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**EROSION OF KOBADAK RIVER AND ADAPTATION PROCESS OF THE LOCAL  
PEOPLE**

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**Abstract:**

All the families who have settled after the riverbank erosion in Padmapukur village have been faced the disaster. It has been found that even after the breakdown, changes in the different elements of the family have been made during the breakdown. However, research has shown that changes in various aspects of life are observed before the river erosion everywhere.

It has been found in the study that there is no family that has become financially viable, rather than their socio-economic status has become more deteriorated day after day. And through this changing situation, people of Padmapukur village are trying to stay on their own homesteads with the last penny of life. During the erosion of the river, it has been observed that a broad difference is seen between the present and previous profession.

It has been found that during the breakdown of the river, the villagers who have been victims of river erosion, even lost the arable land, have taken shelter in nearby villages, Upazillas or adjacent districts. However, many of them have settled on the previous land, but this has been possible when the transit was created after the breakdown. However, in these cases, there can be no specific change in the social status. Among these divergent conditions, the people Padma Pukur have been staying.

Research has found that despite the repeated disruption of riverbank erosion, people try to adopt with their short-term and long-term procedures. But in this case, people are not seen to be very vocal. But government and non-governmental organizations play a helpful role.

**Key Words:**

*Erosion, River, Adaptation  
Process, Local People.*

## **1. Location of the Kodabak River**

Kodabak River originally started on the banks from Kodabak river near the Tahirpur of Jhenaidah district on the east bank of Bhairab river. Since the main course of Bhairab is separated from the Mathabhanga river, Tahirpur gets very little water flow at any time of the year. But water flowed at Tahirpur as the main flow of Bhairab, which is rehabilitated through Jibanagar and Coatchandpur areas, with the equatorial lake and drainage of groundwater. However, the entire recycled flow of Bhairab River flowed, turning the direction of Tahirpur down the direction of the river, falling into the river Kodabak. The Bhairab river basin of Tahirpur is now completely dead due to geological changes.

The flow of the Kodabak river touch into the international border in Tuluni, Jhawgacha. It receives water flow from the Arial Bil near Jhikargachha in Jessore district. In Jhikargachha, it has two branches of Haripur and Bhadak river from West Bank. The rivers are now almost dead for their irregular flow.

The highly active and muddy silt salts are affected by the water of the Kodabak river tidal in Tala upazila. After entering Paikgacha Upazila of Khulna district, two branches came to Kapilmuni in Jessore. On the basis of the main flow of Kodabak river in Kapilmuni, the river leaves the direction and joins the river Shibsha in southeast to the Hariya river. The original course of the Kodabak river is in the west, then on the north, and then in front of Gabura Union of Satkhira district which mixed with the river of Kholpetua.

The Kodabak river basin has a large concave area, but there is little sweet water flows in the upstream. On the other hand, this river carries heavy sediments during tide. Thus the river is gradually being polycystic and draining. The problem of acute water logging in the low land area of Keshabpur, Manirampur and Tala upazila of Satkhira.

From Tahirpur to Jhikargachha, the Kodabak river is 40 km long and about 60 kilometers from Jhikargachha to Satkhira Khulna Road Bridge Bonnarpot (Haque, 2008: 53).

## **2. Current Intensity of River Erosion of the Kodabak River**

The intensity of the current erosion of the Kobadak River are observed in koyra and Shyamnagar upazilas of Khulna and Satkhira districts respectively. Because these areas are coastal, so the impact of breakdown is much more pronounced here. The intensity of the breakdown was seen in the three unions namely South Bedkashi, North Bedkashi and Koyra Union of Koara upazilla. A total of 30 kilometer road is badly damaged in the last riverbank erosion. More than 20 thousands people lost their homesteads. Besides, schools, colleges,

mosques, madrasas are facing enormous losses. According to the Upazila Parishad, the property worth Tk. 100 crore was damaged.

So, Gabura, a union of Shyamnagar upazilla is falling victim to the riverbank erosion. Most villages in this union are affected by breakdown. More than 10,000 families of this union have become destitute due to the last riverbank erosion. They lost almost all the wealth of their house and now they are destitute. Basically the reason behind the breakdown of rivers is due to the sea coastal position. As the Bay of Bengal is near, there is a pressure on embankments in every day. In addition, in the monsoon season these embankments become shaky. Due to which the breach is caused due to excessive increase of river water.

### **3. Adaptation Process of Local People**

Adaptation or tactics or survival is a technique of facing any challenges socially and economically. According to Smit et al. (2000) The word adaptation has been evolved from the term adapt, which means making things/conditions/situations more suitable by alerting. Adaptation refers to both the process of adapting and the condition of being adapted.

