

# Social Resilience of the Riverbank Erosion Displacees in Bangladesh: A Case of Environmental Disaster

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**Abstract:** *The paper expatiates the social resilience of the riverbank erosion displacees in Bangladesh. It is wedded to explore the prodigious needs of this riparian community induced by the catastrophic ferocity of riverbank erosion displacement. Concurrently, the paper tries to mirror the pattern of responses they received from different sources to their needs. The present ecological essay is designed to spotlight the unflinching courage and resilience the displacees show in confronting with the critical and uncertain situations faced by them before, during, and after their displacement from their original homestead plots. In addition to this catalog of findings, the paper distillates indigenous mechanisms the displacees of a Bangladesh village designed and undertook for demoting their socioeconomic loss and consequent immense sufferings in the devoid of organizational responses. Finally, the paper frames some recommendations, which the policy planners and development organizations may consider in their future program content of planning for the development of precarious riverine habitat.*

**Keywords:** Social Resilience, Environmental Disaster, Socioeconomic Loss, Indigenous Mechanisms, Needs and Responses, Riverbank Erosion Displacees, Bangladesh

## Introduction

Social resilience is much more interrelated to ecological resilience, as the members of human society have to be dependent on the ecological resources to meet their enormous needs induced by different environmental disasters. The riparian ecosystem of Bangladesh has to cope with environmental disasters, such as flood, and riverbank erosion, without shifting into a qualitatively different state. In this ecosystem, the process of rebuilding after flood and erosion promotes renewal and innovation. It is to be noted that in extreme cases, the ecosystem becomes vulnerable to the effects of flood and erosion attack that previously could be absorbed. The desolate state of Bangladesh riparian ecosystem renders not only biologically and economically impoverished, but also irremediable.

The riverbank erosion displacees in Bangladesh show enormous social resilience and unflinching courage in order to withstand and recover from the environmental change and/or social, economic or political upheaval caused by the geomorphological phenomenon of riverbank erosion. They have to be socially resilient as they are the users of the riparian tract in their everyday life. The riparian ecosystem and its inhabitants are interacting and interdependent to each other and their reciprocity is dynamic. The paper concerns the social resilience of the riverbank erosion displacees in finding out how much shock they can absorb and still remain within a desirable state, the degree to which they are capable of self organization in the sheer lack of organizational support, and the degree to which they can build capacity for learning and adaptation to the wobbly and critical riparian environment.

## Conceptual Framework

The riverbank erosion displacees are those who are displaced from their riparian homestead plots due to riverbank erosion attack at least once in their lifetime. The shifting of major rivers of Bangladesh and their unstable character cause this environmental disaster. Consequently, thousands of people are compelled to leave the erosion-threatened areas every year. The geomorphological phenomenon of riverbank erosion displaces the riverain people from their original homestead plots and therefore it devastates their livelihood. The displacees are categorized as 'displaced once', 'displaced twice', 'displaced thrice', and 'displaced more than thrice'.

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The present study uses the concept of 'social resilience' in order to explore the ability and adaptability of the displacees in the pre-displacement period, during the onslaught of riverbank erosion, and in the post-displacement period as well. The resilient strategies at different levels of their adaptation to the precarious riparian habitat are pinpointed in this paper. Also they were resilient in meeting their phenomenal needs induced by the catastrophic attack of riverbank erosion displacement. Their social resilience also encompasses the endeavors and unflinching courage they showed in formulating and undertaking the corrective strategies for bridging the gap between their enormous needs and immense sufferings, and the scarce resources and indigenous technologies they had.

## **Study Locale and Data Sources**

Sehala — a medium-sized *mauza*<sup>1</sup> of Nawabganj District in the northwestern region of Bangladesh — is selected as study locale. It is located in Nawabganj Sadar Upazila of the district. The geographical features indicate that more or less half of the upazila area amounting to 91,039 acres is *charland*<sup>2</sup>. The principal rationale for selecting Sehala as the study locale is that a sizeable number of displacees from different erosion-affected areas of Nawabganj District have settled in this peri-urban area in order to search for food, shelter, and employment. It adjoins Nawabganj Town and the Barind Tract<sup>3</sup> as well. The locale provides the displacees with the access to the labor market of Nawabganj Town and also to the agricultural employment of the Barind tract. The catastrophic effects of riverbank erosion in Nawabganj and the sheer lack of social studies on this problem in the Ganges-Mahananda floodplain establish another point of rationale for selecting this study locale.

