

Resettled but Not Safe: Community Voices on Erosion, Migration, and Socioeconomic Vulnerability

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Abstract - Riverbank erosion has become one of the most insistent challenges in the discussion of climate change and disaster risk reduction, especially in low-lying, deltaic countries like Bangladesh. This study has examined how riverbank erosion not only displaces vulnerable populations but also contributes to long-term exposure to future hazards, such as flooding and inundation, and mostly makes them more economically vulnerable. To conduct this study, a mixed-method approach was adapted. Snowball random sampling technique was followed with 90% of confidence level and 8.2% of margin of error. Primary data was collected from two erosion-affected villages Rehaikaulia in Chauhali Upazila (Sirajganj) near the Jamuna River, and Bishnupur in Sonagazi Upazila (Feni) beside the Feni River, the research assessed erosion-induced housing loss, migration patterns, settlement costs and the socioeconomic repercussions. This study examined the pattern of riverbank erosion played an important variable on the impact on livelihood. Results revealed that nearly 90% of households in Rehaikaulia and over 50% in Bishnupur experienced severe land and shelter loss. People who shifted, many of whom have resided in semi-pucca structures, reported insufficient access to water, sanitation, healthcare and education services. The study findings indicated that areas which experienced river erosion and flood almost regularly has the most devastating impact on housing and which areas affected less frequently have the most devastating impact on income. The study argues for integrated river management and anticipatory resettlement planning to reduce cascading disaster risks. Policy recommendations emphasize community-based relocation planning, early warning systems and investment in resilient infrastructure.

Key Words: Riverbank Erosion, Vulnerable, Migration, Resettlement Planning

1. INTRODUCTION

1.1 Background

Flood and Riverbank Erosion are the most frequent natural calamities that occur almost every year in our country. Because Bangladesh is situated on the delta of the

Ganges-Brahmaputra-Jamuna river systems, which has more than 300 perennial tributaries and distributaries, it is also highly vulnerable to the effects of flooding and river-bank erosion [1]. Riverbank erosion has become a significant threat for 31% areas of Bangladesh [2].

Riverbank erosion is a recurrent and highly unpredictable phenomenon. It is merely recognizable that riverbank erosion is taking place due to climate change [3]. However, study reveals that it does not occur due to climate change rather it happens through accelerating the rate of erosion through uneven distribution of precipitation and increased surface run-off.

Bangladesh is one of the most disaster-prone countries around the world with severe cyclones, destructive floods and associated riverbank erosion, drought, etc. The funnel-shaped coast and lowering topography make the country vulnerable to different disasters [4]. As a country in a temperate region, Bangladesh experienced huge rainfall during the monsoon. In addition, abundant water running after the upper catchment areas increases the intensity and vulnerability of floods and associated riverbank erosion.

Riverbank erosion is not a new concept for people like us. Similarly, resettlement is a common word nowadays [5]. Resettlement is done mainly for the betterment of the people who have become helpless for any reason. For any development project, or before or after any disaster, resettlement is needed to help the affected people. To displace people from their existing place to a new place while maintain some rules, is called resettlement.

As riverbank erosion is very frequent in our country, the number of affected people is large [6]. Resettling the people who live nearby the banks of the rivers can be an optimal solution. Because many people lost their lives due to this hazard and those who do not lose their lives, lose everything, like shelter, assets, etc. Several studies have been conducted on climate-induced migration, climate-driven internal displacement, environmental migration and general human displacement [7]. People migrate to find better economic opportunities elsewhere by leaving their own country's hazards and shortcomings and the environment's threats and vulnerabilities [7].

1.2 Objectives

Riverbank erosion is one of the major natural disasters of Bangladesh that takes place almost every year. The effect of this disaster is widespread. The main aim of the study was to find out the socioeconomic consequences of riverbank erosion-induced displacement in Bangladesh.

Furthermore, some objectives have been identified to fulfill the study goal, which are:

- To identify the present housing condition of the affected people;
- To measure the impact of this housing condition on the livelihood of the affected people;
- To examine if people become more vulnerable after migration due to riverbank erosion.

