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RESPONSES AND PERCEPTIONS OF PEOPLE WHILE COPING WITH FLOOD AND RIVERBANK EROSION IN BANGLADESH

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Abstract: This paper investigates responses and perceptions of people while coping with flood and river erosion (of the banks and *charlands*) in a large a river of Bangladesh. A literature review provides an understanding of river erosion in the large rivers of Bangladesh, particularly the Padma, Jamuna, and Brahmaputra. Based on the study of secondary sources, an empirical survey is conducted of affected people (from the banks and the *charlands*) of the Jamuna River in Sirajganj District. The empirical study investigated responses and perceptions of people in the vulnerable areas while coping with flood and riverbank erosion. The responses of people, as found from the study, can be categorized into three major types. These are responses through *structural measure;* responses *in agricultural coping;* and responses through *human safety measures*. It is also found that despite extreme poverty, fragile socio-economic condition and lack of any support from government agencies, majority of these people coped well with these natural disasters. This study identified two major perception types of people while coping with this disaster, a *pessimistic* one and an *optimistic* one. Though both of these groups suffered a lot from riverbank erosion and flood, it is found that the crucial way to overcome these natural calamities is to have a positive mental attitude, an adventurous soul, hardworking mentality, and a flexible outlook towards life. Vulnerable people, particularly the weak, poor, and frightened, often lose their hopes, and suffer the most. The Government and non-governmental agencies, in these erosion prone areas, can play a vital role to support and rehabilitate these affected weakened people. They can provide monetary, material, infrastructural and informational support to them till they stand on their own feet to withstand the setbacks.

Keywords: Riverbank erosion; Flood; Indigenous knowledge; Responses; Perceptions; Charland

Introduction

Riverbank erosion is a natural geomorphologic process. It is one of the mechanisms by which a river adjusts its size and shape to convey discharge and sediment supplied to it from surrounding lands (Morgan *et al.,* 1998). It is generally considered to be beneficial, but can be harmful when affects the lives, livelihood and habitat of people. Generally erosion takes place in the riverbank if the resisting shear stress of the bank and bed material of the river is exceeded by the shear stress exerted by various flow conditions of the river. It is dependent on the channel geometry, properties of the bank material, and the hydraulic and gravity forces active on the bank. Geomorphologic considerations such as river channel pattern (straight, sinuous or meandering) and channel cross sections are also important in this connection. As far as soil properties are concerned, soil shear strength, pore water pressure and cohesion are the major factors. Erosion of the bed and bank material occurs when the shear stress exerted by the water on the channel perimeter, exceeds the

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strength of the bank material. When rivers contain more sediment that they can carry, deposition occurs on the channel bed. Large quantities of such deposition may reduce the channel capacity. Channels in such situations try to adjust their form to a more efficient shape to accommodate the discharge and extra sediment. As the sediment load on the channel bed prohibits adjustments of slope and depth, the channel adjusts its cross section by becoming wider and flatter (Haque, 1998).

The movements of major rivers in Bangladesh and accompanying bank erosions have long been a dominant environmental problem affecting a sizable population. As found, erosion by river is mainly hydrological and when it is associated with a widespread flood, the magnitude of destruction is enormous. In Bangladesh, the rivers often cause erosion due to their unstable character (Elahi, 1989). Large-scale movement of rivers has been taking place in Bangladesh for a long period. In the late eighteenth century, the Brahmaputra flowing through the Bengal upper delta dried up, and started to flow through a new course, during a heavy monsoon, and also due the effect of an earthquake or tectonic movements of the Barinda and Madhupur tract (Rashid, 1977). The new course became known as Jamuna, but the upper reach still retained the previous name *"Old Brahmaputra"*. The large rivers of Bangladesh, particularly the Padma, Meghna, Brahmaputra, and the Jamuna, maintain a more or less stable course while cutting through the mountains in India and China. But as soon as they enter Bangladesh, they assume a braided pattern consisting of several channels separated by small islands/sandbars, called *charlands* within the course. During the last 200 years or so, their channels have been swinging between the main valley walls. As a result, during monsoon seasons, extensive overbank spill, bank erosion, bankline shift and *charland* shifts have become typical for these rivers (Elahi, 1989). These phenomena have become a serious problem for the country, and poses threat to human lives, activities, settlements, structures and sometimes the ecological character of the catchment area (Haque, 1998).

