

**DISPLACEMENT AND LIVELIHOOD CHANGES IN EROSION AFFECTED
CHAR AREAS IN ASSAM; A SOCIO-ECONOMIC STUDY OF DHUBRI DISTRICT**

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**SUBMITTED BY
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**UNDER THE SUPERVISION OF
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DECLARATION

As a Ph.D. Scholar of the department of Economics, University of North Bengal, that the doctoral thesis titled “DISPLACEMENT AND LIVELIHOOD CHANGES IN EROSION AFFECTED CHAR AREAS IN ASSAM; A SOCIO-ECONOMIC STUDY OF DHUBRI DISTRICT” is being submitted to the University of North Bengal for the degree of Ph.D. The research work has been carried out under the supervision of Dr. Kanchan Datta, Associate Professor, Department of Economics, University of North Bengal, India. This work is the outcome of my own effort except the explicit references made in order to acknowledge the contributions of other researchers. This thesis or any part of it has not been submitted elsewhere for obtaining any other degree.

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CERTIFICATE

This is to certify that the thesis entitled "DISPLACEMENT AND LIVELIHOOD CHANGES IN EROSION AFFECTED CHAR AREAS IN ASSAM; A SOCIO-ECONOMIC STUDY OF DHUBRI DISTRICT" submitted to the University of North Bengal, India for the award of the Degree of Doctor of Philosophy in Economics is a bonafied record of the research work done by Shahjahan Ali Sheikh under my supervision. It is also certified that this work has not previously formed the basis for the award to candidate of any Degree, Diploma, Associateship, Fellowship or any other similar title and the thesis is an independent and honest work of the candidate. He bears a good moral character.



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ABSTRACT

This thesis is an attempt to capture the total picture of the people living in char land of Assam which is recurrently fall under flood every year and affected by river erosion frequently. The socio-economic condition of the households is trying to measure in terms of their income and consumption expenditure, assets and liabilities, housing status, availability of safe drinking water, source of energy use, toilet facility, use of radio, television, telephone, literacy rate and health problems.

Flood and erosion are a natural phenomenon. Rivers especially the mighty Brahmaputra and its tributaries erodes vast areas of land every year in Assam. In Assam more than 70 percent of the rural population is depends on agriculture for their livelihood. Agriculture requires fertile land which erodes by the river every year. The Number of people displaced due to erosion is increasing. The occupational structure, income, living standard of the people of the agrarian society badly effected due to erosion especially of the agricultural land. It stands as a challenge for the people as well as the Government for the resettlement of displaced people. As the char area is peculiar in its nature and in its geographic position the impact of flood and erosion fall on the people basically live in *Char areas* in the district. A brief overview of the chapters of this thesis is given below:

The first chapter introduces the research problem, reviews available relevant literature, states objectives, rationality and background, scope, significance and limitations of the study. The second chapter deals with the data base and methodology of the study. For collection of data char villages are divided into four categories. From each category four villages are selected at random and then thirty households are taken at random from each village to the sample. Data collected using a structured questionnaire and analysed with statistical tools like ANOVA, Chi Square, Average etc.

The third chapter presents a brief history of people and land tenure system of char area as it appears significant for the socio economic and socio-political condition of the state as well as the district of Dhubri.

The fourth chapter deals with the issues like flood, erosion and displacement. In Assam, during the period of 1954 to 2007 total of 4,25,932 hectares of land had been eroded and there more than 8 lakh households displaced in erosion. The severity of problem of erosion is more acute in lower parts and the Dhubri district is a worse affected district in Assam.

The fifth chapter present an account of the measures and initiatives adopted at Government level to control flood and erosion in Assam. The flood and erosion management measures started in Assam after the declaration of National Flood policy in 1954. Accordingly, a huge network of flood embankments was erected all over the state. Till 2006, total length covered by embankment has been increased to 4465.19 km. The National Flood Policy included measures like anti erosion and river training works that mostly comprise of bank revetments, construction of stone spurs, boulder deflectors, and R.C.C. porcupines.

The sixth chapter has analyses various impacts of flood and erosion on the char dwellers. Social aspect of char dweller is seriously affected by flood and erosion. After displacement, they lost shelter and all means of livelihood. They take shelter in other place where they supposed to be illegal immigrant by pro-active organisations and harassment in different form taken place. In workplace they experience different types of discrimination like payment of lesser wage, expulsion from the work field, assaulting behaviour etc.

The seventh or final chapter summarises all previous chapters and major findings, suggestions as well as future scope of the study.

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ABBREVIATION USED IN THE THESIS

NE: North-East

GoA: Government of Assam.

HDI: Human Development Index

WRIS: Water Resource Information System

BPL: Below Poverty Line.

HCR: Head Count Ratio.

PWD: Public Works Department.

VOICE: Voluntary Initiative for Community Empowerment.

TRYSEM: Training of Rural Youth for Self-employment

NREP: National Rural Employment Programme

JRY: Jawahar Rozgar Yojana

PMRY: Prime Minister Rozgar Yojana

EAS: Employment Assurance Scheme

SGRY: Swarna Jayanti Gram Swarozgar Yojana

IRDP: Integrated Rural Development Programme

TRYSEM: Training of Rural Youth for Self-Employment

DWCRA: Development of Women & Children in Rural Areas

SITRA: Supply of Improved Toolkits to Rural Artisans

GKY: Ganga Kalyan Yojana

MWS: Million Wells Scheme

SHG: Self Help Group

CHAPTER-1

INTRODUCTION

CHAPTER - I

INTRODUCTION

1.1 Statement of the Problem:

Erosion of the river takes away valuable land on its banks and impoverishes the people affected. Mighty rivers like the Brahmaputra, the Ganga and their tributaries causes immense annual soil loss due to erosion. The erosion process of soils due to winds and floods have increased enormously in many countries of the world. The total land area subjected to erosion throughout the world is estimated at 600 to 700 million hectares and this constitutes about half the total cultivated area of the world (Thorne, 1992). River erosion has a long-term impact on human life. The victims of the erosion are bound to displace as they become destitute. The altered flow of rivers due to bank erosion also affects river ecology. Due to loss of agricultural land those displaced people are face acute economic insecurities when migration causes on erosion. The victims are sufferings from social insecurity due to deprivation of civic rights, health insecurity due to lack of basic infrastructure etc. All these uncertainties arise from forced displacement led to deprivation, destitute, fragility and increased vulnerability of the families. The flood problem in Assam in its nature is severe and found to be a different one in the country (GoA 2017).

Displacement or Migration can be voluntary or involuntary (forced migration) according to the reason. Migration may be due to either the pull factor or the push factor or both. Generally, pull factors leads to voluntary migration and are commonly depicted as better job opportunity, improved life style, better civic amenities, environment friendly climate and so on.

Involuntary or forced migration take place due to push factors like natural disasters, war, communal riot, development activities etc. A forced migrant is also known as an internally displaced person when he or she is forced to leave his or her home region because of unfavourable conditions but does not cross any boundary and hence known as internal displacement. Internal displacement is a matter of concern as it implies the humanitarian crisis, having many complex manifestations (Zetter, 2012). The causes of forced migration are not new, although they vary in time, geographical location and different socioeconomic and political conditions. The major causes of internal displacement are natural or man-made disasters, social or political conflicts and development policies. According to the survey of National Sample Survey conducted during July 2007 to June 2008, more than 4 percent of the total migrants are forced migrants and among them nearly 24 percent of the total forced migrants are found to be due to natural disasters.

India is a land of rivers and river bank erosion is a normal phenomenon. It causes suffering to millions of people every year. The river system in India consists of seven major rivers along with their numerous tributaries. Recurring floods every year cause severe bank erosion over the country. The River Ganga and the Brahmaputra are two major rivers that are subject to severe bank erosion. Bank erosion of the river cause forced migrations to thousands of people in the country. Displaced people experienced substantial socio-economic impoverishment and marginalisation because of flood and erosion and lack of proper means of living.

In order to control the flood in the state, various steps including the erection of embankment have been taken up. Particular mention could be made of the erosion problem of the embankment systems in some states like Assam, Bihar, West Bengal, etc. (India-WRIS). But the embankment itself are under challenge of erosion by the rivers and hence is not free

from the criticism about existing embankments. Now there are distinctly two opposite views (Planning Commission, 2011) on the issue of flood control'. The one opinion said that the problems of flood can be solved by removing all the existing embankments and allowing natural bank erosion of rivers i.e., co-habitation with flood and erosion. The other opinion is that the problems of flood and erosion can be solved by constructing more and more embankments and also by raising and strengthening them.

Brahmaputra river bank erosion remain as issue of the many studies. These studies are useful in taking measures on erosion control as they identified the causes and reasons liable for an equivalent (Sarma & Acharjee, 2012). The Brahmaputra bank erosion causes poverty, illiteracy and unemployment to the displaced people (Talukdar, 2012). After the earthquake in 1950, Brahmaputra and its tributaries has removed vast area on the bank. People habitation like villages, town, river port, agricultural land, Government reserved land, forest land etc are fall under erosion. Such sort of erosion affected area is found altogether districts situated on the bank of Brahmaputra in Assam like Dhubri, Barpeta, Bongaigaon, Goalpara, Nogaon, Morigaon, Jorhat etc. Khan (2012) mentioned in his study that folks migrated into different safe places once they displaced in erosion. He was found that the essential source of livelihood of most of the people sleep in char areas were agriculture and its allied activities. The frequent erosion, happening per annum, reduced land for agricultural use and it causes the people to be landless and marginal farmer. Landless and marginal farmers couldn't feed their families through agriculture and that they are taking resort of daily earner. The dimensions of landless labourers are increasing day after day. Scarcity of cultivable land, change of the occupation, high growth of population in char area had obviously a long-term impact on the people. Poverty become a never-failing friend in their life.

Erosion causes illiteracy and malnutrition among the youngsters within the affected area due to the shortage of education and health care facilities. Alongside land, the erosion takes away all educational and clinic of the affected area. After displacement from char, people move to new places. As most of the displaced people are poor, they sure to settled down them on the river embankment, road sides and Government reserved land. In the villages on this land category, the govt couldn't provide them basic amenities like school, health care centre etc. By this way, erosion causes illiteracy and malnutrition in char area. To char area people, erosion brings them 'identity crisis'. People after displacement face suspicion by some pro-active organisations at different town and cities particularly in upper Assam and that they were labelled as illegal migrants. This unfortunate occurrence happened at the work place where they were in search of job. Erosion in Assam also causes environmental degradation. People having no other alternatives occupy lands in reserve and forests land. Peoples habitation in reserved and forest land cause deforestation which is also result ecological imbalance.

1.2 The Brahmaputra River:

The Brahmaputra is one of the world's mightiest and trans-boundary River which flows through China, India and Bangladesh. It is the 10th largest river in the world by discharge and the 15th by longest. With the origin in the northern Himalaya of Tibet as the Yarlung Tsangpo, it flows across southern Tibet. Then it flows through the Assam valley as Brahmaputra and Bangladesh as Jamuna in the south-west direction. It became merged with Padma (popular name of Ganga in Bangladesh) in Ganga Delta region and finally the Meghna and from here it is known as Meghna before emptying into the Bay of Bengal. (Wikipedia 25th July 2017)

The Brahmaputra is about length of 3848 km. This is an important river that facilitate irrigation and transportation in the region. The average depth of the river is 124 ft (or 38m) and maximum depth is 380 ft (or 120m). The river is prone to catastrophic flooding in the spring when Himalaya's snow melts. The average discharge of the river is about 19,800 cubic metres (Brahmaputra River, Encyclopaedia Britannica) and flood can reach over 100,000 cubic metres. It is classic example of a braided river and is highly capable to channel migration and avulsion. The lives of millions of people are reliant on the Brahmaputra River and thousands of people live on the riverine islands i.e., *chars*. The char dwellers are relying on the annual 'normal' flood to bring moisture and fresh sediments to the floodplain soils, hence providing the necessities for agricultural and marine farming. (Wikipedia 25th July 2017)

The normal flood occurred during the monsoon season (June–October). Different kinds of deforestation activities in the Brahmaputra has resulted in increased siltation levels, flash floods, and soil erosion in downstream of lower and middle Assam. Every year huge amount of flood causes large size losses to crops, life and property. Normal and periodic flood is a natural phenomenon and it is ecologically a necessary because it helps maintain the lowland grasslands and associated wildlife. Periodic floods deposit fresh alluvium, restock the fertile soil of the Brahmaputra River Valley. Thus, flooding process is closely related with the agriculture and agricultural practices.

The effects of flooding can be devastating and cause significant damage to crops, houses and livestock etc and the bank erosion with consequent loss of homesteads, school and land, and loss of many lives and fisheries. Various flood-control measures are taken by Government departments like water resource department and the Brahmaputra Board, but until now the flood problem remains unsolved. One third Land of Majuli Island has been

eroded by the river. In recent years, it is planned to construct a highway protected by concrete mat along the river bank and excavation of the river bed can curb this menace. The Brahmaputra River Restoration Project, is a multipurpose project and it is yet to be implemented by the government. The Central Government approved the construction of Brahmaputra Express Highways on both the banks.

The river is the life source to millions. It supplied vital nutrients to the plains of Assam and other areas, but it causes widespread misery when it flowing fast during flood. In 2020, more than 5.4 million people in Assam were displaced by floods, with many lives lost and whole villages washed away (Hindusthan Times, 20 July, 2020).

1.3 Char Areas:

Char area also referred to as Char-Chapori. This included those land areas located on the bank and within the river. Char area in Assam has a neighbourhood of 3,608 Sq. Km i.e., 4.6 % area of the state. In Assam there are 2251 number of villages are included in char area of the river Brahmaputra. About 25 lakhs of individuals are live in char areas fall into 14 districts in Assam. The Socio-economic condition of char people is extremely miserable. Poverty may be a common characteristic of the people where 68% of the them are BPL household. A series of problems like frequent flood, land erosion, mass poverty, illiteracy, high rate of growth of population, superstitions etc are taking them into a backward society. (Das, 2000).

1.4 Background and Rationality of the Study:

In the pre-Independence period, the population of Assam was very thin. Zamindars of that time exists in undivided Goalpara district were took up farmers and settled them in the low lying riverine and fertile vacant areas and such a way civilization grow on both the banks

of Brahmaputra and other tribute rivers. As erosion occurs every year, agricultural land becoming reduced along with other reasons. As Dhubri district is much backward in respect of industrial development, people of char areas displaced due to erosion become jobless from agricultural sector and also shelter less. They start search of job in towns in and outside the state. The migration of labourers into various towns, cities and other districts also creating problems among other caste, race etc.

In this way, continuous erosion of Brahmaputra and other tributaries has changed the occupational pattern, income and living standard of the people in the char areas of agrarian district like Dhubri. This study aims to enquire into the problem in scientific manner. Study on the strength and extent of the erosion and its impact on agricultural production, extent of displacement, income, occupation and employment is very much needful and important.

1.5 Objectives of the study:

The main focus of the problem of erosion is multi-fold, i.e., reduction of agricultural land and productivity, changes on the occupational pattern, income and employment, agro-based trade and commerce and so on. Many works have been appeared in recent years on the issue of erosion of land, but most of them are confined to state level. The present study is based on the objective to find out the socio-economic impact of erosion upon the people and society under taken in the District of Dhubri of Assam. The other objectives are:

- To find out the extent of displacement.
- To find out the socio-economic impact of flood and erosion.
- To analyse the socio-cultural impact.
- To assess the government measures on flood and erosion control.
- To put forward remedial measure.

1.6 Scope of the Study:

- a) This study includes basic characteristics of the Char society viz. Education, Housing Condition, Drinking Water, Sanitation, Livestock, holding of Durable goods, Availability of Financial services, Occupation etc. Data and information relating to these objects are not available up to date. In many cases old information has been used in analysis.
- b) There only two surveys carried by the Government in the year 1997 and 2002-03. In order to find out the impact of flood and erosion on the people of char areas information from this old survey revealed inappropriate. Therefore, the study is mostly based on the field survey information.
- c) As the Government record, char areas are a special and peculiar geographic zone in Assam. Studies and research work found on such special area is found insufficient. There is an enormous scope to examine the success of various Government policies in respect income, education, poverty and social progress etc.

1.7: Research Questions: Research questions of the study are listed as follows:

- Does the river bank erosion lead to displacement at mass level?
- Does erosion affect the socio-economic life of displaced people?
- Does erosion is blessings for few people?
- Does erosion lead to out migration?
- Does erosion disturb social harmony?

1.8 Hypothesis of the Study:

In this study, we have examined the validity or otherwise the following hypothesis:

- That the flood and erosion does not have any impact on the socio-economic condition of the people of the char dwellers.
- That the erosion does not changed the occupational structure of char dwellers of the District.
- Educational status of the head of the family does not determine the size of the family.
- Income and education are independent component to each other.
- Poverty of the household is not related with the occupation.

1.9 REVIEW OF LITERATURE:

1.9.1. Review on Basics of Flood and Erosion:

Keeping the char area in consideration, literature found available on the difficulty of flood and erosion are reviewed. Literatures skilled enables us about understanding the matter of flood and erosion also because the impact of it on the people sleep in river bank area. Reviewed literature are presented below under three groups viz. a) Basics of flood and erosion, b) Migration into char area and settlement and c) Char area's social organization. Literatures reviewed for the aim forms the idea and background of our study.

Flood is the one devastating natural calamity which is caused mainly due to heavy rainfall and damages human life and social developments (Kandilioti and Markopoulos, 2012). Based on the characteristics, flood is classified into four categories viz. flash flood, standing flood, coastal flood and riverine flood. Of these four categories 'riverine flood' is more difficult to control (Cuny, 1991). The Indian sub-continent endowed with many natural water resources, suffers annually from flood of different magnitudes. The north eastern region alone generates one third of the country's total flood through the Brahmaputra and Barak river system (Wiebe, 2006).

Originating from Tibet, the Brahmaputra River enters into Arunachal Pradesh in India, after which it runs through Assam and Bangladesh. Finally, it drains out into the Bay of Bengal. In this long journey the river picks up a large load of sediment, making the river highly unstable in the upper reaches of the Assam Valley. With increased deforestation due to several factors soil erosion has increased and which in turn has increased the amount of sediment carried by the river (Sharma, 2012). The river carries a large volume of water along with huge sediments. The Brahmaputra has over 100 tributaries, of which 15 large ones

originate in the north due to the melting of snow in the Eastern Himalayas (Ghosh & Dutta, 2012). The river Brahmaputra in the Assam Valley deposited silt and it leads to a change in the slope of the river. This change become the causes for erosion of river banks, frequent migration of the river's course and heavy floods as the river cannot contain the volume of water (Sharma, 2012). This high amount of rainfall during the monsoon season is equally to blame for the river's flood. Landslides and flash floods occurring due to a combination of all these factors are, as a natural consequence, extremely common. Unfortunately, the disaster does not end there; a vicious cycle follows the onset of landslides, as the falling debris block the course of the river, forcing it to flood elsewhere (TERI, 2008). Due to these factors, the flood-prone area in Assam totals to 3.1 million hectares, which is 40 per cent of the state's area, of which, 560 villages dotting the banks of the Brahmaputra are particularly vulnerable (TERI, 2008; TNN, 2013). Every monsoon, the state experiences flooding, with major floods occurring at least once every four years (Directorate of Economics and Statistics, Assam, 2011). Despite the suddenness of such events, the government has ample warnings of their potential magnitude and should be therefore able to implement flood-control measures to minimize the destruction. However, they still cause immense destruction 931,000 hectares are affected each year, eroding at least 8,000 hectares annually. After 1950, the state has been lost 7.4% of its land area. Financially, the cost of major floods is extremely high, Rs. 7.7 billion in damages to utilities, crops and houses when Assam was badly hit in 2004 (Kalita, 2013). Majuli has also been heavily eroded due to the annual flood of the Brahmaputra and the migration of the rivers bounding the island. Between 1998 and 2008, the island lost an average annual amount of 5,000 hectares, while 14,834 hectares of land remain constantly under water (Dutta, Barman, & Agarwal, 2010). Subtracting this land from the island's total, along with the land unsuitable for agriculture and the land reserved by the government, only

32,237 hectares, or 25 per cent of the island's total area remains available for cultivation (ASI 2004).

The recurrent flood and erosion continued to be the burning problems of Assam. Assam has an area of 78,438 Sq. Km. taking both the Brahmaputra Valley and the Barak Valley. The Brahmaputra and Barak are the two main rivers, which cause major problems during the monsoon period of every year in the form of flood, bank erosion and drainage congestion (Goswami, 1985). In fact, the successive waves of devastating floods in almost every year have virtually destroyed the economy, more particularly, the rural economy of the state. The main factors causing extensive floods are the adverse physiography of the region, heavy rainfall, and excessive sedimentation, frequent occurrence of earthquakes, reduction of forest area and encroachment of the riverine area (Valdiya, 1999). Usually, Assam experiences incessant rainfalls during the monsoon season, which normally commence from the month of May till mid-October. Apart from this, occurrence of floods in Assam has direct correlation with rainfall in the neighbouring states of Arunachal Pradesh, Meghalaya, Mizoram, Nagaland and the adjacent country of Bhutan.

Despite building 3647 km of embankments, 599 km of drainage channels and 431 sq km area of soil conservation, Brahmaputra continues to wreak havoc by uncontrollable floods year after year (Goswami, 1998). The recurrent occurrence of such type of devastating floods may be due to the presence of the active faults and continuing crustal movements in this geodynamical unstable region. The width of the alluvial plains of Brahmaputra basin (less than 100 km) is also having a significant role to play in the flood phenomenon which is much narrower than the flood plains of Sindhu and Ganga (350 to 300 km respectively).

The state has not been able to achieve the desired level of development in spite of having vast natural resources due to recurring flood and erosion problem. Country's total

9.4% flood prone area is fall in the state of Assam (National Flood Commission). The damages caused by flood and erosion in the state at the beginning of the century are depicted in Table-1.1 and Table-1.2.

TABLE 1.1: Flood damage in Assam.

Item	Unit	2000	2001	2002	2003	2004
Area effected	Hectare	966053	239511	674148	932113	314268
Population effected	Nos	3888385	542634	7550581	5651954	13493392
Human lives lost	Nos	36	4	65	52	497
Effected villages	Nos	5090	1277	6807	7565	1223
Eroded land	Hectare	-	5348	429657	12589	7829
Crop value	Lakh Rs	17351.0	835.00	14559	14700.0	-
Total damages value	Lakh Rs	19000.0	1095.00	18678.0	16569.0	-

Source: Government of Assam, Flood report.

TABLE 1.2: Flood damage in Assam.

Item	Unit	2013	2015	2016	2017	2018	2019
Population effected	'000	100	1,650	1,600	4,000	4500	44081
Human lives lost	Nos	-	-	-	85	-	-
Villages effected	Nos	396	2100	-	-	-	3,024
Crop area affected	Hectare	7000	4400	4900	-	11,243	1,63,962

Source: Flood reports, Government of Assam

Flood in Assam, characterized by their extremely large magnitude, high frequency and extensive devastation, constitute an awesome natural hazard that repeats itself almost

every year and devastates the economy of the state which is overwhelmingly agrarian. The situation is worsening as erosion is accompanied by flood, which further aggravates the problem (Goswami, 1989).

Human occupation and development of alluvial river floodplains are adversely affected by river channel lateral migration. The ecology of riverine corridors is dependent upon the processes of erosion and sedimentation, which lead to lateral migration. Multiple uses of floodplains adjacent to active rivers also influence the probability and magnitude of channel movements, with implications for habitat type distribution and ecosystem integrity (Shields, 2000).

Riverbank erosion is an endemic and recurrent natural hazard in many parts of Brahmaputra valley of Assam. When rivers enter the mature stage (as in the case Brahmaputra) they become sluggish and meander or braid. These oscillations cause massive riverbank erosion (Alam, 1993). Every year, thousands of people are affected by erosion that destroys standing crops, farmland and homestead land. In fact, bank erosion and flood hazard has become almost a regular feature in the district.

The unstable character of the river Brahmaputra is one of the causes for its eroding nature. The river is assuming a braided pattern consisting of several channels separated by small islands (*chars*) in its course. During the last few decades, the channels have been swinging between the main valley walls and during the monsoon season extensive overbank spills, bank erosion and bank line shifts are typical. The erosion not only affects the rural floodplain population but also urban growth centre and infrastructures as well (Mamun and Amin, 1999).

There is involvement of a large number of variables in the process of riverbank erosion. The intensity of bank erosion varies widely from river to river as it depends on such characteristics as bank material, water level variations, near bank flow velocities, platform of the river and the supply of water and sediment into the river. Loosely packed, recently deposited bank materials, consisting of silt and fine sand are highly susceptible to erosion and rapid recession of floods accelerates the rates of bank erosion in such materials (Kotoky, 2005). Moreover, in recent years, human interventions in the Brahmaputra are growing. Construction of Bridge and bank protection structures thereof has reduced the freedom of the river to widen through bank erosion in that area resulting in greater flow rate and when the river reaches downstream it slows down and deposits silts and causes erosion through widening process. The embankments also contributed to increased suspended loads especially during the summer months which are deposited in the riverbed contributing to the braided nature of the river. This, in turn, will contribute to directing more and more of the finer flow towards the banks accelerating the bank erosion (Kar, 1994).

The Brahmaputra valley in Assam represents a sedimentary province. The channel of the river itself occupies about one-tenth of the valley of which more than 40% of its area under cultivation and housing of the people. In Assam, the river flows in a highly braided channel characterized by numerous mid-channel bars and islands. The Brahmaputra is the fourth largest river in terms of average discharge and second in terms of sediment transport per unit drainage area in the world (Goswami, 1985). Migration of the channel towards the south is a characteristic feature of the river.

The flow regime of the Brahmaputra possesses the seasonal rhythms of the monsoon and freeze-thaw cycle of the Himalayan snow. Along the channel of the Brahmaputra bank materials are not homogeneous in composition, and result in uneven bank slumping. This

causes the flow to take a different path and the orientation of the bank line to the direction of flow also changes and at some locality's older alluvium protruding into the river offers significant resistance to the flow regime and causes changes in hydraulic conditions (Kotoky, 2003).

The finely divided bank material and the constant change in flow direction produce severe bank caving along the channel. When the flow approaches the bank at an angle, severe under-cutting takes place resulting in slumping of sediments. Kotoky (2005) observed that, slumps are more common among banks composed of clay silt. Quite often, the highly saturated clayey silt will liquefy and tend to flow towards the channel. As the materials flow, the overlying, less saturated bank sediments tend to slump along well-defined shear planes. However, the intensity of slumping is more acute after the flood stage. The accumulated water level during the flood stage provides additional support to the bank material as the pore spaces of the loosely bound bank materials are occupied by water and act as a continuous system. With the fall in water level, the support diminishes abruptly and the bank materials are subjected to different degrees and nature of failure. In some localities, stratified fine sand, quite massive channel sands and silts underlie the silt clay of the natural levee deposits. During high stage of the river, water is forced into the strata, raising the pore pressure in the strata. As the water level in the river falls rapidly and the pressure against channel wall is lessened, water moves from the formation back into the river. This causes a lateral flow of sands and silts into the channel, resulting in subaqueous failure. This normally produces a bowl-shaped shear failure in the overlying cohesive natural levee deposits (Coleman, 1969). These types of failure with semi-circular outlines of different magnitude area abundant along the Brahmaputra River channel.

Development of some waterlogged areas after the flood near the bank of the river, related with the construction of embankment, without having any direct outlets to the river is also a characteristic feature. Water from these areas moves through permeable levee materials and oozes out along the bank of the river when water level in the river recedes during the post-flood period, failure of bank materials occur (Lawler, 1992). Another type of failure is related to the subaqueous flow. Because of the braided nature of the river channel and its constant migration, many abandoned channels intersect the newly formed bank-line. This gives rise to a zone of well-sorted silt and fine sand localized in the abandoned channel fill. During rising and flood stage, the sand and silt become highly saturated. The rapid drop in water level in the channel results in rapid withdrawal of water from these sediments. The highly saturated liquefied sediments flow towards the channel. As the materials flow, the overlying less-saturated bank sediments tend to shear along well-defined planes (Lawler, 1997). Shear failure is one of the most effective causes of bank-line recession of the Brahmaputra. The other major cause of shear failure is over-steepening of the bank which always enhances the failure of the bank (Coleman, 1969). Fluvial erosion, in turn, is linked to mass-failure processes through the concept of basal end-point control (Thorne, 1982). Fluvial erosion of the basal area of the bank can lead to undercutting and subsequent cantilever failure. The formation of mud cracks can directly be attributed to sub aerial processes, which include wetting and drying of soil. These are commonly thought as 'preparatory' rather than 'erosive' processes (Lawer, 1999). Although sub aerial 'wakening and weathering' of the soil can occur in a number of ways, all are associated with moisture conditions within the material (Dierith and Gallinati, 1991) and with the physical state of this moisture (Thorne, 1990). Both Wolman (1959) and Simonet (1999) found that the highest rate of retreat occurs as a result of high flow during prolonged wet periods, rather than by floods. On the other hand, as the cohesive soil mass dries, volumetric shrinkage results in the formation of a 'pad fabric', with

blocks of soil separated by desiccation cracks (Thorne and Lewin, 1979). These desiccation cracks provide lines of weakness in the bank face and Green (1996) found desiccation to be one of the dominant forms of bank erosion on the tributaries of the Namoi River in Australia.

Braided river like Brahmaputra represents a high-energy fluvial environment often characterized by non-cohesive banks lacking vegetation and consequently, high rates of bank erosion and deposition. The in homogeneity in bank materials and the constant change in flow direction have caused severe undercutting, which enhances the intensity of slumping along the banks (Mamun and Amin, 1999).

Dhubri district faces an acute erosion problem as no permanent anti erosion measures based on proper geohydrological models have been adopted so far. Geomorphologically, the most parts of the plains fall under the flood plains of the Brahmaputra river. The district suffers from severe bank erosion on its southern side due to the erosive action of Brahmaputra River. The district is subjected to severe annual floods under the influence of the SW monsoon. The erosion is mainly attributed to extreme sediment charge to the braided river and formation of sand bar in the midst of the river (Baker, 1988; Goswami, 1985). Along the channel of the Brahmaputra River, bank material is rarely homogeneous in composition and uneven bank-slumping is a characteristic feature. Often, highly saturated clayey silts liquefy and tend to flow towards the channel. Consequently, the overlying less saturated bank material tends to slump along well-defined shear planes. Thus, there appear two prominent types of slumping, (a) undercutting during flood stage and (b) flowage of highly saturated sediments during the falling stage of the river (Kotoky, 2003).

Several studies (Talukdar 1995, Barman 1981) have indicated that the Brahmaputra River changed its course abnormally after the earthquake of 1950 and the attendant historic flood. There was a balance between sediment supply and transport up to 1950, which was

disrupted by the great earthquake which produced severe landslides within hilly tracts suddenly providing a large quantum of additional sediment. These extra sediments choked the river channel gradually and initiated bank erosion causing channel-widening. Moreover, there has been a gradual increase in channel slope since 1920 (Goswami, 1999). The riverbed of Brahmaputra has also shoaled following heavy siltation due to the construction of flood embankments, deforestation, etc.

The velocity of the river diminishes when large quantities of sediments are deposited and mid-channel bars or chars are formed. Once formed, the chars locally decrease the cross-sectional area and cut the bank laterally to maintain a proper cross-sectional area that is in equilibrium with discharge (Kotoky, 2003). Kotoky (2003) also compared the satellite imageries of 1998 with the topographic base map of the year 1920, and found that the Brahmaputra channel has increased its width from 7.00 to 9.25 km, with significant expansion on the southern side of the river.

Riverbank erosion is a significant problem worldwide and is associated with land loss and deposition of sediments along the river course. Land loss is a consequence of river erosion not only threatens the existence of infrastructures or agricultural land near to the river bank but also pose threat to aquatic habitats and causes sedimentation downstream due to the generation of fine-grained sediments (Darby & Thorne, 1995).

Bank erosion is a dynamic and natural process as rivers meander across the landscape. However, bank erosion of river Brahmaputra has attained a menacing proportion in many parts of Assam including Dhubri district of Assam. Taber and Ahmed (1998) stated that, side by side with floods, bank erosion of some major rivers also causes immense long-term destruction every year. The river Brahmaputra has been shifting slowly southward. Erosion and floods are a perennial problem of the district. Since the last three decades 56 revenue

villages have been affected by erosion by the river Brahmaputra out of which 107 revenue villages have been completely wiped out (Sheikh, 2013) and hundreds of villages are partially eroded. More than 80% of the lost land even rich agricultural land that produces some of the finest variety of jute in Assam. Thorne (1982) stated that, the erosion of the banks takes away valuable lands and destroys towns built on its banks and impoverishes the people affected.

Dibrugarh town protection work in 1954, the town was threatened by the erosion of the Brahmaputra. The flood forecasting and warning system was first started in India in 1959 on the river Yamuna for the benefit of the union territory of Delhi. Sarmah (1993) explained about the origin and drainage patterns of all the major rivers in Assam. The flood havoc in the Brahmaputra valley and causes of occurrence of floods in Assam was properly explained by Ahmed (1991). Deuri (1994) explains the major problem faced by the people of Morigaon district is the flood and bank erosion.

The study of economy and farm management in Nagaon district of Assam by Goswami and Bora (1997) provided some basic information on inputs and production of crops in the Nagaon and Morigaon district. Das (1984), in his published doctoral thesis, "Peasant Agriculture in Assam", presented the structural analysis of peasant agriculture in Assam. The "Agricultural Problems in India" published by Singh and Sadhu (1991) considered flood as major problem of agricultural development in river valley areas. Goswami (1979) in his paper mentioned the nature and causes of flood in the depressed belt of southern West Bengal. The high flood proneness of the belt and the nature and development of land settlement have been studied. According to the Department of Agriculture, flood affected areas of the Brahmaputra valley is accounted for about 98.8 thousand hectares, out of which 24.5 thousand hectares of land is chronically flood affected in Assam, besides 90 thousand hectares being occasionally flood affected, Mahanta (1979).

Saikia (1992), in his unpublished doctoral thesis emphasizes the flood and soil erosion is the severe problem faced by the farmers of Assam. Problems of fluvial erosion are very severe along the river Brahmaputra and its tributaries.

Mukhupadhyaya (1996) in his 'Hydro-Geomorphology of the Brahmaputra -Barak-Manipur basins with special reference to Neo-tectonics' mentions the evolution of the drainage basins including its distinct suite of landforms and peculiar drainage pattern by explaining their regional disposition and dispersion.

The river Kosi rightly is described as the 'Sorrow of Bihar.' Flood has itself been partially responsible for some of the observed changes particularly because of its effect on atmospheric quality due to water pollution and its influence on settlement as well as on agriculture because of land damages (Chahaukar, 1995).

Davies and Walsh (1997), in their paper regarding the flood hazard at Khartoum, Sudan, explain that the 1988 floods at Khartoum were frequently described as 'Unprecedented.' They argued that most problems were created by complacency, lack of planning and mismanagement.

Mahela (2001) in his seminar paper explain that, except embankment no other methods have so far been applied to minimise the damage due to flood & bank erosion in the Brahmaputra valley. The existing embankment system has not been raised and strengthened to withstand against the pressure of increased high flood level, and as a result every year embankments are either breached or overtopped. On the other hand, land use and agriculture are also affected by flood. The agricultural growth is basically related to the analysis of changes occurred in the growth components, that are, area under cultivation, crop-yield and the cropping patterns of particular area.

According to the additive growth model of Minhas and Vidyanathan (1965), the obscured increase in aggregate output has been decomposed in to four component elements, that is, the contribution of the changes in (a) cultivated area (b) crop-yield (c) cropping pattern and (d) the interaction between latter two elements.

Das and Kalita (1993) in their study on Agricultural development of North East India show that there is a direct relationship between the land productivity and the physical factors.

Morgan (1969) has stated that erosion which is also a part and parcel of the activities of a river, effects greatly the flood plain occupancies, in human terms, the most far reaching and devastating consequence of excessive uncontrolled run of is soil erosion. Studying the flood hazard of North Bihar, Choudhury and Kumar (2001) explains that, design of flood mitigation works for long return periods of flood is uneconomical and beyond the means of a developing country like ours.

Although, Assam is one of the most severely flood and erosion affected states of India, not much academic research has been done on this problem. However, geomorphologic accounts of the valley including the flood plain areas are available in several published reports (Murphy 1968, Taber 1975, Kar and Goswami 1993).

The problem of flood and erosion havoc and its impact on various human activities are also studied by Goswami (1989), Bordoloi (1986), Kar (1994), Pal & Bagchi (1983), Bordoloi (1995) and Gogoi (1997). Plains of north India support some of the highest human population densities on earth (Kar 1994). One important reason for such a high population density has been soil fertility recharged by annual alluvial deposition by the rivers flowing through them. The Brahmaputra valley in Assam is an example of such an area. In such systems, inward human migration is a common feature and in fact it has attracted human

settlement from time immemorial. But, the human settlements just adjacent to the Brahmaputra river banks are becoming worst sufferers from riverbank erosion that is taking place since last few decades.

The Brahmaputra river system is located in a seismically active area, thus have a varying geomorphologic behaviour and its erosion is causing serious and disastrous socio-economic implications. The erosion phenomenon is a serious problem for the people residing in the bank of the braided Brahmaputra river channel (Valdiya, 1999). Riverbank erosion takes away all everything belongs to and hence is one of the major causes for poverty for majority of the affected people. As erosion leave nothing, people force to move to new places for shelter and live. The displaced persons usually take shelter on roads, embankments and government lands. Erosion affects most the marginal farmers followed by medium farmers and those big farmers less.

Displacement is the immediate impact of riverbank erosion. The displaced usually move to nearby areas but migration to distant places is not uncommon (Guha, 1977). Most of the displaced persons turn mainly into agricultural labourers, wage labourers in other activities or in occupations like rickshaw pullers. A large proportion of the victims remain unemployed due to lack of work opportunities. However, it is observed that the female-headed households displaced by riverbank erosion and residing on embankments are the worst affected group.

A large number of studies on population redistribution relate to displacement of population due to various development activities in India as well as in whole of South Asia. Kayastha and Yadav have analysed the impact of flood including migration and redistribution of population in the Ghaghar flood plains. Ahmed (1991) has attempted redistribution of tribal population in India on account of developmental processes. The role of partition in the

redistribution of population in India has been the major focus in a large number of studies by Mukherjee (1991) and Gosal and Mukherjee (1970). Premi (1974) has made a specific reference to migration as a major focus in the population redistribution tendencies in India. Likewise, Bose (1967) uses differential growth patterns in different areas of the country as a major focus in the population redistribution.

The vulnerability of households headed by women is based on lack of access to education, training, and employment opportunities, as well as discrimination in the job market. In addition, socioeconomic and political structures exclude women from playing an active role in the functions of their communities (Rossiasco, 2003).

The economic activities that families are involved in before being displaced (usually farming) are impossible to carry over to resettlement sites. The effects of this are felt on an individual level when displaced people are forced to make the difficult adaptation to new forms of work. The first consequences of forced displacement are a lack of access to basic necessities, as well as vulnerability and insecurity, especially for women and children (Shrivastava and Hienen, 2005).