A household level survey was conducted to explore the displacee households settled in the study locale. And it was followed by a sample survey for investigating the resilience of the displacees in the face of catastrophic situations they experience in the riparian tract. The sample size is 140 displacee households (100% of the total) and its displacee population is 766 (100% of the total). All the displacee households are judged as the appropriate primary sampling units here. The displacee household heads were directly interviewed and in this way respective household head represents each sampling unit. In addition to two-tier survey, the local government officials, local elites, and/or public representative and the non-displacees were interviewed. The research collected data through conducting 17 focus group discussions (FGDs) with the displacees and their community people.

The principal tools for collecting the primary data are questionnaire and interviewing — two techniques of survey method. The major sources of primary data, in addition, include observation, informal interview, case histories, and case studies of selected persons and notable issues. Additional sources of data used in this study are collections and analyses of local level office reports, evaluation of government and semi-government projects, programs and census reports, published reports and articles, etc. The nature of this study is based on an extensive fieldwork conducted during the period of June to December 2004.

### ***Resilient Strategies For Loss Reduction***

Riverbank erosion is a recurrent environmental disaster in Bangladesh. It contributes directly to the process of rapid pauperization for the riparian people. It displaces millions of people from their riparian tract every year (*cf.* Elahi and Rogge 1990) and claims many lives and properties as well. The disaster often dislocates cultivable land — the principal but scarce resource to the riparian people — and human settlements, and also it destroys standing crops, roads and communications. The displacees formulated and undertook mostly corrective rather than preventive strategies in reducing their socioeconomic loss as they were threatened by the riverbank erosion attack. As a matter of fact, the displacees' position in the social hierarchy and low-level technological know-how force them to do what is corrective in nature for minimizing their loss and consequent immense sufferings. In spite of such adversity, they were resilient and importunate in formulating and undertaking multiple remedial loss reduction strategies.

### ***Use of Movable Housing Materials***

The displacees tenaciously use movable housing materials and it is a widely practiced precautionary measure for minimizing their economic loss on the riparian tract. More than one-quarter of the displacee households of

Sehala reported that they had economic capability for building concrete house on their original homestead plot but they did not do the same. According to them, "*nodikaataar bhoye paakaa ghar korini, kakhan sarbonaash hoy ke jane*" (the threat of riverbank erosion prevented them from building concrete house). They were compelled by the threat of riverbank erosion to use movable housing materials. They were resilient enough to adapt to such vulnerable habitat. Their strategy of using movable housing materials is not an incidental rather than one of purposive adaptation strategies and it does not support the findings of some studies on riparian people (*e.g.*, Haque 1991).

Their original housing structure prior to displacement was usually traditional. This housing structure was constructed of mud-dough, thatch, bamboo, *tarja* (fence made of bamboo), wooden plank, burnt tile, corrugated iron sheet, etc. These materials are easily movable and less susceptible to the damage caused by riverbank erosion. Not only that, the displacees of Sehala procured the resalable value of these housing materials immediately after displacement. They used this money in rebuilding their hut on the BWDB (Bangladesh Water Development Board) embankment or on *khasland*<sup>4</sup> or on any other land owned by any body, or beside the roads.

More than half of the displacees (50.72%; n=71 of 140) used corrugated iron sheet as roof material in their pre-displacement period (Table 1 in Appendix). The use of this roof material was followed by thatch (25.71% n=36 of 140), and burnt tile (17.86% n=25 of 140). These roof materials have salvageable, resalable, and reusable values in the onslaught of riverbank erosion attack. The wall materials used by the displacees of Sehala prior to their displacement include bamboo and/or thatch (40.71%; n=57 of 140), and mud-dough (35.00%; n=49 of 140), and brick (24.29%; n=34 of 140). Except for mud-dough, all the wall materials have salvageable and reusable values. Moreover, only the wall-material of brick has salvageable, reusable and resalable values.

### ***Investment Pattern***

The displacees during the pre-displacement period invested their capital in purchasing land in Sehala for resettlement (72.86%; n=102 of 140), movable assets (52.14%; n=73 of 140), and livestock (30.71%; n=43 of 140) (Table 1 in Appendix). They purchased these assets purposefully because they were supported by these assets in the desolation caused by riverbank erosion. They purchased land in Sehala for their resettlement after displacement. This type of investment is nothing but their precautionary measure to adapt to the unsafe riparian environment.

### ***Erosion Preventing Technology***

The displacees of Sehala found their indigenous technology of piling sandbag (53.57%; n=75 of 140) and building bamboo crates (52.14%; n=73 of 140) what were partially effective in protecting their land (Table 1 in Appendix). The strategy of land protection minimizes the displacees' loss but this indigenous technology may be partially effective in a season or not at all and may be eventually subjected to erosion in the next season as well.

