with my own eyes, thus I can't say anything about it.")

On the contrary, the younger generation aged 15 to 25 reported their response differently. The majority of participants reported that climate variability has not resulted in significant changes in traditional roles and responsibilities within the community. They either did not notice a change or were not in a position to observe enough to make a comment.

4.10 Environmental Vulnerabilities and Responses

According to responses of KII, climate change has drastically affected the traditional livelihoods of the Bede community, an ethnic group in Bangladesh, residing in Savar. Over the last ten years, many young members of the community have shifted away from traditional practices such as snake charming and herbal medicine skills passed down through generations to pursue more mainstream employment opportunities. This shift has been encouraged by a number of factors that include challenges within the education system and the inherent uncertainties of traditional livelihoods, both compounded by climate variability. Adding to this, the pandemic caused the younger population to think twice about their choices for the future. Increasing floods, unseasonal storms, and erosion of riverbanks have also devastated the main livelihoods of fishing and boat-making and compelled many community members to uncertain occupations like hawking and day labor, which brought in economic instability. Women, elderly, and illiterates were found to be the most vulnerable groups within the community, facing increased discrimination and least access to advocacy or support.

(Govt. official mentioned, “The young generation of Bede community don’t want to accept the traditional occupations rather they want to mix with the mainstream population and job sector. There are more or less 15 thousand Bede lives in Savar. People of Savar’s Bede community are mostly in education now. Those who are older and have no way to transform now they stick to the traditional occupations.”

NGO official noted, “Bede community now lives in the land not in river. They see various scopes of livelihoods by comparing with other people of the society. Thus they are making a backup plan to develop their situation more. This shift in changing livelihoods is also a positive approach.”

Academician stressed, “there is a social climate issue which the community faces due to lack of permanent rehabilitation. Even they don’t earn a lot thus sometimes they get involved in the business of drug dealing and other criminal activities.”

Traditional livelihoods, like boat-making and river-based businesses, of the Bede community are highly disrupted by the erosion caused by climate change. Environmental degradation has made them switch from river-based to land-based livelihoods: they travel from village to village in maintaining their traditional businesses. Compounding this challenge is the decline in the number of people living near the rivers, which reduced their customer base and business

opportunities. Thus, this has driven the community to diversify their livelihood strategies as a means of sustaining themselves economically.

4.11 Development Initiatives and Recommendations

Based on the description of KIIs, while government and NGO programs are important building blocks of progress, these are not the right steps and current efforts are often ineffective and rarely address the needs of the community. Participants highlight the importance of supportive collaboration, such as specialized sewing and handcraft training, a training center, and diversified investments supporting community empowerment. Such as the

(Govt. official suggested, “Govt. and NGO must work together to help the community. Whatever the community wants to do and is capable of, govt. and NGOs must focus on that. Also the community must be given pieces of training to improve their life such as sewing, handcrafts etc. The capacity of these training facilities must be improved. Investments must be increased and interventions must be according to the community’s necessity with a modern approach.”

Academician highlighted, “I don’t think law or policy is that much needed. Community-based actions must be taken to aware the community and bring positive changes among them. Also, the mainstream society must be empathetic towards the Bede community, otherwise, this community can’t be developed.”

According to the NGO official, “Interventions must align with the community’s needs. Plans must be long term not short term with proper investment and close monitoring so that drastic change becomes possible. Loans can be provided to them for business, though they get back to their traditional occupation.”)

Ultimately, the call for joint action around support from the government and NGOs comes to discuss non-returnable funds, monitoring of the allocation process, and financial assistance over the long-term basis is needed. Furthermore, positive changes and resilience will require the community to take grassroots initiatives and the community in general – empathy. Moreover, as NGOs and government programs play a crucial role in meeting needs such as health care, housing and economic development, there remain glaring gaps in meeting the basic rights of the Bede community. Reiterating that existing programs do not always address the particular needs of the community the need for more tailored and sustainable interventions. They need coherent long-term planning properly financed and closely supervised to ensure that the support is effective and meets their needs.

4.12 Community Prospects and Sustainability

Based on the understanding of KIIs, the Bede community members anticipate that their livelihoods will soon become part and parcel of the broader community as fundamental changes in community role viability, along with ongoing climate vulnerabilities, are likely to make the

traditional Bede roles increasingly incongruent. This transition between generations and socio-economic strata emphasizes the need for specific measures to maintain cultural heritage and bolster climate change adaptability. In terms of the future of the Bede community's livelihoods, the outlook is bleak, as integration into mainstream society suggests a gradual erasure of cultural practices. As this traditional role becomes increasingly unviable amidst ongoing climate impacts to the community, integration of traditional knowledge systems into land management becomes vital, and it highlights the need for an integrated approach that balances culture with economic opportunity and stability within a resilience framework.

(The academician opined, "The community will merge with other classes of the society. Then the previous cultures and customs will be gone eventually and new values will be developed. Thus subconsciously the community will merge fully to the mainstream community of the society.")

Correspondingly, the NGO official said, "It is difficult to say that their traditional livelihoods will fully change, but it can be said that there would a massive change in their livelihoods. When they don't have their regular work then they get involved with the day labour work and other works. Eventually the community will understand the value of education and will try to be educated. But it can be tough for them when they need to mix with other people of the society and detach with their own community."

The Govt. official mentioned, "The community will get involved with the mainstream population soon. Because they don't want to be a part of Bede community anymore due to vulnerable and insecure livelihoods.")

Economic insecurity and the diminishing viability of traditional roles have signaled a future of cultural assimilation into mainstream society for the Bede community's livelihoods, the study found. However, such integration threatens their unique cultural heritage and over generations, traditional customs and practices may erode. Diversity in other sectors especially in terms of livelihoods will emerge and will be included in larger socio-economic systems with more and more education. Nonetheless, this shift brings about challenges regarding cultural identity and social cohesion, highlighting the necessity of balanced approaches that safeguard cultural heritage whilst fostering economic stability and resilience.

Chapter Five: Discussion

For centuries, the Bede community-a generic group known more than often as the 'river gypsies'-has belonged to Bangladesh's riverine ecology. Traditionally perceived to be snake charmers, vendors of herbal medicine, petty traders, and artists who put up cultural performances, over the last few decades, the Bedes have tried to adapt to a fast-changing socio-economic and environmental environment. The Bede community or river gypsy community in Bangladesh is an embodiment of how climate change in interaction with socio-economic forces is reshaping traditional livelihoods. This study puts in the spotlight the generational gap in adapting to climate change within this community. Elders are deeply set in river-based traditions and struggle to adapt to shifting river patterns, along with the loss of important resources, while the middle generation struggles to maintain their heritage in a world of adjustment to new realities. The younger generations more and more take on different livelihoods, rarely having experienced directly the traditional ones. Economic stability improves at the expense of cultural erosion. This study identifies the need for more effective supporting mechanisms that meet the specific needs of the Bede community in such a way that it ensures cultural preservation together with successful adaptation to climate change. According to Rahman et al. (2024) This diversification is a response to decreasing demand for traditional services, forcing a shift towards urban jobs and small companies. The Bede's integration into greater society has resulted to changes in their practices and identity, underlining the significance of cultural preservation among socio-economic pressures.

The research brings out sharp generational differences in livelihood and cultural practices among the Bede community. The older generation, aged between 51 and 80 years, characterizes the traditional ways of life, which included river-based livelihoods, snake charming, and traditional healing practices. These occupations were not merely economic but constituted the bedrock on which their cultural identity and prestige rested. The systematic leakage of knowledge down the generations has been a hallmark of their community and is rapidly eroding. The generation in the middle-26-50 years-represents the transitional generation, which bridges traditional and modern occupations. Most members of this generation have been witnesses to the decline of the traditional occupation and the forces of adaptation to a new economic reality. Younger people, aged 15-25 years, do not have any meaningful experience with traditional occupations and also have moved to more secure mainstream employments.

Climate Change is hitting at the very livelihoods of the Bede river gypsy community in Bangladesh. Key environmental challenges are altered river patterns and increased erosion, making traditional navigation routes unsafe. More frequent and intense storms disrupt

traditional practices and destroy necessary equipment. The destruction of medicinal plant habitats and snake populations will jeopardize the ability to continue basic traditional practices like herbal medicine and snake charming. Variable weather patterns make it more difficult for the community to engage in nomadic culture and affect seasonal activities. These changes in the environment have transformed the very relationship of the community with its traditional ecosystem, making historical knowledge less reliable and traditional practices less viable.

The economic response to climate and environmental vulnerability within the Bede community is complex and multi-layered. Whereas for the younger generation, occupation has largely shifted toward modern ones like wage labor or small businesses and sometimes government services also, which provide a more stable and often higher income, there is a significant cultural cost to this. The older generation, who were deeply embedded in traditional river-based livelihoods and cultural practices, often express a profound sense of loss regarding their social status and cultural identity. They lament the loss of traditional skills and knowledge and the particular social functions that these occupations played in the community. This observation underlines one of the critical tensions between economic resilience and cultural conservation. Indeed, the community is in need of balancing economic stability against desires for the maintenance of culture and tradition in the face of rapid social and environmental change. Additionally, this shift to modern livelihoods has many challenges, and one major problem is that many older people have difficulties with digital literacy and modern business practices. With younger members more readily taking to new technologies and methods of business, the learning curve for the older generation exposes them to vulnerabilities within their generational gap.

Changes in gender dynamics are highly documented through the research within the Bede community. Traditionally, the gender roles had been more clearly defined; men were mostly occupied in river-based livelihoods, and women were involved with snake charming, making herbal medicines, etc. However, such livelihoods have been diversified by an ever-changing economic atmosphere through climate change. The women thus are increasingly engaging themselves in a host of economic activities beyond waged labor, small-scale entrepreneurship, and even some traditionally held male-dominated occupations. This shift toward more androgynous roles might suggest that climate-induced livelihood changes are restructuring the economic nature of the community, as well as acting as a catalyst toward social change, at least in regard to changing male and female roles and expectations.

Most critical, there is a perceived lack of adequate governmental and NGO support for the Bede community. More targeted interventions that preserve traditional knowledge while supporting transitions into new livelihoods are clearly required, as identified through this research. Instead, the community wants better access to education and utilization of modern technology to develop their lives. These interventions should be financial assistance and skill development programs, improvement in access to basic services and rights, and climate resilience, including early warning systems, climate-smart agriculture, clean water and sanitation, and climate-resilient infrastructure. Interventions that address these areas will be able to support the Bede community in adapting to climate change while preserving their cultural heritage and promoting their long-term well-being.

The study suggests a complex future for the Bede community, with increasing integration into mainstream Bangladeshi society. Such integration, brought about by economic compulsions and the quest for more sustainable livelihoods, may result in greater economic opportunities and social mobility for community members. Yet, this increased integration is also fraught with serious implications for the long-term survival of their unique cultural identity. With greater assimilation into the mainstream, the risk increases that the distinctive traditions, knowledge, and cultural practices that have defined life for generations will be lost. The delicate balance is between what is necessary in terms of adaptation to a changing environment and economic pressures and conservation of valuable cultural heritage. This calls for an integrated response that would provide for economic sustenance to the community while furnishing the wherewithal towards keeping the cultural heritage alive or revitalizing it.

Chapter Six: Recommendation and Conclusion

6.1 Recommendations

1. Community knowledge platform creation to share traditional and modern skills:

Implementation:

- **Identifying Key Stakeholders:** Engaging with community leaders, local NGOs, and experts in traditional and modern livelihood practices. This will facilitate the identification of skills to share.
- **Platform Development:** Setting up a computer training center in a community for members to engage with digitalization, or developing mobile apps to facilitate skills sharing (like WhatsApp groups or forums), a platform will help connect community members.
- **Training Programs:** Organizing professional training workshops for traditional skills (medically approved herbal medicine, handicrafts) and modern skills (computer literacy, business skills).
- **Content Creation:** Videos, pamphlets, and anything that can reach out to the people and ensure it is accessed even by illiterate members of a community.

Actions:

- Holding local meetings to determine what skills are most relevant.
- Leveraging local schools or existing community centers as hubs for training sessions.
- A mentorship system can be set up where the new generation is trained using a modern skill set using social services offices.

2. Climate resilience program to equip the community with adaption skills, vocational training, and financial literacy:

Implementations:

- **Adaptive Technique:** Providing new ways to adapt to rising water levels, unpredictable weather patterns, and environmental degradation. These could include climate-resistant agriculture, flood-proof housing, or emergency preparedness plans.
- **Vocational Training:** Formulating a curriculum that conveys skills for alternative livelihoods independent of climate-sensitive occupations. This may involve different fishing techniques, boat construction, or solar energy upkeep.
- **Financial Literacy:** Offering workshops on managing finances during dire needs, savings, and securing insurance against weather-related risks.

Actions:

- Collaborating with local agricultural and non-governmental organizations to conduct adaptation training.
- Partnering with vocational institutions to offer certificates for skilled workforce.
- Forming alliances with microfinance institutions to provide accessible financial solutions for the community.

3. Digital inclusion to make the community more advanced and tech-friendly leading to creating more livelihood opportunities:

Implementations:

- **Infrastructure Development:** Ensuring the community has access to dependable internet, through mobile networks or community Wi-Fi hotspots. This can involve working with tech companies and local authorities to improve connectivity in remote areas.
- **Training in Technology:** Providing training programs for basic computer skills, browsing the internet, using social media, and utilizing them for business or education.
- **Access to Online Marketplaces:** Training community people to sell local products (handicrafts, herbal medicines, etc.,) at online worldwide platforms to come up with the new economic opportunity.

Actions:

- Teaming up with tech NGOs or local government for better broadband reach.
- Mobile app programs for job hunting, commerce, and education.
- Subsidizing or donate cheap digital devices.

4. Government advocacy to build sustainable policies, and monitoring systems and provide community funds to strengthen the future of these marginalized communities:

Implementations:

Policy Advocacy: Creating targeted policies for river gypsies by pulling government bodies (both local municipalities and national ministries) to address land rights, social security, and climate adaptation funding.

Monitoring Systems: Promoting a monitoring system that follows the progress of policies relating to disadvantaged populations, ensuring accountability and transparency.

Community Funds: Advocating for a dedicated community fund specifically for river gypsies and promoting sustainable employment, improved housing, health services as well as education.

Actions:

- Organizing discussions between government officials and the community to convey study findings and underline the importance of the issues.
- Creating advocacy materials that stress the beneficial impact of aiding underprivileged populations.

- Developing ties with foreign groups to finance and assist advocacy campaigns.

6.2 Conclusion

The Bede community in Bangladesh stands at a critical point where environmental change, economic pressures, and cultural preservation meet in complex ways. This research has identified ways in which climate change acts to catalyze profound transformations within a community and to create sharply differentiated generational responses to adaptation. The findings reveal that, even as the relative economic stability came with the transition of younger generations into mainstream occupations, it simultaneously accelerated the erosion of traditional knowledge and cultural identity. All these factors have been further complicated in transforming gender roles and a lack of targeted institutional support in their adaptation journey. As environmental and economic forces will surely propel them towards their integration with mainstream Bangladeshi society in the immediate future, such integration does not have to be equated necessarily with the total dissolution of their distinctive cultural heritage. The challenge is thus how to devise interventions that can bridge the gap between necessary adaptation and cultural preservation by the help of support programs, climate resilience measures, and mechanisms for preserving traditional knowledge. The experience of the Bede community carries rich lessons in how traditional communities can adapt to climate change while trying to maintain their cultural identity: a need to recognize policies on the interconnectedness of environmental sustainability, economic resilience, and cultural preservation. Lessons learned in the transformation of the Bede community can be used to effectively adapt other vulnerable communities in a culturally sensitive way to similar challenges while climate change currently reshapes traditional ways of life across the globe.

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Appendices

Participant Consent Form

Research Title:

Climate Variability and Changing Livelihoods among River Gypsies (Bede) of Bangladesh

Researchers:

Khandaker Robin

Tahira Shamsi Utsa

Funding:

This research project is funded by a Research Grant (mentorship) from ICCCAD in collaboration with the Embassy of Sweden, Dhaka.

Dear Participants,

You are invited to participate in a Focus Group Discussion (FGD) as part of a research study conducted by Khandaker Robin and Tahira Shamsi Utsa. The study aims to understand how climate variability is affecting the livelihoods of River Gypsies (Bede) in Bangladesh.

Objective of this Study:

1. Investigating the dynamic transformations in livelihoods induced by climate change;
2. Assessing policy implementations towards the advancement of the river gypsy community.

All information collected during this study will be kept confidential. Your identity and any identifying information will not be disclosed in any reports or publications resulting from this research. Data will be stored securely and only accessible to the research team.

The information you provide will be used solely for research purposes. Findings may be published in academic journals or presented at conferences, but individual responses will remain anonymous.

There are no direct benefits to you for participating in this study. However, your input will contribute to a better understanding of the challenges faced by River Gypsies and may help in developing support programs. There are no anticipated risks associated with your participation.

Consent Statement:

I have read and understood the information provided above. I have had the opportunity to ask questions and all my questions have been answered to my satisfaction. I voluntarily agree to participate in this Focus Group Discussion.

Participant's Name: _____

Participant's Signature: _____

Date: _____

Researcher's Signature: _____

Date: _____

Focus Group Discussion Questionnaire Guidelines for River Gypsies

1. Could you describe the traditional occupations of river gypsies in Bangladesh?
2. How have these occupations been passed down through generations?
3. What major changes have you observed in your community's livelihood patterns over the last decade?
4. Which traditional occupations have declined, and why?
5. What new occupations or income sources have emerged in your community?
6. How have environmental factors (e.g., river conditions, climate change) affected your traditional occupations?
7. How have these changes affected your community's economic status?
8. Are there differences in income stability between traditional and new occupations?
9. What new skills have you had to learn to engage in new occupations?
10. Have any government policies or NGO programs affected your livelihoods? If so, how?
11. What kind of support would be most beneficial for your community?
12. How has access to education influenced livelihood choices in your community?
13. How has technology impacted your traditional and new livelihoods?
14. In what ways has increased connectivity (e.g., mobile phones, internet) affected your work?
15. What challenges do you face in accessing or using digital technologies?
16. Have there been changes in the roles of men and women in terms of livelihood activities?
17. What strategies have you or your community adopted to cope with changes in weather and climate? Can you describe any local knowledge or practices that help you adapt?
18. Have you noticed any changes in the traditional roles or responsibilities within the community due to climate variability?
19. How do climate-related changes affect your ability to access essential services like education, healthcare, and transportation?