However, migration in Assam as a whole is widely recognized as having exerted a disproportionate effect on local demography relative to other parts of India. Most of the riverbank settlers, who had to migrate to other parts of the locality due to erosion of the river belonged to the immigrant settlers. Thus, they have also affected the local demography of their new settlement areas. In addition to the effects of migration, recent research from the Indian Himalayas indicates that immigrants have greater resource needs than settled households (Hazarika, 1993).

Khandakar (2016) in his works enquire the issue of social exclusion of the people living in char areas of Assam. Taking 100 respondents as sample population of Baladuba village in the Dhubri district social exclusion is discussed in respect of life, livelihood and social relations. To him, the conflict between indigenous and immigrant people is the root of the relational exclusion of char people in Assam. Size of per head landholdings is too little and majority of the households are BPL. Health care facilities is likely to be absent in char area. They rely upon the untrained rural practitioner and traditional *baid*s and *kobiraj*. Both fertility and mortality rates are also very high compare to the state average.

Exclusion of char from the mainland society may be a character of char area. The temporary existence nature of char is liable for its exclusion. Besides, economic and social exclusion due to its nature, the char areas also are deprived from required attention for policy interventions. The pro-active groups harass and assault those displaced people within the new place. Economic exclusion has found within the sort of low wage, physical assault etc.

The study also highlighted the cultural exclusion. Cultural traits, physical attire and occupational features of char people are dissimilar to the mainland dwellers. The mainland people not maintained an honest relation with the labour of char area. They use slung words to char people. Occupational status of the displaced char dwellers within the cities creates another sort of exclusion. They engage themselves within the work like mason, jogali, house labour, garbage picker etc. usually avoided by local people.

Exclusion of a marginal society from all kinds of basic necessities never be welcome. during a democratic society, all social groups desire civil right and therefore the opposite of which can mean failure of excellent governance. People of char area proved their skill in several field, particularly agriculture, but remain to be a marginalized group by virtue of prolonged negligence and discrimination. to beat this example of exclusion and

discrimination to char people, it's an urgent got to develop the social and economic infrastructure in char area. Removal of illiteracy and poverty is far important. Providing health care service, loan and job-oriented training facilities will help them to breakdown their 'vicious circle of poverty'. Over and above, measure to alleviate from recurring flood and protection of their land from erosion should be undertaken with priority.

In his work Chakraborty (2008) has mentioned that the process of human civilisation started with cultivation. Being the mother of other sectors, the Primary sector gradually gave birth of secondary and tertiary sectors. The growth of non-agricultural sector was the result of ever ending demand for varieties of consumption goods and services. Although there was continuous increase in the consumption of industrial and service sector products, the importance of agriculture sector was never reduced. Because food is the basic need of human being.

The sectoral dynamics is accompanied with the continuous change in the occupational structure. Normally, any individual worker will change his occupation in search of higher wage or higher productivity. Fluctuations in the income and employment shares of different sectors are two essential parts of the structural change of any economy. The study emphasised on the works of Lewis, Rostow, Fischer and Clark, Chennery and Kuznet on structural changes. A typical structural progression must be accompanied with rising per capita income, which in turn will enhance the opportunities for more and more people to achieve a decent standard of living in terms of development indicators.

The per capita income of northeast India is continuously rising but this is not exactly the reflection of structural change. Statistical tests have shown that per capita income is highly correlated with the per capita allocation of central resources in north-eastern states. Besides, the performances of these states are highly disappointing in terms of

income/expenditure ratio, buoyancy of own tax, own tax/total tax ratio etc. compared to any other general category states. It is easily understandable that economy is basically a dependent economy and cannot sustain in the long run without external assistance. Development experiences of north-eastern states raise different research questions and accordingly the study has formed different hypotheses and to test the hypotheses different research techniques have been applied on the relevant data. The major research techniques applied are trend analysis, regression analysis, principal component analysis, Granger causality test etc.

Sarma (2012) embodies an attempt to capture the totality of labour commitment of female cultivators and agricultural labourers. He took the composition of income and consumption expenditure and economic condition in terms of assets and liabilities, housing status, availability of safe drinking water, percent of household having electricity as a source of lighting, adult literacy rate and health care services of Assam. The study revealed that majority of female workers of rural areas is either female cultivators or agricultural labourers. The study found that female cultivators and agricultural labourers contribute a significant share of the labour use in crop production, but also spend a considerable amount of time in livestock rearing, food processing, Sericulture and weaving activities. These time commits are in addition to the amount of time spent in household cares. There is substantial gender specificity to many agricultural operations. Women agricultural workers continue to be paid less than their male counterparts, and suffer seasonality in employment. Though there are no inter village and intra village differences regarding labour time use, income and consumption expenditures of female cultivators and agricultural labourers, yet there are inequalities between the two sections of the rural society on some basic parameters of economic well-being like assets and liabilities, housing conditions, availability of safe drinking water, literacy rate, health care services and sanitation among the groups of villages under study.

This work employs ANOVA Technique (one-way classification model), Co-efficient of variation, Z- test, Composite Z-test to calculate the variation in income and consumption of the female agricultural labourers and cultivators in the different groups.

1.9.2. Review on Migration into *Chars* and Settlement:

Since day immemorial, different groups of people had been migrated into Assam. Migration from different angle created differences of language, caste, creed and society among the people of Assam. During the colonial period, the process of migration into Assam achieve the highest level (Gohain and Bora, 2007). For the expansion of colonial economy through tea plantation, coal and mining the then British Government imported labour from different parts of India (Chakraborty, 2009). Again, to meet the increasing demand for food crop in the state millions of peasants from erstwhile East Bengal were imported and most of them were Muslim (Kar 1980, Boruah 1980, Hussain 1993). The vast tract of virgin land in Assam was also attracted many of poor peasants of neighboring state (Bhagabati, 2005).

Assam got much abundant through the in-migration to its economy (Chakraborty 2009). Within an equivalent time, it causes a change within the demographic composition of the state. Indigenous people expose their awareness about migration and demographic alteration in 1916 (Guha 1999). In response to awareness of the local indigenous people, policies a bit like the 'line system', 'colonization scheme' were undertaken to ascertain settlement and occupation of land by migrants (Hussain 1993). The line system divided indigenous and immigrants into two classes. the first one was supporter of the line system while the later one was opposed (Ahmed 2005). Muslim migrants were reclaimed vast cultivable waste land within the riverine area (Bhagabati, 2005).

The tactic of migration into Assam didn't come to an end after the independence period too (Gohain and Bora 2007), but continues from Bangladesh. Indigenous people expressed their distress against immigrants and cause the Assam movement (Jana 2008). Though Assam Movement was against the immigrants but there wasn't uniform opinion on their numbers (Mahanta 2013). Immigration into Assam was considered a haul by one section of scholars while other opined it as colored. The Assam Movement was an expression of anguish against immigrants, no matter their religion. But communal instances were also not absent (Hussain, 1993). During the 1980's Muslim migrants were the soft target of the agitators, they taking bloody revenge against Muslim immigrants (Gohain and Bora 2007). It's matter of sad that the Muslim migrants were came into Assam during pre-independence period, but today also, they're called Bangladeshi illegal immigrants. The statistical evidence tells that the conception on Muslim illegal immigration isn't true. Migration of Muslim peasant from East Bengal into Assam has been continuous since 1891 (Das 1980: 859). That's Muslim migrants in Assam has been from pre-independence period. The notice for socio-economic and cultural safeguard of the indigenous people become popular within the Assam Movement but, to form sure the dominance over political power was the foremost aim of frontline leaders of the movement (Gohain and Bora 2007). Muslim migration was happening under the sponsorship of British administration which was supported by Assamese bourgeoisie. These people overnight become foreigner and soft target for attack (Boruah 1980: 56-57).

1.9.3. Review on *Char* Areas Social Structure:

The river Brahmaputra gives birth to numerous river islands which is known as chars and chapori (Bhagabati, 2005). The peculiar nature of char area distinguished itself from other parts of the state. Most of the char habitat villages are bounded by the water of river.

Those area located on the bank of the river is known as chapori. The society existing in char area is a marginal society and poverty is seen in all respect of the economy, society and livelihood pattern of char area (Chakraborty 2009). Due to lack of sufficient fund, Government initiative towards the development of char area is found to be insignificant impact (Chakraborty 2011).

As compare to the other area of the state char area is much unstable in respect of its existence. This instability causes various problems to the people of chars. People are deprived of all basic facilities essential to human life. There found lack of health facilities, educational infrastructure, employment opportunity along with other socio-economic problems. Uncontrol birth and high growth of population is a vital problem in chars. Demographic statistic for death and birth rate, immunization etc. are low as compare to the state average (Goswamy, 2014).

Erosion and its inherent displacement are common to chars. People once displaced are to move to another place. This displacement and movement are more or less frequent in all chars. People of chars are to fight against flood and erosion every year. Recently another issue says 'foreigner issue' is added to the above two. This is as because the entire flood-erosion victimized people are belonging to a soft targeted community in the state (Jana, 2008). Erosion induced displaced persons of chars are open and frequently termed as illegal immigrants as they go for job in other places (Jana 2008, Chakraborty 2011, 2012). This process led to exclusion of the char community from the mainstream Assamese community (Chakraborty 2011).

M. Kar (1990) has opined that the western part of the undivided Goalpara district viz. South Salamra, Lakhipur and Bilasipara was the earliest and mostly affected areas by immigration. The number of immigrations till 1881 was 49059. The population of the district

was increased by 1.4 percent during 1881-91 and 2 percent during next decades. But from 1901 onwards a fairly large number of people from Moymonsingha entered into Goalpara. The decade witnesses a natural growth of population at 15.6 percent. The number of immigrants rose from 49050 to 1,18,233 i.e., 19.7 percent of the actual growth of population of Goalpara district. The census report of 1911 was the first document on the extra ordinary influx of farmers to the chars of Goalpara from East Bengal district like Moymonsingha, Pabna, Bogura and Rongpur. Soon, almost all the available lands of Goalpara which were found suitable by migrants were covered. It was the next decades that immigrant's people spread to other districts of lower Assam and the colonist formed important element of the population in the four lower and central districts of Assam.

In 1911, total migrants numbered 2,58,000 in the Brahmaputra valley. They formed 20 percent in Goalpara district and 14 percent in Nogaon district. In Kamrup, they rapidly took up lands especially in the Barpeta sub division. During the decade, the settlers had not explored much in Darrang district and did not penetrate far from the Brahmaputra bank.

But as the inflow continued and their number increased, they expand further up the valley and away from the river bank. By the time, the entire waste land in the Goalpara and Nogaon district had been explored by the immigrants. Barpeta could actually hold no more and the Darrang district had already taken up.

Santo Barman (1994) had nicely explained the agrarian system under the Zamindars of Goalpara district. According to him, the relation of the Chukanidars or the actual cultivators of the land with the Zamindars were much pathetic. The influx of the immigrants' settlers of the East Bengal brought about a new state of things. It had rapidly raised the value of the land and a rise in the rent consequently. The increasing demand for land had created a desire on the part of the Zamindars and middle men to take every advantage of the new

comers. Referring to the situation, the then EAC. Babu Mohindra Dey in his note dated 13th February, 1914 pointed out that the total population of Goalpara district in 1891 was 4,52,773, 4,62,052 in 1901 and 6,00,643 in 1911. The large size of population attracted by the presence of char lands which has situated in the riverine tracts of the Brahmaputra. The *Jotedars* having *Jotes* in the tracts put these up to auction on the highest bidder. And naturally those who could afford to pay heavy '*salami*' in addition to rent were allowed to take up land in detriment of those who were already in possession but were unable to satisfy the capacity of those Jotedars.

The immigrants were settled mainly in permanently settled tract. Of course, they were hard working made excellent cultivators and had taken largely to the growing of jute. They may be called as enterprising cultivators. They were ready to offer higher rate of rent to the Zamindars of Jotedars.

The work '*Socio-Economic Life of the Char-People*' have a deep through the different problems and prospects of chars (Hussain and others 2005). People live in chars has contributed much to the economy of Assam particularly in agricultural sector. They have introduced multi crop at once in one piece of land and they never leave their agricultural field vacant in any season of the year. But the mainstream society did not like to recognised their contribution (Zaman 2005, Hussain 2005).

1.10. An Eye view on *Char* Area:

Char area is included those area which is found either on the bank or within the river like Brahmaputra. The size, shape and stability of these chars are subject to vary once a year with the mercy or anguish of the river. These char areas are affected by flood and erosion of the river Brahmaputra once a year (GoA, 1983). From Sadiya within the east to Dhubri

within the west of the state, there are 2251 char villages within the Brahmaputra valley. The govt through its 'Directorate of Char Areas Development', conducted two surveys for the people and society of chars. During the first survey (1992-93) number of char villages in char area were 2,089 which found increased to 2251 during the second survey 2002-03. The absolute best number of char villages were found in Barpeta district (351) during 1992-93 followed by Dhubri district (313). But after 10 years Dhubri district (480) takes the first position in respect of the quantity of char villages followed by Jorhat district (293). The chars have an area of 3,608 sq. km. and it constitutes 4.6% of the planet of the state.

The intensity of char land is particularly depending upon the flow pattern, discharge and erosion on the upstream. Existence of a char, thus, influenced by the above elements (Chakraborty 2011). Char lands are divided into three categories viz. Permanent, Semi-permanent and Temporary depending upon their longevity (Sarma 2014). Generally, first two categories are found with human settlement.

Dhubri could also be a bordered district. The district is surrounded by both international and inter-state boundaries. The Brahmaputra is that the most river within the district and there are other tributaries like Gadhadhar, Tipkai, Gourang etc. Char found both just in case of Brahmaputra and its tributaries, but char within the tributaries within the district aren't officially recognised. Both quite char i.e., chars located on the bank and attached to the mainland and other people chars are surrounded by river water, are found within the district. The later one is more flood prone than former. But so far as erosion cares, challenges are same for both the case.

Compare to the other region in Assam, the socio-economic status of the people sleep in char area are much pathetic and thus the condition. Within the Dhubri district the case isn't different, frequently speaking is more pathetic. Size of population of chars within the district

is 6.8 lakh and constitute 35% of the district (SESR 2002-03). Poverty and illiteracy at mass level are common altogether chars. Poor people (69%) of chars couldn't afford education to their children then that the literacy rate (19.3%) is way low than the state average 72.1%.

Agriculture is that the most occupation of char dwellers. They cultivate their land in both summer and winter season. The principal crop produced are paddy, jute, various oilseed, mustard and vegetables. Recently the traditional crop pattern found little change in char area. Because of heavy pressure of population in one hand and loss of land because of erosion on the other hand led to return away from the traditional farming. Now, a significant portion the landless and marginal farmers of the district are earning their livelihood from daily wage as labourer.

1.11 Importance of the study:

Dhubri is an agrarian and backward district in Assam. All the characters of an indigenous society are found in the districts. As more than 80% of the people earn their livelihood from agricultural sector which lost a vast tract of cultivable land every year due to flood and erosion. Consequently, these displaced people become landless, jobless as well as shelter less. They appear as migrating labourer and create many of the social and economic problems. Therefore, a systematic and scientific study on the problem like erosion and its impact on occupational structure or pattern are significant and important.

Every year a vast area of land is going into the Brahmaputra River as erosion in Assam as well as in Dhubri. During the period 1950-1980, the numbers of revenue villages fully eroded by Brahmaputra in the Dhubri District are as- Bagribari Revenue Circle- 06, Dhubri Revenue Circle- 06, South Salmara Revenue Circle- 56. On the other hand, numbers of villages partially eroded by Brahmaputra were as, Bagribari Revenue Circle- 124, Dhubri

Revenue Circle- 39, South Salmara Revenue Circle- 81, Mankachar Revenue Circle- 19, Chapar Revenue Circle- 11, Bilasipara Revenue Circle- 34. As per Government record there were 147 Revenue villages fully eroded till 1997 in only South Salmara Revenue Circle of Dhubri District in Assam. The number of people displaced due to erosion of Brahmaputra is 1.5 lakhs. Government initiative to control flood and erosion are seems to be insufficient.

Thus, a scientific research on the problem of erosion and its impact upon various segment of the society in char areas of the district of Dhubri is much necessary. Once the extent and acuteness of the problem and their impacts is sort out, then it will be helpful for the planners and policy makers to make and implement of appropriate measures to the problem.

1.12 Reference Period:

The reference period in this study includes the range of period 1950-51 to 2009-10. Due to non-availability of data, information of all the relevant variables could not be covered the entire range. The special significance of the period is that there has drastic change been take place in respect of intensity and depth of the river Brahmaputra and its char areas during this period. In our reference period, great earthquake (1950) taken place and then several great flood and erosion has been taken place in the Brahmaputra valley.

1.13. Limitations of the Study:

The main constraints in conducting research on the displacement and changes in the livelihood in the erosion effected char areas are non-availability of consistent data, lack of sufficient literature, communication gaps etc. Data, related with extent of erosion, displacement and damages of live and assets have suffered from the problem of inconsistency

with respect to different sources. As we had no option, we have chosen any one of those sources. Some literatures have not properly mentioned the data source.

1.14. Schematic Arrangement:

Chapter I: In this chapter we have discussed Statement of the problem, Objective, Justification, Scope, Hypotheses, Research questions, Review of literature and Schematic arrangement of the study.

Chapter II: This chapter deals with the Data base and Methodology of the Study.

Chapter III: This chapter presents a brief history of people living in char areas. It deals with background, history of immigration and land tenure system exist in the char areas.

Chapter IV: This chapter presents a discussion on flood, erosion and displacement. This chapter trying to analyses the extent of flood and erosion took place in different periods and number of damages thereon.

Chapter V: This chapter deals with the status of Government measures to control the flood and erosion problem in the state. The policy on the flood and erosion problem, anticipated measures, financial aid and rehabilitation has been analyses.

Chapter VI: This chapter deals with the analysis of the impact of flood and erosion on the socio-economic aspect. How the occupation, education, health and other amenities influenced by flood and erosion have been discussed.

Chapter VII: This chapter provides summary of findings, conclusions, suggestions and further scopes of research in connection with our entire study.

CHAPTER-2

DATA BASE AND METHODOLOGY OF THE STUDY

CHAPTER - II

DATA BASE AND METHODOLOGY OF THE STUDY

2.1. THE STUDY AREA:

Dhubri, the gateway of Assam, is situated at the western most corner of the state and the district happened to be a meeting place of different racial groups in the past which mixed together and formed a unique cultural heritage and historical background. The growth of mix culture in this region particularly in case of language, art and religion is due to continuous process of assimilation of various races, caste and creed of local people, invaders and migrated people.

The origin of the name Dhubri taken from the mythology of Padma-Purana of Behula-Lakhindar, where Behula used to his dead husband going to the still living Lakhindar. Behula arrived at the bank of Brahmaputra called Netai. She had worked for the havened gods such as Shiv, Parboti and others and washed her cloths on a big stone at the bank of Brahmaputra River called 'Netai Dhubunir Ghaat' (District Report, 2013).

The district of Dhubri was created on 1st July, 1983 dividing once Goalpara district. It is located strategically between Bangladesh and states of West Bengal and Meghalaya. The mighty Brahmaputra divides the district into two parts i.e., Dhubri and Bilasipara Sub-divisions in the north and South Salmara-Mankachar Subdivision in the south bank. In 2015, the South Salamara-Mankachar sub division declared to be a new district.

Dhubri district is bounded by inter-state and international border. In the west, there are West Bengal and Bangladesh, in the east Goalpara and Garo Hills district of Meghalaya, in the north Kokrajhar district and in the south, there are Meghalaya and Bangladesh. The

area of the district is 2,838 Sq. kms. The district has become the most densely populated district in India with a density of 690 persons per Sq. km as per 2011 census (Census, 2011). Its population growth rate over the decade 2001-2011 was 24.4 percent. Dhubri has a sex ratio 952 and literacy rate is 59.3 percent.

Agriculture and forest product are the main occupation of the people of Dhubri district. Main source of income is paddy with surplus production than its requirement. Jute and Mustard seed are two major cash crops. The timber and bamboo of the forest add income to the people. Fish, milk, meat and egg have also found a place in the economy. Though agriculture is the main occupation of the district but land revenue occupies less than excise duty to the Govt exchequer.

Dhubri is one of most flood prone district of Assam. Flood is a recurring feature of the district which causes extensive damage and economic loss almost every year. Every year, the South Salmara-Mankachar Sub-division of the district is found affected mostly by floods, particularly the revenue circle viz. South Salmara, Sukchar and Mankachar. Area under South Salmara Circle has already been washed away by erosion. In the Golakganj circle, Golakganj town and Pub-Kanuri village are affected by Gangadhar flood and erosion. The Bilasipara Sub-division is mostly affected by flash floods of river Gaurang originating from Bhutan.

2.2. LOCATION AND BOUNDARIES:

Dhubri district is situated in the western most corner of Assam, between latitudes 25.28° and 26.01° North and longitudes 89.59° and 90.28° East and 35 meter above mean sea level. The district is almost triangle in shape and bounded by Kokrajhar district in the North, Bongaigaon and Goalpara districts in the East, Meghalaya in the South and West Bengal and Bangladesh in the West.

2.3. PHYSIOGRAPHY:

Representing a part of the lower Brahmaputra Valley the area as a whole is considered as plain and the topographic variation along the east-west direction is not significant. The study area comprises *char* lands formed by the braided river Brahmaputra. One interesting geomorphologic feature of the valley is the presence of a good number of isolated hillocks detached from the Meghalaya Plateau by the degradation work of the river Brahmaputra.

Most of the rivers of the lower Assam have their origin in the Bhutan and they have been flowing in almost north-south direction. A significant physical characteristic of this region is that the river Brahmaputra is highly braided in this region due to its low gradient. As a consequence, there found various riverine islands inside the river bed of the Brahmaputra. It includes all the river islands of the Brahmaputra within the territory of the district. This belt as a whole flooded by the river waters every year and termed as floodplains of new alluvium and silts. This transitory river islands and lowlands in the middle of the Brahmaputra are called *Char lands* or *Chapori* which are formed by the deposition of waste in a certain year. They generally remain above the water level during the winter season but submerged under water during the summer flood season. These char lands are suitable for agriculture only for *rabi* crops during the winter season and the peasants have to discard these lands during the summer season.

2.4. GEOGRAPHICAL AREA:

The District has total geographical area of 2838 sq. km. equal to 19,06,643 Bigha with population of 19,49,258 as per Census 2011. After creation of BTAD, the present Dhubri district has total geographical area of 2012 Sq. km., which is almost equal to land area of 15,04,177 Bighas (District Report, 2013). The region comprises seven Community Development Blocks, which are considered as micro level spatial units for the purpose of this

research work. Out of total 1100 revenue villages there are 480 villages are under char areas. The rural area covers 2144.1 sq km representing 75.5 per cent and the urban area represents the remaining 24.5 per cent of the total geographical area. Geographically the land of the district can be divided into three categories and they are:

1. **Char (Riverine) areas:** The area along river Brahmaputra and almost the entire South Salmara-Hatsingimari Sub- Division fall in this category. Areas fall under this category is also mostly affected by flood and erosion.
2. **Kaim (Permanent) areas:** Land area located at middle of the district along the NH 31 is known as kaim area. This part is also flood prone area.
3. **High land and Hilly areas:** Area fall under this category located on the Northern part of the district and the area bordering with Meghalaya. Floods is not a problem there.

2.5. ADMINISTRATIVE SET UP:

Dhubri is one of the plains districts of Assam. It falls in the Brahmaputra valley. Dhubri was one of the three sub-divisions of old Goalpara district. It has three sub-divisions namely, Dhubri, Bilasipara and South Salmara-Mankachar. The district has 1,091 villages spread over 3 sub-divisions and 8 Revenue Circles. The districts have an area of 2176.00 Sq km (Rural: 2144.06 Sq km. and Urban: 31.94 Sq km). It is 17th position in terms of area of the total 27 districts in Assam. It has 168 Gaon Panchayat in all (Census; 2011). The numbers of revenue villages in the district are:

Dhubri (Sadar) Sub- Division:

- 1) Dhubri Revenue Circle = 232 Revenue villages.
- 2) Golakganj Revenue Circle = 147 Revenue villages.

3) Agomani Revenue Circle = 83 Revenue villages.

Total = 462 Nos of Revenue villages.

Bilasipara (Civil) Sub- Division:

1) Chapar Revenue Circle = 151 Revenue villages.

2) Bilasipara Revenue Circle = 203 Revenue villages.

3) Bagribari Revenue Circle = 242 Revenue villages.

Total = 596 Nos. of Revenue villages.

South Salmara- Mankachar (Civil) Sub- Division:

1) South Salmara Revenue Circle = 201 Revenue villages.

2) Mankachar Revenue Circle = 115 Revenue villages.

Total = 316 Nos. of Revenue villages.

TABLE 2.1: Demographic Profile of Dhubri.

Total Population: 19,49,258	
Male	9,97,848 Nos. (51.37 %)
Female	9,51,410 Nos. (48.63 %)
Sex Ratio	1000: 952
General Population	12,36,054 Nos. (92.76%)
Schedule Caste	70,395 Nos. (3.61%)
Schedule Tribe	6,332 Nos. (0.32%)
Urban Population	2,03,701 Nos. (12.16%)
Rural Population	17,45,557 Nos. (87.84%)
Density	896 Nos. per Sq. Km.
Percentage of Decadal growth rate (1991-2001)	+24.44
Crude Birth Rate	31%
Crude Death Rate	9%
Maternal Mortality Rate	4/1000
Infant Mortality Rate	78/1000
Literate Person	922,341 Nos. (59.34%)
Male	511,551 Nos. (63.10%)
Female	410,790 Nos. (53.33%)

Source: Census Report, 2011.

2.6. ROAD NETWORK:

The National Highway 31 passes through this district starting from Chapar to Chagolia covering a total distance of 112 kms. The surface transport and water ways connect South Bank Subdivision from Dhubri, the district head quarter through Goalpara by road and ferry services to transport the public as well as the essential commodities by water way. Length of State PWD Road is 125.95 km and rural PWD Roads are 660.478 km.

2.7. RAILWAY COMMUNICATION:

Northeast Frontier Railway line communication runs through the Dhubri Sub-division and Bilasipara subdivision via Parbatjhora Subdivision of Kokrajhar district. There are 5 Nos of Railway Stations viz. Dhubri, Gauripur, Golakganj, Balajan and Moterjhar covering a total length of 59 kms of B.G. line. A portion of New Moinaguri-Jogighopa railway fall in the district is under construction.

2.8. AIR COMMUNICATION:

Rupshi-airport (now under BTAD) was constructed during the last World War-II by the British Govt is about 15 km away from Dhubri town. Some private companies were operating regular flights carrying passengers as well as goods between Calcutta and Dhubri via Coochbehar (West Bengal) after Independence. The Indian Airlines also operated regular air flights between Calcutta and Dhubri. After a long period, at present the Airport is under the National Airport Authority of India and opened for flight.

2.9. TOPOGRAPHY:

The unique geo-climatic condition of Dhubri district has made it a unique district compared to other districts of Assam. The mighty Brahmaputra flows through the district separating it into two parts- South Salmara-Mankachar Sub -Division in the South, Dhubri and Bilasipara Sub Division in the North Bank. The tributaries of the river Brahmaputra are Gangadhar, Gadhadar, Gaurang, Tipkai, Champawati in the North and Jinjiram, Jinari and Kaloo in the South bank which causes flood along with massive erosion in the district. Major Beels of the district are Sareswar, Tally, Dheer, Dhakra, Diplai etc. The Brahmaputra flows through a total length of 720 Km in Assam of which 88 Km lies in Dhubri district itself.

2.10. CLIMATE AND RAINFALL:

The climate of the District is damp and humid for its high temperature and heavy rains. The highest rainfall happened in the month of June and July. Generally, the period from June to October is considered as flood season.

TABLE 2.2: Comparative Rainfall in 2010

Month	Year-2010		Year-2011	
	Daily Average Rainfall (in mm)	Monthly Actual Rainfall (in mm)	Daily Average Rainfall (in mm)	Monthly Actual Rainfall (in mm)
January	0.0	0.0	3.4	0.1
February	0.0	0.0	30.8	1
March	72.7	2.3	58.7	2.1
April	426.0	14.2	69.6	2.3
May	548.1	17.7	233.3	7.5
June	553.6	18.5	290.4	9.7
July	223.2	7.2	252.1	8.3
August	178	5.7	409.4	13.2
September	171.3	5.5	-	-
October	31.0	1.0	-	-
November	2.7	0.1	-	-
December	2.4	0.1	-	-

Source: Disaster Management Plan of Dhubri, 2011.

2.11. DATA BASE AND METHODOLOGY:

This study has been conducted in Char Areas of Dhubri district of the state Assam. The area under char area is 998 sq. km and it constitutes 35.7% of the total area of the district. The char areas of the district Dhubri cover the maximum area among the char areas of all the other districts and it is very high in comparison to percentage of total char areas of Assam (i.e., 4.60 percent of the total geographical area of Assam).

The percentage of population in char areas of Dhubri district is 42.14 of the total population of the district as against 9.34 percent in overall char areas of the state to the total population of Assam. Density of population in overall char area is accounted for 690 per sq.km, which are 690.61 in char areas of the district Dhubri.

Number of villages and households in char areas of Dhubri district is highest in comparison to the char areas of other districts of Assam. The total cultivable land in char areas of the district Dhubri is 67,124 hectares, which is highest in comparison to the char areas of other 13 districts, and the total irrigable land in the same is 8,145 hectares. The char areas are located in both the North and South bank of the river Brahmaputra (SES, 2002-03).

2.12 METHODOLOGY:

Both the primary and secondary data have been used in the study. Primary data has been collected on the basis of questionnaires prepared as per requirement.

2.12.1 SAMPLING PROCEDURE:

Primary data used in the study have been collected from the sample survey. Two types of sampling have been used viz., the stratified and the random sampling. Out of 2251 char villages in Assam, there are 480 numbers of char villages are in the Dhubri District. We

divided all the char villages of the district into four strata (or categories). These four strata were as-

1. Char villages near of towns.
2. Char villages far distant from town.
3. Char villages surrounded by river water.
4. Char villages attached with mainland.

In the 2nd step, using multi-stage sampling, 4 (four) villages from each of the four strata listed above, have taken in the sample at random and have constitute a sample of 16 (sixteen) char villages of different categories of the district.

In the 3rd step, from each of the villages 30 (thirty) household have been selected at random. This has constituted a sample of $30 \times 16 = 480$ households.

In the next step, a questionnaire was prepared to collect relevant information on the basis of personal interview method from 480 households of the sample. Primary data collected are related to cross section data on Income, Education, Health, Sanitation, Use of fuel, Occupation, Banking habits and other civic amenities in the present study.

In order to collection of primary data a structured questionnaire has been used. To avoid improper filling of the questionnaire by illiterate and unskilled respondents of char areas, the researcher will use the questionnaire as interview schedule to fill up the questionnaire on the spot as the respondents provide the answers.

The size of sample keeps small due to lack of sufficient manpower, time and money involve in the process of collection of data. As the researcher is an employee and hence other

duties also have to do. Therefore, the size of sample keeps as $30 \times 16 = 480$ households of char areas in the district.

2.12.2 SECONDARY SOURCES:

Secondary data used in the study have been collected from different published and unpublished sources. The main published source of secondary data are the Census of India, Statistical Handbook of Assam, Economic Survey of Assam, Human Development Report, National Family and Health Survey, District Annual Report, Report of different Government department, Books, Journals, Bulletins and so on. Unpublished data includes information collected from Government offices like Revenue Circle, Development Block offices, unpublished research works etc.

2.13 DATA PROCESSING:

To fulfil the first objective of the study, information collected from various secondary sources and analysed. In order to understand the extent of displacement due to flood and erosion data collected from secondary sources are grouped at National, State and District basis.

In order to fulfil the second objective data collected relating to income, occupation, and education etc of the household of the selected char villages of the district which are recurrently affected by flood and erosion every year. Data and information so collected is compared to the District and State level data available at secondary sources.

For the third objective the various literatures, reports, researches and analysis is sufficient. To fulfil the fourth objective analysis of all the information collected from primary and secondary sources have been analysed.

2.13.1 STATISTICAL ANALYSIS:

The statistical methods like Averages and Percentages have been used to measure the attributes like Income, Education, Migration, Assets and Property, Housing conditions etc. So that data collected on different attributes are expressed in Average and Percentage. In this analysis the percentage value was used for all the groups and was taken to draw the comparable results.

The two-way ANOVA technique is used in order to measure the sample variation on the attribute like education, occupation, size of land holding of the households. The ANOVA is a statistical technique that used to check if the means of two or more groups are significantly different from each other. It checks the impacts of one or more factors by comparing the means of different samples.

In the two ways ANOVA, data are classified according to two different criteria. The procedure for analysis of variance is somewhat different from the one way that the one way dealing with problems of one-way classification. In a two-way classification the ANOVA table takes the following form:

ANOVA: Two way				
Source of variation	Sum of Squares	Degrees of freedom	Mean Sum of Squares	Ratio of F
Between Samples	SSC	(c-1)	MSC= SSC/(c-1)	MSC/MSE MSR/MSE
Between Rows	SSR	(r-1)	MSR= SSR/(r-1)	
Residual or Error	SSE	(c-1) (r-1)	MSE= SSE/(r-1) (c-1)	
Total	SST	n-1		

SSC= Sum of squares between columns.

SSR= Sum of squares between rows.

SSE= Sum square due to error.

SST= Total sum of squares of variations

Chi Square Test is also used to measure the change in occupation due to erosion. The chi square describes the magnitude of the discrepancy between the observed and expected values. It is defined as-

$$X^2 = \sum \frac{(O-E)^2}{E}$$

Where, O refers observed and E refers expected frequencies. Expected frequencies are obtained using the formula $E = \frac{(\text{Row Total})(\text{Column Total})}{N}$

In some cases, we measured the **Karl Pearson's Correlation Coefficient** among variables. The correlation coefficient helps us to know the types and degrees of relationship among the variables. The formula used to find out the correlation coefficient (r) is-

$$r_{xy} = \frac{\sum xy}{\sqrt{\sum x^2} \cdot \sqrt{\sum y^2}}$$

Where, $x = (X - \bar{X})$ and $y = (Y - \bar{Y})$

2.13.2 Quantification of Socio-Economic Variables:

In order to quantification of socio-economic attribute we have used the *Kuppuswamy's Socio Economic Scale* in this study. In this method the socio-economic status of a household is identified based on their Income, Education and Occupation. Different

score point has been offered for different levels of attributes. The model of the scale is given as follows:

TABLE 2.3: Revised scale of socio-economic status (2012)

A) Education		Score
1	Profession or Honours	7
2	Graduate or Post Graduate	6
3	Intermediate or Post High School Diploma	5
4	High School Certificate	4
5	Middle School Certificate	3
6	Primary School Certificate	2
7	Illiterate	1

B) Occupation		Score
1	Profession	10
2	Semi Profession	6
3	Farmer, Shop-owner, Clerical	5
4	Skilled Worker	4
5	Semi-Skilled Worker	3
6	Unskilled Worker	2
7	Unemployed	1

c)	Monthly Income (in Rs.)	Score	Modified for 1998 (in Rs.)	Modified for 2012 (in Rs.)
1	≥ 2000	12	≥ 13500	≥ 32050
2	1000-1999	10	6750-13499	16020-32049
3	750- 999	6	5050 - 6749	12020-16019
4	500- 749	4	3375 - 5049	8010-12019
5	300-499	3	2025 - 3374	4810-8009
6	101-299	2	676 - 2024	1601-4809
7	≤ 100	1	≤ 675	≤ 1600

Total Score	Socio economic Status
25-29	Upper (I)
16-25	Upper Middle (II)
11-15	Middle/ Lower Middle (III)
6-10	Lower/ Upper lower (IV)
≤5	Lower (V)

This method has been helping us in categorisation of household in different groups like Lower, Middle or Upper class. In order to identify the number of households living below the poverty line we depend upon the BPL ration card issued by the Government.

CHAPTER-3

A BRIEF HISTORY OF PEOPLE LIVING IN CHAR AREA

CHAPTER - III

A BRIEF HISTORY OF PEOPLE LIVING IN CHAR AREAS

3.1. INTRODUCTION:

Human civilisation is the history of migration of people from one place to another. The economic growth and development of a nation or region is connected with the rate of migration. No nation in the world could be witness of development without migration. Even U.S.A, the most developed nation of the world, is also a good witness of economic development through migration of people from different countries.

It is a universal phenomenon that the people living mainly on small-scale subsistence agriculture in the rural areas do not like to move outside in search of alternative occupations unless they are pushed by such factors as increasing scarcity of agricultural land due to diminishing land-man ratio or increasing pressure of population on agricultural land, lack of avenues for alternative occupations within the rural sector and increase of literacy and educational attainment associated with unemployment. As a result of such factors, people are pushed away from their rural areas in search of other job elsewhere wherever they get the opportunity. Thus, the existing socio-cultural landscape is altered and a new landscape is created by the human action through the process of evolution (Rawntree, 1982). It is more so in the case of urban community. Even the illiterate poor people move away from their villages to do low grade non-agricultural works elsewhere when they do not have required agricultural land (Alexander, 1985). Thus, the process of occupational mobility of the rural people is caused in an agrarian situation leaving behind significant changes in the socio-economic structure of the rural areas from where they move away but not completely shedding their relationship with their rural homes.

In 1874, districts like Cachar, Goalpara and Sylhet were attached to the state of Assam and peasant migration from different parts of Bengal to Brahmaputra valley started steadily. The landless peasants of the densely populated districts of the then East Bengal always attracted by vast tract of waste land of Brahmaputra valley. By 1875-76 there were 67,79,978 acres of cultivable waste land in the Brahmaputra valley districts where only 12,58,277 acres of land were cultivated (Guha, 1984).

‘Char areas’ is a peculiar geographic feature of Assam. Those vast tracts of land found in and on the bank of river like Brahmaputra are known as ‘Char Areas’. The structure of these lands is very soft and hence temporary in nature. These areas are low lying so that found under water during the period of flood every year.

Initially these areas were waste land and used for the purpose of cow feeding and other such secondary utility till the last part of 19th century. It was the British Government of India who took initiative for settlement of farmers from then East Bengal through the middle class like *Zamindar, Jotedar, Talukdar* etc.

As per Survey report, 2003 by the Director of ‘Char Areas Development, Assam’ there are 2251 numbers of char villages scattered in 60 numbers of Development Blocks under 14 numbers of districts in Assam. Among these districts, the Dhubri district has maximum 480 numbers of char villages. In Assam, there are 24,90,397 population and 4,34,754 households living in char areas which constitute 12% of the total population of the state. The cultivable land is measuring about 2,42,277 hectares i.e., 2.98% of the total land of the state fall under char areas. Like ‘Boarder Areas’, ‘Hill Areas’, ‘Tea Garden Areas’ the ‘Char areas’ also recognised as Backward areas in the Government records. The present study is an attempt to sketch a picture on the life and livelihood of the people living in char areas in the district of Dhubri.

