

RIVERBANK EROSION INDUCED MIGRATION: A CASE STUDY OF CHARBHADRASAN UPAZILA, FARIDPUR

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Abstract: Riverbank erosion is one of the most severe natural hazards in Bangladesh. It erodes enormous amount of land as well as it creates internal population displacement bringing disastrous socio-economic consequences. This study was an attempt to examine the process and pattern of riverbank erosion induced migration of Charbhadrasan Upazila at Faridpur located at the right bank of the Padma River. Charbhadrasan Upazila is the most vulnerable Upazila for riverbank erosion due to char formation, shifting channels, loose materials and high velocity of water in the Padma River during monsoon period. The study based on both primary data collected through questionnaire survey and Focus Group Discussion and secondary data from different sources reveals that due to riverbank erosion the number of migrated households was found 10132 and the number of eroded villages was identified 66 in Charbhadrasan Upazila during 1988-2013. The migrated households propagated all over the study area. Most of the displaced households migrated to big cities particularly Dhaka and nearby district headquarters. Effective and immediate interventions are required to protect riverbank erosion in the study area.

Keywords: Riverbank Erosion, Migration Process and Pattern, Padma River, Employment Opportunities

INTRODUCTION

Riverbank erosion induced migration is a very common phenomenon in Bangladesh. This type of migration is involuntary migration that changes social environment of an area. Being a land of rivers, riverbank erosion often begets this type of migration in Bangladesh every year. The geographical location and natural settings of Bangladesh are highly responsible for the vulnerability of recurrent flooding and riverbank erosion. Most of the tributaries and distributaries of the Ganges, the Brahmaputra and

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the Meghna (GBM) Rivers drawn out within the country either meandering or braided type are susceptible for bank erosion that causes displacement or migration.

An alarming situation prevails in Bangladesh where about tens of thousands of people become landless and homeless through riverbank erosion each year (Keya and Harun, 2007). This natural hazard not only compels people to migrate or leave from their place of origin, but also erodes their homestead land and agricultural land; destroys their houses, property as well as belongings. Riverbank erosion is indeed a silent hazard. It causes pauperization in rural areas in Bangladesh where hundreds of households could become landless in one day (Rasheed, 2008). Besides, Riverbank erosion induced migrants create extra pressure in urban slums and squatters as well as poor pockets of urban.

AIM AND OBJECTIVES

The aim of the research is to focus on the riverbank erosion induced displaces' migration process and pattern at country's one of the most riverbank erosion prone areas of Faridpur.

The specific objectives of the study are:

1. To illustrate riverbank erosion induced migration process and pattern in the study area.
2. To assess the adaptation mechanisms of the displaced HHs during 1988-2013.

METHODOLOGY

This research paper is an empirical study based on primary and secondary data. The entire primary data were collected through questionnaire surveys at household level and Focus Group Discussions (FGDs). Through these sources both quantitative and qualitative data were collected. The head of the households was taken as a respondent. In some cases, homemaker was considered as respondent instead of presence of head. The questionnaire was semi-structured with 30 series of question. A simple random cluster sampling was selected to conduct household survey. The sample size was 304 as selecting 3% of the target households within the study area. Fifteen FGDs have been carried out and among them eight FGDs were conducted with people of the riverbank area and the remaining seven FGDs were conducted with the migrated households. The collected data were analyzed by Microsoft Excel Software and SPSS

17.0 and maps were produced by ArcGIS 10.1. Secondary data used in this study were collected from River Research Institute, Centre for Environmental and Geographic Information Services and Bangladesh Bureau of Statistics, national and international research papers and journal articles.

SELECTION OF THE STUDY AREA

Charbhadrasan Upazila in Faridpur District was selected as the study area for analyzing migration process and pattern of displaced people due to the Padma riverbank erosion. In the study area, the sample surveys were conducted only for migrated households who are living here. They have come from places of origin where are eroded by the mighty Padma River. Twenty seven study sites under Charbhadrasan Upazila were selected for survey shown in (Fig.1). The Upazila occupies an area of 154.65 sq. km. It is located between 23° 33' and 23° 40' north latitudes and between 89° 53' and 90°07' east longitudes (BBS, 2012). The Upazila is bounded on the north by Harirampur Upazila of Manikganj District and Nawabganj Upazila of Dhaka District, on the east by Dohar Upazila of Dhaka District, on the south by Sadarpur Upazila and on the west by Faridpur Sadar Upazila and Nagarkanda Upazila of Faridpur District. There are four unions in Charbhadrasan Upazila. The name of the unions are Charbhadrasan Union, Char Harirampur Union, Gazirteck Union and Char Jhaukanda Union.

