

Resilience of Char Dwellers of Darrang District of Assam: Navigating Lives on Shifting Sands

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Abstract

Original Research Article

The char dwellers of Assam are one of India's most environmentally aware yet still quite strong groups. These people dwell on river islands that are just temporary and were produced by Brahmaputra rejecting deposits. They have come up with creative strategies to deal with floods, erosion, and climate change that happen over and over again. About 10% of Assam's people live in char areas, yet they only use 4–5% of the land. They have a lot of challenges, such being left out of society and the economy, having bad infrastructure, and having their citizenship questioned. Their power is shown by how they can change their ways of making a living, their traditional ways of knowing things, and their cultural customs to stay alive in a world that is continually changing. This study focusses at how char populations adapt and thrive even when the weather is uncertain. The study used focused group discussions, case studies and direct observation method to full fill the objectives.

Keywords: Resilient, Vulnerable, Soil erosion, flood.

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1. INTRODUCTION

The Brahmaputra River runs through Assam and creates a number of sandbars and alluvial islands. These are called "chars" and "chaporis" in the area. They are transient landscapes that are always changing due to the processes of creation and erosion. Char is the name for the island look like mirages in the middle of the river and are surrounded by water on all sides (Bhagawati 2004; Krishnan, 2014; Sultan, 2015; Saikia, 2023) and Chapori are the sandy plains near the banks of the Brahmaputra and connected to the mainland (Bhagawati 2004; Krishnan, 2014; Sultan, 2015; Saikia, 2023).

These temporary landmasses cover more than 3.60 lakh hectares and are home to over 24.90 lakh people, which is almost 10% of Assam's total population (Government of Assam, 2002–03). In char areas in 2002–03, there were 690 persons per square kilometre, which is approximately double the state average of 340.

Life on chars is characterized by uncertainty and impermanence. As one char dweller, Monirul, poignantly expressed: "our life is in this river island, otherwise where will we go, where will we sleep, what

will we eat"(Bhuyan, 2024). This remark summarises up how char dwellers feel about their dangerous surroundings, even though they are hard to deal with. The demographic composition of char areas reflects complex historical migration patterns. Inhabitation goes back to when the British governed India and the government told Muslim farmers from East Bengal to move to chars and farm them to make money from what were then regarded to be wastelands (Sen, 2023).

The people who live in the char areas are hard-working and painstakingly laborious, rich in cultural heritage, and that they have adapted effectively over the years to adverse situations like floods, erosion, and storms (Das, 2023). Their socioeconomic data shows that they have many significant challenges. Many people in chars can't read or write, so they think of climate change and risks as acts of God instead of things that need to be recognised and dealt with (Barman & Bokth, 2024). Studies demonstrate that char areas are often some of the poorest in Assam, with the highest levels of multidimensional poverty compared to other sections of the state. The 2014 Assam Human Development Report says that char areas have the highest economic deprivation, and that poverty is not only about not having

enough money (Government of Assam, 2016). This indicates how hard it is for many people to get the things they need. The Char Area Development Authority did a socio-economic survey in 2002-03 and determined that around 80% of the people who live in the char area are poor (Government of Assam, 2002-2003). This is more than twice the rate reported in other sections of the state. This data indicates how serious the economic marginalisation is for char communities and how crucial it is to take specific initiatives to decrease poverty.

Despite facing several challenges both annually and in their day to day lives, the char dwellers of district continue to reside in these vulnerable areas. Rather than relocating, they persist and even make progress which demonstrate a remarkable resilience in the face of adversity. Thus, the present study aims to understand how these dwellers navigate the difficulties they encounter and to identify the strategies they adopt to improve their quality of life