3.2. BACKGROUND AND HISTORY:

The habitation in char areas begins to start during the last decades of 19th century and it extends its scope from the first decades of 20th century onwards. Before that, these areas, except a few, were filled with forest and jungles. Mill's report, 1854 and Census report, 1872 mentioned nothing about the life and society of these areas. Even as per census, 1901 population was much less. The density of population per square mile in Brahmaputra Valley was as Goalpara 117, Kamrup 153, Darrang 99, Nogaon 68, Sibsagar 120 and Lakhimpur 82. On the other hand, there were a different picture in province of East Bengal adjacent to state of Assam (and were part of Assam for 1905-1911). The density of population there were as Rongpur 617, Bogura 619, Pabna 772, Dacca 952, Moymonsing 618, Nowakhali 694 and 416 in Silhet district (Guha, 1984). These odd balance and distribution of population leads people to migrate from bulk to thick density areas.

River bank erosion causes displacement of inhabitants who previously lived near river banks. 'Those erosion-affected people loose not only their homes, means of livelihood and assets but also their previous identity, and they, therefore, often try hard for recognition of an identity (Das, 2010)'. Flood and river bank erosion are almost regular disaster in the world. Between these two types of disaster, the loss due to flood is temporary, but the loss of land due to river bank erosion is not compensable any way and hence there is a long-term impact on the society and economy. Once residential and productive land is lost due to erosion, it cannot be replaced. Generally, provision of institutional compensation is not available for erosion affected people. This undesirable experience needs an appropriate policy, so that the conflict between river dynamics and human settlement could be minimized.

Erosion is a natural phenomenon. Rivers especially the mighty Brahmaputra and its tributaries erodes vast areas of land every year in Assam. As it is well known fact that more

than 70% of the population are depends on agriculture for their livelihood. Agriculture or cultivation requires fertile land which erodes by the river every year. People displaced due to erosion become more and more in recent years. The occupational structure, income, living standard of the people of the agrarian society hamper greatly due to the continuous erosion especially of the agricultural land. It stands as a challenge for the people as well as the Government for the resettlement of displaced people.

The present study is confined to the char areas covered by the boundary of the Administrative District of Dhubri. The District of Dhubri is situated at the western part of Assam and is known as the 'Gateway' into the North Eastern states of India. It is the entrance point into the state of Assam as well as North East for the people of other parts of India.

The Geographical and Political situation of the Dhubri District is also suitably important. It touches the International border with Bangladesh and hence serves as one of the 'Gateway' of Bangladesh to Assam.

During the period of Mughal, this area was included into three Zamindary Estates viz. Gauripur, Porbotjowar and Chapar Zamindary Estate. The Gauripur Raj Zamindar family is well-known to whole of India after the name of late Pramathesh Barua, one of the pioneers of Indian Film Industry and were the Director of 'British Dominion Film Company' and '*Hostir Konya*' Padmasree Protima Pandy Baruah, the 'Empress of *Goalparia* Folk Song'.

During British Period, this region was transferred into various administrative blocks. Once it was attached with Rongpur district of East Bengal. Then it was separated from Rongpur and attached with Greater Cooch Behar administrative block. Finally, it was given an identity as a district and named it as 'Goalpara District' including Dhubri as a sub-division and attached with the Province of Assam.

The mighty river Brahmaputra passes way from the East to the West in Assam as well as in the District of Dhubri. There are six tribute rivers of the Brahmaputra in the District. During rainy season with the effect of Monsoon, heavy rain fall in the upper stream causes heavy flows of water into mighty Brahmaputra and its all-tribute rivers. This heavy flow of water causes flood in the district and consequently erosion takes place. Both flood and erosion cause much damage of lives and property including agricultural land in the District as well as in Assam. The process of damaging lives and property occurs every year recurrently. The impact of flood and erosion fall on the people basically live in *Char areas* in the district.

3.3. IMMIGRATION INTO CHAR AREA:

Immigration into char and its neighbouring low-lying areas were due to some geographical and socioeconomic factors. Though the process of immigration was started in the last part of 19th century but it accelerated in the beginning of 20th century (Sheikh 2013, p25). During pre-independence period, the major reasons of immigration were as follows:

1. Long lasting oppression and suppression by Zamindars and Mahajan leads the farmers to become landless farmer. Due to increasing rent and taxes farmers were bound to resort loans from Mahajan. Though interest was paid to Mahajan but principal amount was always unpaid and lands owned by the farmers were went to the hands of the Mahajan. So, most of these types of landless farmer were used to migrate into Assam in search of cultivated land.
2. During 1905 to 1911, Assam was attached with East Bengal and both comprise the same state. There exchange was taken place on Government employees, education, culture etc. between two provinces. Many of students were studied in different schools and college in Dacca and Calcutta.

3. Land tenure system in Bengal and Assam was another factor that encourages much the farmers of East Bengal to migration into Assam. In Bengal where Zamindari system was prevails under permanent settlement but in Assam (except Karimganj sub division and Goalpara district) there prevails Ryotwari land tenure system. The extent of rent and suppression in Bengal was higher than in Assam.
4. In the year 1893, 1897, 1898 and 1915, famines taken place in most of the places of Bengal and thousands of people were died in famine. Many of subject in Bengal were migrated into Assam in rescue of famine.
5. Caste and culture were another element of immigration in to Assam. The south part of Assam was a part of Bengal years after year. People resides here were Bengali and they occupied majority in every time. Similarities of language, caste and culture of the residents were made easy to immigration from Bengal.
6. Before the beginning of 20th century, most of the land in Assam was full of forest and jungles. Proportion of non-cultivated land to the population were much high and the fertile non cultivated land were attracted much landless farmers of Bengal.
7. The indigenous local people show no interest on the char and low lying riverine remote areas. These areas lying as grassing and waste land.
8. Another important factor for immigration was the economic condition of then Assam. Population of Assam was drastically decline due to Cholera, Kalazar, Malaria like epidemic dieses and the Burmese invasion. Report said, population declines in Nogaon district by 25 percent, 7 percent in Kamrup and 9 percent in Mongoldoi sub division during the decade 1891-1901. Some places in upper Assam found to be uncultivated due to lack of people. In such a situation some prominent figures like Gunabhiram Barua were prayed then British Government to import farmers from outside to settled in Assam.

9. Colonization scheme of the British Government was an important factor that extends the size of immigration into Assam. Like Bengal, land in Assam was found to be suitable for jute cultivation and from the inception Government was encourages outside farmers for the jute cultivation. They like laborious and skill farmers of Bengal for the purpose of extension of jute cultivation and other cash crops. Farmer of East Bengal was known for more production in less amount of land.

Though immigration was taking place due to factors mentioned above, but the colonial policy of the British Government was mainly responsible for the immigration (Sheikh,2013 p26). In order to attract more immigration into Brahmaputra valley Francis Jenkins, Commissioner and agent of Governor General for North East Frontier, emphasize on the extension and development of road and communication system. He wrote letter to the Director of Assam Company, Lord Dalhausie, to extend the shipping from Guwahati to Dibrugarh. Mr Anandaran Dekial Phukan, an Assamese figure was also a supporter of the immigration policy of the Government. In a letter written to Mills, he expressed his willingness as ‘the people from some of the badly provided parts of Bengal could be invited to immigrate.’

However, there were found no immigrant people in char areas till 1874. In order to attract immigrant people to the province of Assam, the Assam valley District commissioner Mr Johnson made a proposal on 8th May, 1885 that provides cheap ticket facility for Rail and Ships and rent-free land for three years to the immigrants. In those days, a family could go anywhere of the state from Bengal simply by collecting a ‘Family ticket’ of Rs 5 only. This proposal was taken place in the Government policy (Sheikh, 2013).

But the rate immigration was very slow till the beginning of the 20th century. E.A.Gait wrote in his census report, 1891 ‘It might have been thought of the amount of available land,

the fertility of the soil, and low rents, prevailing would have induced some portion of at least of the overcrowded cultivators of Bengal to find their way to Assam and take up land here, But this does not appear to be the case.’ (Census of India, 1891, Assam, Vol 1, Report p 67). Only a few numbers of people were immigrating into Goalpara district from Moymonsingha, Dacca and Rongpur.

The process of immigration becomes easier when communication has been established between Assam and East Bengal. The first Railway connection between Assam and Bengal starts in 1891-92 from Chittagang to Tinsukia. People came into Assam in ships and railway and they first settled in waste alnd like low lying char areas, grassing field and forest areas of Goalpara, Kamrup and Nogaon district. Some people were also used traditional boat and foot to migrate. Once Dhubri, Fulkatari, Bahadurkati, Goalpara, Palashbari, Tarabari were the shipping port. People who came into Assam by ships were boarded at these ports and scattered in different char areas.

In the year 1903-05, partition of Bengal opened a flood gate of immigration of farmers from East Bengal into Assam. Immigration became easier when Assam was attached with East Bengal. This has increased the size of jute cultivation in Assam as well. The extent of jute cultivation increased from 30,000 acres in 1905-06 to 106,000 acres in 1919-20 (Hussain, I, 1997).

During the period 1904-11, 54,000 people were migrated into Assam from adjacent Bengal district like Moymonsingha, Rongpur and Jalpaiguri. Of these 51,000 people were settled in Goalpara district and 3000 in other districts of Assam. By 1921, altogether 141,000 immigrants had settled down in Goalpara and 117,000 in Assam proper. The number of East Bengal settlers together with their children in the Brahmaputra valley were estimated at 3,00,000 by the census authorities in 1921 (Guha, 2016). During the decades 1921-31, the number of immigrants rose to 5,75,000. Among the immigrant’s majority of were from the

district Moymonsingha of East Bengal (Hussain, 1997). The Colonial Government and some middle-class Assamese people were encouraged the large-scale immigration. Providing financial support, some Marwari and Assamese businessman were helped those immigrant farmers to start plough in the virgin soil. It was those immigrant farmers to introduce the cultivation of jute and mung mah (a kind of pulse) on the land in Assam (Guha, 2016)'.

3.4. LAND TENURE IN CHAR AREAS:

There is no special land tenure system for Char areas in Assam. Based on the Colonial exploitable land system and land laws introduced in post-independence era, land tenure system is running in Assam and in Char areas. The Land and Revenue Law, 1886 is the foundation of land and revenue policies in Assam. In this law, there is no provision of ownership of land by the farmers, though all other matters related to land were mentioned. For the purpose of farmers right on land, there were three tenancy laws viz. Goalpara Tenancy Act 1929 for Goalpara, Silhet Tenancy Act 1963 for Karimgnj sub division and Tenancy Act 1935 for other part of valley district. To overcome the inequalities and conflict on the rights of riots, The Assam Temporarily Settled Areas Tenancy Act, 1971 was introduced in the year 1971.

Hunter report (1879) mentioned that char areas of Brahmaputra extent from Rongpur to Bijni was full of jungles and this land was used to feed cattle. Later these lands become cultivable and Government provide one-year settlement (*eksona*) to the farmers of neighbouring villages. When immigration takes place, Government has settled East Bengal farmers in these areas. Zamindars of Gauripur, Chapar and Karaibari were allotted these lands to rich farmer as *Jotedars* who were imported laborious farmers from Rongpur and Moymonsingha district.

Though the method and process of cultivation was same in all char areas, but the land tenure and occupation were found not to be uniform. When the Goalpara district was under the Permanent Settlement system, all other districts of Assam were under Raytowari settlement. Hence, land system in char areas of Goalpara district was separate from that of Raytowari system. In Goalpara, there was a middle class e.g., Zamindars, Jotedars, Talukdars etc. in between the Government and farmers. This middle class was exploited farmers in all the way. Farmers were bound to pay rent along with other taxes. Above all, majority of farmers was landless. Either whom Zamindars or Jotedars, rent was paid they were treated as landless by law (Guha, 1984). On the contrary, farmers in char areas in other district were allotted land on yearly basis and they were paid rent to the Government directly. There was no middle class in between Government and farmers (Sheikh, 1993).

Under the permanent settled area, the existing chars of the river Brahmaputra were owned by the Zamindars. In order to get land in Assam, the immigrant farmers were used pay high rate of salami and rent to the Zamindar and hence they were always preferred to settled down here (Das, 1990). The Zamindars did not bother about keeping the chars as professional Grazing Reserves or other reserves as in the temporarily settled areas and a newly emerging borderline char was often the scene of armed fighting between different parties engaged by neighbouring Zamindars (Das, 1990). The Zamindars of permanently settled estates claimed full ownership of the chars and the riverine areas thrown up by the Brahmaputra and the prospect of augmenting their revenue by selling these tough hard-working immigrant cultivators on sandy lands which had hitherto no value for them made them extremely happy (Das, 1990).

In Assam, during 1897 and 1929, for 32 years 'The Bengal Alluvion and Diluvian Regulation, 1825 was in force. Section 4(3) of this Act mentioned that when a char rise in the middle of Shipping River shall come be under of the Government if the channel between

chars and the bank neither cross by walk. In the district other than permanently settled, when a new char is grown up it become the state property. New char was used kept either as catling land or else. Generally, competition begins among the farmers when a char land becomes cultivable. No one waits for Government steps to allotment of such land. That is why much encroachment and boundary related disagreement found in chars. As there is no provision to settle down of such disagreement in either 'Assam Land and Revenue Act' or 'Alluvion and Diluvian Act', very rare numbered case was settled under revenue law. In whole of the country, the law is in force that 'Eroded land reformed on the old site continues to be the property of the owner provided it has not been completely abandoned meanwhile. Abatement of revenue is said to be an indication of complete abandonment' (Das, 1990). The District Collector has the authority to cut in rent of the land. But these will loss the owner because if the owner applies for rent relief then certainly, he will lose and the land shall become as Khas land. If the owner continues to pay rent even after the land eroded then he will get back the land after due time. Provision under the 'Goalpara tenancy Act' is that the 'tenants' interest in the diluviated land subsists till 20 years or till 3 years after the appearance whichever is less' (Das, 1990). The interest of the owner of eroded land is mentioned under Section 83 of the Goalpara Tenancy Act as 'If the entire land of the tenure or holding or a portion of such land is lost by diluvian. 'The rent of the tenure or holding shall be abated by an amount which bears the same proportion to the rent of the whole tenancy, as the area lost bears to that of the whole tenancy' (Das, 1990)'.

Land laws, those were in force, in pre independence era were not able to secure the interest of the riots on land in char areas. Land allotment system was not error free and farmers in char areas were suppressed and exploited. Even after the independence, situations remain same. Government measures in case of allotment and settlement of char land and impact of erosion of Brahmaputra can be understand as that there is no system to settlement

of temporary char land, so clash and disagreement on the ownership are always to be found in char areas. Char land becomes under frequent erosion and people residing there were scattered in different places. After few years when eroded land thrown up, it becomes tough to establish the ownership by the old farmers. If the eroded char thrown up in the same place and owners was paying rent regularly then it creates no difficulties. But after erosion a char can be thrown up as a set of many chars. Again, owners are leave to pay rent after the land eroded and the land become *khas* land. In such situation, it becomes difficult for the revenue department to return the land to its owner.

The nature of chars is not same. Some chars are semi-permanent and some other is most temporary. Those chars are situated on the north bank of Brahmaputra are found to be more permanent to that of on the south bank. Many of the farmers have *patta* on their occupied land. Of course, these are also not free from flood and erosion. But the stability and protection capacity are more than other char lands. On the contrary, conditions of char lie on the south bank are more acute and their both stability and protection capacity is very poor and uncertain. These chars have rare *patta* lands and even if few have *patta* but they are not certain because once land eroded by Brahmaputra, *patta* become valueless.

Loss of ownership of land due to nonpayment of rent is a normal fact to the farmers in chars. Very few numbers of farmers are able to pay rent regularly and the causes of nonpayment of rent are due to:

- (1) In many cases, the revenue department denied to receive rent of the eroded land,
- (2) Due to acute poverty among cultivators, it is not possible to pay rent for the eroded land,
- (3) After alleviate the land, farmers become landless and in search of livelihood they travel long distant. For such farmers it is very difficult to deposit rent in Government office,

(4) In some time, land less farmers went to cities and town to earn their livelihood. They become familiar to the job that has no relation with agriculture and they lose their interest to pay rent of their eroded land,

(5) Sometimes Government declares some rent relief schemes after flood. Due to illiteracy among the farmers, they did not have the accurate information about for how many years and for what class of lands the rent is relieved and hence the leave to pay rent.

Lack of proper survey of land is another problem in chars of Brahmaputra valley. In Goalpara district (permanently settled areas) re-survey of char land starts in 1979 but the initiative stopped down due to movement on foreigner's issue. In 1983, surveying of char land re started but due to lack of sufficient manpower like *Mondals* etc process become at a slower rate. In 1994, in few selected districts of lower Assam issuance of *patta* starts to the household up to 6 bighas of land who occupied it for 15 years or more. Again, the issue of foreigner has become a hindrance in the process.

Government should come forward with some remedial measures to overcome the problems related to the settlement of char land. Normally the government personnel of revenue department show no interest to visit the char areas. When a *char* is thrown up in the bed of river and no immediate measures taken to survey then it became difficult to hand over the land to its owner. The opportunist *Matabar* in char areas become self-declared owner of new chars.

Because of the temporary nature of char land, in order to identification and rent fixation, frequent survey and demarcation of holding is urgently need. If the revenue department is not conscious about the quick survey of newly thrown up chars normally there will be some clash on claims of holdings among the public. Sufficient numbers of survey personnel are necessary otherwise the Government will lose its revenue. The method and

process of determination of rent should simple and the temporary nature of settlement should apply at the beginning.

During post-independence period several land laws has been introduced. In tribe belt areas farmers right has been protected by law, but till the day, no such land law is prepared for char land. Keeping in mind the special nature of chars, the Government should come forward with a special law for char areas land. This will help in rising of land revenue of the Government as well as it will stop the oppression made by *Dewani* and *Matbars* in chars.

3.5 CROPPING PATTERN:

Cropping pattern reflects the production behaviour of the farmers in their agricultural operations. In a traditional society due to lack of knowledge and capital, use of new technology is remain absent. Again, the possibility of crop shift is much low by the illiterate and poor farmer (Sing 1964). Cropping pattern is an important indicator to show the proportion of land area under different crops at a particular point of time. At the beginning of the 20th century 90 percent of the cultivable land was used to produce food crops and remaining 10 percent were under nonfood crops. The change in cropping pattern starts in 1950's (Sheikh, 2000). The ratio of land used for food and nonfood crops become 84:16. The change in the cropping pattern takes place due to increase in the price of nonfood or cash crops.

After independence a lot of change has been recorded on cropping pattern. The following table shows the change in the cropping pattern in Assam since 1960.

TABLE 3.1: Change in percentage of area under different crops:

Crops	1960-61	1980-81	1990-91	2004-05
Food grains	84.9	84.2	83.5	80.0
Rice	80.2	75.9	76.5	73.8
Wheat	0.16	3.4	2.5	2.0
Cereals	--	--	--	0.8
Pulses	--	--	--	3.3
Nonfood grains	3.4	3.8	3.4	20.0
Oil seed	15.1	15.8	16.5	9.0
Jute	5.7	7.8	9.7	1.8
Cotton	5.5	3.7	2.9	--
Mesta	--	--	--	--
Sugarcane	--	--	--	0.7
Potatoes	--	--	--	2.2
Others	1.4	1.2	1.6	6.1
	--	--	--	--

Source: Sheikh, 2000.

The table shows that the proportion of area under cultivation of food and nonfood crops has recorded a little change from 85:15 in 1960-61 to 84:16 in 1980-81 and then 80:20 in 2004-05. In recent years

CHAPTER-4

FLOOD, EROSION AND DISPLACEMENTS

CHAPTER - IV

FLOOD, EROSION AND DISPLACEMENTS

4.1 INTRODUCTION

Among the widespread natural disasters all over the world, flood is one which caused mainly due to heavy rainfall and damages life and social developments (Kandilioti & Makropoulos, 2012). Flood can be classified into four basic categories as Flash flood, standing flood, coastal flood and riverine flood. Of all these four types of flood 'riverine flood' is the most difficult to control (Cuny, 1991). India is endowed with huge natural resources, suffers from flood events of various magnitudes annually. The Brahmaputra River ranks fifth in the world in terms of discharge (Akhtar, 2001).

Flooding in the floodplains of Indian rivers is a recurring phenomenon and thereby not of much concern until and unless it is associated with some serious socio-economic consequences (Sen, 2010). Flood inundation in the rural areas of the country is mostly associated with large scale loss in agricultural production, loss of livestock and sometimes loss of human lives too (Sen, 2010). Historical records reveal that the char areas of Brahmaputra suffered from several large floods that have devastated the area causing extensive flood inundation and severe bank erosion (Sarma & Phukan, 2004).

Riverbank erosion associated with the loss of land and deposition of sediments along the river course. Land loss due to river bank erosion not only threatens the existence of infrastructures and agricultural lands near to the river bank but also poses threat to aquatic habitats and causes sedimentation downstream due to the generation of fine-grained sediments (Darby & Thorne, 1995). In India, most of the hydrological challenges are owed to the high sediment load of the rivers which ultimately results in riverbed aggradations, bank

erosion and channel widening (Thakur, 2012). The land once lost due to riverbank erosion could not be revived. The severity of the problem can well be understood in case of char areas of Assam which witnessed flood and erosion recurrently every year.

Internally displaced people are those who have been forced or compelled to flee or leave their homes or place of habitual residence, in particular as a result of, or in order to avoid the effects of armed conflict, situations of generalized violence, violation of human rights or natural disasters, and who have not crossed an internationally recognized state border' (Washington DC, 1999). For a country like India, the problem of internal displacement assumes a vital issue in the post-colonial period whether it is development induced or environment induced displacement. Besides these displacements, in India, there are other lesser-known corners where massive internal displacement has been taking place silently since last hundred years. Assam is such one remote corner in the Northeast which has witnessed large scale internal displacement of people following environmental changes (Hussain, 2000).

Assam had been historically a place of migration for diverse of population. This trend of migration has continued till current times. Assam has already taken on a large number of refugees from East Bengal and neighbouring states belonging to different religions, languages and cultures. Assam witnessed huge number of displaced population due to conflict among different tribes and races in the form of movement. The conflict induced displacement is of more recent origin. An older form of displacement that continues to engage attention of local social and political thinkers as well as the general public is the recurring flood induced internal displacement. Every year, the Brahmaputra made flood and erode the river-banks and river islands where thousands farmer carrying their subsistence agriculture.

The erosion of the river banks and *chars* (midstream river islands) displaces thousands of people, who then migrate to neighbouring 'mainland' areas in search of shelter and livelihood. During flood time water of the Brahmaputra is carrying huge sand and clay which increases the water current and as a result erosion taken place. The valley is so densely populated and hence so attackable to natural disasters, and so easily displaced.

The problem of internal displacement along the Brahmaputra in the Assam valley can be analysed with two aspects. **Firstly**, even at the best of times, internally displaced persons (IDPs) are unwelcoming in any society anywhere in the world, and this also found true in case of the *char*-displaced as well when they try to resettle a life in the mainland of Assam. **Secondly**, the problem of IDPs in this instance is intrinsically overlapped with the politically contentious issue of illegal immigration into Assam from East Pakistan/ Bangladesh (Guha, 1997). Most of the internally displaced persons of *char* area are Muslims of East Bengal origin settled in Assam since the colonial years (Dasgupta, 2001), a community that is commonly suspect for being latter-day illegal immigrants from Bangladesh. In mainland towns, presence of latest face is given as simple proof of fresh illegal immigration from across the international border in south Assam. But the important fact is that they're not illegal immigrants or outsiders but displaced people of *char* area of the state. they need lost all everything thanks to devastating flood and erosion.

In Assam, there's a chorus since last five or six decades has been the threat of the indigenous people is facing from a gentle and illegal immigration. Significantly, in spite of lengthen anti-immigrant social movements over the last 20 years, there has been little movement by the Indian State towards a political settlement of the 'Bangladeshi' problem in Assam and new dimensions are added to the present fear when thousands of poor Muslim

peasants from the far reached riparian areas spread into the Assamese hinterland (Guha, 1983).

The political elite of Assam adds a political overtone to what's primarily a humanitarian and socioeconomic problem, which partly explains the low priority given to the relief and rehabilitation of the char displaced. Non recognition of erosion as a disaster within the state is additionally an outcome of this overtone. The char area is a crucial contribution of the river Brahmaputra. Char land is given rise during a natural action of the river during flood time. Height of char land is usually determined by highest water level during flood (Bhagawati 2001). Chars are normally very unstable in respect of its survival and are subject to erosion. The dimensions and shape of chars are rearranging per annum after flood. The erosion in Assam exhausted a huge tract of land year after year. Only within the district of Barpeta, the river Brahmaputra eroded quite 50% of the char land during the amount 1988-2003 (Chakraborty 2009) and therefore the Beki takes away 93% land of char dwellers during 1983-2004 (Chakraborty 2006).

Natural pasture within the river Brahmaputra was converted into human settlement during the tenure of British. To boost the land revenue to the govt exchequer East Bengal farmer were welcome. The high density within the adjacent district of East Bengal and thick density in Assam valley district was also attracted many peasants to settled down here. Under the patronage of local Zamindars, Jotedars etc. peasants inherit Assam and settled within the char area.

There was a light and slow migration at the start. the method ready when Assam was attached with East Bengal and made one province with Dacca as capital. It's to be mentioned here is that in 1905-1911 these two separate regions were took together one province. Till 1950, there have been 15 to twenty lakhs of immigrant farmers within the state (Goswami

1994). They occupied nearly 10 lakh acres of wasteland in chars and riverine area (Guha 1977). These immigrant peasants contribute much to the economy and particularly to the agricultural sector. It had been they who diversified the cropping pattern of the state.

4.2 THE INDIAN FLOOD SCENARIO:

Though people lose their life and damage to property, the sense of insecurity and fear in the minds of people living in the flood plains is of a great concern. Impact of flood such as the suppressed pain of survivors, spread of epidemics, lack of drinking water, essential commodities and medicines, loss of the dwellings etc. make floods the most fearsome among the natural disasters. Heavy flood damages had occurred in the country during the monsoons of the years 1955, 1971, 1973, 1977, 1978, 1980, 1984, 1988, 1989, 1998 and 2004. The major highlights of the flood damages are given in the table 4.1:

TABLE 4.1: Flood Damages in India during 1953-2005.

Loss	Average
Area affected (in lakh hectares)	75.6
Number of Human Lives lost	1,504
Cropped Area (In Lakh hectares)	35.3
Population affected (in lakh)	320
Value of Damages (in Rs. million)	9,821

Source: NDMA, Govt of India, 2008.

4.3 FLOOD AND EROSION IN ASSAM:

The flood has been affected vast area every year and erosion erode land including embankments. Erosion is taking away land on the bank of river and flood covered crop land with sand. Both of these two are cause a huge loss to the agricultural sector of the state.

Before 1950, the mentionable floods occurred in Assam were in the year 1897, 1910, 1911, 1915, 1916 and 1931 mainly in the north bank of river Brahmaputra. After 1950, the year of great earthquake, Assam experienced floods in 1954, 1962, 1966, 1972, 1974, 1977, 1978, 1984, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2008, 2012, 2019 and is still continuing. Table 4.2 shows the major highlight of the flood occurred in Assam during the period 1953 to 1995.

TABLE 4.2: Flood damages in Assam during 1953 - 1995

Loss	Total
Area affected (in Lakh hectares)	41.66
Population affected (in Lakh)	981.0
Number of Human Lives lost	1724
Value of damage (in Rupees million)	8,324.2

Source: GoA report.

Floods was a every year occurrence during 1950-1980. But unfortunately, systematic data on both flood and erosion are not available. From different sources some information have been collected that may be helpful to understand the intensity and damaged caused due to flood in past decades.

4.4 FLOOD DURING 1954-70:

During two decades after independence, the erosion takes away land of nearly 2534 number of villages and the flood was affected 90,726 number of households along with a damage of 294421 hectares of crop land in Assam. In 1964, a Government expert group was of the view that the river bed of Brahmaputra was made high at 6.5 metre on average through deposition of sand on the bed. Rise of river bed is one of the main factors causing devastating flood.

The Government of Assam took an initiative to reduce the suffering of flood through formation of 'Ministers' Committee' on flood relief. This committee took various relief schemes during the flood time in order to save the lives of human and livestock. There was no flood happened in 1978 but next two consecutive years witnessed of devastating flood in the state. Series of flood waves make serious challenge to the society and assets.

TABLE 4.3: Flood damages in Assam 1954 -1970

Damages	1954	1958	1962	1966	1970
Area affected (Lakh Hectares)	29.00	12.29	15.95	15.11	7.58
Cropped land (Lakh Hect.)	3.05	0.25	3.61	3.69	2.26
Population affected (in Lakhs)	13	4.04	39	36.2	18.9
No of houses damaged	NA	2044	44018	213	44281

Source: Directorate of Economics and Statistics; Assam

TABLE 4.4: Flood damages in Assam 1973-1980.

Loss	1973	1974	1975	1976	1977	1978	1979	1980
Area affected (Lakh Hect)	10.2	29	1.2	14.1	10.2	3	6.7	12.4
Cropped land (Lakh Hect.)	2.9	3.2	0.17	NA	NA	1.18	NA	NA
No of villages affected	6710	7558	NA	NA	NA	NA	NA	NA
Population (in Lakhs)	22	40	2.3	14.6	45.4	9.1	23.5	33.5
Human Lives lost (Nos.)	19	40	05	Nil	70	02	29	57
No of houses damaged	29596	57700	4865	NA	NA	NA	NA	NA
Total loss (in Million)	NA	NA	NA	119.8	310.8	42.7	28.16	398.0

Source: Govt. of Assam

1984 floods: Another great flood that the people of Assam suffered was held in 1984. This flood like other devastating year flood caused tremendous loss of lives and property of the state. It also damaged a vast area crop land. From the month of June there have been five waves of flood and the last one happened in the month of September 1984. The untimely happened last wave of the flood carried sorrow to the farmers particularly live-in chars.

TABLE 4.5: Flood damages in Assam 1981-1985

Loss	1981	1982	1983	1984	1985
Area affected (Lakh Hect)	4.5	68.8	7.2	15.1	2.7
Cropped land (Lakh Hect.)	NA	NA	NA	4.9	0.50
No of villages affected	NA	NA	NA	NA	NA
Population (in Lakhs)	13.5	14.2	22.5	56.8	8.8
Human Lives lost (Nos.)	22	16	23	90	23
No of cattle lost	99	227	2735	26239	145
No of houses damaged	NA	NA	NA	NA	9585

Source: Govt. of Assam

1987 and 1988 floods: Data and information relating to flood tells us that the volume of loss and damages due to flood are increasing. In 1987 and 1988 two great flood occurred in the Brahmaputra valley districts. In 1987 flood have been affected 90 Lakh people in Assam. The flood happened in 1988 was more devastating than any other flood happened in past. The water level crossed the danger point 2.2 metre that brings various kinds of loss and difficulties to the state. The devastating flood of this year affected 1.13 million hectares of crop land. Another important fact of 1988 flood was that the flood prone area of the state went up extended from 40% to 62%. Except two Hill districts, all plain districts in Assam were under flood water in 1988.

TABLE 4.6: Flood damages in Assam 1986-1993

Loss	1986	1987	1988	1989	1990	1991	1992
Area affected (Lakh Hect)	4.3	15.3	38.2	6.9	4.8	9.97	2.3
Cropped area affected (Lakh Hectare)	2.2	0.9	1.1	0.3	0.2	0.33	0.04
Population affected (in Lakhs)	23.8	104.9	84.10	24.09	16.92	53.07	9.71
Human Lives lost (Nos.)	15	127	232	28	28	108	12
No of houses damaged	222920	401110	618272	104408	36658	321355	15117
Value of crop damaged (in Rs. crores)	98.01	139.04	334.10	NA	63.70	115.558	17.78
Total loss (in Rs. crores)	204.60	346.60	663.84	NA	74.58	191.15	26.56

Source: PLAVAN, 1999

1997 Floods: Flood occurred for a long duration in the year 1997 from June to September.

According to the report 5408 nos. of villages damaged which effected 7.53 lakh hectares of land in 1997. Flood of this affected 27.51 lakhs population and 1.0 lakh hectares of crop land. Damage of crops was estimated at Rs. 19.46 crores. The extent of erosion due to flood are taking place in different district of the valley. The bank erosion on an aggressive mode taken place in North Lakhimpur (31235 Hectares), Darrang (9877 Hectares), Hailakandi (3404 Hectares), Nalbari (1402 Hectares),

Cachar (1818 Hectares), Dhubri (599 Hectares), Bokakhat (404 Hectares), Dhemaji (206 Hectares), Hatsingimari (189 Hectares), Kamrup (133 Hectares), Goalpara (69 Hectares) and Majuli (15 Hectares).

1998 Floods: After 1988, flood of 1998 was found to be a long duration flood over all valley districts in the state. Flood was affected 13.2 lakh hectares of land and 7740 numbers of villages. Along with all other damages, heavy erosion was taking place. Total 5634 hectares of land was eroded this year. The serious erosion was taken place in Sonitpur (1109 Hectares), South Solmara (511 Hectares), North Lakhimpur (368 Hectares), Barpeta (257 Hectares), Kamrup (489 Hectares), Morigaon (995 Hectares), Bilasipara (167 Hectares), Jonai (72 Hectares), Bijni (57 Hectares), Tinsukia (Hectares) and Goalpara (46 Hectares).

TABLE 4.7: Flood damages in Assam 1994-1999

Loss	1994	1995	1996	1997	1998	1999
Area affected (Lakh Hect)	0.5	7.2	10	7.5	9.6	2.2
Crop land (Lakh Hectare)	2.5	3.9	2.4	1.03	2.8	NA
No of villages affected	711	7998	4797	5408	5298	1503
Population affected (in Nos.)	NA	5599	3077	2751	4710	890648
Human Lives lost (Nos.)	7	74	42	28	102	3
No of houses damaged	2557	199157	27539	18104	29791	NA
Total loss (in crores)	NA	NA	NA	29.4	496.9	51.9

Source: Flood Control Department of Assam

In the year 2000 like any other previous flood, the state had to incur a heavy loss of the flood waters. Media reported that 447000 people of 12 districts has been affected by flood

along with 27608-hectare land, 11200 hectare cropped area. Dhemaji district was the worst affected area by flood in 2000.

TABLE 4.8: Maximum flood damage in Assam.

Flood Loss	Unit	Maximum effect (year)	Average
Affected area	Hectare	3.2 (1988)	0.95
Crop land	Hectare	1.1 (1988)	0.22
Crop damage	Rs. Crores	334.1 (1988)	27.6
Total value	Rs. Crores	663.8 (1988)	55.2
Lives lost	Numbers	232 (1988)	38.0

(Source: PLAVAN, 1999)

TABLE 4.9: Average flood damages in Assam.

Headings	Area affected (m. ha.)	Cropped area affected (m. ha.)	Damage to public utilities (Rs. In Crores)	Total damage (Rs. in crores)
(a) Average values excluding high floods	0.58	0.11	1.07	8.1
(b) Average value 1953-82	1.8	0.3	2.1	21.3
(c) Average value 1985-90 excluding high flood	0.6	0.2	85.7	139.7
(d) Average value 1983-90	2.2	0.8	119.6	353.7

(Source: PLAVAN, June, 1999)

TABLE 4.10: Flood Damage in different districts 1974

District	Total Area Affected (in sq. km)	Cropped Area Affected (in Lakh Hect)	Population Affected (in thousands)	Human lives lost (nos.)
Goalpara	5000	0.90	900	1
Kamrup	4800	1.20	725	12
Darrang	4000	0.31	300	1
Nagaon	3500	0.48	650	18
Sibsagar	4500	0.32	550	3
Dibrugarh	2000	0.02	75	1
Lakhimpur	3000	0.06	375	2
Cachar	2000	0.12	400	1
Karbi Hills	200	0.02	25	1

Source: Govt. of Assam

TABLE 4.11: District-wise damage 2000

Districts	Nos. of villages affected	Area affected in hac.	Cropped area affected in hac	Population Affected in nos.	Nos. of lives lost
Dhubri	625	131400	31090	800	3
Kokrajhar	35	NA	NA	NA	NA
Bongaigaon	58	3980	NA	53	2
Goalpara	265	53168	NA	400	NA
Barpeta	142	95100	35000	210	3
Nalbari	247	NA	NA	257	1
Kamrup	329	65931	3500	377	9
Darrang	131	20302	9533	178	1
Sonitpur	330	43282	7175	241	10
Lakhimpur	821	149765	112856	581	18
Dhemaji	810	103601	28084	306	29
Morigaon	30	NA	NA	NA	NA
Golaghat	156	93238	18337	174	5
Jorhat	415	92559	20497	287	5
Sibsagar	153	45433	NA	209	4
Dibrugarh	123	11000	NA	112	NA
Tinsukia	61	4933	NA	29	NA
Nagaon	30	NA	NA	NA	1
Karbi Anglong	NA	NA	NA	NA	NA
N.C.Cachar	NA	NA	NA	NA	8
Karimgang	65	1900	NA	8	1
Hailakandi	NA	NA	NA	NA	NA
Cachar	115	10000	3508	23	2

Source: Govt. of Assam

4.5 EXTENT OF EROSION:

Erosion is a long lasting and a burning problem to chars. It takes away village, agricultural land, homestead and the last shelter of farmers and breaks down the backbone of rural economy. It can be termed as a life death issue of the people living in chars.

The severity of erosion is more in middle and lower Assam than upper Assam. In the last 60 or 70 years of the history of erosion in the district like Morigaon, Darrang, Barpeta, Kamrup, Nalbari, Goalpara and Dhubri, it is clear that rural areas were more affected than town urban areas. The Flood Control department in its survey of the period 1954 to 1969 said that 253 villages and 8091 hectares of land washed away by erosion of Brahmaputra every year. In a report placed in the State Assembly it was revealed that during 1954 to 2007, total of 4,25,932 hectares of land has been eroded and there on displaced more than 8 lakh households in different parts of the state (Sheikh: 1993 p82). The said report also admits that erosion is a more devastating than flood.

The erosion of the Brahmaputra hits the life and livelihood of lakh of people in chars. After the great earthquake in 1950, numerous char land goes into the bed of river. The chars which are visible in the Brahmaputra valley from Tinsukia to Dhubri, most of them were *kayem* (or permanent) land. In Majuli, the greatest river island lost its 16 km of embankment and 235 sq. km of area due to erosion during 1956 to 1964. In a study organized jointly by Indian Space Research Organisation and Brahmaputra Board find that during 1969-94, Majuli has lost its 50.07 sq km area in erosion. Out of 244 villages 64 has completely washed away and other 30 villages have partially affected by the erosion (Asomiya Khabar 7 Sep, 2008).

In Lahorighat Block of Morigaon district, a total of 100 villages have been eroded completely including Kochari gaon, Botahmari, Tulsiguri, Mitmari, Jotiabari, Holowkhunga,

Chitakati, Joribor etc. and more than 2000 bighas of cultivated land destroyed. In Bhuragaon Circle, 21 villages have completely been going in Brahmaputra.

In Barpeta district, more than 100 villages under Chenga and Mondia Block were washed away. There found no existence of villages like Chenimari, Chenglidia, Balidhari, Jatrada, Bordia, Atia, Koltoli etc which once a crops full green village. Tarabari, a known river port of the area has been washed away by Brahmaputra in 1959.