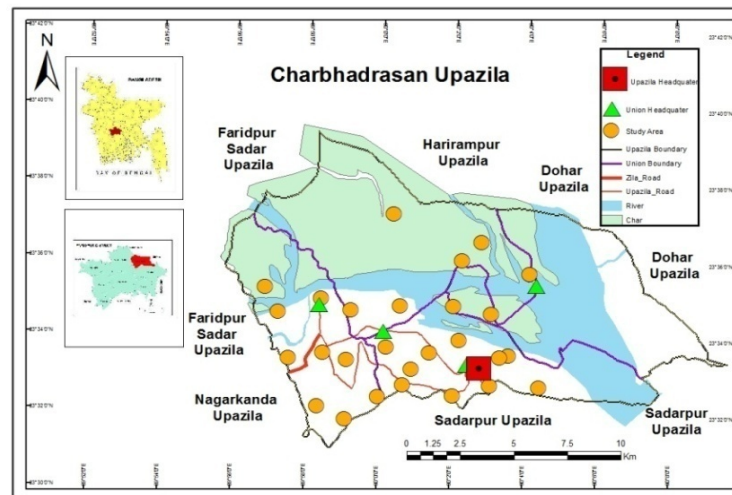


Figure 1: Study Area

Source: Base map collected from LGED, 2013

RESULTS AND DISCUSSION

Migrated Members of the Respondents' Households

Migration is the alternative way of livelihood management. The present study indicates that one-third (33.9%) of the total 304 sample households' family members who migrated shown in (Fig.2). Among them 25% members were involuntary migrants due to Padma riverbank erosion. They migrated immediately after erosion or latter especially when they couldn't find alternative places to live within their villages. They migrated for different purposes. One-fourth (25%) (72 respondents) of the total 304 respondent households' family members migrated for employment crisis. Riverbank erosion is responsible for employment crisis and population mobility. Left of the respondent households' family members migrated for marriage (7.6%) and study purpose (1.3%). Most of the migrated households' (66.1%) family members did not migrate (Fig. 2). Only single person migrated from most of the households (21.1%) of the total respondents' households. About 7.2% and 5.6% of the total respondent households' migrated family members are 2 persons and 3 persons respectively. These migrated members tried to manage their livelihoods by themselves.

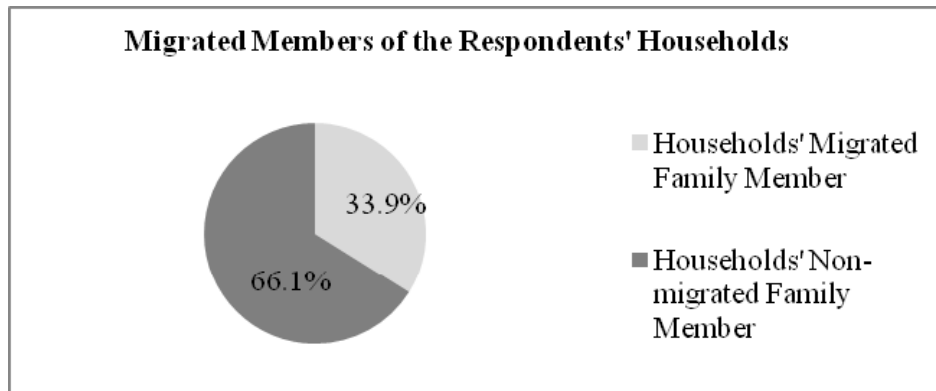


Figure 2: Migrated Members of the Households

Source: Field Survey, December 2013

Migration on a permanent and temporary basis usually acts as one of the most important survival strategies for people in the face of natural or human caused disasters (IOM, 2008). Most of the members of these households (23%) are staying Dhaka City due to their employment opportunities. Dhaka City is considered as the first preference for employment opportunities due to huge population and adjacent to Charbhadrasan Upazila. An empirical research carried out by Mahbub and Islam,