2. RESEARCH METHODOLOGY

This study takes a qualitative method to look into the challenges that people in the Darrang district of Assam face and how they deal with them. We undertook fieldwork in four chosen chars: No. 2 Magurmari, Chatihara, Aglachar, and Nanglichar were chosen to demonstrate a range of experiences in the area. There were four focused group discussions (FGDs), one in each char. To make sure that a wide range of viewpoints were represented, each group contained 5 to 7 local people of diverse ages, genders, and occupation. These talks were guided by semi-structured questions. They talked about subjects like daily concerns, how individuals deal with environmental threats like floods and erosion, and how the community handles them. We also undertook in-depth case studies of select persons and families to learn more about how they dealt with challenges and got back on their feet. We looked at a lot of existing literature, including as academic studies, government papers, and NGO publications about char areas of Assam, to put the source data in context and add to it. We wrote down all of the qualitative data we collected and then looked at it in terms of themes. We also compared the results to FGDs, case studies, and other sources to make sure they were accurate and thorough. We were very careful to observe all the rules of ethics. Everyone who took part in the study gave their informed consent, and we kept everything private throughout the whole process.

2.1. Ethical Approval and Consent to Participate:

This study did not require formal ethical approval, as involved low risk, didn't include collecting sensitive personal data, and used non-invasive approaches like focus group discussion, case studies, and direct observation. All of these steps were taken with a promise to do research in an ethical way. All participants gave their informed verbal agreement before taking part. Participants were informed about the purpose of the

study, their voluntary involvement, and their right to withdraw at any time.

2.2. Consent for Publication:

This study has references to specific case studies and facts that people in their local area may recognise. All of the people in the study gave their written permission for their information to be published and we tried our best to keep the participants personal identity anonymised.

3. RESULT AND DISCUSSION

3.1. Educational Infrastructure and Access Barriers:

The schools and other educational facilities in these areas are quite bad, which makes it even tougher to make the economy and society better. Studies show that there aren't enough schools in some areas, and the ones that do exist often have old infrastructure that makes parents less likely to invest in their children's education. In char villages, a lack of infrastructure and lack of transportation facilities make it very hard for children to get ahead in school. A study found that a student living in the char lands has to walk 2.5–5.5 km to go to school, while a student living on the mainland only has to walk 0.92–1.7 km (Siddique, 2021).

Most of the time, children in these areas finish their elementary or secondary education in schools that are in or near their char. They can live at home and go to school during this period. But they usually have to leave home or transport around 10 to 15km daily to attain higher level of schooling as there were no higher secondary schools in char areas. This usually costs a lot of money, which makes it hard for every family to pay for more school. Even with these problems, families' chars know how important education is and that it is necessary to end the cycle of poverty. Parents work hard to make more money and pay for their children's education. They typically send their children to cities where there are better schools and college.

Therefore, many children from char areas are doing well in education and getting employment in both the private and public sectors. These students generally study hard as they know how their parents are working in the field to make money and give them for their education and overcome tough situations to be successful in life.

3.1.1. Case Study 1: The Educational Journey of Saidur Rahman—A Resident of No. 2 Magurmari Char

Saidur Rahman, who is 29 years old, lives on No. 2 Magurmari Char, a small island in the river about 15 km south of Kharupetia in Assam. They have to cross a small river to get to the village from the mainland, which makes it challenging. They walk, use a bamboo bridge, or take a boat across the riverbed, depending on the level of the water in the river. This daily struggle with

transportation indicates the isolation faced by the people living in that char. There haven't been many chances for schooling at No. 2 Magurmari Char in the past. When Saidur was a child, there was only one school in the villages of that char. It was a Lower Primary (LP) school that was about a kilometre away from his house. Most youngsters couldn't go to school beyond elementary school because there were no school for further schooling. All of Saidur's brothers, except for the second oldest, who attended to school till class 5, are illiterate. Even though he had to deal with these challenges, Saidur was able to go to school more than anyone else in his village. He rode his bicycle seven km to and from high school after finishing his LP school. He had to ride his bicycle nine km every day to go to his high school. Saidur was blessed to be the youngest because he didn't have to do chores or make money for the family. His family, especially his brothers, helped him with money and emotionally so he could focus on his studies.

