

## Research Paper

## Bank Erosion and Management –A Human right Perspective: A case study Block Suti –I and –II of Murshidabad District, West Bengal, India.

**Dr. Anuradha Sengupta**  
Principal Dumkal College,  
Murshidabad.W.B

**S.M. Appel Mehammud**  
Research Scholar,S.U ,  
Rajasthan

### ABSTRACT

*River Bank erosion and flood in Murshideabad has been natural threat since time immemorial. But the destructive velour of the river Ganga and Padma ignoring all the traditional and modern techniques of BE has all the requisite ingredients for evoking research interest. All though it is a critically acclaimed truth that the changing courses of the river, bank slumping and flood are all but natural processes and inevitable circumstances experienced by the alluvial plains of all the civilizations in all the ages, establishing human rights with such an natural phenomena is an oxymoron.*

The point of justification in linking HR creeps in when man by hills determinism and intelligence attempts to control and tem the whims and wrath of an undefeatable nature. The structural, technical and economic preventions those have so far been undertaken to control the riverine morphological imperatives causing BE and flood, seems to have in this disaster battered geographical unit, unfathomably swayed into the waste pit. As per govt. record more than 32.5 thousand hectares of land has been washed out since 1931, till date mostly by river Ganga and Padma in this district.

The Farakka barrage constructed across the upper stream of Ganga river at Farakka in Murshidabad district of West Bengal, India in 1971 -72 had some objectives like to solve the problem of siltation, navigability and transport and communication system had in turn increased the rate of erosion in its courses causing severe problems like loss of land property, population displacement, international border disputes, marginalization of rural communities living along the river bank. Block Suti 1 and 2 in Murshidabad district have been chosen for the study. The obvious question that captures every consumerist and technology dependent mind is that how far technology has equipped man too brave these natural slaughter, over powered to mantle human existence and safeguard the inborn rights which they are entitled to by virtue of being human beings in this troubled phase. The authors in a comprehensive language incorporate with maps, diagrams, table, charts and recent statistical methods tried to illustrate in interesting ways to produce the socio-economic and human rights along with the causes and consequences of BE with present situation, out look, experiences and prospect of relief and rehabilitation.

**Key Issues:** 1) To mitigate the problem arised from river BE mainly ; shrinkage of geographical area and degradation of socio economic environment

2) To find out the way to check the violation of HR evoked from BE

3) To find out the alternative way of urban and rural planning not disturbing the natural flow of these mighty rivers.

(4) To raise people' s voices fight for their own cause and draw the attention of the outside world especially the media activities and human rights organizations.

(5) To investigate the actions of the Govt. and prepare plans and programmes that would mitigate the local needs and review the achievement.

(6) Estimation of the loss of renewable and non –renewable properties and extend mental support to the distressed.

(7) Perception of the dwellers on the cause and consumer of flood.

(8) To review the existing situation from time to time and quest solutions for a better alternative.

(9) Reviewing the relief and restoration and the perception of the distressed /how far have these relief been able to mitigate the needs of the local people.

**Key words;** ABP -Ananda Bazar Patrika, Kths-Khathas, BE- Bank erosion. HR- human rights, FC-Flood control.

### Review of literature:

Various hydro-geomorphologic aspect of deltaic channel all over the world has been studied in considerable details as deltas are the most densely populated part on the earth surface .Changes of course ,BE and flood events exerts great influence on human life and activities. So this aspect of deltaic fluvial morphology have been taken a place of keen interest of concerned.

According to renowned Prof S.R.Basu(1993) higher level of beds of distributaries, obtuse angular disposition of the off-take points to the feeder river, beheading of the off-take point due to differential migration of the knick point are responsible for decaying and changing of course and flood in deltaic drainage system in Benga.l Change of river course and flood in deltaic part of the world are indiscremenable part of fluvial geomorphology. M. Moriswawa in her book , has

discussed elaborately these facts. To explain, she took help of so many equations. In Hindu epic Mahabharata, Krishna Dwaipayana Veda Vas explained the origin of the river Ganges as “To give divine relief of souls of ancestors, who were trapped in and call down from heaven following the part pioneered by Bhagirath to set free from penalties of king Sagar and his sons and to fall in to the bay of Bengal, at Ganga Sagar. This story reveals the fact that Bhagirathi –Hoogly was the main course of the river Ganga not the present course of Padma.

S.C Majumdar in his lecturer in Calcutta University (1941) on the formation river of Bengal delta, says that the seriousness and complicity of the river problems have arisen partly due to change in the course of some of the major rivers and partly due to human interference with the natural process in the build up the delta. Pre-mature reclamation and encroachment of river beds and swamps of deltaic Bengal exerts crucial environmental effect. He wrote, “As man requires certain area of land to house and nourish himself and to meet his various needs, as a cow needs a certain grazing ground so does a river require a certain spill area where it could relieve itself of portion of its silt which would otherwise deposit in its bed and would gradually deteriorate it.” Sir W. Willcocks (1930) in his lecture on the Ancient System of Irrigation in Bengal treats the river Bhagirathi as an irrigation channel. K. P. Bhattacharya in his book “Bangladesher Nadnadi O Parikalpana” explained Bhagirathi as an artificial channel and he has several arguments against his view. Amitava Bhattacharya, river scientist and engineer, wrote that the river Ganges has bifurcated at Chhabghati near the P.S of Suti (24-26 N and 88 2 E) in the district of Murshidabad. But at present Bhagirathi takes off from Ganges at Mithipur, some 40 kms south –east of Farakka 9 (Kalyan Rudra). Deterioration of the river Bhagirathi is evidenced in many publications of as past as 15th century. In 17th century, French traveler Tavernier (1666) in a letter dated 6.1.1966 wrote that the Bhagirathi off take was dry and not navigable except during the monsoon months. The quotation from him justifies the present situation. Bernier while passing from Rajmahal to Cossimbazar expressed his views about the river route which was impracticable and when the river bed became down in respect to water, it is impassable because of large sand bank, which lies before the town called Suti,” (Final report on survey & settlement operation in the district of Murshidabad. After 100 years, the condition was in Rennel's time (1766). Rennel wrote that the River Bhagirathi at Cossimbazar was almost dry from October to May but Hoogly river was navigable. This shallowness and obstruction by shoals and bars of the river Bhagirathi are due to deposition of silts at the mouth of the river at faster rate leading to BE.