Consequences of River Erosions

Bangladesh is exposed to and repeatedly affected by a particular type of hazards – *floods*, with concomitant riverbank erosion because of shifting of river channels. Often the major rivers of Bangladesh do not flow in the same course for two successive years (Ahmad, 1956). The large land areas in and around the principal rivers of Bangladesh are, therefore, subject to active alluvial action in all seasons. The rivers not only erode land, causing settlements to be constantly on the move, they also throw up new virgin lands through accretion for newer settlements and agricultural activity (Baquee, 1997). These newly formed lands (*charlands*) and the eroded riverbanks are inhabited by some of the most desperate and vulnerable people in the country. Living in the far-flung, fragile environment of the erosion prone areas means abidance in the midst of natural hazards – some sorts of co-existence with a hostile environment. And the poor peasants, living there from generation to generation, have always had to cope with its fallout. Fragile riverbanks and charlands have never been abandoned because of flooding. On the contrary, these erosion prone areas are accommodating a rapidly expanding population (Haque, 1985; Hasan, 1999). It clearly suggests that there must be reasons to believe that the benefits of living in the charlands and riverbanks sometimes outweigh the disadvantages.

Literature Review

The problems of people due to river bank erosion and flood in the large rivers of Bangladesh remains under-represented. Key researchers in this connection are Elahi (1987, 1989, 1991); Baquee (1993, 1997), and Mamum and Amin (1999). To understand the indigenous knowledge and perception of people while struggling with flood and erosion in the *charlands*, it is perhaps important to have a glimpse of the social power structure that dictates the overall scene in these areas. The char settlements originate through the sponsorship of powerful elites and inevitably

grow through a filtration process (Baquee, 1993). Prospective settlers have to undergo a process of scrutiny at the outset. Kinship, factional bonds, political disposition and neighborhood relationships are the determinants of preferences. The *matbar* (village head) maintains control over the charland. Only the selected people or groups of people who in fact, determine the activities of the land-less peasants through different ways and means to exercise this control. Elahi (1987, 1989, and 1991) discusses the eternal struggle for survival of people on the western bank of the Jamuna River in Rajshahi Division, and described how they cope and resettled on the banks after erosion. Mamun and Amin (1999) discuss the perception of people in the vulnerable charlands and suggest a number of strategies to mitigate their sufferings. Haque (1999) provides an overview of indigenous knowledge and practices of people while coping with river erosion and floods.

Methodology

This research conducted an empirical study in January 2000, to investigate the effects of river erosion on the lives and activities of people. Affected people from the *charland* and from the eroded riverbanks were selected for the study. They include a wide spectrum of people from beggar to *charland matbar*. Sixty households (2% of the total affected households) were surveyed through a questionnaire, and interviews were taken of twenty persons. Sirajganj district was chosen as the case study area for this research. It is one of the most severely eroded districts of Bangladesh, and has been encroached by the river Jamuna.

Profile of the Study Area

The study areas for the research are the union of Khoksabari and Kaoakola of Sirajganj Thana, located at the northeast part of Sirajganj District. Among them, Khoksabari Union has a population of 2,6042 in an area of 4,838 acres and is located in the main land, on the west bank of the Jamuna. Kaoakola Union comprises of different *charland* settlements, and most of them are located in the midst of the Jamuna. It has a population of 8164 persons, and an area of 8,690 acres. Dispersed type of settlements with very low density is observed in this union. The mighty Jamuna separates the union from the Thana headquarters. Among these two unions, Kaoakola experienced recurrent flood and massive river erosion each and every year. The study area lies between 24 27'- 24 31' North latitude and 89 38' -89 43' East Longitude.

Responses of People in the Flood and Erosion Prone Areas

People living in the *charlands* are subject to the whims of the river, and perhaps epitomize the precarious man-environment interaction. Their survival in the hazard prone areas largely depends on how they put to use their experiences, and these are likely to differ according to the perception, and economic ability of the persons in question. The people in the *charland*s understand the climate of Bangladesh very well. They also have keen powers of observation and can predict the nature of the floods that might occur during a year. For example, if the monsoon rain is abundant and the water flow is relatively clean and has a current, they become alert of the onslaught of flood. However, not all their observations have any credible basis, and sometimes they prove to be incorrect. Response of the people to flood and erosion indicates planned attempts at reducing or minimizing their devastating impact. The responses vary according to the intensity of the floods. Different measures are usually taken during the monsoon. The responses in general can be divided into three major areas of activities. These are:

- *Structural measures:* those activities or practices intended to reduce damage to dwelling structures and household goods.
- *Agricultural measures:* activities carried out for reducing and/or recovering crops and agricultural losses.
- *Human safety measures:* activities, which are taken to gear up safety of the people.