Participant Consent Form

Research Title:

Climate Variability and Changing Livelihoods among River Gypsies (Bede) of Bangladesh

Researchers:

Khandaker Robin

Tahira Shamsi Utsa

Funding:

This research project is funded by a Research Grant (mentorship) from ICCCAD in collaboration with the Embassy of Sweden, Dhaka.

Dear Participants,

You are invited to participate in a Key Informant Interviews (KII) as part of a research study conducted by Khandaker Robin and Tahira Shamsi Utsa. The study aims to understand how climate variability is affecting the livelihoods of River Gypsies (Bede) in Bangladesh.

Objective of this Study:

1. Investigating the dynamic transformations in livelihoods induced by climate change;
2. Assessing policy implementations towards the advancement of the river gypsy community.

All information collected during this study will be kept confidential. Your identity and any identifying information will not be disclosed in any reports or publications resulting from this research. Data will be stored securely and only accessible to the research team.

The information you provide will be used solely for research purposes. Findings may be published in academic journals or presented at conferences, but individual responses will remain anonymous.

There are no direct benefits to you for participating in this study. However, your input will contribute to a better understanding of the challenges faced by River Gypsies and may help in developing support programs. There are no anticipated risks associated with your participation.

Consent Statement:

I have read and understood the information provided above. I have had the opportunity to ask questions and all my questions have been answered to my satisfaction. I voluntarily agree to participate in this Key Informant Interview.

Participant's Name: _____

Participant's Signature: _____

Date: _____

Researcher's Signature: _____

Date: _____

KII's Questionnaire (Open-ended):

1. What factors have influenced changes in their (Bede community) livelihoods over the past decade?
2. How has climate change affected the Bede community's livelihood activities (e.g., fishing, boat-making, seasonal migration)?
3. Have climate-related changes such as floods, droughts, or storms impacted their resources (water, land, etc.)?
4. What adaptations have the Bede community made to cope with climate change?
5. What are the key challenges the Bede community faces due to climate change?
6. How has climate change affected the Bede families' economic stability and well-being?
7. Which groups within the community (e.g., women, children, elderly) are most vulnerable to climate impacts?
8. Have government or NGO programs helped the Bede community adapt to climate change?
9. What additional support or interventions do you think the community needs to cope with climate change better?
10. What do you see as the future of the Bede community's livelihoods in light of climate change?

Title: Ripples of Change: Climate Variability and Livelihoods among River Gypsies of Bangladesh

Age: 15-25

Participants: Bede Community People

Location: Savar

FGD's Code sheet

Date & Time: 07/07/2024; 10:00 AM

1. Could you describe the traditional occupations of river gypsies in Bangladesh?

Participant Number	Transcript	Code	Category	Theme
1	I can't describe it that well because I haven't witnessed these traditional occupations at all.	Lack of Knowledge	Awareness of Traditional Occupations	Changes in Livelihoods and Knowledge Gaps
2	I haven't seen the traditional occupations with my own eyes but I have heard stories from my grandmother that their occupations was fishing, making medicines from snake's poison and showing snake game.	Oral Tradition	Transmission of Traditional Occupations	Continuity of Traditional Knowledge
3	I heard similar stories from elderly people. They said that our ancestors were great fishermen, and some knew the art of using snake venom in medicine.	Ancestor Knowledge	Transmission of Traditional Occupations	Continuity of Traditional Knowledge
4	While fishing has always been a significant occupation, I believe many have transitioned to other livelihoods like boat repairing, trading, and sometimes even working in urban areas.	Transition of Occupations	Modern Livelihood Diversification	Adaptation to Climate Change and Urbanization
5	I don't know about the traditional occupation of us, even nobody told me any stories.	Lack of Tradition Transmission	Awareness of Traditional Occupations	Knowledge Gaps and Disconnection from Tradition
6	The river is our lifeline. We depend on it for everything, from food to transportation. While traditional occupations are changing, the river remains at the heart of our community.	Dependence on River	Importance of River in Livelihood	Role of the River in Traditional and Changing Livelihoods

7	some people still practice traditional medicine, but it's mostly for personal use or within the community.	Limited Practice of Traditional Medicine	Persistence of Traditional Occupations	Continuity of Traditional Occupations in Local Contexts
8	I haven't seen the traditional occupations with my own eyes, but I have heard stories from my grandmother that they were fishermen, made medicine from snake's poison, and performed snake games.	Oral Tradition	Transmission of Traditional Occupations	Continuity of Traditional Knowledge
9	I don't have any idea.	Lack of Knowledge	Awareness of Traditional Occupations	Gaps and Disconnection from Tradition

2. How have these occupations been passed down through generations?

Participant Number	Text	Code	Category	Theme
1	The traditional occupations have not been passed down actually. My family is more about educating me now so that I can get a good job.	Shift to Education	Changing Family Priorities	Transition from Tradition to Modernity
2	I am doing my own business of a tea- stall. I don't do the traditional job.	Divergence from Tradition	Shift in Occupation Choices	Emergence of New Livelihoods
3	In my family, fishing and traditional medicine are passed down orally from generation to generation. However, times have changed, and fewer people are interested in these skills.	Oral Tradition	Transmission of Occupations	Continuity and Decline of Traditional Skills
4	I think the younger generation is less inclined toward traditional occupations. They seek opportunities in urban areas or other sectors.	Disinterest in Tradition	Changing Attitudes towards Work	Shifting Aspirations and Urban Migration
5	It's a bit of an issue. Some of the traditions are disappearing, while others are really trying to fit into	Adaptation of Tradition	Blending Tradition with Modernity	Evolving Livelihoods and Technology Integration

	today's times. For example, some are doing traditional fishing but using modern equipment.			
6	Well, the traditional occupations have not been passed down, actually. My family is more about now educating me so that I can get a good job.	Shift to Education	Changing Family Priorities	Transition from Tradition to Modernity
7	I actually study now and I don't want to perform any traditional occupation.	Rejection of Tradition	Changing Attitudes towards Work	Desire for Modern Careers
8	I run my family business of cloths. My family is not continuing the traditional occupation.	Shift in Family Business	Change in Family Occupation	Emergence of New Livelihoods
9	I don't think the occupations have been passed down to the younger generation.	Lack of Continuity	Disconnection from Tradition	Disintegration of Traditional Livelihoods

3. What major changes have you observed in your community's livelihood patterns over the last decade?

Participant Number	Text	Code	Category	Theme
1	I have observed any major changes in my community's livelihood pattern. While growing up I watched my family doing business.	Stable Livelihood	Continuity in Livelihood	Stability and Lack of Change
2	I see my grandfather showing snake game but my father used to do business.	Generational Shift in Occupations	Transition in Occupation Types	Changing Occupational Roles within Families
3	I have seen some changes, especially in the dependence of people on the river. In the past, there was more fishing and small boat trade. Nowadays, with the fact that the river is not as giving as it was some time back, people have started to shift to other forms of work, like labor in towns nearby. Climate change, irregular flooding has made fishing alone not sufficient.	Shift from River-Based Occupations	Impact of Climate Change on Livelihoods	Impact of Environmental Changes on Livelihoods
4	Yes, I have seen a change. My father was into the boat business, but now it is something that most people are leaving. They don't own as many boats as they used to; the few who still do have them mostly	Decline in Boat Business	Shifting Livelihood Preferences	Transition to Agriculture and Urban Jobs

	rent them out for tourists. The young ones, however, are going into agriculture or factory jobs and leaving the river behind.			
5	I think that over the last ten years, we started to rely less on the traditional ways. People are not so much into selling fish or working with boats anymore. It is like everyone tries to find some more stable job, be it construction work or selling goods at the market. The floods became really unpredictable; therefore, it is difficult to live off the river as we used to.	Decline in Traditional Livelihoods	Shift in Livelihood Strategies	Instability Due to Climate Change and Unpredictable Flooding
6	Honestly, I haven't seen many changes. The mode of living has remained pretty similar, although some have started cultivating on a small scale near the riverbanks. What I do notice is that the younger generation doesn't bother too much about traditional work; instead, they work as laborers somewhere else or run shops.	Limited Change in Livelihood	Continuity and Gradual Transition	Youth Disengagement from Traditional Occupations
7	Yes, some big changes have taken place. During my childhood, almost all people in our community were traders of goods on boats, while nowadays many people are abandoning it. Due to the weather being unpredictable, people find other ways of supporting their families, mostly in towns or through agriculture. But even farming is not that easy due to the flooding.	Abandonment of Boat Trading	Shifting Livelihood Strategies	Migration to Towns and Challenges in Agriculture
8	I have witnessed more changes due to flooding and the fluctuating water level in the river. People relied more on the river earlier for transport and fishing. As the river began to dry out in certain areas, most shifted towards small businesses or sought jobs in agriculture. One can no longer sustain their lives in the water; hence, adaptation is compelled upon people.	Adaptation to Water Level Changes	Environmental Adaptation	Forced Adaptation Due to Climate Change

9	I have seen a lot of change in my lifetime. My father used to fish and trade on the river, but over the years, many have started finding new ways to make a living. Some people are involved in construction, while others are starting small shops or working in the cities. The changes are mainly brought about by climate change, I think, since the river is not like it used to be before; so we find other means.	Shift to Urban Jobs and Small Businesses	Diversification of Livelihoods	Adaptation to Changing Environmental Conditions
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4. Which traditional occupations have declined, and why?

Participant Number	Text	Code	Category	Theme
1	All	Decline of All Traditional Occupations	General Decline in Traditional Occupations	Unspecified Decline of Traditional Livelihoods
2	All	Decline of All Traditional Occupations	General Decline in Traditional Occupations	Unspecified Decline of Traditional Livelihoods
3	I can't name them.	Inability to Identify Specific Occupations	Lack of Awareness or Specific Knowledge	Unclear or Undefined Decline
4	I don't have that much idea as I haven't seen the traditional ones.	Lack of Exposure to Traditional Occupations	Lack of Awareness or Specific Knowledge	Unclear or Undefined Decline
5	All	Decline of All Traditional Occupations	General Decline in Traditional Occupations	Unspecified Decline of Traditional Livelihoods
6	All	Decline of All Traditional Occupations	General Decline in Traditional Occupations	Unspecified Decline of Traditional Livelihoods

7	All	Decline of All Traditional Occupations	General Decline in Traditional Occupations	Unspecified Decline of Traditional Livelihoods
8	All	Decline of All Traditional Occupations	General Decline in Traditional Occupations	Unspecified Decline of Traditional Livelihoods
9	All	Decline of All Traditional Occupations	General Decline in Traditional Occupations	Unspecified Decline of Traditional Livelihoods
5. What new occupations or income sources have emerged in your community?				
Participant Number	Text	Code	Category	Theme
1	Grocery business.	Grocery Business	Emergence of Retail Occupations	Rise of Local Retail Businesses
2	Sewing	Sewing	Skill-Based Occupation	Emergence of Handicraft and Tailoring Businesses
3	Tea-stall business	Tea-Stall Business	Small Scale Food Service	Rise of Informal Food and Beverage Businesses
4	Boat making	Boat Making	Traditional Craft	Revival of Traditional Craftsmanship
5	Tea-stall business	Tea-Stall Business	Small Scale Food Service	Rise of Informal Food and Beverage Businesses

6	Grocery business.	Grocery Business	Emergence of Retail Occupations	Rise of Local Retail Businesses
7	Sewing.	Sewing	Skill-Based Occupation	Emergence of Handicraft and Tailoring Businesses
8	Business of cloths.	Clothing Business	Retail and Textile	Growth of the Textile and Apparel Industry
9	Business of saree stores	Saree Store Business	Retail and Textile	Specialization in Apparel and Traditional Clothing
6. How have environmental factors (e.g., river conditions, climate change) affected your traditional occupations?				
Participant Number	Text	Code	Category	Theme
1	The river has dried up in some areas, making fishing and boat trading harder. It's not as reliable as before.	Decline in River Conditions	Environmental Impact on Livelihood	Impact of River Degradation on Occupations
2	The weather has changed, and floods are unpredictable now. It affects our ability to do business or fish.	Unpredictable Weather	Climate Change Impact	Uncertainty Due to Climate Change
3	I don't think environmental factors affected traditional occupation.	No Impact from Environmental Factors	No Environmental Impact	Stability of Traditional Occupations
4	As I have seen there are fewer snakes now in the rivers which causes the decline of the snake business in the community.	Decline in Snake Population	Environmental Impact on Livelihood	Environmental Changes Impacting Traditional Occupations

5	In that river, fishing has become less dependable; that is why many other people are doing other jobs as well.	Decline in Fishing	Impact of River Degradation	Shift Due to Decreasing River Resources
6	I've noticed the river is quite unpredictable. Sometimes, too much flood, and another time, it's so dry the boats can't go.	Unpredictable River Conditions	Climate Change and River Variability	Challenges Posed by Unpredictable River Conditions
7	I haven't observed any changes due to climate change.	No Change Observed	No Environmental Impact	No Observable Impact from Climate Change
8	Because of this change in climate, it has somehow made our traditional ways of living very difficult. The river is no longer the same, and we can't rely on it anymore.	Impact of Climate Change on Traditional Livelihood	Climate Change Impact	Difficulty in Maintaining Traditional Livelihoods Due to Climate Change
9	I don't think environmental factors affected traditional occupation.	No Impact from Environmental Factors	No Environmental Impact	Continuity in Traditional Occupations Despite Environmental Factors

7. How have these changes affected your community's economic status?

Participant Number	Text	Code	Category	Theme
1	Previously, I heard that the community doesn't earn a stable income every day. It's had to mouth income. But now due to doing different types of business and jobs the people of the community have a stable economic situation which also helps the children and growing adults to get better scope in life and career.	Stable Income from Diversified Occupations	Economic Stability	Improved Economic Opportunities
2	The community used to struggle a lot with income. But now, many people are working in towns or doing small businesses, so we're better off. People can	Improved Income from Urban Work and Small Business	Economic Improvement	Access to Education and Better Opportunities

	support their families more easily, and the kids have more opportunities to study and work.			
3	Sometimes we did not even know how to feed our families. Now that people are engaged in different jobs- either in construction or shops- we have more stability. It's good, because the kids now have a chance to go to school and look for better opportunities.	Economic Stability from New Jobs	Economic Transition	Stability and Education Opportunities
4	We have seen improvement in the economy of our community. People are doing different jobs and businesses, so income is more stable. The children have better opportunities now, and it's easier to manage daily life.	Diversified Occupations Leading to Stability	Economic Change	Better Quality of Life
5	Before, it was hard to make enough money. But now, since people have adapted to other work, we're better off. There's more money to spend on the family, and kids can go to school. Life is easier now.	Adaptation to Stable Jobs	Economic Adaptation	Easier Life and Educational Opportunities
6	In the past we never knew whether we will earn sufficient money through fishing or boat trading. But nowadays, since people have more businesses and work in other jobs, somehow it has felt like earning more stable income. It's easier to plan for the future.	Shift to Stable Employment	Economic Security	Planning for the Future
7	The community used to struggle a lot with income. But now, many people are working in towns or doing small businesses, so we're better off. People can support their families more easily, and the kids have more opportunities to study and work.	Improved Income from Urban Work and Small Business	Economic Improvement	Access to Education and Better Opportunities
8	We are now in a better economic condition. Whereas earlier, people had uncertain incomes, they now find work at more regular intervals. This, in turn, has created greater avenues for education and	Regular Work and Stable Income	Economic Stability	Opportunities for Youth Employment and Education

	employment among the general masses, particularly among the young.			
9	It was a tough economy before, but now that people have moved into more stable jobs, like agriculture or small businesses, we're in a better place. We don't have to worry as much, and the kids have a better chance at a good life.	Stable Jobs in Agriculture and Small Business	Economic Transition	Improved Future for Children
8. Are there differences in income stability between traditional and new occupations?				
Participant Number	Text	Code	Category	Theme
1	The income stability is higher.	Higher Income Stability	Income Stability	Improved Stability in New Occupations
2	The earnings are better now than in previous decades.	Better Earnings Over Time	Income Improvement	Long-term Economic Improvement
3	Yes, the new jobs yield more stable earnings. Classic jobs such as fishing and boat trading were always in precarious conditions, but now, people can rely on working in agriculture or business and earning a steady income.	Stable Earnings from New Jobs	Income Stability	Reliable Income from New Occupations
4	Definitely, new jobs bring more money that can be relied upon.	Reliable Income from New Jobs	Income Stability	Economic Security in New Occupations
5	The new occupations are also more stable.	Stability in New Occupations	Income Stability	Improved Financial Security
6	I fully agree. These new jobs, such as shop keeping or doing construction, provide better pay and more regularly than previous modes of employment. Prior, many of the former wage-earning activities greatly depend on weather and river variables.	Stable Pay from New Jobs	Economic Security	Dependability of New Occupations
7	Yes, one has more regular income earnings now.	Regular Income	Income Stability	Consistent Earnings in New Jobs

8	Income is definitely more stable with new jobs. Before, there were times when fishing or boat trading didn't bring in enough, but now people doing small businesses or working in factories earn more consistently.	Consistent Income from New Jobs	Income Stability	Stable Earnings from New Occupations
9	I feel that new occupations provide more financial security. Traditional work always had ups and downs, but now people doing other jobs seem to have more steady income.	Financial Security from New Jobs	Economic Stability	Stability in New Occupations vs. Traditional Work