Adaptation is a process that protects people from the meteorological health effects of humans but also avoids the adverse reaction of the environment.

Adaptation is basically two types-

- 1) Traditional adaptation
- 2) Designed Adaptation (Chowdhury & Azad, 2004: 86-87).

#### **3.1 Traditional Adaptation**

The main point of community effort is the conventional adaptation. Through this, people are very sincerely trying to overcome losses due to the effect of any adverse environment.

In the past few years, community management has been playing a special role in tackling the disasters. In this case, people should show more interest in running with any unforeseen situation in the present and the future. For example, it is possible to take a quick step to play an important role in tackling the effects of monsoon climate. Moreover, it has a role in ensuring food supply, providing pure drinking, even responding to disaster mitigation.

#### **3.2 Designed Adaptation**

With the prediction of disaster, various steps may be taken to protect the daily necessities of the people. In this case, home appliances those are essentially fit to face adverse conditions, even after any disaster.

For example, drainage can be arranged if there is a possibility of water logging. Especially in the case of floods, the above mentioned method may be played an important role. In addition, infrastructural development is essential in river erosion areas. Cyclone centres need to be established.

#### **4. Government Institutions Involved in River Erosion**

Government agencies and non-governmental organizations are involved with the process of rehabilitation of displaced and immigrant population in river prevention, control and river erosion. Below is a list of both types of organizations.

Table 1: Government Institutions Involved in River Erosion

Sl.	Name	Founded	Activities	Financed by
1	Ministry of Water Resources			Government
2	Water Development Board			Government
3	River Research Institute	1990	Sediment Technology, Soil Mechanism, River Hydrology, Hydrology of Structure of Structure of Irrigation.	Government
4	Institutes of Water Resources Planning	1996	Implementation and Observation of National Water Planning, Promotion and renewal of information for water resources	Government
5	Disaster Management Bureau			Government
6	Ministry of Housing and Public Works			Government
7	Ministry of LGED			Government

Source: Prepared by Researcher

## 5. Non-Government Organisations Involved in River Erosion

Table 2: Non-Government Organisations Involved in River Erosion

Sl.	Name	Founded	Activities	Financed by
1	CEGIS	2002	River erosion survey, river erosion, predication and other research related to the river.	Government, USAID, Netherland Government
2	IWM	1996	To research Water Resources, Fluvial Hydraulics and River Morphology, River Engineering, Esquire and Marine System Management, Integrated Coastal Zone Management	
3	Coast Trust	1984	River erosion research, financial assistance for the victims, rehabilitation assistance.	Action Aid, PKS, Manusher Jonno Foundation
4	Action Aid			
5	Oxfam			
6	Char Development and Settlement programme	2005	To improve the quality of lives of the coastal people.	Bangladeshi and Netherland Government

Source: Prepared by Researcher

## 6. Investment Trends to Combat River Erosion

Although river erosion is recognized as a major disaster for rural and urban poverty unending, it is still not possible to find the cooperation of policy makers and donor groups. However, since the independence of the government, some steps have been taken in a small scale. But this step is very little and temporary-based. This is one of the main initiative is Flood Action Plan (FAP) out of all these steps. But the government's policy is very slow regarding the procedures.

From the year 1971-72 and 1999-2000, the average allocation was only 1245 million BDT annually. The entire parts of it come from the government's own fund. However, there was little participation of donor groups in this regard. Various initiatives are noticed after this in

1993: Secondary Towns Integrated Flood Protection Project (STIFPP), Dhaka Integrated Flood Protection Project (DIFPP), Jamuna Multipurpose Bridge (JMB), River Training Works and River Bank Protection Project (RBPP). None of these initiatives were not enough for the rehabilitation of the disaster affected peoples. The initiatives taken by the government were including the city-building project, flood control dam, blocking river in erosion area, rebuilding of dams etc. But in this case, people with vulnerabilities need rehabilitation, including poverty alleviation, education, and new housing construction assistance. But this kind of initiative has not been noticed so far (Rahman, 2003: 86-87).

Besides, both government and non-governmentally short-term and long-term measures are taken for residents of coastal areas.

## **7. Short-term Measures**

One of the government and non-government short-term measures is the rehabilitation of the affected people, the various river policies, employment solutions and employment opportunities. These are discussed below.

### **7.1 Rehabilitation of Affected People**

In any disaster, government and non-governmental organizations operate an emergency operation. But their support is not enough compare to necessities. Studies shown that a very few residents of the affected areas can be rehabilitated.