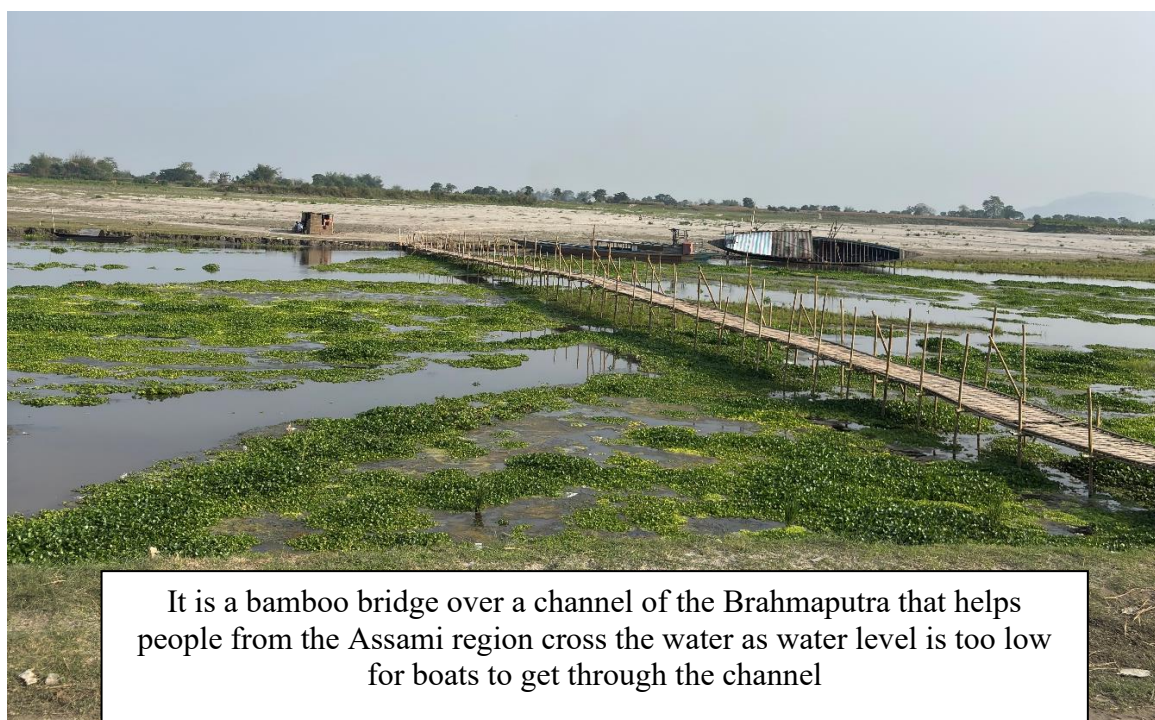
Saidur's tale is considerably different from those of other families in Char areas, where they can't afford to send their kids to schools far away. Most youngsters in these places still have huge challenges

because there aren't any schools and it's hard and expensive to go around.

3.2. Transportation and Connectivity Challenges:

There are essentially no all-weather communication systems that connect char places to the mainland, which is one of the largest challenges with the structure of char people. People have to make long trips to get to char communities because there isn't a reliable transport system. They usually have to take ferries or big country boats and then walk for hours across sandy and dusty ground. This makes it very hard to get to markets, hospitals, schools and government services.

Within char areas themselves, transportation options remain extremely limited, with bicycles being the main practical form of automobile transport available. During the period when there is water in the river residents had to use traditional boats called "Bhutbhuti" to get around (Elahi, 2023). This shortage of transportation produces a chain reaction of problems that affect many elements of daily life and business in char communities.



It is a bamboo bridge over a channel of the Brahmaputra that helps people from the Assami region cross the water as water level is too low for boats to get through the channel

Figure 1: Illustration of Bamboo Bridge

Source: Captured by the Author at the time of field survey

Ferry services stop functioning (see figure 1) when the river's water level drops a lot from November to March. People have to trek across the river because of this. It can take them one to two hours to get to the mainland. People build temporary bamboo bridges (as shown in the above figure 1) over the river in locations where it stays deep and keeps water. This makes it easier to cross. These bamboo bridges are just temporary, but

they are incredibly vital for keeping people linked and able to go to important services during the dry months.