### **Loss Acceptance**

The displacees were forced to accept their loss due to riverbank erosion displacement. They did not have any alternative choice of loss acceptance as they failed in protecting their cultivable land, homestead plot, and other valuable properties from the cataclysm of riverbank erosion. Their local initiative and indigenous technology of sandbag piling and bamboo crates building for preventing erosion-attack was ended in failure. Their preventive strategies were found to be worthless and the erosion-attack went out of their control. Eventually, the displacees accepted their loss due to riverbank erosion through formulating some corrective measures. All the displacees (100%; n=140 of 140) deserted their original homestead plot and it is their indigenous strategies for accepting the loss (Table 1 in Appendix). Also a considerable proportion of them (35.71%; n=50 of 140) prayed to Allah for preventing the erosion and it is nothing but a negative acceptance of their loss.

### ***Reducing Economic Loss***

The displacees were found to be resilient in formulating and undertaking a number of economic loss reducing mechanisms. They salvaged their housing structure (96.43%; n=135 of 140) (*cf.* Haque 1991; Rogge 1991), moved

properties from erosion-threatened area to safer places (67.86%; n=95 of 140), sold the title of their eroded land (28.57%; n=40 of 140) to the wealthy landowners who can afford to wait for the reemergence of that dislocated land (*cf.*, Rogge 1991; see also Zaman 1987), and also sold their livestock (22.86%; n=32 of 140) what is empirically supported by Haque (1991) and Rogge (1991) (Table 1 in Appendix). It is, in rural Bangladesh, easier to sell livestock than other assets and to have cash money in any degree of immediacy. In addition to these, they cut their standing crops (9.29%; n=13 of 140), and cut trees and sold these (9.29%; n=13 of 140) in some cases.

**Case # 1:** Idris Hossain Gharami is a man of 32 years old. He has experienced the displacement status thrice in his lifetime. His homestead was at a distance of 3 meters and the erosion-attack engulfed it in a night. As a matter of fact, he did not have any chance to dismantle his hut. Also he lost all his land and was rendered landless laborer. During the last displacement, his family members were sheltered under his relatives' shed in Sehalá.

### **Shift of Lives and Properties**

The shift of lives and properties from erosion-threatened homestead to a safer place is another corrective strategy undertaken by the displacees of Sehalá. It encompasses some measures: shift of family (100%; n=140 of 140), shift of assets (62.86%; n=88 of 140), and shift of livestock (18.57%; n=26 of 140) (Table 1 in Appendix). The proportion of the displacees formulated and undertook the strategy of location change are more than two times multiple of that of the displacees of Kazipur (Haque 1991). Haque (1991) found that 43.5 percent of the displacees moved family, 9.3 percent livestock, and 15.5 percent shifted their belongings from erosion-affected areas to comparatively safer places.

#### ***Means of Transportation***

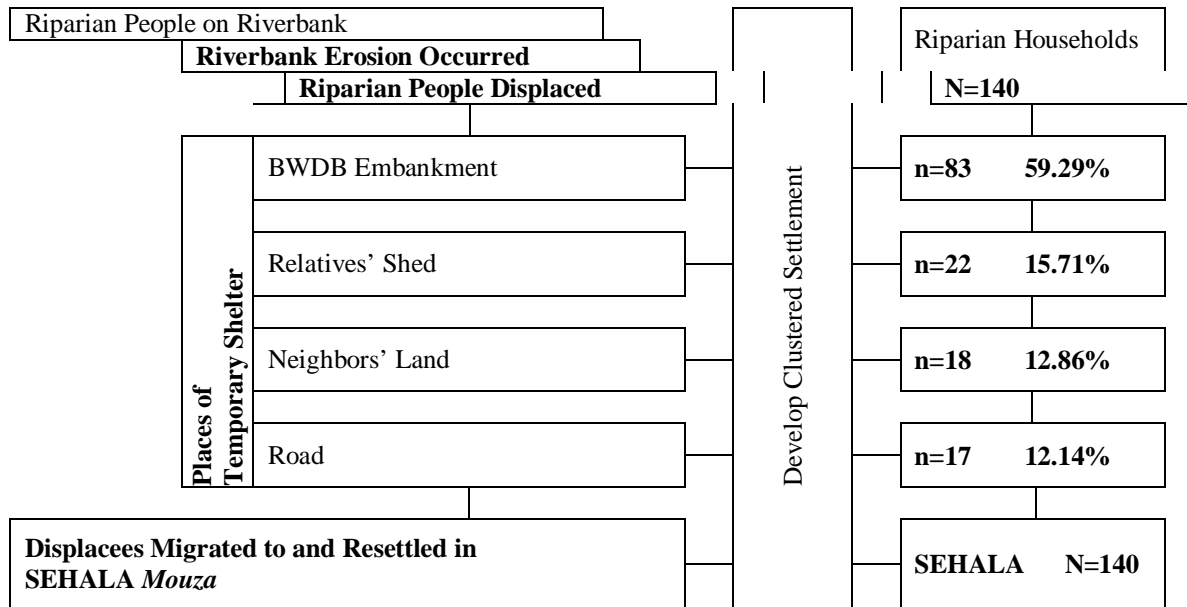
The displacees used means of transportation in reducing their loss due to erosion and consequently for their adaptation to the precarious environment. They possessed indigenous means of transportation. These are bullock cart (28.57%; n=40 of 140), bicycle (14.29%; n=20 of 140), and *dingi* (country boat) (12.86%; n=18 of 140) (Table 1 in Appendix). They used these means in carrying dismantled housing materials, wood, livestock, and other tangible goods during the onslaught of riverbank erosion and high flood. This task of shipping goods is not manually manageable. The displacees with no means were helped and supported by their counterparts in carrying their goods from the erosion-affected homestead to safer places.