9. What new skills have you had to learn to engage in new occupations?

Participant Number	Text	Code	Category	Theme
1	As a young adult I am getting myself educated which also helps me to learn the modern technological skills to work diversely.	Modern Technological Skills	Skill Development	Educational and Technological Advancement
2	I had to learn how to manage a small business, including keeping records of money and the way to deal with customers. I also learned some basic skills in using the computer to manage sales and marketing.	Small Business Management & Computer Skills	Skill Development	Adapting to Modern Business Practices
3	learned the use of modern farm tools, such as new irrigation methods. In addition, I had to acquire other skills, such as keeping accounts and maintaining records for the small shop.	Modern Farming Techniques & Business Skills	Skill Development	Integration of Technology in Farming and Business
4	I had to learn how to use machinery and tools in order to work in construction. I also went through some courses on safety and managing work sites.	Machinery Operation & Construction Safety	Skill Development	Technical Skills for Construction Work
5	I have learned the use of smartphones and computers for running a business, such as keeping stock or talking to customers online. It is different from the old ways, but it is necessary.	Business Management with Technology	Skill Development	Digital Skills for Modern Business

6	Since I joined the factory, I had to learn new technical skills such as operating machines. I had to learn how to follow the rules at work regarding safety.	Factory Technical Skills & Safety	Skill Development	Adapting to Factory Work and Safety Regulations
7	I have picked up the skills in business management; I can keep accounts and advertise my products, deal with suppliers. It's all new as compared to what we did before.	Business Management Skills	Skill Development	Advancing Business Practices
8	I am studying to get a government job.	Educational Skills for Government Job	Skill Development	Preparing for Government Employment
9	I have learned much about basic technology, especially how to use a computer and smartphone for communication and work.	Basic Technology Skills	Skill Development	Learning Basic Technology for Work

10. Have any government policies or NGO programs affected your livelihoods? If so, how?

Participant Number	Text	Code	Category	Theme
1	No	No Impact	Government/NGO Influence	Lack of Policy or Program Impact
2	No	No Impact	Government/NGO Influence	Lack of Policy or Program Impact
3	No	No Impact	Government/NGO Influence	Lack of Policy or Program Impact
4	No	No Impact	Government/NGO Influence	Lack of Policy or Program Impact
5	No	No Impact	Government/NGO Influence	Lack of Policy or Program Impact
6	No	No Impact	Government/NGO Influence	Lack of Policy or Program Impact
8	No	No Impact	Government/NGO Influence	Lack of Policy or Program Impact

9	No	No Impact	Government/NGO Influence	Lack of Policy or Program Impact
11. What kind of support would be most beneficial for your community?				
Participant Number	Text	Code	Category	Theme
1	If we get more educational scope with allowance, we can build ourselves competent for the mainstream job opportunities. Also as our community is underprivileged and carries social stigma we need more inclusive support created by the government.	Education & Social Inclusion	Support Needed	Educational Advancement and Social Support
2	Access to several skill development programs, such as vocational, and financial support to start businesses will actually help people become independent and decrease their reliance upon conventional working.	Skill Development & Financial Support	Support Needed	Empowerment through Skill Development and Financial Assistance
3	The community needs better access to healthcare and education. If we had access to cheaper education and preparation for jobs that are in demand, plenty of opportunities would open themselves up, and financial help toward schooling would be beneficial.	Access to Healthcare & Education	Support Needed	Improving Access to Essential Services
4	The support would, in the form of loans or grants, go a long way in starting small businesses. We also need government-backed programs to teach us technical skills, such as farming techniques, carpentry, or mechanics.	Loans/Grants & Technical Training	Support Needed	Financial Assistance and Skill Development for Self-sufficiency
5	We need more social inclusion and support from local governments, especially to break down the stigma we face. More education and skill-building programs, coupled with financial help, will definitely aid us in improving our lives and increasing opportunities.	Social Inclusion, Education & Skill Building	Support Needed	Reducing Stigma and Supporting Growth through Education and Skills

6	I think our community needs better access to educational resources and job training. There is a need for more awareness programs that can change how others view us and encourage us to take part in mainstream opportunities.	Educational Resources & Job Training	Support Needed	Access to Education and Training for Integration
7	What would help most is if there were government initiatives for education and employment opportunities for our youth. We also need financial assistance for those wanting to start businesses or further their education.	Education & Employment Opportunities	Support Needed	Government Initiatives for Youth Employment and Education
8	More programs would help if they support education and job training. Also, alongside that, we need financial support to overcome the challenges in setting up businesses or furthering our children's education.	Education, Job Training & Financial Support	Support Needed	Addressing Education, Business Set-up, and Financial Barriers
9	Instead, the best support would be better education, especially with financial help for the families; additionally, it would be helpful to provide grants or low-interest loans for small businesses. Support by the government in eliminating social stigma would also make a big difference.	Education, Financial Support & Social Stigma Reduction	Support Needed	Overcoming Barriers through Education, Finance, and Social Inclusion

12. How has access to education influenced livelihood choices in your community?

Participant Number	Text	Code	Category	Theme
1	Education has opened our horizons for different job opportunities. With this, people recognize that they do not have to depend completely on working in the fields. With further education, we are capable of engaging in various fields: businesses, agriculture, and even government jobs.	Education & Career Opportunities	Education's Influence on Livelihood	Expanded Career Choices through Education

2	The doorway to so much in our community has been opened through education. Younger people want to go work in factories rather than going out on the rivers. It gives them the self-confidence to seek out a wider range of professions.	Education & Career Opportunities	Education's Influence on Livelihood	Shift to Diverse Occupations through Education
3	The fact is that education has greatly differentiated what people opt to do. More people nowadays have aimed at seeking stable jobs in towns and others have opened up their own businesses. To them, education is a means of progressing from fishing and trading in boats.	Education & Career Pathways	Education's Influence on Livelihood	Transition to Stable Jobs and Entrepreneurship
4	As education became more accessible, many of the younger generation started looking for office or skilled labor jobs. They no longer followed the livelihoods from old but were seeking better and more secure career paths.	Education & Career Development	Education's Influence on Livelihood	Shift to Secure and Skilled Careers
5	Education has enabled people to pursue various careers. Some have gone on to become teachers, office workers, or small business owners, which is a big change from the traditional occupations tied to the river.	Education & Career Development	Education's Influence on Livelihood	Diversification of Career Choices
6	Education has helped shift the mindset of the community. The people now have a broader awareness of various available career opportunities. They also are leaving behind traditional livelihood means and find new ways to earn by working in shops or, for instance, in factory employment.	Education & Awareness	Education's Influence on Livelihood	Broadening Career Horizons and New Employment Opportunities
7	People are informed enough to decide on their occupation with increased access to education. Several youths are taking up jobs in cities or learning skills to enable them to start small businesses for livelihood stability.	Education & Empowerment	Education's Influence on Livelihood	Empowerment through Education for Stable Careers

8	The nature of education has really changed livelihoods. More and more are getting themselves good, stable, regular jobs, whether it is office work, health services, or skilled trades, and are no longer relying on the old, unstable jobs linked to the river.	Education & Career Stability	Education's Influence on Livelihood	Movement towards Stable and Regular Employment
9	People have more access to education, which has made them pursue new careers. Most of the young generation is abandoning traditional occupations like fishing and engaging in other activities such as education, health, and business.	Education & Career Shift	Education's Influence on Livelihood	Career Shift to Education, Health, and Business

13. How has technology impacted your traditional and new livelihoods?

Participant Number	Text	Code	Category	Theme
1	The traditional jobs of fishing, showing snake game, and trading in boats have become so unpredictable, but technology has opened up avenues for online businesses and digital skills, which are helping us to earn a more stable income.	Technology & Livelihood Stability	Technology's Impact on Livelihood	Transition to Digital Businesses for Stability
2	Fishing and river-based jobs are no longer lucrative, but technology has opened up new avenues for e-commerce and tech-related jobs, enabling us to earn from home or start small online businesses.	Technology & E-commerce	Technology's Impact on Livelihood	Rise of E-commerce and Home-based Jobs
3	Our traditional livelihood of fishing is no longer sustainable due to the changing river conditions, but technology has introduced new skills such as digital marketing and online services, offering new career paths.	Technology & Skill Development	Technology's Impact on Livelihood	Digital Skills & New Career Paths
4	Traditional work, such as trading with boats, is unpredictable, but through technology, many have now engaged in online businesses or work in the	Technology & Income Consistency	Technology's Impact on Livelihood	Stable Income through Technology

	digital economy, which offers more consistent income.			
5	Fishing no longer provides the same opportunities as before, but new technology allows people to engage in online freelancing, digital farming tools, and other tech-based work that is more stable.	Technology & Freelancing	Technology's Impact on Livelihood	Stability through Freelancing & Digital Tools
6	With the depreciation of river-based livelihoods, people have started to engage in technology-based jobs such as virtual work, teaching online, and e-commerce, which proved more viable.	Technology & New Job Opportunities	Technology's Impact on Livelihood	Virtual Work & E-commerce as Viable Alternatives
7	The traditional life of a boat trader no longer exists. With the advancement of technology, many are studying how to code or create businesses online. For the first time, new forms of income are becoming possible.	Technology & Education	Technology's Impact on Livelihood	Learning to Code & Creating Online Businesses
8	Fishing and river trading are not as lucrative, but with the rise of technology, new opportunities in digital services, agriculture tech, and online selling have emerged, offering more steady work.	Technology & Digital Services	Technology's Impact on Livelihood	Digital Services & Agriculture Tech as New Opportunities
9	We have lost many traditional job opportunities due to environmental changes, but technology has allowed us to move into online work, e-commerce, and digital skills training, providing new income sources.	Technology & Adaptation	Technology's Impact on Livelihood	Adapting to New Opportunities through Technology

14/15. In what ways has increased connectivity (e.g., mobile phones, internet) affected your work? ; What challenges do you face in accessing or using digital technologies?

Participant Number	Text	Code	Category	Theme
1	I have less frequent use of a phone or internet to become regularly helpful in my job. But sometimes, getting a chance to use one friend's phone, either	Limited Connectivity	Connectivity & Work Access	Limited Access to Technology

	learning some skill or searching for a job, could be helpful. Maybe if I had more access, it could help a lot.			
2	I have limited internet access, but when I do, I try to spend my time learning something, like graphic design or writing from free online resources. Sometimes I could do small freelancing jobs, but that is pretty difficult without having access all the time.	Limited Internet Access	Connectivity & Work Access	Challenges with Irregular Access
3	I don't have my own phone or internet, but I can borrow my friend's whenever; I use it for all the necessary things that would help me learn, like online marketing, social media management, so it helped me find some freelance stuff, but not in an ongoing manner.	Borrowed Technology	Connectivity & Work Access	Reliance on Borrowed Devices
4	Limited access to the internet makes it hard to fully take advantage of online work opportunities. But when I do get access, I try to improve my skills, such as web design or photography, through online tutorials.	Limited Access to Internet	Connectivity & Skill Development	Limited Skill Development Due to Connectivity
5	I do not have much access to the internet, but once I can use it, I learn new things from writing and digital marketing. I try a little freelancing, which is tough without my own phone or regular internet.	Limited Access to Internet	Connectivity & Freelancing	Difficulty in Freelancing Without Regular Access
6	I do not have a phone, but I sometimes use my relative's. I try to learn some new skills like coding or content writing skills through free online courses. I have done some small freelancing tasks. It's difficult without regular internet, though.	Borrowed Devices	Connectivity & Skill Development	Learning Skills with Irregular Access
7	I only have limited access to the internet, and then, too, if that is available, I try to learn skills like video editing or graphic designing. I have been able to do	Limited Internet Access	Connectivity & Freelancing	Freelancing Challenges Due to Irregular Access

	some freelance jobs, but it is hard to get regular jobs without constant access.			
8	I don't have a phone all the time, so I miss out on many online opportunities. But when I can use the internet, I learn new skills and try freelancing-like writing or data entry-to earn some money.	Lack of Regular Phone Access	Connectivity & Freelancing	Missing Opportunities Due to Inconsistent Access
9	It's pretty tough, but with the little access to the internet, I try to learn something new. Sometimes I do small jobs like freelancing: manage social media platforms, among others, but it is not easy without a proper and reliable internet connection.	Limited Connectivity	Connectivity & Freelancing	Difficulty in Freelancing Without Reliable Internet

16. Have there been changes in the roles of men and women in terms of livelihood activities?

Participant Number	Text	Code	Category	Theme
1	I have heard that previously in traditional livelihoods women used to be the main source of income as they showed snake games, sold medicine made of snake venom and used horns as a remedy of any disease. Now women and man are doing the same things like business and agriculture.	Change in Roles	Gender Roles	Gender Equality in Livelihoods
2	I have heard that earlier, women used to do much work related to snake games and healing with snake venom. But now, men and women both are doing almost similar work: business and agriculture. More or less, there is a balance in the livelihood activities.	Balance in Roles	Gender Roles	Equality in Livelihood Activities
3	In the past, women were mainly responsible for showing snake games and selling traditional medicines, while now men and women are equally involved in business and farming. The roles are more mixed now than before.	Equal Involvement	Gender Roles	Mixed Gender Roles in Livelihoods

4	Earlier, women were supposed to perform certain roles, such as showing snake games and selling remedies. Nowadays, men and women both are into business and farming. It is not that only women do these tasks.	Equal Participation	Gender Roles	Shared Roles in Livelihoods
5	Earlier, women were basically engaged in showing snake games and selling snake-related items, whereas now both men and women are working in the same sectors, such as farming or running small businesses. More equality in roles has emerged nowadays.	Equality in Work	Gender Roles	Increased Gender Equality in Occupations
6	I hear earlier it used to be women did snake games and sold medicine, whereas today the business and agriculture involvement are in both males and females. Times have changed and there is more similarity now in roles for both genders.	Gender Role Change	Gender Roles	Similar Roles for Both Genders
7	Earlier, more of the traditional work like snake games and selling of remedies was done by women. Today, men and women together are doing business, farming, and all other activities. There are more equal roles for men and women now.	Shared Responsibilities	Gender Roles	Gender Equality in Livelihood Activities
8	Previously, women were supposed to undertake certain roles, such as showing snake games and making remedies, but now the work is shared more equitably between men and women, with both participating in business and agriculture.	Role Sharing	Gender Roles	Equal Participation in Livelihoods
9	Earlier, women were the chief earners through snake games and traditional healing. Nowadays, they are equally contributing in business and agriculture, just like their male counterparts. Times have changed, and roles are not restricted anymore.	Equal Contribution	Gender Roles	Shift Toward Equal Roles

17. What strategies have you or your community adopted to cope with changes in weather and climate? Can you describe any local knowledge or practices that help you adapt?				
Participant Number	Text	Code	Category	Theme
1	We tried to make our houses in a high level so that when it floods the water doesn't get into the house.	Elevation for Flood Protection	Climate Adaptation	Flood Management
2	We use local materials to construct our houses, like bamboo and strong mud, which does not easily get broken even with heavy rain and floods. In addition, we store food and necessary things in high-level areas or waterproof containers to keep them safe during flood scenarios.	Use of Local Materials & Storage	Climate Adaptation	Flood and Storm Preparedness
3	We adapt farming by planting crops that are resistant to both excess water and drought. Some predict storms by observing the natural indicators, such as wind directions or cloud positions, in order to take early measures by securing their houses and belongings.	Crop Adaptation & Natural Indicators	Climate Adaptation	Agriculture and Storm Prediction
4	We change to higher elevations during the rainy season so as not to get flooded in our homes. We also monitor the water level of the river and other natural warnings, such as birds or insects, which could signal an oncoming bad weather.	Elevation & Natural Signs	Climate Adaptation	Flood Management & Weather Prediction
5	We save water in the dry season, and we also have rain-catching means to be used during drier times. We have learned to read changes in animal behavior, such as the movement of fish in the river, to predict when weather changes might be coming.	Water Conservation & Animal Behavior	Climate Adaptation	Drought Management & Weather Prediction
6	We have adapted to the impending floods by transferring our houses and livelihood where it is safer. We also follow some indigenous knowledge, such as observing the flow of the river and the sounds	Relocation & Indigenous Knowledge	Climate Adaptation	Flood Management & Weather Prediction

	of some animals, to predict whether the weather will be bad or not.			
7	We are planting more flood-resistant varieties of crops, such as some kinds of rice; we plant and harvest them much earlier before the flood season arrives. We have to depend upon the traditional knowledge regarding water levels in the river for specific dates for planting and harvesting.	Flood-Resistant Crops & Traditional Knowledge	Climate Adaptation	Agricultural Practices & Timing
8	We now build houses on stilts or raised platforms to protect from floodwaters. Additionally, we rely on knowledge from elders who can tell us when the rainy season is about to begin based on changes in the river and surrounding environment.	Raised Houses & Elders' Knowledge	Climate Adaptation	Flood Protection & Weather Forecasting
9	The community plants more trees and has better irrigation systems to save water. We also use signs, such as the movement of clouds or the rise of certain plants, to help us prepare for storms or droughts.	Tree Planting & Signs of Weather Change	Climate Adaptation	Drought & Storm Management

18. Have you noticed any changes in the traditional roles or responsibilities within the community due to climate variability?