Colbrook (1801) wrote in the magazine of Asiatic society as “The Quantity of land which has been here destroyed by the river, in course of few years will amount upon most moderate calculation to forty square miles or 25600 acres” These crucial environmental events of BE and consequent changes in the course of rivers and flood hazards are concerned in many publications even from long past to present works of environmental scientists and works of other natural science. But no comprehensive work is yet done. Particularly impact of the river Ganga on these environmental issues are yet not assessed. So my effort is on the river Ganga and its distributaries such as Jalangi and Bhagirathi to assess the effect of change of course and decaying of this river on human settlements and on living of habitants on her bank particularly in the district of Murshidabad and to point out the violation of Human Rights.

### Introduction

Geographically the importance of the Murshidabad district surpasses others because of its location, almost in the middle of W.B, bordering river Ganga (Bhagirathi) connecting North Bengal with South. More over Murshidabad has become the gateway to the north and northeast after the completion of Farakka Barrage. But at present the district Murshidabad has become a victim of the BE of the Ganga (Bhagirathi) resulting in the appearance of large sand dunes encroaching the river bank and leading to the displacement of thousands of farmers. But critical issues are seldom feature of the mainstream busy in reporting political issues which has raised a major environmental hazard violating HR.

The Ganga our subject in this paper is a perennial river (2510 km) originating from the mighty Himalaya flowing east ward to the northern plain of India and drains into the Bay of Bengal. The northern plains thus have been shaped by the rich alluvial deposits carried by the river itself over a vast period of time. On its 2510km course in plains, Ganga flows southeast through the Indian states of UP, Bihar and West Bengal. On its way after crossing UP and Bihar (at Bhagalpur) the river tend to meander at the Rajmahal, and started to change its course southward. At Pakur the river begins its first attrition with the branching away of its first tributary the Bhagirathi which goes on to form the river Hoogly close to the border with Bangladesh, the Farakka barrage, built in 1975 controlling the flow of this mighty river diverting some of the water through the feeder canal linking the Hoogly to keep it relatively silt free. Such locking and suppression probably induced the systematic variations in flow and bed topography creating the adverse affect leading BE and hazard to the environment.

### Methodology of study:

- (i) Study and analysis of the existing report on river BE and devastation.
- (ii) Villages of Aurangabad-I & II, and Bhautali, were chosen for the case study in Block Suti-I & II and nearly 80 household were surveyed by questionnaire to serve the purpose by random sampling method.
- (iii) Collection of secondary data like literatures, charts, statistical information from District Irrigation Division under the supervision of an Executive Engineer and from the Dist. Agriculture Office, Murshidabad, the local news papers (Jhar, Murshidabad times etc.) and district collectorate office.
- (iv) Elaborate analysis and discussion on the major causes and consequences of river BE along with socioeconomic effects and right of rehabilitation.
- (v) Cartographic and statistical representation of both the primary and secondary data and the related major and minor topics.
- (vi) Articles of Human Rights

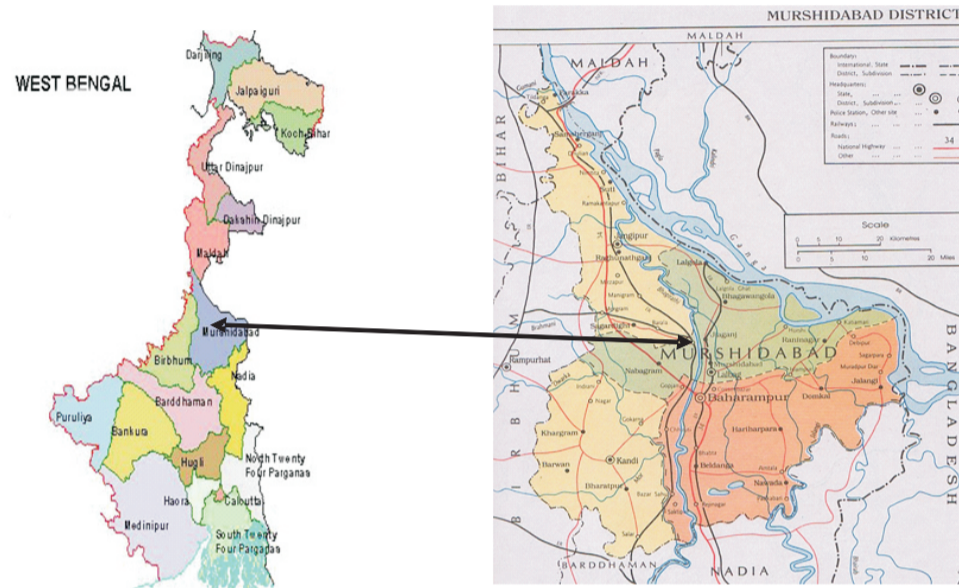
### Findings

River BE is one of the most important effects of shifting river course. Going by the past and present records an

