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River bank erosion and its impact on population displacement in Bauphal upazila under Patuakhali district, Bangladesh

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ABSTRACT

Key Words:

Landless, Displacement, Population, River bank erosion, Livelihood



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Bangladesh is one of the most disaster prone countries around the world with severe cyclone, destructive flood and associated river bank erosion. River bank erosion is one of the major natural calamities of Bangladesh that took place in almost every year. It is a recurrent and highly unpredictable phenomenon. Two unions of Bauphal Upazila (Dhulia and Najirpur) under Patuakhali districts are also affected by river bank erosion. A field survey was carried out to assess the status of river bank erosion and population migration. Focuses of the study are to identify the nature of relationship between river bank erosion and population displacement and to evaluate the socio-economic condition of people in Bauphal Upazila under Patuakhali District. Most of the family size of the study area was medium category (50%) among the respondents (54%) were literate. Most of the respondents (80%) were involved in fishing. Majority (76%) respondents used drinking water from deep tube wells and their sanitation facility were satisfactory (68%) use kacha latrine and (24%) use semi pacca latrine. Most of the respondents (74%) were landless and average land holding of the respondents were 0.54%. Majority respondents (50%) displaced one time during their life time. Among them (65%) displaced permanently and (35%) displaced temporarily. This study describes and explains the estimation of river bank erosion in the study area and human adjustment due to the river bank erosion. Most of the people are suffering a lot of problem, i.e., people loss their homestead area and house, facing economic problems, shifting their occupation also and migrated from one place to another place. Most of the people are unable to regain their eroded land and newly developed char lands. For this hazards social instability also increase is affected area such as political instability.

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I. Introduction

Bangladesh is a disaster prone country (Hossain and Ferdousi, 2004). The Population is 160 million with growing rate of 1.33 per annum (UNDP, 2009) and more than 75 percent of the population lives in the rural areas (Agarwal and Bina, 1990). In recent years, river bank erosion has become a common natural disaster in Bangladesh. Bangladesh is one of the large deltas of the world. The whole of Bangladesh is formed with generic hilly region, limited high land and a vast area of plain land washed by river water. More than 310 rivers and tributaries have made this country a land of rivers (Siddique et al., 2014; RIC, 2008). River bank erosion is a natural disaster and takes place round the year (Baqee, 1997). A large number of people become homeless due to river bank erosion (Das, 2011). This study intends to estimate the amount of river bank erosion investigate into the relationship between riverbank erosion and its impacts on the socio economic condition of the displaced population in the study area. Irregular flooding and fast riverbank shifts seriously disrupt human settlement and activities. Rivers are dynamic systems as they are continuously changing their way. In its natural process, erosion and accrual is normal. River bank erosion occurs both naturally and through human interference. The natural river bank erosion process can produce favorable outcomes such as the formation of productive floodplains and alluvial terraces. Even stable rivers may have some amount of erosion; however, unstable rivers and the erosion that take place beyond normal range on either bank is a serious concern. The socio-economic condition of river bank erosion is sticking as the numbers of marginalized peoples are increasing day by day. People not only loss their houses and agricultural lands but also become displaced often permanently and impoverished. The study area of Bauphal is located under districts Patuakhali. Main Rivers are Tetulia and Lohalia. Najirpur and Dhulia union were selected for research area. These unions are very much affected by river bank erosion. The present study deals with the population displacement and resettlement due to the environmental problem like river bank erosion. Environmental migrants are one of the most burning issues at this time throughout the world. No other disaster is as disastrous as river bank erosion and internally migrated populations face many unavoidable problems at different stages of displacement. Displacement marginalized them in respect of livelihood and forced to lead a floating life. This research can evaluate the socio-economic condition of people of the study area and can identify the relationship between river bank erosion and population displacement. The research action may facilitate actions of responsible authority to protect river bank from erosion and can minimize its impacts on population displacement.

II. Materials and Methods

Two union of Bauphal upazila, Najirpur and Dhulia were selected for data collection to meet study objectives. Total area of Najirpur and Dhulia union are 13356 and 6567 acres and total population 28274 and 16298 respectively.

