The Assam Kaziranga University
National Journal of
Social Science Reserch
Vol. I, July, 2017. Page: 121-127
KU NJSSR

Flood, Environmental Degradation and Society: The Case of the Dibrugarh District of Assam

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Like many states in India, Assam has been suffering a lot by floods in regard to environmental degradation. The two great rivers of Assam- the Brahmaputra and the Barak and their large number of tributaries have been leading to this natural havoc for most of the districts. The district of Dibrugarh of the state is one of the prominent districts, which is still under the severe stress of flood where hundreds of village even towns are affected. The purposes of this study are to find out how the floods are leading to environmental degradation and thereby its effects. With the help of field based data as well as some secondary information it has been revealed that soil erosion, deforestation, degradation of soil quality due to deposition of huge amount of sands and silt, loss of thousands of plants, domesticated as well as wild lives even human being, water pollution etc. are subjected by the floods. These are leading to lack of day-to-day requirements of livelihood like food, shelter etc., unhygienic living condition, loss of cultivated crops, occurrence of various diseases, damage and destruction of educational, religious institutions, Govt. and Non- Govt. offices, disruption of communication due to damage of roads, bridges etc. Besides, many of the riverline people have displaced from their original habitation.

Key words: Flood, Environmental Degradation, Society

Introduction

Among the various reasons, flood is a prominent one, which has become the subject for discussion in terms of environmental degradation to a great extent in many countries throughout the world. Soil erosion , deforestation, destruction of cultivable as well as non-cultivable waste land by depositing huge amount of sands, destruction of thousands of plants , domesticated as well as wild lives even human being , water pollution, creation of unhygienic living conditions, air pollution etc. are subjected by this natural calamity . Besides, flood as a continuous havoc every year affects economy and occupation, education, public health, social infrastructural facilities and many more and all these effects hampers societies.

Though floods occur frequently over wide geographical area having disastrous ramifications in many parts of the world, floods in the South, South-East and Bangladesh are frequent and equally disastrous and in India, it is a major natural hazard which is occurred in the country

widely every year. In the country, Assam, West Bengal and Bihar are among the high flood prone states of India. Apart from these, most of the rivers in the northern states like Punjab and Uttar Pradesh are also vulnerable to occasional floods. It has been noticed that states like Rajasthan, Gujarat, Haryana and Punjab are also getting inundated in recent decades due to flash floods .(Uppal:2006)

The state of Assam of India has been suffering a lot by floods in regard to environmental degradation. The recurrence of flood continued to be the burning problem of the state. The two great rivers of Assam- the Brahmaputra and the Barak and their many tributaries as noted by Geographers and Geologists after the great earthquake in the region, have been a curse in many spheres of social life. In Assam the average area affected by flood annually is 4,50,000 hectareand the average area being eroded by flood is 6,5000 hectare.(http://www.envisassam.nic.in). Bora (2002:42-43) estimates that normally around 40 per cent of state's area is affected.In the *Economic Survey of Assam: 2005-2006,* it has been mentioned thatthe numbers of affected areas and population have increased and the major districts of the state have been experiencing serious effects of flood and its multi-facet manifestations over the decades.As a result the state had not been able to achieve the desired progress and prosperity, in spite of having vast natural resources.

The Dibrugarh District of Assam over the last few decades has been an example of such devastation. The river Brahmaputra along with its tributaries which are flowing through the district such as Burhi-Dihing, Dibru, Sesa etc. are causing floods in many areas and the river Brahmaputra is engulfing large portion of areas. The purposes of the study areto search how floods have been leading to environmental degradation and to search its effect on society of the affected areas of the Dibrugarh District.

Methods of the Study:

This study was conducted on the basis of both primary and secondary data. The primary data were collected through field study in some flood affected areas. This field study was carried out in 2015. During this, we adopted observation as well as personal interview with some affected people. Besides, a number of secondary data about the district with regard to the annual records of flood, flood damages, number of villages affected etc. were gathered from Revenue Circle Offices, Deputy Commissioner's Office, Internet etc.

Results and Discussion:

The effects of flood on environment and its impacts on the societies of the affected areas are as discussed below.

Riverbank Erosion:

Riverbank erosion is one of the major problems for several riverline area. Jeevanrao(2002:23) stated that among the various soil degradation processes, soil erosion is the most serious degradation problem in the Indian subcontinent. Erosion due to water and wind occurs over large areas.

