

Impact of River Bank Erosion on Human Life: A Case Study in Shantipur Block, Nadia District, West Bengal

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ABSTRACT: River bank erosion has emerged to be one of the most dreadful environmental problems in India. The rivers Ganges, Son, Yamuna, the Brahmaputra, Chambal and Mahi, all are tough competitors when it comes to their bank erosion. Shantipur Block, Nadia District, West Bengal, the birthplace of Vaishnavism is among the worst preys of erosion of the river Bhagirathi-Hooghly and thousands of inhabitants are either displaced or suffered huge loss in the form of land, cattle and houses and thrown as destitute. This study was conducted with an effort on analyzing the impact of erosion on the socio economic lives of the poor villagers, their frequency of displacement, patterns of rehabilitation, their perception about the causes of erosion and the way they continuously try to adapt themselves to this anathema.

I. INTRODUCTION

River bank erosion, is the wearing away of bank materials of a river. It is a dynamic process affecting the concave side of the bank, while depositing sediments on the opposite side. Almost every Indian river is prone to bank erosion turning more than half of the country's land affected and lives of millions deplorable. The river Bhagirathi-Hooghly, in West Bengal resorts to massive bank erosion at an alarming scale in Malda, Murshidabad, Nadia, Burdwan and Hooghly and contributes to a dominant irreparable loss of farm lands of a very high quality each year. It has been estimated, that about 43% of the total geographical area of the state has been declared as flood prone. Form reports of West Bengal Irrigation Department, it has been seen that the average annual quantum of land, engulfed by the rivers in West Bengal is about 800 hectares. Shantipur Block in Nadia District is similarly hit by this environmental hazard and its associated problems of mass displacement of the poverty stricken rural population with their land, cattle, houses and other assets lost. In West Bengal studies related to erosion and its impact on people, so far conducted, have given little attention to this part of the planet. This paper is an endeavor to highlight their pangs and bring out the ways these poor mass combat the devouring river.

II. SHANTIPUR, A BRIEF OUTLOOK

Shantipur Community Development Block, is in the Ranaghat Subdivision of Nadia District of West Bengal, India, more than 21 kms downstream of Farakka Barrage, at the left bank of the river Bhagirathi-Hooghly. (The Ganges after Farakka is known as Hooghly.). The river here resorts to massive bank erosion. Methidanga in Haripur Gram Panchayat and Kalna Ghat in Nrishingapur, are the places which houses the people uprooted from their original places of residence.

III. OBJECTIVES OF THE STUDY

This study was conducted mainly for detecting the problems of the affected, to assess the socio economic impacts of river bank erosion and to have an idea about the adaptability and resilience of the inhabitants.

IV. METHODOLOGY

Maps of the last forty years were collected and superimposed to find the average rate of bank erosion in Shantipur Block. To get the average length, width and breadth of the river banks, we had taken help of GPS, digitizers and mapping was done through sophisticated GIS software. Necessary data were also collected from The Port Trust of India, West Bengal Irrigation Department and Survey of India. For examining the disastrous effect of river bank erosion on the lives of the people of Shantipur, we had obtained household data through detailed questionnaire survey of about 223 affected people. The sample population were mainly chosen from Methidanga in Haripur and Kalna Ghat in Nrishingapur as these places are now actively witnessing erosion. Questions were mainly asked about migration, the loss of their property, their coping mechanism and the reasons which they find responsible for this heavy sweeping away of land.

V. RESULTS AND FINDINGS

5.1) Active Bank Erosion in Shantipur.

Since the Farakka barrage has been planted in Malda, vast parts of land downstream, gets affected by massive floods almost every year. Erosion occurs mainly through slumping and hydraulic action of the river water. While assessing the rate of bank erosion in the study area, we found that in the Kalna Ghat area, land loss is about 10 meters each year on an average and if this trend continues, then parts of Haripur constituting some 300 people will be lost within a few years, rendering them homeless. In the Gobarchar area, in the northern part, there has been an erosion of about 23.50 meters of land on an average, which if allowed to continue, shall eat up the whole Ghorolla region within just a few years. In the middle and the southern part, the rate of land loss were 44.83 meters and 21.525 meters respectively. Three villages have been submerged, the most prominent being the Methidanga village, which can be found even in the Survey of India, topographical map of 1970. However, people have shifted themselves and named their new land Methidanga.

5.2) Mass Displacement of Population and Patterns of Rehabilitation.

The people of the lost village of Methidanga were displaced four times in about 20 years. The village was gradually consumed by the river and people moved inland from the bank and were provided pattas (free land) by the government. Now the people are relocated to about 1.75 to 2.45 kms. east of the river. They have settled in a linear pattern along the Nrishingapur road, in temporary encampments, made of bamboo, and straw.

Table I No. of Displacements of the Inhabitants of Methidanga.

No. of times	4 times	3 times	2 times	1 time
% Population	66.82	26.009	7.17	-

The people in The Kalna Ghat area, either migrated once or did not migrate till now but are in a vulnerable position. A village in Purbasthali in Burdwan District, lying in the opposite bank of Shantipur, was submerged under water and the majority of its population shifted to Shantipur. The people here, did not get pattas. They had to buy lands at the rate of Rs.40, 000 per bigha.(1/6 acres)They have shifted parallel to the river bank in about 100 to 150 meters. from the bank line. Places of Panpara Bagachra, Harinadibhatsala are now in a better condition although they have suffered lots before, mainly when the river was in her way of straightening, throwing out a horse shoe lake.