2. METHODOLOGY

To conduct this study, a mixed-method approach was adapted. Snowball random sampling technique was followed with a 90% confidence level and 8.2% margin of error. Primary data was collected from two erosion-affected villages—Rehaikaulia in Chauhali Upazila (Sirajganj) near the Jamuna River, and Bishnupur in Sonagazi Upazila (Feni) beside the Feni River—the research assessed erosion-induced housing loss, migration patterns, settlement costs, and the socioeconomic repercussions.

For the two study areas sample size was determined using the formula for determining the sample size for an unknown population. The total sample was 100, and 4 case studies.

Study areas have been selected on the basis of considering the river-eroded areas. After reviewing the previous data, two study areas were selected. One was at Chauhali upazilla, Sirajganj, on the bank of the Jamuna River. Another was at Sonagazi upazilla, Feni, on the bank of the Feni River.

3. RESULT & FINDINGS

3.1 Reasons and Intensity of River Erosion

The types of river erosion were different in the two villages of the study area. The reason behind this variation is the river system. The study area consisted of two villages. One belongs to the Brahmaputra-Jamuna river system; another is from the Meghna river system. The village Rehaikaulia is 35km south away from the main town and just beside the Jamuna River. The entire village, except for some portion of it, had eroded several times. In contrast, Bishnupur is 30 km south away from the main town and just beside the Feni River. The entire village was not affected directly by river erosion. River erosion occurs frequently there, but the pattern of the erosion is different. One part of the river erodes while another part of the river is constituted.

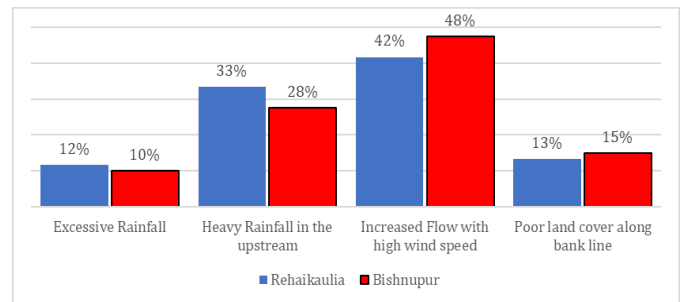


Chart -1: Reasons Behind River Erosion

From Chart 1, it is observed that an overwhelming majority of the respondents believe that an increased flow of water in association with high wind and heavy rainfall is the major cause of riverbank erosion.

From July to August, most of the areas of Bangladesh are flooded, and river erosion is affected as additional water from the upper catchment areas overflows the banks of the rivers. 50% respondents reported a severe erosion problem during this period. In addition, the soil composition of riverbanks loses its composition during floods and the capacity of resistance against erosion is destroyed. With a decreasing trend of river water after the monsoon period, the velocity of the current increases, which washes out the riverbank easily. In these circumstances, 17.5% of the respondents argued that during the lean monsoon season (September-October), they face severe bank line erosion, while 5.4% of them termed the disaster as of moderate intensity. Furthermore, 25% of the respondents said that they faced river erosion in a poor way during January to March.

3.2 Loss of Agricultural Land and Homestead

Table 1, represents that 48.4% and 52.33% of respondents from Feni and Sirajganj, respectively, became landless in comparison to the total agricultural lands occupied by them before the river erosion in 2016. Total economic losses arising from such loss may be counted as the value of land, total agricultural production of that particular land, and the labor force engaged in that occupation.

Table -1: Loss of Agricultural Land (Ha)

Land Quantity (in Ha)	Rehaikaulia	Bishnupur
Landless	52.33%	48.4%
<0.2	27.67%	22.4%
0.2-0.5	12%	7.6%
0.5-1.0	7.6%	10.6%
More than 1	0.4%	11%

The severe impact of bank erosion is the loss of a homestead, which makes the population more vulnerable to living a decent life. When erosion strikes, people have no option left

except to bear the losses. Some of them never changed the location of their homestead before the erosion took place. The main reason behind such behavior was that they had little earnings that never allowed them to replace their homesteads before it totally collapsed.

Chart 2 represents the homestead loss scenario in the study areas. In both of the study areas, it was observed that due to bank erosion, most of the respondents lost their entire household area after the river erosion. In Bishnupur, the economic loss from the destruction of homesteads was 560,000 BDT, excluding the cost of housing. As most of the housing was constructed with bamboo and straw, the average cost of housing was 4000 BDT in 2016. On the other hand, at Rehaikaulia, the price of land was less than Bishnupur, but the number of affected households was more, which comprises a total loss of 857,500 BDT.