3.3. Healthcare Access and Medical Service Gaps:

Getting to healthcare is another huge challenge for the char dwellers since there are big gaps in both infrastructure and service delivery. Consequently, the dwellers in these areas generally acquire and store

essential medications at home for emergencies. Commonly stored medications are primarily utilised for the treatment of conditions including fever, gastrointestinal issues, pain, and headaches. Due to limited access to modern healthcare, many char dwellers hold a strong belief in Ayurvedic medicine and traditional healing practices. Within the community, particularly among the elderly, there exists significant knowledge regarding remedies for prevalent ailments such as pain, fever, and vomiting. This traditional knowledge is transmitted across generations, with many older individuals possessing expertise in the application of these medicines for common health concerns. Thus, these home remedies and Ayurvedic treatments constitute a fundamental aspect of their daily healthcare regimen. When traditional medicines and home treatments are ineffective, the char people seek medical care on the mainland, where qualified doctors and healthcare services are accessible. Alongside medicinal treatments, char dwellers also maintain significant beliefs in spiritual and religious healing practices. Practices including tantra, mantra recitations, and jhara fuka, a traditional healing ritual, are frequently employed to alleviate illnesses. These spiritual practices are integral to their culture and are frequently utilised in conjunction with medicinal treatments to address health issues.

The healthcare approach in the char areas integrates self-reliance on basic medicines, traditional Ayurvedic knowledge, and spiritual healing practices, with professional medical care utilised as a last resort when alternative methods fail. This combination illustrates the resourcefulness and cultural heritage of the char people in addressing their health amidst challenging circumstances.

3.4. Access to Basic Utilities and Services:

It is still very hard to get basic amenities to these locations, such power and other critical services. Only No. 2 Magurmari Char has electricity out of the four chars that were surveyed. The other three chars don't have formal electricity, so the people who live there have to find other ways to get it. Some homes use solar panels to get light at night, while others use rechargeable batteries. But the poorest families can't afford either alternative, so they use oil lights instead.

Solar panels don't work well when it's gloomy or rainy. Because of this, people in these kinds of situations can't use lights or fans at night too often. Most people retire to bed early, usually between 8 and 9 p.m., and wake up with the sun at morning. Students also follow this schedule, studying mostly in the morning and evening. Even though they have to deal with these problems, the community is very strong and able to get by without dependable electricity.

3.5. Adaptive Housing and Settlement Patterns to tackle with flood and soil erosion:

The settlements in chars usually have clustered patterns that are determined by both the environment and the principles of social structure. People frequently create settlements in regions that are safe from floods, have good farmland, and are easy to get to for everyday use. Most of the people in these communities are related to one other and work in similar ways. Extended families generally live close to each other so they can help each other out when there are natural disasters. Most of the time, homes are built on stilts or raised platforms to keep them safe from floods in the spring and summer. Schools, health institutions, and places of worship are located on the highest land in the community. During light flooding, paths that connect homes should still be useable. They usually have high walkways or platforms that link different portions of the settlement.

The number of people living in a settlement can change a lot based on how much land is available and how big the community is. Some chars have towns that are relatively near together, while others have homesteads that are more spread apart. There are a lot of dwellings in No. 2 Magurmari char, but not many in Assami char. Because char development takes time, settlement patterns need to be flexible so that communities can migrate quickly as the environment grows worse. A lot of organization has a spatial arrangement that is rather open, which exhibits this flexibility. They like being able to change things instead of following rigorous planning standards. Chars dwellers know how to build homes that are both strong and easy to move, so they can swiftly adapt to problems that come up in their environment. When erosion forces them to shift, some individuals acquire land from others. Others rely on borrowing arrangements within their social networks (Barman and Bokth, 2024). People choose strategic places to live that protect them from floods while yet allowing them access to fields. This shows how they adapt to environmental risks.

A lot of people and their animals stay on the riverbanks when there are floods. They make temporary dwellings there until the water goes down. During the winter, the char villages become safer locations to live and work because the riverbed dries up and people may walk to them from the riverbanks.