Rresponses in Structural Measures: Structural adjustments are not necessary every year, as these adjustments can work for several years. At the initial stage, measures are taken against a low-level inundation, and when the situation gets worse, further adjustment is called for. 25% of the households reported that they had to repair their houses every year, while the rest went for repair only when it was necessary. Normal flooding does not call for repairs to houses by re-thatching the straw (against rains) every year. The regularly practiced method of *structural adjustment* to floods in char settlements is to strengthen the bamboo poles supporting the house by tying ropes around and linking the main joints, and to set additional bamboo poles diagonally to support the dwelling units. Structural adjustment to cope with flooding includes the use furniture such as wooden cots and earthen vats. These cots with six legs prove to be of great utility during the rainy season. In years of great flood, when water reaches plinth levels, high platforms made of bamboo are set up and the cots are placed on them. Large earthen vats are used to protect seeds and food-grains from dampness and rising waters. The need for these vats arises during the monsoon and heavy flood. During the monsoon, the basic foundation of the house (plinth) is usually plastered with a paste of mud, jute fiber or husks (*tush*), which protect the plinth from direct impact of raindrops. During floods, the protection of the plinth is a bit difficult and is done in a different way. Usually short bamboo stakes are placed at regular intervals along the plinth, so that running water can not hit the plinth directly and erosion is minimized.

Responses in Agricultural Coping: Agricultural adjustments refer to the measures taken to protect and grow crops in the field. Taking care of domestic animals is also included. Adjustment with respect to crops may be broadly classified into two types: *after flooding* and *before flooding*. Agricultural adjustment varies depending on the nature of flooding. During the initial stage of flooding, known as monsoon, the char people prepare themselves mentally for the coming rainy season. If the crops are mature enough for an early harvest, they usually do it in a group. This is the time, particularly for the poor, when they help out one another voluntarily and free of charge. The rich farmers also go for early harvesting by hiring labor and with help from their tenant farmers.

Selection of crops is very vital for the charland people. Usually groundnuts and sweet potatoes are sown at the highest level of the land where the soil is sandier. At the waterfront, the people plant *aman* paddy, which is adaptable to high flooding. The deep-water *aman* can grow at the rate of six inches per day and reaches a height of 15 feet to keep pace with the rising waters. There are also the adjustments in cropping practices, such as inter-cropping practices to spread the risk of crop failure. The short stem flood sensitive *aus* is sown together with the long stemmed flood-tolerant *aman* in the same field. Normal flooding would yield two crops, while a dry year will give a good *aus* but no *aman* crop; abnormal floods will favour *aman* but will be detrimental to *aus*. Often flood sensitive crops like *aus* and jute are harvested before peak floods hit the char settlements. When crops are near maturity, and are almost ready for harvesting, bamboo stakes are placed every few feet apart in the fields to reduce the onrush of water and to stabilize it.

The post-flooding period is crucial for the char people. This is the time when they assess their losses and take steps to face the resultant economic problems. The first step in the adjustment process is to arrange for seedlings to be sown in the fields. When the water starts receding, those who have family connections on higher grounds, look for seedbed there, if available, for sowing seeds. Sometimes farmers prepare floating seedbeds by horizontally placing banana trunks on the water, and putting water hyacinth plants over the platform thus made, followed by spreading of earth as soon as the hyacinth starts rotting. However, raising seedlings on this type of seedbed is not an easy thing to do. Moreover, it involves a very difficult and cumbersome process. The rich farmers, however, have the means and resources to grow seedlings, or buying them from market. The preparation actually starts with the appearance of the signs of the retreat of flood. In the charlands, it is only the rich farmers, who can afford to have livestock such as cows and goats. On the other hand, almost all the charland dwellers rear poultry, but little in number. During the flood,

the livestock and poultry require some kinds of temporary shelter. Chicken and ducks are kept for a time on the main structure. It is found that the people usually sell out most of their chickens before and during the flood. It provides them with some ready cash, in any case; however, the chickens would have perished in the flood. But the same households sold out most of their chickens at the onset of the floods, while the ducks were sold out at a later stage. The ducks were set aside in the hope of early retreat of the flood, which, however, does not materialize always.