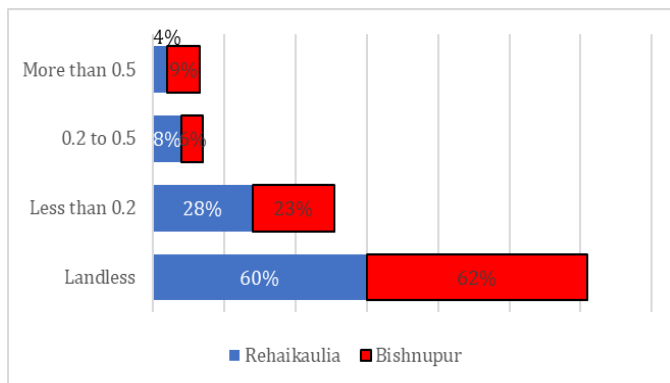


Chart -2: Homestead Loss Scenario

3.3 Migration Frequency

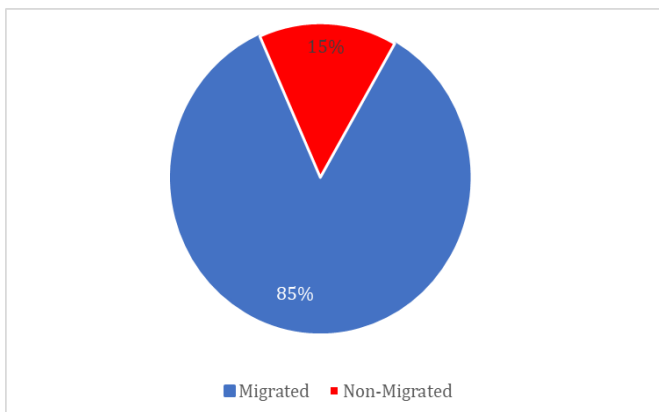


Chart -3: Overview of Migration in the Study Area

From Chart 3, it is clear that 85% of the respondents had to migrate because of river erosion. River erosion affected the livelihood of the people of the study area. Except for resettlement, the marginalized people had no other option to save their lives. Study shows that people of Rehaikaulia migrated more (91.5%) than people of Bishnupur (75%). In Rehaikaulia, almost all the households had to migrate

because the entire village had been drowned by riverbank erosion; only a few portions were left. People had migrated from Rehaikaulia before the 2016 river erosion. They had shifting into the nearby places of the village from 2001. People migrated from Bishnupur who used to live just beside the riverbank. And most of the migration took place here in the same village.

3.4 Migration Patterns and Length of Housing

After the survey, it was shown that the number of migration and the duration of living in the present house has a relationship. It is similar for both of the villages in the study area. The duration of living in the present house increased with the increasing number of migrations. Table 2 presents the relationship between the frequency of migration and the duration of living in their current houses.

Table -2: Relationship between the Number of Migrations and the Duration of Living in the House

Number of Migration	Duration of living in the present house		
	Less than 1 Year	1 to 5 Years	More than 5 Years
Once	37%	0%	0%
Twice	0%	25%	0%
Multiple times	0%	0%	23%
Non-Migrated	15%		

3.5 Migration Trends

People of the study area migrated in different ways. Some migrated to the same village, and some found a place far away from the study area. Some migrated recently to the study year; some migrated before the study. In Sirajganj, the affected people of the Rehaikaulia village migrated from Rehaikaulia to Chauhali, Kulhara, Muradpur and Nagorpur and nearby places of Sirajganj and Tangail district. The other respondents migrated into Kulhara, Muradpur and other places nearby Rehaikaulia. Some respondents did not migrate from Rehaikaulia. They were living in the same place in miserable conditions because they did not have the ability to migrate to other places. In Feni, the affected people of Bishnupur migrated to the same place within the same village. 62.5 % of the respondents migrated to the same village. Other respondents migrated to Raghobpur, Fulgazi, Sonagazi, and other nearby places.

Table 3, is showing the percentage of migration from the study areas to the surrounding areas.