Participant Number	Text	Code	Category	Theme
1	No, not that much.	No Change	Climate Variability	Traditional Roles
2	No	No Change	Climate Variability	Traditional Roles
3	No	No Change	Climate Variability	Traditional Roles
4	No	No Change	Climate Variability	Traditional Roles
5	I have not seen the traditional roles of the community with my own eyes, thus I can't say anything about it.	No Observed Change	Climate Variability	Traditional Roles
6	No	No Change	Climate Variability	Traditional Roles
7	No, not that much.	No Change	Climate Variability	Traditional Roles
8	No	No Change	Climate Variability	Traditional Roles
9	No	No Change	Climate Variability	Traditional Roles

19. How do climate-related changes affect your ability to access essential services like education, healthcare, and transportation?				
Participant Number	Text	Code	Category	Theme
1	Whenever there is a flood, the roadways become blocked, and hardly anybody can move either to school or the clinic. Sometimes the level of water becomes so deep that we cannot even reach any healthcare center or attend any classes. Everything gets delayed.	Disruption of Access	Climate Impact	Transportation & Services
2	Muddy roads during the rainy seasons also make transportation difficult. As a result, we do sometimes fail to go to school or reach the hospital whenever we are in need of it. It also mediates the supply of drugs, as delivery trucks at times cannot pass through flooding areas.	Transportation Difficulties	Climate Impact	Education & Healthcare
3	Many roads become impassable when the river rises or during heavy rains, making it difficult for us to go to school or reach health facilities. In case of a medical emergency, it is challenging to find a means of reaching the hospital in time.	Impassable Roads	Climate Impact	Healthcare & Education
4	Transportation is disrupted when the weather gets bad. The ferries or boats we rely on to go to school and clinics sometimes do not operate due to river conditions. For example, it could mean not going to class or failing to get healthcare on time.	Disrupted Transportation	Climate Impact	Education & Healthcare
5	Flooding and strong winds can block the roads, so that makes traveling quite hard. The schools shut down at times, and people cannot manage to make it to their medical appointments. And then there are times when necessary supplies can't get to us because trucks just can't reach us due to bad roads.	Blocked Roads	Climate Impact	Education & Healthcare

6	In the rainy season, the bridges and the roads are all washed away, making it difficult to access schools or health centers. This causes a delay in seeking medical care or continuing education. It is tough when a family member falls sick and one needs to rush him or her to a clinic.	Destroyed Infrastructure	Climate Impact	Healthcare & Education
7	Floods and storms disrupt transportation; hence, we miss school or can't go to the doctor. Especially in cases of emergency, it is very challenging because the roads or boats are not available to take us to the hospital or health center.	Transportation Disruption	Climate Impact	Healthcare & Education
8	Heavy rains flood the roads, and it is impossible to travel. It affects students who cannot reach school; people cannot reach hospitals. It is very frustrating since we cannot access these services when needed.	Flooded Roads	Climate Impact	Education & Healthcare
9	The changing weather makes it very difficult to access the means of essential services. During floods, the roads are blocked, and at times boats may not be working. It delays getting to school or healthcare, especially in cases where someone is unwell and needs urgent treatment.	Blocked Access	Climate Impact	Healthcare & Education

Table 01: Code sheet of FGD Discussion Aged 15-25

Title: Ripples of Change: Climate Variability and Livelihoods among River Gypsies of Bangladesh

Age: 26-50

Participants: Bede Community People

Location: Savar

FGD's Code sheet

Date & Time: 20/07/2024; 10:00 AM

1. Could you describe the traditional occupations of river gypsies in Bangladesh?

Participant Number	Transcript	Code	Category	Theme
10	During my childhood days, I used to charm snakes and sell some traditional medicines. We used to travel along the rivers showing snake games and selling some herbal medicines for various diseases.	Snake charming, herbal medicine, river-based occupation	Traditional Occupation	River-based Livelihood
11	I remember my father performing monkey shows and magic in various villages. We would ride a boat and bring entertainment to the people of riverside villages.	Monkey shows, magic performances, river-based occupation	Traditional Occupation	River-based Livelihood
12	Personally, I have not applied these customs, but I have seen the older generation in the community doing snake charming and even selling traditional medicines.	Snake charming, traditional medicine, observation	Traditional Occupation	River-based Livelihood
13	When I was young, I helped my father in making medicines of rheumatism and toothache with the use of herbs. We gathered the herbs along the riverbanks.	Herbal medicine, riverbank resources	Traditional Occupation	River-based Livelihood
14	These customs I know from my parents, but I never practice them myself. I have a small business now.	Traditional occupation knowledge, small business	Traditional Occupation	Livelihood Transition
15	I was engaged in petty trading along the river routes, selling from village to village all kinds of goods. This was common within our community.	Petty trading, river routes	Traditional Occupation	River-based Livelihood

16	My father was a snake charmer, and I learned some of his skills, but never professionally. Times were already changing when I grew up.	Snake charming, skill learning, generational occupation	Traditional Occupation	River-based Livelihood
17	In festivals, I used to support the magician or monkey performances. That was very important in our culture.	Magic, monkey performances, cultural occupation	Traditional Occupation	Cultural Livelihood
18	I only heard about these traditional occupations from my parents. Since my childhood, I have been engaged in business.	Traditional occupation knowledge, business engagement	Traditional Occupation	Livelihood Transition

2. How have these occupations been passed down through generations?

Participant Number	Text	Code	Category	Theme
10	Our generation was a transition generation: although we had learned those skills, we had not been passing the skill to our children mostly.	Transition Generation	Knowledge Transfer	Shift to Modern Skills
11	Maybe this traditional knowledge has not been transferred because, at that time, each one of us observed times that were changing, pushing them into getting some education.	Changing Times	Knowledge Transfer	Education as Priority
12	We still remember it in my family, but we just decided not to pass it onto our children and instead emphasized education and other modern skills for them.	Not Passing on Skills	Knowledge Transfer	Modernization of Skills
13	The chain of traditional knowledge transfer with our generation broke. We wanted our children to have different opportunities.	Break in Knowledge Chain	Knowledge Transfer	Pursuit of New Opportunities
14	We respect our traditions, but we knew these jobs would not be enough for our children's future.	Respect for Tradition	Knowledge Transfer	Focus on Future Opportunities
15	Some of us indeed learned but never practiced them professionally. We opted for different paths for ourselves and our children.	Learning but Not Practicing	Knowledge Transfer	Shift to Modern Careers

16	We are the last generation that witnessed these traditions first hand, but we encouraged our children to pursue modern occupations.	Last Witness Generation	Knowledge Transfer	Emphasis on Modern Occupations
17	That knowledge was not passed on, seeing how life started getting difficult with those kinds of occupations.	Declining Occupation Viability	Knowledge Transfer	Transition to New Occupations
18	We belonged to the generation when people shifted from traditional livelihoods to modern ones. We opted to send our children to education and business.	Shift in Livelihoods	Knowledge Transfer	Emphasis on Education and Business

3. What major changes have you observed in your community's livelihood patterns over the last decade?

Participant Number	Text	Code	Category	Theme
10	I have seen many big changes. In my childhood, our community was snake-charming and doing traditional medicine. Nowadays, most of them are doing business or working in towns.	Transition to Business	Livelihood Changes	Shift to Urban Work
11	The greatest change I see is in how our children are leaving the river livelihoods. They are into more stable businesses and formal employment.	Shift to Stable Jobs	Livelihood Changes	Education and Employment
12	Within my life span, I have seen our community change from entertainers and traditional healers to business people and traders. The river is no longer our main source of livelihood.	Shift from Traditional to Modern	Livelihood Changes	Decline of River-Based Livelihoods
13	Changes have been very dramatic. Traditional performances and healing practices have almost ceased. Young people prefer running shops or working in cities.	Decline of Traditional Occupations	Livelihood Changes	Urbanization
14	I have seen how our people changed. From being migrant performers to becoming business persons who have settled, there is a complete transformation.	Shift from Migration to Settlement	Livelihood Changes	Stability and Business

15	The most significant change is that nomadism is no longer in use. Most families have settled in a place and started a business.	End of Nomadism	Livelihood Changes	Settling Down for Business
16	I've seen our community move from traditional occupations to modern livelihoods. Although it was necessary for survival, at times I miss our old ways.	Transition to Modern Livelihoods	Livelihood Changes	Nostalgia for Traditional Practices
17	The younger generation has entirely different aspirations. They're more educated and prefer stable sources of income over traditional practices.	Aspirations of Younger Generation	Livelihood Changes	Education and Stability
18	I have seen our community become more integrated with the mainstream over the last ten years through business and education.	Integration into Mainstream Society	Livelihood Changes	Urbanization and Education

4. Which traditional occupations have declined, and why?

Participant Number	Text	Code	Category	Theme
10	Snake charming has largely vanished because of increased wildlife legislation and reduced populations of snakes. People have also stopped believing in traditional medicine as such.	Decline of Snake Charming and Traditional Medicine	Decline of Traditional Occupations	Impact of Legislation and Belief Changes
11	Magic shows and the monkey shows have reduced because the youth find it rather outdated; besides, there are a lot of other entertainment options.	Decline of Magic and Monkey Shows	Decline of Traditional Occupations	Shift in Entertainment Preferences
12	The traditional healing is going down because people have changed to modern medicine. Its knowledge is getting lost along with our generation.	Decline of Traditional Healing	Decline of Traditional Occupations	Modern Medicine Adoption
13	River-based trading has reduced to a minimum due to increased road transportation and unpredictable conditions of the river.	Decline of River-Based Trading	Decline of Traditional Occupations	Impact of Transportation and River Conditions
14	All traditional entertainment services have declined, as people's interests changed and these professions have ceased providing stable income.	Decline of Traditional Entertainment	Decline of Traditional Occupations	Changing Interests and Income Instability

15	Preparation of traditional medicine has almost vanished; young people do not want to learn these skills and instead prefer modern careers.	Decline of Traditional Medicine Preparation	Decline of Traditional Occupations	Shift to Modern Careers
16	Snake charming and performance arts have declined mainly because they're not economically viable anymore.	Decline of Snake Charming and Performance Arts	Decline of Traditional Occupations	Economic Viability
17	Petty trading along river routes has decreased due to changes in the climate affecting river conditions and better transportation alternatives.	Decline of Petty Trading	Decline of Traditional Occupations	Climate Change and Improved Transportation
18	All traditional occupations have declined because they are not able to provide stability and attractive income in today's world.	General Decline of Traditional Occupations	Decline of Traditional Occupations	Lack of Stability and Attractive Income

5. What new occupations or income sources have emerged in your community?

Participant Number	Text	Code	Category	Theme
10	Many have opened grocery shops or small convenience stores in fixed locations.	Grocery and Convenience Stores	New Occupations	Emergence of Small Retail Businesses
11	Several community people now operate the transport business with auto-rickshaws or small vehicles.	Transport Business (Auto-Rickshaws)	New Occupations	Expansion into Transport Sector
12	Some have gone into wholesale business, giving a supply to petty shops.	Wholesale Business	New Occupations	Rise of Wholesale Trading
13	Many of them go out as skilled laborers for the towns nearby, especially in constructions and factories.	Skilled Labor (Construction and Factories)	New Occupations	Migration for Skilled Work
14	Others open restaurants or tea stalls at busy places.	Restaurants and Tea Stalls	New Occupations	Growth in Hospitality Sector
15	Some sell clothes, especially those from traditional wear shops.	Clothing Sales (Traditional Wear)	New Occupations	Expansion in Clothing Retail

16	Some do agricultural activities on lease taken up on the banks of rivers.	Agricultural Activities (Leased Land)	New Occupations	Shift to Agricultural Ventures
17	A lot of youth have opened shops for repairing mobile phones and electronic gadgets.	Mobile and Electronics Repair	New Occupations	Rise of Tech and Repair Services
18	Some of them have even opened furniture businesses or carpentry shops.	Furniture Business and Carpentry	New Occupations	Growth in Furniture and Carpentry
6. How have environmental factors (e.g., river conditions, climate change) affected your traditional occupations?				
Participant Number	Text	Code	Category	Theme
10	Traditional boat routes are no longer easily accessible due to changes in the river patterns. I have seen the dramatic changes in the rivers within my lifetime.	River Pattern Changes	Environmental Impact	Disruption of Traditional Routes
11	Unpredictable weather has made it impossible to maintain regular performance schedules like we used to.	Unpredictable Weather	Environmental Impact	Disruption of Livelihood Schedules
12	Climate change affected the availability of medicinal herbs that we used to collect along riverbanks.	Climate Change (Medicinal Herbs)	Environmental Impact	Decrease in Traditional Resources
13	Frequent floods make it risky to keep performing animals and equipment.	Frequent Floods	Environmental Impact	Risk to Livelihoods
14	River erosion has displaced so many families, and even the traditional trading routes were disrupted. Participant 6: And when it does rain, no one can predict good days anymore for performances and trading.	River Erosion	Environmental Impact	Displacement and Disruption of Trading Routes
15				

16	And a lot of our spots to convene along the river have washed out with erosion.	River Erosion	Environmental Impact	Loss of Traditional Gathering Spots
17	With rising temperatures and shifting seasons, snake ecologies change and make traditional snake charming unviable.	Climate Change (Snake Ecology)	Environmental Impact	Change in Traditional Occupation Viability
18	Extreme weather events have made river-based livelihoods increasingly unreliable.	Extreme Weather Events	Environmental Impact	Increased Uncertainty in River-based Livelihoods

7. How have these changes affected your community's economic status?

Participant Number	Text	Code	Category	Theme
10	Initially, this transition was hard, but now most of the families have more stable incomes compared to the past.	Transition to Stability	Economic Change	Improved Economic Stability
11	We lost our traditional identity somewhat, but our economic condition has improved with modern occupations.	Loss of Traditional Identity	Economic Change	Economic Improvement Through Modern Occupations
12	In fact, the shift to stable businesses has helped families plan better for the future of their children.	Shift to Stable Businesses	Economic Change	Better Planning and Security for Future Generations
13	Though we struggled during the transition, most families are financially better off now.	Transition Struggles	Economic Change	Financial Improvement Post-Transition
14	It was not easy to move away from traditional occupations, but it has brought better economic security.	Shift Away from Traditional Occupations	Economic Change	Enhanced Economic Security
15	Now we have more regular income in our community, though we had to adapt a lot.	Regular Income	Economic Change	Adaptation for Financial Stability

16	Incomes among the younger generation are more predictable than what we got from traditional occupations.	Predictable Incomes	Economic Change	Stability and Predictability in New Occupations
17	Our economic status has improved, though we faced many challenges in adjusting to the change.	Economic Improvement	Economic Change	Overcoming Challenges for Economic Progress
18	The community is now better off, economically speaking, but we certainly do miss the cultural elements of that kind of work.	Economic Betterment	Economic Change	Economic Growth vs. Cultural Loss
8. Are there differences in income stability between traditional and new occupations?				
Participant Number	Text	Code	Category	Theme
10	Yes, traditional occupations were highly seasonal, but new businesses give daily income.	Seasonal vs Regular Income	Income Stability	Stability in New Occupations
11	New occupations provide far more stable income. We used to have good days and many bad days with traditional work.	Unstable vs Stable Income	Income Stability	Regular Income from New Occupations
12	Modern businesses give us regular income, unlike the uncertain earnings from performances and healing.	Uncertain Earnings	Income Stability	Regularity in New Occupations
13	The difference is huge - now we can plan our expenses better with steady income.	Steady Income	Income Stability	Better Financial Planning
14	Traditional work was unpredictable; sometimes we earned well, sometimes nothing. New occupations are more reliable.	Unpredictable vs Reliable Income	Income Stability	Reliability in New Occupations
15	The stability of income in new occupations has made life easier to manage.	Stability in New Occupations	Income Stability	Easier Life Management
16	As much as traditional work was attractive in its own way; new occupations provide better financial security.	Attractiveness of Traditional Work	Income Stability	Improved Financial Security
17	Regular income from new businesses helps us save and plan for the future, which was difficult before.	Saving and Planning	Income Stability	Financial Planning with Regular Income

18	Modern jobs provide regular income all year round, unlike the traditional occupations that were seasonal.	Seasonal Work vs Regular Income	Income Stability	All-Year Financial Stability
9. What new skills have you had to learn to engage in new occupations?				
Participant Number	Text	Code	Category	Theme
10	I had to learn basic accounting in order to manage my shop.	Basic Accounting	Skill Development	Financial Management
11	How to understand the market price and inventory management was new to me.	Market Price & Inventory Management	Skill Development	Business Operations
12	I learned customer service skills which I applied in my retail business.	Customer Service	Skill Development	Customer Relations
13	The basic mathematics and record-keeping skills were important to develop.	Basic Mathematics & Record-Keeping	Skill Development	Financial Tracking
14	I had to learn about different products and their sources for my wholesale business.	Product Knowledge & Sourcing	Skill Development	Product Management
15	For instance, banking and savings are one area that I did have to learn about, though.	Banking & Savings	Skill Development	Financial Literacy
16	Others were negotiating suppliers and inventory management.	Supplier Negotiation & Inventory Management	Skill Development	Business Negotiations
17	I had to understand the quality of my product and pricing policies.	Product Quality & Pricing	Skill Development	Product Pricing
18	Basic Business management was the necessary concept behind this occupation.	Business Management	Skill Development	Business Strategy
10. Have any government policies or NGO programs affected your livelihoods? If so, how?				
Participant Number	Text	Code	Category	Theme
10	No significant support has reached our community. But some of us get the allowance for Bede community.	Lack of Support	Government/NGO Programs	Limited Assistance

11	We haven't received any special assistance for livelihood changes.	Lack of Assistance	Government/NGO Programs	Limited Support
12	No, we've managed these changes on our own.	Self-Reliance	Government/NGO Programs	Independent Adaptation
13	I am not aware of any particular programs for our community.	Lack of Awareness	Government/NGO Programs	No External Intervention
14	No government support has reached us. I get the widow allowance though.	Limited Support	Government/NGO Programs	Inconsistent Assistance
15	We have not seen any targeted programs for our community.	Lack of Targeted Programs	Government/NGO Programs	Absence of Support
16	No formal support has been provided.	No Formal Support	Government/NGO Programs	Absence of Assistance
17	We have done all these changes without external assistance.	Independent Adaptation	Government/NGO Programs	No External Support