In Goalpara district, as consequences of construction of unscientific embankment, massive erosion takes place and many villages, trading centers and agricultural tract goes in to the bed of Brahmaputra particularly in the south bank of the district. In 1954, a long embankment was constructed from Khormuja to Molakhowa. The embankment protects the inside area from flood, but the river deposit sediment in the outside of the embankment which make the area higher than the area of the inside. This has invited erosion of the land more repeatedly and most part of the embankment become in front of erosion. The first attack came in 1972 with breaking down the embankment at Balikashi. Within a very short time vast area become under water, cultivated land were covered by sand and thousands of households become shelter less and they begin travel to different towns in search of livelihood.

After 1954, near Pancharatna-Khormuja, several chars like Katlamari char, Sonahara, Ramhori, Roshidpur, Soner sala, Tiyapara, Kalodanga, Hojua, Khodertari, Balarbhita, Sholmari etc have been washed away by the erosion of Brahmaputra. Flood occurred in 1990's several villages and crop land near Chunari, Monkola, Haguripara, Fetengapara, Mechervita, Chulkanipara, Saptibari etc were covered by sand and has affected numerous farmers families. After destroying several villages, now the Brahmaputra offers a open challenge to the villages like Bilpara, Sanvendi, Tangvita, Beldubi, Duramara, Buraburi, Digirpara etc, near Jaleswor. Again in 1980's, erosion takes several villages near Poravita

such as Sundarpara, Amtoli, Kashiartari, Ferabari, Shakaripara, Khoilsamari, Kandapara, Kushbari, Jamadarpara, Dudtola, Bhalukmari, Mathakata, Balachapa, Kapurpuri, Nichinpur, Mondia etc.

On the acuteness of erosion, the Dhubri district may be considered as a most affected district in Assam. Only in South Salmara Revenue Circle of the district, 107 villages out of 201 villages have been completely washed away in erosion since 1962, the year of survey. All the villages under Permanent Settlement in Goalpara district were densely full of inhabitants. The devastating flood that begins in 1980's took three historical trading centres viz. Fakirganj, South Salmara and Sukchar of the district for ever from the map of Assam. In 1989, the South Salmara towns became the target of Brahmaputra and in 1991-92, all institutions, offices, business firms etc are destroyed and transferred to another place. Now there is no existence of historically important trading centre of South Salmara. The Brahmaputra meets the river Jinjiram at Fulbari of Meghalaya. Both the river frequently changes its direction and along 42 km vast tract including 27 villages severely facing erosion that affects more than 1.51 lakh peoples. Total area of the circle was 44,068 hectares of which 32,769 hectares of land have been gone into the bed of river Brahmaputra.

Among char areas of Assam, chars neighbouring the Dhubri town are more woeful. Some chars like Boyejer alga, Bondihana etc exist only in name. Since last 20/25 years these chars are under the bed of Brahmaputra. For continuous erosion in 1990's chars like Kalsabhanga, Marowar Char, Chalbanda, Chenikhowa, Majerchar, Cholakura etc have no existence. Likewise chars once existed in west of Dhubri like Khodar char, Motirchar, Hawrar par, Bhasanichar etc vanished due to erosion of Brahmaputra. But chars those are located on the north side of Dhubri town were frequently eroded and thrown up again and again in the last 20 years. Some important chars in this category were Birsing, Airmari,

Aminerchar, katiar alga, Moinakandi, Bonsirchar, Khedaimari, Porarchar, Pocharchar, Muhrirchar, Muthkhowa, Nilokhia, Montirchar, Moshlabari, Takimari, Patamari, Sostharghat etc.

A brief picture of destroys by erosion in South Salmara Sub division is shown below:

TABLE 4.12: Loss due to Erosion in South Salmara Sub Division

Year	No. of Villages Completely eroded	Eroded Cultivable land	Government Land	No. of affected Household	Remarks
1993-94	65	241	81	5284	Some eroded village thrown up and eroded again.
1994-95	--	159	52	--	
1995-96	93	287	95	7043	
1996-97	56	371	124	4199	
1997-98	29	142	47	972	
1998-99	76	382	127	5805	
1999-00	114	1046	348	1884	
2000-01	34	895	298	4587	
2001-02	68	454	130	2437	
2002-03	79	722	241	4995	

Source: Sub Divisional Office, South Salmara (Sheikh, 2013: 89)

Erosion and frequent changes of direction of Brahmaputra have deep impact on the social life of the people living in lower Assam particularly in char areas. Some of them are as,

1. Geographical structure of Brahmaputra valley destroyed.
2. Movement of people towards towns and cities increases due to loss of cultivable land. People in the occupation like Riksha puller, Thela Puller, Kuliwala etc increases at high rate.
3. Erosion takes many revenue villages which has decreases the land revenue to the Government and extent of *patta* land also decreases.
4. Many of historic places were washed away by Brahmaputra erosion e.g., Kamalabri Satra, Bordowa Satra etc.

4.6 EXTENT OF DISPLACEMENT:

In Assam, the riverbank erosion is happening per annum. Thousands of individuals living in char areas loss their livelihood thanks to flood and erosion. Sometimes thanks to break down of embankment results in over bank flood and it causes damage of fertile cultivable land to unusable land by covering surface with sand. This led farmland to unsuitable for cultivation. During 1994 only, the river Brahmaputra eroded 6116 hectares of land on its north bank. Average annual damage has been found over Rs 124 crores and average erosion rate has been estimated at 8,000 hectares per annum. Erosion on Brahmaputra valley have affected quite 90,700 families in Assam since 1954 (Sheikh, 2000). Brahmaputra carries a large-scale damage to the lives and assets to the whole valley particularly to the flood and erosion prone char area of the state.

According to the report of the Internal Displacement Monitoring Centre, in the year 2009, at least 16.7 million people were found displaced due to the natural disasters like flood, storm etc. out of the total people effected by disaster 16 percent were displace. In this very year, 15.2 million people which are 91 percent of the total were displaced due to climate related disaster like flood and storms. Of the total displaced people 14.9 million people i.e. 87 percent of the total was from Asia.

Generally, most of the internally displacement was found in a relatively small number of countries. Asian countries like India, China, the Philippines and Bangladesh were found where over one million people were displaced. However, the impacts of major floods in Mexico and Brazil in the Americas, and in Senegal in Africa, remind us that large-scale displacement is not only an Asian concern. India was found to be the country in which the most people were displaced due to the disaster like flood. Floods in India displaced an estimated 2.5 million people.

Assam is frequently affected by its both flood and erosion. During a period of normal flood (1989-98), only in Barpeta district of Assam, 45% of the total households were affected and 51% of the total land was lost. The char dwellers were lost 77% of their land in the erosion of Beki river only during 1980-2004. In such a circumstance, after displacement due to erosion, char dwellers have no option except flee to other place and towns for their livelihood.

In Assam, flood recognised as a disaster but the erosion is not (Dasgupta). Displacement due to flood is a temporary and is for two or three months in a year for the victims. When flood affects the villagers, they went to some safe and secured place where they can protect themselves from the flood. During flood time Government and Non-Government Organisations (NGOs) come forward and open some rehabilitation camps for

those victims. Food, drinking water, baby food, medical aid etc are provided. After the flood is over, villagers go to their home and the problem of displacement disappeared.

But the unlike the flood, erosion is different type of disaster or calamities. Erosion takes away all assets, livestock, homestead and agricultural land. For the farmers agricultural land carries much more value as it gives them the means of livelihood. Once erosion taken place households lost all everything they have. After losing their shelter and homestead they take resort in forest land, Government *khas* land, railways, embankment etc. Though they lost everything of them, in government record they did not recognise as displaced people. Therefore, erosion affects heavily on the socio economic and socio-political life of the erosion induced displaced households. This is found more acute in the char areas because people displaced due to erosion of the char villages are suspected as illegal immigrants or encroacher from neighbour country Bangladesh.

The problem of erosion particularly in the char areas of Assam needs special attention from all stakeholders. Government and other stakeholder may pay special attention to enquire, study on the problem of erosion and the impact of erosion on the household living there. Researcher may also come forward to take research initiative and to formulate policies in order to providing relief to the victims.

CHAPTER-5

GOVERNMENT MEASURES AND REHABILITATIONS

CHAPTER-V

GOVERNMENT MEASURES AND REHABILITATIONS

5.1 INTRODUCTION:

There found a number of studies have been conducted to assess vulnerability and adaptation measures for flood in Assam. Singh (2014) analyses the problem of flood based on construction of a matrix of weighted indices. He used data from sample of 150 households of six different places on the banks of Brahmaputra in Assam such as Dhubri, Goalpara, Barpeta, Guwahati, Dibrugarh and Jorhat. The study has been highlighted 26 issues as high vulnerability, 12 issues as medium vulnerability and 2 issues as low vulnerability. There were 15 issues showed as requiring urgent attention on adaptation assessment result. Singh has suggested various mitigation processes for the challenges experienced by the people such as construction of embankments and dams and forecasting flood, etc. So far as vulnerability is concerns, they presented a table showing how people adapted to flood by changing their land use pattern in some of the important districts in Assam during the period from 1950-51 to 2010-11.

Baruah and Goswami (2013) have given an account of extent of river bank erosion in Assam and mentioned various reasons of flood. According to them the Water Resources Department of Assam has identified 25 acute erosion affected spots within the main stem river Brahmaputra in Assam. They say that during last 100 years, the Brahmaputra river is widening in the entire state. As a consequence, it has taken away more and more of river bank area and destroyed infrastructure including the old established system of flood embankments. The rate of erosion was three times higher than the deposition in the last 15 years. Brahmaputra occupied around 4,000 sq km in the 1920s and expanded to around 5,000

sq km by the early 1970s. Avulsion of the upstream of Dibrugarh town added additional square kilometers to the area within the river banks of Brahmaputra during the 1990s. In the first decade of twenty first Century the Brahmaputra occupied about 6,000 sq km (Govt. of Assam, 2008).

After the declaration of the National Flood policy in 1954, flood and erosion management measures started in Assam. Since then, a huge network of flood embankments was erected all over the state of Assam in the river Brahmaputra, Barak and its tributaries as immediate and short-term measures under the "food for work" programme. This programme enhanced the length embankment to 4465.19 km in 2006 which was 211 km in 1954.

These measures included both anti erosion and river training works and comprises mostly of bank revetments, construction of stone spurs, boulder deflectors, timber dampeners, pile screens, R.C.C. porcupines and other pro-siltation devices. In addition, the Government had also constructed 86 numbers of major sluices, 539 numbers of medium and minor sluices and about 855 km of drainage channels to provide adequate drainage and dewatering facilities. Along with long term measures some temporary measures like providing dowel bund with empty cement bags, back filling with bamboo support, A-type spurs, bamboo porcupines, breach closing works, bamboo cribs etc. to meet the emergency situation of the flood. All the above measures provided reasonable protection to about 16.50 lakh hectares of area of the state as assessed by the National Flood Commission, Govt. of India. In the anti-erosion and river management works chiseled and blasted boulder were used as one of the chief materials during last decades. This material has been found to be very effective in these works and cheap in cost.

Das (2013) has highlighted the importance of water and its quality for various uses of water. Water is used for irrigation, drinking, industry, power generation, recreation, etc.

Water is regarded as one of the important ingredients for agricultural purpose when fertilizer is used. If the surface water becomes polluted, it may be dangerous for plants, animals as well as for human beings. Before using water for irrigation, its quality should be assessed and it should be kept in mind that it does not create any health hazard. Low quality of water used for irrigation may cause low quality crops. As the uses of surface water, particularly of Brahmaputra, are increasingly polluted in the form of urban and industrial wastes, they may be constrained. Based on his experiment and various tests he suggested not to use the surface water of Brahmaputra for any domestic purposes without treatment.

A study was undertaken by Barman (2013) on the use of land of Majuli islands for the period from 1975 to 1988 and from 1998 to 2008 based on remote sensing data. The study found an overall trend during a period of more than three decades revealed changes from fallow land to settlement, grass land, water body and grassland to settlement, water body and plantation to settlement land. As the island was an erosion-prone area, their analysis showed that the majority of the grassland and fallow land were eroded by Brahmaputra. Total grassland declined by 22.62 per cent, fallow land reduced by 18.6 per cent, areas of plantation have been declined by 2.19 per cent and reduction of water bodies was 0.16 per cent. However, the area covered by human settlement was increased by 1.47 per cent due to growth of population.

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developed or under construction. The study mentioned that abundant water resources that cause severe distress and costs in the area hence the frequent flooding needed to be managed.

Goyari (2005) in his work made an effort to seek out those challenges arise from natural disaster like flood and erosion and brings threat to the existence of agricultural sector in Assam. Recurring flood per annum destroyed huge number of crops and eroded vast areas of land including crop land. This leads the agricultural sector in Assam ahead of an excellent threatened. the dimensions and rate of productivity influenced much by this flood and erosion in Assam. During 1953-1995 period, in India, the flood caused a damaged of Rs 4,400 on crop, livestock and public utilities (Shukla Commission Report, 1997). The flood affected area within the state was estimated at 31.5 lakh hectares and it had been 92.6% of the farmland as in 1992-93. Frequent floods within the state reduce the productivity of crops, changes the cropping pattern from Kharif rice to summer rice and Rabi season crops. He also mentioned that the majority of the control measures undertaken were of short-term nature and thus, there was a requirement for long-term policy to regulate flood by the govt. The cooperation of the neighboring countries was also of paramount importance.

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In our country, the erosion control measures (CASA, 2009) are commonly known as river training works. River training works cover all engineering works, structural or nonstructural construction to control and stabilize a river along a well-defined course as well as to regulate its bed configuration. Depending on the problems and objectives, river training measures adopted are as follows:

1. Construction of spurs to divert the flow away from the bank,
2. Erection of embankment to confine the flow for flood protection,

3. Setting revetment and riprap to protection of the bank against erosion,

4. Bank guide to lead the flow to a defined channel,

River training may include one or the combination of more than one measures mentioned above. It is the actual situations and problems in the affected area that decide the works to be adopted. As embankment, guide bank, cutoff and sills have no direct protection against erosion, alternative measures to control erosion are to be taken into consideration. Spurs are the most effective and widely used measures for river erosion control and flow diversion.

Spurs are constructed to divert the flow extending from bank towards the mainstream flow of river. An appropriate spur induces a favorable curvature of flow, diverting it away from the bank to prevent the current on it, to protect against erosion. Spur can be used in singly or in series or in combination with other protection measures. A single spur located at appropriate point on a river bend can control the entire bend against erosion. The spur is made up of stable materials against flow.

Impermeable spurs are made up of resistant material like gravel stone etc. They are generally used for repelling or diverting the flow of water away from the bank. A repelling spur is aligned inclined a little upstream and an attracting spur inclines a little downstream for effecting the desired goal. These spurs are very effective for shore line protection but very costly.

Permeable spurs fall in the category of sedimentary groins which allow the flow of sediment laden water through them. They protect loose flow to cause the deposition of the sediments of the river. Therefore, they are best suited for sediment carrying channels. As the sediments accumulate between the groins, the foreshore becomes more or less permanent. Therefore,

permeable spurs require only temporary or semi-permanent construction as the lasting effect is produced by the sedimentation trapped by the groins. Permeable spurs are made of brushwood, trees and bamboos, wooden and concrete piles. Permeable spurs can be made of locally available materials and hence cheap. Permeable spurs are more effective in regulating river courses or protecting the river banks. Erosion control mechanisms flood-resistant construction Flow through the permeable spur does not change abruptly for which silt deposition is evenly and quickly effected. Permeable spurs have been found very useful to;

1. To divert the flow which is threatening a bank,
2. To close down a flow channel in a braided river,
3. To affect sediment deposits on low char area.

5.3 GOVERNMENT INITIATIVES:

As the erosion control measures require huge technology and finance, initiatives in Assam are mainly carried out by Government departments. Since independence, several measures are adopted in order to control the flood as well as erosion problem in Assam. Some of the examples of Government initiatives are as follows-

5.3.1 Permeable Spurs:

Late Er. H P Barua, Chief Engineer of Assam PWD utilized on experimental basis in 1935, the use of permeable screens and floating cages, low-cost devices made of bamboo for channelization and silting in alluvial rivers of Assam. The traditional Bamboo tripods are used in some areas to close down a shallow stream in braided rivers. A-Type spurs made up of bamboo are used for river bank protection from erosion. A series of bamboo porcupines are erected and used for protection of bank and raising bed level by inducing silt deposition. Bamboo and wooden logs along with brush woods are used for gulley head control.

5.3.2 A-type Bamboo Spur:

A-type bamboo spur is a modification of Er Barua's permeable screen. It is made up of series of two bamboo pieces tied together at top by string and other ends struck in ground forming the shape of English capital alphabet A. They are driven closely placed 1.5 m below ground keeping 3m apart and tied together at top. Horizontal bamboos on both faces are tied at 1m apart and horizontal struts at 1m apart are placed inside. The space inside may be filled with brushwood and toe may be protected by closely placed sand bags.

These spurs are placed at around 2 m intervals extending from bank towards main flow at 7 to 9 degree facing current. A-type spurs are widely used in tributaries. It shows a good result in bank protection and siltation of Brahmaputra and Barak valley. They can also be used for closing shallow channels of braided rivers.

5.3.3 Bamboo Porcupine:

Concrete porcupines are widely used for protection sea shore and built-up areas. These are very costly permanent structures. The traditional Bamboo porcupines are cheap and made up of 12 numbers of bamboo pieces 2m long each in a spur. They are tied by string to one another forming a cube like open structure fortified by diagonal struts. Each member is projected 0.75m outward leaving middle portion of 0.5m. They are used for both bank protection and bed formation by inducing sediment deposition.

The Bamboo porcupines are placed in a row tied together by a cable. The cable is tied on the bank and anchored to a dead man, which is a heavy weight, either boulders or sand bags encased inside wire meshing. Bamboo lines of two rows are placed at 2m intervals and the middle portion of a porcupine is reinforced by boulders or sand bags. Bamboo porcupines are placed on the shallow bed with anchorage on both ends and fortified by counter weight of

boulder or sand bags in the middle of each porcupine. Bamboo porcupines are being used at Bharalumukh in Brahmaputra river at Guwahati resulting silting up of pond just downstream of Bharalu River out fall, which is now a good site recreation activity. They are also constructed across Chintoli and Salmara suti of Brahmaputra.

5.3.4 Bamboo Tripod:

Bamboo tripods are traditionally practiced by Bodo people of Assam for closing a shallow stream channel. These are placed across the stream to be closed with two legs in line, the third leg acting as support of the two. A bamboo platform is constructed above water level through the three legs and is loaded with stones.

5.3.5 Gully Erosion Control:

The problem of gully erosion is an extra type of erosion. It is easy to attend properly in erosion control measures. Potential causes are runoff from adjacent land, poor drainage, lack of vegetation in appropriate areas and storm water may cause the gully formation at outfall, which when left unattended, gradually turns agricultural land into ravine. In char areas, soil is very loose and gullies are easily formed by rain water. During high flood, a gully may lead to the formation of a flow channel leading to a *suti*.

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In Morigaon District of Assam, under the initiative of Voluntary Initiative for Community Empowerment (VOICE), a Non-Government organization some Char stabilization work was done in the year 2004, 2005 and 2006. The model of the initiative was designed by one of the founder members of VOICE, Mr. Komrul Hussain Choudhury. Mr. Choudhury got the inspired from his visit to Vaniakulam Panchayat of Kerala in 2001. The Char Stabilisation initiative of VOICE was named "*Raijor Sramdanere Brahmaputra*

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5.4.1. Survey and Site identification:

This is one of the important aspects of this model and it requires deep understanding of the river line areas. The water current of the river is studied along with the pattern of erosions. Frequent visit to the river and understand the current from the upstream have been involved in this particular step.

5.4.2 Filling and placing of sand bags:

The plastic granny bags are filled till 3/4th part and then tied up with locally available jute rope. The placing is one of the important aspects and is done very carefully in a specialized way in the river bed under the supervision of local experts.

5.5 EROSION CONTROL MECHANISMS FLOOD-RESISTANT CONSTRUCTION.

5.5.1 Protection of the main bundh (sand bag barrier) with mini bundh:

The main bundh of the initiative is generally 18ft width. Though the general height of the bundh is 8 to12 ft, but actually it depends on the location. The main bundh is protected with a mini bundh on both the side, which is generally 12ft width and 2-3ft height. This is done in order to prevent the bundh from damage due to strong undercurrent of the river particularly at flood period.

CHAPTER-5

GOVERNMENT MEASURES AND REHABILITATIONS

CHAPTER-V

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5.1 INTRODUCTION:

There found a number of studies have been conducted to assess vulnerability and adaptation measures for flood in Assam. Singh (2014) analyses the problem of flood based on construction of a matrix of weighted indices. He used data from sample of 150 households of six different places on the banks of Brahmaputra in Assam such as Dhubri, Goalpara, Barpeta, Guwahati, Dibrugarh and Jorhat. The study has been highlighted 26 issues as high vulnerability, 12 issues as medium vulnerability and 2 issues as low vulnerability. There were 15 issues showed as requiring urgent attention on adaptation assessment result. Singh has suggested various mitigation processes for the challenges experienced by the people such as construction of embankments and dams and forecasting flood, etc. So far as vulnerability is concerns, they presented a table showing how people adapted to flood by changing their land use pattern in some of the important districts in Assam during the period from 1950-51 to 2010-11.

Baruah and Goswami (2013) have given an account of extent of river bank erosion in Assam and mentioned various reasons of flood. According to them the Water Resources Department of Assam has identified 25 acute erosion affected spots within the main stem river Brahmaputra in Assam. They say that during last 100 years, the Brahmaputra river is widening in the entire state. As a consequence, it has taken away more and more of river bank area and destroyed infrastructure including the old established system of flood embankments. The rate of erosion was three times higher than the deposition in the last 15 years. Brahmaputra occupied around 4,000 sq km in the 1920s and expanded to around 5,000

sq km by the early 1970s. Avulsion of the upstream of Dibrugarh town added additional square kilometers to the area within the river banks of Brahmaputra during the 1990s. In the first decade of twenty first Century the Brahmaputra occupied about 6,000 sq km (Govt. of Assam, 2008).

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5.5.2 Careful guidance of water current to the Bundh:

Brahmaputra being known for strong under-current; the current is carefully guided to the burking through creation of upward slope. This process reduces the speed of the current. Then the water is allowed to fall in the mini bund hand then again sat free, which is generally slow-moving water.

5.5.3 Place of sand bag porcupine:

Porcupine line structures were created with sand bags and are placed in a scattered way in the river, which further reduces the water current to induce sand deposition.

5.6 GOVERNMENT INITIATIVE ON CHAR AREAS:

Char area witnessed a century old human settlement started during colonial period. Chars are abundant the economy of Assam in various way particularly by agriculture. But the unfortunate reality is that information regarding char area and its society isn't available (Chakravorty, 2012). The char area is one among the remote and backward regions within the state. For the aim of development of this area, the initial afford of the Government was launching of 'Char Areas Development Programme' in 1983. 'Directorate of Char Areas Development' was the nodal authority to execute the programme. Since 1998, a replacement department 'Welfare of Minorities Development' was created and every one schemes of development on chars are taken under the department. Government undertook various schemes to develop the socio-economic condition of char people. Schemes of the govt included training to unemployed youth for self-employment, supply of beverage, providing sports materials, agricultural tool like hand-pump, shallow machine etc.

To assess the socio-economic condition of char people, the authority undertaken two survey. the primary survey was wiped out 1992-92 and other in 2002-03. These two surveys

are the idea of data about the char area in Assam. The number of chars is rises from 2089 to 2251 during 10 years of two surveys. The district of Dhubri (480) remain on the highest of the list in respect of the amount of char villages. Decadal rate of growth of population found 55.6% which was much high than the state average 18.9% during 1991-2001. Population living in char area constitute 9.4% of the state population. But the acreage covered under chars is merely 4% of the state's area. thanks to high rate of growth density is far high i.e., 690 per sq. km. The state density is merely 340 per sq.km. Declining of the cultivable land is a stimulating fact about char area. thanks to erosion and other factors, cultivable land is declined from 70% to 67% during 1991-2001. Mass level illiteracy is found common. the speed of literacy is increased at a really nominal rate during the amount of two surveys and it had been 14.9% to 19.3%. In some districts char area's literacy found declining. It had been as due to the frequent migration of migration to other places. Due to the miserable condition of all element determined the socio-economic condition, are depressing in chars and hence poverty is found to common among the char dwellers. Number of individuals living below poverty level is increasing. It was 48.8% in 1991-92 and 67.8% in 2001-02 where the state average is declining and was 36%.

5.6.1 REMOVAL OF POVERTY:

Poverty is a peculiar problem in third world countries like India. There is no common definition of poverty which can be accepted everywhere. Leaving all differences, it can be said that poverty is a situation where a section of the society is denied of even basic need of life. In India, the broadly accepted definition emphasises more on the minimum level of living than on reasonable level of living. Thus poverty, in broad sense, termed as a situation where a section of people fails to reach a certain minimum level of consumption.

The estimate of poverty line is based on the idea of necessity of an average intake of 2250 calories per capita per day. After a throughout examination, the study group set up by the Planning Commission in July, 1962 recommended a standard of private consumption expenditure of Rs 20 (at 1960-61 prices) per capita per month as the minimum amount common to both rural and urban people.

Later on, the 'Task Force on Projection of Minimum Needs and Effective Consumption Demand' offered an alternative definition of poverty which has been adopted by Planning Commission in recent years. The Task Force defined poverty line as the midpoint of capital expenditure class which have a daily calorie intake of 2400 per head in rural areas and 2100 calorie in urban areas. Accordingly, the minimum desirable standard was worked out at Rs 76 for the rural areas and Rs 88 for urban areas at 1979-80 prices. (Planning Commission, Sixth five-year plan. 1980-85, New Delhi 1981 p51)

Although the poverty is a serious problem since long past, the Government initiates started only with the fifth five-year plan. Since fifth five-year plan, the programme like Small Farmer's Development Agency (SFDA), Marginal Farmer's and Agricultural Labourers' Development Agency (MFAL), Drought Prone Areas Programme (DPAP), Foods for Work Programme (FWP) was introduced for benefiting the rural poor. Later on, Integrated Rural Development Programme (IRDP), National Rural Employment Programme (NREP) and Rural Landless Employment Guarantee Programme (RLEGP) were introduced. In 1989, NREP and RLEGP were merged into a single wage employment programme under Jawahar Rozgar Yojana (JRY). The objective of this programme is to assist poor families in developing skills and inputs to overcome their poverty. Other programmes like TRYSEM (1979), Employment Assurance Scheme (EAS), Prime Minister's Rozgar Yojana (PMRY) in

1993-94, Prime Minister's Integrated Urban Poverty Eradication Programme (PMUPEP) in 1995-96 and National Social Assistance Programme in 1995 introduced.

Some of the employments generating schemes implemented in the state of Assam are as follows:

5.6.2 TRYSEM:

The national scheme for Training of Rural Youth for Self-employment (TRYSEM) is a programme for generating self-employment opportunities by imparting training to the rural youths in various trade and skills. In Assam the scheme is operating since 1979-80. Rural youths trained under the scheme were as 1695 in 1980-81, 4253 in 1981-82, 8681 in 1988-89, 5055 in 1989-90, 9152 in 1991-92 and 7302 in 1997-98. Altogether 60,293 youths were trained up under the scheme in various trade and vocations for self-employment till 1997-98.

5.6.3 National Rural Employment Programme (NREP):

National Rural Employment Programme (NREP) also aimed at providing Employment Avenue to the same time. In 1980, the NREP has come into operation in Assam. This programme has laid a target of generating seasonal employment to the tune of about 80 lakh man-days in 1980-81 against which 41 lakh man-days were generated during the year. In 1987-88 state government set a target of generating employment to the extent of 40.6 lakh man-days which 33.8 lakh man-days was generated.

5.6.4 Jawahar Rozgar Yojona (JRY):

On 28th April, 1989, the Jawahar Rozgar Yojona (JRY) was introduced in Assam along with other state. Under this programme, all the employment generating schemes like NREP and RLEGP introduced earlier were merged. Cost sharing basis between the centre

and the States were 80:20. The main objective of the yojana was to generate additional gainful employment for the unemployed and under-employed youths in rural areas. The other objective of the scheme was the creation of sustained employment by strengthening rural economic infrastructure and assets in favour of rural poor. Special attention was given to the people living below the poverty line and also the preference was to be given to the Scheduled Castes, Scheduled Tribes and freed bonded labourers. Employment opportunities women in rural areas were reserved at 30 percent. Gaon Panchayats were to be involved in the process planning and implementation of the programme at root level. At the instance of the Planning Commission, the Programme Evaluation Organisation (PEO) undertook a quick study of the JRY with a view to assess the extent to which the Yojana helped in providing employment to the target group; analyse the type of assets created under the Yojana including their quality and usefulness; comprehend the arrangements for the maintenance of assets created; and study the problems encountered in the implementation of the Yojana.

5.6.5 Prime Minister's Rozgar Yojana (PMRY):

Prime Minister's Rozgar Yojana (PMRY) was launched in Assam along with other state on 2nd October, 1993. The scheme will provide self-employment to one million educated unemployed youths in the country in micro enterprises, manufacturing, service and business ventures. The scheme will provide a loan up to a ceiling of Rs one lakh, out of which subsidy element would be 15% with a ceiling of Rs 7,500. All of those who have undergone Government sponsored technical courses for a minimum duration of six months besides matriculation and ITI diploma holders will be eligible for the scheme.

The PMRY is implemented both in urban and rural areas of the state with a view to provide self-employment to the educated youths. The scheme is implemented through the District Industries and Commerce Centres of the state. Any person between the age group of

18-35 years with minimum earmarked education and whose family income is not more than 24,000 per annum is eligible for the assistance under the scheme. The amount to be contributed as margin money is 5 percent of the total project money. The balance amount would be sanctioned as loan by banks.

The number of beneficiaries under the scheme was 43,051 till 1997-98. Under the scheme, loan sanctioned to 10,187 in 2003-04, 12,683 in 2004-05 and 10,549 in 2005-06.

5.6.6 Employment Assurance Scheme (EAS):

The Employment Assurance Scheme (EAS) was introduced in Assam since 1993-94 in the identified backward block situated in drought prone areas, tribal areas and hill areas. In 1994-95 total number of employments generated under EAS was 95.5 lakh man-days and the figure was 200.66 lakh man-days in 2001-02. The EAS scheme has been extended to 409 additional blocks of the country identified as Drought Prone Areas Programme (DPAP), Desert Development Programme (DDP) and Modified Area Development Approach (MADA), having a larger concentration of tribal population during 1994-94. Later on, the scheme was extended to the blocks by April 1997. All blocks included under EAS are categorised as A, B and C-type for the purpose of release of funds in different amounts. This categorization was made on the basis of backwardness and the relative needs of the people for generation of wage employment in different blocks.

The main objective of the Employment Assurance Scheme is to provide gainful manual work employment during off agricultural seasons in rural areas. These people are in need of work, but they could not find any job. Creation of economic infrastructure and community assets for sustained employment and development was remain another objective of the scheme. This EAS scheme is designed to provide up to 100-man days of assured

employment at minimum wage to the unemployed in rural areas, taking a maximum of two beneficiaries from each family.

The EAS was a Centrally Sponsored Scheme and the share of states were fixed at 20 per cent of total expenditure. The Central share is directly released to DRDA of the concerned district, and the states' matching share is required to be released within a fortnight of the receipt of Centre's share.

5.6.7 Swarnjayanti Gram Swarozgar Yojana (SGSY):

The scheme of Swarnjayanti Gram Swarozgar Yojana (SGSY) is adopted to provide sustainable income to the poor of the rural area. The aim of the SGSY was to establish a large number of micro-enterprises in the rural areas based on local resources and build up the potential of the rural poor. Under SGSY, it was aimed to brought all the household included under the scheme above the poverty line in a period of three years. The Government of India through its Ministry of Rural Development, has launched this new programme 'Swarnjayanti Gram Swarozgar Yojana' (SGSY) by reformation of the existing employment generating schemes namely: ·

- Integrated Rural Development Programme (IRDP)
- Training of Rural Youth for Self-Employment (TRYSEM)
- Development of Women & Children in Rural Areas (DWCRA)
- Supply of Improved Toolkits to Rural Artisans (SITRA)
- Ganga Kalyan Yojana (GKY)
- Million Wells Scheme (MWS)

The SGSY Scheme starts on 1st April 1999 in rural areas of the country. SGSY is noble Scheme taking all aspects of self-employment such as formation of Self-Help Groups, training, credit, technology, infrastructure and also marketing. All concerned institutions are involved under the scheme were the financial institutions, Panchayat Raj Institutions, District Rural Development Agencies (DRDAs), Non-Government Organisation (NGOs), Technical institutions in the district.

The poor people of rural areas with land, landless labour, educated unemployed, rural artisans and disable are intended to covered under the scheme. The benefitted families under SGSY scheme were named as Swarozgaris and whether it is individuals or groups of individuals selected from BPL families. Swarozgaris possessing skills will be updated through the orientation programme which is mandatory.

5.6.8 Self - Help Groups (SHGs):

Self-Help Groups is a group formed with people aims at an improvement of their economic status. The Government scheme provides all sorts of facilities for formation of Self-Help Groups (SHGs), nurturing and their linkage with banks. Group activities is given preference and funding will be provided to Self Help Groups. Half of the groups formed at block level were kept reserved exclusively for women groups. SHG under this scheme consist of 10 to 20 members belonging to BPL families. However, in case of minor irrigation and disabled persons the number of the group may be a relaxed to minimum of 5 persons.

SHGs are a good way to improve the socio-economic condition of poor masses. Like in other rural parts of the state, SHG is formed in char areas also. But the number and the performance both are found to be very poor in char areas. The main reason behind the poor performance of SHGs in char areas is non availability of bank branch and hence linkage problem. Challenges face by SHGs in char area are found as-

- 1. Ignorance of the members:** Though every measure taken for creating awareness among the group members about the schemes beneficial to them, still majority of the group are unaware of the schemes of assistance available to them.
- 2. Lack of Training facilities:** The training facilities given to the members of SHGs on product selection, quality of products, production techniques, etc are found to be not sufficient.
- 3. Lack of unity:** In the case of SHGs dominated by women, it is found that there is no stability of the units as some member married has change the residence. Moreover, unity among women members is found to be rare owing to personal reasons.
- 9. Inadequate Financial Assistance:** Financial assistance provided to SHG's by the agencies concerned is found to be not adequate in most of the reported cases to meet their actual requirements.
- 10. Non-co-operative Attitude of the Financial Institutions:** The reluctant attitude of financial institutions does not consider SHGs seriously while providing finance and other technical support or help.

CHAPTER-6

SOCIO-ECONOMIC IMPACT OF EROSION

CHAPTER-VI

SOCIO-ECONOMIC IMPACT OF EROSION

6.1 INTRODUCTION:

Recurring occurrence of flood and erosion is the burning problem in Assam. The mighty river Brahmaputra and Barak with their numerous tributaries causes havoc in Assam in the form of flood, bank erosion and drainage congestion. The flood in plain Assam is more acute than anywhere in India.

In earlier time, flood was considered as blessing than a problem because it deposited fertile soil in the agricultural field every year which helps the farmers. But after 1950, the great earthquake rises up the bed of the river and damage due to flood has been on the rise. The river once identified as the life process and culture of people become to be considered as menace.

The intensity of flood and river bank erosion has increased in recent years in terms of areas and victims. It is to be mentioned here is that the erosion made people more victims than that of the flood. The victims of flood can go back once the flood recedes, but the victims of erosion could not go back to their original land. The Brahmaputra has wiped out 4000 sq. km area (i.e., 80 sq km per year) destroying more than 2500 villages and displaced more than 5 million of people (Herald, 2010).

The National Flood Commission estimates 31.60 lakhs hectares of land as flood vulnerable in Assam where as it is 335.16 lakhs hectares in the whole country. That Assam has 9.4 percent of flood vulnerable areas of the country. The State Water Resource Department states that 388476 hectares of land was lost in erosion during the period of 1954

to 2002, i.e., 8000 hectares per year. It implies that displacement of 90,700 families' of 2534 villages (Talukdar, 2011).

Due to flood, the state of Assam has lost of Rs 3100 crores in last five decades. According to a report of National Flood Commission, out of 31 lakhs hectares of flood vulnerable areas only 16 lakhs hectares areas could be protected from flood in last 53 years of action (Bulletin, 2011).

The socio-economic impact becomes more acute when people are more vulnerable to natural disaster. This is what happens in Asian countries. High population density and poor economic condition of the people make consequences of natural disasters more devastating. A major portion of population is bound to stay in high-risk area like banks of meandering rivers. Bank erosion is a threaten for their safety and shelter as well as their sources of livelihood (Brouwer, 2007). Riverbank erosion caused landlessness, unemployment and poverty in every year and is increasing year after year. This increasing trend of poverty and unemployment creating instability of the social peace in the country (Rahman, 2013). Those who suffer most during floods are the low income, poor and informal settlers living along river banks and low-lying areas that are most vulnerable to rising tides and increasing water levels (Romualdez, 2013).

The Brahmaputra River was occupied 4000 sq. km in the 1920s in the entire valley and it is increased to 6000 sq. km in recent years (Phukan, 2012). The Brahmaputra has been taken away the area of land through its erosion every year 72.5 to 80 sq km during 1997 to 2007. Bank erosion of Brahmaputra has been destroyed more than 2500 villages and 18 towns affecting the lives of nearly 5,00,000 people including sites of cultural heritage and tea gardens in the state. It is regretful to mention here is that there found no systematic information in respect of the effect and damage by flood and erosion in char area

(Chakraborty 2009). Newspaper and media published few information during the flood time and remain as the source of information.

6.2 IMPACT OF RIVER BANK EROSION:

Riverbank erosion have multi-fold impacts viz. social, economic, health, education and sometimes political. The loss of shelter is that the primary impact of abrasion. People haven't any option aside from migration once they face erosion. Erosion like natural disaster causes forced migration where people are affected by several crisis. Due to the loss of property and occupation, they're face acute poverty (Iqbal, 2010). Displaced poor people involved many criminal activities also. Another important impact of abrasion is that of the psychological state of the migrated people. People where they migrate aren't welcome them, but denied mostly. Erosion bring another impact associated with medical and health facilities to the displaced population. All existing establishment of medical and health care services are lost in eroded place and within the new place, these services were found to be absent. So, so as to possess medical treatment they need to travel longer distances than before and sure to bear extra cost. Similarly, for education children of those displaced households are to travel long distant villages and towns. Above all, thanks to loss of occupation and sources of livelihood, they become helpless and unable to get essential goods and services like food, cloths, education and medical services within the new place where they take shelter after migration. the last word consequences are that they compel to live in a vicious circle of poverty.

6.3 EROSION OF BRAHMAPUTRA IMPACT:

Scholars are engaged in identifying the causes of abrasion and its impact at different angles. Such studies and findings help the important person to adopt suitable measure to

regulate erosion in affected area (Sarma and Acharjee, 2012). But there found only a few studied concerning the assessment of loss of property thanks to erosion. But the erosion of Brahmaputra causes poverty and features a long-term impact with none compensation mechanism (Talukdar, 2012). It's documented to all or any is that bank erosion of Brahmaputra has been washed away a huge area of the state including people habitation, crop land river port, commercial centres and reserve area.