Table -3: Post-Erosion Migration Patterns from the Study Areas

Migration	% of migration
Rehaikaulia-Rehaikaulia	0
Rehaikaulia-Nagorpur	33
Rehaikaulia-Chauhali	31
Rehaikaulia-Kulhara	27
Rehaikaulia-Muradpur	9
Bishnupur-Bishnupur	62.5
Bishnupur-Raghobpur	12.5

3.6 Settlement Pattern during River Erosion

After the survey, it was found that 53% of respondents of Rehaikaulia depended on the temporary shelter. Temporary shelter means a tent-type shelter on the roadside, even above the road. Shelter in a permanent house was rare there. 47% of respondents stated that many of them depended on the shelter centers of that area during any kind of disaster. On the other hand, 75% of respondents from Bishnupur are generally dependent on shelter centers and temporary shelters. Shelter in a permanent house is also common here. Because the solvent people who live far from the riverside are less affected and need to take shelter in any other place.

3.7 Settlement Cost during River Erosion

For staying at a shelter center or a temporary settlement or in a permanent house a minimum cost is needed. At Rehaikaulia maximum 47% people had to pay 2,500 BDT at least as settlement cost. 28% of people had to pay 3,000-4,000 BDT, and the rest had to pay more than 4,000. BDT. People who took shelter in a shelter center mainly had to pay less than others. Some poor elderly people also had to pay less after taking shelter in a temporary settlement.

At Bishnupur 12.5% of respondents had to pay less than 2,500 BDT. It was applicable for them who lived in their permanent house during river erosion. Actually, they had to pay extra money besides their regular expenses. The majority of the people (50%) had to incur expenses 3,000-4,000 BDT during erosion as settlement costs. 40% of them had to spend more than 4,000 BDT. The reason behind this is the price value of commodities. The price value of commodities is more at Feni than Sirajganj.

3.8 Changes in Livelihood Pattern over Time

The change in occupation was majorly noticed in Rehaikaulia. Before river erosion, most people were farmers and van or rickshaw pullers, mainly in the village. But after river erosion, they had to change their occupation to day laborers. And some farmers lost their own land and now they work as farmers on others' land. People of Bishnupur

are mainly fishermen and boatmen. They did not need to change their occupation after the erosion of 2016. But their income has been reduced. Table 4 shows the current occupation and previous occupation, and the changing frequency between times.

Table -4: Correlation between Current Occupation and Occupational Change

Occupation	Past Frequency	Present Frequency of Occupation	Change in Occupation (%)	Cumulative % of Changes
Farmer	29	20	-31	-31
Day Laborer	4	35	89	58
Van/Rickshaw Puller	17	8	-53	5
Fisherman	26	21	-19	-14
Boatman	17	12	-29	-43
Teacher	1	1	0	-43
Housewife	3	0	100	57
Others	3	3	0	57

3.9 Impact of Riverbank Erosion

Chart 4 describes the impact of river erosion on lives and livelihood. According to the study, 55% of respondents lost everything due to the river erosion. The people of Rehaikaulia have the worst impact on living places, income, and assets, as the whole village was inundated after the river erosion, while the people of Bishnupur had the worst impact on living places, mainly as most people had to change their living place. 53% of respondents from Rehaikaulia had migrated two or more times. And their impact on housing was less severe than their impact on other things. This study also found that people who did not migrate during riverbank erosion had the worst impact on their incomes. It was also found that to cope with the losses of cultivable land, the majority of them rely on moneylenders (55% from Rehaikaulia and 22% from Bishnupur). It was reported that sometimes moneylenders lent money to relocate households and spent money to buy food in exchange for their eroded land, which eventually made them landless. However, marginalized people have no choice but to borrow money from different sources, mostly from moneylenders, despite high rates of interest. Borrowing money from any organization was also highly noticeable in the study areas.

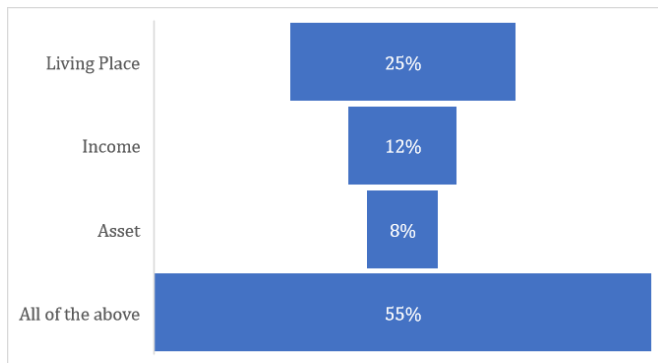


Chart -4: Impact of Riverbank Erosion on Lives & Livelihood

3.10 Recommendation

The Government of Bangladesh should include riverbank erosion in its Five-Year Plan and in its framing of the Poverty Reduction Strategy Paper. It should also develop a national habitat policy that would ensure the shelter needs of the tens of thousands of people displaced each year. A database needs to be developed to assess the magnitude of the erosion and the number of people affected.