(1991) indicates 34% (772 respondents) of total erosion induced migrants of Dhaka City from 2271 respondents came from Faridpur District. Left members of these households adjusted themselves in Faridpur Town (4.7%), Savar Upazila in Dhaka District and Manikganj Town (1.6%), nearest village (3.6%) in Sadarpur Upazila, Bhanga Upazila and Nagarkanda Upazila in Faridpur District, and Dohar Upazila in Dhaka District and in abroad (1%) mainly India (West Bengal), United Arab Emirates (UAE) and Malaysia.

Migration of the family members in different time periods are shown (Fig. 3). The average (mean) years and the most of the migrated family members' migration duration are 6.56 years and 8 years respectively. The minimum and maximum years of migration of migrated family members are 1 year and 12 years respectively.

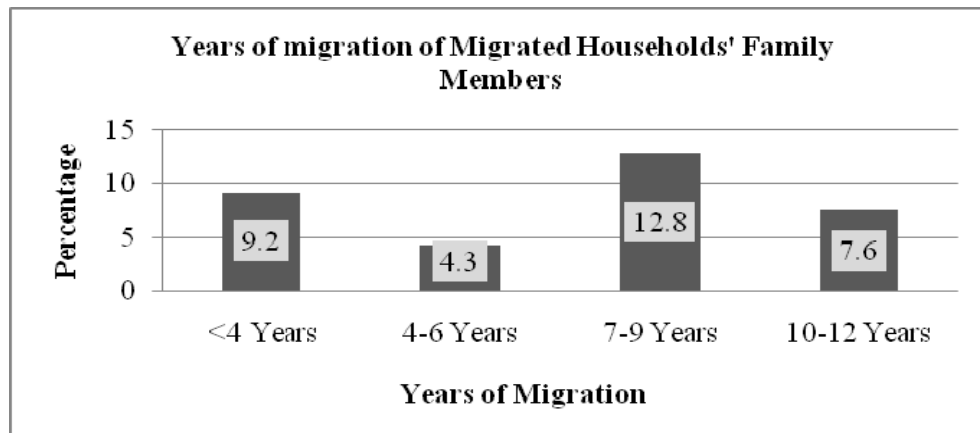


Figure 3: Migration of the Family Members in Different Time Periods

Source: Field Survey, December 2013

Communication with family is a common phenomenon in Bengali culture. Almost one-fifth (21.1%) of the total respondents' (304 respondents) migrated family member communicate with their family 2-3 times in a year. Another migrated family members communicate with their family every month (6.9%), 1 time in a year (4.2%) and 1 time in 2-3 years (1%). Remaining 0.7% (2 respondents) family members do not communicate with their family.

Number of Times Displaced

Table 1 shows the number of times displaced of respondents' households. Maximum displaced time is eight that indicates the severe bank erosion. Highest erosion took place at the right bank of Padma River at 4.4 km during 2005-2015 near Faridpur and Madaripur (Rob and Billah, 2013).

Table 1: Number of Times Displaced

Number of Displaced	Number Times Displaced
Mean	3.36
Mode	1.00
Minimum	1.00
Maximum	8.00

Source: Field Survey, December 2013

Most of the respondents' households (60.2%) were displaced due to the Padma riverbank erosion at less than 3 times. Remaining households were displaced at 3-4 times (12.8%), 5-6 times (12.2%) and 7-8 times (14.8%). They only displaced their living place from place of origin to beside the bank of the Padma River. For this reason, they became more victims. Geographically, Charbhadrasan Upazila is erosion prone upazila in Bangladesh because of the right side of the Padma River is shifting towards right side every year (RRI, 2001).