People displaced on erosion are migrated to the closest villages, towns and reserve areas (Khan, 2012). Agriculture was the main occupation and source of livelihood in chars. Due to erosion, agricultural land is declining and farmers lost their land become landless labourers. The share of landless labours to the entire working force in char area is 90% of Barpeta district where the district average is merely 16%. This increasing share of landless labour resulting from erosion obviously put an impression on their livelihood. The poverty among the people is common because the number of BPL population here was found to be quite double as compared to district average of Barpeta district.

Like Mandia of Barpeta district, char villages of Bilasipara, Bagribari, Dhubri and South Salmara Revenue Circles of Dhubri district are badly suffering from flood and erosion. Only in South Salmara Revenue Circle of the district, 107 villages out of 201 villages are completely washed away in erosion since 1962 (Sheikh, 2000). The devastating flood that begins in 1980's took three historical trading centres viz. Fakirganj, South Salmara and Sukchar of the district for ever from the map of Assam. In 1989, the South Salmara towns become the target of Brahmaputra and in 1991-92, all institutions, offices, business firms etc are destroyed and transferred to a different place. Under such a condition, people of char areas of the district are frequently displaced and moving from one place to a different. Most of the displaced households are moving one char to a different new char and are victims of

abrasion. within the course of study, it's found that though agriculture is that the main occupation of the people but majority of them (i.e., 89.3%) become daily earner and among this 42.8 percent are landless earner. Literacy rate among the people of displaced char dwellers of the district was found as 32.5 percent where it's 59.36 percent and 73.18 percent within the district and state respectively. The portion of population below the poverty level within the surveyed char areas of the district was 92.5% much above the district average.

Because the erosion deducts all means, displaced people fall into acute poverty. This acute poverty again causes to rise many other problems like illiteracy, malnutrition etc. the prevailing school and medical centres are destroyed and within the newly occupied place these facilities are found either absent or nor adequate.

6.4 SOCIAL IMPACT:

Both flood and erosion bring several social impacts on the people displaced. The primary social impact that the displaced people are to face is discrimination. They become victimised when move from chars to other place in search of job etc. On looking their language, religion, dress etc, the mainland people suspect them as illegal immigrants across international boarder (Gorky, 2012). They become assault and harassment by some proactive groups and organisation. Sometimes they were driven out from the work place. within the labour marker, the displaced labours from chars are paid lesser wage than existing rate. The media and organisation who termed them as illegal immigrants just on suspicion, remains ignorant and silent to trace out the rationale of their frequent migration from the char areas. This sort of propaganda creates mistrust, suspicion and discord between char people and indigenous groups. Under such a situation, the identity-based politics become the political issues in every election of the state. This coloured and biased issue now become a simple way

for the political parties to win election which carpeted the sensible issues like poverty, illiteracy and development (Gorky, 2012).

6.4.1 DEMOGRAPHIC ASPECTS:

Due to uncertainty of chars about their existence, it is not easy to determine the number of char and their population. Appear and disappear of a new char is frequent. Number of char villages were 1256 in 1985 which increased to 2089 in 1991-92 and 2251 in 2002-03. Population of char area was 16 lakhs in 1991-92 which increased to 25 lakhs in 2002-03. Except *Majuli* all other chars are dominated by East Bengal origin people. District wise char population is given in Table 6.1 along with literacy rate.

TABLE 6.1: Char population and Literacy.

Sl No	District	No. of Char Villages	Char Population	Literacy Rate %
1	Darrang	121	135876	10.12
2	Barpeta	351	275525	12.90
3	Kamrup	148	105687	16.85
4	Nalbari	58	62892	7.90
5	Bongaigaon	150	110215	12.58
6	Goalpara	187	130007	8.38
7	Dhubri	313	233206	19.06
8	Morigaon	41	55581	8.02

9	Nogaon	29	45161	9.44
10	Dhemaji	95	68998	14.44
11	Lakhimpur	182	110200	14.01
12	Sonitpur	118	92061	12.63
13	Tinsukia	86	33034	14.20
14	Jorhat	210	141901	31.90
Total		2089	16,00,244	15.45

Source: Socio-Economic Survey, 1992-93.

Directorate of Char Areas Development has conducted another survey in 2002-03 (Table 6.2) and according to that survey char area constituted around 25 lakhs population covering 2251 villages and 14 districts. From Table 6.1 and 6.2, it may clear that both the number of char and population live there vary time to time.

TABLE 6.2: District wise Demographic Profile of Char areas of Assam.

Sl. No	District	Area (Sq km)	No. of Char Villages	Area under char (sq km)	% Area under char %	% Area under cultivation	Total Char Population	% Char Population	Sex Ratio	Literacy	Density
1	Dhubri	2798	480	999.0	35.2	67.1	689909	42.2	998	14.6	690
2	Bongaigaon	2152	117	142.5	5.6	66.7	135809	14.9	930	12.4	953
3	Goalpara	1824	179	198.6	10.8	66.6	186826	22.7	955	13.6	940

4	Barpeta	3245	277	366.5	11.3	67.4	268344	16.3	948	17.6	732
5	Nalbari	2257	32	134.3	5.9	66.9	83602	7.3	957	16.2	622
6	Kamrup	4345	175	171.7	3.9	67.8	154508	6.1	974	15.1	899
7	Darrang	3481	134	167.5	4.8	67.0	142405	9.4	917	12.3	850
8	Sonitpur	5324	145	141.1	4.6	67.9	145729	8.6	940	16.9	1032
9	Lakhimpur	2277	109	215.2	9.4	67.1	143235	16.1	956	18.5	665
10	Dhemaji	3237	149	169.8	5.3	66.8	91203	16.0	912	15.6	532
11	Nogaon	3973	43	120.4	3.1	66.9	89803	3.8	982	17.5	745
12	Morigaon	1551	39	119.3	7.0	66.6	91324	11.7	906	18.5	765
13	Jorhat	2851	293	421.7	14.8	66.4	215095	21.7	962	60.5	510
14	Tinsukia	3790	79	140.9	9.7	67.3	52605	5.5	931	14.0	373
Total		78438	2251	3609	4.6	67.17	2490097	9.35	931	14.0	689

Source: Socio-Economic Survey, 2002-03.

As mentioned earlier that except a little portion of indigenous char dwellers sleep in upper Assam, all people living in chars are immigrant Muslim (Bhagabati 2005). A couple of numbers of Bengali and Nepali refugees also found in char area of the state. Char people are accustomed with their own cultural heritage. People living in char area are poor and backward. Many studies including Report of the Sachar Committee (2005) recognised them as marginalised group of population. Demographic profile is a crucial determinant of a marginal group. In Assam, Muslim population features a significant growth. It had been 24% in 1971 and it rose to 30.9% in 2001. Kar (2008) have an analysis that pattern of growth of population among different groups aren't uniform. If this process goes on, then in near future

demographic structure of Assam would change. Actually, he was acknowledged the fear of accelerating trend of char population without taking into consideration the socio-economic background and illiteracy of char people. Because the most reason of high rate of growth among char people is their ignorance and illiteracy. Bose (2005) has rightly found that the geographical and financial condition are more prevailing factors liable for high growth of population than that of the faith. But it is often said that the devastating flood and erosion for long period has changed the demographic composition of the char areas. In char areas there have been live a substantial portion of scheduled caste and backward caste people belong to Hindu. They were engaged in various occupations like fishing, blacksmith, small business, different craftsmen etc including agriculture. Due to continuous erosion and loss of their place of business alongside other reasons they shifted themselves from char areas and settled nearby towns and other permanent places. as an example, it is often said that in char villages like Bhogdahar, Dighaltari-I and Dighaltari-II there was a substantial number of schedule caste Hindu people. In Bhogdahar there have been 98 out of 1017 people and in Dighaltari-II, 81 out of 1003 people were belonged to Hindu (Census, 1961). Again Dighaltari-I was a witness of 150 people belong to Hindu out of 1601 (Census, 1971). But the census report, 2011 shows that the whole population living in char villages of the district are belong to Muslim community. Likewise, char villages of South Salmara and Bilasipara revenue circle were also witness of existence of individuals belong to Hindu up to 1980's. After the good flood occurred in 1972, 1974 and 1978 and erosion, leaving those poor farmers belong to Muslim all has removed from char areas. Now char areas become more unstable than before and only poor farmers ahead of whom there exist no alternatives live in char villages. Thus, it is often seen that the demographic composition of the char areas has changed thanks to recurring flood and continuous erosion happening per annum.

Fluctuation of size of population of a specific village is a crucial characteristic of char area. That's continuous increase of the dimensions of population of a specific village may be a rare picture. The census data since 1951 reveals the very fact. Fluctuation of population were as 652 (1951), 369 (1961), 227 (1971) and 1755 (2011) in Aminerchar, 154 (1951), 371 (1961), 522 (1971) and 1333 (2011) in Dalsingar alga Part I, 1842 (1951), 856 (1961), 1076 (1971) and 2455 (2011) in Jhaleralga Part I. These fluctuations happen thanks to frequent river bank erosion. the other picture also found available within the char villages which are comparatively permanent. Such villages show endless increase of population. For evidence census data for such villages could also be taken. In Nayeralga Part I, we see population on continuous increases as 802 (1951), 275 (1961), 438 (1971) and 1536 (2011). Similarly, we've 481 (1951), 526 (1961), 1048 (1971) and 3833 (2011) in Nayer alga Part II and 649 (1951), 1226 (1961), 3626 (1971) and 9969 (2011) for Nayer alga Part III. Thus, we may say that although the speed of growth of population in char area is so high but the dimensions of the population of a specific village may or might not increase over period of your time.

6.4.2 NATIONAL REGISTER OF CITIZEN (NRC) AND CHAR AREAS:

The National Register of Citizens (NRC) is a register of Indian citizens maintained by the Government in the state of Assam. This register was first prepared after the 1951 Census of India and since then it has been kept without any update. In recent years the process of updating the NRC is being taken up to include the names of all those persons whose names were already appeared in the 1951-NRC and and/or of their descendants living in state of Assam.

As an amendment carried out in the Citizenship Act, 1955, the Register of Citizens for the state of Assam has also been held to be legal to contain the names of all persons, whose names appeared at least in any of the Electoral Rolls published up to midnight of 24 March

1971 and also of descendants of such persons presently having permanent residence within the state.

The process of updating of NRC in the state of Assam started in the year 2013, when the Supreme Court of India passed an order for its updating was monitoring the entire process. The entire process is conducted by an IAS officer designated as the State Coordinator of NRC, Assam and is carried out under the continuous monitoring of the Supreme Court of India. The court was holding time to time hearing to all stakeholders on representations.

The Final NRC has been published on 31 August 2019 (Wikipedia). As per final NRC, a total of 3,30,27,661 persons applied to the registering authority through 68,37,660 application forms and out of which 3,11,21,004 persons were found eligible for inclusion of their names in the final NRC leaving out 19,06,657 persons (News18). People whose names were not included in the complete and final draft of NRC shall have to approach a Foreigners' Tribunal with an appeal against non-inclusion.

Complete Draft Stage:

There about 40 lakhs of people were excluded from the final draft of NRC which has been published on 31 July, 2018. This has caught the attention of various stakeholders across the country. Though the media has brought out cases of large number of well-established individuals but the stories of fear anxiety of marginalised and vulnerable sections still remained unreported.

In the char areas those abled people to raising their voice and have proper documents were able to apply and their names were found to appeared in the NRC draft. But the scenario of remote char villages is completely different from the above. As reported by the

respondents near about 40 percent names are not in the list and those excluded are mostly women and children.

The main reason behind this exclusion is the lack of linkage documents. As most of the women in char areas are illiterate and hence to establish linkage with the legacy person, they were provided Panchayat Certificates which has been rejected. Again, due to several reasons' child born in char areas are not registered with the authority. The discussion in the char village cantered on the Panchayat certificate and delayed birth certificate. Initially these certificates were accepted by the NRC authority but later they declined to accept birth certificates and started scrutinizing Panchayat certificates 'strictly'.

Every year char dwellers suffers from flood and erosion and frequent move from one place to another is normal fact. In the last two decades, thousands of households have shifted their residence twice or thrice often taking shelter in the temporary relief camp during the flood. Safe keeping of valuable documents becomes a major challenge for these people who are often move one place to another during flood and erosion.

More than 4.7 million married women were submitted certificate secretary to establish relationship with their parents out of which 1.7 million women were under "original inhabitants" category. All of these women were rejected to enter at the verification process. However, Muslims and Bengali Hindus in Assam were nor recognised as original inhabitant category. Thus, Muslim women from the char areas, although from one of the marginalised social groups, had to go through a tough verification process. Leaving those 'original inhabitants' about 2.9 million 'unfortunate' women were submitted Panchayat certificate as linkage proof in NRC and most of them are from char areas that comprises nearly 10 per cent of the population of the state.

According to the survey by Government in 2002-03, as many as 68% of char people live under the below poverty line (BPL) and over 80 per cent of them are illiterate. Assam Human Development Report (2014) says that the Mean Year of Schooling (MYS) in char areas is 4.76 years. This is the lowest among all marginalised communities in Assam.

Reasons why women of char areas were submitted Panchayat certificate is the abysmally low female literacy rate. Due to lack of educational documents higher number of women submitting Panchayat certificate from these areas.

Another reason that is equally responsible for making the char women most vulnerable in the NRC updating process is the feudal legacy and continuance of core patriarchal practices like child marriage.

National Family Health Survey (NFHS 4) data reveals that in char dominated districts nearly half of the women get married before the age of 18. When a woman got married before the age of 18, they miss the opportunity to enter name into the voters list in their parental house. In absence of educational document, it effectively delinks them from their parents and bound them to use Panchayat certificate as linkage with parents. If they were had been married after getting their names in the voters list at parental address, they could have used the voter's document for linkage which is very rare in char area.

Final Stage of NRC:

After published the final draft several organisations submitted PIL at the supreme court to consider the matter of Panchayat certificate. The Hon'ble Supreme Court has please to accept the said certificate and ordered the official to accept it after a strong verification of their authenticity. This made a relief to those thousands of women submitted Panchayat

certificates. From observation it is found that 5 to 8 percent people are not finds their name in the final list of NRCs. The major reasons of this exclusion are as follows;

1. **Mistake found in names.** As most of the people in char areas are illiterate, they could not read or write their names correctly. They can't verify what the other person has written for them.
2. **Inconsistent age of relatives.** As it well known that the birth rate is unimaginably high among the households in char villages. One couple has several children and there is no sense of birth registration. The differences between two births are minimum and after few years' parents are forgotten the ages of their child which leads to an inconsistency of ages among the children. In some cases, it is found that difference between father/ mother and elder son/ daughter is less than 10 years.
3. **No documents for children.** In most of the households in char villages it is found that there exists one or more un-enrolled child. These children have no document to proof a linkage with their parents.
4. **Loss of documents.** As we know that all of the char villages are plagued of with flood and erosion. Keeping valuable documents in safe guard becomes a major problem for these people.
5. **Indifferent attitude of Government official.** As many of the respondents reported that they got ignorant attitude from Government official at different stages of documentation in NRC process. It is of their view that after loss their valuable document during either flood or erosion they apply Government offices for them re issue. But official in the offices did not give it at time.
6. **Inappropriate presentation on hearing.** Illiterate and un-awesome people of char areas were called for hearing at different places and districts of the state. Due

to lack of proper awareness, education and knowledge of language they could not present themselves properly before the officials on hearing of NRC.

6.4.3 FAMILY SIZE AND COMPOSITION:

The size of the family is an important characteristic of char dwellers. As there found a high growth rate of population, number of members in a family is to be more than in any other part of the state. Again, most of the household have two or more generations among the members. There has been found a change on the size and composition in the household of char areas. Few decades before, Joint family was the tradition in char areas. A joint family (also undivided family) is a large and undivided family where members from more than one generation live together. There found two, three or more generation member in a family. All workable male members were work in agriculture and female members were did all household job. This system of joint family start declining with the devastating erosion taken place at large scale. As erosion take away all land, assets, homestead and means of livelihood, it become harder to a large joint family to settle down at one place and one home. A large family bifurcates into several micro families and settled down at different places. Small or micro families so formed move into towns or work field. In the study it is found that some worker working in Coal field of Meghalaya and Bricks field in the state or outside the states are gone with families i.e., spouse and children. On composition of the family whether it is joint or nuclear, it is found (Table 6.3) that the percentage of joint family is 61.2% where 38.8% was nuclear families.

TABLE 6.3: Family Size and Composition.

	Joint	Nuclear
Char Near Towns	30	90
Attached to Mainland	39	81
Far from Towns	111	9

Disjoint Char	114	6
Total	292	186
Percentage	61.2	38.8

Source: Field Survey.

There found a close relationship between the location of char and types of families. Near the village to town or permanent mainland, the number of joint families declines. The correlation coefficient between these two variables (i.e., distance of char from town etc and number of Joint families) is found as high as $r = 0.92$. This implies that higher the communication with urban or semi urban area the number of nuclear families in char area in increases.

6.4.4 CHILD LABOUR:

Child labour assumes to be the centre of a social problem as it distorts the natural growth process of the child to attain its development. The problem of child labour is arising with a plenty of causes. When adults of the household could not get employed any way, there left no option except to depend on their children's employment. Child can get job as because it is cheap to employers.

It is a fact that children are more obedient, submissive and ready to do all types of work, cannot organize union, do not demand overtime and are more needy and active. Illiteracy and ignorance of parents in the rural poor is mainly responsible for child labour in the district. Like many underdeveloped areas, the char areas, in the district are still deprived of modern scientific education. Low-income earner large families often fail to provide protected childhood to their children. For them, more children mean more income. In Dhubri town, hotels and factories mostly employ child labour.

Some of the root cause of child labour in the district are unfavourable conditions at home, tensions, parent separation, illness, physical unfitness, etc.

In India, there were 12.6 and 4.3 million of child labour as per census 2001 and 2011 respectively between the age group 5 to 14. In Assam, these figures were 3.5 and 0.9 lakh for 2001 and 2011 respectively. At present this figure is about more than 2 crores and female child labour is about 70 lakhs. They are working for long duration at low wage in unhealthy atmosphere.

Due to various measures taken by Government, number of child labours is reducing in recent days. Government through its Acts like Factories Act, 1948 and the Mines Act, 1952 banned the practice of using children below the age of 14 and 18 in their respective production processes. The Child Labour (Prohibition and Regulation) Act, 1986 have made provision to prevents the employment of children below the age of 14 years in life-threatening occupations. The life-threatening job identified in a list by the law and finally the Juvenile Justice (Care and Protection) of children Act, 2000 made the employment of children a punishable offence. The Right to Education Act, 2009, was an important step from Government side and it was supposed to go beyond punishing people for child labour. However, even after all these measures child labour continues to be the norm in a lot of industries.

The picture of child labour in chars is more acute. Flood and erosion affected chars are very backward and undeveloped. 90 percent of the people living here are marginal and landless farmer. Flood and erosion taken place in last five decades broke the backbone of the agricultural economy and most of the farmers become unemployed. Unemployed and occupation less household earn their livelihood on *rikshaw* pulling, *thella* pulling, *kuliwala*

like non-traditional job and their rootless children bound to work in different field in very unhealthy and un hygienic condition.

Among agricultural labours in chars most of them are child labours. They do all sorts of works. It is found that household displaced in erosion flies to other places in search of job along with their family and hence their children also. Children having no other business, they join their parent's job.

Types of Child Labour in Char:

Child labours are found in different forms in different situation in the society. In char areas child labour found in following types-

1. **Child labour in fishing:** Children are involved in fishing without the use of protective equipment. Fishing boat employs children recruited from poor neighbourhood. Children are in water up to 12 hours. Sometimes they have been attacked by poisonous fish and snakes.
2. **Children in construction work:** Children undertaking heavy work and carrying massive loads in the construction work. Many times, their body becomes deformed because of the excessive stress being placed on the bones.
3. **Migrant child labours:** Children who migrate from rural to urban areas alone or with their families are migrant labour. They migrate in search of better job or to escape from family bondage. Some mis guided agencies picked up them and supplies to factories.

4. **Domestic child labour:** This is one of the important forms of child labour in chars. They are employed within the household for domestic works. Most of the domestic workers are girls and are as young as five to six years old. They generally belong to very poor and illiterate family.
5. **Bonded labours:** A person become bonded labour when their labour is demanded as a means of repayment for a loan. This type of labour also known as debt slavery. As most of the farmers are poor and when such farmer is fall under river erosion, they bound to take loan from the rich farmers and Mahajans. Finding no other alternative for repayment of the loan they bonded their children as labour.

In India, Child labour has been banned and declared as crime. If some practice below 14-year-old children as labour for self-interest then it would be considered as crime in India. Instead of various measures taken by the Government, child labour practice could not be stopped. In backward areas like chars and other remote areas child labour is a normal phenomenon. Following are some causes of child labour:

1. **Poverty:** Poverty is the main causes of child labour. There are many households in Char areas that cannot fulfil their day-to-day requirement for their household as well as for their children. They send their children to work somewhere to earn something for their families. Children of these families leave their school after just enrolment or did not enrol them in any schools. They go for working in field, cattle feeding, begging etc.
2. **Lack of proper Implementation of the Act:** There are many Acts for prevention of child labour. Some important Act were as 'Child Labour Act, 1986', 'The Juvenile Justice of Children Act, 2000', 'The Right of Compulsory and Free Education Act,

2009' etc. All these Act were aimed at to prevent child labouring, but fails to achieve their goal in most extend. In Assam, implementation of these child protections Act is very lower stage. This is as because of the fact that the Government alone cannot prevent this type of crime without the cooperation from the public. The rate of cooperation is too low. Public cooperation is low as they are illiterate. Illiterate people do not that child labour is a crime and they are not aware about the right of children.

3. **Migration for work:** Every year large numbers of families migrated to towns and other places in search of job. They migrate with their whole families. In work place, they get no education and other facilities to their children. So, they engage their children in work.
4. **Lack of Morality:** Due to lack of morality on the part of the employer is another cause for child labour. Employer finds it wage bill saver and most obedient work force. Ignoring the human rights of the children of under age, most of the industries and commercial institutions employed child labours.

6.4.5 FREQUENT MIGRATION:

In Lower Assam, Dhubri and Goalpara districts are two areas of that experience very high rate of erosion and floods every year (Dasgupta, 2001). Recurrently after every five to ten years most of the weak chars are washed away. People living there become displaced and moved or migrate to another place. In Dhubri, most of the displaced char people find shelter on tops and sides of the hillocks along the river, such as *Rakshashini Hills*, *Kosutola Hills*, *Shonamukhi Hills*, *Rangamati Hills* and *Dudhnath Hills*. Migration from one place to another due to erosion and flood is become indispensable for the people particularly live-in char areas.

The extreme deprivation arrived at peak level to the people in *char* when the floods begin around June or July every year. Along with the other riparian areas of Assam, thousands of the flood and erosion induced displaced from the *char* areas are seen crowd together in temporary shelters on bunds, by the side of the highways or in the school houses of the neighbouring mainland villages. During floods people of *char* areas become jobless because of the off season in respect of agriculture. In search of their livelihood, they flee into another place. The towns and cities become a source of income to some people only in times of floods and therefore their migration is seasonal. Once the flood over, the migrants slowly returns their way back to the *chars*. But over the years due to a growing environmental degradation and the increasing irritation of the Brahmaputra, large numbers of permanent migrants are being attracted to the cities. Most of these people are lost their all lands and means of livelihood due to the river erosion. They never return to their *chars*.

As erosion is a continuous process, peoples are displacing every year in *char* area. Only an able portion of the displaced people is shifted to other permanent places. Most of the poor people are bound to stay there and they only shifted one *char* to another. Most of the *char* land is still *khas* land and so that it is easy to them to settle in any new *char* when they become displaced due to erosion.

For both shelter and livelihood frequent migration is to be seen as a common character of the people among *char* areas. In our surveyed population, it is found that 55.4% of households have migrated from somewhere. Among these household, 89.8% household were migrated due to erosion of their original habitat village. Only 10.2 % have been reported to have migrated due to other factors like for the search of better living.

TABLE 6.4: Migration of displaced people

Migration			Causes of Migration		
Response	Yes	No	Erosion	Flood	Other
Numbers	266	214	239	00	27
Percentage	55.4 %	44.6%	89.8%	00%	10.2%

Source: Field survey.

The reality of phenomenon of frequent migration of char dweller can easily accessed through the census data. One can easily find that some char villages shown no population in certain census which may be recorded as much populated in another census. For example, char village like Bhasani char, Bhogdahar, Boyejeralga part I, II, III, Dalsingeralga are recoded no population in 1951 census but subsequent census is recorded huge population in these villages. Again, some villages like Boldiaralga part II, Falimari, Ilshamari, Khererchar were found much populated human settlement in 1951 census, but subsequent census shows population nil in these said villages. Therefore, it is obvious fact that there found a frequent migration of people in between the char villages. Only a minor portion could out migrate from chars but majority of the poor household or people remain migrating within the char area.

6.5 ECONOMIC IMPACTS:

6.5.1 VICIOUS CIRCLE OF POVERTY IN CHAR AREAS:

The people in char areas have been trapped in a vicious circle of poverty and under development. The continuous poverty among the char dwellers is due to high growth of population, low literacy, poor health infrastructure, inadequate physical infrastructure and uncertain livelihood opportunities. These variables cause poverty and poverty subsequently causes further deterioration in these variables. In this causation circle the physical environment gets damaged. This has taken place when poverty and population growth force these people either to migrate into nearby towns/cities or to occupy any other inhabited char areas nearby. In the latter case, it affects the environment negatively by making the char areas more prone to erosion.

As mentioned earlier that the people in the char areas are victims of poverty, illiteracy and high population growth. All these situations set off the environmental degradation and leading erosion. Poverty and high density of population compels the char inhabitants to look beyond their present areas of homestead and cultivation. They are confronted with two choices before them, i.e., either to migrate to nearby towns/cities or inhabit new char arise in the river bed. In the lateral case people start deep ploughing in the new char for cultivation. As Gorky Chakraborty (2010) writes this deep plough leads to severe damage to the structure of new born earth. This disturbance of the soil profile on surfaces also disturbs the natural drainage system and it became more prone to erosion during the next flood. In addition to this, people bring in more and more areas under cultivation and they clear all the natural vegetation, shrubs etc. This again makes the catchment areas too vulnerable for erosion during floods.

Thus, people in the char areas of Assam live their lives in an environment of uncertainty, illiteracy, poverty and inadequate basic infrastructure. Their socio-economic life is rounded in a vicious circle of poverty and underdevelopment. This has its negative impact on the larger physical environment where in they live. To take them from this vicious circle of poverty external intervention from the Government and other important non-state developmental players are much needed.

TABLE 6.5: Number of BPL Household

	Yes	No
Char Near Towns	84	36
Attached to Mainland	96	24
Far from Towns	114	6
Disjoint Char	117	3
Total	411	69
Percentage	85.6	14.3

Source: Field survey.

In the table-6.5, it is found that 85.6 % of the surveyed household living below the poverty line and only 14.3 % households found to be of the above the line. It is found that there is a close relation between Illiteracy and Occupation. The correlation coefficient between illiteracy and occupation like agriculture or labour is found as $r = 0.91$ which implies a high degree of correlation. This is as because that illiterate people are unskilled and could not engage themselves in modern sector like business etc. Again $r = 0.98$ is found between occupation and poverty. Occupation like agriculture and labour could not provide them a

sufficient income so as they can afford a better life. So, the under developed and temporary nature of agriculture and labour like occupation are not in a position to uplift them from poverty line.

6.5.2 IMPACT ON LIVELIHOOD AND INFRASTRUCTURE:

After the devastating earthquake in 1950, the Brahmaputra brings unbearable miseries to the people of Assam. These miseries took in the form of increased river bank erosion, have directly and indirectly affected the livelihood of the people through deteriorating situation in the front of displacement, loss of livelihood, land and jobs. Phukan (2012) have reported that river bank erosion has been destroyed more than 2500 villages and 18 towns affecting the lives of nearly 5,00,000 people including sites of cultural heritage and tea gardens. Total land loss due to erosion of Brahmaputra estimated at from 72.5 to 80 sq. km/year during 1997 to 2007–08. Since 2009 almost every year flood hits Assam. However, the flood of 2004 broke all the previous records of flood damage. The flood of 2004 was affected 28.5 million hectare of land, 12.3 million people, 12.57 million hectare of cropland, and 10,560 villages. This year flood claimed death to 251 human lives and innumerable cattle and wildlife. All the 27 districts were affected by the flood and the total damage was estimated at Rs 6500 crores. Erosion of the Brahmaputra was extremely severe in several vulnerable regions of the state like *Majuli, Palasbari, Rohmorja, Bhuragaon, South Salmara* etc.

Northwest Hydraulics Consultants (2006) found in its study that floods affected 0.8 million hectares of land on an average every year. In recent years flood affected more than 4 million hectares of land which is nearly 50 percent of the state. Such devastating floods inundated at least 2,000 villages along with destroying other infrastructures. Due to riverbank erosion, about 8,000 hectares of land along the River were damaged. People displaced due to erosion has compel to migrate other villages, towns and reserve area. Char society is based on

agriculture and agriculture is their source of livelihood. Bank erosion causes loss of agricultural land and it leads to an increase of landless labourers. Reduction of land due to erosion and the growth of landless labourers affected their live and livelihood.

During last three or four decades, a major change has taken place in regard of occupation of the char people. The pressure on land is increasing day by day due to both growth of population and land erosion. The 60 above senior inhabitants were of their past experience that there was enough land. All people were engaged in agriculture and were self-sufficient. They were proud as farmer and there was no tendency to move outside the village. Only a negligible number of people were out of agricultural farming and they earn their livelihood from other job in towns. After 1950, the behaviour of Brahmaputra become changed, it come more anguish and taken away vast area of fertile agricultural land. Flood every year covers other vast area with sand. These sandy lands are unsuitable for farming or cultivation. So, both flood and erosion are reducing the agricultural land and its fertility.

Due to lack of sufficient land in chars, agriculture is not in apposition to feed all of its inhabitants. Having no scope of earning opportunities, people use to migrate to cities and other places in search of livelihood. Without any base of industries, trade and commerce people flee to nearby town as *thella* puller, rickshaw puller, areal and other type of labour. The changes of occupation found at the time of the study as shown in the table 6.6. In the table it is shown that only 35.0 percent of the household have the occupation of agriculture and following that 52.7 percent people are basically landless and hence depends upon the occupation of labour. Only a few portions (12.5 percent) of people are taken up small trade and commerce as their occupation. Service in Government and non-Government sector provides livelihood to only 3.9 percent of people in the char areas. So, it is found that there

has been taken place a drastic change in respect of occupation of the people in the char areas due to erosion.

Agriculture is a prestigious job than manual labour. Once all of the household were farmers and now 52.7 percent of them have shifts as labour, as they reported, due to lack of any other option for livelihood when their farming land were eroded by the river.

TABLE 6.6: Occupation of Households.

	Service	Agriculture	Labour	Other
Char Near Towns	5	33	49	33
Attached to Mainland	9	44	45	22
Far from Towns	2	42	73	3
Disjoint Char	3	49	66	2
Total	19	168	233	60
Percentage	3.9	35.0	52.7	12.5

Source: Field survey.

During the course of study, most of the respondent of age above 60 was of the view that few decades ago almost all the household living in char villages were earned their livelihood from agriculture or from allied farming. But the present scenario is quite different. Presently more than half of the char dwellers are landless. From the table-6.6, it is seen that nearly 65 percent of the household living upon the occupation other than agriculture. 52.7 percent

household solely depends on their daily wage and most of the wage earners are landless. They work in different towns and cities, Coal fields, Bricks field and so on.

6.5.3 EDUCATION:

Education is the backbone of a society. No society could develop without the modern education. In Assam, the literacy rate is recorded 88.8 percent where male literacy is 91.8 percent and female literacy is 85.7 percent (Census, 2011). On literacy rate the Dhubri district lagging behind the state rate. As per census, 2011, the literacy rate in the district is 81.3percent. The male literacy is 86.3 percent and the female literacy recorded as 77.1 percent. Char areas in Assam is a backward region in respect of education. It is after the 1970's modern schools were established in the area. The literacy rate among the people of char area is much low as compared to the other regions of the state as well as the country. It was only 14.0 percent at an average for char areas in Dhubri (Socio Economic Survey, 2002-03) and 48.6 percent in all char area as compared to 88.8 percent of the state rate of literacy.

Survey conducted during the study reveals that educational status is a backward one. The table 6.7 reveals that out of 480 household only 242 head of household are literate i.e., the rate of literate household is 50.4 percent. There are 3.7 percent household having at least one-member graduate, having member secondary or more is found as 9.7 percent and 36.0 percent household have only members with education level at primary. There are 49.5 percent household have no member literate.

In recent days, due to effort of Sarbo Sikhsa Abhiyan (SSA) enrolment picture has been somehow improved. The rate of enrolment has increased in considerable level. Table No. 6.7(a) shows that children of 89.3 percent of household have enrolled their name in

schools and till now 10.6 percent household have deprived off enrolment of their children into any schools.

Again, in days of privatization, all conscious parents send their children to a private school for getting quality education. As we found in the study (Table No. 6.7.b), most of the children (81.8 percent) of char areas get enrol them in Government sector schools where quality education is a far reach. Only 7.2 percent lucky parents are able to send their kids to private schools. Other 10.9 percent children remain out of the circle of the modern education. These children go to charity funded religious educational institutions. The rate of dropout children also found to be at high. 50.6 percent children get lost their education in the mid-way. High rate of dropped out children is a major problem of char areas. This has found valid in our study also. Among the household's 46.6 percent household have admits that they have dropped out children in their families. The main reason of dropped out is acute poverty and child labour.

TABLE 6.7: Education of the Head of the Family.

	Illiterate	Primary	Secondary	Degree	Total Literate
Char Near Towns	52	48	12	8	68
Attached to Mainland	59	38	16	7	61
Far from Towns	68	45	6	2	52
Disjoint Char	63	42	13	1	57
Total	242	173	47	18	238
Percentage	50.4	36.0	9.7	3.7	49.5

Source: Field survey.

TABLE 6.7 (a): Enrolment Status

	Yes	No
Char Near Towns	110	10
Attached to Mainland	110	10
Far from Towns	105	15
Disjoint Char	104	16
Total	429	51
Percentage	89.3	10.6

Source: Field survey.

TABLE 6.7 (b): School type.

	Government	Private	Others
Char Near Towns	91	14	5
Attached to Mainland	86	17	7
Far from Towns	89	0	16
Disjoint Char	85	0	19
Total	351	31	47
Percentage	81.8	7.2	10.9

Source: Field survey.

TABLE 6.7 (c): Household of Dropout Students

	Yes	No
Char Near Towns	45	75
Attached to Mainland	67	53
Far from Towns	49	71
Disjoint Char	63	57
Total	224	256
Percentage	46.6	53.3

Source: Field survey.

It is a recognised fact that education is the backbone, power and the only way to uplift a society. But the char areas are lagging this. There are many reasons for which the household living in char areas could not afford the education in proper way. The study found following factors responsible for the backwardness of people of chars in respect of education are-

- 1. Acute poverty:** Majority of the household in chars are living below the Poverty Line. They spend their whole afford to feed their family members. They have no time and space to think other than food. Many respondents tell us that they welcome new born male baby because when they become at age 6 or 7 years, they become able to help their earning job. According to them, more hands mean more earnings for the family.
- 2. Frequent change of living place:** Due to many factors, Char dwellers are bound to change their living place frequently. 88.4 percent of the household has changed their original living place in last 10 years or more. The major reason of such

changes is river bank erosion. After erosion people lost their land, residence and also educational institutions as well. Therefore, it becomes impossible for the displaced household to send their kids to schools. Those kids were in schools are also bound to leave their learning due to lack of schools in convenient area.

- 3. Insufficient road communication:** In char areas road communication is in very worse condition due to several factors. There exist lots of canal and channels of river among the char villages. These canals and channels stand as barrier to construction of road communication. Lack of road facilities pulled out the society in every respect. That is why, little kids of one habitant could not go for school situated in another habitant.
- 4. Lack of awareness among the Parents:** Parents of the char areas are not aware about the importance of education. Illiterate parents are not interested to send their children schools. Instead of they want to join their children in earning jobs as early as possible.
- 5. Lack of schools:** Existence of insufficient number of schools is another important reason of illiteracy in the char areas. As per RTE Act, 2009, there should be at least one primary school in one KM radius. But this norm is failed in chars. Due to geographical and other bottlenecks many of the inhabitants have no school at all.
- 6. Irregular schooling:** It is found at the time of investigation that schools existed in the char villages are not going on proper way. Irregularities in different form are found existent and this led to illiteracy in the area.

6.5.4 WOMEN AND CHILD HEALTH:

One of the important goals of UN Sustainable Development Goal to be achieved by 2030 was health and well-being to all. A standard health is a fundamental right. Many countries have committed to universal access to health for all in general and reproductive health for women in particular.

The Government of Assam has adopted its State Development Goal (SDGs) in 2016. Significantly SDGs of the state has selected Char areas of the state as models. The Char areas of the Brahmaputra valley have a unique feature of development exclusion. This exclusion is coupled with geographical isolation, hostile terrain, naturally disaster prone with a society afflicted by poverty, illiteracy, population explosion and heavily gender biased. Lack of health services and the distances the that the char dwellers have to cross to access the health services is a major challenge. The health issue of women live in chars is of prime importance as it surpasses SDG 3 (Gender Equality).

The public health service within the char areas of Assam is nearly said to be absent. They need no awareness about health and hygiene. Anaemia may be a common among char women. Most of the char people no idea about hygienic food and beverage. Normally most of the people in char area want to choose open defecation.

National Foundation for India, New Delhi has been made a study on women of Char areas and SDGs covering 9 districts of Assam including Dhubri district. the prevailing health care scenario and ladies found during a pathetic state altogether Char areas.

The status of public health in Dhubri district is found to be a pathetic. Only in name only, few Primary Health Centres are found within the district. they're at Bhogdahor, Boraibari, PHCs in Airkata, Birshing, Katlamari, Mahamaya Char, Nayaralga, Masaneralga

and at Geramari (MPHC) and Kachokhana (SD). As char villages are scattering at different locations of the river, hence these health centres are too far away from the villages in remote chars. Char area witnessed that 92.2 percent of the deliveries of kid are happening reception. Only 9.7 percent of the ladies from the chars are parturition to their child in Government hospitals (Ahmed, 2007).

So far as assistance in delivery of kid is concerns, majority of them relying more on the untrained dhai. Home delivery in chars is found to be above the national average of 51.3%. the advantages of the ICDS scheme are found also non-existent.

The concept on contraception isn't popular within the char areas of Assam. Early marriage is one among main problem exist in char area. For this reason, women in chars receives an extended duration for parturition. In most of the households in char has quite two generation. Women are considered reproductive tool. There found an entire ignorance about the health and wellbeing of girls in chars.

Another factor that reduces the dignity of girls is polygamy. Polygamy induces many births of kid during a household. thanks to lack of proper education and awareness, polygamy remains continuing activity found in chars.