It can be inferred from the field data that the displacees of Sehalá formulated and undertook multiple strategies in accepting and reducing loss, and in shifting their lives and properties. It is predicated that the dominant strategies are land desertion (100%) for loss-acceptance, salvaging housing structure (96.43%) for loss-reduction, and shifting family (100%) for location change. The resilient strategies of loss-acceptance, loss-reduction, and shifting of lives and properties contribute crucially to the process of displacees' environmental adaptation to their precarious riparian habitat.

#### ***Stay in the Place of Shelter***

The displacees of Sehalá took shelter on the flood-protecting embankment, on neighbor's land, on *khasland*, beside the roads and highways, and under the shed of kin or neighbors. It is noticeable that 59.29 percent (n=83 of 140) displacees took shelter on the BWDB embankment (Figure 1). They rebuilt their small hut on both side of the embankment and took shelter in squatting dwelling shed. They were suffered from the lack of drinking water, sanitation facilities, and emergency health care service. Two small proportions of the displacees were sheltered under their relatives' shed (15.71%; n=22 of 140) and on their neighbors' land (12.86%; n=18 of 140) as well. They were also supported by their relatives and/or neighbors in having drinking water and sanitation facilities to some extent. The following proportion of them took shelter beside the road (12.14%; n=17 of 140). They reported that they were in the places of shelter for a period of three months at the lower limit and of one year at the higher limit. Finally, they left these places and migrated to Sehalá for developing their new settlement.

**Figure 1: Riverbank Erosion Displacees in the Places of Temporary Shelter**



Note: Multiple responses computed.

### ***Clustered Settlement Pattern***

The displacees lived in clustered settlement on the original homestead plots and in their places of temporary shelter as well. They also started to settle themselves in Sehala closely together. They form a cluster and/or contiguous settlement in their present residential locality. They were also clustered into a major squatting on the flood-preventing embankment (*cf.* Zaman 1986b).

Their settlement in a cluster and contiguous pattern is a corrective type of strategy for adapting to a new social environment. One's homestead neighbors on other's and it helps them maintain their *samaj*<sup>6</sup> ties. As the *samaj* members they provide assistance and cooperation with each other in any crises. This is an incidental measure of reducing socioeconomic loss due to riverbank erosion displacement. The clustered settlement pattern bridges the displacees and the non-displacees settled earlier in Sehala as well.

### **Nature Of Needs And Responses**

While the majority of rural people do not have access to food, housing, and medical facilities, the disaster of riverbank erosion further intensifies the rate of landlessness, homelessness, and un- and under-employment annually. In such alarming and aggravated condition, the displacees resiled themselves to formulate and undertake multiple measures and techniques for meeting their enormous socioeconomic needs enticed by the riverbank erosion displacement and consequent immense sufferings in the devoid of organizational responses.

The riverbank erosion displacees eventually try to regain their socioeconomic status. It is noticeable that their efforts were absolutely limited by scarce resources, finite land, and the devoid of organizational assistance to their enormous needs. The buoyancy and tenacity of displacees was multiplied as their counterparts and relatives, and/or neighbors provided them with manual labor, accommodation, and sympathy. Their effort to regain socioeconomic status significantly shaped their needs to be responded.

The levels of responses to the needs of displacees are of great significance in the process of their adaptation to unsafe environment. It is determined by the articulation of displacees' needs to the sources of response at the one end and on the other, by the readiness and capability of sources of response. Another crucial aspect is that the displacees should have access and option in relating their articulation of needs to the viable sources. It is notably disappointing fact that the displacees in Bangladesh also suffer from a devoid of channels for bridging the gap between them and

the institutional sources of response they need and expect as well.