11. What kind of support would be most beneficial for your community?

Participant Number	Text	Code	Category	Theme
10	We do need some financial support to expand our businesses and to support the education of our children.	Financial Support	Community Support Needs	Business Expansion & Education
11	Training on modern business skills would better equip our community.	Business Skills Training	Community Support Needs	Skill Development
12	Access to low-interest loans would provide more stable businesses.	Access to Loans	Community Support Needs	Financial Stability
13	Support regarding the education and vocational training of the youth would work well.	Education & Vocational Training	Community Support Needs	Youth Empowerment
14	The programs of preserving cultural heritage while supporting new livelihoods would be beneficial.	Cultural Heritage Preservation	Community Support Needs	Balancing Tradition & Modernization
15	Financial literacy and management would definitely be of help.	Financial Literacy	Community Support Needs	Financial Management Skills
16	Opportunities or supports to develop small businesses would be helpful, and additionally marketing.	Small Business Development	Community Support Needs	Business Growth & Marketing

17	Availability of better health facilities and more schools in our community would develop the life pattern.	Health & Education Infrastructure	Community Support Needs	Community Well-being
18	Programs to help us document and preserve our traditional knowledge, yet supportive for the new livelihoods.	Knowledge Preservation	Community Support Needs	Cultural Continuity

12. How has access to education influenced livelihood choices in your community?

Participant Number	Text	Code	Category	Theme
10	Education has given our children options we never had. They can now choose from a variety of careers, like in healthcare, business, or technology. This has made them more independent, allowing them to break away from the traditional occupations that we followed.	Career Opportunities	Education Impact	Independence & Career Mobility
11	We are only emulating our parents' footprints into this traditional work, while educated children can have a host of options available: as teachers, doctors, and engineers, which is huge compared to the career opportunities we had earlier.	Career Choices	Education Impact	Expanded Career Options
12	Education has made the young lot more understand business than us. Now, they have the abilities to maintain and expand small businesses, and some even try their luck in totally new fields, like digital marketing or doing online work, which we never had.	Business Expansion	Education Impact	Business Knowledge & Innovation
13	The education of our children has opened doors to new possibilities we could not even imagine. Instead of relying on traditional skills, they now have access to better-paying jobs in other sectors, such as technology, and can make informed decisions about their futures.	Job Opportunities	Education Impact	Access to Better Jobs
14	Education has helped break up the traditional circles of occupations, enabling young people to search for a different kind of job-the more so if they relocate to	Job Diversification	Education Impact	Breaking Tradition & Urban Migration

	urban settings-which helps them forge ahead in lives different from what we experienced.			
15	The education of the younger generation helps them in making better business decisions. They understand modern management and finance, which has improved the profitability of the businesses they run compared to how we did things before.	Business Management	Education Impact	Improved Business Practices
16	Education has earned respect for our community and opened up better opportunities. More and more young people who receive formal education are now able to integrate into mainstream society, working in all sectors and contributing to uplifting the general status of our community.	Social Integration	Education Impact	Respect & Social Mobility
17	Now, our educated youth are capable of competing with other mainstream job contenders. Many of them today work in offices, schools, or hospitals, in fields we never had any opportunity to touch because of a lack of formal education. This has brought more stability and dignity into our lives.	Job Competitiveness	Education Impact	Stability & Dignity through Employment
18	It was education that integrated our community better with today's society. Now our children can go into areas other than traditional livelihood, and it brings knowledge of modern practices into the community, making us more conscious of the world around us.	Social Awareness	Education Impact	Modernization & Community Integration

13. How has technology impacted your traditional and new livelihoods?

Participant Number	Text	Code	Category	Theme
10	We are challenged by new technology; we see it works for our children's businesses.	Technology Challenge	Technology Impact	Generational Technology Gap

11	Technology has made traditional performances not as attractive, but they help in new businesses.	Technology in Business	Technology Impact	Decline in Traditional Occupations
12	Even though we struggle to work with technology, we know it's an important part of business.	Technology Struggle	Technology Impact	Adapting to Technology
13	Children do business with the use of technology, even though we are comfortable with traditional means.	Technology in Business	Technology Impact	Generational Adaptation
14	Technology has changed how business is done, and we're adapting slowly.	Business Transformation	Technology Impact	Adapting to New Business Models
15	We depend on our children for handling the technology aspects of business.	Technology Dependence	Technology Impact	Generational Technology Gap
16	It is cumbersome for us to learn technologies but necessary in modern business.	Learning Technology	Technology Impact	Adapting to Technology
17	Technology is something which we do not easily grasp but ultimately payoff in business.	Technology Adoption	Technology Impact	Long-term Benefits of Technology
18	Technology-related tasks in our businesses are held and managed by young generation members.	Technology Management	Technology Impact	Generational Technology Gap

14/15. In what ways has increased connectivity (e.g., mobile phones, internet) affected your work? ; What challenges do you face in accessing or using digital technologies?

Participant Number	Text	Code	Category	Theme
10	I only use basic phone features. My children handle internet-related tasks. They manage our business communications, orders, and even social media pages, which has opened new opportunities for our family, but it's difficult for me to keep up with the technology.	Limited digital literacy	Technology access	Challenges in using digital tools
11	It assists in business communication, especially mobile phones, though using the internet challenges me. My phone is okay to use for calls, but even email or social media is problematic for me. My children normally	Reliance on younger generation	Technology access	Dependence on younger generation for tech tasks

	help me with those things. They have since learned to use the internet to get better suppliers or customers.			
12	I struggle with smartphones, but I recognize their importance for business. The internet makes it easier to track orders and communicate with suppliers. However, I rely on my children to handle these tasks because the technology is hard for me to learn.	Internet for business expansion	Technology access	Use of technology for business growth
13	Basic calls and messages are all I can manage. In addition, complex features involving applications or online banking stump me. While I do understand that the internet could help in the expansion of our business, it is hard to keep up with the rapidly changing world of technology.	Difficulty with complex tech	Technology access	Struggles with advanced digital tools
14	I depend on younger family members to do internet-related work. They put up the goods for online sale and marketing, and I do the store display. It's a good system, but it is a challenge for me to learn how to use the internet effectively.	Adaptation to digital communication	Digital communication	Role of mobile and internet in communication
15	Technology overwhelms me; it's necessary in modern business, yet I know using the internet and smartphones will help improve sales, yet I still don't understand using those tools for our traditional activities.	Support from younger members	Digital communication	Intergenerational tech support
16	I use simple functions of the phone but avoid complicated technology. I can send text messages and make calls, but handling emails or using social media feels beyond my capabilities. Thankfully, my children can manage these tasks for me.	Overwhelm with technology	Digital communication	Feeling overwhelmed by technology
17	Learning new technology is difficult at our age. While I understand that it can benefit our business, I feel left behind. My children help by using the internet for	Learning digital tools	Digital communication	Difficulty in learning new technologies

	advertising and customer communication, but I don't feel fully comfortable with these tools.			
18	We face challenges with digital literacy, but try to adapt. We are reliant on our young people, who are more confident using technology, to manage much of the online business activities for us, while we, again, learn how best we can use digital technologies in our work.	Benefits of online presence	Business development	Increased opportunities from online presence
16. Have there been changes in the roles of men and women in terms of livelihood activities?				
Participant Number	Text	Code	Category	Theme
10	Previously, women were more into traditional healing and performances. Now both genders do similar business work.	Shift to Gender-Neutral Business Work	Gender Roles	Equality in Business Activities
11	In our time, women had specific roles in traditional occupations. Now these distinctions have blurred.	Blurred Gender Distinctions	Gender Roles	Reduced Gender-Specific Roles
12	The younger generation has more equal participation in business activities.	Equal Participation in Business	Gender Roles	Generational Gender Equality
13	Earlier, certain traditional tasks were gender-specific. Now everyone does everything.	Elimination of Gender-Specific Tasks	Gender Roles	Comprehensive Gender Equality
14	Women used to engage in healing practices, while now they run businesses like men.	Women Running Businesses	Gender Roles	Women's Economic Empowerment
15	Traditional occupations had more defined gender roles. Modern work is more balanced.	Balanced Modern Work	Gender Roles	Balanced Gender Roles in Modern Occupations
16	Business activities are equally engaged in by both men and women.	Equal Engagement in Business	Gender Roles	Gender Parity in Business
17	New occupations have eliminated traditional gender roles to a great extent.	Elimination of Traditional Gender Roles	Gender Roles	Significant Gender Role Transformation

18	The shift toward modern livelihoods has made work quite gender-neutral.	Gender-Neutral Work Environment	Gender Roles	Creation of Gender-Neutral Workplaces
17. What strategies have you or your community adopted to cope with changes in weather and climate? Can you describe any local knowledge or practices that help you adapt?				
Participant Number	Text	Code	Category	Theme
10	We predict the occurrence of a flood based on traditional knowledge of the patterns of the river. The way the water flows and acts allows us to predict its rise and take necessary measures well in advance to safeguard our dwellings and businesses.	Traditional Flood Prediction	Climate Adaptation Strategies	Early Flood Warning and Protection
11	Experience over the years helps us to read weather signs and prepare our businesses. We can tell by the sky or even from the behavior of some birds that a change in weather is about to take place, which helps us in preparing for storms or floods.	Traditional Weather Signs	Climate Adaptation Strategies	Natural Indicators for Weather Prediction
12	We have learned to construct stronger structures that can withstand extreme weather. For instance, we elevate our houses and businesses above the ground so that in case of flooding, it will not destroy them, and use materials that are more durable in heavy rains or storms.	Structural Adaptations	Climate Adaptation Strategies	Building Resilient Infrastructure
13	We pass on the traditional knowledge of the weather to the younger generations in our community. This knowledge involves the river cycles, some signs in nature, and other things like knowing when exactly to plant or harvest in the changing seasons.	Knowledge Transfer	Climate Adaptation Strategies	Intergenerational Knowledge Sharing
14	We combine traditional weather forecasting with modern weather forecasts.	Integrated Forecasting Methods	Climate Adaptation Strategies	Combining Traditional and Modern Techniques

15	Timing of our business has adjusted accordingly to the seasons.	Seasonal Business Timing	Climate Adaptation Strategies	Adjusting Business Operations to Seasons
16	Traditional knowledge is what helps us prepare for seasons of change.	Reliance on Traditional Knowledge	Climate Adaptation Strategies	Preparation for Seasonal Changes
17	We use both traditional and modern ways to adapt to climate changes.	Hybrid Adaptation Methods	Climate Adaptation Strategies	Utilizing Multiple Adaptation Approaches
18	Years of experience with the pattern of the river helps us plan better.	River Pattern Experience	Climate Adaptation Strategies	Long-term Planning Based on River Patterns

18. Have you noticed any changes in the traditional roles or responsibilities within the community due to climate variability?

Participant Number	Text	Code	Category	Theme
10	Yes, climate changes have necessitated us to abandon many practices passed down through generations. Changed weather patterns made it difficult for them to predict river cycles and seasons, so they started to adjust their traditional farming and fishing methods accordingly.	Abandoning Traditional Practices	Role Adaptation	Shifting Traditional Methods
11	Unpredictable weather has changed how we organize community activities. Where we once relied on seasonal shifts to plan events or work, the changing climate now forces us to be more flexible and adjust our timing and plans.	Flexible Community Planning	Role Adaptation	Increased Flexibility in Activities
12	Traditional roles have adapted to cope with new climate patterns. For example, people who once focused on fishing now have to balance farming and business because fish stocks have decreased due to changing river conditions.	Balancing New Livelihoods	Role Adaptation	Diversification of Roles

13	Climate change has already had its impacts on how we conceptualise and operate business. We changed our farming cycles, and localised traditional roles such as fishing were less predictable in how we made our livings.	Changing Business Operations	Role Adaptation	Altered Livelihood Strategies
14	Many of these traditional practices had to reorganize themselves within the community. The climate variability has made people change from being dependent on the seasons to a new way of techniques and diversification in activities due to unpredictable weather conditions.	Reorganizing Traditional Practices	Role Adaptation	Diversification and Technique Innovation
15	Their traditional roles have evolved to deal with some of the climate challenges. Such as, there are many community members who changed their more traditional farming to ones that become more drought-resistant to cope with shifting rainfall.	Adopting Drought-Resistant Farming	Role Adaptation	Sustainable Agricultural Practices
16	We've had to modify many traditional practices due to climate change. For example, fishing has become less reliable, so people have turned to alternative livelihoods like small businesses or agricultural activities to ensure food security.	Modifying Traditional Practices	Role Adaptation	Transition to Alternative Livelihoods
17	The unpredictability of climatic variability has altered how we engage in seasonally-bound activities. Fixed seasons that were allocated to farming and fishing no longer exist; therefore, cultural roles became modified to the unpredictability of weather.	Altered Seasonal Activities	Role Adaptation	Modification of Seasonal Roles
18	Many cultural roles have been adapted due to these changes in the environment. People moved to new occupations to adapt to such changing situations, like business or trade, as farming and fishing were becoming less predictable.	Adapting Cultural Roles	Role Adaptation	Shift to Business and Trade

19. How do climate-related changes affect your ability to access essential services like education, healthcare, and transportation?				
Participant Number	Text	Code	Category	Theme
10	In most cases, floods prevent access to health facilities or schools.	Flood-Induced Access Barriers	Access Disruption	Impact of Floods on Essential Services
11	Unpredictable weather affects planning by people for routine medical check-ups.	Unpredictable Weather & Healthcare	Access Disruption	Impact of Weather on Healthcare Access
12	Riverbank erosion has resulted in affecting routes of traditional means of transport.	Riverbank Erosion & Transport Routes	Access Disruption	Impact of Environmental Changes on Transportation
13	Bad weather conditions mostly disrupt education among children.	Weather Disruption of Education	Access Disruption	Impact of Weather on Education Access
14	Access to emergency health care services may be difficult during flood situations.	Emergency Healthcare Access	Access Disruption	Emergency Healthcare Access Challenges
15	Climatic change has made accessibility and transport more laborious and expensive.	Increased Transport Costs	Access Disruption	Financial and Physical Barriers in Transportation
16	The accessibility of regular services is mostly disrupted due to weather occurrences.	Regular Services Disruption	Access Disruption	Consistent Access Challenges Due to Weather
17	Flood seasons particularly affect our access to essential services. Participant 9: Climate variability makes it more difficult to maintain regular access to services.	Seasonal Flood Impact on Services	Access Disruption	Seasonal Climate Impact on Services
18	In most cases, floods prevent access to health facilities or schools.	Flood-Induced Access Barriers	Access Disruption	Impact of Floods on Essential Services

Table 02: Code sheet of FGD Discussion Aged 26-50

Title: Ripples of Change: Climate Variability and Livelihoods among River Gypsies of Bangladesh

Age: 51-80

Participants: Bede Community People

Location: Savar

FGD's Code sheet

Date & Time: 09/08/2024; 10:00 AM

1. Could you describe the traditional occupations of river gypsies in Bangladesh?

Participant Number	Transcript	Code	Category	Theme
19	I spent my whole life being a snake charmer. Over 40 years, I traveled along the rivers, performing different types of snake games and selling traditional medicines in villages. This was our main livelihood.	Lifetime Snake Charming	Traditional Occupation	River-Based Livelihood
20	I was a great monkey trainer and performer. I spread smiles in many villages through my performances. We would take the boat, and we stayed for several days in one place and then moved on to another place.	Monkey Training and Performing	Traditional Occupation	Cultural Entertainment
21	My expertise was to prepare herbal medicine for rheumatism and toothache. My father taught me, his father taught him. We would gather herbs along specific locations in the riverbanks.	Herbal Medicine Preparation	Traditional Occupation	Traditional Healing Practices
22	I both charmed snakes and practiced traditional healing. I did snake shows during the dry season and prepared and sold medicines in the rainy season.	Dual Role: Snake Charming & Healing	Traditional Occupation	Seasonal Livelihood Activities
23	Magic shows were my expertise. I traveled with my family on our boat, performing in riverside villages. People would eagerly await our arrival.	Magic Shows	Traditional Occupation	Cultural Entertainment
24	I was involved in petty trading and traditional healing. We would collect rare medicinal plants during our river journeys and sell them along with other goods.	Petty Trading & Medicinal Plant Sales	Traditional Occupation	River-Based Trading & Healing

25	Snake charming was the main occupation. I have kept various types of snakes and knew the tricks for all those species. We also prepared antidotes against snake bites.	Specialized Snake Charming	Traditional Occupation	Specialized Livelihood Practices
26	Monkey shows and magic were done by me. In fact, all these entertaining services were essential for village festivals and other celebrations.	Monkey Shows & Magic Performances	Traditional Occupation	Festival and Celebration Services
27	My family belonged to the healing category. We knew hundreds of medicinal plants and their uses.	Family-Based Traditional Healing	Traditional Occupation	Herbal Medicine Expertise
2. How have these occupations been passed down through generations?				
Participant Number	Text	Code	Category	Theme
19	Knowledge was transferred in a very organized manner when I was young. Starting at seven years old, my father began teaching me snake charming. Any skill was transmitted with patience.	Organized Knowledge Transfer	Knowledge Transmission	Structured and Early Training
20	We learned by observation and experimentation. My grandfather taught Father, and he taught me. Every technique had to be done correctly.	Observation and Experimentation	Knowledge Transmission	Intergenerational Learning
21	Knowledge of the medicinal properties of plants was transmitted orally, by word of mouth. Learning about which plants have what healing properties took us many years.	Oral Knowledge Transmission	Knowledge Transmission	Oral and Time-Intensive Learning
22	We started training as children. We used to go along with our parents on their beats and slowly learned the tricks of the trade.	Practical Training with Parents	Knowledge Transmission	Hands-On and Practical Learning
23	The knowledge transfer was serious. The magic and the art of performance are family secrets passed down meticulously.	Family Secrets and Meticulous Transfer	Knowledge Transmission	Preservation of Family-Specific Knowledge
24	It wasn't just skills we got; it was the established customers who had been dealt with for generations. Each had its specific routes and expertise.	Clientele and Route Expertise	Knowledge Transmission	Integration of Skills with Established Networks