Keeping in view the main objectives of the present study six villages namely: Nimdi, Dhandi and char kochua villages are in Najirpur union and Ghurchakathi, Mothbaria and Char Basudibpasa villages are in Dhulia unions of Bauphal upazila under Patuakhali district were selected in my study area. Both Najirpur and Dhulia union are situated near Tetulia river and also surrounded by Lohalia river. This locality covers large area where river bank erosion occurs.

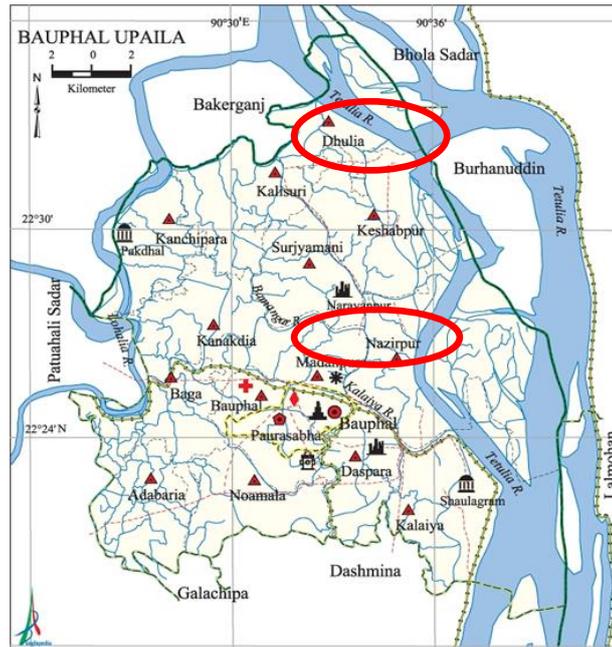


Figure 01. Bauphal upazila map (Source: Banglapedia).

Data for this study was collected both from primary and secondary sources. Primary data was collected through questionnaire survey, Focus Group Discussion (FGDs), Key information interview (KII), Case study and personal observation. We collected data from fifty (50) households from six villages (Ghurchakthi-10, Mothbaria -10, Char Kochua -10, Nimdi, Dhandi -10 and Char Basudibpasa-10) survey using the semi-structured questionnaire and four (04) in depth focus group discussion with village people were conducted. Questions were focused under three major categories viz., about socio-economic condition of a household, hazard they are facing, risk exposure levels and the experience they had about the river bank erosion, its impact on population displacement and pattern etc. A total of ten key informant interviews with notable stakeholders or leaders in the communities, school teachers, upazila statistic officer, Government organization, NGOs work in local office, union parishad member and chairman of Najirpur union and Dhulia Union and aged people as well were conducted. Secondary data has been collected through official documents, books, previous research works, internet, online articles and journals, public documents and internet websites; were analyzed and integrated with primary data.

III. Results and Discussion

Relationship between population displacement and river bank erosion

River Bank Erosion is a one of the common natural disaster in Bangladesh. Land degradation due to river bank erosion is reported at the beginning and at the end of the monsoon season in the Tetulia and other rivers of Bangladesh. Towards the beginning (May to July) the Tetulia devoured Najirpur and Dhulia Union of Bauphal upazila in Patuakhali district. The continuous erosion of the Tetulia River devoured about 1000 acres of cultivable land, 210 households two bazars, three primary school, and 10 mosques under water in last 15 years. Two study unions such as Najirpur and Dhulia union of Bauphal upazila in Patuakhali district are the most erosion prone area.

Table 01. River Bank Erosion in Bauphal upazila (2006-2016)

Union	Area (ha)	Eroded
Dhulia	276	Char Basudibpasa
Najirpur	195	Char Kochua

Source: Upazila Nirbahi Office, Bauphal.

Population settlement in newly developed area

Newly developed char land is disrupted to the landless people. People living in the char area are migrated from other area. In the study area Bauphal upazila, Dhulia union and Chandradip union there are two char land developed namely Char Basudibpasa and Char Kochua where live population. In Char Basudibpasa population settlement was starting in late 1996. More than 5000 people living here and Char Kochua population settlement was starting 1960, more than 8000 people living here. Among these Char, Char Kochua is the oldest char. It is emerged about sixty years ago. It is also larger than the other char. Char Basudibpasa is latest char and people leaving here from twenty years ago. In the study area accretion of soil is continued and formed new land.

Origin of displacement

Displacement mainly confined within the upazila. A question was asked among the people of the study area about their origin of displacement.