The study shows that almost fourth-fifth (84.3%) of the total respondents' living place and land were eroded due to Padma riverbank erosion at less than 6 days. Left respondents' living place and land were eroded within 6-10 days (12.8%), 11-15 days (0.3%) and greater than 15 days (2.6%). The average (mean), most of the days during erosion are 8.96 (9) days and 2 days respectively. The minimum and maximum days of during erosion are 1 day and 300 days respectively. These reveal that there is no systematic pattern for the bank erosion of the Padma River because of the involvement of a large number of variables in the process. Many hydrological studies have been recorded both dramatic and gradual shifts of river channels in Bangladesh. This is also a pertinent behaviour of channel pattern of GBM Rivers (CEGIS, 2000).

Place of Origin of the Respondents

Migrants were displaced by bank erosion of the Padma River. Their places of origin were eroded at different years. This study shows that most of the respondents' places of origin were in Gazirtek Union and Char Harirampur Union. The place of origin of the respondents is shown in (Table 2).

Table 2: Place of Origin of the Respondents

Name of Union	Frequency (N=304)	Percentage
Charbhadrasan	34	11.2
Char Harirampur	105	34.5
Gazirtek	127	41.8
Char Jhaukanda	38	12.5
Total	304	100.0

Source: Field Survey, December 2013

Place of Destination of the Respondents

The loss of land due to riverbank erosion has been found enormous in nature and this forced the people to move away from their parental homestead and relatives. The displacement of people caused by massive riverbank erosion takes shelter place known as place of destination (Saleheen, 1991). Table 3 indicates the place of destination of four unions' respondents. The people took their shelter within their unions and outside their unions shown (Table 3 and Fig. 4).

Table 3: Place of Destination of the Respondents

Name of Union	Place of Destination (Village/ Mouza)
Charbhadrasan	Ramnagar, Baliadangi, Hajidangi, BS Dangi, MK Dangi
Char Harirampur	Bishoimatubbarerdangi, Salepur, Ekram Matubbarerdangi, Golap Khardangi, Alfu Matubbarerdangi, Aminkhardangi
Gazirtek	Dhalarpar, Beparidangi, Khalasidangi Hazarbigha, Char Uzzudya, Char Hosenpur, Telidangi, Kanairtek, Char Hajiganj, Majidangi, Amin Khardangi, Natundangi, Baudhyadangi, Eman Khardangi
Char Jhaukanda	Gopalpur, Kalyanpur

Source: Field Survey, December 2013

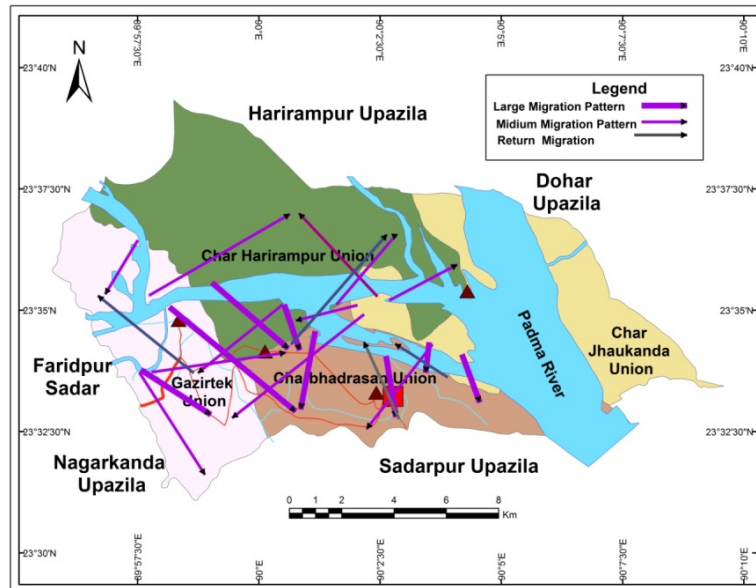


Figure 4: Migration Pattern of Respondents within Study Area

Source: Field Survey, December 2013

Padma Riverbank Erosion and Involuntary Displacement

In the study area, migration is a dependent variable which is linked to mainly riverbank erosion. Padma River eroded homestead land, agricultural land, pond and lost many others property likes homestead plants, tube well, crops of the victims in the study area. Charbhadrasan Upazila is one of the nine Upazilas at Faridpur District in Bangladesh. Four unions of this Upazila are adversely affected by bank erosion of the Padma River. Union Parishad Assessment List (2013) refers 10132 households were displaced during 1988-2013 caused by the Padma riverbank erosion.