25	The learning process never stopped. After knowing the basics, even then, we learned different skills from elders continuously.	Continuous Learning	Knowledge Transmission	Ongoing Skill Development
26	Knowledge transfer was our way of life. Children naturally grow into the profession by watching and helping their parents.	Natural Knowledge Transfer	Knowledge Transmission	Informal and Participatory Learning
27	Every family had their specialized knowledge, which was kept guarded and transferred only to their children.	Guarded Family Knowledge	Knowledge Transmission	Protection and Exclusive Knowledge Sharing
3. What major changes have you observed in your community's livelihood patterns over the last decade?				
Participant Number	Text	Code	Category	Theme
19	Actually, the biggest change I have seen is the almost disappearance of our snake charming. It hurts; it really does. What we kept for generations now gets lost piece by piece. An art respected and passed on through generations is slowly diminishing since nobody wants to learn or continue. With the rise of modern entertainment, there's less appreciation for traditional performances like ours, and it's heartbreaking to see younger generations not taking up these skills.	Disappearance of Snake Charming	Livelihood Changes	Decline of Traditional Occupations
20	In my youth, every family had their specialty - some did monkey shows, others magic or healing. Now everyone is turning to business. Our cultural identity is fading. We used to take pride in what we were doing, each family contributing something different to the community. Nowadays, however, most youth have abandoned these crafts for more "modern" jobs: selling things or working in offices. The rich cultural heritage that once defined us is being replaced by a focus on financial success and convenience.	Shift to Modern Jobs	Livelihood Changes	Loss of Cultural Identity

21	<p>The biggest change is that young people no longer live on boats. They want permanent houses and stable jobs. Our nomadic lifestyle is disappearing. In the past, our families would travel along rivers, living on boats and relying on the seasonal rhythms to guide our work. But now, the younger generation wants the comfort of a steady home and a predictable income. This change in life is meaning that we're losing the old ways, and this deep contact with land and water, it is not so common now.</p>	End of Nomadic Lifestyle	Livelihood Changes	Transition from Nomadism to Settlement
22	<p>The traditional way of healing has been replaced by modern medicines. We have lost so much information on medicinal plants. Our elders knew what kind of herbs would cure certain ailments and would pass down this type of information down generations. But with the penetration of hospitals and pharmaceuticals, hardly anyone goes to the traditional healer. The young generation doesn't have the patience and interest in learning about these plants, and soon lots of this ancient wisdom will be forgotten.</p>	Replacement of Traditional Healing	Livelihood Changes	Decline of Traditional Healing Practices
23	<p>The respect and wonder people had for our performances has diminished. Now, with television and mobile phones, our shows don't attract crowds like before. There was a time when our performances were the main attraction at village gatherings—people used to come from miles around. But with television and mobile phones, entertainment has become more accessible, and people's attention has been diverted. Our shows aren't as magical as they used to be, and it is very difficult to maintain that same level of excitement when the next generation is more into digital media.</p>	Decline of Traditional Performances	Livelihood Changes	Impact of Modern Entertainment

24	<p>In our community, we used to be river-based. Right now, we are land-based. The new young generation no longer knows how to read the patterns of the river or how weather changes will affect their lives. We used to depend on our knowledge of the river for fishing, farming, and transportation. But now, most young people don't even know how to navigate the river or recognize the signs of weather changes that could affect our livelihoods. With every passing day, as we have moved out of river-based life, the relevance of this wisdom from the elders on water and land is also rapidly diminishing, and the knowledge stands in jeopardy.</p>	Shift to Land-Based Livelihoods	Livelihood Changes	Loss of River-Based Knowledge
25	<p>Traveling along the rivers, giving entertainment and healing to far-flung villages, has almost come to an end. Now, everyone wants to be settled in one place. In those days, we used to go from village to village, entertaining isolated communities with our music, healing, and fun. But now the younger generation seeks to be settled, work steadily, and build permanent houses. Our mobile lifestyle is very fast becoming a thing of the past, which is sad because this cultural exchange that knit so many communities together is lost.</p>	End of Mobile Lifestyle	Livelihood Changes	Loss of Cultural Exchange
26	<p>We are no longer valued for our role as cultural performers and healers. The community's identity is wholly changed into business and trade. We were once considered part and parcel of community life, where we conducted rituals, cured the sick, and narrated stories that conveyed our cultural values. Today, the emphasis is elsewhere. It seems as though people are more concerned with earning a profit and consuming</p>	Devaluation of Cultural Roles	Livelihood Changes	Shift from Cultural to Economic Focus

	products than with the very cultural traditions that once brought them together. The less valuable of our knowledge and skills, and indirectly we are being sidetracked to make way for more modernist economic pursuits.			
27	The young people have no interest in learning traditional skills. They prefer to pursue modern education and look for jobs in the cities. I tried teaching my children and other young people from the community about the crafts and healing practices we used to do; they have absolutely no interest. They value more getting an education and working in cities, where they feel there is more opportunity. The traditions that once connected us to our ancestors and our culture are slowly disappearing, and there's little interest in preserving them for future generations.	Lack of Interest in Traditional Skills	Livelihood Changes	Disinterest in Preserving Traditions

4. Which traditional occupations have declined, and why?

Participant Number	Text	Code	Category	Theme
19	Snake charming has almost disappeared. Government restrictions on keeping snakes, added to the fact that there are fewer snakes due to environmental changes, made it impossible to continue.	Decline of Snake Charming	Decline of Traditional Occupations	Regulatory and Environmental Impacts
20	Now, monkey shows are hardly seen. People consider it cruel to keep performing animals, and there are too many regulations. Also, younger people aren't interested in this art.	Decline of Monkey Shows	Decline of Traditional Occupations	Ethical Concerns and Lack of Interest
21	The traditional healing has been drastically degraded. People now trust modern medicine, and the source of many medicinal plants is destroyed due to the changes in the river ecosystems.	Decline of Traditional Healing	Decline of Traditional Occupations	Shift to Modern Medicine and Ecological Loss

22	Magic shows have almost disappeared. People entertain themselves with television and mobile phones instead of our traditional art performances.	Decline of Magic Shows	Decline of Traditional Occupations	Competition with Modern Entertainment
23	River-based trading has drastically declined. The roads replaced the river routes, and river travel is too risky because of unpredictable weather.	Decline of River-Based Trading	Decline of Traditional Occupations	Infrastructure Changes and Weather Risks
24	Preparing herbal medicines has stopped since young people do not want to learn the complicated processes of identifying and preparing herbs.	Decline of Herbal Medicine Preparation	Decline of Traditional Occupations	Lack of Skill Transmission
25	The traditional entertainment services have disappeared since the interest of people has shifted. They are into modern entertainment nowadays.	Decline of Traditional Entertainment	Decline of Traditional Occupations	Shift in Public Interests
26	The knowledge on the treatment of snake bites and rheumatism is dying since elderly practitioners die without any successor.	Loss of Medicinal Knowledge	Decline of Traditional Occupations	Knowledge Loss Due to Lack of Succession
27	The whole system of traveling performers/healers has declined due to settled life offering more security and comfort.	Decline of Traveling Performers	Decline of Traditional Occupations	Transition to Settled Lifestyle

5. What new occupations or income sources have emerged in your community?

Participant Number	Text	Code	Category	Theme
19	Our children now run permanent shops in markets. Much as that has also reduced our mobile lifestyle, their incomes are stable.	Permanent Retail Shops	New Occupations	Shift to Stable Retail Businesses
20	Many have embarked on small-scale transportation with motorized vehicles. And all these replaced our traditional methods of movement by boats.	Motorized Transportation	New Occupations	Replacement of Traditional Transport
21	Some community members put up medicine shops, selling them nowadays uses modern medicines rather than those traditionally used by us.	Modern Medicine Shops	New Occupations	Transition to Modern Healthcare Sales

22	The young generation is doing mobile phone shops and repair centers. It is strange to see this change from our traditional skills.	Mobile Phone Shops & Repairs	New Occupations	Adoption of Tech-Based Businesses
23	Many have engaged in the clothing business, opening fixed shops in market areas.	Clothing Retail Businesses	New Occupations	Establishment of Fixed Retail Stores
24	Some have started working in construction or as day laborers completely different from our traditional occupations.	Construction & Day Laborers	New Occupations	Shift to Construction and Labor Jobs
25	A few operate restaurants or tea stalls, which give them regular income unlike our seasonal earnings.	Restaurants & Tea Stalls	New Occupations	Shift to Hospitality Sector
26	The educated ones have taken up jobs in offices or schools, something we never imagined in our time.	Office & School Jobs	New Occupations	Integration into Formal Employment
27	Some have engaged in agricultural activities, though this was never our traditional occupation.	Modern Agricultural Activities	New Occupations	Diversification into Agriculture

6. How have environmental factors (e.g., river conditions, climate change) affected your traditional occupations?

Participant Number	Text	Code	Category	Theme
19	The rivers have changed so much. Many channels we used to navigate have either dried up or become too dangerous, making our traditional travel routes impossible. In the past, we knew the river like the back of our hand. It was our lifeline for transportation, fishing, and even for gathering resources. Now, with the change in weather patterns, the flow of the river has changed, and places that we used to frequent are now inaccessible or dangerous. It's hard to even imagine how we can go back to the old ways, and it feels like we are losing a vital part of our culture and lifestyle.	River Channel Changes	Environmental Impact	Disruption of Transportation and Resource Gathering
20	The storms are much unpredictable. In our time, when there was a storm, you could read the signs; it's not possible even today because well-experienced people	Unpredictable Storms	Environmental Impact	Increased Storm Severity and Preparation Challenges

	cannot explain the pattern. We took as a guide the changes that occur in the sky and with clouds; also, the river will give us a signal: weather turns worse. But with change of climatic condition, the variation became very hard to read. These storms just seem to pop up out of nowhere, and the severity of these storms has increased. It has disrupted our traditional ways of preparing for them, which in turn makes it more difficult to protect our families and businesses.			
21	Most of the medicinal plants we used have disappeared due to changes in the river ecosystems. Places where we would collect herbs have been covered by water or worn out. Our elders knew the exact places to get the best herbs, and we'd collect them during seasons of the year. But with the eroding of riverbanks and increased flooding, many of the places these plants were supposed to grow are now submerged or washed away. It's really sad to witness this loss of such important resources; we struggle to adapt to these changes and find new places to gather these plants.	Loss of Medicinal Plants	Environmental Impact	Decline in Traditional Healing Resources
22	The extreme weather has made it impossible to continue the traditional lifestyle of living on boats. The risks are too high now.	Extreme Weather Impact on Boat Living	Environmental Impact	End of Nomadic Lifestyle
23	River erosion has destroyed many of our traditional performance spaces. Villages where we used to perform regularly have been washed away.	River Erosion on Performance Spaces	Environmental Impact	Loss of Cultural Performance Venues
24	The changed climate has affected snake habitats. Many species we worked with have either become rare or disappeared completely.	Climate Impact on Snake Habitats	Environmental Impact	Decline of Snake Charming Practices
25	Flooding is higher and more frequent. We would have seasonal flooding that was manageable; however, the times of flood are so unpredictable and dangerous now.	Increased Flooding	Environmental Impact	Unpredictable and Severe Flood Risks

	<p>Flooding was something that was somewhat expected and one could prepare oneself for it. Nowadays, the rains may be expected, yet they happen out of season or with a very high degree of violence. Every year our house or business stands at risk to suffer huge damage compared to previous decades. We can no longer depend on the old ways of managing floods, and it's forcing us to reconsider how we live and work.</p>			
26	<p>Most medicinal plants have altered their growth patterns with the rising temperatures. Some essential herbs grow in different seasons or not at all anymore.</p>	<p>Altered Medicinal Plant Growth Patterns</p>	<p>Environmental Impact</p>	<p>Changes in Herbal Medicine Availability</p>
27	<p>Places where we used to normally tie our boats and enact our performances have been eroded. Many traditional stopping spots no longer exist.</p>	<p>Loss of Traditional Stopping Spots</p>	<p>Environmental Impact</p>	<p>Erosion of Cultural and Operational Sites</p>

7. How have these changes affected your community's economic status?

Participant Number	Text	Code	Category	Theme
19	<p>We received respect along with our income in our time. Though people are earning more nowadays, we have lost our special status in society.</p>	<p>Loss of Social Status</p>	<p>Economic Impact</p>	<p>Decline in Community Respect</p>
20	<p>Now, the income is more stable, but we have lost our independence. We used to be our own masters on the rivers.</p>	<p>Stable Income vs. Lost Independence</p>	<p>Economic Impact</p>	<p>Trade-off Between Stability and Autonomy</p>
21	<p>Earnings were seasonal but enough. Now, though regular income comes, the cost of living has gone up so much.</p>	<p>Increased Cost of Living</p>	<p>Economic Impact</p>	<p>Financial Strain Despite Stable Income</p>
22	<p>We used to make less money, but we were happier. We did not need that much to live on our boats and lead a simple life.</p>	<p>Happiness vs. Increased Earnings</p>	<p>Economic Impact</p>	<p>Quality of Life vs. Income</p>

23	Now the community has better houses, but we lost our style of living. Nowadays, everything revolves around money.	Improved Housing vs. Lifestyle Loss	Economic Impact	Material Improvement vs. Cultural Loss
24	The young people make more money in their businesses, but they have lost those skills which gave distinction to our community.	Skill Loss in Youth	Economic Impact	Erosion of Traditional Skills
25	We had less to amuse ourselves with, but we had more peace of mind. The modern generation earns a lot, but they are more stressed out.	Peace vs. Increased Stress	Economic Impact	Mental Well-being vs. Financial Pressure
26	The economic status has definitely improved, but at the cost of our cultural identity and traditional knowledge.	Economic Improvement vs. Cultural Loss	Economic Impact	Financial Gain vs. Cultural Preservation
27	Modern occupations bring regular money, but we've lost our special role as healers and entertainers in society.	Regular Income vs. Loss of Roles	Economic Impact	Financial Stability vs. Social Roles Loss

8. Are there differences in income stability between traditional and new occupations?

Participant Number	Text	Code	Category	Theme
19	In our time, income was very seasonal, depending on seasons and festivals, but we knew how to manage it. Sometimes we earned abundantly, other times very little.	Seasonal Income Management	Income Stability	Adaptation to Seasonal Income
20	The traditional work brought in irregular earnings, but we had no fixed expenses either. We lived with the flow of the river and seasons.	Irregular Earnings	Income Stability	Flexibility with Income Fluctuations
21	We got feast or famine type earnings- during festivals and winter months we earned well but it was lean during monsoons.	Feast or Famine Earnings	Income Stability	Seasonal Income Peaks and Lows
22	Our traditional occupation gave us scope to earn more in good times. Now the income is fixed, so are expenses.	Fixed Income vs Variable Earnings	Income Stability	Stability vs. Earning Potential

23	We used to earn less frequently but in large amounts. Small incomes which come today give no satisfaction.	Large Infrequent Earnings	Income Stability	Satisfaction with Earnings Structure
24	Our income depended on our skills and the season. Good performers could earn substantially during festivals.	Skill and Season-Based Earnings	Income Stability	Skill-Driven Income Variability
25	Traditional earnings were not quite predictable but suited our lifestyle. We didn't need daily income like today's generation.	Predictable vs Unpredictable Income	Income Stability	Lifestyle Compatibility with Income Patterns
26	Modern jobs give regular money. We had more earning potential during peak seasons in traditional work.	Regular Income vs Peak Earnings	Income Stability	Regularity vs. Peak Earning Opportunities
27	Our earnings matched natural cycles. We knew when to expect good income and when to save.	Cycle-Matched Earnings	Income Stability	Predictability and Planning with Income