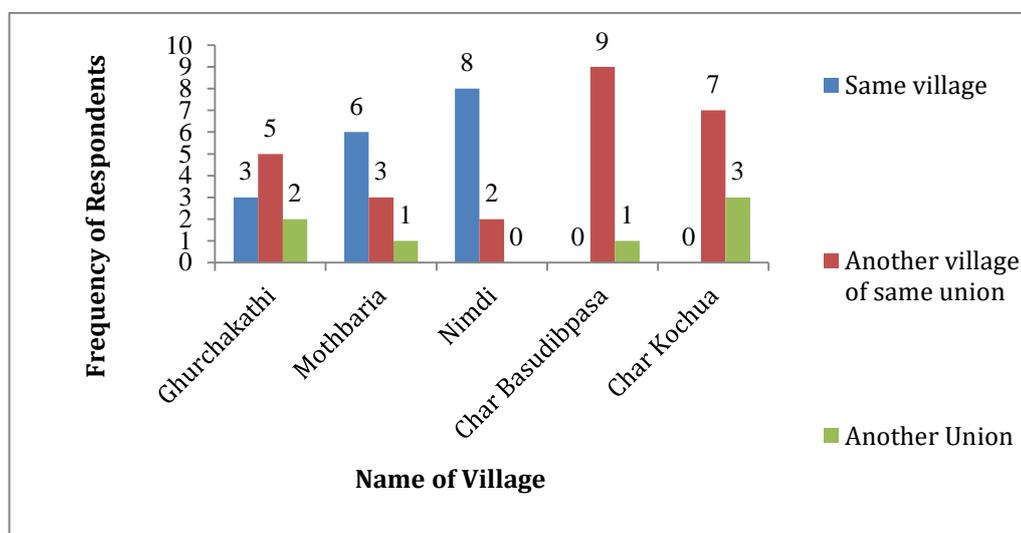


Figure 02. Distribution of the respondents according to their origin of displacement.

Reasons for displacement

There found three main reasons for displacement. In the affected area respondents are displaced due to low income and they are landless. In main land beside the river people are displaced for landlessness river bank erosion.

Table 02. Distribution of respondents according to their reason for migration

Village	Land less	River Bank Erosion	Low Income	Total
Ghurchakathi	7	2	1	10
Mothbaria	0	9	1	10
Nimdi, Dhandi	0	10	0	10
Char Basudibpasa	8	1	1	10
Char Kochua	9	1	0	10
Total	24	22	4	50

Table 02 showed that respondents living in char area mainly displaced for landlessness. 17 people among 20 from 2 char area are displaced for landlessness where 2 people were displaced for river bank erosion and 1 respondents displaced for low income. In Ghurchakathi, Mothbaria Nimdi and Dhandi 28 respondents among 30 respondents displaced for river bank erosion and 2 respondents for low income.

Consequently, the poverty level of these areas is found to be higher (52% in Barisal, 51% in Rajshahi and 46% in Khulna) compared to other areas of Bangladesh and this higher poverty level imposed the local people to have displaced round the year searching for suitable livelihood (BBS, 2011).

Pattern of displacement

According to pattern of displacement the respondents were categorized into two. In Figure 03, it is indicated that majority respondents displaced permanently. Deshingkar defined seasonal migration as a temporary move from and followed by return to the normal place of residence, for purposes of employment.