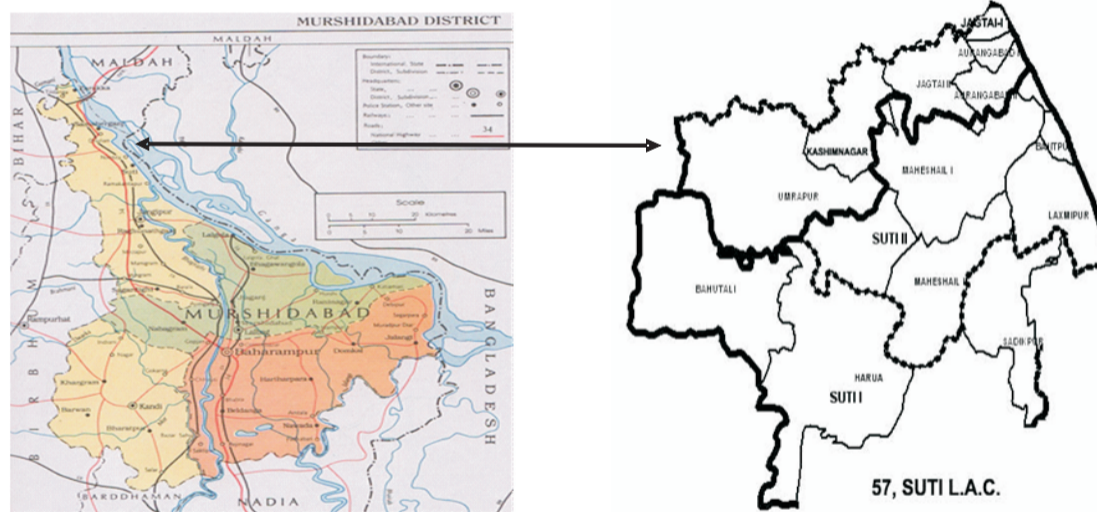
astounding scenario is exhibited. From agricultural point of view we can describe it in a single word as 'pathetic'. This loss of land property have taken its toll over the district's economy.

**BACKGROUND OF THE STUDY AREA**

The Murshidabad district of West Bengal is situated on the south of Ganga river. Latitude and longitudinal extension of the district is 23°43' N. to 24°52'N. and 87°49'E to 88°44' E. respectively. Bhagirathi is the branch of Ganga (from Noorpur 25 km below Farakka) flowing away to the south it leaves from the district just north of Palessey. The river Bhagirathi has bifurcated the triangle shaped district and divided it into two broad geographic regions and Suti Block I &II, our case study areas are situated on this bifurcating point. These two regions have their striking differences in their geology, in agricultural pattern and also in the habitation



MAPNO 1&2 Location map of Murshidabad in West Bengal



Location of SUTI block in Murshidabad MAPNO 3&4

Courtesy:-Election commission of W.B.

**SUTI I**

Suti-I is one of the Blocks in Murshidabad District in West Bengal State which is 45.8 km far from its District Main City Murshidabad-Jiaganj and 222 km away from the State's Main City Kolkata . Nearest Towns are Raghunathganj-II(8.9 k.m.) ,Suti-II(10.2 k.m.) ,Raghunathganj-I(10.8 k.m.) ,Shamsherganj(17.8k.m). Suti-I, Bahutali, Bansabati, Nurpur, Sadikpur, Harua, are the affected villages of this Block.

**SUTI II**

Suti-II is located 55.9 km distance from its District Main City Murshidabad-Jiaganj and 232 km from Kolkata . The affected villages in Suti-II Block are Aurangabad-I, Aurangabad-II, Jagtai-I, Jagtai-II, Kasimnagar, Towns affected are namely; Shamsherganj(8.3 k.m.) ,Suti-I(10.2 k.m.) ,Raghunathganj-Ii(19 k.m.) ,Raghunathganj-I(20.6



k.m.)

**The mostly affected villages of Suti Block I&II by bank erosion**

Suti-I	1.Sadikpur 2.Nurpur
Suti-II	1.Aurangabad-I 2.Aurangabad-II 3.Bajitpur 4.Laximpur 5.Jagtai

**POSSIBLE CAUSES OF BANK EROSION.****Natural Causes:-****1.Geology of Bengal Basin and change in the course Bhagirathi- Hoogly**

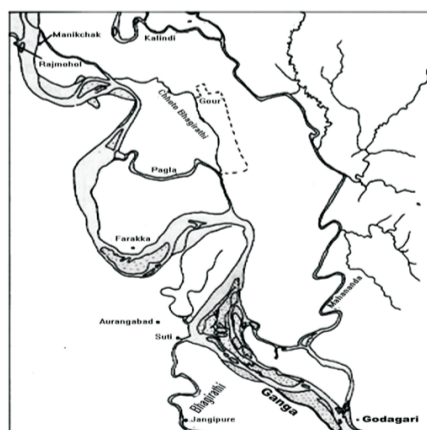
1.The area of Ganga –Brahmaputra basin is 150000 sq km . In a depressed synclinal shield region, the basin plain was formed over a prolonged period of seventy million years with the accumulation of silt and clay. Ganga and Brahmaputra bring an amount of 166.70 crore ton of silt per year and deposit them in such a layering pattern that the configuration was attained. In this vast basin each sq km area receives 10.30 lakh cubic meter water through rain fall every year. Such huge amount of water of the Ganga – Bramhaputra Basin passes to reach Bay of Bengal. With the Meghalaya pleatue in the east and Chottonagpur Sheild to the west , the narrow passage of the basin having a length of 200 hundred km allows the ice-melt water of the rivers of U.P , Nepal and Tibet to pass through. It is also known as the Rajmahal –Meghalaya Gap. Through this gap enormous quantity of water( 85000 crore cubic meter) of the Bramhaputra ,Tista,Mahananda and other rivers of North Bengal take their way .But as these rivers are not able to contain such a huge amount of water in their shallow courses, so occurrence of flood is a very common feature of Malda , Murshidabad and 2 Dinajpur districts in the wet months. According to the Geologists over the last two centuries, due to the orogenetic and epeirogenetic forces from within the earth, the geologic stratus of the basin are slanting eastward i.e from the middle eastern India towards the Bay of Bengal contrarily, many of the rivers have left their previous courses as paleo-channels and started flowing within new channels towards the east.