He also pointed out that as per estimates of the Central Water Power Commission, about 1356 million acre ft. of water flows annually through the rivers to sea, of which 1.87 million acre ft. runs off annually, causing soil erosion. It may be mentioned here that in Assam it is a serious hazard caused by various rivers. In this regard Goswami(2003:9) mentioned that erosion hazard posed by the river Brahmaputra is very serious in several vulnerable areas such as Majuli and Palashbari. A large chunk of the Majuli Island i.e. about 35.00 per cent of its present area has already been lost to the river in the last few decades.In*TheEconomic Survey of Assam, 2005-2006,* it was recorded that Assam has about 455424.32 hectare land due to soil erosion during 2001 to 2004.

In the Dibrugarh District riverbank erosion is occurring in riverline areas. The river Brahmaputra and its tributaries such as Dibru, Burhi-Dihing, Sesa etc. are causing it. The acute erosion has been occurred in many places of the district by the river Brahmaputra. These areas are Rohmoria, Bogibeel, Maijan, Oakland, Kanai Gaon, Nagaghuli, Nijkanai Gaon etc. In Rohmoria about 29 villages are affected and in Bogibeel area almost 2000 *bighas* of land have already been lost by the river Brahmaputra. Heavy erosion is also occurred by this river in Oakland area where an area including a part of a tea garden has already been eroded. The most important fact is that even the Dibrugarh Town has been threatening. Dutta(2011:45) has pointed that the Dibrugarh Town- an important town of the Upper Assam region and established by the Britishers as early as 1840 has been threatening by the river Brahmaputra many years ago. During 1922-23 there were severe bank erosion and floods and a large area in the west of the Dibrugarh town got submerged in the Brahmaputra.

The erosion is taking place by the river Burhi-Dihing in West Dibrugarh Revenue Circle since 1990. In *Sadin:*2011, a weekly Assamese Newspaper published from Guwahati, it was mentioned that the areas such as Jokai, Lezai, Itakhuli etc. are being more affected where a vast area with crop plants and hundreds of other plants has already been eroded. Similarly in Bhogamukh Tini-ali area of the West Dibrugarh Revenue Circle, a huge area with hundreds of plants including crop plants has already been eroded by the river Burhi-Dihing and threatening almost 100 families. Therefore, soil erosion is causing in land degradation as well as deforestation.

The erosion impacts upon hundreds of households in the studied area among whom many have lost their entire land including cultivable land and they have been displaced. Even many of them have to live on the river dyke with a minimum livelihood standard. It is leading to the problem in food and nutrition, shelter, drinking water, health, financial aspects etc. It is to be mentioned that mainly the women and children are more victimized. In a study on impact of displacement on women conducted among the erosion induced displaced people in the Dibrugarh District Gogoi (2007:39-40) has discussed that the displaced women have to face many problems such as problems in household activities, problems in food and nutrition, disruption in occupation, problems in income generating activities etc. Another vital fact is that many small tea cultivators are affected as they have lost their tea plantation due to soil erosion. This study is in

line with some other similar studies conducted in the state. Besides, official buildings of many Governmental as well as Non-governmental institutions and departments, office of many social associations, play ground, recreational centers, business centers etc. are destroyed by soil erosion in the district. Therefore, the soil erosion- an environmental problem is leading to various social problems in the district. Phukan(2007:116) studied at the Matmora region of Lakhimpur district of the state has reported that almost a huge sunk of this region has already been vanished thereby disrupting people's livelihood.

Siltation and Loss of Soil Quality:

Siltation caused by flood water causes land degradation.Hussain (1996:14) pointed out that the fertile plains and flat valleys of the North-east are subjected to degradation by deposition of new soils (Sand and boulders carried by streams and rivers coming from surrounding hills and mountains). In Assam the deposition of sand due to flood in many areas causes loss of agricultural land to some extent by diminishing the fertility of soil.

In the district under study it has been a severe problem that hundreds hectare of land including a huge area of agricultural land is submerged by the sands and silts carried by the floods. It is leading to the degradation of soil quality which ultimately hampers in agricultural production of hundreds families. In some places the available paddy fields have become completely barren due to heavy siltation. Besides, deposition of sands and silts in many ponds hampering fish cultivation and submersion of roads is leading to communication problem.

Therefore, the high siltation leads in disruption of agricultural production and as well as in fish cultivation, communication etc. In a similar study Gogoi(2008:174-175) has reported that in Sadiya Region of Tinsukia District of the state, suddenly occurred deposition of huge amount of coarse to medium grained sand on the existing agricultural fields due to influx of flood water makes much of the resourceful lands into wastelands.