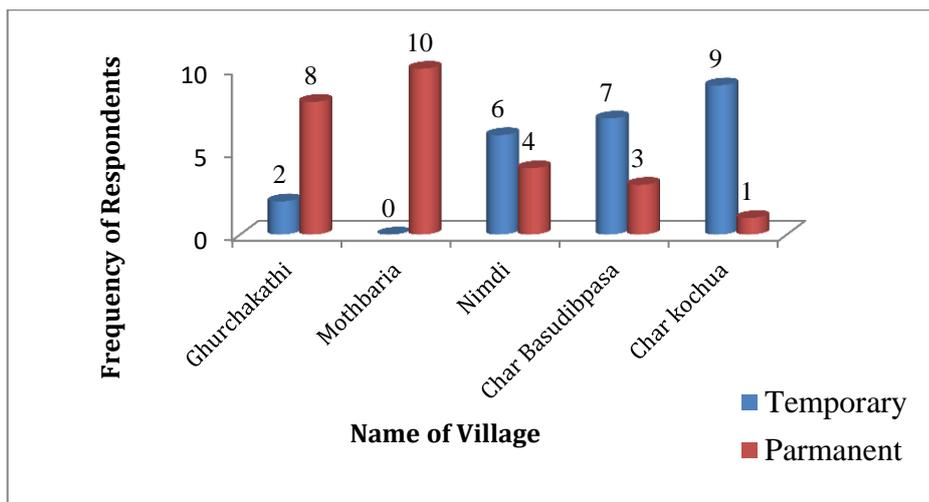


Figure 03. Distribution of the respondents according to their pattern of displacement.

Number of homestead shifting

Displacement at family level is high. Disseminating dwelling structures and reconstructing at different sites require enormous effort, both in terms of money and manpower. Migrated of the following Figure 04 indicated that the worsened situation at the site, where people had no option but to accept displacement as something fated. The number of homestead shifting, the respondents was classified into five categories as shown in the Figure 04.

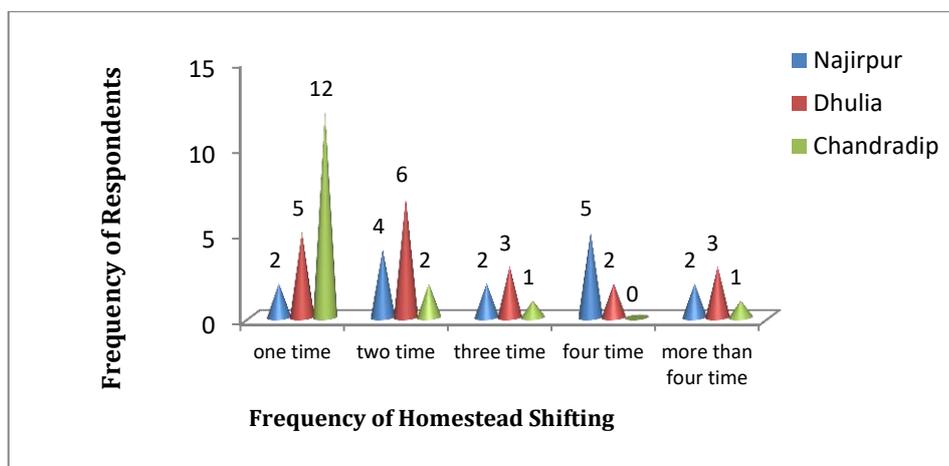


Figure 04. Distribution of the respondents to their pattern of homestead shifting.

Socio-economic characteristics

A closer look at the socio-economic condition of the people is relevant to understand clearly their perception and process of adjustment to erosion hazard. Information collected at the field level and presented here in discussing the general characteristics are on age, sex, literacy, occupational status and changes, health facilities, status of settlement frequency of homestead shifting, choices of areas of further displacement, agriculture practice, cropping pattern and on certain related aspects of population dynamics.

Family size of the respondents

The table below indicated that majority of the respondents 50% had medium family size, 30% had small family size and only 20% respondents had large family size.

Table 03. Distribution of the respondents according to their family size in area the study

Types of family	Percentage (%)
Small (up to 4)	30
Medium (5 to 6)	50
Large (more than 6)	20
Total	100

Types of dwelling house hold

The figure below indicated that 20% respondent made their house with straw, 40% respondent made their house both metal sheet and straw, 30% made their house metal sheet or tin and only 5% had house which made with building which indicates that the house condition of the respondents was not well satisfactory.