Women in char areas are found to be unaware about hygiene and wash issues. Only 1.4 percent of households in char areas have sanitary toilets. During their menstrual periods, thanks to lack of awareness and facilities, women face many troubles. Open defecation remains quite common.

To realize the target of SDG (2016), healthiness and Well Being is included together of the most indicators. Government linked the Health & Family Welfare department with Education, Public Health Engineering (Water and Sanitation) as primary departments. From

these developments there's an expectation on change and transformation of health generally and for women's health especially in Char areas for Assam.

It is clear from the above discussion that the general scenario of river bank erosions and their impacts are miserable. As a results of riverbank erosion and displacement, forced migrants bring insecurities in several form. Economic insecurity like unemployment, erosion of agricultural land, social insecurity thanks to deprivation of civic rights, health insecurity thanks to lack of basic infrastructure etc are to face. Forced migration cause insecurities and led to deprivation, destitute. Thus, riverbank erosion has negative impact on human life. Conversely, human activities even have liable for riverbank erosion. People cultivate on riverbanks due to its fertile land. No fertilisers are needed. River banks provide better productivity than upland farming and for this reason, there's over-cultivation, poor management of cultivated fields, and indiscriminate lowering of trees. All this results in riverbank erosion alongside river sedimentation, pollution and fish habitat alteration (Kaunda and Chapotoka, 2003). So, natural resources management including riverine resources in poverty-stricken communities is of very complex nature.

6.5.5 LAND OWNERSHIP

In a rural agrarian society, land is regarded as important element. The ownership of land resource is the main indicator of the status of a household in the society. The family owned more land regarded as wealthier as because land is the prime source of livelihood in any agrarian society. The char areas are one of the traditional agricultural societies in the state of Assam. Almost all the household in the char areas are depend directly or indirectly upon the land for their livelihood. Due to flood and erosion, changes are taking place in the basic agrarian society of chars. Erosion reducing land for agriculture. Along with the reduction of

land, growth of population leading many people to opting daily wage labour and many other non-agricultural occupations.

The patterns of land distribution are found to be very unequal among the tillers in char areas. As the survey conveyed for the purpose reveals that 62.0 percent of the households owned no land for agriculture and among these 24.16 percent house have no land at all. Only 38.0 percent fortunate household of char area has their own land for cultivation purpose. Among the land owner household 19.5 percent has land range from 0.5 to 2.0 Bigha only, 12.5 percent possesses 1.0 to 5.0 Bighas of land. Only 5.8 percent dwellers are lucky enough to possess more than 5.0 Bighas of land.

TABLE 6.8: Land Holding of Households (Bigha)

	Nil	Up to 0.5	0.5 to 1.0	1.0 to 5.0	More than 5.0
Char Near Towns	35	38	27	14	6
Attached to Mainland	34	43	23	14	6
Far from Towns	27	48	21	17	7
Disjoint Char	20	53	23	15	9
Total	116	182	94	60	28
Percentage	24.1	37.9	19.5	12.5	5.8

Source: Field survey.

Maximum holdings of land used for cultivation by a single family are found more than 40 Bigha. The main reasons of low holding of land and unequal distribution are found as-

- Recurring flood destroys land use for agriculture.
- Divesting erosion decline the area of char land.
- Growth of population at high rate.
- Fragmentation of land among the successor and
- Indebtedness of the farmers.

6.5.6 NATURE OF HOUSES:

One of the prime necessities of human being is shelter i.e., residential house. People of char areas are indeed poor and they lack their residential home. Traditionally people live in thatched roof and jute barrier house with bamboo post and *kachha* floor. Now a day, due to lack of such nature originated items like thatch, jute etc people start to use aluminium tin for roofing for their house. Cement made post are in use in place of wooden one and floor remain *kachha*. Government is also aware of the fact that the char areas are most temporary and is not suitable for any permanent construction. Due to recurring flood and erosion house and another establishment are subject to frequent move or shift from one place to another. The Government department prepares a special model of houses to be constructed in char areas for different purpose like Educational institutions, Anganwadi Centres, Community hall etc. Even, the model and sanction amount for the house provide by the Government to the BPL household are also different from the model etc allotted in other parts of the district as well as the state.

Home or shelter is an important ingredient of standard of living. After the whole day labour in work field people rest at home. An improved condition of home could improve both the physical and mental health which in turn could improve the efficiency and ability to work.

The temporary nature of char land due to flood and erosion make this area as different from the rest part of the district. The socio-economic condition of char people greatly affected by the its temporary nature. Condition of most of the char houses is not hygienic. In the studied areas, it is found that the status of shelter house is very poor. Out of total household surveyed 90.0 percent of the household live in kachha houses. Kachha house meant for the house made from traditional elements like bamboo, thatched etc. Only 9.3 percent houses are found to be *pacca* in the sense that floor and post are made of cement etc.

Most of the households owned their own houses. No household found to be live in rental houses. Only 4.2% households are living at the houses owned by other. Most of the families living in other's houses are bonded labour and they live together with their master families. Following table presents the scenario of shelter houses in the studied areas.

TABLE 6.9: Types of House

	Kachha	Pacca
Char Near Towns	103	17
Attached to Mainland	99	21
Far from Towns	116	4
Disjoint Char	114	6
Total	432	48

Source: Field survey.

6.5.7 DURABLE CONSUMER GOODS:

The status of a family depends upon the wealth they belong to. More wealth a household belongs treats as richer than others. Again, the comfort of life mostly depends upon the items used for the purpose. Wealth or asset may be of different kind. It may be Land, House, Durable consumer good, Lives stock etc. Use of Durable consumer good improves the standard of living of the household. Urban household lives an improved life than rural counterpart as because they use more comfort items. Poor people remain busy with their minimum necessities and hence use of durable and comfort items is less.

Char area of Assam is economically more backward than any other rural part of the state. Recurring flood and erosion have breaks down the backbone of the economy of chars. Household living there suffers from lack of agricultural land, roads, trade and commerce, education, health and other basic amenities of the modern live. Majority of the household is either marginal farmer or landless labour. Considering the number of durable consumer good, they own, it is found that people of char area is living in a miserable condition.

As most the families or household live below the poverty line, wealth they belong are also found to be very low level. Only 7.5 percent of the household owned a bike in the char areas as a modern tool for transport. 19.3 percent of the household owned a bicycle for their transportation. Remaining major portion of people still using on foot for go here and there. For the purpose of communication, 76.8 percent of the household use mobile phone. There found very few families those have more than one mobile phone in their families. Radio and Television are found in 3.1 percent and 11.2 percent of the household respectively. No families were found that keeps and read newspaper of any language.

TABLE 6.10: Holding of Durable Goods

	Bike	Cycle	Radio	TV	Mobile
Char Near Towns	21	36	0	17	103
Attached to Mainland	15	24	0	6	108
Far from Towns	0	18	2	1	84
Disjoint Char	0	15	3	1	79
Total	36	93	5	25	374
Percentage	7.5	19.3	1.0	5.2	77.9

Source: Field survey.

6.5.8 LIVESTOCK:

Livestock is commonly defined as domesticated animals rose in an agricultural setting to produce labour and commodities such as meat, eggs, milk, leather, and wool (Wikipedia). Livestock production in Assam is characterised by rural smallholder production using indigenous cattle, buffalo, pigs, goats and chicken. The livestock population of Assam mainly belongs to the indigenous nondescript type for which the average productivity of livestock in Assam is poor.

Once the char land was considered as waste and grassing land and was used for feeding cattle etc. Till the last decades of 20th century char areas was abundant in livestock. Each and every household of char villages had livestock particularly cow, buffalo, goat, sheep, duck and hen. Maintenance of goat, duck and hen was the job of women. It is the only way to earn for women in char villages. They support their family with the income earned from the livestock they had. People living in char villages was the main producer of milk, egg and chicken to the towns and cities particularly in lower Assam including Guwahati. Along

with some other factors, the divesting flood and erosion have changed the scenario of the chars. Due to hardship of feeding and sheltering the livestock faced by people, char area lost her position in respect of livestock. Many households give up maintaining pet animals particularly cow and buffalo.

In the course of our study, it is found that a major portion of the household has no livestock particularly cow and buffalo. As stated in the Table 6.11 it is seen that only 68.7 percent household have feeding cow, 85.6 percent feeds goat. Duck and hen nurtured 66.8 percent and 95.8 percent of the household respectively. That is 31.1 percent of the household have no cattle due to either no land to feed or shelter them.

TABLE 6.11: Holding of Livestock

	Cow	Goat	Duck	Hen
Char Near Towns	60	75	66	81
Attached to Mainland	71	84	75	78
Far from Towns	84	112	115	116
Disjoint Char	103	112	83	114
Total	318	345	339	389
Percentage	66.2	71.8	70.6	81.0

Source: Field survey.

6.5.9 ENERGY SOURCE FOR COOKING AND LIGHTENING:

One of the basic components of living is the use energy for the purpose of lightening and cooking. Use of improved energy source leads the standard of living to higher level. For lightening purpose either kerosene lamp or electric bulb could be used. The electric bulb is more convenient and comfortable than kerosene lamp. Likewise, for cooking there exists various options or sources viz. traditional wooden fuel, natural gas, and electric burner etc. More advance a household use more advance source of energy. As the char households are lacking all basic amenities of living, they are deprived off all improved sources of energy in their daily life. Hence their living standard is also found to be very low.

Uses of energy for lightening and cooking purposes are found very low and traditional among the household of erosion affected char area. The Table-6.12(a) depicts the information collected from the field survey. For the purpose of lightening 26.8 percent households use kerosene, 13.5 percent uses electricity and 59.5 percent are use solar energy. The use of kerosene is higher in mostly distant and disjoint chars. Electricity used up more in near town chars. Households from both near town and distant-disjoint char villages are using solar energy as a source of lightening in recent years.

As the displaced households are poor, they are lagging behind the use of modern amenities and hence the level of living standard is also below the standard level. We found in the course of study that 81.4 percent (Table No. 6.12.b) of the household in the erosion affected chars are use traditional fuel like wood, leaves etc for the purpose of their cooking. Only 18.5 percent of household and mostly of them are from near town chars are uses LPG Gas as their cooking fuel.

TABLE 6.12(a): Source of Lightening.

	Kerosene	Electricity	Solar
Char Near Towns	30	75	15
Attached to Mainland	48	6	66
Far from Towns	24	0	96
Disjoint Char	15	0	105
Total	117	81	286
Percentage	24.3	16.8	59.5

Source: Field survey.

TABLE 6.12(b): Use of Energy for Cooking.

	Firewood	LPG
Char Near Towns	36	84
Attached to Mainland	48	72
Far from Towns	114	6
Disjoint Char	117	3
Total	285	195
Percentage	59.3	40.6

Source: Field survey.

6.5.10 BANKS and INSURANCE:

Banks and Insurance are two basic financial institutions of modern society. A moderate transaction could not operate without any banking system. Banks are the institution where public can deposit their saving, borrows funds for their any need whether it is domestic, commercial and so on. Banking system today developed up to its super level. All financial assistance including subsidy, old age pension etc directly to its beneficiary through the bank account. Banks are introduced Digital Money which means transaction without cash or it may call cashless transaction.

Like banks, insurance is also another modern tool of modern society. People are afraid of many unseen outcome and insurance companies are come forward to cover such unseen happenings to provide relief from there. Insurance provide both insurance and savings to its customers. Thus, peoples are benefited from insurance policies if they opted for it.

Char areas are lacking both banking and insurance facilities. In our surveyed areas it is found that 71.9 percent of household have no bank accounts in their name. Only 28.1 percent of household reported as they have their own bank account. Most of the accounts are recently opened for the purpose to avail the old age pension and house for homeless. Again, it is found that most of the accounts are operative only based on the government contributions. Deposits into such accounts from the owner's side are near to be nil and almost all accounts opened for the purpose of house becomes inoperative just after the purpose was served.

In the surveyed areas only 28.1 percent households found (Table-6.13) to be the owner of a bank account and remaining 71.9 percent households have no bank accounts. So far as bank loan is concerned, only 1.3 percent household reported to have get loan from any bank and 98.7 percent have no idea about bank's loan.

TABLE 6.13: Status on Bank and Insurance.

	Bank A/C		Bank Loan		Insurance	
	Yes	No	Yes	No	Yes	No
Char Near Towns	36	84	6	114	12	108
Attached to Mainland	54	66	0	120	3	117
Far from Towns	24	96	0	120	0	120
Disjoint Char	21	99	0	120	0	120
Total	135	345	6	374	15	365
Percentage	28.1	71.9	1.3	98.7	3.1	96.9

Source: Field survey.

TABLE 6.14: Status on Savings and Indebtedness

	Savings		Indebtedness	
	Yes	No	Yes	No
Char Near Towns	9	111	30	90
Attached to Mainland	6	114	36	84
Far from Towns	3	117	96	24
Disjoint Char	0	120	90	30
Total	18	462	252	228
Percentage	3.7	96.2	52.5	47.5

Source: Field survey.

In regard of insurance, only 3.7 percent of household reported to have any kind of insurance policies in their families. The lion share of population (96.2 percent) has no relation with any kind of insurance policies. Savings is an important component of capital formation

of the society. In the char villages, savings behaviour is a utopia. As the study reported that 96.2 percent house has no savings either in banks or in own hands. Only 3.7 percent household reported to have saving at a minimum level. Indebtedness is a feature of a backward society which exists among char dwellers. Of the total 52.5 percent household have their debt with their relatives, friends and *Mahajans*. Though the majority of the people are in indebtedness, but they could not avail banking loan facility as there exist no banking branch in char areas. Post office banking service is also rare to be found in service.

Deprivation of banking and insurance policies has due to following reasons:

1. **No bank branch:** There found no bank branch in char areas. Bank branch of any bank whether it is nationalized bank or regional bank have their branch located in towns. Even some branches named after some greater char area is also located in nearby towns.
2. **Lack of land document:** Lack of proper document is also another reason to have no account in banks for char people. This document issue hampered the people of char areas to avail loan from banks. As the land in char areas are *khas* land and have no record in government offices and hence people could not produce any documents based on lands.
3. **Reluctant attitudes:** Banks, either nationalised or regional, are found to be reluctant to provide loans to farmers, unemployed youths, SHGs, small enterprises etc of rural areas. They are interested to provide home loan to Government servant, established business man of town and cities.
4. **Lack of Awareness:** People living in char areas are illiterate. They have no awareness about the schemes and policies of the government. Due to lack of

education and awareness, they could not approach the bank for financial service. As reported by the household at the time of investigation, it is acknowledged that many of the parents lost the scholarship amount of their children due to failure to open an account in the bank against the name of their children.

5. **Existence of middlemen:** Existence of middlemen is an important bottleneck to get agricultural loan by the farmers. Bank personnel are favoured those middlemen who prepares list of beneficiaries for loans like KCC etc. General public of the concerned area are not aware of the list. Finally, the bank personnel and middlemen take pocket the whole amount keeping farmers in darkness.

6.6 SOCIO CULTURAL AND POLITICAL IMPACT:

Assam is a multi-cultural, multi ritual state. A variety of caste, creed, religion, language is found among the people of Assam. There are some caste and creed living in the state for which the other caste or creed knows a little or nothing. The state has lost more than 7 per cent of its area to erosion due to floods. People living in the eroded areas become displaced and they move nearby places for shelter. Mostly these people take resorts of government land, reserve forests etc.

Land loss due to erosion compelled those displaced people to migrate to other place without any economic and social security (Rahman, 2010). After losing all options of means of livelihood, they started migrating to various towns and cities of Assam as well as to different north-eastern states. Assam witnessed 6 yearlong 'Assam Agitation' during 1979 to 1984. The main slogan of the movement was to detect and deport illegal immigrants from the state. The affected people in the riverbank erosion when started going to various towns and

cities of Assam and north-east states, the then AASU leaders thought that these people were coming from newly created Bangladesh. The reason behind this thinking might be attributed to the similarity in language, dressing and mainly in religion of these people. In the name of detecting and deporting illegal immigrants, the descendants of the genuine Indian citizen who came to Assam and settled there in since latter part of 19th century were being targeted and harassed. Many were even killed in the genocide in *Neli* (Ahmed, 2016). Thus, we see that the riverbank erosion was indirectly influencing the political situation of Assam as the displacement of the riverbank erosion affected people from one place to another added the fuel in the flame in Assam agitation.

Displaced char people victimised at different angle, once they migrate from chars. Their appearance on mainland created a suspicious scenario. This suspicion arises because the language, religion, dress, behaviour etc of char people are different from that of the most land. This has led to misunderstanding among main land people and char people. Some por-active groups termed them as illegal immigrants and labelled the as 'Bangladeshi' also. They're assaulted, harassed and oppressed in their work place. Discrimination against them were also found just in case of labour market. they're paid much lesser wage than the prevailing market rate. Sometimes they were driven out from the work field by some pro-nationalist groups. Both print and electronic media publish and circulated the news of illegal immigrants, but they always remain silent about the basis causes of migration of those people from their char land. This has induced mistrust among communities which can't be good sign of a peaceful society.

It is clear from the above discussion that the overall scenario of river bank erosions and their impacts upon the people live in char area are very depressing. Due to the erosion induced displacement, people compel to forced migration that took them at the risk of

insecurities in different form. The uncertainties that they are to face in their life are economic insecurity due to unemployment, loss of capital and indebtedness, social insecurity due to deprivation of civic rights, health insecurity for absence of basic infrastructure etc. All these insecurities led to deprivation and vulnerability of the families. Thus, riverbank erosion has negative impact on human life. Human activities also have responsible for riverbank erosion. People cultivate on riverbanks because of its natural fertility. No fertilisers are needed. River bank land provide better yields than upland farms. For these kinds of benefits, there happened over-cultivation and poor management of cultivated fields (Kaunda and Chapotoka, 2003). All these factors are inducing riverbank erosion along with river sedimentation. So, it can be said that natural resources management including riverine resources in poverty affected communities is complex matter.

CHAPTER-7

OVERALL FINDINGS AND SUGGESTIONS

CHAPTER-VII

SUMMARY, CONCLUSION AND SUGGESTIONS

7.1 SUMMARY:

The present chapter is an outlined of the previous chapters and is an attempt to capture the total picture of the people living in char land of Assam which is recurrently fall under flood every year and affected by river erosion frequently. The socio-economic condition of the households is trying to measure in terms of their income and consumption expenditure, assets and liabilities, housing status, availability of safe drinking water, source of energy use, toilet facility, use of radio, television, telephone, literacy rate and health problems.

Erosion of the river banks in India have become recurrent event and creates enormous problem for the people as well as the Government. Presently a large number of townships, villages, human dwellings, trade centre etc. are under the threat of bank erosion. The impact of erosion is unbearable and non-recoverable and cause permanent loss to human being. Hence it is suggested to adopt scientific approach for erosion control on priority.

Flood and erosion are a natural phenomenon. Rivers especially the mighty Brahmaputra and its tributaries erodes vast areas of land every year in Assam. It is well known fact that in rural areas of Assam more than 70 percent of the population is depends on agriculture for their livelihood. Agriculture or cultivation requires fertile land which erodes by the river every year. People displaced due to erosion become more and more in recent years. The occupational structure, income, living standard of the people of the agrarian society hamper greatly due to the continuous river bank erosion especially of the agricultural land. It stands as a challenge for the people as well as the Government for the resettlement of

displaced people. As the char area is peculiar in its nature and in its geographic position the impact of flood and erosion fall on the people basically live in *Char areas* in the district.

Chapter I has encompassed the research problem, its objectives, rationality and background, scope, significance and limitations of the study. An introduction to the river Brahmaputra and Char areas of Assam have been made. A review of relevant literature on the issue in brief is analysed. Review of literature is categorised into three groups viz. review on flood and erosion, immigration and inhabitation and society of char area. It may, however, be mentioned here is that the analysis of the problem is sometimes hampered due to the non-availability of adequate data at desired level.

Chapter II deals with the data base and methodology of the study. This study has been conducted in Char Areas of Dhubri district in Assam. The area covered by char areas in Dhubri district is 998 sq. km. The percentage of population in char areas of Dhubri district is 42.1 of the total population of the district and density of population are 690.6 per sq km.

For collection of data char villages are divided into four categories viz. char villages located at near of towns, far distant from town, surrounded by river water and attached with mainland. Four villages are selected at random from each category of villages. Then from each village thirty households are selected at random to construct the sample for collection of data. This has constituted a sample of 480 numbers of households.

A structured questionnaire was used to collect primary data from the household included in the sample. Along with primary data secondary information has also been used in the study. After gathering data were analysed with statistical tools.

The statistical methods like Averages and Percentages have been used to measure various attributes. Methods like the ANOVA and the Chi Square have been used to measure

the sample variation and validating the hypothesis of the study. The Coefficient of Correlation is used to measure the relationship among the attributes. In order to quantify the socio-economic variables like Income, Education, Occupation etc. the Kuppuswami's Socio Economic Scale have been used.

Chapter III describes a brief history of people and land tenure system of char area as it appears significant for the socio economic and socio-political condition of the state as well as the district of Dhubri. *Char area* is a peculiar geographic feature of Assam. Those vast tracts of land found in and on the bank of river like Brahmaputra are known as '*Char Areas*'.

Initially these areas were waste land and used for the purpose of cow feeding and other such secondary utility purpose till the last part of 19th century. It was the British Government of India who took initiative for settlement of farmers from then East Bengal through the middle class like *Zamindar, Jotedar, Talukdar* etc. Immigration into char area took place for various reasons and among them most important reasons were long lasting suppression by Zamindars in East Bengal, unequal density of population in adjacent districts, convenient land tenure system in Assam, colonial sponsorship etc.

As per Survey report, 2003 by the Director of 'Char Areas Development, Assam' there are 2251 numbers of char villages in Assam. There are 24,90,397 population and 4,34,754 households living in char areas which constitute 12% of the total population of the state. The cultivable land are about 2,42,277 hectares i.e., 2.98 percent of the state.

Chapter IV deals with the issues like flood, erosion and displacement. In Assam, during the period of 1954 to 2007 total of 4,25,932 hectares of land had been eroded and there on displaced more than 8 lakh households in different parts of the state. The severity of problem of erosion is more acute in lower parts than other parts of the state. The Dhubri district is considered as most affected district in Assam. Only in South Salmara Revenue

Circle of the district, out of total 201 villages 107 villages have been completely washed away in erosion since 1962. The devastating flood that begins in 1980's took three historical trading centres viz. *Fakirganj, South Salmara and Sukchar* of the district for ever from the map of Assam. In 1989, the South Salmara towns become the target of Brahmaputra and in 1991-92, all institutions, offices, business firms etc are destroyed and transferred to another place.

Char areas neighbouring the Dhubri town are unluckier than any other parts in Assam. Char villages like *Kalsabhanga, Marowar Char, Chalbanda, Chenikhowa, Majerchar, Cholakura, Bondihana* etc lost their existence due to continuous erosion since 1990. Chars located on the north bank of the district were frequently erodes and thrown up again and again in the last 20 years. For instance, *Birsing, Airmari, Aminerchar, Katiaralga, Moinakandi, Bonsirchar, Khedaimari, Porarchar, Pocharchar, Muhrirchar, Muthkhowa, Nilokhia, Montirchar, Moshlabari, Takimari, Patamari, Sostharghat* etc. are peep boo frequently.

Table 4.12 shows that thousands of households of hundreds of villages were displaced due to erosion of Brahmaputra only. Every year thousands of people living in char areas loss their livelihood due to flood and erosion. Revenue Department of the Government recorded that in 1994, land area was affected by erosion was 6,116 hectares in Brahmaputra Valley. Another important information is that the average annual damage has been over Rs 124 crores and average annual erosion rate has been 8,000 hectares of land, since 1954 (Sheikh 2000). Brahmaputra is causing a large-scale destruction on its bank whatever may be the site. Char area of Assam is very backward by its nature and location. Hence, the severity of destruction by flood and erosion of Brahmaputra are also found to be much devastating.

According to the report of the Internal Displacement Monitoring Centre, in the year 2009, at least 16.7 million people were found displaced due to the natural disasters like flood, storm etc. out of the total people effected by disaster 16 percent were displaced. In this very year, 15.2 million people which are 91 percent of the total were displaced due to climate related disaster like flood and storms. Of the world's total displaced people 14.9 million people i.e. 87 percent of the total was from Asia.

In Assam, flood recognised as a disaster but the erosion is not (Dasgupta). Displacement due to flood is a temporary and is for two or three months in a year for the victims. When flood affects the villagers, they went to some safe and secured place where they can protect themselves from the flood. During flood time Government and Non-Government Organisations (NGOs) come forward and open some rehabilitation camps for those victims. After the flood is over, villagers back their home and the problem of displacement disappeared.

But the unlike the flood, erosion is different type of disaster or calamities. Erosion takes away all assets, livestock, homestead and agricultural land. For the farmers agricultural land carries much more value as it gives them the means of livelihood. Once erosion taken place households lost all everything they have. Therefore, erosion affects heavily on the socio economic and socio-political life of the erosion induced displaced households. Although they lost everything of them, in government record they did not recognise as displaced people. Again, the Revenue Department of the Government fails to estimate the extent of erosion of char areas and displacement thereon as because of the fact that there is no record of land of char areas. Most of the land under char areas is recorded as khas land.

Chapter V present an account of the measures and initiatives adopted at Government level to control flood and erosion in Assam. The Government adopted National Flood policy

in 1954 and only since then the flood and erosion management measures started in Assam. Accordingly, a huge network of flood embankments was erected all over the state of Assam as immediate and short-term measures under the "food for work" programme. Under this programme total length covered by embankment has been increased from 211 km in 1954 to 4465.19 km in 2006. The National Flood Policy included measures like anti erosion and river training works that mostly comprise of bank revetments, construction of stone spurs, boulder deflectors, timber dampeners, R.C.C. porcupines and other pro-siltation devices.

During flood seasons there arises several emergencies and mostly of them taken care of by using some temporary measures like providing dowel bund with empty cement bags, back filling with bamboo support, bamboo porcupines, breach closing works, bamboo cribs etc. All the above measures provided reasonable protection to about 16.50 lakh hectares of area which was almost 50% of the total flood prone area of the state.

In our country, the erosion control measures are commonly known as river training works. River training may include one or the combination of more than one measure. It is the actual situations and problems in the affected area that decide the works to be adopted. As embankment, guide bank etc. have no direct protection against erosion; alternative measures to control erosion are to be taken into consideration. Spurs are the most effective and widely used measures for river erosion control and flow diversion.

Spurs like Impermeable spurs are generally used for diverting the flow away from the bank along a desired course. These spurs are very effective for shore line protection but very costly. The permeable spurs require only temporary or semi-permanent construction and can be made of brushwood, trees, and bamboos, wooden and concrete piles. This spur can be made of locally available materials and hence cheap. Permeable spurs are found to be useful in erosion control process. The main the object of permeable spurs are:

1. To divert the threatening of a bank,
2. To close down a flow channel,
3. To affect sediment deposits on lower chars.

Due to the need of huge finance and technology erosion control measures in Assam are mainly executed by Government departments. Government has adopted its measure to control erosion through spurs, tripod and porcupine. Tripod and spurs are traditionally used method to close a shallow stream channel in a braided river. Porcupine is made of both bamboo and concrete to protect bank erosion by diverting the flow of water current. Another technique of erosion control is Gully method. Like char areas where soil is very loose and gullies are easily formed by rain water. During high flood a gully may lead to the formation of a flow of new channel.

In Assam, there are some NGO's have also taken initiatives to protect erosion. Voluntary Initiative for Community Empowerment (VOICE) an NGO of Morigaon district has done Char Stabilisation Work in 2004, 2005 and 2006. Their first step was to Survey and site identification which is an important aspect as it requires deep understanding of the river line areas. This involved very frequent visit to the river and understand the current from the upstream and pattern of erosions. Next, the plastic granny bags are filled till 3/4th part and tied up with locally available jute rope and placed in the river bed carefully under the supervision of local experts.

Char area witnessed a century old human settlement started during colonial period. Char area abundant the economy of Assam in various way particularly by agriculture. But the unfortunate reality is that information regarding char area and its society isn't available (Chakravorty, 2012). The char area is one among the remote and backward regions within the state. For the aim of development of this area Government took an initiative adopting 'Char

Areas Development Programme' in 1983. 'Directorate of Char Areas Development' was the nodal authority to execute the programme. Since 1998, a replacement department 'Welfare of Minorities Development' was created and every one schemes of development on chars are taken under the department. Government undertook various schemes to develop the socio-economic condition of char people. Schemes of the govt included training to unemployed youth for self-employment, supply of beverage, providing sports materials, agricultural tool like hand-pump, shallow machine etc.

To assess the socio-economic condition of char people, the authority undertaken two survey. the primary survey was wiped out 1992-92 and other in 2002-03. These two surveys are the idea of data about the char area in Assam. the number of chars is rises from 2089 to 2251 during 10 years of two surveys. The district of Dhubri (480) remain on the highest of the list in respect of the amount of char villages. Decadal rate of growth of population found 55.6% which was much high than the state average 18.9% during 1991-2001. Population living in char area constitute 9.4% of the state population. But the acreage covered under chars is merely 4% of the state's area. thanks to high rate of growth density is far high i.e., 690 per sq. km. The state density is merely 340 per sq.km. Declining of the cultivable land is a stimulating fact about char area. thanks to erosion and other factors, cultivable land is declined from 70% to 67% during 1991-2001.

Mass level illiteracy is found common. the speed of literacy is increased at a really nominal rate during the amount of two surveys and it had been 14.9% to 19.3%. In some districts char area's literacy found declining. It had been as due to the frequent migration of migration to other places. Due to the miserable condition of all element determined the socio-economic condition, are depressing in chars and hence poverty is found to common among

the char dwellers. Number of individuals living below poverty level is increasing. It was 48.8% in 1991-92 and 67.8% in 2001-02 where the state average is declining and was 36%.

For removal of poverty in the country, Government has adopted various measures since fifth five-year plan. Among all programmes Small Farmer's Development Agency (SFDA), Marginal Farmer's and Agricultural Labourers' Development Agency (MFAL), Drought Prone Areas Programme (DPAP), Foods for Work Programme (FWP) was introduced for benefiting the rural poor. Later on, Integrated Rural Development Programme (IRDP), National Rural Employment Programme (NREP) and Rural Landless Employment Guarantee Programme (RLEGP) were introduced. In 1989, NREP and RLEGP were merged into a single wage employment programme under Jawahar Rozgar Yojana (JRY). The objective of this programme is to assist poor families in developing skills and inputs to overcome their poverty. Other programmes like TRYSEM (1979), Employment Assurance Scheme (EAS), Prime Minister's Rozgar Yojana (PMRY) in 1993-94, Prime Minister's Integrated Urban Poverty Eradication Programme (PMUPEP) in 1995-96 and National Social Assistance Programme in 1995 has been introduced. Employments generating schemes implemented in the state of Assam were the Training of Rural Youth for Self-employment (TRYSEM), National Rural Employment Programme (NREP), Jawahar Rozgar Yojana (JRY), Prime Minister's Rozgar Yojana (PMRY), Employment Assurance Scheme (EAS), Swarnjayanti Gram Swarozgar Yojana (SGSY) etc but the people living in char areas got a little benefit of these government schemes.

The **Chapter VI** accounts for various impacts of flood and erosion on the char dwellers. Flood and erosion of mighty river Brahmaputra causes havoc in Assam is more acute than anywhere in India. In earlier time, flood was considered as blessing than a problem because it deposited fertile soil in the agricultural field every year which helps the farmers.

But after 1950, the river once identified as the life process and culture of people become to be considered as menace.

Social aspect of char dweller is seriously suffering from flood and erosion. After displacement, char people compelled to migrate from chars to other places. But they're not welcome by the people where they migrate. This unwillingness of mainland people on char people results in various sorts of discriminations. The common discrimination is found within the labour market where they're paid lesser wage as compare to the market rate. Sometimes they were driven out from the development site or work place by pro-nationalist groups. alongside this discrimination of wage, they're assaulted and harassed physically by these pro-active groups. This has resulted a unpeaceful environment of labor also as financial condition of labours hampered. The mainstream media and organisation never show any sympathy to the char migrants. They termed and labelled them as illegal immigrants or Bangladeshi inflators. They never undergo the basis of displacement and migration of char people. A suspicious environment is active among mainstream and char people. this is often as due to the shortage of data on the part of the people of the mainland. Deviation of nature, behaviour, language and religion of the char dwellers are mainly liable for such suspicion.

The devastating flood and erosion have changed the demographic composition of the char areas. The census data reveals that there were a considerable portion of scheduled caste and backward caste people belong to Hindu in char area. They were engaged in various occupations like fishing, blacksmith, small business, different craftsmen etc including agriculture. Due to continuous erosion and loss of their business establishment along with other reasons they shifted themselves from char areas and settled nearby towns and other permanent places. In Bhogdahar there were 98 out of 1017 people and in Dighaltari-II, 81 out of 1003 people were belonged to Hindu (Census, 1961). Again Dighaltari-I was a witness of

150 people belong to Hindu out of 1601 (Census, 1971). But in census report, 2011 found that the entire populations living in char villages of the district are belong to Muslim community. Thus, it is found that the demographic composition of the char areas has changed due to recurring flood and continuous erosion taking place every year. Another interesting characteristic of char area is the frequent migration and fluctuation of size of population of a particular village. That is continuous increase of the size of population of a particular village is a rare picture. The census data since 1951 to 2011 has also support the fact. Thus, we may say that although the rate of growth of population in char area is so high but the size of the population of a particular village may or may not increase over period of time. For both shelter and livelihood frequent migration is to be seen as a common among char areas. In the course of study, it is found that 55.4% of households have migrated from somewhere. Among these household, 89.8% household were migrated due to erosion of their original habitat village. Only 10.2 % have been reported to have migrated due to other factors like for the search of better living.

The impact of erosion is also visible on the size of the family in char dwellers. Few decades before, Joint family was the tradition in char areas. A joint or undivided family is a large family where more than one generation lives together in a common house. In recent days the tradition of joint family becomes unpopular due to several factors including erosion. There found a close relationship between the education level and size of families. The chi square test leads to accept the alternative proposition that the education level of the head of the household plays a vital role to determine the size the family. Near the village to town or permanent mainland, the number of joint families declines. The correlation coefficient between these two variables (i.e., distance of char from town etc and number of Joint families) is found as high as $r = 0.92$. This implies that higher the communication with urban or semi urban area the number of nuclear families in char area in increases.

The people of char areas are victims of poverty, illiteracy and high population growth. These factors are related to each other. After displacement they are confronted with two options before them, one is to migrate to nearby towns/cities and two inhabit new char, natural habitations. People in the char areas live their lives in an environment of uncertainty, illiteracy, poverty and inadequate basic infrastructure. Their socio-economic life is subjugated to a vicious circle of poverty and underdevelopment.

In table 6.5, it is found that 85.6 % of the household living below the poverty line and only 14.3 % households found to be of the above the line. It is found that there is a close relation between Illiteracy and Occupation. The correlation coefficient between illiteracy and occupation like agriculture or labour is found as $r = 0.91$ which implies a high degree of correlation. This is as because that illiterate people are unskilled and could not engage themselves in modern sector like business etc. Again, there found a close dependency among occupation and poverty. The chi square test applied to judge whether there is any dependency among occupation and poverty is or not. The result of the test from collected data shows that there is a direct dependency of poverty upon occupation. Occupation like agriculture and labour could not provide them a sufficient income so as they can afford a better life. So, the under developed and temporary nature of agriculture and labour like occupation are not in a position to uplift them from poverty line.

In case of occupation, a serious change has taken place in char areas in Assam during last three or four decades. High growth of population and erosion cause increasing pressure ashore day after day. As farmer char dweller felt proud. there have been only a touch portion of population depending upon nonagricultural occupation in populated area. The senior inhabitant was expressed their grievance major portion of cultivable fertile land has been either washed away by the river erosion or covered by sand by flood. Thus, the flood and

erosion cause both loss of agricultural land and fertility. Again, available cultivable lands are getting used for homestead. On the opposite hand, growth of population was at a high rate. in order that agriculture becomes insufficient to feed the population. Having no alternative, people of chars are compelled to maneuver in towns and cities in search of job. They engage themselves as thela puller, rickshaw puller, areal and another sort of labour. The change in occupation of the study area is shown within the table 6.6. it's reveals that only 35.0 percent of the household remain within the occupation of agriculture. About 52.7 percent people become landless and hence depend on the occupation of labour. Household earn livelihood from aside from agriculture and labour is 12.5 percent. Service in Government and non-Government sector provides livelihood to only 3.9 percent of individuals within the char areas. So, it's found that there has been taken place a drastic change in respect of occupation of the people within the char areas thanks to erosion.

Education is the backbone of a society. In Assam, the literacy rate is recorded 88.8 percent where male literacy is 91.8 percent and female literacy is 85.7 percent (Census, 2011). On literacy rate the Dhubri district lagging behind the state rate. As per census, 2011, the literacy rate in the district is 81.3percent. The male literacy is 86.3 percent and the female literacy recorded as 77.1 percent. Char areas in Assam is a backward region in respect of education. It is after the 1970's modern schools were established in the area. The literacy rate among the people of char area of Dhubri is much low (14.0 percent) as compared to the state rate of literacy 88.8 percent.

Table 6.7 shows that children of 89.3 percent of household have enrolled their name in schools and till now 10.6 percent household have deprived off enrolment of their children into any schools. Among the enrolled children, children of 10.9 percent household remain out of the coverage of modern education as they enrolled in charity funded religious educational

institutions. Dropped out rate is also abnormally found high among char dwellers. Acute poverty, frequent migration, insufficient road communication, lack of awareness, lack of school, irregular schooling etc are main hindrance of education in char area.

The health care facilities of chars are said to absent. They have no awareness on health care and show an ignorant attitude on this purpose. People walk on bare foot, use river water to drink and other purposes and stay very unclean and unhygienic. The public health service condition is found to be a pathetic one. There exists few Primary Health Centre but located too far from the villages under it. Status of child care and women health is also running in traditional way. Reported that 92.2% of child birth are happened at home in chars.

Early marriage and unopposed polygamy are normal and such practices are mainly responsible for high rate of birth and hence growth of population in char area. Birth control measures are not popular and not available also.

Land is an important asset in char area as in any rural economy. The socio-economic condition of dwellers is mostly depending upon the size of holdings. The patterns of land holdings are found to be very unequal among the tillers in char areas. As the survey conveyed for the purpose (Table 6.8) reveals that 62.0 percent of the households owned no land for agriculture and among these 24.16 percent house have no land at all. Only 38.0 percent fortunate household of char area has their own land for cultivation purpose. Among the land owner household 19.5 percent has land range from 0.5 to 2.0 Bigha only, 12.5 percent possesses 1.0 to 5.0 Bighas of land. Only 5.8 percent dwellers are lucky enough to possess more than 5.0 Bighas of land. The main reasons of low holding of land and unequal distribution are found as-

- Recurring flood destroys land use for agriculture.
- Divesting erosion decline the area of char land.

- Growth of population at high rate.
- Fragmentation of land among the successor and
- Indebtedness of the farmers.