Loss of Plants:

Flood causes destruction of trees. It occurs due to submersion of the plants for long period under the flood water, due to diseases caused by flood and due to heavy soil erosion. In my field investigation, I have found that hundreds hectareof paddy and jute crops , tea plants, coconut tree, pineapple, betel nut, papaya tree, betel vine, black pepper many trees of the forest areas are being destructed by submersion under the flood water, diseases caused by flood and heavy soil erosion of the rivers. It is resulting deforestation in many parts in the district. In a study Gogoi(2007:7) has revealed that up to 2007 at Rohmoria area 20 Nos. of *Beels* with fodder tree and 8 Nos. of small forest area with valuable trees have already been lost due to erosion. *The Dainik Janambhumi*: 2011, an Assamese daily published from Jorhat reported thatthe heavy erosion of the river Dibru, an area of 5 sq. km. with hundreds of tree have been lost in the Dibru-Saikhua National Park.

Loss of Domesticated as well as Wild Lives:

In the studied area, as reported by local people a huge number of domesticated as well as wild lives have already been lost due to drown off and diseases during or post flood. Besides, fishes of individual as well as public ponds are lost due to diseases caused by flood and these losses affect society. Especially the loss of domesticated birds, animals and fishes affect society in different ways. First, it affects financial aspects as many households domesticate fowl, duck, goat and practice fish cultivation etc. for income purpose. Secondly, the loss of cattle affect agriculture as almost all the cultivators except the tea cultivators are depended on animal power in ploughing. Thirdly, many people domesticate cows and buffalos for milk production, but these entire losses impact peoples livelihood.

Loss of Human Lives:

Flood may cause loss of human lives. It may be due to two reasons- drown off in flood water and diseases occurred during or post flood. The average loss of human live in Assam is 31 nos. per year. The Economic Survey conducted for the period 2002-2005 recorded a total of 681 lives lost during flood in Assam.(*Economic Survey of Assam,* 2005-2006:33)

Effect on Sources of Water and Water Pollution:

The major sources of drinking water for the people of rural Assam are the ponds, wells, tube wells and sometimes river water. It is most common phenomenon that due to flood these sources of water and their quality may be affected to a great extent. This results in the shortage of water for the rural inhabitants. Kharghoria (2003:106) has stated that existing water sources are contaminated by flood water. As a result of contamination there is scarcity of safe drinking water.It leads to water born diseases. It is due to contaminationof flood water with the wells, tube wells etc. resulting polluted water that become unsafe for drinking purpose.

In my field investigation, I have found that most of the people take drinking water from tube wells, wells, ponds etc. and the common source of drinking water is tube wells. These sources of water are both personal and public. It is also significant that sometimes some riverline inhabitants use water from the rivers for various purposes including drinking. But the water of almost all the sources is polluted due to contamination with flood water. Thus, there is shortage of safe drinking water in the flood affected areas. So, they have to use the polluted water during this period and it leads to various water born diseases.

Creation of Hellish Atmosphere:

Many of the affected people reported that after flood, the rotten and stinking garbage create a hellish atmosphere. In this regard, I have also witnessed many such cases where rotten and stinking garbage are deposited. The offensive smell of those particulates degrades the atmosphere of an area and it leads to an unhygienic living condition.

Conclusion and Recommendations:

In the above discussion, it has been found that flood is leading to environmental degradation. Soil or land, water, air, plants, animals and human lives are being affected and all these effects hamper the societies of the affected areas. Therefore, some protective measures should be taken by the Governmental and Non-governmental agencies. Moreover, some individual efforts may be fruitful to some extent. These are -

1. There should be a Central Plan by the Government to reduced large scale erosion in Assam in general and in the Dibrugarh District in particular. In this regard permanent solid spar at the river bank should be made.
2. Governmental agencies or the departments such as the Flood Control Department, The Brahmaputra Board etc. should think to reduce flood problems in the state in general or in the Dibrugarh District in particular.
3. Through the District Administration, the District Natural Disaster Management Department should take initiatives to provide quick and proper rescue operation to the affected areas.
4. Governmental Departments, Voluntary organizations, NG.O.s should provide adequate reliefs to flood victims and the victims should be advised to take adequate measures towards the polluted water, germs, etc.
5. State Agricultural Department should take initiative to practice alternative agricultural practices such as *rabi* cultivation.
6. The residential houses, granaries, cowshed etc. should built highly to save from flood.

If such efforts are adopted by these Governmental Departments, N.G.O.s, Voluntary organizations, the effects of the floods on environment as well as society can be minimized.

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