Responses in Human Safety Measures: These include making rafts from banana trunks, keeping vigil at night when the water is high or rising. Often people keep awake at night especially to keep away snakes and prevent children from drowning. In case of high flooding, the poor people also form groups to hire boats for moving to safer areas. But they try to stay in their homes until the last moment, till there is any slightest hints of hope. The most common type of human safety measure is the construction of a high platform above floodwater level on bamboo poles. Often beds are raised by placing something under the legs. When it is difficult to go through the door, the false ceiling is used as the platform for living. When the water level exceeds the false ceiling, the whole structure is dismantled, and people moves to a safer place. Boats are a common mode of transport in the charlands, but it is only the well off people who own or hire boats. The poor man's boat is the raft, which is made of banana trunks. Only 10% of the surveyed household own a boat. The last resort in times of flood is temporary moving of household members. Moving the whole family to safer place is not always desirable, unless the family members are compelled to do so. People in fact cannot afford to leave their possessions behind, particularly the rich farmers who often cannot move all their belongings at a short notice. Poor houses have fewer possessions, which make it easier for them to move to a safer place quickly. Still leaving behind their homestead vacant is not a sensible option for the poor either; because, losing even a piece of the roof would be a great loss to them.

Perceptions of People in the Flood and Erosion Prone Areas

Material and life losses are endemic in the frequently devastated flood plains and riverbank erosion-prone areas. Whereas excess flooding routinely destroys crops and damages property, more devastating effect takes place from the loss of land due to river encroachment, since it washes away the permanent settlements deep into the river with simultaneous loss of the main sources of living – the cultivable land. Population displacement due to riverbank erosion is also widespread in parts of the country. Although some households do move to safer areas and build safer settlements, many merely relocate within the same area that has either been already affected or bears known vulnerable characteristics. Despite their general vulnerability, the erosion prone regions are also known to contain areas that are comparatively safe for settlement building.

Perception and awareness of flood and bank erosion play a profound role in preparedness and adjustment behavior of the people living in vulnerable areas. Two predominant views are found regarding the causes of riverbank erosion and flood. One group perceives flood and erosion as being caused by current in the river (55%). On the other extreme, a significant proportion is fatalistic and considers flood and erosion to be will of God (45%). Such beliefs could be perceived to divert the threat of flood and erosion out of their hand. The traditions, social norms, illiteracy, lack of legal and political entitlement, and poor enterprise development virtually put them without any means to safeguard against erosion. The majority of those who perceives God's will as the cause of erosion, is illiterate (60%), and suffered from erosion several times in their life. The fatalist group is dominated by farmers and farm labourers; while service holders and retailers govern the rational line of thoughts. The majority of households are well aware of the damaging impacts of erosion and flood on homesteads (65%) and farmlands (55%). A large number of respondents mentioned (45%) hardship as the effect of erosion. Other effects include migration (15%), education disruption (10%), and fall of income (10%). The two important effects on community are increase in poverty level (45%) and social disintegration (35%).

This study found that the majority of the households are aware of the damaging impacts of erosion and even succeeded in realizing the fruits from settling in safer places. But often this takes place only after repeated experience and losses from erosion. Being helpless to prevent it, they initially pay more attention to immediate interests (e.g. raising a quick crop even from extreme vulnerable land) rather than the perils of erosion. This helplessness also tends to nurture fatalism. The migration and adjustment behavior of dislodged residents show that after the experience of first couple of erosion, the majority of households settle near their eroded land in an unplanned manner. But gradually, with the increase in erosion effects, they realize the risk of living in vulnerable areas, especially after the distressing experience of early erosions, and tend to move in a planned fashion and avoid staying in vulnerable lands. However, they cannot think of moving to distant lands due to their strong attachments to their kins, financial disadvantage, and total dependence on farming. Other significant deterrents on moving are the lack of marketable education and skills, and the hopes of getting back the lost land from possible land accretion. The erosion-affected households are also found to gradually decrease their dependence on farming as the sole occupation and get more involved in small business and fishing.