In order to adjust with the changed configuration of the Bengal Basin the rivers are proceeding east ward leaving their former courses and taking new channels of the east. In 1959, geomorphologist Morgan published an article analyzing the bed of Bramhaputra in Bangladesh which is gradually depressing due to excessive silt load. This is the reason for which Ganga is shifting eastwards. As a result the east bank of Ganga is eroding and curving contiously and the west bank is standing with high elevation. Consequently ,the distributaries like Bhagirathi ,Bhairab ,Jalangi etc being delinked from their point of origin with Ganga. A large numbers of wet lands signifies the channel shifting.

**2.Ganga–Bhagirathi ;the history of Bifurcation**

Near Mithipur 40 km.south east from Farakka Barrage in Murshidabad. Ganga is bifurcated in two flows –one is Bhagirathi and other is Padma. After passing 60 km.path Padma enter Bangladesh and the other narrow flowing Bhagirathi covering 500km flowing southward to reach the Bay of Bengal. From Krishnanagar to Gangasagar –this part of course is known as Hoogly With the changing course of Ganga, Bhagirathi has shifted 35 km. southeast from its previous course .

The first description about the history of Ganga –Bhagirathi bifurcation was found in a letter Tavarneer written to Barnier in 1666 on 6th January. This reference is also evident from the Geographical account of “Renel” named “Memory”of a map of Hindusthan “ in 1688. At this point of time Bhagirathi was bifurcating from Ganga near Suti of Murshidabad.

**MAPNO 5**

Position of river Ganga in Murshidabad 1797, 1847 and 2007A.D (K.Rudra, Banglar Nodikatha)

Major Colbrook wrote in an article published from Asiatic Society in 1801 that the Ganga-Bhagirathi connection was found at two sites-one is at Mohanganj near Farakka and the other was at Suti.

Description of Bhagirathi bifurcation can be obtained from the reports of irrigation department from 1824 -1852.in 1824 Bhagirathi originated from suti,22 km. away from Farakka Barrage.But in 1825,Ganga shifted 11 km. southwest of

Farakka Barrage and captured some parts of Bhagirathi. So by 1828,Ganga attained a new course near “chokka”,12 km.southeast from Farakka.From 1825-30, the connecting part between Ganga –Bhagirathi shifted 5 km. more towards southeast.It was 5 kms. away from Suti. In the following two decades starting from 1820 Ganga and Bhagirathi Changed their courses severally from “Suti to Choka”.In 1847 to retain the flow of Bhagirathi in dry seasons, 3 km. long passage was dug from Suti to further east.

River action in this part of Ganga involves bed erosion, bank undermining and back collapse.Erosion of alluvium on the river bed involves lifting of loose particles particularly by turbulent water.

Bank collapse occurs as the river bank of the mighty Ganga are undercut. At some critical points the bank slopes become unstable and the upper part of the bank falls in a slides down producing a gentler slope until undermining begins . In case of Ganga bank, collapse is aided by ground water seepage or effluent seepage in the dry months of the year ie from March to August

Excessive bank slumping coupled with water saturated block collapse along the bank lines is the main reason behind BE in Malda and Murshidabad resulting river course change.

New channel are cut into alluvium by gulling. Gullies are extended during rainy season when surface runoff pours in drainage undercutting the head and incising the floor accelerating bank BE at an alarming rate.

**3. Water discharge:** The main reason of BE is due to fluctuating water discharges from the Farakka barrage through the feeder canal at Jangipur .

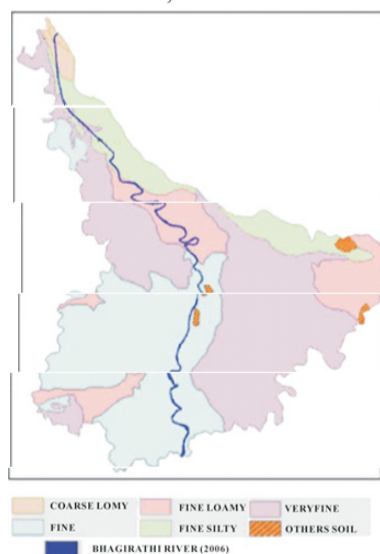


Maximum water discharge of feeder canal in CFS(source-CPT)

After the construction of Farakka barrage about 262km (1971),the 40000 cusec of water drainage from Farakka upstream to Bhagirathi river through the feeder canal(38.30km) the high discharge of water increases the stream power and high stream power has increased the rate of BE and flood.

**4.Soil types**

The Murshidabad District belongs into the zone of alluvial soil. The characteristics of the soil also have great impact on the extent of erosion. The banks adjacent to Suti block(1 and 2) have been formed by alternate layers of silt, clay and sand .The high velocity of water colliding with the sand particles and chemical composition of alluvial soil leads to turn the soil becoming more acetic and erodable .For the soils present along the bank have pore space which gets filled up with water of river during the monsoon months. When this water gets inside these pore space the soil particles (chemical composition) here liquefied and in the winter months, these soils become loose causes BE leading to change its courses.



MAPNO 6

**SOIL MAP OF MURSHIDABAD****5. Stream power**

One of the most important expressions of the hydraulics of flow in a channel is stream power which is related to BE proportionate to the bed slope, discharge and specific weight of water. In the region after the Farakka barrage the slope variation is less but the water discharge is high which initiates the changing of course of river Ganga.

**6. SLOPE**

The less variation in hydraulic slope is not capable of passing in the huge amount of water through its channel which in turn initiates the changing of course of the river Ganga and Bhagirathi to the south. Geomorphologists are of the view that if the general slope of any area changes from moderate to gentle ( $1^{\circ}$ - $2^{\circ}$ ) the course of river changes from straight to curve, hydrologist opine that as excessive siltation on the river bed results in reduction of both the bed within the slope and depth of the river. As a consequence the change in course of Ganga started way back in 1976.