Table 4 shows that the Census population of Char Harirampur Union in 2001 was lower than the expected population in 2001 when population growth rate of Faridpur District is 1.38% in 1991 (BBS, 1994) based on Arithmetic Growth Rate formula. It means that this union of the study area was highly affected by the Padma riverbank erosion during 1988's flood. Every union of the study area's population of 2011 referred by Census is lower than expected population in 2011 when population growth rate of Faridpur District is 1.02% in 2001 (BBS, 2006). Gazirtek Union among four unions of Charbhadrasan Upazila was severely affected by the bank erosion of the mighty Padma River during 2004's flood that causes a large number of displacements as shown in (Table 4).

Table 4: State of Migration in the Study Area

Name of Union	Pop.* in 1991	Expected Pop.* In 2001 Using Arithmetic Growth Rate, where $r=1.38$	Pop.* in 2001	Expected Pop.* In 2011 Using Arithmetic Growth Rate, where $r=1.02$	Pop.* in 2011
Charbhadrasan	23305	26521	30076	33143	26479
Char Harirampur	19657	22369	14027	15457	13349
Gazirtek	22544	25655	29257	32241	20845
Char Jhaukanda	4370	4973	3006	3312	2804
Total	69876	79518	76366	84153	63477

Note: Pop.* Means Population and the formula of Arithmetic Growth Rate $P_t = P_o (1+rt)$ where r means Population growth rate of Faridpur District. The bold numeric number indicates the lower number of population than expected population.

Source: BBS, 1994, 2006 and 2012

Again, Census population in 2011 of four unions of Charbhadrasan Upazila under Faridpur District was lower than Census population in 2001 (BBS, 2006 and 2012) of same four unions of Charbhadrasan Upazila. Annual population growth rate of Charbhadrasan Upazila (study area) is (-1.8%) in 2011 where annual population growth of Bangladesh is 1.47% in 2011 (BBS, 2012). This reveals that the Padma riverbank erosion induced migrants became out-migrants from Charbhadrasan Upazila. Four unions of Charbhadrasan Upazila are severely affected by bank erosion of the Padma.

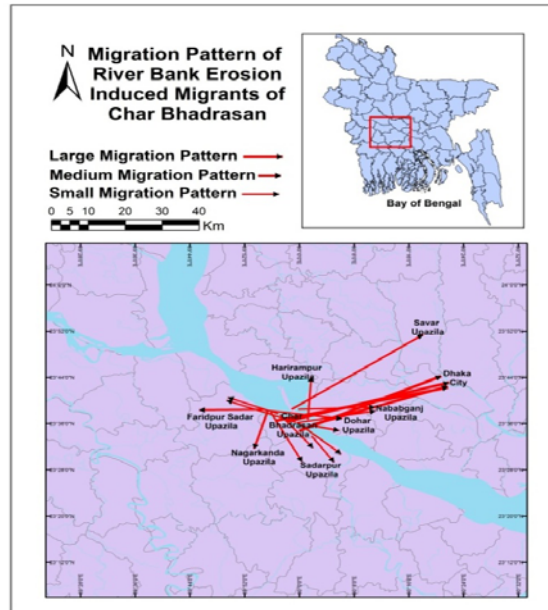
Places of Origin and Destination of the Migrated Households

The migration due to riverbank erosion is involuntary migration because people migrated from their place of origin to place of destination by forcefully to save their lives. Rural to rural and rural to urban movement are common and widespread phenomenon in the study area as well as Bangladesh. Migration in populated developing countries is a very common social phenomenon (Mahbub, 1997). In this study, place of origin cited at union level and place of destination of riverbank erosion induced households are shown in (Table 5 and Fig. 5). Most of the households are out-migrants due to many crises as living place scarcity and unavailable earning sources. They move to some towns (Table 5) and Dhaka city having economic opportunities.