The only resource base of the people includes a large number of small and big charlands, fertile but unsafe. Those who settle near their farmland in these charlands as well as not-yet eroded land despite the known risks of erosion, do this mainly for the convenience of access to land, saving time on travel, and avoiding the risk of commuting by unsafe river transport. The safe distance land cultivation can be seen as a means to utilize land and water resources, thereby, maintain basic farm employment and output. They also look forward to moving to safer places for deriving the benefits from the infrastructure and utilities that exist there. The displacee solely relying on agriculture and having no education, or nonfarm skills, tend to stay near their eroded land and plunge into a downward spiral of overall well-being. On the other hand, displacees, having some non-farm occupation, education, and skills migrate to safer areas and are able to improve their economic condition; even those who are engaged in farming in the safer area are better off than their counterparts in the vulnerable area.

As already mentioned, riverbank erosion, often associated with abnormal flooding, creates human misery, damaging crops and properties and dislocating people and associated social and economic linkages. Had population dislocation been caused only by flood, economic recovery would be possible within a predictable time, but the victims of riverbank erosion suffer the entire loss of their land, the main sustenance of the farming households in the study area. In general, economic recovery is not possible by the next monsoon, even if a farmer has a little land left. The situation in the erosion-prone areas is thus one of continuing gradual economic deterioration of the people affected.

Some households on the riverbank have been the victims of the phenomenon more than once and many live in makeshift shelters on the BWDB (Bangladesh Water Development Board) embankment. There are major concentrations of squatters, contributing to slum developments. The study found that the principal occupations of the displacees are mostly in the informal sector of the local economy, including wage labor, both agricultural and non-agricultural. The farming displacees survive on the *kod tenure* arrangement, taking fixed-term lease of land from big farmers, and many are engaged in sharecropping. About 60% of all displaced households are thus engaged in agricultural occupations. Some engage in small and seasonal businesses and in some households one or more members have moved out to nearby towns to supplement family income.

The Case Studies

This research conducted an empirical study to investigate the effects of river erosion on the lives and activities of people. Except from the household survey and interviews, a few families were thoroughly investigated for case study. Affected households from the *charland* and from the eroded riverbanks of the study area were chosen for the case study. The number of case study was kept to a minimum of ten households. The case studies are now discussed briefly.

Sakila Bibi (aged 50) from Khoksabari, had her homestead and a paddy field on the bank of the Jamuna. She lost every thing because of river erosion, and presently lives in a makeshift house in a government *khas* land. She already lost her husband, and her kids have grown up. Now she makes earthen oven to earn a meager living. Karim Sardar (aged 45), from Kaoakola, once upon a time an energetic farmer, has turned into a boatman. He lost his cultivable land and homestead, and lives with his family in a slum on the *Bangladesh Water Development Board Embankment (BWDB)*. He ferries people and materials from the west bank of the river to the remote charlands. He has to pay 50 taka to the owner of the boat, and earns about 130-160 taka a day. Ismail Hossain (aged 30), from Kaoakola, is now a petty thief. He used to be a prosperous farmer, has now turned into a criminal activist. He steals goats, cows from the mainland and carries those by boat to the charland. After slaughtering these stolen animals, he sell out the meat, the hides and skins. He has his own boat and two trusted lieutenant armed with sharp iron weapons. He has to face rival thieves as well as police forces from the mainland, but he rarely bothers about them. Matlab Mian, (aged 36), from Kaoakola, once a sharecropper, is now a ferocious muscleman. He now works for the leader (matbar) of his char and his responsibility is to engage in fights and broils with the people of other charland. Matlab, along with other fellow members, capture newly emerging char areas to control these lands for rice cultivation. He is often engaged in stealing ripe paddy for his matbar from nearby charland. His job is very risky and he was twice seriously wounded in his life. Nanna Miah (aged 28) from Kaoakola, is now a snake charmer and seller of indigenous medicine. He had plenty of land in the char, but lost all his land assets gradually due to river erosion. He married a snake charmer (Bedini), and now sells different medication in the char areas. He can earn a good living after the harvest and in winter. But during summer, or rainy season, his earning is squeezed. River erosion has enriched Kibria Saheb (aged 47) from Kaoakola. He was a very notorious boy in his childhood and boyhood. He was involved in a number of feuds, village politics, and battles. But every time he emerged to be the winner. He was very strong, courageous and had good connections with the political elite. Now he is a matbar (in a new *char*), and controls a vast amount of land in the *charland*. He has his own bodyguards and a group of muscleman to control and capture any new char. He also owns some good fast moving boats. Hakim Fakir (aged 43), from Khoksabari, once an idle farmer is now a beggar. He was the only son of his father, who had large amounts of cultivable land on the riverbank. After the death of his father, he gradually lost all his landed property because of river erosion. He and his family has vulnerable group feeding (VGF) cards and he is now making both ends meet through begging from door to door. Rifa Khatun (aged 26), from Khoksabari, is now a prostitute in Sirajganj Town. After her father lost all his land, her family