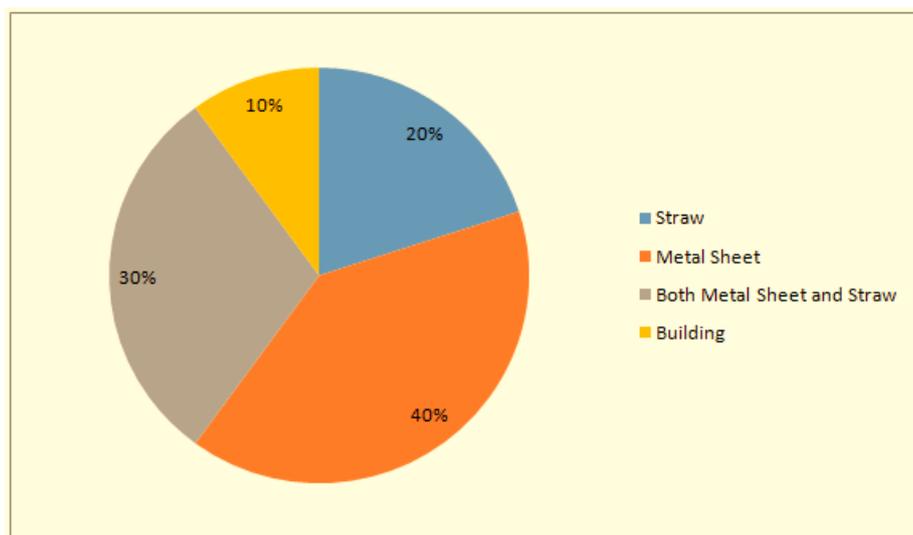


Figure 05. Distribution of the respondents to their dwelling house in the study area.

Educational status

The table below indicated that majority of the population 30% had no educational qualification, i.e., they were fully illiterate in which male population were 14% and female population were 16%. The socio-economic and demographic consequences of migration based on sample surveys and concluded that rural-urban migrants are relatively better educated than the national population found (Rokib, 2009)

Table 04. Distribution of the respondents according to their level of education

Level of Education	Frequency of Respondents		Total (Percent %)
	Male (Percent %)	Female (percent %)	
Illiterate	14	16	30
Can sign only	15	10	25
Primary	16	7	23
Secondary	8	6	14
More than Secondary	5	3	8
Total	58	42	100

Drinking water

Water and sanitation facility is a good indicator of the socio-economic status of a region (Psaki et al., 2014) In this figure indicated that it is clear that 76% of the total respondents used deep tube-wells as he sources of their drinking water and 18% used shallow tube-well and 6 respondents from study area among 50 people said they drink river or canal water by using potash alum which is 10% of total population.

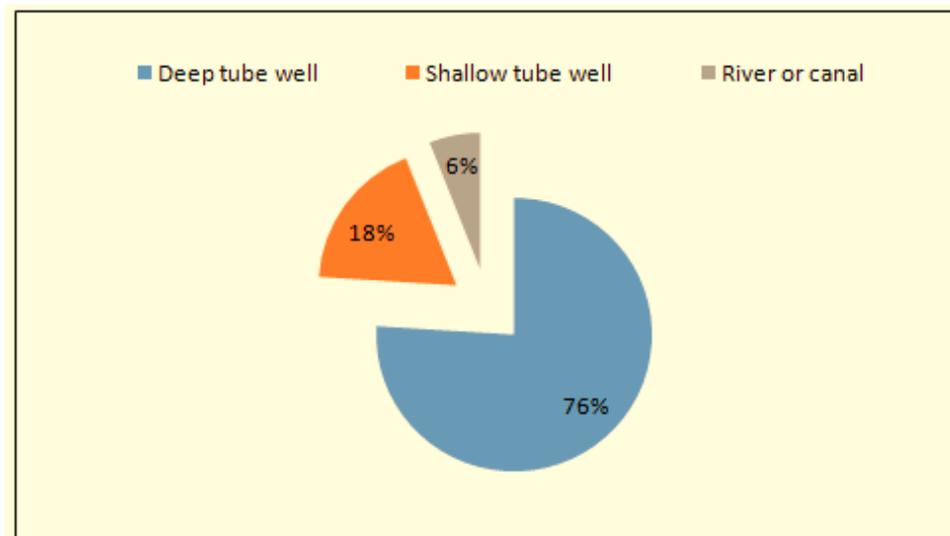


Figure 06. Distribution of the respondents according to their source of drinking water.

Sanitation facility

The figure below showed that 68% of total respondents use kaccha latrine, which is made of ring and surrounded by sack, 24% semi pacca latrine and only 4 respondents of study area.