Loss of Property and the Resultant Economic Stress:

Property lost is in the form of

- Multiple Cropped Land
- Cattle
- Houses

Table II Amount of Land Lost.

Percentage of Surveyed Population	Average Amount of land lost
15.29	>2 bigha
47.22	1-2 bigha
27.62	Less than one bigha
9.87	Did not lose land

15.29 % of the surveyed people, lost more than 2 bighas of land. 47.22 % suffered a loss between 1 and 2 bigha land. 9.87 % of the surveyed population did not lose land till now and they are totally from the Kalna Ghat area.

Table III Kinds of Properties Lost.

Methidanga		Kalna Ghat
Percentage of people who suffered the Loss		
Land+Cattle+House	89	27
Land + Cattle	11	14
Land	-	56
No loss till now	-	3

Most of the residence of Methidanga lost all their land cattle and houses. While this loss is not much pronounced in the Kalna Ghat area, where people, mostly lost land and are in the way of losing more.

Table IV Monetary Loss Suffered.

Loss in Indian Rupees	<50,000	50000-100000	100000-200000	>200000
% of Surveyed Population	6.28	32.74	50.22	10.76

10.63% of the surveyed population, lost more than 2 Lakh Rupees, 50.27 % between one and two lakh, 32.66% between fifty thousand and one lakh and 6.44 % lost less than fifty thousand.

Table V Profession of the Displaced and Vulnerable Groups

Profession	Percentage of Surveyed Population
Weaving	19.23%
Weaving and Farming	69.506%
Non Weavers	11.264%

These poor sufferers are mostly small, marginal peasants and weavers. Some continue with their job of weaving even in the worst conditions in their new settlements, some farmers now have resorted to either weaving or rickshaw pulling and some small and marginal jobs. There are mainly handlooms, with a hand drawn small pit loom for weaving the world famous Shantipur "Tant Sarees". They get a wage varying from Rs. 70 to Rs.100 per day and work with all their proficiencies, energy and distress to weave one saree per day. They say that, their pit looms are all that they have and every time they are moved, they have to plant their looms in the new places, and in all these, their days of income slowly wanes. Moreover, their earnings from this industry is too low for them to build a good strong place of decent residence. Loss of enormous amount of multiple cropped land, has increased unemployment, and has created a continuous pressure on land and increased the number of surplus labour and resulted in a huge monetary loss. Many people, mostly from Hijuli, who witness their properties to be gradually vanishing, have gone to Mumbai and Delhi to work as assistants to the jewelers. However, the MGNREGA scheme of the Government of India has created some jobs, but frequent flooding and slumping of bank and advancement of the river inland, has again left the people deprived of the benefits of this scheme. One of the main jobs in this scheme in the villages is guarding the advancement of the river by sand bags.

5.3) People's Perception about the Erosion.

In order to study what people feel about the causes of erosion, a questionnaire survey was conducted. The results obtained are as follows:

Table VI Causes behind Erosion as Felt by the Inhabitants.

Causes	Percentage population(surveyed)
Natural	33.18
Anthropogenic	16.14
Farakka Barrage	13.90
God's Will	36.78

33% people attributed the cause to Nature, not sure what exactly happens. 16.14% and 13.90% people find anthropogenic causes and Farakka barrage responsible. However, a huge no. of people (36.96%), attribute it to the will of God. Now, the people, who attributed the cause to the will of the Almighty, were either old or middle aged, God fearing and of course illiterate or have some minimum literacy. People, who held the Farakka Barrage, and anthropogenic causes responsible, were at least holding a secondary educational degree or above. However, there were some exceptions as old men who had no education came forward to ascribe the cause to Farakka Barrage as they say that before it came into existence, erosion did not take place at such a rapid pace. It was after the authorities started controlling the river, flood frequency has increased which leads to erosion. However, some findings surely tell us the gender gap still remains predominant in our social system. Women in large numbers, could not even imagine, how the actions of human being can cause flood and its concomitant evils.

VI. CONCLUSION AND SUGGESTIONS

Though people have lost almost everything, there has evolved a strong bondage between the neighbours, as if the total neighbourhood is a single family. Their distress, the common cause of suffering and their continuous struggle through generations, have made them united, resilient and this is the strength with which they fight for existence against the mighty Ganges and staying together is the only means of coping with this environmental problem. Many steps are being taken by the government to minimize the rate of erosion. However, compared to Malda and Murshidabad, Shantipur gets lesser importance. It is true that a number of schemes are introduced, but in reality, only sand bags are used as bolts. To fight erosion, a number of measures can be effectively followed.

- i) Concretization of river banks,
- ii) Plantation of erosion resistant crops,
- iii) Regular desilting of the river bed.
- iv) Use of nut fibers as well as synthetic erosion control options have been proved useful by the erosion control team of the Granite Environmental.
- v) Use of erosion control mats of coir straw, wood fibers and coconut fibers and synthetic erosion resistant mats.

In future, we shall look forward to bold Government schemes and planning for doing away with this all devouring menace.

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