Use of Durable consumer good improves the standard of living. Urban household lives an improved life than rural counterpart as because they use more comfort items. Poor people remain busy with their minimum necessities and hence use of durable and comfort items is less. Char area of Assam is economically backward as recurring flood and erosion has breaks down the backbone of the economy. They live a miserable life. Only 7.5 percent of the household owned a bike and 19.3 percent owned a bicycle as a modern tool for transport. For the purpose of communication, 76.8 percent of the household use mobile phone. There found very few families those have more than one mobile phone in their families. Radio and Television are found in 3.1 percent and 11.2 percent of the household respectively. No families were found keeping and read newspaper of any language.

Uses of energy for lightening and cooking purposes are found very low and traditional among the household of erosion affected char area. The Table 6.12 depicts the information that the purpose of lightening 26.8 percent household uses kerosene, 13.5 percent uses electricity and 59.5 percent are use solar energy. Again, in the course of study it is found that 81.4 percent of the household are use traditional fuel like wood, leaves etc for the purpose of their cooking. Only 18.5 percent of household and mostly of them are near town chars are uses LPG Gas as their cooking fuel.

Banks and Insurance are two basic financial institutions of modern society. A moderate transaction could not operate without any banking system. Banks are the institution where public can deposit their saving, borrows funds for their any need whether it is domestic, commercial and so on. Like banks, insurance provide both insurance and savings to

its customers. Char areas are lacking both banking and insurance facilities. In our study it is found that 71.9 percent of household have no bank accounts in their name. Only 28.1 percent of household reported as they have their own bank account. Most of the accounts are recently opened for the purpose to avail the old age pension and house for homeless. Again, it is found that most of the accounts are operative only based on the government contributions. Again, in case of insurance, only 3.7 percent of household reported to have any kind of insurance policies in their families. Indebtedness is a feature of a backward society which exists among char dwellers. Of the total 52.5 percent household have their debt with their relatives, friends and *Mahajans*. Though the majority of the people are in indebtedness, but they could not avail banking loan facility as there exist no banking branch in char areas. Post office banking service is also rare to be found in service. Lack of bank branch, lack of land document, reluctant attitude of bank, lack of awareness, existence of middle man etc are found to be main problems.

7.2 STATISTICAL RESULTS:

In order to validate the hypothesis of the study some statistical tool like ANOVA, Chi square and Regression Analysis has been used. To test the **1st hypothesis** i.e., the flood and erosion does not have any impact on the socio-economic condition of the people of the char dwellers, ANOVA tool is used. In the variation among rows, the table value of F at 5% level of significance for $v_1=3$ and $v_2=15$ is 3.287 and the calculated F value is 0.196. Since the calculated value is less than the table value, hence the hypothesis is accepted. That is the difference of the impact of flood and erosion on the socio-economic condition among different char villages are not significant.

Again, in the variation among columns, the table value of F at 5% level of significance for $v_1=5$ and $v_2=15$ is 2.9012 and the calculated F value is 13.3469. Since the

calculated value is more than the table value, hence the hypothesis is rejected. That is the difference of the impact of changes of variables like education, occupation, employment, poverty and land holding on socio economic condition of the people is significant.

For the **2nd hypothesis** i.e., the erosion does not change the occupational structure of char dwellers of the District, the calculated chi square value (13.96) found greater than the table value (5.99) at 5% level of significance; hence the null hypothesis is rejected and accepted the alternative hypothesis that occupation of the char dwellers is changed due to flood and erosion.

For justification of the **3rd hypothesis** i.e., Education of the Head of the family has no influence on the size of the household, the calculated chi square value (69.77) found greater than the table value (5.99) at 5% level of significance; hence the null hypothesis is rejected and accepted the alternative hypothesis that the education levels of the head of the household influence the size of the family.

The **4th hypothesis** i.e., Education of the family head has no impact on the income level of the household is rejected by the chi square test. The calculated chi square value (223.32) is found much greater than the table value (5.99), hence the hypothesis is rejected and accepted the alternative hypothesis that the income of the household depends upon the education level of the head of the household.

The **5th hypothesis** i.e., Occupation of the Head of the family not determines the Poverty of the Household. The calculated chi square value (214.72) is found much greater than the table value (7.81), hence the hypothesis is rejected and the alternative hypothesis is accepted which implies that the poverty of the household is depends upon the types of occupation.

7.3 MAJOR FINDINGS:

Flood and erosion are a never-failing friend of the people living in char areas of Assam. Flood occurred every year without fail along with bank erosion. Although people are got habituate to cohabit with flood and erosion, but impact of it on the people is remarkable. Major findings of this study can be summarising as:

1. **Cropping pattern** of the char dwellers changed. The traditional crops viz. paddy, jute, oilseeds and vegetables etc. found less productive and replaced by modern paddy like IR-8, Chinese paddy etc. One interesting fact has been found is that some traditional crops like *Kaun*, *Cheena*, *Gom*, *Pera*, *Shon-ghati*, *Mitha Aloo* etc have disappeared from the scene. These crops vanished completely from the agricultural field. No farmer is now interested to cultivate these crops.
2. **Occupation** of majority of char dwellers has been found to be changed due to flood and erosion. For high growth of population and continuous decreasing of agricultural land people compel to start search new venture for their livelihood. At present only 35.0 percent of the household have the occupation of agriculture and following that 48.5 percent people are basically landless and hence depend upon the occupation of labour. Only 12.5 percent of people are taken up small trade and commerce as their occupation. Service in Government and non-Government sector provides livelihood to only 3.9 percent of people in the char areas. So, it is found that there has been taken place a drastic change in respect of occupation of the people in the char areas due to erosion.
3. **Agricultural production and agro based industries** in char areas greatly hampered due to flood and erosion occurred every year. Flood carries sand in its water and covered the

farming land. There are many of such examples that once a field was very fertile become waste land just after the flood. Again, due to change of the fertility condition both the cropping pattern and quantity of production also changed. Land once used for the production of jute or paddy is now not fit for those crops. Farmer tries to cultivate alternative crops there. The quantity and quality of production also got hampered. Agro based industry is an important feature of an agrarian society. Before the erosion has occurred in char areas especially before 1970's, all char villages were self-sufficient in every respect. It is after that period, river bank erosion is occurred at large scale. As erosion takes away the land and shelter of the people, the agro-based industries got destroyed. Artisans, after losing their land and shelter, flee to nearby established villages or towns. Due lack of own land in the villages and temporary nature of char lands, no new industries taken place. Only few rice mills were found in char areas those were run with diesel or other type of oil. Erosion destroys the transport and communication system of the char areas. It is only the char areas which have not electricity facilities. The government department is unable to build a line to supply electricity to these char areas. Due to absence of electricity supply in char areas no industry grown up.

- 4. Education** is a measure the standard of living and it determines the way of living, thinking and job opportunity and so on. Originally char areas is a backward area in respect of education and the yearly occurred flood and erosion has also a negative impact on it. Due to flood for 3 to 5 months and erosion, the place of living of the inhabitants changed frequently for which the education system hampered greatly in char villages. Instead of several government measures 49.5 percent household remain illiterate and 10.6 percent household could not enrol their children in any school. This non enrolment is due to lack of educational institution, geographical barriers and frequent change of residence of the household due to erosion etc. Among the char villages those located on the middle

of the river and far distant from any towns are more backward comparatively than those located near towns and attached with mainland.

- 5. Frequent Migration:** Migration from one place to another due to erosion and flood is indispensable character of char people. Recurrently after every five to ten years most of the weak chars are washed away. People living there become displaced and moved or migrate to another place. In our surveyed population, it is found that 95 percent of households have migrated from somewhere. Among these household, 88.4 percent household were migrated due to erosion of their original habitat village, 3.7 percent household were migrated for flood and only 7.5 percent have been reported to have migrated due to other factors like for the search of better living (Table-6.4).
- 6. Poverty:** It is found that 95.5 percent of the surveyed household living below the poverty line and only 4.5 percent households found to be of the above the line (Table-6.5). Although 89.3 percent of the households has ration cards under the public distribution system (PDS), but they received a very low standard food items from the fair priced shop. Only few food items like rice and atta, sugar and fuel item like kerosene oil were supplied through the ration card. Supply of these items is not regular, for example sugar has been supplied only on the occasion of festival like Idd etc.
- 7. Durable Goods:** The status of a family depends upon the wealth they belong to. More wealth a household belongs treats as richer than others. Wealth may be of durable consumer good, lives stock etc. As most the families or household live below the poverty line, wealth they belong are also found to be very low level. Durable consumer good determines the standard of living of a family. It is found that only 7.5 percent of the household owned a bike in the char areas as a modern tool for transport. 19.3 percent of the household owned a bicycle for their transportation. Remaining major portion of

people still using on foot for go here and there. For the purpose of communication, 76.8 percent of the household use mobile phone. Radio and Television are found in 1.0 percent and 7.9 percent of the household respectively. No families were found that keeps and read newspaper of any language.

8. **Banks and Insurance:** A moderate transaction could not operate without any banking system. Banks are the institution where public can deposit their saving, borrows funds for their any need whether it is domestic, commercial and so on. Like banks, insurance is also another modern tool of modern society. Insurance provide both insurance and savings to its customers. Thus, peoples are benefited from insurance policies if they opted for it. Char areas are lacking both banking and insurance facilities. It is found (Table-6.13) that 71.8 percent of household have no bank accounts in their name. Only 28.2 percent of household reported as they have their own bank account. Most of the accounts are recently opened for the purpose to avail the old age pension and house for homeless. Again, it is found that most of the accounts are operative only based on the government contributions. Deposits into such accounts from the owner's side are near to be nil and almost all accounts opened for the purpose of house becomes inoperative just after the purpose was served. So far as bank loan is concerned, only 1.3 percent household reported to have get loan from any bank and 98.7 percent have no idea about bank's loan.

In regard of insurance, only 3.2 percent of household reported to have any kind of insurance policies in their families. There 96.8 percent household has no relation with any kind of insurance policies (Table-6.13c). Savings is an important component of capital formation of the society. In the char villages, savings behaviour is a utopia. As the study reported that 96.2 percent house has no savings either in banks or in own hands. Only 3.8 percent household reported to have saving at a minimum level. Indebtedness is a feature

of a backward society which exists among char dwellers. As stated in the Table- 6.13(e) among the total 52.5 percent households have their debt with their relatives, friends and Mahajans. Though the majority of the people are in indebtedness, but they could not avail banking loan facility as there exist no banking branch in char areas. Post office banking services are also rare to be found in service.

9. Use of Energy: Uses of energy source are found very low and traditional among the household of erosion affected char area. For the purpose of lightening 26.8 percent households use kerosene, 13.5 percent uses electricity and 59.5 percent are use solar energy. The use of kerosene is higher in mostly distant and disjoint chars. Electricity used up more in near town chars. Households from both near town and distant-disjoint char villages are using solar energy as a source of lightening in recent years. Again, 81.4 percent of the household in the erosion affected chars are use traditional fuel like wood, leaves etc for the purpose of their cooking. Only 18.5 percent of household and mostly of them are from near town chars are uses LPG Gas as their cooking fuel.

10. Socio Cultural and Political Impact: Assam is multi-cultural, multi ritual state. There are some caste and creed living in the state for which the other caste or creed knows a little or nothing. People living in the eroded areas become displaced and they move nearby places for shelter. Mostly these people take resorts of state land, reserve forests etc. After migration too, char people face various difficulties. thanks to their own language, culture and religion, suspicion arises among the mainstream people. Mainstream people cannot take them on trust. Lack of data on the part of the mainstream people is additionally liable for such suspicion. supported this suspicious environment, some pro-active organisation and groups are termed them as illegal immigrant and labelled as Bangladeshi inflators (Gorky, 2012). Another discrimination found available

within the labour market where char workers are paid lesser wage compared to the prevailing market rate. Instance also found because the so-called nationalist group driven out labour of chars from their work place without paying them any remuneration. Media and organisation active within the field show no sympathy to those displaced workers. They never undergo the basis causes of displacement and migration of char people from their homeland. As a consequence of the above situation, we see an unbroken distance, mistrust and suspicion among two groups of individuals and it's hampered the wellbeing of the region.

From the above discussion, it's clear that, both extent and impact of river bank erosions are very miserable. Displaced migrants thanks to erosion are at the danger of insecurities in several form. The uncertainties that they face are economic insecurity thanks to unemployment, loss of capital and indebtedness, social insecurity thanks to deprivation of civic rights, health insecurity thanks to lack of basic infrastructure, etc. These insecurities and uncertainties led to deprivation, destitute, and vulnerability of the families suffered from flood and erosion. Normally the bank erosion has always a negative impact on human life. But the human activities also found liable for riverbank erosion. Riverbanks are more fertile land compare to other land and no fertilisers are needed for cultivation. Land on banks area provides better production of crop than upland farms. so as to accumulate more and more production, there found over-cultivation and poor management of cultivated fields (Kaunda and Chapotoka, 2003). of these factors mentioned above, results in riverbank erosion, pollution and fish habit. Therefore, the management of natural resources including riverine resources in poverty prone communities may be a complex matter.

7.4 SUGGESTIONS:

In order to minimise the problem of displacement of the people living char areas in Assam due to flood and erosion, anti-erosion programme like porcupine system or any other scientific measurement should be implemented on preference. As corruption found in various stages in such measures, hence vigilance should be made to check the corruption. Digging the river bed especially of the river Brahmaputra to allow passing huge volume of water through one major channel is a must. Rivers like Brahmaputra may be prepared to use as national and international water ways. It is another point to suggest is that the erosion affected people be declared as internally displaced people (IDP) and certificates should be issued to them as IDPs by the appropriate authority. This will help all those erosions induced displaced people in solving the identity crisis to some extent of the affected people. Moreover, the land and property insurance facilities by the government should be provided to the people residing in river banks.

Our study has discovered a series of loopholes in the development policies of the Government in respect of char areas. Here we provide some suggestions with a hope that these will rectify the past defects and limitations and accordingly will fetch better socio-economic status of this region.

- 1) Socio-economic status of the people living char area is heavily influenced by their traditional activities. A drastic action against their activities may bring social unrest. Awareness through mass campaign, mass literacy and providing alternative incentives in many schemes may solve the problem slowly.
- 2) Control on the growth of population should be first priority of policy makers. High growth of population leads to a bias in favour of marginal worker. Since the state

income share of agriculture sector is continuously falling but the employment share of this sector is not hence, economic status of rural people is gradually worsened. Policies on the population control can directly handle this problem in an effective manner.

- 3) Establishment industry and service sector is almost impossible owing to the ecological constraints. Under this situation the advance agricultural method suit for the region is to be introduced.

7.5 FUTURE SCOPE OF STUDY:

Char area of Brahmaputra is a peculiar characteristic of the geography of Assam. Society, Language, Culture, Economic and social condition etc of char area are found to be different from the mainstream. Char area is suffering from a lot of problems. Among the problems recurring flood and erosion is the major problem. It creates other problems to the char people and pull down the society in a backward state.

This study was an attempt to study the impact of flood and erosion occurred frequently in char area upon the people and society in different angles. But due to several limitation and lack of sufficient information and literature, the aim has not been achieved. This study may open the scope of research to researchers on the people, society and other related aspect of the char area.

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APPENDIX- I

ANOVA, CHI SQUARE

Analysis of Variance (ANOVA)

H₁: That the flood and erosion does not have any impact on the socio-economic condition of the people of the char dwellers.

Comparative Chart						
	Literacy (%)	Occupation other than Agriculture and Labour (%)	Employment more than 6 month (%)	Below Poverty Line (%)	Land more than 1 Bigha (%)	Erosion Migration (%)
Char Near Towns	12.7	7.9	18.7	17.5	4.1	6.6
Attached to Mainland	12.7	6.4	17.5	20	4.1	7
Far from Towns	10.8	1.04	15.6	23.7	5	16.8
Disjoint Char	11.8	1.04	14.3	24.3	5	19.1

ANOVA: Two-Factor without Replication:

<i>SUMMARY</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
Row 1	6	67.5	11.25	36.127
Row 2	6	67.7	11.283	42.085
Row 3	6	72.94	12.156	68.660
Row 4	6	75.54	12.59	74.812
Column 1	4	48	12	0.82
Column 2	4	16.38	4.095	12.819
Column 3	4	66.1	16.525	3.8291
Column 4	4	85.5	21.375	10.289
Column 5	4	18.2	4.55	0.27
Column 6	4	49.5	12.375	42.349

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Rows	7.914	3	2.638	0.194	0.898337	3.287
Columns	905.216	5	181.043	13.363	4.45E-05	2.901
Error	203.214	15	13.547			
Total	1116.346	23				

The table value of F at 5% level of significance for $v_1=3$ and $v_2=15$ is 3.287 and the calculated F value is 0.194. Since the calculated value is less than the table value, hence the hypothesis is accepted. That is the difference of the impact of flood and erosion on the socio-economic condition among the various categories of char villages are not significant.

Again, the table value of F at 5% level of significance for $v_1=5$ and $v_2=15$ is 2.901 and the calculated F value is 13.363. Since the calculated value is more than the table value, hence the hypothesis is rejected. That is the difference of the impact of changes of variables like education, occupation, employment, poverty and land holding on socio economic condition of the people is significant.

CHI SQUARE TEST (χ^2)

H₁: That the erosion does not changed the occupational structure of char dwellers of the District.

	Agriculture	Labour	Other	Total
Eroded Household	73	127	54	254
Non eroded Household	95	106	25	226
Total	168	233	79	480

O	E	(O-E)	(O-E)²	(O-E)²/E
73	88.9	-15.9	252.81	2.84
95	79.1	15.9	252.81	3.19
127	123.2	3.8	14.44	0.11
106	109.7	-3.7	13.69	0.12
54	41.8	12.2	148.84	3.56
25	37.1	-12.1	146.41	3.94
$\sum(O-E)^2/E=$				13.76

$$d.f. = (r-1) (c-1) = (2-1) (3-1) = 2$$

$$d.f. = 2, \chi^2_{0.05} \text{ is } 5.99$$

The calculated chi square value (13.96) is greater than the table value (5.99) at 5% level of significance; hence the null hypothesis is rejected and accepted the alternative hypothesis that occupation of the char dwellers is changed due to flood and erosion.

H₁: Education of the Head of the family has no influence on the size of the household.

Education/ Types of family	Illiterate	Primary	Secondary and above	Total
Large family	187	142	25	294
Small family	55	31	38	186
Total	242	173	65	480

O	E	(O-E)	(O-E) ²	(O-E) ² /E
187	148.22	38.78	1505.44	10.15
55	93.77	-38.77	1497.69	15.98
142	105.96	36.03	1298.16	12.25
31	67.03	-36.03	1298.70	19.37
25	39.81	-14.81	219.33	5.50
38	25.18	12.82	164.35	6.52
$\Sigma(O-E)^2/E = 69.77$				

$$\text{d.f.} = (r-1)(c-1) = (2-1)(3-1) = 2$$

$$\text{d.f.} = 2, \chi^2_{0.05} \text{ is } 5.99$$

The calculated chi square value (69.77) is greater than the table value (5.99) at 5% level of significance; hence the null hypothesis is rejected and accepted the alternative hypothesis that the education levels of the head of the household influence the size of the family.

H₁: Education of the Head of the family has no impact on the income level of the Household.

Education/ Income	Illiterate	Primary	Secondary and above	Total
BPL	230	141	7	381
APL	12	32	58	99
Total	242	173	65	480

O	E	(O-E)	(O-E) ²	(O-E) ² /E
230	192.08	37.92	1437.92	7.48
12	49.51	-37.51	1407.00	28.41
141	137.31	3.69	13.61	0.09
32	35.68	-3.68	13.54	0.37
7	51.59	-44.59	1988.26	38.53
58	13.40	44.60	1989.16	148.44
				$\sum(O-E)^2/E = 223.32$

$$\text{d.f.} = (r-1)(c-1) = (2-1)(3-1) = 2$$

$$\text{d.f.} = 2, \chi^2_{0.05} \text{ is } 5.99$$

The calculated chi square value is greater than the table value, hence the hypothesis is rejected and accepted the alternative hypothesis that the income of the household depends upon the education level of the head of the household.

H₁: Occupation of the Head of the family not determines the Poverty of the Household.

	Service	Agriculture	Labour	Other	Total
BPL	0	147	212	13	381
APL	19	41	21	47	99
Total	19	188	233	60	480

O	E	(O-E)	(O-E) ²	(O-E) ² /E
0	15.08	-15.08	227.40	15.07
19	3.91	15.09	227.70	58.23
147	149.22	-2.22	4.92	0.03
41	38.77	2.23	4.97	0.12
212	184.94	27.06	732.24	3.95
21	48.05	27.05	731.70	15.22
13	47.62	34.62	1198.54	25.16
47	12.37	34.63	1199.23	96.94
$\sum(O-E)^2/E = 214.72$				

$$\text{d.f.} = (r-1)(c-1) = (2-1)(4-1) = 3$$

$$\text{d.f.} = 3, \chi^2_{0.05} \text{ is } 7.81$$

The calculated chi square value is greater than the table value, hence the hypothesis is rejected and the alternative hypothesis is accepted which implies that the poverty of the household is depends upon the types of occupation.

APPENDIX-II

CHARTS

Appendix-II

Flood Damage during 1953-2005 in India.

Sl. No	Year	Area in m. ha	Population affected in million	Damage to Crops		Damage to Houses		Cattle Lost Nos	Human Live Lost Nos	Damage to public utilities Rs Crores	Total damages crops, houses and public utilities in Crores Rs
				Area in m. ha	Value in Rs Crores	Nos	Value in Rs Crores				
1	2	3	4	5	6	7	8	9	10	11	12
1	1953	2290	24280	0930	42.080	264924	7.420	47034	37	2.900	52.400
2	1954	7490	12920	2610	40.520	199984	6.561	22552	279	10.150	57.231
3	1955	9440	25270	5310	77.800	1666789	20.945	72010	865	3.980	102.725
4	1956	9240	14570	1110	44.440	725776	8.047	16108	462	1.140	53.627
5	1957	4860	8350	0450	14.120	318149	4.979	7433	352	4.270	23.369
6	1958	6260	9260	1400	38.280	382251	3.896	18439	389	1.790	43.966
7	1959	5770	15460	1540	56.760	648821	9.418	72691	619	20.020	86.198
8	1960	7530	10930	2270	42.550	609884	14.309	13908	510	6.310	63.169
9	1961	6560	13780	1970	24.040	533465	0.889	15916	1374	6.440	31.369
10	1962	6.120	15.460	3.390	83.180	513785	10.655	37633	348	1.050	94.885
11	1963	3.490	10.930	2.050	30.170	420554	3.701	4572	432	2.740	36.611
12	1964	4.900	13.780	2.490	56.870	255558	4.588	4956	690	5.149	66.607
13	1965	1.460	3.610	0.270	5.870	112957	0.195	7286	79	1.070	7.135
14	1966	4.4740	14.400	2.160	80.150	217269	2.544	9071	180	5.736	88.430
15	1967	7.120	20.460	3.270	133.310	567995	14.264	5827	355	7.857	155.431
16	1968	7.150	21.170	2.620	144.610	682704	41.112	1303305	3497	25.373	211.095
17	1969	6.200	33.220	2.910	281.900	1268660	54.423	270328	1408	68.112	404.435
18	1970	8.460	31.830	4.910	162.780	1434030	48.606	19198	1076	76.441	287.827
19	1971	13.250	59.740	6.240	423.130	2428031	80.241	12866	994	129.113	632.484
20	1972	4.100	26.690	2.450	98.560	897301	12.460	58231	544	47.174	158.194
21	1973	11.790	64.080	3.730	428.030	869797	52.482	261016	1349	88.489	569.001
22	1974	6.700	29.450	3.330	411.640	746709	72.434	16846	387	84.842	569.016
23	1975	6.170	31.360	3.850	271.490	803705	34.097	17345	686	166.050	471.637
24	1976	11.910	50.460	6.040	595.030	1745501	92.160	80062	1373	201.495	888.685
25	1977	11.460	49.430	6.840	720.610	1661625	152.290	556326	11316	328.948	1201.848
26	1978	17.500	70.450	9.960	911.090	3507542	165.574	239174	3396	376.100	1454.764
27	1979	3.990	19.520	2.170	169.970	1328712	210.606	618248	3637	233.627	614.203
28	1980	11.460	54.120	5.550	366.370	2533142	170.851	59173	1913	303.283	840.504

29	1981	6.120	32.490	3.270	524.560	912557	159.630	82248	1376	512.314	1196.504
30	1982	8.870	56.010	5.000	589.400	2397365	383.869	246750	1573	671.607	1644.876
31	1983	9.020	61.030	3.290	1285.850	2393722	332.327	153095	2378	873.429	2491.606
32	1984	10.710	54.550	5.190	906.090	1763603	181.308	141314	1661	818.164	1905.562
33	1985	8.380	59.590	4.650	1425.370	2449878	583.855	43008	1804	2050.043	4059.268
34	1986	8.810	55.500	4.580	1231.580	2049277	534.410	60450	1200	1982.535	3748.525
35	1987	8.890	48.340	4.940	1154.640	2919380	464.490	128638	1835	950.590	2569.720
36	1988	16.290	59.550	10.150	2510.900	2276533	741.600	150996	4252	1377.800	4630.300
37	1989	8.060	34.150	3.010	956.740	782340	149.820	75176	1718	1298.770	2405.330
38	1990	9.303	40.259	3.179	695.610	1019930	213.733	134154	1855	455.266	1708.920
39	1991	6.357	33.889	2.698	579.015	1134410	180.421	41090	1187	728.893	1488.329
40	1992	2.645	19.256	1.748	1025.578	687489	306.284	78669	1533	2010.670	3344.532
41	1993	11.439	30.409	3.206	1308.627	1926049	528.324	211193	2864	1445.534	3282.485
42	1994	4.805	27.548	3.963	888.622	914664	165.206	52315	2078	740.762	1794.590
43	1995	5.245	35.932	3.245	1714.787	2001898	1307.894	62438	1814	679.627	3702.308
44	1996	8.049	44.729	3.827	1124.491	726799	176.589	73208	1803	861.393	3005.743
45	1997	4.569	29.663	2.258	692.743	505128	152.504	27754	1402	1985.934	2831.181
46	1998	10.845	47.435	7.495	2594.167	1932874	1108.783	107098	2889	5157.771	8860.721
47	1999	7.765	27.993	1.753	1850.873	1613260	1299.057	91289	745	462.830	3612.760
48	2000	5.382	45.013	3.580	4246.622	2628855	680.943	123252	2606	3936.979	8864.544
49	2001	6.175	26.463	3.964	688.481	716187	816.474	32704	1444	5604.461	7109.416
50	2002	7.090	26.323	2.194	913.092	762492	599.368	21533	1001	1062.083	2574.543
51	2003	6.503	34.466	3.426	1424.826	846920	802.929	16425	1864	2206.599	4434.354
52	2004	8.031	34.215	2.693	615.070	1492814	852.655	63869	1275	1868.866	3336.591
53	2005	3.376	29.684	2.24	958.266	349624	316.954	113226	1503	1546.935	2822.155

Source: Report of the working Group on Water Resources for the XI Five-year plan (2007-12), Annexure-2.9, Page 136, Govt. of India, Ministry of Water Resources.

Population of some selected char villages of Dhubri district.

SI No	Village	1951			1961			1971			2011		
		No. of House	Population	SC	No. of House	Population	SC	No. of House	Population	SC	No. of House	Population	SC
1	Aminerchar	106	652	-	56	369	-	37	227	-	305	1755	-
2	Asameralga	48	211	-	110	677	-	121	871	-	172	1051	-
3	Bhasanichar I	208	1565	-	-	-	-	105	734	-	-	-	-
4	Bhasanichar II	-	-	-	-	-	-	132	927	-	223	1434	-
5	Bhogdahar	-	-	-	156	1017	98	130	926	-	448	2518	-
6	Birsing I	84	265	-	-	-	-	104	574	-	1028	5548	-
7	Birsing II	109	884	-	-	-	-	15	84	-	511	2386	-
8	Birsing III	-	-	-	-	-	-	54	378	-	562	3117	-
9	Boldiar Alga I	41	247	-	-	-	-	-	-	-	-	-	-
10	Boldiar Alga II	89	270	-	254	1375	-	-	-	-	-	-	-
11	Boyejeralga I	15	97	-	46	308	-	-	-	-	67	360	-
12	Boyejeralga II	-	-	-	44	377	-	130	904	-	561	3092	-
13	Boyejeralga III	-	-	-	120	793	-	177	1236	-	439	2251	-
14	Boyejeralga IV	-	-	-	40	274	-	71	487	-	263	1458	-
15	Boyejeralga V	-	-	-	37	254	-	57	399	-	243	1280	-
16	Chaitanmari	168	1080	-	-	-	-	-	-	-	-	-	-
17	Cholakura Char	-	-	-	-	-	-	104	728	-	-	-	-
18	Dalsinger alga I	18	154	-	41	371	-	81	522	-	316	1333	-
19	Dalsinger alga II	-	-	-	75	490	-	102	612	144	314	1562	-
20	Dangir char	84	301	-	53	409	-	90	620	-	493	2358	-
21	Digholtari I	143	1248	-	61	388	-	229	1601	150	147	849	-
22	Digholtari II	-	-	-	145	1003	81	25	137	-	121	536	-
23	Falimari I	81	668	-	96	617	-	146	1025	-	-	-	-
24	Falimari II	71	528	-	210	1237	-	189	1323	-	-	-	-
25	Ghager alga I	52	569	-	93	594	-	98	685	-	-	-	-
26	Ghager alga II	-	-	-	24	165	-	44	263	-	-	-	-
27	Hatipota I	-	-	-	50	341	-	72	498	-	373	1833	-
28	Hatipota II	-	-	-	322	1801	-	262	1828	-	766	3665	-
29	Ilshamari	42	247	-	-	-	-	-	-	-	-	-	-
30	Jahormura	14	102	-	42	269	-	62	395	-	-	-	-

31	Jhaler alga I	235	1842	-	115	856	-	136	1076	-	493	2455	-
32	Jhaler alga II	-	-	-	95	678	-	142	853	-	395	1962	-
33	Jhelturchar II	-	-	-	-	-	-	70	490	-	114	592	-
34	Jhelturchar I	81	246	-	57	433	-	44	302	-	403	2268	-
35	Katdanga	-	-	-	67	433	-	155	1050	-	267	1322	-
36	Katiaralga I	32	284	-	90	550	-	24	160	-	78	370	-
37	<i>Kaunbari</i>	89	675	-	75	556	-	115	804	-	338	1912	-
38	Kazaikata III	-	-	-	-	-	-	15	104	-	-	-	-
39	Kazaikata IV	-	-	-	4	23	-	21	146	-	-	-	-
40	Kazaikata V	-	-	-	143	1300	-	265	1851	-	-	-	-
41	Kazaikata VI	-	-	-	99	714	-	173	1208	-	-	-	-
42	Khererchar	99	654	-	-	-	-	-	-	-	-	-	-
43	Kolapakani I	89	589	-	19	119	-	-	-	-	86	500	-
44	Kolapakani II	-	-	-	51	278	-	-	-	-	1167	7081	-
45	Lalmonir alga	19	210	-	35	312	-	49	299	-	133	558	-
46	<i>Machipara I</i>	66	450	-	-	-	-	32	190	-	77	407	-
47	Machipara II	-	-	-	-	-	-	57	344	-	200	1088	-
48	Mahamayar Char	8	70	-	-	-	-	57	422	-	-	-	-
49	Majerchar Cholakura	-	-	-	-	-	-	87	610	-	466	2326	-
50	Majher Char	-	-	-	139	862	-	33	165	-	725	3526	-
51	Majheralga I	65	588	-	51	384	-	109	694	-	310	1550	-
52	Majheralga II	-	-	-	26	230	-	19	156	-	153	741	-
53	Monirchar	-	-	-	-	-	-	171	1016	-	129	649	-
54	Montirchar	-	-	-	-	-	-	20	110	-	307	1961	-
55	Muthakhowa	-	-	-	91	455	-	157	975	-	26	163	-
56	<i>Nayeralga I</i>	89	802	-	42	275	-	63	438	-	265	1536	-
57	Nayeralga II	71	481	-	88	526	-	150	1048	-	746	3833	-
58	Nayeralga III	78	649	-	162	1226	-	510	3626	-	1852	9969	-
59	Nayeralga IV	17	112	-	172	1211	-	97	678	-	430	1990	-
60	Nilokhia I	-	-	-	93	599	-	172	1301	-	128	646	-
61	Nilokhia II	-	-	-	133	900	-	156	1112	-	117	669	-
62	Nilokhia III	-	-	-	85	507	-	232	2189	-	162	840	-
63	Patakata I	98	588	-	67	499	-	101	701	-	129	566	-
64	Patakata II	82	184	-	64	478	-	91	636	-	158	898	-
65	<i>Patamari</i>	44	418	-	121	702	-	181	1268	-	304	1538	-
66	Piazbari I	92	585	-	29	151	-	41	286	-	155	1166	-
67	Piazbari II	-	-	-	81	546	-	102	709	-	245	1236	-
68	<i>Pocharchar</i>	-	-	-	43	261	-	103	677	-	11	59	-

69	Poddaralga I	18	92	-	18	133	-	106	747	-	204	1203	-
70	Poddaralga II	29	171	-	34	230	-	70	381	-	336	1961	-
71	Reserverchar	179	1430	-	-	-	-	-	-	-	-	-	-
72	<i>Sadubasha I</i>	91	789	-	43	215	-	154	1144	-	208	1036	-
73	Sadubasha II	21	282	-	71	462	-	49	339	-	169	875	-
74	Sadubasha III	-	-	-	32	212	-	69	477	-	-	-	-
75	Sadubasha IV	-	-	-	14	126	-	37	258	-	116	725	-
76	Salapara I	-	-	-	37	247	-	95	586	-	73	416	-
77	Salapara II	-	-	-	24	144	-	125	1028	-	327	1866	-
78	Salapara III	-	-	-	58	525	-	67	514	-	-	-	-
79	Sater alga	19	106	-	24	184	-	61	431	-	257	1530	-
80	Siberalga	-	-	-	29	186	-	52	324	-	182	1116	-
81	Sutramara	28	178	-	65	392	-	11	326	-	88	410	-
82	<i>Suapata I</i>	-	-	-	69	476	-	126	878	-	-	-	-
83	Suapata II	-	-	-	225	1494	-	240	1676	-	-	-	-
84	Sasterghat E	122	874	-	147	915	-	-	-	-	88	468	-
85	Sasterghat W	45	292	-	60	391	-	-	-	-	219	1075	-
86	Sasterghat New	-	-	-	100	674	-	-	-	-	98	448	-

Source: Census of India; 1951, 1961, 1971 and 2011.

ANEXURE- I

QUESTIONNAIRE

INTERVIEW SCHEDULE**(Displacement and Livelihood Changes in Erosion Effected Char Areas in Assam; A Socio-Economic Study of Dhubri District)**

Name of the Respondent: (Head/ Other)

Village: Revenue Circle: District: *Dhubri* (Assam)**1. FAMILY INFORMATION:**

1	Nos. of Population	Age		Male	Female
		0-14			
		15-60			
		60 and above			
2	Education (Head of family)	Degree	Secondary	Primary	Illiterate
3	Occupation	Service	Agriculture	Labours	Others
4	Types of Family	Joint		Nuclear	
5	Whether migrated from another place?	Yes		No	
6	If yes, cause of migration	Erosion	Flood	Other	
7	Do you have a ration card?	Yes		No	
8	Whether belongs to BPL?	Yes		No	

2. ASSESTS OF THE HOUSEHOLD:

1	Type of House	Kacha		Pakka		
2	Ownership of House	Own		Relatives	Any other	
3	Durable Goods	Bike	Cycles	Radio	Mobile	TV
4	Land Owned	Yes		No		
5	If Yes, Nos. of Bigha(s)	Patta-		Khas-		
6	Live stocks	Cow	Goat	Duck	Hen	

3. EDUCATIONAL STATUS:

1	Whether all children are enrolled in the school?	Yes		No	
2	If yes, which type of School?	Govt School	Private School	Any other	
3	Medium of School?	Assamese	English	Other	
4	Private tuitions?	Yes		No	
5	How is the performance of the children in the school?	Satisfactory	Undecided	Not Satisfactory	
6	Is there any school dropout in your family?	Yes		No	
7	Number of dropouts				
8	Reason for drop out	Economic	Social	Other	

4. OCCUPATIONAL, INCOME & EXPENDITURE STATUS:

1	Is there any change in your family occupation?	Yes		No	
2	What is your opinion about your occupation?	Satisfied	Undecided	Not Satisfied	
3	How many months in a year do you work?	(<3)	(<6)	(>6)	
4	Whether the employment is	Temporary	Permanent	Other	
5	Do you have any savings?	Yes		No	
6	If yes, whether it meets your family requirements?	Always	Sometimes	Never	
7	When needed where from you borrow the money?	Bank	Relatives	Friends	Any other
8	Do you have any debt on you?	Yes		No	

5. HOW DO YOU SPEND YOUR MONEY PER MONTH?

1	Food	Rs
2	Clothing	Rs
3	Housing	Rs
4	Health	Rs
5	Transportation	Rs
6	Entertainment	Rs
7	Communication	Rs
8	Others	Rs
Total		Rs

6. HEALTH STATUS:

1	Do you have a health centre nearby?	Yes		No	
2	When sick where do you go for the Treatment?	Govt. Hospital	Private Hospital		Others
3	Is there any death in your family in last 5 years?	Yes		No	
4	If yes, Whether the death was	Natural		Unnatural	
5	Do you have sufficient food stock at home?	Yes		No	
6	Do you purchase the food grain from the ration shop?	Yes		No	
7	Quality of food grain	Good	Average	Below Average	Worst

7. YOUR DIET MAINLY INCLUDES:

Food Item	Daily	Some times	Very rarely
Rice			
Dals			
Vegetables			
Meat/ Fish/Egg			
Milk			
Fruits			

8. BASIC AMENITIES:

Sources of Drinking Water	Govt	Private	Other	
Lightening	Kerosene	Electricity	Solar	Other
Types of Fuel used for cooking	Chula	Stove	Gas	
Sanitation	Kachha	Pacca	Other	

9. BANKS and INSURANCE:

Have any a/c in Bank?	Yes	No
If yes, whether availed Loan?	Yes	No
Whether Insurance Policy?	Yes	No

Signature of the Respondent

Date:

ANEXURE - II

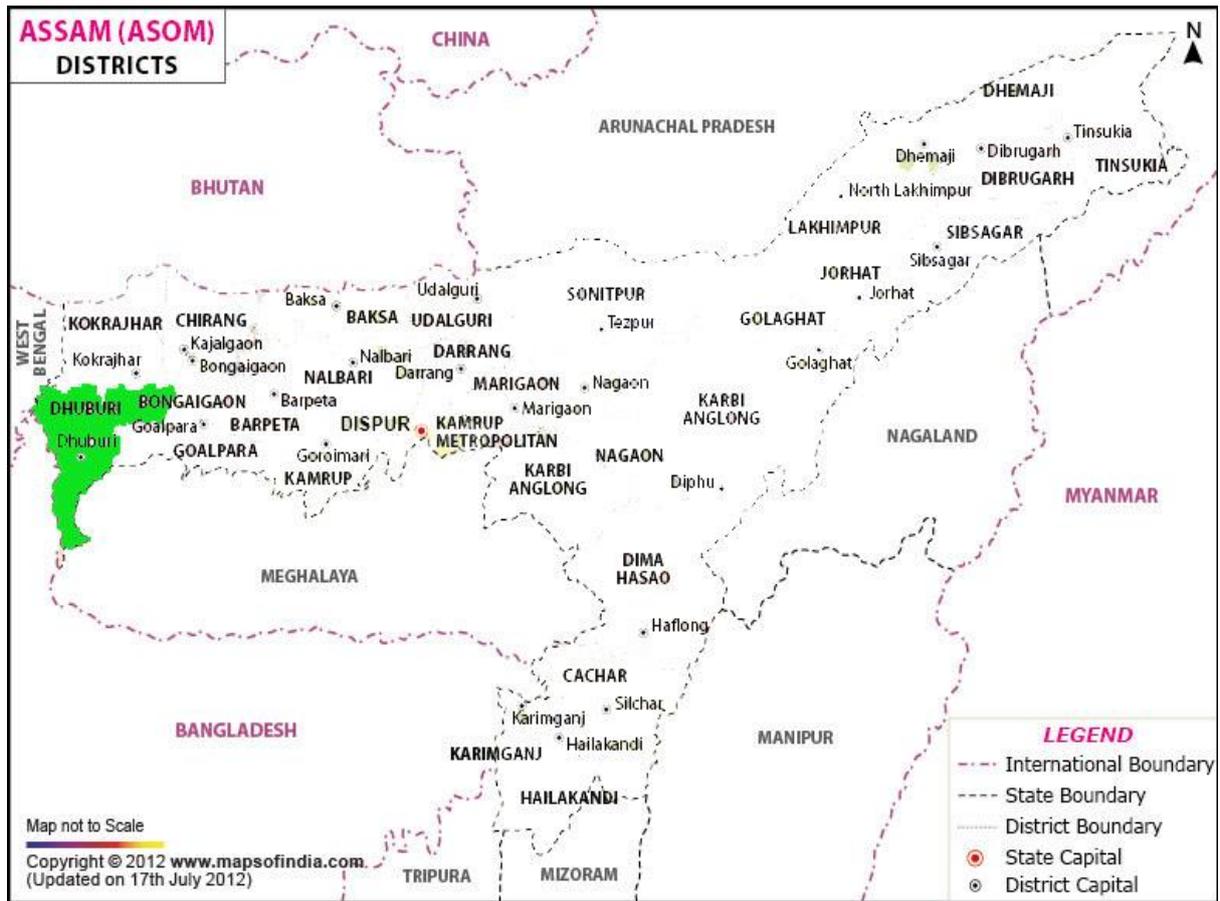
ANNEXURE-II

MAPS

Location of Assam in India



Location of Dhubri District in Assam



**CHAR AREAS ARE LYING ON BOTH THE BANKS AND INSIDE THE RIVER
BRAHMAPUTRA**



ANEXURE - III

PHOTO GALLERY

PHOTO GALARY

Traditional homestead of Chars.