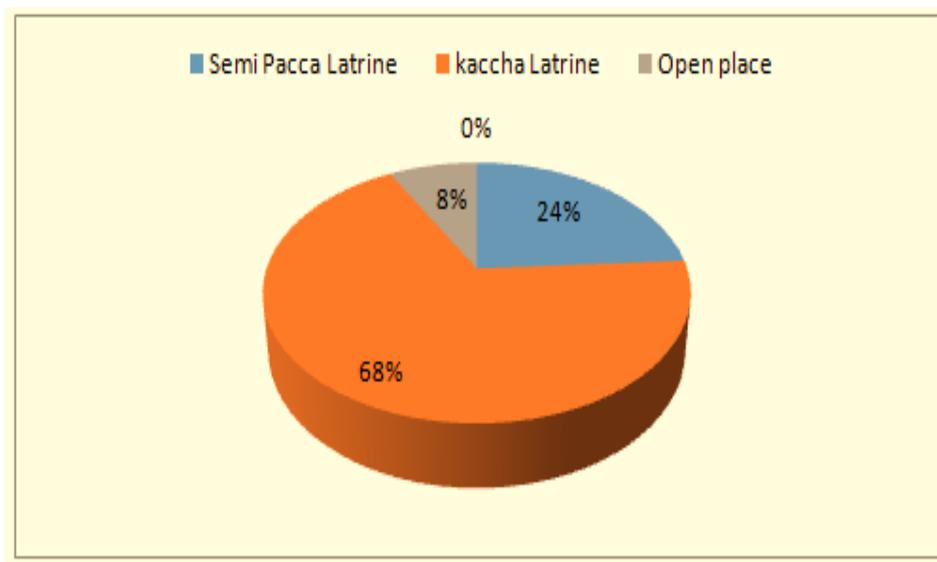


Figure 07. Categories of respondents according to their sanitation facility.

Farm size

This table below showed that majority of the respondents 74% were land less while 24% were small farmer and 2% had medium farm size. The average farm size of the respondents was 0.56 acre, which was lower than that of the national average of 2 acres.

Table 05. Distribution of the respondents according to their land size

Land Size	Frequency of Respondents	Percent (%)	Land Holding
Land less (0-0.49 acre)	37	74	0.56 acre
Small Farmer (0.50-2.49 acre)	12	24	
Medium Farmer (2.50-7.49 acre)	1	2	
Large Farmer (more than 7.49 acre)	0	0	
Total	50	100	

Credit availability

The figure below indicated that majority 40% of the respondents took credit from Mahajon, 24% involved in government credit institute like BRDB (Bangladesh Rural Development Board), 20% were related with different types of NGO in case of their credit transition, 4% of the respondents were involved with government bank and 12% were related with public bank and with NGO.

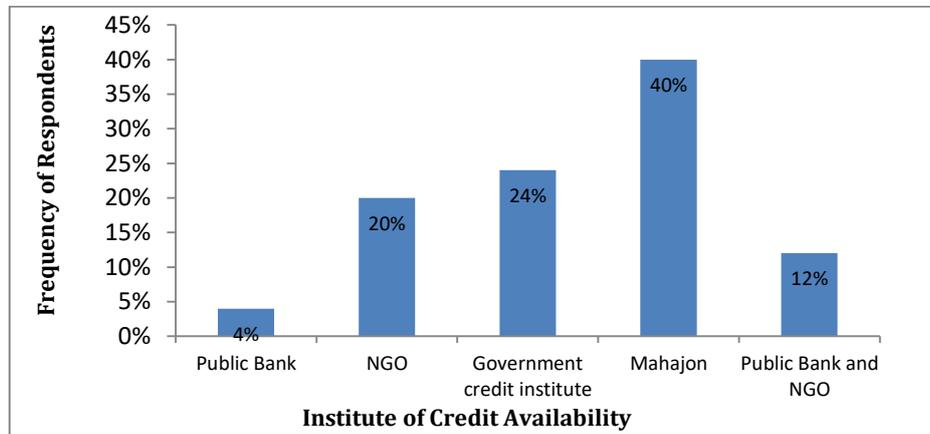


Figure 08. Distribution of the respondents according to their credit facility.

Cropping intensity

The figure below indicated that majority 48% of the respondents had no cultivation of crops, 40% had cultivation mono or single crops, 10% cultivate double crops and only 2% cultivate triple crops per year on their land.