3.6. Diversified and Flexible Livelihoods:

People that live in char do a lot of different things to generate money so they can survive and have a stable income. People in these areas produce money in a number of ways, including as fishing, farming, rearing animals, and doing things outside of the farm (Cinner and Bodin, 2010; Hussain *et al.*, 2022). Diversification comprises activity in both farming and other fields. Households purposefully mix plot-based crop production with non-plot agricultural activities including home gardens and non-crop businesses like livestock and fisheries (Jackson *et al.*, 2025). This technique enables local communities to spread their risk among many sorts

of companies, so they don't have to depend on just one source of income that could be harmed by climate change. Climate change has affected the way char regions used to farm. For example, there are more floods and more salinity, so communities have had to change the way they cultivate crops (Jalal et al. 2021). A lot of individuals who live in char have stopped cultivating rice and begun planting maize and other crops that are flood resilient. The integration of livestock rearing with traditional agriculture represents one such adaptive strategy, though it comes with both opportunities and challenges for household food security. Livelihood diversification serves as a crucial resilience-building mechanism for char dwellers by providing multiple pathways for income generation and risk management (Hossain, et al. 2023). Even if one of their sources of income fails because of environmental problems like flooding, riverbank erosion, or saltwater intrusion, families can still meet their basic necessities (Hossain, 2022).

Char communities are stronger because of social networks and community-based adaptation mechanisms. Moving, even if it's just for a short time, is another important approach to diversify (Saha et al. 2023). Family members often move to cities to earn and send money back home to support the family income. This spreading out of money sources across numerous locales helps insulate char communities from environmental shocks.

3.7. Social Networks and Collective Knowledge:

People who live in trailers need to have social networks to stay alive. They step outside of their own homes to build support systems for the whole community. These networks work by following rules of mutual cooperation, which are important social capital for adapting to new situations. When there are floods or other problems, these social ties make it easier to share resources, spread knowledge, and make decisions as a group. All of these things make the community as a whole stronger. These networks are especially strong when there is a crisis and formal support services may not be enough or may not be available. These social networks usually help retain and share traditional ways of knowing about the environment. They also make it easier for people to work together to improve local skills and encourage the use of appropriate risk management strategies. Community leaders, elders, and people with local expertise are very important for keeping these networks going and making sure that important information is passed down from one generation to the next. People that live in char have a lot of information that comes from living in places where the river changes throughout time. They know how floods happen, how to predict the weather, how to deal with floods, how the seasons change, traditional farming methods, and native plants that have many uses, such as making sure there is enough food. They can use this shared knowledge to guess how the environment will change and take steps to

stop it from happening. Traditional farming methods include picking crops that can survive flooding, altering the times of planting to account for seasonal flooding, and adopting ways that maintain the soil fruitful even when it floods over and over again.

For those who live in char, the healing process is considerably easier when there are strong social capital networks that work inside and between char communities. People in these networks help one other out during hard times by sharing resources, trading work, and working together to fix things that are broken. They act like informal insurance policies. A lot of the time, extended family networks have more than one char and mainland area. They make it easy for money transfers, short-term lodging, and support with money during floods to happen.

3.8. Psychological and Cultural Resilience:

One of the most amazing things about char dwellers' resilience is how they deal with mental and cultural instability. Many char dwellers nonetheless feel quite connected to their homes, even if they live in "precarious homelessness within their own homes" (Barman and Bokth, 2024). Many people who are having troubles because of climate change say they "refuse to move to other places." This illustrates how strongly they feel about the riverine scenery, even though it can be hard to live there.

People display this mental strength in the way they express themselves and in the manner they make their identities. For many dwellers, the char isn't just a place; it's also a part of who they are. "Our life is in this river island," stated one resident (Bhuyan, 2024). This quote captures the strong cultural links that hold communities together through loss and recovery.