The river Ganga brings 80,00,00,000 tons silts every year. During the past three decades an amount of 1856,00,00,000 tons silts have been deposited within the bed. A survey made by the Ganga Bhangan Protection Action Committee has estimated that at Murshidabad the depth of river bed during the season reduces from [10.61 mt.](#) as low as 1.52 mt. But some back the depth was 25.76 mt.

The following map( no 7) shows the shifting course of river Ganga from the periods 1847-2007 i.e in about 160 years and the location of Suti which has also changed. But the fact is that the rate of erosion is more in the recent year than in the past.

By the latest reports Ganga has shifted about 1 km. further eastward during the last 10 year

**Man-made causes:-****1. Construction of Embankments and its effects on BE**

Till 1931 the course of the river was more or less straight between Rajmahal and Frarakka. But with the construction of the embankment after 1963, the problem of meandering towards the east bank of Ganga increased. It has also been recorded several times that as much embankments have been constructed till date all have been destroyed by the river. It is found that the striking of river water against the concrete walls of the embankments increased the potential erosivity of the water.

**2. Brick Making**

Due to the prosses of using of alluvial soil for brick making, digging the soil from the river bank is the another cause of bank erosion. In Suti block I & II there are about 11 brick fields, the raw material of which are being collected from the river bank indirectly leading to BE. One a day a brick field dig approximately 12 to 16 trucks(11ft×6ft×2ft)soil from the side of the river for the preparation of 800-1000 bricks. To support the need of human habitation it thus initiates to create hazardous environment.

**3. Over Population:**

Over population is a major cause of BE in Murshidabad. An official Census 2011 detail of Murshidabad, a district of West Bengal has been released by Directorate of Census Operations in West Bengal. In 2011, Murshidabad had population of 7,102,430 of which male and female were 3,629,595 and 3,472,835 respectively. There was change of 21.07 percent in the population compared to population as per 2001. In the previous census of India 2001, Murshidabad District recorded increase of 23.76 percent to its population compared to 1991.

As per 2001 census, Suti I block has a total population of 139,419, out of which 70,554 were males and 68,865 were females. Suti I block registered a population growth of 25.03 per cent during the 1991-2001 decade. Decadal growth for the district was 23.70 per cent. where it was in West Bengal 17.84 per cent. And these leading growth of population have acquired the land which was under forest cover and some portions of marshy land also. It has been a common picture to look that huge numbers of refugees being settled on the embankments and thus the rate of BE has increase manifolds inviting environmental hazards and inviting the disastrous situation.

All such evidences prove that with construction of banks and excessive siltation the cross- sectional area of the river diminishing. Added with this problem of excessive water pressure during rainy season which readily creates flood and thereafter bank line crack on the embankment.

**Adverse impact of changing course of river Ganga at Suti-I & II.****Loss of landed property**

It is the most important of all the effects of river BE. Going by the past and present records an astonishing scenario is exhibited. Form agricultural point of view we can describe it in a single word as pathetic. This loss of landed property have taken its toll over the districts economy which has largely been in a moribund state over the past few years. The following table exhibits land loss in chronological order :-

**Appendix-A****Yearly loss of land in hecctres (1931-2011) Murshidabad district. –**

Year	Land lost	Year	Land lost
1931-1978	28,290	1995	270
1979	100	1996	465
1980	100	1997	40
1981	80	1998	500
1982	90	1999	511.5
1983	105	2000	628.2
1984	635	2001	300.1
1985	245	2002	102.0
1986	180	2003	482.2
1987	105	2004	387.7
1988	255	2005	331.2
1989	175	2006	421.2
1990	120	2007	656.1
1991	115	2008	624.0
1992	115	2009	91.1
1993	270	2010	82.21
1994	2585	2011	79.28

**Appendix-B****Table showing detailed report of damages from river erosion, Murshidabad district**

Sl. No.		1994	1996	1999	2004	2008	2011
1	Area of specification	8	2	4	2	6	3
2	Total population of the district.	-	-	-	-	-	7102430
3	No. of villages affected	134	59	84	98	116	61
1.	Population affected	32559	586	5115	2448	5416	564
2.	Area affected(in hect.)	2585	465.22	481	387.7	624	79.28
3.	Cropped area affected( in hectors)	1369.8	7102.3	131.0	211.3	244.1	22.3
4.	No. of Families affected	2765	321	954	612	1413	91
5.	Loss of human lives	24	31	11	3	2	-
6.	Loss of livestock	30	10	12	18	9	11
7.	No. of houses damage	6512	672	1224	841	1324	987
8.	i)fully damage	1022	384	673	343	862	447
	Corresponding money value						
9.	ii)severally damage	859	167	244	262	372	294
10.	iii)partly damage	884	119	307	236	90	246

**Appendix-C**

The following table showing the year wise statement regarding the area under erosion and number of population affected due to the changing course of river Ganga.