Bangladesh has a long history of its land management. According to the Alluvium and Villuviam law of 1825, the sediment land will be considered as the property of the actual owner. The ownership of sediment land was handed over to the government. The purpose of this order was to divide the Char lands from the hands of influential elites to landless merchants. By the provisions of 1978 it revitalized it and the sediment land came to the actual owners where the rights of old owners could be acknowledged. But through field observations, there are some illegal processes going on. As time goes on in the process of mischief, deceit of poor dwellers with the help of fraudulent fraud or with the help of the settlement officer, such steps are taken to declare the land. Later, for a long time, the land was taken under the name of fake owner.

Such incidents severely disrupt the rehabilitation process of the landless community. In 1994, the law was changed again and the land was called it was said to be brought under government control so that it could be distributed among poor landless populations.

## **7.2 Various Remedy Policies for River Erosion**

In fact, the chance of prevention of breakdown by taking short-term planning is very limited and the scope of permanent migrations to the population is also inadequate. For this reason, on the basis of material and socio-economic planning, it is necessary to deal with immediate rehabilitation and take the risk of breakdown. If the proper steps are not taken, then the problem of breakdown will continue to affect the economy and the human habitation of the relevant region. In the initial stage of the planning process, long-term goals must be kept in mind and reflecting the aspiration of the local experts and the hopes of remote people.

## **7.3 Creating Employment Opportunities**

Employment opportunities are very limited due to the number of people infected in the areas. But there is a unique opportunity to conduct life in a traditional way. Under the food project, landless unskilled workers can be engaged in various activities. NGOs can take various steps to manage works for unemployed people under special projects.

## **8. Long-term Steps**

Many times government and non-governmental organizations take long-term measures based on social, political and economic issues. It is mentioned below.

### **8.1 Right to Eat**

The right to food is recognized as the most important fundamental right, because of the absence of food, other political, economic independence becomes meaningless. Most of the people who suffer from river erosion do not eat well, so they have to be fasted sometimes. Many government and non-government organizations help to feed people who are affected by river erosion.

### **8.2 Right to Habitats**

The person who loses his residence thinks that he loses everything. As it is the main source of survival and livelihood. River erosion is a disaster that manages to take away people's habitat, so that the affected people become vulnerable and turns floating people. So the main problem is that after the breakdown is to find out a safe place to live. These floating peoples then built houses on embankments, roads and make temporary shelters on other lands. Government or non-governmental initiatives such as rehabilitation are done in many cases.

### **8.3 Right to Education**

A human mind can not be developed without proper education. Education must be needed in order to create emotional and positive emotions for people. In the research area, both government and non-government measures are seen to repair those academic institutions. People dealing with river erosion lead to such a life which is very unstable and insecure, where food is not available, and many children do not go to school for minimum education.

Again many times, many parents try to raise their income by employing boys instead of sending schools. Indeed, there is lack of enough educational institutions in the displaced areas. After the breakdown, the number of students dropped out from schools severely because they have to move to other places with their parents. In those cases, those who leave school are rarely admitted to school again because they are forced to work.

### **8.4 Right to Healthcare**

Healthcare is a fundamental right of people which includes nutrition, healthy Food, sanitation and clean Environment. Although the quality of medical services have improved significantly in Bangladesh, but the poor people do not have the capability to accept this service. Although the people of the land can accept it at some level, it is difficult to take advantage of the opportunity for the reclining people those live in the chars. Maternal health care, family planning, and child health are almost absent in all these (Char) areas. Moreover, government health officials in the river do not agree to go. In these areas, maternal and child mortality rates are very high.

### **8.5 Migrated people and Sanitation's Rights**

People in the research area suffer from severe sanitation problems. Most people who live on embankments and on the road side they don't have the opportunity to use safe sanitation and toilets. In particular cases, many people use bush jumps instead of using raw or seasoned latrines. Although many people use latrines, they can not be called sanitary latrines. In this case, lack of understanding about their ignorance, illiteracy, and disease germs is the main reason. Most of the people in the area are deprived of sanitary facilities.

### **8.6 Right to Drinking Safe Water**

The previous discussion shows that people with disruption are deprived of safe drinking water. Most of them do not have the ability to arrange tubewells for drinking water. They

(immigrants) can not collect water from their rich neighborhoods tube well. Because they are not allowed to collect water from there.

As a result, they take unsafe water from the river. But the right to drink safe food with health and healthcare is directly involved. Therefore, it is not possible to ensure the right to health of those who have lost their lives in safe drinking water and food insecurity.

### **8.7 Political Rights**

Women voting right are also associated with river erosion. Although their franchise is included in the constitution, sometimes they are excluded from the voters list due to limited livelihood, housing change and social isolation. In the case of women, due to their lonely career and patriarchal system, limited mobility and political environment prevent them from voting rights.