9. What new skills have you had to learn to engage in new occupations?

Participant Number	Text	Code	Category	Theme
19	Learning something at my age is rather problematic, so it was the learning of counting money in some newer methods. That confuses me. When we lived a long time ago, no systems confused our minds; we could trade things or count them on our brains. Today, one has to keep all those receipts, do all this accounting and the e-transactions that get very cumbersome to do. It's difficult to adapt to such an idea-working with machines and numbers in that much detail. And quite often, I ask younger people in the family for help with those things; it's always a fight.	Difficulty with Modern Accounting	Skill Development Challenges	Struggles with New Financial Systems
20	The young ones talk about receipts and calculations. In our time, we remembered everything without writing. We sold goods on credit and remembered who owed us how much and how much we owed another. There were no such things as receipts; it was a matter of trust and	Struggles with Record-Keeping	Skill Development Challenges	Challenges with Documentation Systems

	memory. Nowadays, this new system is about writing everything down and calculations I have never seen or comprehended. I have tried to live with the times, learning to write out a receipt, but it is not easy; often I get lost in these systems.			
21	I find it hard to understand modern business methods. We dealt in trust and verbal agreements. Everything used to be done with a handshake or an agreement made by word of mouth. It was simple, and there wasn't much paperwork involved. Now, with contracts, invoices, and digital transactions, I feel disconnected from how business is done today. I am still not sure of all the new ideas and it really makes me feel like I am losing touch with how we used to work.	Disconnect with Modern Methods	Skill Development Challenges	Loss of Personal Business Practices
22	They want us to learn about banks and savings accounts. In fact, our traditional system of keeping money was much simpler. We used to keep money in safe places at home or within the community. But now, we are being encouraged to open bank accounts, keep records, and use digital money systems. It's all very foreign to me. I don't know how to navigate these modern financial systems, and it feels like it complicates what used to be simple. I've tried to learn, but it's hard to understand the process.	Difficulty with Banking Systems	Skill Development Challenges	Challenges with Modern Financial Tools
23	Modern business is too much paperwork. This we never required within our traditional type of working. We also never needed to fill up forms nor note down the minute quantity of the products sold previously. It all was straight and simple. Nowadays, while running a business, documents are so numerous: income tax, billings, and bills. They are more work, mostly overwhelming. I don't understand why so many	Overwhelming Paperwork	Skill Development Challenges	Burden of Administrative Tasks

	documents are needed, and it makes me nostalgic for the old days when we didn't have to worry about all these details.			
24	I tried learning about fixed shops, but I prefer our old way of mobile trade. We used to travel around in different villages and put up our stalls, selling face to face. Now, with fixed shops, we have to remain in one place, manage the inventory, and deal with the rent issue. It is very different, and the structure traps me. I miss the freedom we had beforehand where mobility was free, and word-of-mouth was predominant in the sales as against this location fixation and consumer expectations.	Preference for Mobile Trade	Skill Development Challenges	Resistance to Fixed Business Models
25	The keeping of stock and inventory differs much from our traditional ways of trading. We never used to stock or bother about the amount of stock. If at all anything got over, we just procured it. But now, with modern businesses, there is a need to keep detailed records for everything that is sold or bought. There are regulations related to the management of stock, how to track inventory. It is so much work, and I'm still finding out how to keep up. I don't know if this is the right way for us, as it takes away the flexibility we used to have.	Challenges with Inventory Management	Skill Development Challenges	Difficulty with Modern Inventory Systems
26	We are finding the new regime of fixed prices weird. We used to haggle on everything, depending on the situation. We used to make deals depending on who gave the order, how much was being bought, and even what the weather was like. We thought this was the way it was supposed to be. Now, having fixed prices for this and that feels rigid. It is much harder to maintain relationships with customers, and I am at a loss how to	Difficulty with Fixed Pricing	Skill Development Challenges	Loss of Personalized Pricing Practices

	adopt this impersonal way of business. I miss the bargaining and human touch we used to have.			
27	All these new ways of conducting business are just too complex for our generation. I am accustomed to a very simple way of selling and trading. The modern business world is so overwhelming with its regulations, accounting, and technology. Every time I try to learn something new, it seems like there is even more that I do not know. We used to trust our guts and the relationships we built, but now everything feels like a mechanism that I just can't grasp. It is frustrating; I don't know if ever I will get comfortable with such novelties.	Overwhelmed by Modern Business Systems	Skill Development Challenges	Frustration with Complex Modern Systems

10. Have any government policies or NGO programs affected your livelihoods? If so, how?

Participant Number	Text	Code	Category	Theme
19	I really don't think that anybody thought about our livelihood.	No Livelihood Support	Government/NGO Programs	Lack of Consideration for Livelihoods
20	We have never received any substantial support for continuing our traditional practices.	No Substantial Support	Government/NGO Programs	Absence of Meaningful Assistance
21	Some NGOs tried to help, but they do not understand the traditional way of life.	Ineffective NGO Assistance	Government/NGO Programs	Lack of Understanding by NGOs
22	Continuous river encroachment restricted our movement on rivers without considering how we lived.	Negative Government Policies	Government/NGO Programs	Impact of Restrictive Policies
23	We receive old age allowance, but not support for preserving traditional knowledge.	Limited Financial Assistance	Government/NGO Programs	Minimal Support for Cultural Preservation
24	The government doesn't value our traditional healing	Lack of Support for Traditional Healing	Government/NGO Programs	Neglect of Traditional Practices
25	No	No Support	Government/NGO Programs	No Assistance Provided

26	No	No Support	Government/NGO Programs	No Assistance Provided
27	No	No Support	Government/NGO Programs	No Assistance Provided
11. What kind of support would be most beneficial for your community?				
Participant Number	Text	Code	Category	Theme
19	We are in need of support to safeguard our traditional knowledge. The youngsters should know our methods of healing and the techniques of snake charming, which are going to be lost forever.	Safeguard Traditional Knowledge	Cultural Preservation	Preservation of Traditional Practices
20	The traditional occupations need to be recognized by the government. Many among us still know certain herbal medicines that are useful to society.	Government Recognition of Traditions	Cultural Preservation	Official Recognition of Traditional Roles
21	We require proper shelter during floods. During our time, we managed in boats, but nowadays we are too old for it.	Flood Shelter Support	Housing and Safety	Protection Against Environmental Hazards
22	We need healthcare support as elderly people. The traditional medicines helped, but now we need modern medical care.	Healthcare Support	Healthcare	Access to Modern Healthcare Services
23	Financial support for our basic needs would help. We can't do shows or trade anymore due to age.	Financial Assistance	Financial Support	Basic Economic Support
24	The government should document our traditional knowledge and skills. These are the valuable parts of our heritage.	Documentation of Traditional Knowledge	Cultural Preservation	Preservation through Documentation
25	We need help with housing. Living near rivers becomes hard, as we grow older, especially during storms.	Housing Support	Housing and Safety	Improved Housing Facilities
26	Support for teaching our traditional practices to the young would be good. Not to practice them, but to preserve knowledge.	Teaching Traditional Practices	Cultural Preservation	Educational Support for Cultural Preservation

27	Medical facilities nearby will help. In our generation, we used herbs for everything; now we need proper health care.	Nearby Medical Facilities	Healthcare	Improved Access to Healthcare Services
12. How has access to education influenced livelihood choices in your community?				
Participant Number	Text	Code	Category	Theme
19	In our time, we learned our trades from our parents. Now our grandchildren go to school and want office jobs. It's good but different.	Shift to Office Jobs	Education Impact	Transition to Modern Careers
20	Education has changed everything. Our knowledge of herbs and healing was passed down orally, but now children learn modern medicine from books.	Shift to Modern Medicine	Education Impact	Replacement of Oral Tradition with Formal Education
21	We never had formal education, only the knowledge of our crafts. Now our grandchildren can read and write, and they choose different paths.	Formal Education and Career Diversification	Education Impact	Broader Career Options
22	The young ones with education don't want to learn our traditional skills. They prefer stable jobs in cities.	Decline of Traditional Skills Learning	Education Impact	Loss of Traditional Practices
23	Education has made our community different. Our children and grandchildren understand things we never knew about.	Enhanced Knowledge through Education	Education Impact	Increased Awareness and Knowledge
24	In our childhood, snake charming or performing skills were our education. Today, the books and schools have changed everything.	Replacement of Traditional Education	Education Impact	Transition from Practical to Formal Education
25	The educated young show less respect for our traditional learning. According to them, it's backward.	Reduced Respect for Traditional Knowledge	Education Impact	Generational Attitude Shift
26	Education opens up far better opportunities than what we have had, yet it steals the young from the nest of our traditions.	Opportunity vs. Tradition	Education Impact	Trade-off between Modern Opportunities and Cultural Preservation

27	The better lifestyles our grandchildren lead than what we did on rivers, owe it to their education.	Improved Lifestyle through Education	Education Impact	Enhanced Quality of Life
13. How has technology impacted your traditional and new livelihoods?				
Participant Number	Text	Code	Category	Theme
19	The technological advancement has made our traditional shows less interesting to the people. They now like to watch television instead. If some years ago we were doing snake charming or magic shows, people used to come from all over to watch, while nowadays they like to sit at home and watch television shows or videos running on the internet. The younger generation, particularly, does not have patience to watch our performances. They are habituated with speedy and energetic performances. It's like the world has moved on from what we used to do, and the old ways don't have quite the same allure anymore.	Decline of Traditional Performances	Technology Impact on Culture	Loss of Traditional Entertainment Appeal
20	People do not want to watch the snakes when they have the option of entertaining themselves through mobile phones. Our snake shows were once something great to watch, and people were very interested in watching it, but now everyone carries smartphones, which can entertain them on end. Instead of gathering around and watching a show, they are the ones busy with their phones, social media, or video watching. It's hard to compete with this form of technology. It's traditional art that has slowly disappeared due to much easier and more varied entertainment.	Competition with Mobile Entertainment	Technology Impact on Culture	Mobile Phones Diminish Traditional Art
21	Our knowledge regarding herbal medicine is deemed outdated due to modern technology. People respected our knowledge when we used to depend on medicinal	Shift to Modern Medicine	Technology Impact on Healthcare	Decline of Traditional Healing Practices

	plants and traditional healing practices. Now, with current medicine and pharmaceutical technologies, many regard our herbal remedies as old-fashioned, or even irrelevant. People either visit doctors, take medicines that are prescribed by them, or purchase over-the-counter medicines without considering those natural remedies which we used earlier. We feel the things which we knew are no more useful or even understood by the next generation.			
22	Youngsters no longer appreciate the magic of our shows, with so much new gadgetry in every household. We used to do magic tricks for the community, and they were amazed. Nowadays, kids and teenagers are so hooked on technology that they don't seem to care about our shows. They have access to endless entertainment on their devices—whether it's games, movies, or social media. They can get a bigger thrill from watching things online than from the simple magic we used to perform. They become restless due to the availability of lots of distractions.	Decline of Magic Shows	Technology Impact on Culture	Digital Media Supersedes Traditional Magic
23	This machine and phone have just made our traditional skills useless. We relied on the traditional skills for performing, healing, and trading, which this technology has just changed totally. Instead of relying on our abilities to entertain, heal, or trade, phones, computers, or modern machinery are considered by people.	Replacement of Traditional Skills	Technology Impact on Livelihoods	Technology Supplants Traditional Roles
24	We used to give little performances and entertain villages in our time. Now everybody has television and internet.	Decline of Mobile Performances	Technology Impact on Culture	Reduction in Mobile Entertainment
25	Technology has ended the era of traditional performances. People want different entertainment now.	End of Traditional Entertainment Era	Technology Impact on Culture	Shift to New Forms of Entertainment

26	Traditional trading by boat has no place in this day and age of fast transport and phones.	Decline of River-Based Trading	Technology Impact on Livelihoods	Fast Transport and Digital Communication Replace Traditional Trading
27	We don't understand these new technologies. It changed all that which we knew.	Lack of Technology Adaptation	Skill Development Challenges	Inability to Adapt to Modern Technologies
14/15. In what ways has increased connectivity (e.g., mobile phones, internet) affected your work? ; What challenges do you face in accessing or using digital technologies?				
Participant Number	Text	Code	Category	Theme
19	I can't use these new phones. In our time, one was able to communicate by approaching a person face to face. Simplicity was how we used to interact—by either visiting neighbors or just by gathering in the village square. All of a sudden, using the new phones feels so out of place, so very impersonal. I know everyone relies on them, but it is hard for me to adjust to this new way of connecting. I prefer face-to-face conversations, where we could really understand each other's feelings.	Preference for Face-to-Face	Technology Access Challenges	Resistance to Digital Communication
20	These gadgets perplex me. We never needed them for our traditional work. We would go from village to village, meeting people in person and trading goods. We didn't need mobile phones or the internet. Everything was so straightforward, and we knew what was happening around us. To me, these new devices simply appear superfluous and overwhelming. I don't know how to use them, and honestly, I feel like they complicate things. They're taking us away from the direct connections and practical ways of life that we once had.	Perception of Gadgets as Overwhelming	Technology Access Challenges	Complexity of Modern Devices

21	I do not know how to properly use a mobile phone. My grandkids try teaching me, but it is so complicated. I am very grateful that they would want to help me, but every time I try to learn, it is like more and more information to absorb. The telephones nowadays are too foreign, different to the ones we used to apply—numerous buttons, apps, settings, and I can't seem to figure it out. My grandchildren say, "It's easy." The more they say that, the more frustrated and muddled it sets me. I wish I were able to go back with the old way of life.	Frustration with Learning Technology	Technology Access Challenges	Emotional Barriers to Technology Adoption
22	We knew every village along the river in our day. Nowadays, everybody uses phones and maps that I couldn't read.	Inability to Use Modern Maps	Technology Access Challenges	Difficulty with Digital Navigation Tools
23	These new devices are beyond my understanding. We managed our whole lives without them.	Lack of Understanding of Devices	Technology Access Challenges	Incompatibility with Traditional Practices
24	I avoid using these new technologies. They make me feel outdated and useless. I see how everybody is using their phones and computers, and I'm feeling left out. I've tried to understand them, but just get the feeling it's not for me. I have lived my life without these devices, and it's hard to imagine just how they'd improve anything I do. I don't want to keep up with these changes because it feels like I'm losing my identity in the process. It's easier for me to just stick with the way things used to be.	Avoidance of New Technologies	Technology Access Challenges	Identity and Self-Worth Concerns
25	Internet and phone for young people. We're already too old to learn these things now.	Perceived Age Barrier	Technology Access Challenges	Generational Gap in Technology Learning
26	The modern devices give me a sense of lagging. We used to do everything without them.	Feeling of Lagging	Technology Access Challenges	Sense of Being Left Behind

27	I can't use smartphones or computers; our traditional ways didn't require such things.	Inability to Use Digital Tools	Technology Access Challenges	Lack of Digital Literacy
16. Have there been changes in the roles of men and women in terms of livelihood activities?				
Participant Number	Text	Code	Category	Theme
19	In our generation, snake charming was carried out by men, whereas women used to help them in herbal medicines. Now all are doing everything.	Gender Role Blurring	Gender Roles	Elimination of Traditional Gender Roles
20	Women used to stay with boats during the show. Now they run shops, just like men.	Women Taking on Business Roles	Gender Roles	Women's Economic Empowerment
21	Traditional roles were clear - men performed shows, women prepared medicines. These differences are gone now.	Clear to Blurred Gender Roles	Gender Roles	Dissolution of Defined Gender Responsibilities
22	In our day, each gender had specific duties in our trade. Now such distinctions don't exist.	Specific to General Roles Transition	Gender Roles	Transition to Gender-Neutral Roles
23	Women's roles were different then - they helped in shows but didn't perform. Now they work independently.	Independent Women in Livelihoods	Gender Roles	Increased Autonomy for Women
24	Men and women both had separate roles in our traditional work. Modern generation does not follow these traditions.	Separate to Unified Roles	Gender Roles	Modern Generation Rejecting Traditional Roles
25	Our traditions had defined what work needed to be done by each gender. Modern times have changed it all.	Defined to Changed Gender Work Roles	Gender Roles	Complete Transformation of Gender Responsibilities
26	Women's work was different in our time. Now they do the same work as men.	Equality in Work Responsibilities	Gender Roles	Gender Equality in Employment
27	The old ways kept men and women's work separate. Now everything has changed.	Complete Change in Gender Roles	Gender Roles	Total Shift from Traditional to Equal Roles

17. What strategies have you or your community adopted to cope with changes in weather and climate? Can you describe any local knowledge or practices that help you adapt?				
Participant Number	Text	Code	Category	Theme
19	We know from years of living on the river the moods it shows. Young ones no more understand these signs.	Decline in Traditional Weather Signs	Climate Adaptation Strategies	Loss of Traditional Ecological Knowledge
20	Our experience taught us to read from birds and wind patterns as soon as weather would change. We utilized this experience during our travels.	Use of Natural Indicators	Climate Adaptation Strategies	Natural Indicators for Weather Prediction
21	We learned to secure our boats and belongings before storms. This is passed on from generations in river life.	Securing Boats Before Storms	Climate Adaptation Strategies	Protective Measures against Storms
22	In our time, we knew exactly when to travel and when to stay put based on river patterns.	Travel Timing Based on River Patterns	Climate Adaptation Strategies	Seasonal Movement Based on River Conditions
23	Years of performing on riversides taught us about weather changes. We could predict storms days ahead.	Storm Prediction from Performance	Climate Adaptation Strategies	Predictive Knowledge from Performance Activities
24	The traditional knowledge helped us survive the dangers presented by the river. They do not have that forecast accuracy today.	Traditional Knowledge for Survival	Climate Adaptation Strategies	Effectiveness of Traditional Knowledge vs Modern Forecasting
25	Reading clouds and winds-we learn from our ancestors. This kept us safe during our programs.	Ancestor-Inherited Weather Reading	Climate Adaptation Strategies	Ancestral Knowledge in Weather Prediction
26	The living in the boats taught us everything about weather patterns. New generations don't have this experience.	Boat Living and Weather Knowledge	Climate Adaptation Strategies	Loss of Knowledge through Lifestyle Changes
27	Our traditional knowledge of rivers and weather came from years of experience, not from books or devices.	Experience-Based Weather Knowledge	Climate Adaptation Strategies	Reliance on Experience over Modern Tools
18. Have you noticed any changes in the traditional roles or responsibilities within the community due to climate variability?				

Participant Number	Text	Code	Category	Theme
19	Now, the weather has become so unpredictable. During our time, we knew exactly when to travel and perform. We knew the seasons very well and could plan everything according to the pattern that we observed. We knew exactly when the rains would come, the rise and fall of the river, and when it was safe to travel to neighboring villages. With erratic weather, we now could no longer depend on these patterns. It's a matter of not knowing whether to do your thing at the right time, as well as the navigable current of the river. That started being stressful because we had never really trusted the rhythm with which we normally lived.	Unpredictable Weather Patterns	Role Adaptation	Increased Uncertainty in Planning
20	The storms are now stronger than when we were youths. To go on practicing our traditional labor would have been impossible. We were used to seasonal storms in the past, but now they're unpredictable, much fiercer. These storms disrupt our performances and trading because we can't travel safely anymore. In the past, we used to travel on the river and then set up performances, but now with stronger and more frequent storms, the risks are too high. Our old methods of planning around the weather no longer work, and many of us have to adjust our mode of living to one that relies less on the river.	Stronger and More Frequent Storms	Role Adaptation	Disruption of Traditional Practices
21	The rivers behave differently now. Our old knowledge about safe travel times doesn't work anymore. The river, once the lifeblood of our community, has changed so much. Whereas we used to know to the day when the currents would be calm enough to travel, now the water levels can change unexpectedly, and dangerous currents	Changed River Behavior	Role Adaptation	Increased Risk in River-Based Activities

	appear where there were none before. The riverbanks have eroded in places we never expected, and it's harder to predict when it will be safe to cross or perform.			
22	Climate change made the traditional timing of the show and trade not reliable.	Unreliable Timing	Role Adaptation	Disruption of Scheduled Activities
23	We couldn't predict weather like before. It affected how we planned our travels and performances.	Reduced Weather Predictability	Role Adaptation	Challenges in Planning Due to Weather
24	The seasons are not like they were in our time. It is even harder to maintain the traditional practices. Once we could count on the dry and rainy seasons so that we would know when to go out and perform. Nowadays, the seasons change so unexpectedly that at times it will rain when it should not rain, or heat might be excessive earlier than usual. This makes it harder to carry out our traditional livelihoods, which were based on the cycles of the weather. Our practices are deeply tied to the land and the river, but now it feels like we're losing control over those natural rhythms.	Erratic Seasonal Changes	Role Adaptation	Loss of Predictable Seasonal Cycles
25	River patterns have changed so much. Our traditional knowledge doesn't apply like it used to.	Altered River Patterns	Role Adaptation	Inapplicability of Traditional Knowledge
26	Extreme weather makes traditional livelihoods dependent on the river impossible now.	Extreme Weather Impact	Role Adaptation	Infeasibility of River-Dependent Livelihoods
27	The change in climate forced many to desert their traditional roles. The river is not as predictable as it was.	Desertion of Traditional Roles	Role Adaptation	Abandonment of Traditional Practices

19. How do climate-related changes affect your ability to access essential services like education, healthcare, and transportation?