The sources of response at individual level provided the displacees with assistance in the immediacy of riverbank erosion displacement. These sources were usually confined to relatives, neighbors, *samaj* members, friends, etc. They also may be a channel of mobilizing the articulation of nature and extent of the displacees' needs to their desolate state of livelihood. The organizational sources of response comprise non-government and government organizations. The government organizational sources are at the local and national levels. In addition to that, the non-government organizations at the international level may be responding to the environmental disaster-victims as well. Both the government and non-government organizations may work as viable sources in responding to the needs of displacees. They may also mobilize the awareness about hazardous after-effect of riverbank erosion displacement among the people on the erosion-affected and erosion-prone riparian tract. The local level sources can be pressed into service in assisting the displacees in the immediateness of riverbank erosion. The effective efforts positively articulate the needs of displacees. Eventually, it mobilizes the significance for responding the displacees to the national level and to the international level as well.

The riverbank erosion displacees in Bangladesh do not receive any response to their prodigious needs for environmental adaptation in significant way. They received whatever responded by their relatives, neighbors, *samaj* counterparts, and friends; but no support was served from the government organizational level. A considerable number of studies (e.g., Elahi 1989, 1991; Elahi and Rogge 1990; Haque 1988; 1991; Haque and Zaman 1989; Hossain 1984; Hossain and Greendberg 1985; Rahman 1991; Rogge 1991; Wiest 1991; Zaman 1986a, 1988, 1989, 1991; Zaman and Wiest 1991) have made an inference that no government organizational support is provided to assist the displacees of Bangladesh in procuring shelter or employment. The adaptation strategies undertaken by them have received, to date, little attention given by the organizational level (cf., Mahbub and Islam 1991). It is also noticeable that the inadequate economic and social laws of class society, like Bangladesh, are significantly swelling the socioeconomic status of the displacees (Amin 1991).

The national government has to consider the size of erosion-affected population and the severity of catastrophic situation induced by riverbank erosion. The organizational sources of national government do it in comparison with other national issues that are to be responded. Unfortunately, the national government of Bangladesh has not yet formulated any long-term and ongoing response strategy for the riverbank erosion displacees.

### ***Pattern Of Expected Needs And Responses***

The present study identifies seventeen principal needs for displacees' adaptation to the precarious and vulnerable riparian environment. It also mentions their respective sources of response as the displacees of Sehala expected and respective sources responded to their needs.

#### ***Immediate Needs***

More than 19 percent (n=27 of 140) displacees expected that the local and/or national government should undertake measures for the prevention of erosion (Table 2 in Appendix). It is not possible for the individual to undertake effective measure in this respect since it requires a large-scale engineering works. It is reported that only two (1.43%) displacee households received assistance in preventing riverbank erosion with their indigenous technology during the onslaught on their original homestead plot. Their relatives, neighbors, and *samaj* counterparts assisted them in doing the task. It is noteworthy that their technology was not effective and sustainable for long-term.

After displacement, the displacees had to move from their original homestead to safer place. They expected physical labor for salvaging houses and carrying housing materials and other tangible goods. It was a corrective type of need at the first end of adaptation to hazardous situation. More than 51 percent (n=72 of 140) displacees of Sehala expected this help from their relatives, neighbors, *samaj* members, and/or friends. It is found that they were well responded by their expected sources in this respect. More than 48 percent (n=68 of 140) displacees of Sehala

received physical labor to move their housing materials, and other tangible goods from their erosion-affected homestead plot to a safer place.

In the immediateness of erosion, the displacees need to be sheltered at any cost. While the displacees (71.43%; n=100 of 140) expected to be sheltered by their relatives, neighbors, *samaj* members, and/or friends, only 12.14 percent (n=17 of 140) of them received such response from their expected sources. Their other source local government — expected by 64.29 percent displacees (n=90 of 140) — did not provide them with adequate assistance of shelter but allowed them to build temporary huts beside the roadside (12.14%; n=17 of 140) and on the BWDB embankment (59.29%; n=83 of 140).

The financial assistance is crucial for the resettlement of displacees. Their (70.71%; n=99 of 140) expected sources were local government, national government, and /or NGOs. It is a disappointing fact that only 14.29 percent (n=20 of 140) of them received it, to a smaller extent, from their relatives, neighbors, *samaj* members, and/or friends. A few of them were also responded here by two NGOs, as they were members of those NGOs' associations. The displacees received no financial support from these sources from the government and/or non-government organizations.

The national government and non-government organizations should provide housing materials, food, clothes, and other necessary goods with the displacees as immediate relief. It was expected by 83.57 percent (n=117 of 140) displacees but not responded. Nearly 73 percent (n=102 of 140) displacees were provided with only food relief doled out by the Member of Parliament (opposition) of that locality once in their crisis situation. The displacees also need moral support in their desolate state of livelihood. Their expected sources (32.14%; n=45 of 140) were relatives, neighbors, *samaj* members, and/or friends and they were well responded (27.86%; n=39 of 140) by these sources.