Table 5: Places of Origin and Destination of the Migrated Households

Place of Origin of the Migrated Households	Places of Destination of the Migrated Households
Charbhadrasan Union	Charbhadrasan Union, Gazirtek Union, Sadarpur Upazila and Faridpur Sadar Upazila in Faridpur District, Dohar Upazila in Dhaka District and Dhaka city.
Char Harirampur Union	Charbhadrasan Union, Gazirtek Union, Sadarpur Upazila and Faridpur Sadar Upazila in Faridpur District, Dohar Upazila, Nababganj Upazila and Savar Upazila in Dhaka District and Dhaka city.
Gazirtek Union	Charbhadrasan Union, Gazirtek Union, Char Harirampur Union, Sadarpur Upazila, Nagarkanda Upazila and Faridpur Sadar Upazila in Faridpur District, Dohar Upazila in Dhaka District and Dhaka city.
Char Jhaukanda Union	Charbhadrasan Union, Gazirtek Union, Char Harirampur Union, Sadarpur Upazila in Faridpur District, Harirampur Upazila in Manikganj District, Dohar Upazila and Nababganj Upazila in Dhaka District and Dhaka city.

Source: FGD-1, December 2013

**Figure 5:** Migration Pattern of Bank Erosion Induced Migrants of Charbhadrasan Upazila Working Place of Respondents

Source: FGD-1, December 2013

Respondents conduct various types of work at different places. Exercising a work is the way of livelihood management. Almost half of the respondents (52.4%) try to do their work in surveyed mouza/ village. The respondents who conduct their work in other villages where are adjacent and near-far from their living villages and in other Upazilas as Sadarpur Upazila, Nagarkanda Upazila and Faridpur Sadar Upazila in Faridpur District shown (Fig 6).

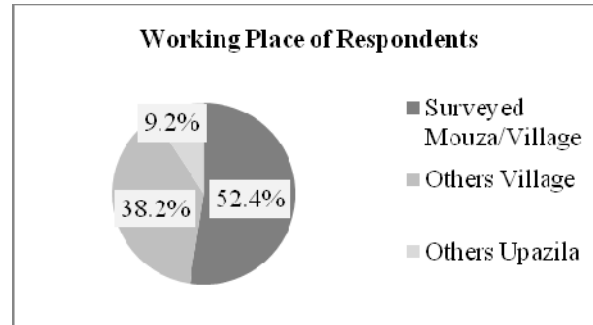


Figure 6: Working Place of Respondents

Source: Field Survey, December 2013

Number of Displaced Households

A total of 2348 and 3713 households were displaced by Padma riverbank erosion in Charbhadrasan Upazila during 1988-92 years and 1996-99 years respectively (Table 6). Riverbank erosion is seasonal. During flood, it becomes more active. Since 1988's and 1998's floods 61% and 68% land of Bangladesh were affected (Miah, 2004).

Table 6: Number of Displaced Households at Union Level in Different Years

Name of Union	Number of Displaced Households at Union Level in the Different Years' Group							
	1988-91	1992-95	1996-99	2000-04	2005-07	2008-11	2012-13	Total
Charbhadrasan	178		304	587				1069
Char Harirampur	1514		1362	443	102			3421
Gazirteck		156	580	1848	512	644		3840
Char Jhaukanda			923	341		302	236	1802
Total	2348	156	3713	1621	1112	946	236	10132

Source: UP Assessment List, 2013 & FGD-1, December 2013

CONCLUSIONS AND RECOMMENDATIONS

Population migration from Charbhadrasan Upazila due to bank erosion of the Padma River was common during and after the flood. But, return migration also observed within Charbhadrasan Upazila. The migrants moved to new forming char from the places beside the bank of the Padma River. Riverbank erosion is now active in four unions of Charbhadrasan Upazila where Char Jhaukanda Union is more vulnerable for erosion situated in middle of the mighty Padma River. The affected households migrated from original place to others losing lands due to the Padma riverbank erosion. They faced a number of unavoidable problems in different times of migration, i.e. before migration, during migration and during shifting household materials and family members and after migration at their new settlement areas. Due to Padma riverbank erosion, they were forced to migrate from permanent living places to other places, mostly unknown to them. Unlike voluntary migration, involuntary migrations caused by riverbank erosion usually affect the migrants adversely and as a result in most cases these migrants cannot improve their socio-economic status. So, the victim households of Charbhadrasan Upazila need special attention from the government particularly with regard to their resettlement, securing employments and reclaiming their lost lands.

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