3.9. Gardening at home:

For people who live in char, homestead gardening and integrated crop-livestock systems are particularly vital for their food security and ability to bounce back. Char communities make sure they always have access to good food, make additional money, and are better equipped to deal with food shortages by cultivating vegetables and keeping animals in the tiny space around their homes (Korpelainen, 2023; Rahman, et al. 2008). Families can acquire a lot of fresh fruits and vegetables from their homestead gardens, which are necessary for a healthy diet. Studies have shown that these gardens may provide a lot of the vitamins A and C, iron, and calcium that people need, as well as protein (Rahman et al., 2008; Olney et al., 2009). Adding animals like cows and chickens to a home makes it even more food secure by providing animal-based proteins and extra money from selling eggs, milk, and meat (Ehsanul, 2016). Families can manage risks better when they garden and raise animals on their own property since they have more opportunities to get food and make money (Korpelainen, 2023). These systems can be even

more sustainable and productive if we use organic matter from our trash and cultivate vegetables. Homestead gardening is especially good for women since it helps them make money and eat well with little outside support. It also offers them more influence in household decisions (Bushamuka *et al.*, 2005). In general, farmhouse gardening and keeping livestock in rural regions not only make people healthier and more secure in their food supply, but they also make communities stronger in times of food shortages and help local economies.

Fainuddin is the head of a family that lives in Chatihara Char. They farm for a living and grow practically almost all of the food they need. As they can't grow every kind of vegetable themselves, but they trade with their neighbours to get what they need. This system of exchange and sharing enables the char families receive the food they need without having to buy everything from the market. They only need to buy salt and mustard oil from the market.

Fainuddin's family grows enough veggies for themselves and sells or trades the rest. They put the money they gain from selling extra crops away for when they need it, like when their own gardens aren't producing vegetables or when there are floods. They use these funds to buy veggies and other things they need from the market when times are bad.

The people who live in the char keep their food expenses low and their food security high by making some of their own food, trading it, and buying it from time to time. This system is robust enough to make sure they have adequate food all year long, and it also brings everyone in the community closer together.

3.10. Adaptive Infrastructure and Asset Management:

Char communities have found innovative ways to take care of their things that make floods less damaging and recovery faster. For instance, houses are frequently built in a way that makes them easy to take apart and put back together. Also, precious things are placed in high or portable places that can be transferred quickly when there is a flood danger. Keeping animals that can swim well or be moved quickly, as well as feed storage techniques that keep them safe from flooding, are some of the ways to manage livestock. After a flood, community networks often assist people get back on their feet by letting them borrow and save money in informal ways. These methods make it easier for people to access money to rebuild and get their lives back on track without having to deal with the red tape and collateral that comes with banks and other conventional financial institutions. Family members who move around for work also send money home, which is a crucial component of the system that helps people get back on their feet.

These coping skills show how flexible char dwellers are and how they can handle issues in their communities and the world around them. They highlight how crucial it is for both individuals and groups to work together to build resilience.

4. CONCLUSION

Individuals who live in char in Assam show how flexible individuals can be when they have to deal with very difficult social and natural conditions. We can learn more about how they deal with climate change in general by looking at how they stay strong, which includes living in mobile homes, finding alternative methods to make a living, building social networks, and using traditional knowledge systems. But when communities have big difficulties like poverty, illiteracy, and citizenship issues, they can't adjust on their own very well. A community needs both self-directed adaptation and interventions that deal with the elements of vulnerability and make the collective more adaptable in order to be really resilient.

Climate change is making environmental threats greater; therefore, we need to act quickly to come up with ways that take into account both the strengths and vulnerabilities of char communities. Instead, then thinking of chars as dangerous and unimportant locations, policy frameworks should consider them as areas where people can be creative and learn critical lessons about how to deal with changes in the environment.

For char communities to have a future, society as a whole need to respect their rights, needs, and contributions. By helping char residents become more resilient and fixing structural problems, stakeholders may help make these unique and fragile riverine ecosystems fairer and more long-lasting.

Data Availability Statement:

The data that support the findings of this study were collected through field surveys and are available from the corresponding author upon reasonable request. Due to the sensitive nature of the data collected from the vulnerable populations in the char areas, restrictions apply to the availability of these data

Author Contribution Statement:

All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by Basir Uddin Ahmed. The first draft of the manuscript was written by Basir Uddin Ahmed, and Dr. Basanta Kalita provided critical feedback and contributed to the refinement of the manuscript. All authors read and approved the final version of the manuscript.

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