

Flood and Its Impact on the Economy of Assam: A Critical Review

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Abstract: Flood is one of the serve disaster affecting the people across the globe. It is one of the major natural hazard of Assam which is occurs in every year. Flood in Assam is characterized by their extremely large magnitude, extensive devastation and high frequency. The flood occurs in Assam caused by two river system i.e. Brahmaputra and Barak. The topographic condition, accelerated rate of deforestation, high intensity of rainfall, explosive growth of population, great amount of land use etc. are the dominant cause of flood in the state. Although it is an age old phenomena in the riverine state of Assam, the extent of damage caused by the flood has increased significantly in recent year. It cause huge destruction and irreparable loss to the state's economy which is largely agrarian. It adversely effects on human life and properties, transport and communication, agricultural activities etc. which lead to huge amount of economic loss of the state in every year. This paper study about the major economic losses of the state due to flood.

Keywords: Flood, Economy, Rainfall, Population, Agriculture

1. Introduction

Flood are the most common and destructive natural hazards causing extensive damage to infrastructure, public and private services, the environment, the economy and devastation to human settlement (Alam et al., 2011). It is a phenomena which is occurs almost all state of India. According to estimation in India more than 40 million hectares of area is flood prone. Floods are recurrent phenomena, which cause huge loss of lives and damage to livelihood system, properties, infrastructure and public utilities (Muzzammil et al., 2011). It was noticed that the flood related damage are change in increasing rate for the last decade. According to an estimation the annual flood damage during the last 10 years was approximately 5000 crore which too much as compared to 2000 crore for last 50 years. Due to recurrent prevalence, the economic loss and life damage cause by flood has put more burden on economy than any other natural disasters (Tripathi, 2015). India is also a country which suffered by many floods and has loss of life and economy in every year. Among the different natural hazards effecting India, the impact of flood to be the most recurring, disastrous and widespread. In recent time the number of people affected by flooding in India by hydrological disasters overwhelming exceeds that by metrological and geophysical disasters (Scheuren et al., 2018). Estimation gave the information that between 1953 and 2011, total 97,551 people were death by flood. The death and damage has occurred mainly in Assam, Bihar, Gujarat, Maharashtra, Chhattisgarh, Andhra Pradesh, Odisha and Tamil Nadu.

Assam has effected by floods in every year. The state had experiences major flood in 1954, 1962, 1966, 1972, 1974, 1978, 1983, 1986, 1988, 1996, 1998, 2000, 2004 and 2012 (source: Assam State Disaster Management authority). Apart from these several high and medium level floods were occurs in Assam in every year which devastating the socio-economic condition of the state. According to CSE, 1992, the maximum flood affected area of Assam is 3.15 million hectors during 1953 to 1984. After 1990 the flood affected

area has been increased and many new area are effected by flood which has not affected before.

2. Methodology and Database

2.1 Study Site

Assam popularly known as the land of Red River and Blue hills is the gateway to the northeastern part of India. The state extending from 22°19' N to 28°16' N latitude and 89°42'E to 96°30'E longitude between the range of Naga and Patkai hills and Eastern Himalaya. With a total area of 78,438 square km, Assam shares its international border with Bhutan and Bangladesh. The state has experiences high rainfall and the mighty river Brahmaputra and its tributaries and lakes provides the region with a unique hydromorphic and aesthetic environment. It is one of the major flood affected area of India, situated northeastern part of the country. Apart from the heavy rainfall that occurs in Assam, the mighty Brahmaputra and its tributaries and Barak and its tributaries swell up during the monsoon on account of rains in the upper reaches of the catchment areas of various river, which include China, Myanmar and Bhutan, besides the neighboring state of Assam i.e. Arunachal Pradesh, Meghalaya and Nagaland (NIDM, India). The river Brahmaputra is originated in Manasarovar Lake in Kailas range of Himalayas and flow throw the three countries namely China, India and Bangladesh for a total length of 2800 km before enter in to the Bay of Bengal. The different major tributaries of the river Brahmaputra such as Dihang, Subanshiri, Dibang, Manas, Dikhow, Burhidihing etc. are associated with the Brahmaputra valley that has always been causing flood in monsoon season. During the monsoon period the failures of embankments at different places have adversely effects thousands of village along with lakh of people. According to the report district of Lakhimpur, Dibrugarh, Dhemaji, Sonitpur, Nagaon, Morigaon, Nalbari and Barpeta are the worst effected by failure of embankment. Another major river of Assam is the Barak River, rises in the state of Nagaland and passes through the Manipur hills of Manipur state over a length of about 400 km. Finally it flow through Cachar plain of Assam over a

length of nearly 130 km to enter the Bangladesh. The major causes of flood in the state are mainly overflowing from high flow in both the rivers, heavy rainfall on the plain, obstruction of natural drainage by roads and railway line and other infrastructure.