### ***Subsistence Needs***

The displacees expected that the food ration (77.14%; n=108 of 140) and health care (26.43%; n=37 of 140) should be pressed into service by the national government and/or non-government organizations on regular basis during the emergency situation (Table 2 in Appendix). They had to confront with food crisis and thus the emergency food ration may lessen their sufferings. They were usually surrounded with famine as they lost their standing food crops due to erosion. They were also subjected to health hazard and the epidemic was its ultimate result. They were immediately attacked by diarrheal diseases. In spite of such unsafe and critical situation, the displacees did not responded by any sources in this respect. They were hindered in adapting to their precarious living environment due to the lack of adequate housing and health care facilities (see Greenberg and Hossain 1987).

The drinking water and sanitation facilities in the places of their shelter were not available to satisfy the displacees' felt needs. They were compelled to carry drinking water from neighboring village and/or to use the river and pond as drinking water sources. They also did not have any sanitation facilities. The building of low-cost housing with sanitary latrine and safe drinking water facilities should be provided with the displacees in order to improve their living environment (Elahi and Rogge 1990). While they expected that the local and national government, and non-government organizations should provide the displacees with water (18.57%; n=26 of 140) and sanitation facilities (20.71%; n=29 of 140), a few of them received safe drinking water (3.57%; n=5 of 140) and sanitation (5.00%; n=7 of 140) support from their relatives, neighbors, *samaj* members, and/or friends. In addition to it, the Member of Parliament (opposition) installed two sanitary latrines and three tubewell for safe drinking water in the squatting settlement of the displacees' temporary shelter for the community.

More than 79 percent (n=111 of 140) displacees expected that they had to be provided with income generating activities by the national government and non-government organizations. But they (17.86%; n=25 of 140) were only responded here informally and irregularly by their relatives, neighbors, *samaj* members, and/or friends. Additionally, their expectation of employment (90.00%; n=126 of 140) was responded in this way by their (19.29%; n=27 of 140) relatives, neighbors, *samaj* members, and/or friends.

## ***Resettlement Needs***

The needs of land for resettlement are the most crucial to their adaptation. The adequate responses to these needs help them in formulating and undertaking survival strategies. The local and/or national government were considered as a viable source of response to this need. This expectation was made by 81.43 percent (n=114 of 140) displacees (Table 2 in Appendix). Among these displacees, 29 percent each were provided with the land for resettlement purpose only but no ownership at all by their relatives and neighbors and 59 percent of them by their friends. They were provided with a piece of land for building their housing structure and to some extent also with opportunities of developing homestead agriculture on that plot. While they (85.00%; n=119 of 140) expected the support of housing materials for their resettlement from the local and/or national government, and NGOs, some of them (14.29%; n=20 of 140) were provided such materials by their relatives, neighbors, *samaj* members, and/or friends.

The displacees had to enroll in a new *samaj* where they were sheltered and/or resettled. They needed the cooperation of their *samaj* counterparts. To secure cooperation they (100%; 140 of 140) wanted to establish neighborliness with their *samaj* counterparts. Their need of enrollment in new *samaj* was satisfied by the relatives, neighbors, *samaj* members, and/or friends. Also they (7.14%; n=10 of 140) developed fictive ties with their new neighbors and/or *samaj* counterparts.

It is to be noted that more than 9.29 percent (n=13 of 140) displacees clearly expected no assistance from any sources. It is because they deserve well economic standing though they lost their original homestead plot due to riverbank erosion attack. The fact is empirically supported by what Halli (1991) found in Kazipur. According to him, the displacees expected no assistance have skills and experiences in some non-agricultural occupations in addition to their agricultural skills.

**Case #16:** Sabdar Ali Mondal of Kaloni is a man of 46. He was displaced three times due to riverbank erosion attack. He lost his homestead plot of 0.33 acre but no cultivable land. He is a poor peasant. His cultivable lands are in the Barind Tract — a safer area. In addition to that, he has been sharecropping in. He is illiterate. His son has been doing wholesale business of fish.

The displacees were surrounded with family, kin groups, *samaj* ties, neighbors, friends, mosque, education, socio-economic status, health, livestock, tangible goods, market, employment, food and the like prior to their displacement (*cf.*, Rogge 1991). These surroundings were replaced by a plethora of needs due to riverbank erosion displacement. The cataclysm of riverbank erosion destroys their established settlement and living environment in the riverine Bangladesh (*cf.*, Nazem and Elahi 1990). It affects all the riparian people through eroding land and destroying employment facilities, which the land could provide with them (*cf.*, Romanowski 1988). It claims adequate responses from sources at both individual and organizational levels. More or less all the displacees of Sehala considered the sources at organizational level, specially the national government, as viable and effective in responding to their needs. But their expectation was not yet responded by these governmental organizational sources.