### **8.8 Right to Work**

As a result of river erosion, changes in new areas of immigration and change in labor conditions are also noticed. In this case, the issue of labor women in outside area is also important to sustain their household. Women used to labor only at home before, but in order to adapt them to the changing situation of river erosion, women also have to labor outside along with the household. In this case, women do various functions like cooking, bathing, roasting, cooking, cloth washing, roasting and snewing clothes at home. Although the work of men has narrowed after river-breakdown, women's work has increased and they can do some additional works all year round. As a result, women can contribute towards household income and their views are also becoming increasingly important in household decisions.

### **8.9 Economic Rights**

Economic rights are essential for each person's development. This right of the people of the affected areas is seriously decreased due to river erosion. Economic rights refers to access to various types of economic resources (such as land, labor, financial capital, commodity and market exchange, etc.). Every person has economic rights and these rights can be described as follows- 1. Right to Land and natural resources, 2. Right to national credit, 3. Right to enjoy fruit of labour and 4 Right to protect properties.

In these cases, the government and non-governmental organizations, even the institutions, assist in the process of adaptation of river erosion in the coastal areas, but it is slightly smaller than the requirement.

### **8.10 Local's Migration in the Sphere of River Erosion**

The migration of Kodabak riverbank erosion affected peoples usually depends on socio-economic issues. In this case, there is a lot of impact on food management. As the research area is located in the sub-basin region of coastal areas, the relocation of the locals depends on various subjects. For example, domesticated duck conditions, filling of riverbeds, cultivating salinity tolerant crops, providing safe drinking water, floating gardens, depositing crops of different periods etc. Residents of the area are also in the process of taking various steps. However, government and non-governmental organizations involved in river erosion also play an important role.

### **9. Maintenance of Ducks as Domestication Animals**

The domestication of ducks in the research area has become one of the key centers of income. After the disaster, many families are seen to rear ducks. Apart from these, the non-governmental organization 'Beautiful Project' distributed ducks among the distressed people of the research area. And women's role in keeping goats is also noteworthy.

### **10. Construction and Maintenance of Embankments**

The people of the research area have been able to stay in their areas by constructing and repairing of the embankments. With the help of the government, work was done to prevent river erosion. Besides, long-term projects were taken by various non-governmental organizations. Among them, the 'Sushalon' and 'Islamic Relief' works in the research area to repair the dam through a project "Food through works". As a result, a large part of the local population works under this project and they work for their livelihood.

### **11. Harvesting Salinity-tolerant Crops**

After the river erosion, the amount of salinity on the soil has been increased many times in these coastal areas. There is no way to cultivate any crop other than cultivating salinity-tolerant crops. In this study area, shrimp cultivation has become the most acceptable and profitable task. Many people are cultivating shrimp fishes on their land and many others take lease land from others. But shrimp cultivation is not pleasant at all this time. Shrimp cultivation is being disrupted due to various types of viral diseases. As a result, the inhabitants of these regions have gradually moved towards another profession.

## **12. Safe Water Supplies in Saline Areas**

Safe water availability is very difficult due to the salinity of the coastal areas. Here the only source of safe water is Deep tubewell. However, its number is very limited. There are 4 arsenic-free tubewells for 2,000 people in Padmapukur vllage of research area. But during the river erosion, people of the area usually use big jar to keep rain water for their future necessities.

## **13. Floating Garden**

Floating gardens in the river erosion area are now becoming a very popular business. Due to salinity, there is no other crop except shrimp in the arable land. For this reason, many families are now cultivating different types of vegetables on the top of their houses. In the research area, people have been cultivating various types of crops by staging raw materials near their houses. For example, Brinjal and Leopards, etc.

## **14. Crop Production in Rainwater**

After the river erosion, there was no possibility to produce any crop due to the salinity of the water. But gradually the people of this region, using rain water, produce crops with different monsoon, and now the people are turning towards rice cultivation. Recent trends of rice cultivation are noticed.

## **15. Constructing Cyclone-resistant Shelters**

Shortly after the river erosion, those who had to build a new residence were somehow natural disaster-resistant. The migration process is less witnessed for constructing this sort of houses now a day. That's why the adaptation process is still very low. Basically their morale is very important in the survival of the people of this region. Moreover, a shelter center has been constructed recently in Padmapukur village. Besides, when the houses are destroyed in the river during breakdown, various private organizations arrange their house and proper sewage disposal. In addition to the adaptation of the people of the coastal region, the local people take various steps in addition to the government and non-government organizations.

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