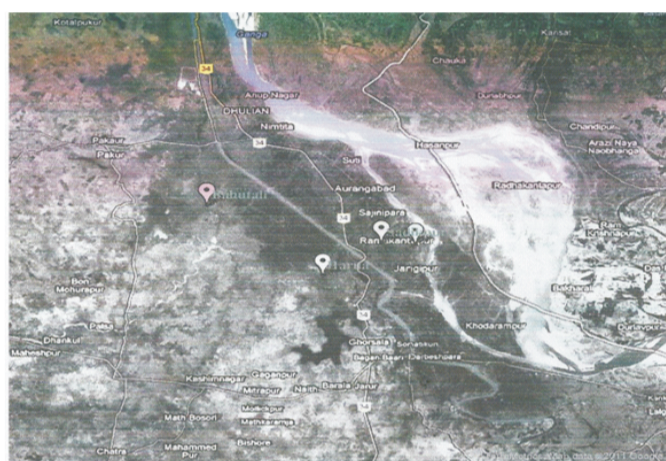
**Block Suti-I & Suti- II**

Name of the Vulnarable G.P	Name of the village affected.	Population of villages
Ahiron	Romdova, Sonapur	7704
Nurpur	Kantidara, Khoribona	12939
Harua	Nayagram, Panchgachi, Soverghat, Paraipur,	11064
Bohutali	Bottola, Sidhori, Gopalnagar,	16414
Bansabati	Nazirpur, Bansabati, Ajagorpara	10534
Sadikpur	Fatuallahpur,	8937



### Appendix-D

Year	Area affected in sq.km	Population affected
2000	6	1563
2001	3	1245
2002	1	880
2003	2	369
2004	3	410
2005	2	355
<b>TOTAL</b>	<b>17</b>	<b>4822</b>



MAPNO 7 A Satellite image of Ganga river in Murshidabad distri



#### Block wise-Adverse Impact Statement : Year 2000

Name of the Block	Affected G.P	Affected Mouza	Eroded Land	Cultivated eroded land	No.of Char
Jalangi	5	17	2878	2196	17
Lalgola	6	9	1379	987	8
Bhagwangola-1	1	3	4894	4182	2
Bhagwangola-II	3	21	7003	5630	42
Raninagar-II	5	14	4635	3358	14
Farakka	6	12	2971	2179	10
Suti-II	2	2	29	28	14
Raghunathganj-II	5	45	3472	1617	3
Saserganj	2	11	1033	429	8

Source- Irrigation Department. Murshidabad district.



**Case studies;of some displaced families (May, 2008), to identify how far the rights of the victims be maintained: \_\_**

Some of the displaced families of erosion at Suti Block I&II were revisited on may 24th 2008 and surveyed by questionnaire method to document current case studies on the living conditions and HR of the victims. Despite the initial noncooperation of the victims for the revisit and survey without any improvement in the previous situations, they finally agreed to provide information about the latest situations. At the same time they disapprovingly objected the researchers self-interest in obtaining degrees utilizing their tragedies beneficially.

Samir Das, daily labourer and the principal bread- earner of a eight member family has three school going children, originally a farmer, has lost 72 kths of agriculture land and 3 kths of landed homestead, totaling 75 kths. Out of this, 20 kths of agriculture land and 7 kths of landed homestead totaling 27 kths were lost in the last ten years. Pampered by river erosion he has changed his dwelling place eleven times, each time settling at distance of 2/3 kms away on an average from the previous one. He had to accumulate the construction materials at his own expenses every time on his present economic constraints, the once marginal farmer feels that commercials crop cultivations, especially of jute is the best suited for the conditions here. The leaving conditions are unhygienic having no provisions for sanitation and safe drinking water. He recalled that during the last floods the District Magistrate approved ten tubewells for the village but only two were seen to serve the villagers. The rest were used as a business commodity by the panchayat members. Whatever relief materials reach in the panchayat office, the villagers did not even get a pinch share of the relief. The harassment of the villagers at the panchayat office for collecting tarpaulin was awful. Many did not receive tarpaulins and had to live on the embankments shelter less, shielded by the sky itself. Some had even going to the District Magistrate's Relief Office at Murshidabad town five times for collecting tarpaulins and had to spend nearly Rs. 150/- as traveling fares. Relief materials like rice, 'chira' are of very poor quality and often mixed with sand Discontented with relief, he felt that panchayati politics is the impediment in the way of both government and non-government relief. At the same time he unequivocally confirmed the relief works of the Ramakrishna Mission Murshidabad to be very to particular and regular. Usually they provide a card per family nothing the total number of family members and supply cooked food, 'Khichuri' and drinking water everyday till the recession of floods. At that time all the affected villagers had received relief from some of the NGO s of Murshidabad namely 1, Indian Red Cross Society, Tel. No.03482 256733. 2, Ram Krishna Mission. Phone, 03482-232300, 3.Sadikpur Unnayan Samiaty.Phone-9851317501, 4. Domkal Bikash Kendra, Ph. 9733606569. Etc.

At present Asura Bibi,aged 80 has 87 years old paralyzed husband to look-after. This old issueless couple has to depend to own their neighbor's generosity in the days of adversity since 10 to 15 yrs after loosing everything for the changing course of the river.

Out of 10 respondents thus 3 respondents had changed their dwelling places 5 times, 4 had changed 8 times and the rest three 11 to 16 times respectively.

The distance involved in shifting for the respondents were varied.

Four have settled at a distance of 2 to 3 kilometers from the previous one each time. Other three at a distance of five to six kilometers and the rest at a distance of nine to ten kilometers. And all of them have to arrange the materials for construction by accumulation at their own expenses.

The case studies and the public perception evident to pinpoint that the HR of the villagers of Jagtai and Aurangabad are being grossly endangered in the event of recurring river erosion and the flood for the district. The article-3 of HR is the right to life, liberty and security of person and article seven right to equality and equal protection of the law without any discrimination. But the present situation can not able to give support to the victims as stated in the article.

Samir Das and his neighbourers all have the common grievances and stories to tell their chief concern during the floods is that of lack of a livelihood. When they can no longer work as daily labourers, most of them maintain their family by borrowing from the village money tender. The female members who otherwise work as grass cutter, agriculture and daily labour – carrying boulders in the nearby construction sites, paid Rs. 500/- per truck also become jobless dependents. The future of the children is no better as extreme poverty has barred most children from education. Those who attend schools remain absent for most of the days. Others even though willing to continue schooling find difficulty in enrolling to schools as they change their dwelling places more often.