Local Government Organizations should play the lead role in all phases. Decentralization of power and increased responsibility and accountability to local government bodies an important aspect to reduce vulnerability and provide a quicker and more efficient response. Local-level institutions should also have a special budgetary allocation to mobilize resources.

Efforts should be made to coordinate all aid and development interventions.

Phase I: Preparation:

Early Warning System: Regular monitoring at critical periods and the use of local knowledge.

Phase II: Disaster Management:

- A rapid response team to provide logistical support.
- Evacuation announcements and assistance provided in advance of a major disaster;
- Designation of relocated sites well in advance to allow preparation of necessary infrastructures;
- Emergency medical supply and mobilization of appropriate health care providers;

Phase III: Rehabilitation:

- Resettlement advice, linking settlement with income-generating activities and skill development;
- New housing that is easy to dismantle and shift;
- Agricultural aid, including marketing support;
- Credit schemes and support services for off-farm activities;

Phase IV: Livelihood Management:

The Government should:

- Introduce insurance schemes at soft premiums to minimize the effects of loss of the property;
- Develop a banking policy that addresses the needs of affected people;
- Develop the health care facilities and services in the erosion-prone areas and introduce a pilot boat-based roving hospitals;
- Introduce mobile schools and teachers;
- Offer skill development training;

The NGOs should:

- Consider writing off and/or deferring the payment of debts (depending on the severity of situations) of the affected households as a measure of their sectoral social responsibility programme;
- Get involved in providing flexible credit schemes that take into account the ground realities that riverbank erosion affects households' finances.
- Reorient their activities to target men, women, and children in education and skill development;
- Introduce low-cost irrigation schemes;
- Encourage the participation of ultra-poor and affected people during idea generation;
- Help create market linkages to improve trade.
- Support community counselling on women's rights;

Institutions need to begin seeing the mitigation process as a matter of the rights of affected people. They need to be viewed as agents rather than simply subjects of a rehabilitation programme. Only by constant promotion of their rights can their interests be protected. According to the analysis of the study, resettlement is the best solution for the affected people. Because they are still living beside the river and it does not reduce the risk of being affected by the riverbank erosion.

4. CONCLUSIONS

Riverbank erosion is a threatening problem for the people of Bangladesh and for the economy of the country as well. It also breaks the environmental and ecological equilibrium. The loss of erosion is irreparable. Rehaikaulia and Bishnupur are small representatives of riverbank erosion beside the Jamuna and Feni River, respectively. People of these two areas lost their houses, land, and even occupation because of river erosion. They have to migrate to save their lives, and so they have to leave their forefathers' place also. Because of migration, they had to change their occupations in some cases, and their income had also been reduced. The impact of river erosion is highly negative to the affected people of Rehaikaulia and Bishnupur. And the worst impact was on their living place. The consequences of the impact on housing also affect the livelihood. These areas are not affected only for one time. These have been affected for so many years. Actually, weakly planned and interest-driven

attempts to control riverbank erosion have failed to reduce the socio-economic vulnerability of the people; moreover, it has wasted huge national resources. In our country, policy planning and implementation are a top-down approach. In the case of the two study areas same thing has happened. Generally, people are not consulted before policy formulation. If the people's voice had been heard, proper policy planning and implementation would have become easier, and it would also have been effective. Political masters are the fortune makers of the country. There is no alternative to the politicians as policy makers. Once again, it is revealed from the statement of the erosion victims of the study areas. They are not satisfied with the performance of BWDB but feel that honest and committed political leaders could solve the problem efficiently. Riverbank erosion is a natural calamity. There is no perfect way to control this, but if there is honesty and commitment from the policy planners, then proper policy planning is possible, consulting with stakeholders, and together with people, it is easy to combat disasters like riverbank erosion.

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