## **Concluding Remarks**

The social resilience of riverbank erosion displacees of a northern Bangladeshi village shows a sheer corrective type of measures they formulate and undertook for adaptation to unsafe riparian habitat in their nature. It is because that the devoid of administrative and organizational support, and their low level socioeconomic and technological capacity as well failed to prevent the attack of riverbank erosion and consequent massive loss. This adverse and critical situation intimidates them to design and undertake corrective rather than preventive measures for trimming down their loss. It can be concluded that in the devoid of institutional support, the displacees of Sehala were compelled to be socially resilient and dependant on the assistance given by their relatives, neighbors, *samaj* counterparts, and friends in formulating and undertaking strategies for adapting to their precarious environment.



## ***Policy Recommendations***

The policy implications claimed by the research findings prefigure that the government and non-government organizations should respond to the prodigious needs of riverbank erosion displacees. These responses should be made in the immediacy of erosion attack for aiding them in their environmental adaptation on the hazardous riparian tract. The research findings set down some recommendations for future planning which are coming next after.

- i. The government should undertake large-scale engineering works and allocate financial cost for preventing the riverbank erosion.
- ii. In the immediateness of erosion, the displacees need to be sheltered at any cost. The government should provide them with adequate assistance of shelter.
- iii. The displacees have to grapple with food crisis and thus the emergency food ration may lessen their sufferings. They expect that the food ration should be pressed into service by the government in onslaught of riverbank erosion.
- iv. The displacees are subject to health hazard and its ultimate result is epidemic. The government should provide them with health care and low-cost house with sanitary latrine and arsenic-free drinking water facilities. This assistance will aid them in adapting to their hazardous riverine environment.
- v. The homestead plot, housing materials and financial support are crucial to their resettlement. They receive skimpy financial assistance from their neighbors and/or relatives but from any organizational sources. They expect that the government and non-government organizations should do this job in time.
- vi. The government and non-government organizations should provide the displacees with adequate income generating activities and finally regular employment in both agricultural and non-agricultural sector for their survival.

## **Endnotes**

<sup>1</sup>A geographically defined land revenue unit. The land revenue survey undertaken by the government of British India coined the term *mauza* for revenue purposes. *Mauza* was the unit of this survey. This was defined in the note of directions for settlement Officers, 1849 as a parcel of land which had a separate name in the revenue records, i.e., practically a local subdivision of an estate or *mahal* (Nelson 1923; Wilson 1855). The lands are not always contiguous and compact, but may have outlying portions intermixed with those of other village. It is noticeable that these villages are brought under one head with the rest in the revenue settlement of *mauza* (Wilson 1855). For example, the Collectorate Registers show that an estate has land in the village *A* only, while geographically and in revenue records it has land in the village *B* and in many other villages besides *A*. *Mauza* is nothing but the lowest revenue area for which the settlement records were prepared in 1850. One *mauza* may comprise one or more villages.

<sup>2</sup>A mid-channel islet in the riverbed. It is any accretion in the river which may be seasonal or may survive for several decades. *Charlands* are abundantly found in the large rivers of Bangladesh, such as the Padma. The intense competition among floodplain inhabitants to cultivate these *charlands* and/or to settle on it creates social clash in terrible form. These lands were regulated in the British India by Bengal Regulations XI, 1825 (Wilson 1855).

<sup>3</sup>A tract called *Varendra* in the Sanskrit literature, which means a part of Bengal north of the Ganges/the Padma, designating especially one great division of the *Brahmans* of Bengal (Wilson 1855). This tract is one of the terrace areas of Pleistocene age within the Bengal Basin. It has two terrace levels — one at 39.7m and the other between 19.8m and 22.9m (Rashid 1977). It is divided into five sections, viz., North-Eastern Outlier, Eastern Barind, East-Central Barind, West-Central Barind. The district of Nawabganj includes parts of the West-Central Barind and of the Western Barind.

<sup>4</sup>*Khas* is an Arabic term used to mean select, eminent, noble and also private, peculiar, etc. (Wilson 1855). *Khas* as a revenue term is applied to lands held by Zamindars and cultivated by themselves for their own benefit (Wilson 1855). The term of *khasland* is considered by the present study as unused land owned by the government.

<sup>6</sup>It is an indigenous village social organization. It is not organized by the government. It is a village council, which may be compared with *parea* of Punjabi village in Pakistan (Eglar 1960). *Samaj* performs religious, ritual, ceremonial, and adjudicative

functions (for more, see Karim 1990).