Now the equal protection of the law without any discrimination (article -7) and right to effective remedy by the competent national tribunals for acts' violation is the fundamental rights granted by the constitution or by law (article 8.). Right to own property alone as well as in association with others and no one shall be arbitrarily deprived of his property (article 17) with right to work to free choice of employment. Favourable conditions of work, protection against unemployment, right to equal pay for equal work without any discrimination and the right to just and favourable remuneration ensuring himself and his family is an existence, worthy of human dignity and supplemented, by other means of social protection (article 23) including the right to form and join trade unions for the protection of his interest the Right to freedom of opinion and expression. In this connection is the right to a standard for living adequate for the health and well-being of himself and of his family, including food, clothing, housing medical care and necessary social services is the right to security in the event of unemployment, sickness, disabilities widowhood, old age. The right of special care and assistance for mothers and children has been stated (article 25). Finally right to free education at least in the elementary and fundamental stages to the full development of human personality and strengthening respect for human rights and fundamental freedoms (article 26) stands formidable in the context of the ignorant sufferers of river erosion and flood.

But finally, article10.1 provides “ all persons deprive of their liberty shall be treated with humanity and with respect for the inherent dignity of the human ” and article 19 states 'everyone shall have the right to hold opinios without interference “

Now in summing-up the causes and consequences of BE and flood in Murshidabad district in Suti block i & ii it has been observed that most of the people who have affected by this environmental hazards are more less become accustomed with this changing phenomena. And in view of the HR situation of the present study, it emerges as though the existence of these international instruments safe guarding individual rights has been more in the form of paper documents rather than as pragmatic appliances for HR protection. It may at the end be commented that as India is a state party to the ICCPR and

ICESCR it should ,as part of its duty, uphold and oblige the noble objectives of these covenants to ensure the realization of HR in this territory.

Many Nagarik Committees or peoples party constituted at the fastend along with NGO's working in this sphere but the district administrations has to stand as guarantor for the victims so that they can draw loans at affordable rates of interest. Many microfinance institutions have extended their hands but villagers are always at stake with the tension of force migration again

#### Remedial Measures

- 1.Planning of river training project and flow diversion.
- 2.Long spurs to be constructed in the upstream of farakka barrage as suggested by the engineers and geomorphologists in all those places where left maginal bunds have been weekend and a pilot channel may reduce the rate of curvature as done at Raghunathganj creating Netaji Subhas Dweep.
3. To ensure the distressed for a better life
4. To control the trafficking
5. To control smuggling
6. To activate the actual process of flood plain zoning and
7. Rehabilitation as started by Indira Gramin Bikash Yojana.

Usefulness of submerged vanes:

Submerged vanes have been successfully used in controlling erosion of outer banks in meandering river. Placed at the angle varying from 15 to 25 with the mean flow, these inclined vanes with their pressure (stagnation ) towards the outer bank of the meander and their suction towards the inner bank neutralize the secondary current responsible for erosion of bed and bank on the outer side of the channel.

#### Substitute measures:

About 24 lakh people of Murshidabad now live along the banks of Ganga. to protect this 174 km. stretch, 1740 crores was estimated. But in the budget the sanctions for this Irrigation Department was a measure of Rs. 396 crore only. Actually every year between July to September 15 lakh cusec water pass through the poor alluvial basin of Bengal gap which increases bank slumping five times than the dry month. The flood and rain time flow of Ganga should be reduced to 10 lakh cusec to keep the banks in position. To achieve this objective 5-10 lakh cusec water per second or 24,000 cusec water per second to be reserved while for the 3 months rainy season a reserve of 088.40crore cubic meter is required. But only inundation canals, large dams and reservoirs may not sound friendly for biodiversity.for this the traditional system of water reserve may be considered.

Social forestry, population control and water management programs should lie with the panchayet samities, Zilla Parishad, Local association social workers like Sundarlal Bahugunnan and Medha Patkar. The 'bils'and ponds of the region can be used to contain the excessive water of the Ganga.

**Local planning and programmes:** Pragmatic planning at local level is essential to fight the yearly flood and erosion of the district.

- I. The landing pattern of Murshidabad extending over 1740 sp km of the Ganga basin should be gradually yet steadily modified.
- II. Railways, National Highway (NH), highway etc. should be shifted at more secure sites.
- III. The contraction of heavy houses should be discouraged altogether and houses has to be built at least 10 km. away from both the banks. Metalled houses should be replaced by glasses, fibers, tines, tiles, woods and bamboos.
- IV. In the channel bar areas proper survey to be conducted to rehabilitate the displaced and the rehabilitation process to be made systematized and corrupt – free, as with the compensation to each of the families affected.
- V. The central Govt. provided sanction to more than Rs. 1000 crore for the betterment of this erosion and flood affected district, the funds be used judiciously for the sufferers.

The 'char' lands has the potential to be the 'Gram Bowl ' of Murshidabad . The scarcity of funds regarding flood control and erosion can easily be made up with the initiation of the local enthusiasts by generating such economic activities at best which requires negligible primary inputs.

But achieving this end is out and out a tough job given the Farakka Barrage have been permanently silted and so dredging up to a dept. of 60 mt. below the bed is the next immediate action to be taken .

As Ganga is a river of enormous international interests and significance, it is the responsibility of the Central Government and the international community to mantle this phenomenal disaster.

#### Flood plain zoning : Constitutional validity

Of the methods aimed at reducing or redistributing flood losses the zoning of flood plain of a river is an important one. The concept of zoning has become very familiar in the task of town and country planning in which the area of a township is divided into residential sindustrial and commercial sectors with specification as to height ,size, space etc. But the notion of zoning of a flood plain comperatively a newer one than the traditional types of zoning. Each river has a flood plain which is an area that will be flooded and discharge the water of high flood. So the flood plain should be kept free from encroachment by people in order to minimize the flood loss. And thus flood plain zoning is different from the construction of dams, detention reservoirs, cannel enlargement etc. As flood plain zoning involves regulations of landuse, the Government requires legislation to that effect.