became virtually penniless. This was exacerbated by the death of her father. She was enticed by old call girls in the locality and gradually entered into this profession. Now she earns a good sum of money, but is socially isolated from her village. Abdur Razzak, (aged 40), from Khoksabari, was a matriculate, when his parents lost all their land due to erosion. He then went to work as an accountant in a local brickfield. He worked there for 10 years, saved all his salary and learned everything about brick making. After that, he left the job, borrowed some money from family members and relatives, and started hid own brickfield. He is now a respectable as well as rich person of his village, and built a house in Sirajganj Town. Siraj Miah, (aged 50), from Khoksabari, is now a lunatic. He lost around two thirds of his land due to river erosion and landslide. However, one incident shocked him very much. His three-year-old daughter was lost in the Jamuna when she was playing on its bank. This shocking incident made him more depressed, and he gradually stopped talking. Now he is a total mad.

Conclusion

The findings of this study partly conforms the studies conducted by Elahi (1987, 1989, 1991), Baquee (1993, 1997), and Mamun and Amin (1999). From the study it is found that the displaced people on the banks of large rivers often stay in semi permanent shelters in government land or on the embankment. These displaced people sometimes develop informal settlements. This conforms to the previous study of Elahi (1989, 1991). This paper also throws some light into the findings of Baquee (1993, 1997). One case study confirms that a man has emerged as the leader of a *Single Person-Pole Filtered Settlement (SPPFS)*. Two other persons are also found who work under the authority of a single power pole leader. This study also indicates that because of hazards and uncertainty, the people of the *charland* often do not leave those places, as mentioned by Baquee (1993, 1997), and Mamun and Amin (1998). But when they are forced to leave, they normally resettle in nearby areas. Profession change is clearly found among the affected people. People with any marketable skills are found to be engaged in enterprising activities such as brick making industry. Some pessimist vulnerable people can spiral down the poverty ladder often accepting menial jobs such as begging. While some desperate, daring and clever people can prosper by unscrupulous activities (such as thieving, terrorizing, prostitution etc.)

This study however highlights two general kinds of reaction of the affected people, which may influence their future performance or state of affairs. A *pessimistic attitude* along with a feeling of psychological morbidity can result in mental instability, fatalism, poor expectation, and consequently degradation of economic condition and quality of life. On the other hand, a *positive attitude* along with an adventuring and daring mentality, can lead to the development of such characters that might own a large amount of asset in these vulnerable areas, though once upon a time, they were very poor. Criminal behavior, violence and aloofness from laws and regulations are important attributes of these people. It is imperative in this connection that the weakened and affected people are provided with some kind of support and assistance till they cope with this calamity. Development of infrastructure, utility services, and water transportation facilities is also important for these remote charland areas. The need for education and skill development is also vital, so that the affected people can find alternative jobs if they lose their livelihood.

In fine, we can say that river erosion is a natural process and it should be remedied by natural measures. Building embankments, and repairing and maintaining them every year is a burdensome and expensive task. Even a strong embankment like a *hard point* in the Jamuna, is not a guarantee or hedge against river erosion. A number of embankments in the large rivers of Bangladesh have

already being eroded making many people homeless. The right way to help the affected people in the erosion prone areas could be to create an environment where these people can survive and sustain through their own initiative. Governments can provide infrastructure, utilities and financial assistance to the displacee for rehabilitation. The *charlands* are normally considered neglected areas because of their instability, fragility, and remoteness. Government attempts can be more forcefully in these areas to integrate them with the mainland activities, and particularly for more effective government and NGO interventions in these places.

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