Traditional ploughing technology.



Transportation of Chars.



Picture showing flood.



Picture showing flood



Picture showing flood



Picture showing flood



Livestock during flood.



River bank erosion



Situation after flood



Grow of habitation of displaced people.



Temporary relief camp.



Relief camp at Government school



An elder woman patient



Dharna on demand for relief and aid



Relief item distributed by NGOs



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Chapter 19

Poverty and Microfinance in Char Areas of Dhubri District in Assam

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ABSTRACT

In India, 70% of population lives in rural area and 60% of population earn their livelihood from agriculture which implies a high rate of underemployment and poverty. The root cause of poverty is the low access to credit facilities. Micro finance in this respect can play a vital role in providing financial services to the poor. In India Micro finance is dominated by self-help groups (SHGs), bank linkage programs aimed at providing a cost effective mechanism for providing financial services to unreached poor to fight against poverty. The chapter, thus, aims at identifying the current status, role, and performance of microfinance in Char areas of Assam in India. The chapter is concluded with the stress that more and more number of SHGs should be encouraged to form among the poor household in the study area to avail the benefit and cross poverty line.

INTRODUCTION

According to Gandhiji, named after M. K. Gandhi, the father of nation, India lives in villages. It was said because 70 percent of the population of the country live in rural areas. Most of the population live in rural areas are depend upon the agriculture and allied sectors. Rural areas are witnessed a high percentage of poor people and 67 percentage of the rural people are found Below Poverty Line. The root cause of poverty is the low access to credit facilities. The traditional financial institutions like banks are not interested to provide financial services to the poor living in rural areas. Again requirements of formali-

Poverty and Microfinance in Char Areas of Dhubri District in Assam

ties of the formal banking sector are out of reach for the poor and deprived people. Micro finance in this respect can play a vital role in providing financial services to the poor.

Microfinance, also known as microcredit, is a financial service that offers loans, savings and insurance to entrepreneurs and small business owners who don't have access to traditional sources of capital, like banks. These days, microfinance has become an important institution and mechanism of credit delivery, particularly for the poor and the deprived. There have been a number of studies undertaken in India and other developing countries that have brought out the success of various micro finance programmes in alleviating rural poverty, promoting holistic development of individuals, communities and developing small enterprises. The ultimate recognition of the viability, suitability and efficiency of microfinance as an agent and institution of development has recently come about, because of the pioneering work undertaken by Prof. Yunus of Bangladesh. Microfinance and more specifically the credit element in it, is basically undertaken and promoted by various Microfinance Promoting Institutions (MFPIs). These institutions can be Non Government Organizations (NGOs), Self Help Group (SHGs) and other social groups. The importance of the microfinance programmes and the success of the MFPIs in various developing countries, get prominence, because of persistent market and government failures in the sphere of rural development in general and rural credit in particular. This very success also negates the age-old perception and belief of most of the formal sector financial institutions that the "poor are not bankable". The proposed Microfinance Services Regulation Bill of India defines microfinance services as "providing financial assistance to an individual or an eligible client, either directly or through a group mechanism for:

- An amount, not exceeding rupees fifty thousand in aggregate per individual, for small and tiny enterprise, agriculture, allied activities (including for consumption purposes of such individual).
- An amount not exceeding rupees one lakh fifty thousand in aggregate per individual for housing purposes.
- Such other amounts, for any of the purposes mentioned at items (i) and (ii) above or other purposes, as may be prescribed."

The bill further defines Micro Finance Institution as "an organization or association of individuals including the following if it is established for the purpose of carrying on the business of extending microfinance services:

- A society registered under the Societies Registration Act, 1860.
- A trust created under the Indian Trust Act, 1880 or public trust registered under any State enactment governing trust or public, religious or charitable purposes.
- A cooperative society / mutual benefit society / mutually aided society registered under any State enactment relating to such societies or any multistate cooperative society registered under the Multi State Cooperative Societies Act, 2002 but not including a cooperative bank as defined in clause (cci) of section 5 of the Banking Regulation Act, 1949 or a cooperative society engaged in agricultural operations or industrial activity or purchase or sale of any goods and services.

Microfinance institutions have witnessed enormous growth during the last couple of decades. The spread of the SHG-microfinance linkage programme in Assam is recent. In this study we want to explain the expansion of this programme in the Char areas of Assam and analyse how it compares with the other parts of the state. To put it straight, the specific objectives of the study are:

- To find out the current status and growth of micro finance in char areas of Assam.
- To have inter-regional comparison in the progress of this linkage programme.
- To find out the future prospects of microfinance in char areas in Assam.

POLICY ON RURAL DEVELOPMENT

Developing countries like India has been adopting rural development through various public policies since independence and the Policy makers have been emphasizing upon the need of rural development ever since the advent of planning process in the country. The ultimate objective of rural development was the eradication of poverty and improving the quality of masses. In formulating rural development policy, the whole approach has been fundamental and has been targeted at removal of poverty of rural people, which has been perpetuated over the ages. The concept of rural development has undergone many changes depending upon the requirements and social transformation of Indian democratic system. The Government of India was committed to formulate plan policies on rural development in its Five Year Plans.

After the independence, the Community Development Programme was launched in year 1952 with 55 pilot projects on experimental basis. By early 1960's, the programme was extended to almost all the 5011 Community Development blocks of the country. It was emerged that the developmental process would allow benefits to the lowest level of the society. It failed to achieve the desired results mainly because of the lack of functional responsibility and coordination of the part of administration. The food shortage in 1960's led to the policy shift and more emphasis was laid on production-oriented programmes like IADP and IAAP. This was followed by the adoption of a new strategy of agricultural development based on high yielding varieties of crops in the late 1960's. During 1970 Area Based Programmes were introduced like SFDA, DPAP, MFAL etc. 1980's emphasized on strengthening socio-economic infrastructure in rural areas, alienating disparities under Integrated Rural Development Programmes, creating new employment opportunities etc. 1990's era witnessed the policy shift and decentralized, people's centred and human face development approach and strategy was adopted.

REVIEW OF LITERATURE

Various studies have been conducted since the nationalization of commercial banks in 1969, highlighting the importance and use of credit particularly in rural areas. These studies look into the problems of over dues and the causes for poor recovery. Interestingly, several studies have been conducted by social scientists, financial institutions and agencies, which highlight the positive trends and impact of Self Help Groups on empowerment, credit accessibility and the social change. Some of the available relevant studies, particularly case studies, workshops, seminars and symposia, have been critically reviewed.

Nagayya (2000) maintains that an informal arrangement for credit supply to the poor through SHG's is fast emerging as a promising tool for promoting income-generating enterprises. He has reviewed the initiatives taken at the national level with a view of institutional arrangements to support this programme for alleviation of poverty among the poor, with focus on women. He called for an imperative need to enlarge the coverage of SHG's in advance portfolio of banks as part of their corporate strategy, to recognize perceived benefits of SHG's financing in terms of reduced default risk and transaction costs.

Poverty and Microfinance in Char Areas of Dhubri District in Assam

Ahmad (1999) through a case study on Thrift Groups in Assam highlighted that women are coming to the administration directly for their just rights and to address their grievances boldly. It proved that Self Help Groups are successful in North East India even in the midst of insurgency. Similarly, Gurumoorthy (2000) maintained that SHG is a viable alternative to achieve the objectives of rural development and to get community participation in all rural development programmes. SHG is a viable organizational setup to disburse micro credit to the rural women for the purpose of making them entrepreneur and encouraging them to enter into entrepreneurial activities. Credit needs of the rural women can be fulfilled wholesomely through the SHG's. The women led SHG's have successfully demonstrated how to mobilize and manage thrift, appraise credit needs, maintain linkages with the banks and enforce financial self-discipline. SHG's enhance the equality of status of women as participants, decision-makers and beneficiaries in the democratic, economic and social and cultural spheres of life. They encourage women to take active part in the socio-economic progress of the society.

Bhatia and Bhatia (2000) through few case studies highlighted that recovery of SHG's is higher than other credit extended to borrowers. Moreover, involvement of SHG's had helped the bank branches in recovery of old dues. They observed that there has been a perceptible change in the living standards of the SHG's members, in terms of ownership of assets, increase in savings and borrowing capacity, income generating activities and income levels as well. Rao (2002) maintain that a review of the genesis and development of SHG's in India reveals that the existing formal financial institutions have failed to provide finances to landless, marginalized and disadvantaged groups. The origin of SHG's could be treated to mutual aid in Indian village community. SHG's encourage savings and promote income generating activities through small loans. Rakesh Malhotra (2000) in his study of 174 women beneficiaries, in Rae Bareilly of the state of Uttar Pradesh, drawn and covered randomly from four formal agencies of credit i.e. CB's, RRB's, PACS, and ARDB's revealed that less than half a per cent of female population against 3.5 per cent of male population in the study area were clients of the banks. Furthermore, only 7.64 per cent of the total number of cases financed and only 6.96 percent of the total quantum of credit extended by RFI's have gone to women. It was observed that 83 per cent of loan cases availed by women; male members were primarily responsible for the end use of credit.

Dasgupta (2000) in his paper on informal journey through Self Help Groups observed that micro-financing through informal group approach has effected quite a few benefits viz.: savings mobilized by the poor, access to the required amount of appropriate credit by the poor, matching the demand and supply of credit structure and opening new market for FI's, reduction in transaction cost for both lenders and borrowers, tremendous improvement in recovery, heralding a new realization of subsidy less and corruption less credit and remarkable empowerment of poor women. He stressed that SHG's should be considered as one of the best means to counter social and financial citizenship not as an end in itself. In another study, Datta and Raman (2000) highlighted that SHG's are characterized by heterogeneity in terms of social and economic indicators. The success of SHG's in terms of high repayment is mostly related to the exploitation of prevailing social ties and cohesion found among women members. Social cohesiveness among members spring not only from their diverse background of knowledge base, skills occupations and income levels, but also due to the dynamic incentive system of progressive lending to the groups on the successful completion of loan repayment. However, SHG's are heavily dependent on external financial agencies for their lending operations.

In their study, Barbara and Mahanta (2001) maintained that the SHG's have helped to set up a number of micro-enterprises for income generation. Rastriya Gramin Vikas Nidhi's credit and saving programme in Assam has been found successful as its focus is exclusively on the rural poor. It adopted

a credit delivery system designed especially for them with the support of a specially trained staff and a supportive policy with no political intervention at any stage in the implementation of the programme. Puhazhendhi, and Satyasai (2001) in their paper attempted to evaluate the performance of SHG's with special reference to social and economic empowerment. The study revealed that the SHG's as institutional arrangement could positively contribute to the economic and social empowerment of rural poor and the impact on the later was more pronounced than on the former. Though there was no specific pattern in the performance of SHG's among different regions, the southern region could edge out other regions. The SHG's programme has been found more popular in the southern region and its progress in other regions is quite low, thus signifying an uneven achievement among the regions. Older groups had relatively more positive features like better performance than younger groups. Manimekalai and Rajeshwari (2001), in their study, highlighted that the provision of micro-finance by the NGO's to women SHG's has helped the groups to achieve a measure of economic and social empowerment. It has developed a sense of leadership, organizational skill, management of various activities of a business, right from acquiring finance, identifying raw material, market and suitable diversification and modernization. Similarly, Sharma (2001) maintained that through SHG's women empowerment is taking place. Their participation in the economic activities and decision-making at the household and society level is increasing and making the process of rural development participatory, democratic, sustainable and independent of subsidy, thus, macro-financing through SHG's is contributing to the development of rural people in a meaningful manner. Interestingly, Singh (2001) in his study in Uttar Pradesh highlighted that the SHG's is now functioning in the place of moneylenders because loan could be taken at any time as and when needed for any purpose. There are no formalities involved and the transaction cost is low.

The above studies simply demonstrate that SHG's are playing a vital role in extending macro-finance to the rural poor. The functioning of SHG's has been based on participatory mechanism and therefore the impacts of SHG's on its members in terms of empowerment, accessibility to credit, socio-economic change etc. has been found positive. Though there are a number of studies which are related to functioning and micro-finance but only a few studies have been taken so far to assess the impact of Self Help Groups on the socioeconomic empowerment of the poor and deprived people living char area which is most backward and peculiar geographic area in Assam. In this context, the present study is important to assess the impact of Self Help Groups on its members in terms of socio-economic empowerment in char areas of Assam. The study findings may be useful for policy imperatives and smooth functioning of SHG's. More benefits of SHG's may be obtained through proper functioning of these groups and extending of micro-finance to develop and promote micro-enterprises.

RATIONALE FOR THE STUDY

Poverty alleviation is one of the primary objectives of any planning in a national economy. Therefore, it becomes imperative to formulate situation specific poverty alleviation policies and programmes for generation of a minimum level of income for rural poor, which form the substantial percentage of national population in developing societies. One initiative is credit infusion in the rural sector. Increased involvement of banks in rural credit in post nationalization in India was considered as integral part of socio-economic development efforts for the rural areas. However, despite a vast network of commercial, cooperative and rural banks and other financial institutions no significant impact could be made on the grim poverty situation prevailing in rural India. Knowing that the success of any credit programme for

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the rural areas hinges on its high out-reach and people friendly approach, the governmental and other institutional players stepped in to provide favourable environment to the poor to develop their organizations. The decade of 1990's witnessed growth of various people's organizations. In this context the role of Self-help groups (SHG's), especially of women has assumed a critical challenge. Self-help groups approach is the key element of social mobilization. Linked with micro-finance, the SHG approach and movement has now been accepted as an effective intervention strategy for poverty alleviation. India has nearly 400 million people, living below or just above the poverty line. About 75 million households therefore need micro-finance. Of these, nearly 60 million households are in rural India and remaining 15 million are urban slums. The current annual credit usage by these households was estimated in 1998 to be Rs. 465,000 million. It is estimated that the number of small loans accounts from banks covered some 40 million households in 2000. The remaining 35 million households are perhaps meeting their credit needs from the informal sector (Fisher et al., 2002). Statistics, available from NABARD (2003), suggest that more than 8.67 lakh SHG's in India made successful functioning, while NABARD's target of ensuring bank loans are extended to 1 million SHG's by 2008 with an average membership of 17, this would mean bank's outreach to some 17 million members, the vast majority of whom will be women, with an average size of Rs. 1766 per family, Banks loans were made available to 11.6 million families in 2002-03: Beside the big donor agencies like NABARD, SIDBI etc. there are 2800 partner NGO's working extensively in this field. Two specific programmes viz. Swayam Sidha and Sivashakti which envisage formation, stabilization and bank linkages of women's self help groups are quite important. Southern region accounts for lion's share i.e. 64 percent in SHG bank linkage while Central India (11 percent), Eastern India (13 percent), Western India (6 percent) and Northern India (5 percent) account for nominal share. North-eastern region has negligible share i.e. 1 percent in total bank linked SHG's.

The government of India as well as the state governments has initiated a number of projects and programmes for socio-economic empowerment of the poor. The microfinance project intervention in terms of formation and stabilization of SHG for extending credit support and promotion of thrift to promote viable economic activities in the backward areas has resulted empowerment. However, there is scarcity of resource literature regarding the impact of SHG's on their socio-economic empowerment. Against this background, present study has been carried out in Char areas of Dhubri district in Assam to assess the impact of micro-finance or SHG on socio-economic conditions and eradication of poverty of the people.

MAJOR MODELS OF MICROFINANCE INITIATIVES

The literature on microfinance listed 12 various models of microfinance institutions working in different countries. This classification is on the basis of regulatory structure and operational methods. Few models are not common in international level and few others are complimentary. NGOs and self help groups are example. Most of the Self Help Groups have a promoter NGO. At the same time many NGOs have direct microfinance chains. Like that commercial banks are implementing microfinance operations through its SHGs. In these cases two models are working together to serve poor. Some models are working in the informal sector only. Major models are Grameen bank, Village bank; Credit union, Cooperatives, Self Help Groups, Commercial banks, NBFCs, Association of persons, *Nidhi* model, Community banking, NGOs and ROSCAs.

There are different organizations engaged in programmes of microfinance. In India this programme is predominantly undertaken and has been made successful by another institution popularly known as

SHGs. P Satish (2005), has defined SHG as a voluntary group valuing personal interactions and mutual aid as a means of altering the problems perceived as alterable, pressing and personal by most of its participants. These groups are voluntary associations of people formed to attain certain collective goals that could be economic, social or both. These days it is being increasingly realized that, the best strategy of ensuring simultaneously growth and human development, is by promoting the growth of SHGs. Hence both in development theory and development practice, microfinance and SHGs have become important institutions.

Microfinance has become one of the most discussed subjects in the last two decades all over the world. While one group advocates that it has significant impacts in reducing poverty (Prof Yunus Mohammed of Grameen Bank is an ardent promoter of this idea and has recently been awarded Nobel Peace prize for this endeavour); others caution against such optimism and point to negative impacts. There are still others who follow the middle path and argue that while micro finance does increase access of capital for the poor, in order to reduce poverty other non-financial services must be added on. Whatever may be the case, today microfinance programmes and institutions have become increasingly important components of strategies to reduce poverty or promote micro and small enterprise development in many of the developing countries.

Microfinance means the provision of thrift, credit and other financial services and products of very small amounts to the poor in rural, semi urban or urban areas for enabling them to raise their income levels and improve their living standards. Usually, the loan size would be below Rs 50,000 or so. Thus microfinance does not mean only the size. It means a change in the approach and philosophy to a demand led financial services and products for all of those who have been left out of the formal banking sector.

DATA SOURCE AND METHODOLOGY

The present study is both descriptive and empirical. This is based on group discussion among the beneficiaries with the help of well-structured questionnaires and supplemented by secondary data whenever necessary. The relevant secondary data have been collected from books, journals, research paper, newspaper, Government Reports and related websites. The present survey has been carried out in char villages of the district of Dhubri. Considering the availability of data, State level, District level and Block level information has been used for stratification purpose. A multi-stage sampling procedure was adopted for the investigation.

EMERGENCE AND NATURE OF CHAR LAND

The mighty Brahmaputra is the mainstream of the state of Assam. In the dynamics of erosion and accretion in the rivers, the sandbars emerging as islands within the river channel, or as attached land to the riverbanks, often create new opportunities to establish settlements. Once vegetated, such lands are commonly called '*chars*' in Assam. These are of two types:

- Areas created with sand of river within the bed as disjoint island (i.e. Chars) and
- Areas on the bank of river attached to the mainland (i.e. Chapori).

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That sandy land area which is surrounded by river is known as 'Char' and 'Chapori' is that land which is located on the bank of river. When a river changes its direction, a large number of 'chapori' go into the heart of the river as eroded land and after a few years, it grows as a new 'Char' and time taken in this process is usually ten to twenty years. In this sense high sandy land surrounded by river in different districts in Assam are termed as 'Char Areas' including 'Majuli', the greatest river island in the world.

According to longevity, the char areas can be divided into three categories viz. Temporary, Semi-permanent and Permanent. The char which exists less than 15 years categorised as temporary. The char having life span between 15 to 30 years are categorised as semi-permanent and the rest are termed as the permanent char. But it should be noted that no char is permanent in the sense that they everlasting after their emergence. Most of the temporary char areas are not inhabited. They are generally cultivated as they are naturally fertile. Of course some people build temporary cottage and used them as farm house. Needless to say that these houses are washed away by the river during flood and people build new cottage every year. The size and nature of char areas seriously affected by flood and erosion occurred every year which in turn influence on the socio-economic condition of the people living in char areas.

PROFILE OF THE CHAR AREAS

As per survey of the Government of Assam, there are 2251 numbers of char villages scattered in 23 sub divisions of 14 districts in Assam (Table 1). Total area under char is 3,60,927 acres of which cultivable land is only 2,42,277 acres and remaining 1,18,650 acres of land is not cultivable at all. That is 67.13% of land in char areas is used for agricultural purposes and 32.87% of land either used for residential purpose or waste land.

HISTORY OF MICROFINANCE

While the concept has been used globally for centuries, Bangladesh's Muhammad Yunus is the pioneer of the modern version of microfinance, according to Kiva, a crowd funding-based micro lending organization inspired by Yunus' work. While working at Chittagong University in the 1970s, Yunus began offering small loans to destitute basket weavers. Yunus carried on this mission for nearly a decade before forming the Grameen Bank in 1983 to reach a much wider audience.

Joseph Blatchford, former head of the Peace Corps and a UC Berkeley law student, is also credited with building up the modern-day micro financing efforts. Blatchford founded nonprofit Action as a volunteer project in 1961, and in 1973, the organization began offering small loans to entrepreneurs in

Table1. Profile of Char areas

Total Char Villages	2251
Total Areas (in acres)	3,60,927 acres
Cultivable Land (in acres)	2,42,277 acres
Non-Cultivable Land (in acres)	1,18,650 acres
Population	24,90,097

Brazil to see if a one-time influx of money could help lift them out of poverty. The operation was a success: 885 loans helped create or stabilize 1,386 new jobs. Action expanded the model to 14 other Latin American countries over the next decade.

GROWTH OF MICROFINANCE IN ASSAM

The economy of Assam is agricultural in nature. Most of the people are rural and relatively poor. Despite the large size and depth of the Indian financial system and thousands of bank branches across the country, Assam is still lagging behind in terms of financial inclusion. The people of Assam have very little access to formal finance. They have little access to other financial services such as savings accounts, life, health and crop insurance. To meet their short term and long term credit needs these rural poor have to depend on money lenders, friends and relatives and shopkeepers rather than on formal credit institutions. This is due to the fact that they do not have any collateral to offer. Despite very high rate of interest rate and other hazards, the absence of formalities scores over them and attract a large number of clientele to the fold of unorganised sector. In this context we can mention the importance of the alternative credit delivery mechanism like the SHG based microfinance programme in providing essential, financial services to poor.

The SHG group formation in the state started with a very slow footing. From the year 1988 some groups were formed but actual progress was after 1990-91 with the initiative taken by many NGOs. The microfinance movement in Assam started only around 1996-97 with a strong thrust by NABARD. However, prior to that SIDBI, with its earlier avatar of Micro Credit Scheme did start up with funding some NGOs. It is only in 1996-97 that they ventured in a slightly large fashion with Rastriya Gramin Vikas Nidhi (RGVN) under the Credit and Saving Programme (CSP) in Assam. Thus we can say that microfinance movement started in Assam around 1996-97. Introduction of SHG-bank Linkage Programme (SBLP) in 1996, further geared many NGOs, banks and government agencies to promote group formation and their subsequent linkages. In 2000 another programme called Swanajoyanti Gram Swarajgar Yojana (SGSY) was introduced as anti poverty programme. The SGSY and the SBLP are the two main programmes under which the formation of SHGs is undertaken for providing credit to members.

STATUS OF MICROFINANCE IN ASSAM

Both the models of micro finance i.e., SHG-Bank Linkage Model and MFI Bank Linkage Model which are operational in India are also operational in the State of Assam. But the micro finance programme in the State of Assam has not progressed in the same manner as it has progressed in other parts of the country up to 1999-2000. This was mainly because of the lack of awareness and exposure among the various stakeholders. However, there has been visible progress under SHG-Bank Linkage Programme from the year 2000-01 onwards. The cumulative number of SHGs having savings account with the banking agencies stood at 245120 SHGs up to 31st March, 2011. On the other hand, as on 31st March, 2011, the number of groups having bank loan outstanding stood at 111589 SHGs (Table 2).

NABARD through its Regional Office in the state headquarter is playing an active role in the promotion of micro finance movement in the state. Under its Self Help Promoting Institutions (SHPIs) Programme, NABARD has been providing grant assistance to NGOs and RRBs for promotion and nurturing of SHGs

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Table 2. Progress of SHG-Bank Linkage Programme in Assam

Year	No of SHG Credit Linked	No of SHG Refinance Linked
1998-99	14	1
1999-00	53	46
2000-01	209	120
2001-02	748	528
2002-03	2453	1225
2003-04	7229	3309
2004-05	20528	3076
2005-06	25215	859
2006-07	25005	3167
2007-08	20318	5871
2008-09	26448	1779
2009-10	39058	3133
2010-11	29094	3030

Source: NABARD

so that they could become a viable group. In this regard, NABARD has sanctioned a grant assistance of Rs. 416.06 lakh to NGOs and Rs. 10.95 lakh to RRBs for promotion and credit linkage of 16,409 and 1300 SHGs respectively. NABARD has also sanctioned a grant assistance of Rs. 135.18 lakh to utilise the services of 751 Individual Rural Volunteers (IRVs) in 25 districts for promotion and credit linkage of 7,510 SHGs with the banking system. Till date, 2288 SHGs have been promoted through 126 IRVs and so far, 1141 SHGs have been credit linked.

The NABARD Regional Office, with a view to increasing the flow of credit particularly to the small borrowers, is also working to popularise the concept of Joint Liability Group (JLG) financing in the state. It is a group of 5 to 10 members having limited or no collateral to offer, come together voluntarily to avail bank loans. Borrowers are individually and jointly liable for repayment. To achieve this JLG financing, NABARD Regional Office has sanctioned Rs. 45.86 lakh, Rs. 40.60 lakh and Rs. 1.80 lakh respectively to Assam Gramin Vikash Bank (AGVB), Langpi Dehangi Rural Bank (LDRB) and UCO Bank for formation and credit linkage of 2,293, 2030 and 90 JLGs over a period of three years. NABARD is also supporting various NGOs across the state for organising Micro Enterprise Development Programme (MEDPs) to enable the mature SHG members to strengthen existing economic activities/ take up new activities.

The progress under SHG-Bank Linkage Programme in the State of Assam since inception is given in Table below. It is observed from the table that during 1998- 99, only 14 SHGs were provided with bank loan which has increased to 29094 SHGs during 2010-11. On the other hand, the number of refinance linked SHGs had increased from only one SHG during 1998-99 to 3030 SHGs during 2010-11.

GROWTH OF MICROFINANCE IN DHUBRI AND ITS CHAR AREAS

Informal credit delivery system assumes importance in the present rural economic scenario. Though formal banking structure has a wide network of branches in rural areas, the rural poor still continue to be in the clutches of money lenders mainly due to reluctance of banks in meeting the credit needs of the small farmers. In this context, Self Help Groups formed on the basis of mutual interest have proved to be an effective alternative credit delivery mechanism to reach the unreached poor. Although, SHG bank linkage programme was launched in the year 1992, a beginning of formation of SHGs was made in the district by *Chilarai Krishi Vikash Samiti* in the year 1999. It needs no mention that when SHG Bank Linkage programme was picking up in the country, Government of India had announced SGSY programme with a component of subsidy. As a result, Government Machineries, PRI, NGOs started to propagate formation of SHGs with the objective to get benefit of subsidy under SGSY. More particularly, bank officials had also shown much interest to help SHGs under SGSY. But, due to various reasons, subsidy did not reach smoothly to SHGs. Practically most of the SHGs, so formed did not get any benefit in the form of bank loan or subsidy till 2002-03. However, the situation has improved subsequently. The SHG-Bank Linkage Programme is being implemented in all the 13 development blocks of the district through Assam Gramin Vikash Bank, Commercial Banks like UCO Bank, United Bank, SBI etc. Further, NGOs and Farmers Clubs are also involved in promotion and linkage of SHGs in the district.

PROGRESS OF SHG-BANK LINKAGE PROGRAMME IN DHUBRI DISTRICT

The highlight of SHG-Bank Linkage Programme in the district is given in Table 3. It is observed from the table that as on 31st March 2011, a total of 4,885 SHGs were formed under the SHG-Bank linkage programme in the Dhubri district of Assam which is only 3 percent of total SHGs formed in the state under the same programme. On the other hand, the number of credit linked SHGs in the district is 2,157 and Rs. 343.9 lakh was disbursed to these SHGs as bank loan. Almost 67 percent of the total SHGs formed in the district is exclusively for women. Further the average loan per SHG during 2010-11 in the district is Rs. 85,766 which is more than the state's figure of Rs. 58,000 but lower than the all India per SHG bank loan of Rs. 90,000.

Dhubri is one of the most backward districts in Assam both economically and socially. The slogan of inclusive development and financial inclusive is lagging in the district. The mahajan, money lender, kabuliwala, marowaris are main source of micro credit of the poor. The formal banking sector always keeps a distance with poor people and farmers. It was between 1998 and 2004, micro finance taking place in the district with the initiative of some NGO like *Chilarai Krishi Vikash Samiti* under Swanojayanti

Table 3. Status of SHG-BLP of Dhubri district (As on 31st March, 2011)

	Total no of SHG	Total Amount (Rs)	Amount Per SHG (Rs)
Savings performance of SHG	4885	116.7 Lakhs	2390
Bank loan disbursed	401	343.9 lakhs	85,766
Bank loan outstanding	2432	834.7 lakhs	32,969

Source: NABARD Regional Office, Guwahati.

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Swarojgar Yojana (SJSY). Due to lack of availability of banking facilities, the char areas of the district are far lagging behind. People of char areas become to learn about SHG only after 2000-01.

The economy of char areas is depending upon the agriculture which is basically traditional. Most of the people in char areas earn their livelihood from agriculture. As the productivity of agriculture per head or per unit of land is low, majority of the farmers are fails to fulfil their basic need and hence live below poverty line. The ownership of land is in the hand of few rich farmers known as *Matabar*. They hold 90% of the land and other farmers work as agricultural labour, marginal farmer etc. The formal banking sector is maintaining a far distance from these poor farmers. Actually speaking there is no any branch of any nationalised or regional bank in char areas of Assam particularly in the district of Dhubri. Very few people are maintaining their saving account in the bank which is located at towns and bazaars.

The poor performance in the progress of micro finance is mainly due to the sparse population in this region, lacked of experienced NGOs for formation and nurturing of SHGs and lack of homogeneity in Groups in the respective States.

INTERPRETATION OF THE RESULT AND FINDINGS

The Dhubri district is includes highest number of char villages i.e. 480 numbers of char villages are in the district. Population is near about 5 lakhs i.e. nearly 40% of the population of the district live in char areas. But due to several factors growth and extension of financial institutions either formal or non-formal sector to provide financial services to the poor and deprived people are found as not satisfactory. Following are the main findings (or challenges) of the study.

- Most of the SHGs found in char areas are formed and established during 2001 and 2005. SHGs formed after 2005 in char areas were unable to open an account in the branch of bank. This inability of the SHGs to have an account in the bank discourages the interest of the youth in involving with SHGs.
- There are 2157 (in 2005) and 4885 (in 2011) numbers of SHG found in the district having banking linkage. But the char areas of the district have only 664 such banking linkage SHGs which is much less than any average either state or national level.
- Among 664 SHG having banking linkage of char areas, only 104 have received a loan of Rs 2.0 (two) lakhs only. Other have received only a revolving fund of Rs. 10.0 (ten) thousands. Members reported that they become tired following different level of official.
- Absence of bank branch in char areas is another bottleneck for the proper functioning of the SHGs. It is found that most of the char villages are located at far distance from town and bazaars where to be found any branch of bank.
- Town based branches of nationalised bank and regional bank are always reluctant to open account to the poor people living in char areas. Middle class bank official, as reported by the SHGs, given no interest to the poor members of SHGs of char areas.
- Another important finding of the study is that of the shortage of staffs in the existing banks. Due to shortage of staff and imposition of responsibilities from the government side in respect of job card account, old age pension account etc, and banks denied opening any account to SHGs.

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- Most of the women in char areas are indifferent about formation, benefit etc of SHG and other related matters. This indifferent attitude is due to the illiteracy, lack of information and social restrictions.
- Ignorance about micro credit or SHGs is acute and it is found to be 85% of the respondents were totally ignorant about micro finance and financial services.
- Nonexistence of the local guiding institutions is found to be another hindrance of the growth of micro credit in char areas. Most of the NGOs working in formation and guidance of SHGs are found to be town base and their workers shows little interest to work with the people of char areas.
- The district suffers lack of bank branch. Only a few banks are operating in the district which is very few and not sufficient to serve public.
- Most of the respondents report of loss of working day in the name of depositing monthly collection money at bank branches. As there are no bank branch in char areas and located at the far distant, poor people are loss their working day at bank.
- No Customer Service Point (CSP) is found in the entire char areas of the district. Though few such CSP are allotted area wise they are working by sitting at town. They place their argument as no electricity facilities are available in char areas.
- Religious and social restriction, conservatism and illiteracy at mass level among the people in char areas is another main factor for lagging behind in financial education and empowerment.
- Fear about non-payment of bank loan by the people in char areas is another main factor of financial exclusion. As divesting flood occurs recurrently every year, heavy loss of assets and livestock taken place. But banks show indifferent attitude about such natural calamities. So illiterate people have always a fear about bank loan.

POLICY IMPLICATIONS

Majority of the beneficiaries obtained microfinance for dairy farm. Many more other activities like goat farm, fishery etc to be included to start their unit and financial support is to be extended by the banks.

In case of dairy farm one cow was not sufficient to raise income and employment level. To earn income and generate employment throughout the year few more cows should be provided for the beneficiaries by extending micro finance required based on the performance.

The micro finance was extended to only few poor rural women in the study area. Financial assistance is to be extended to more and more youth both male and female in different activities as per their interest in order to create an environment of work and to provide opportunities to earn income.

Poultry, Duck farming, goat farming are feasible enterprise and very much suitable for women in char areas to practice and empower them economically and socially. So the financial institutions and NGO's should come forward to extend financial support and guidance through Self Help Groups to take up such enterprise as an income generating activity.

Government and rural development department should focus on various programmes and schemes on rural development in every village through Panchayat institutions, NGOs and other stakeholders. Government may take initiative to establish more branches of banks either nationalised or regional rural banks particularly to serve the people of char areas which is most backward in every respect.

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To overcome the problem of illiteracy and ignorance among mass people Adult education scheme may introduce in order to make awareness programme easy.

Extension of training services among the young male and female people in char areas must be strengthened in order to make the char areas people more efficient in terms of skill, capacities to work and enhance productivity and net returns.

CONCLUSION

Self Help Group or Microfinance is an important tool for upliftment of living standard of a poor. It can help a person or group of persons to have all kinds of financial services like saving, credit, insurance and so on. The movement of SHGs could not serve the poor of the country as it ought to be. Particularly, the state of Assam is lagging behind the country in this regard. Again, the district of Dhubri which is one of the most backward districts in the state and its *Char areas* are found to be at bottom of the list. Formal financial institution like banks shows their reluctant attitude to the poor of the char areas and hence SHG movement could not help them to get financial services.

Based on the results, it is suggested that SHG members be given a better understanding on financial services- such as opening of savings account in formal institutions, participation in fixed/recurring deposit scheme, and availing of life insurance for the entire family. NGOs and other agencies need to increase the awareness by providing proper information and training to reach the currently un-reached segments of population and should motivate members to take up more productive activities to enhance the income of the household in order to avail these facilities. The chapter is concluded with the stress that more and more number of SHGs should be encouraged to form among the poor household in the study area to avail the benefit and cross poverty line.

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KEY TERMS AND DEFINITIONS

Char Area: The extremely braided channels of the river along with its unique gradient, suspended particles and bed load combine together during floods to give rise to ‘almond’ shaped alluvial formations known as chars. The mid-channel bars (locally referred as char) are an integral part of the fluvial regime of the river Brahmaputra and its tributaries in Assam.

Living Standards: Standard of living generally refers to the level of wealth, comfort, material goods and necessities available to a certain socioeconomic class, in a certain geographic area. An evaluation of standard of living commonly includes the following factors: income, quality and availability of employment.

Micro Finance Institutions: Micro finance institutions, also known as MFIs, a microfinance institution is an organization that offers financial services to low income populations. Almost all give loans to their members, and many offer insurance, deposit, and other services.

Microfinance: Microfinance, also known as microcredit, is a financial service that offers loans, savings and insurance to entrepreneurs and small business owners who don't have access to traditional sources of capital, like banks.

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Poverty: Poverty means not having enough money for basic needs such as food, drinking water, shelter, or toilets. Many people in different countries live in poverty, especially in developing countries.

SHG: Self-help group (SHG) is a small voluntary association of poor people, preferably from the same socio-economic background. They come together for the purpose of solving their common problems through self-help or mutual help. The SHG promotes small savings among its members. The savings are kept with a bank. This common fund is in the name of the SHG. A SHG has specific number of members like 15 or 20.

Women Empowerment: Women empowerment refers to the creation of an environment for women where they can make decisions of their own for their personal benefits as well as for the society. It refers to increasing and improving the social, economic, political and legal strength of the women, to ensure equal rights to women, and to make them confident enough to claim their rights.