**Equality before the law and equal protection of the law:**

The flood plain zoning legislation has to meet the challenge of article 14 of constitution guaranteeing equality before the law and equal protection of laws. Equality clause does not mean equality for all alike as it is impossible to achieve that in this world. It implies that law should operate alike on all persons under similar circumstances.

**Compensation:**

Payment of compensation for acquisition of property by the state is essential to validate acquisition. However, judicial interpretation of the composition clause in article 31, raises problems for acquisition of property for FC works. The judicial attitude on the question of compensation has been considerably influenced by the Supreme Court's decision in the state of W.B.

**Conclusion****Suggestions for a model bill on flood control :**

It is, however, suggested that the union government may prepare a Model Bill and FC giving guidelines to the states as regards the various methods of FC and procedures for their implementation. Then it is for the states to enact laws adopting the most appropriate methods of FC suitable to the local condition. The Model Bill must have provisions providing for all kinds of flood protection measures such as those that physically control the flood including construction of dams, levees, embankments etc. and those aimed at reducing or re-distributing flood losses involving the introduction of flood plain zoning measures in the rivers, compulsory evacuation of persons and property threatened with flood, forecasting system and the introduction of flood insurance, if financially possible.

**Requisition of labour :**

In times of emergency, the state authorities must have the powers to obtain compulsory labour for prevention of serious damage to FC works and to meet emergencies arising from floods to prevent losses. Some of the state acts mentioned already provide for such requisition. To facility such requisition, the authorities must have a list of labour to be supplied by the proprietors or formers whose land are benefited by the FC works. Before the authorities can call upon proprietors to provide labour certain procedural formalities have to be complied with. Every requisition so made, shall in writing state the nature and locality of the work to be done, the number of labourers to be supplied by the persons upon whom the requisition is made and the approximate time for which and the day on which the labourers will be required. Further, the Bill must contain substantive safeguard also to the highest rates for the time being paid in the neighbourhood for similar works and the state government shall fix, and may from time to time alter the rate to be paid to any such labourers.

The humanitarian considerations in this paper had been so fragmentarily strewn that tracing live age of all the previously mentioned facts in the conclusion calls for an interest and composed presentation, so that an authentic aura about the HR of the flood and erosion effected people in this economically parlous district can therein be rightly identified.

Thus, it is understood that the shortcoming rests in the lack of a comprehensive disaster response and mitigation policy based on the people's experiences, felt needs and sustainable development involving the stake stakeholders with an administrative framework to successfully implement it. Public ignorance keeps the issues of fund misappropriations by governmental agencies unveiled year after year. Generating awareness and accessible information network will throw further light into the unsought questions of project failure and gross disregard for HR.

Embanking and the institutional lacuna encountered during surveys, it can be enjoined that these capital – intensive stupendous projects are always undertaken at the onset of monsoon be any comprehensible logic as to why such projects are undertaken at the onset of monsoon and not in the rest of the month of the year certainly not. The river, in spate during the rainy season washes away the constructional materials in no time. While the homeless people hunt up for shelter, the contractors and promoters take into make business. Dr. Kalyan Rudra, an eminent river geomorphologist once mockingly commented (Reference – ABP) that the boulders so far used in constructing spurs would have equaled three Rajmahal hills. By this, he obviously hinted at the economic and environmental imperatives of resource utilization with years of continual blasting in the Rajmahal hills, an ecological imbalance has already taken in.

Improving the present range of technologies applied in erosion and flood abatement requires the guidance of a permanent technical advisory body- along with a permanent parliamentary standing committee adding in developing, reviewing and strengthening unfocussed abatement policies.

At present central Govt. has taken initiatives as referred by the state Govt. to make an action plan to control the rate of BE in the Padma and Ganga basin area from Panchanandapur in Malda to Jalangi in Murshidabad District. The Farakka barrage authority will take the initiative to maintain proper technology to control the bank erosion upto Plassey in Nadia and as per the statement of the central finance minister, it has been revealed that (16th April, 2012, ref. ABP, page no.12) as in the flood control measures taken in Block Suti (study area), some problem have been demarcated so in the sector of bank erosion control of river Bhagirathi, technological specifications should be followed and for this reason central gov't. has undertaken a plan to make a collaborative approach with both the states i.e West Bengal and Jharkhand.

Hope that if the plans and programme taken by the central gov't. are executed then the states may achieve the goal of controlling the so called environmental disaster coming from BE in the district itself along with others.

**References:-:**

- 1 .Kalyan Rudra "Shifting of the Ganga and land Erosion in West Bengal: A Socio-Ecological viewpoint" Centre for Development and Environment Policy IIM, Kolkata 2006 pp.I-43
2. Report on the River Bhagirathi, Hydraulic Study Department, Calcutta Port Trust, Berhampore, Vol. I, July 1992-June 1993.
3. B. K. Gopal, "The Bhagirathi-Hooghly Basin," Published by R. D. Press, 11/B, Chowringhee Terrace, Calcutta. 1972, pp.

73-74.

4. [www.wikipedia.com](http://www.wikipedia.com), free encyclopedia.

5. Official website of Geological Survey of India.

6. Project Report submitted by Arpita Ghosh (2001)

7. **Prof. Basu of S.R(1993)**...Some consideration on the day of the Drainage system of Bengal, C.U Dept. of Geog.

8. **Das Gupta A.B.(1997)** Geology of the Bengal basin Pub. Indian Journal of geology , Vol.-69, -2, P-161-176.

9. **Govt. of Bengal (1931)**-Gazetteer of the Murshidabad dist.

10. Irrigation and Waterway Department, W.B. Govt (2001)

11. **Hanter W.W(1976)** Statistical Account of Bengal.