## **In-text Citations**

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## Appendix

**Table 1: Social Resilience of the Displacees for Minimizing Their Socioeconomic Loss**

Resilient Strategies for Loss Reduction	SEHALA		
	Households		
	n	%	
N=140			
<b>Use of Movable Housing Materials</b>			
<b>Roof Materials</b>	Corrugated Iron Sheet	71	50.72
	Thatch	36	25.71
	Burt Tile	25	17.86
	Rod Cement Concrete	7	0.05
<b>Wall Materials</b>	Bamboo/Thatch	57	40.71
	Mud Dough	49	35.00
<b>Investment Pattern</b>	Brick	34	24.29
	Land Purchase for Resettlement	102	72.86
<b>Erosion Preventing Technology</b>	Moveable Assets	73	52.14
	Livestock	43	30.71
	Using Sand Bag	75	53.57
<b>Loss Acceptance</b>	Building Bamboo Crates	73	52.14
	Homestead Plot Desertion	140	100.00
<b>Reducing Economic Loss</b>	Pray to Allah	50	35.71
	Salvaging Housing Structure	135	96.43
	Moving Properties	95	67.86
	Sale of the Title of Eroded Land	40	28.57
	Sale of Livestock	32	22.86
	Cutting Standing Crops	13	9.29
	Cutting and Selling Trees	13	9.29
<b>Shift of Lives and Properties</b>	Family	140	100.00
	Assets	88	62.86
	Livestock	26	18.57
<b>Means of Transportation</b>	Bullock Cart	40	28.57
	Bicycle	20	14.29
	Country Boat	18	12.86
	No Transport	63	45.00

Note: Multiple responses considered.

**Table 2: Differential View of Sources of Response Expected and Responded to Displacees' Needs**

Areas of Displacees' Needs		SEHALA					
		Households			N=140		
		Potential Responses			Actual Responses		
		Sources Expected	Displacees Expected		Displacees Received		Sources Responded
n	%		n	%			
Immediate Needs	Erosion Prevention	Local Government National Government	27	19.29	2	1.43	Relatives Neighbors Samaj Members
	Physical Labor to Move	Relatives Neighbors Samaj Members Friends	72	51.43	68	48.57	Relatives Neighbors Samaj Members Friends
	Shelter	Relatives Neighbors Samaj Members Friends	100	71.43	17	12.14	Relatives Neighbors Samaj Members Friends
	Temporary Hut	Local Government	90	64.29	90	64.29	Local Government
	Financial Assistance	Local Government National Government NGOs	99	70.71	20	14.29	Relatives Neighbors Samaj Members Friends NGOs
	Immediate Relief Supply	Local Government National Government NGOs	117	83.57	102	72.86	Member of Parliament (Opposition)
	Moral Support	Relatives Neighbors Samaj Members Friends	45	32.14	39	27.86	Relatives Neighbors Samaj Members Friends

to be continued ...

Table 2 (contd.)

Areas of Displacees' Needs		SEHALA					
		Households				N=140	
		Potential Responses			Actual Responses		
		Sources Expected	Displacees Expected		Displacees Received		Sources Responded
n	%		n	%			
Subsistence Needs	Emergency Food Ration	Local Government National Government NGOs	108	77.14	-		
	Emergency Health Care	Local Government National Government NGOs	37	26.43	-		
	Safe Drinking Water Supply	Relatives Neighbors Samaj Members Friends Local Government National Government NGOs	26	18.57	5	3.57	Member of Parliament (Opposition) Relatives Neighbors Samaj Members Friends
	Sanitation Services	Local Government National Government NGOs	29	20.71	7	5.00	Member of Parliament (Opposition) Relatives Neighbors Samaj Members Friends
	Income Generating Activities	Local Government National Government NGOs	111	79.29	25	17.86	Relatives Neighbors Samaj Members Friends
	Employment	Local Government National Government NGOs	126	90.00	27	19.29	Relatives Neighbors Samaj Members Friends

to be continued ...

Table 2 (contd.)

Areas of Displacees' Needs		SEHALA					
		Households				N=140	
		Potential Responses			Actual Responses		
		Sources Expected	Displacees Expected		Displacees Received		Sources Responded
n	%		n	%			
Resettlement Needs	Land for Resettlement	Local Government National Government	114	81.43	24	17.14	Relatives Neighbors Friends
	Housing Materials	Local Government National Government NGOs	119	85.00	20	14.29	Relatives Neighbors Samaj Members Friends
	Enrollment in New Samaj	Relatives Neighbors Samaj Members Friends	140	100	140	100	Relatives Neighbors Samaj Members Friends
	Developing Fictive Ties	Relatives Neighbors Samaj Members Friends	26	18.57	10	7.14	Relatives Neighbors Samaj Members Friends

Note: Multiple responses considered.