2.2 Collection of Data

The data has been collected both primary and secondary sources. The primary data are collected by using different methods such as field observation, questionnaire as well as schedule method. The data related to economic aspect of the study area were collected using survey schedule. A reasonable number of houses were randomly selected near the flood prone are for this purpose. The secondary data have been collected from different sources such as journals, books, report, census data, publication of national and international organization, government publication and other documents available in the print media. This data help to know about the demographic composition, socio-economic status and physical as well as cultural setting.

3. Result and Discussion

Assam is one of the flood affected state of India. The state suffers an average loss of Rs. 200 crore in every year due to floods and the government has declared that nearly 40% of

the state's total land areas are flood prone. According to economic survey, Assam, in 2004 the total annual loss of flood in the state was Rs. 771 crore which is decrease to 200 crore during the periods of 2013-14. The two main river Brahmaputra and Barak with their 48 major tributaries and innumerable sub-tributaries are the reason behind the state recurring problems that also damage roads, bridges, educational institutions, communication systems, houses, crop field, livestock and other facilities which impact on the development of the state. The flood and erosion problems in Assam is quite different from other state so far as extent and duration of flooding and magnitude of erosion is concerned and is probably the most unique in the country (Assam Water Resource Department).

In 2012, Assam was flooded due to significant monsoon rain in India, Bangladesh and Myanmar. 124 people were death because of flooding and landslide, and about six million people were displaced. Floods affected the Kazironga National Park where 540 animals died including 13 rhinos.

The important railway network between Lumding and Badarpur, which is also the lifeline foe Tripura suffered extensive damage die to landslide at various location. The rail track had been washed away at 23 critical locations and one tunnel had collapsed, in addition to the damage to several bridges. According to ASDMA, there are some

Period	Average annual area flooded (million hectares)	Total Cropped	Flooded crop as % of total inundated	Average annual population affected	Affected population per hc of flooded area	Average annual damage (million rupees)	Value of crop lost as % of total damage
1953-1959	1.13	0.10	8.85	8,60,000	0.8	58.6	66
1960-1969	0.75	0.16	21.33	15,20,000	2	75.7	92
1970-1979	0.87	0.18	20.69	20,00,000	2.3	151.8	89
1980-1988	1.43	0.40	28.05	45,50,000	3.2	1,455.70	96
1999-2005	1.07	0.38	35.65	45,86,000	4.3	7,171.70	34

Source: Assam state Water Resource Department

District that have been worst hit namely Morigaon, Sonitpur and Nagaon affecting more than 13,19,260 people. According to Assam State Disaster Management Authority in 2013, flood worstly affected 12 districts of Assam namely Bongaigaon, Chirang, Dhemaji, Golaghat, Jorhat, Kamrup, Karimganj, Lakhimpur, Morigaon, Nagaon, Sivasagar and Tinsukia in which 396 villages were effected and around 7000 hectares of agricultural land were destructed. During this time mainly roads and bridges were washed away cutting all roads link to rest of the state. Similarly, in 2014 nearly 42,03,609 people of 4446 villages across 23 district have been affected and 67 person lost their life. It damaged 3,72,178 hectares of cropped area and 10,91,493 livestock have been affected. 884 roads, 86 RCC bridge and 125 culvert has been damaged due to this floods. Again in 2015, 1.65 million people in 21 districts were effected and 42 people died due to flood. It effected 2100 villages and devastating the crop around an area of 55,22,321 hectares.

In 2016, 22 districts of the state has affected by flood. Among them Morigaon, Jorhat, Dhubri, Borpeta, Lakhimpur, Golaghat and Dhemaji are mostly effected. According to an estimation made by ASDMA, 1.8 million people and 2,13,251.53 hectares crop area affected by flood.

Apart from it, thousands of livestock has been died. Communication network, along with power transmission have been hampered in many region of the state. According to an estimate made by Assam Branch Indian Tea Association, 21-30% crop loss of Assam Tea due to floods. The last year that is 2018, flood disturbed 9 district of Assam and around 1.39 lakh people have been affected. Among them Golaghat, Borpeta, Sivasagar, Charaideo, Lakhimpur, Dhemaji, Darrang are worstly effected.

4. Conclusion

In every year flood emerge as a physical barrier of the economic development of the state. Thus it is necessary to mitigate this phenomenon to continuous growth of the state. Some special emphasis should be given by the district administration to these high risk flood affected village while planning and carrying out developmental objective. District administration should identify the major flood prone area so that the department can take adequate measures for mitigating the impact of same. To minimize the agricultural loss, administration should instruct the concern department to propagate the use of flood tolerant crops in these high risk flood affected villages. They should also pre identify the

raised platforms and shelter place for sheltering the villagers and the livestock for reducing the life and properties.

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