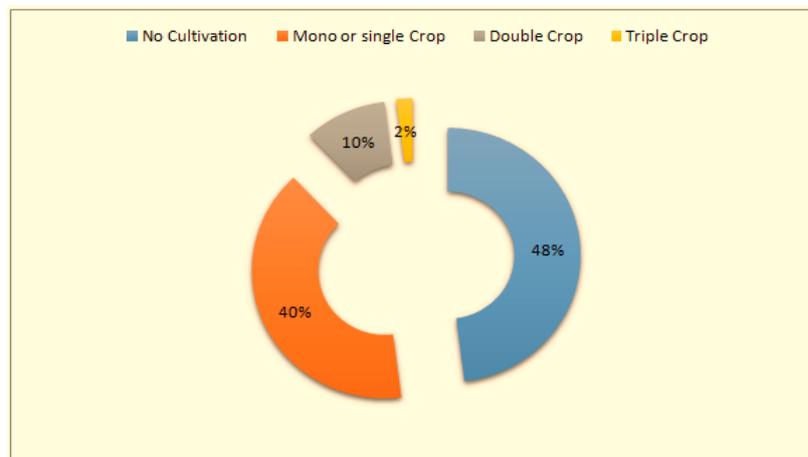


Figure 09. Cropping intensity of respondents in the study area.

Ownership of newly emerged land

The figure below indicated that the contractor on an average occupy about 70% of newly land, Only the displaced respondents captures 18% of their eroded land and erosion affected families occupy 12% of the emerge land. The contract or control over the land through violence.

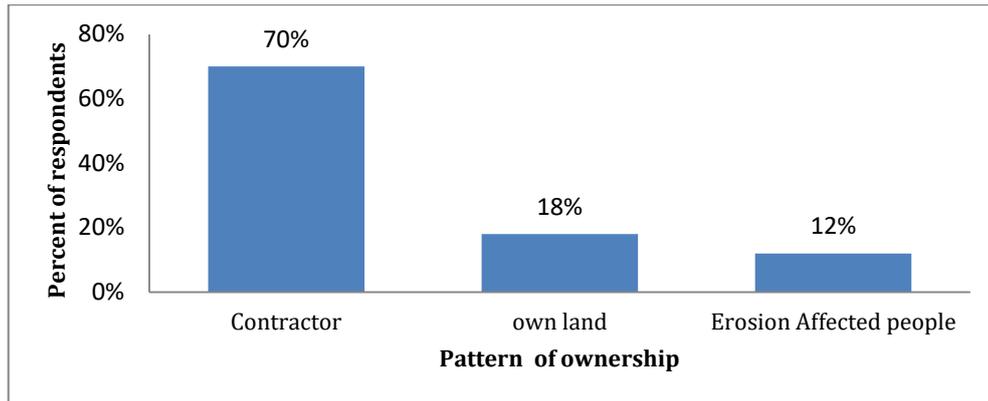


Figure 10. Distribution of respondents according to ownership of newly emerge land.

Occupation

This table indicates that respondents living in char area are mostly involved in fishing. Few of the respondents practiced agriculture, successful cultivation require fertilizer recommendation (Sultana et al., 2015) Due to limited scope of employments (off-farming economic sector), the livelihood diversification in the study areas has become one of the major challenges (Hossain and Roy, 2010).

Table 06. Occupational structure of the respondents of the study area

Village	Agriculture	Fishing	Other	Total
Ghurchakathi	4	3	3	10
Mothbaria	3	6	1	10
Nimdi	4	4	2	10
Char Kochua	1	9	0	10
Char Basudibpasa	2	8	0	10
Total	15	29	6	50

IV. Conclusion

River bank erosion is a great threat in the study area at different times and badly affects in human life and crop production. The impact of erosion on the natural resource and socio-economic condition of the displaced population was multilateral. In one side, it was eliminating the homesteads and infrastructure, damaging crops of the people, on the whole increasing poverty. Displacement not only removes people from the main economic and social foundations upon which their livelihood are constructed but forces them to face the uncertainties of surviving in a new and unpredictable environment. From the study it was clear that in some cases the socio-economic condition improve in the study area by the help of government and NGO, but there remain many sectors in the area which had the opportunity to improve. In the area, the education status is not satisfactory. Most of the people in char area are small farmer and they have no cultivated land. Most of the people are unable to regain their eroded land and newly developed char lands. For this hazard social instability also increases in affected area such as political instability.

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APA (American Psychological Association)

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