Participant Number	Text	Code	Category	Theme
19	Floods are worse nowadays. In our time, we knew how to handle them, but nowadays they cut off access to everything.	Increased Flood Severity	Access Disruption	Enhanced Impact of Floods on Essential Services

20	Bad weather makes it hard to get to the hospitals. In our day, we relied on herbal medicine, but now we need modern healthcare.	Difficulty Accessing Healthcare	Access Disruption	Challenges in Reaching Healthcare Facilities
21	Weather changes make it difficult to reach services. We are too old to travel by boat like we used to.	Mobility Issues Due to Weather	Access Disruption	Age-Related Mobility Challenges
22	Storms and floods isolate us from facilities. Our traditional lifestyle prepared us better for this.	Isolation from Facilities	Access Disruption	Increased Isolation During Extreme Weather
23	Healthcare access is most affected. We can't travel far anymore when weather is bad.	Healthcare Access Hindrance	Access Disruption	Limited Access to Healthcare in Bad Weather
24	Bad weather cuts us off from everything. In our time, we were more adaptable to such conditions.	Comprehensive Access Barriers	Access Disruption	Overall Barriers to Access Due to Weather
25	It was pretty hard to get medicines if flooded. We used to make do with herbs, and then we needed regular medication.	Medication Access During Floods	Access Disruption	Difficulty in Obtaining Medicines During Floods
26	Weather affects even some other basic needs. We were rather mobile in our younger life.	Impact on Basic Needs	Access Disruption	Disruption of Basic Necessities Due to Weather
27	During storms and floods, we are cut off utterly. It is more challenging to bear these days, now we've grown older.	Complete Service Cut-Off	Access Disruption	Total Disconnection from Services During Events

Table 03: Code sheet of FGD Discussion Aged 51-80

Title: Ripples of Change: Climate Variability and Livelihoods among River Gypsies of Bangladesh

Participant: Academician from the University of Dhaka

Location: Dhaka

KII's Code sheet

Date & Time: 09/10/2024; 01:00 AM

1. What factors have influenced changes in their livelihoods over the past decade?

Transcript	Code	Category	Theme
The Bede community is still staying behind in our country. The communities that are unable to develop, must bring to the mainstream culture. The Bede community wants to stay in their occupation, they don't want that much change. However, the younger generation of this community wants to be involved in mainstream education and jobs. Once the children are taught their traditional knowledge but now there's a huge change. Since they are not likely to change their traditional job aspect thus they have been given support so that they can have a developed form of their traditional jobs. Moreover, they the children go to school now ignoring the stereotype.	1. Generational Shift Towards Mainstream Education and Jobs 2. Support for Developed Traditional Occupations 3. Resistance to Change in Traditional Roles	Livelihood Changes	1. Younger generation moving towards mainstream education and employment 2. Government/NGO support in modernizing traditional occupations 3. Older generation's reluctance to abandon traditional roles

2, 3 and 5. How has climate change affected the Bede community's livelihood activities (e.g., fishing, boat-making, seasonal migration)? Have climate-related changes such as floods, droughts, or storms impacted their resources (water, land, etc.)? What are the key challenges the Bede community faces due to climate change?

Transcript	Code	Category	Theme
The influence of climate change is not same in every place. Savar is not that much disaster prone are. We can mention Savar Bede community as semi-vulnerable. If there is heavy rainfall, then are their houses sufficient enough to protect them? The basic needs of this community is affected by climate change as their income sources change.	1. Varying Climate Impact by Location 2. Semi-Vulnerability of Savar Bede	Livelihood Changes, Vulnerability Factors, Infrastructure Challenges, Social Challenges,	Differential Climate Impacts, Semi-vulnerable Status of Community, Insufficient Housing Protection, Changes in Income Sources Affecting Basic Needs, Migration Due to Livelihood Insecurity, Inadequate Rehabilitation Support

<p>Domestic migration also happens. But there is a social climate issue which the community faces due to lack of permanent rehabilitation. Even they don't earn a lot thus sometimes they get involved in the business of drug dealing and other criminal activities.</p>	<p>3. Housing Protection during Heavy Rainfall 4. Impact on Basic Needs due to Income Changes 5. Domestic Migration 6. Lack of Permanent Rehabilitation 7. Involvement in Criminal Activities</p>	<p>Economic Challenges,</p>	
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4. What adaptations have the Bede community made to cope with climate change?

Transcript	Code	Category	Theme
<p>Bede community has taken steps by their own like how to build a sustainable houses and infrastructures. But due to lack of money they can't make much development. State must provide their housing facilities to this community. There needs to be local intervention with community based stakeholders to make a permanent solution of Bede community's income generation. The biggest drawback of marginalized community is not having regular income which needs to be solved to develop their adaptation power. Climate prone area's Bede community must be given hands-in-training to fight any sort of climate change.</p>	<p>1. Community-led Sustainable Housing 2. Financial Constraints on Development 3. Need for Government Housing Support 4. Local Intervention and Stakeholder Engagement 5. Need for Training in Climate Adaptation</p>	<p>Adaptation Strategies, Economic Challenges, Capacity Building</p>	<p>Community Initiatives for Sustainability, Economic Barriers to Adaptation, External Support for Housing, Collaborative Approaches to Livelihoods, Skill Development for Climate Resilience,</p>

6. How has climate change affected the economic stability and well-being of Bede families?

Transcript	Code	Category	Theme
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There needs to be a permanent economic opportunity for this community.	Need for Permanent Economic Opportunities	Economic Stability	Sustainable Economic Opportunities for Stability
7. Which groups within the community (e.g., women, children, elderly) are most vulnerable to climate impacts?			
Transcript	Code	Category	Theme
Definitely women and adolescent girls.	Vulnerable Groups: Women and Adolescent Girls	Vulnerability Factors	Gender and Age-related Vulnerability to Climate Impacts
8. Have government or NGO programs helped the Bede community adapt to climate change?			
Transcript	Code	Category	Theme
Joint actions can be taken. Moreover, non-returnable funds can be given to them to develop the Bede community's situation. NGO must have a monitoring approach so that the individuals from the community don't waste the loan rather use it for the betterment of their situation. Government can allocate a budget and continuously generate funds for them so that the community gets loan in a circular motion.	1. Collaborative Efforts 2. Provision of Non-Returnable Funds 3. NGO Monitoring Mechanisms 4. Sustainable Government Funding	Program Support, Financial Support, Accountability	Partnership for Community Development, Financial Aid without Repayment, Ensuring Proper Use of Financial Resources, Sustainable and Continuous Financial Support Systems
9. What additional support or interventions do you think the community needs to better cope with climate change?			
Transcript	Code	Category	Theme
I don't think law or policy is that much needed. Community based actions must be taken to aware the community and bring positive changes among them. Also the mainstream society must be empathetic towards Bede community, otherwise this community can't be developed.	1. Emphasis on Community-based Actions 2. Need for Societal Empathy	Program Support, Social Support	Need for Grassroots Initiatives, Importance of Mainstream Society's Support
10. What do you see as the future of the Bede community's livelihoods in light of climate change?			
Transcript	Code	Category	Theme
The community will merge with other classes of the society. Then the previous cultures and customs will be gone eventually and new values	1. Cultural Assimilation	Future Livelihood Trends	Cultural Erosion and Mainstream Integration

<p>will be developed. Thus subconsciously the community will merge fully to the mainstream community of the society.</p>	<p>2. Loss of Traditional Customs</p> <p>3. Integration into Mainstream Society</p>		
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Table 04: Code Sheet of the Academician KII

Title: Ripples of Change: Climate Variability and Livelihoods among River Gypsies of Bangladesh
Participant: Govt. Official (Social Service Officer)
Location: Savar
KII's Code sheet
Date & Time: 15/10/2024; 03:00 AM

1/4. What factors have influenced changes in their livelihoods over the past decade? What adaptations have the Bede community made to cope with climate change?

Transcript	Code	Category	Theme
The young generation of the Bede community doesn't want to accept the traditional occupations rather they want to mix with the mainstream population and job sector. There are more or less 15 thousand Bede lives in Savar. People of Savar's Bede community are mostly in education now. Those who are older and have no way to transform now stick to traditional occupations.	Education-driven Livelihood Shift	Livelihood Changes	Generational Transition to Mainstream Jobs

2/3. How has climate change affected the Bede community's livelihood activities (e.g., fishing, boat-making, seasonal migration)? Have climate-related changes such as floods, droughts, or storms impacted their resources (water, land, etc.)?

Transcript	Code	Category	Theme
Climate change and environmental pollution harm them the most. Such as fishing is tough for them, and snake charming is also impossible now. Thus they are doing jobs like hawkers and day laborers now.	Climate and Pollution Impact	Livelihood Changes	Disruption of Traditional Livelihoods and Adaptation to New Jobs

5. What are the key challenges the Bede community faces due to climate change?

Transcript	Code	Category	Theme
Bede community used to make Tabij for people and worked as a fortune teller. Now in modern society, people don't approach them anymore. Moreover, many variants of snakes are becoming extinct making Bede switch their jobs. They can't cope with the traditional occupations now due to climate change.	Decline of Traditional Occupations	Key Challenges	Loss of Traditional Practices and Species Extinction

6. How has climate change affected the economic stability and well-being of Bede families?

Transcript	Code	Category	Theme
Due to climate change, they can't fully explore their traditional livelihood scopes. Now they choose other professions making their economic stability shaky.	Livelihood Disruption and Shift	Economic Impact	Economic Instability from Livelihood Changes

7. Which groups within the community (e.g., women, children, elderly) are most vulnerable to climate impacts?			
Transcript	Code	Category	Theme
Women and older populations are vulnerable communities due to discrimination. Also, those who are totally illiterate are also vulnerable because they can't raise their voice about their necessities.	Vulnerable Groups: Women, Elderly, Illiterate	Vulnerability Factors	Increased Vulnerability Due to Discrimination and Illiteracy
8/9. Have government or NGO programs helped the Bede community adapt to climate change? What additional support or interventions do you think the community needs to better cope with climate change?			
Transcript	Code	Category	Theme
Govt and NGOs must work together to help the community. Whatever the community wants to do and is capable of, govt and NGOs must focus on that. Also, the community must be given training to improve their life such as sewing, handcrafts, etc. The capacity of these training facilities must be improved. Investments must be increased and interventions must be according to the community's necessity with a modern approach.	Collaborative Support from Govt and NGOs	Program Support	Partnership for Community Assistance
10. What do you see as the future of the Bede community's livelihoods in light of climate change?			
Transcript	Code	Category	Theme
The community will get involved with the mainstream population soon. Because they don't want to be a part of the Bede community anymore due to vulnerable and insecure livelihoods.	Integration into Mainstream Population	Future Livelihood Trends	Shift from Traditional to Mainstream Occupations due to Vulnerability and Insecurity

Table 05: Code Sheet of the Govt. Official KII

Title: Ripples of Change: Climate Variability and Livelihoods among River Gypsies of Bangladesh

Participant: NGO Official from Sajida Foundation

Location: Dhaka

KII's Code sheet

Date & Time: 05/11/2024; 12:00 AM

1/3/5. What factors have influenced changes in their livelihoods over the past decade? Have climate-related changes such as floods, droughts, or storms impacted their resources (water, land, etc.)? What are the key challenges the Bede community faces due to climate change?

Transcript	Code	Category	Theme
Females are the main breadwinner of the Bede community. In the Bede community when a girl is born, parents become happy. Climate change is a factor for them to change their livelihoods. Earlier all of them used to have a boat of their own and they used to do business with it. Now there is river erosion thus the people living beside the rivers are decreasing as well as their Bede community's businesses. Now they go from village to village walking and trying to run their traditional businesses.	<ol style="list-style-type: none"> 1. Female Breadwinners 2. Cultural Value of Female Birth 3. River Erosion Impact 4. Adaptation to Land-based Business 	Gender Roles, Cultural Values, Climate Impact, Environmental Impact, Adaptation Strategies	Gender-based Economic Roles, Cultural Significance of Female Offspring, Environmental Degradation Affecting Livelihood, River Erosion Affecting Livelihoods, Transition from River-based to Land-based Business

2. How has climate change affected the Bede community's livelihood activities (e.g., fishing, boat-making, seasonal migration)?

Transcript	Code	Category	Theme
The community listens to their head of community; they call him 'Sarder'. Bede community now lives on the land, not in the river. They see various scopes of livelihoods by comparing them with other people of society. Thus they are making a backup plan to develop their situation more. This shift in changing livelihoods is also a positive approach.	<ol style="list-style-type: none"> 1. Leadership-Driven Adaptation 2. Transition from River to Land-based Livelihoods 3. Diversification of Livelihood Options 	Adaptation Strategies, Livelihood Changes	Influence of Community Leadership on Livelihood Shifts, Moving from River-Based to Land-Based Livelihoods, Developing Backup Plans for Economic Stability, Embracing Positive Changes in Livelihoods

	4. Strategic Backup Planning		
4. What adaptations have the Bede community made to cope with climate change?			
Transcript	Code	Category	Theme
Bede community lives a little bit higher than the land level due to flood and water clogging. NGOs help them to build this type of infrastructure. When they used to be in the river, they used to face many health issues. Now living in the land they are making the infrastructure that is suitable for them.	1. Elevation of Living Areas 2. NGO Support in Infrastructure 3. Transition from River to Land 4. Reduction of Health Issues 5. Construction of Suitable Infrastructure	Adaptation Strategies, External Support, Livelihood Transition, Health and Infrastructure Development	Structural Adaptations to Mitigate Flooding, Role of NGOs in Facilitating Adaptation, Shift from River-Based to Land-Based Livelihoods, Improved Health Outcomes through Relocation
6. How has climate change affected the economic stability and well-being of Bede families?			
Transcript	Code	Category	Theme
Previously, the community lived all together in a group. Currently they are mixing with different caste, creed and classes of the society. They now need to communicate with the people out of their community, which impact their well-being. Women starts to earn in a very small age leading to strategized economic stability. The community faces divorce mostly nowadays because of mixing with different other community which also impact their well-being and economic stability.	1. Social Integration and Cultural Mixing 2. Early Female Workforce Participation 3. Impact of Inter-Community Mixing on Well-being 4. Rise in Divorce Rates Due to Cultural Mixing	Social Changes, Economic Changes, Well-being Changes, Social Changes	Cultural Integration Impact on Social and Economic Stability, Economic Stability through Women's Employment, Social and Economic Impact of Cultural Mixing
7. Which groups within the community (e.g., women, children, elderly) are most vulnerable to climate impacts?			
Transcript	Code	Category	Theme

Women are definitely vulnerable but they want to show themselves as a stronger and charming creature. Such as, they drape thin sarees to enhance their business. They think their beauty is a major point of their income.	1. Gender-based Vulnerability 2. Empowerment through Appearance 3. Economic Dependence on Beauty	Vulnerability Factors, Gender Roles, Economic Activities	Gender and Age-related Vulnerability to Climate Impacts, Empowerment through Economic Strategies
8. Have government or NGO programs helped the Bede community adapt to climate change?			
Transcript	Code	Category	Theme
Many NGO actually works for them. Govt gives allowance to the community, mostly to the older people. Locally many NGOs work for the development of the community. Furthermore, many NGOs work for their health and housing. But focus must be put on the fundamental rights of Bede community more.	1. NGO Involvement in Development 2. Government Allowances to Elderly 3. Need for Fundamental Rights Focus	Program Support,	Existing NGO and Government Support with Gaps in Fundamental Rights
9. What additional support or interventions do you think the community needs to better cope with climate change?			
Transcript	Code	Category	Theme
Interventions must align with the community's needs. Plans must be long term not short term with proper investment and close monitoring so that drastic change becomes possible. Loans can be provided to them for business, though they get back to their traditional occupation.	1. Need for Community-aligned Interventions 2. Long-term Planning and Investment 3. Importance of Monitoring Mechanisms	Program Support, Financial Support	Sustainable and Tailored Support for Adaptation

	4. Support for Traditional Occupations		
10. What do you see as the future of the Bede community's livelihoods in light of climate change?			
Transcript	Code	Category	Theme
It is difficult to say that their traditional livelihoods will fully change, but it can be said that there would a massive change in their livelihoods. When they don't have their regular work then they get involved with the day labour work and other works. Eventually the community will understand the value of education and will try to be educated. But it can be tough for them when they need to mix with other people of the society and detach with their own community.	1. Cultural Assimilation 2. Loss of Traditional Customs 3. Integration into Mainstream Society	Future Livelihood Trends	Cultural Erosion and Mainstream Integration

Table 06: Code Sheet of the NGO Official KII

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