Research Paper Social Sciences

A Study on Flood Disaster in Assam: Threats and Measures

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ABSTRACT

The heavy monsoon rain over catchments of Himalayan and Patkai ranges of hills pausing threats to gently sloping narrow valley of the rivers coupled with high seismic activities in the easily erodible hill slopes along with certain anthropogenic causes create heavy flood in the State of Assam. Every year during the successive waves of floods, most of the areas in the valley of this state remain submerged for a considerable numbers of days causing wide spread damages to crops, public & private properties, disruption of vital communication link within the State, with neighbouring States and also with the rest of the country. This paper mainly deals with, Causes and Impact of flood on socio-economic life, Flood management by district administration, Role of Assam State Disaster Management Authority (ASDMA) with a discussion on Implementation of schemes and their achievements.

KEYWORDS | Flood havoc, Flood Control Measures, Assam

INTRODUCTION:

By virtue of geo-climatic conditions about 60 percent of the landmass of India is prone to flood and it is the most common of all environmental hazards. Flood regularly claims over 20,000 lives per year and adversely affects around 75 million people worldwide (Smith, 1996). The reason lies in the widespread geographical and geomorphological distribution of the tracks of rivers and floodplains and low-lying coasts, together with their longstanding attractions for human settlement. Death and destruction due to flooding continue to be all too common phenomena throughout the world today, affecting millions of people annually, especially in region like Assam. Floods cause about one third of all deaths, one third of all injuries and one third of all damage from natural disasters (Akew, 1999). Some of the recent flood effects in Assam are-

a) Biggest flood reported after 1998 in Assam was in the year 2012 where 21 out of 27 districts of the state was affected,
b) 2013 flood of Assam triggered by heavy rainfall affected 12 districts in which 396 villages were affected and 7000 hectares of agriculture land was destroyed.
c) In 2014 flood, 85 people lost their lives and over 42 lakh people across Assam were affected.

Due to increasing frequency of the disasters and their severe impact on individuals, communities, society, economy and environment in the last few years, the subject of planning for disaster management has received greater attention.

Figure 1: Flood affected Village area, Assam

CAUSES OF FLOOD IN ASSAM:

As identified by Water Resource Department of Assam causes of Flood in Assam are-

A) Drainage congestion-

High stages of the Brahmaputra river over prolonged periods obstruct free discharge of tributaries causing back flow and congestion near outfalls.

- Restricted waterway of road and railway bridges and culverts obstruct the natural flow of water.
- Inadequate countryside drainage through sluices in embankment system particularly during high floods causes prolonged inundation in the countryside.
- Encroachment of natural drainages further aggravates the situation.

B) Excessive Rainfall-

- Excessive rainfall concentrated during the monsoon months from May to October
- Mean annual rainfall varies between 2480 mm in the Brahmaputra valley to 6350 mm in North Eastern Hills.

C) Seismicity and Landslides-

- Brahmaputra Valley is subjected to frequent tectonic activity. The valley falls under Zone V, which is highly risk zone.

Moreover,

- Excessive sediment charge causes rivers to change course frequently.
- Carrying capacity is reduced thereby river either spills its banks or erodes.
- Formation of braided channels and constant shifting of channels & sand shoals.

D) Encroachment of Riverine Areas

- Narrowness of the valley and restricted availability of plain areas for habitation.
- Increase in population and developmental activities leading to encroachment of chars.
- Density of population in plain areas more than 200 persons per sq km.

IMPACT OF FLOOD ON SOCIO-ECONOMIC LIFE:

Located in the north-eastern region of India in the eastern Himalayas (Das 2009), floods affect eastern Brahmaputra basin every year; flash floods are also a normal component of the flood regime. Sand casting, although not a new phe-

nomenon, has become increasingly devastating since the mid 1990s, especially on the northern banks of the eastern Brahmaputra valley. All of these hazards affect all aspects of the land, lives, and livelihoods of communities living in the region to a significant degree. Both floods and flash floods leave people homeless and displaced, destroy crops, damage public property, and damage development infrastructure, spread of water-borne diseases like cholera, dysentery etc. Victims who become destitute suffer from trauma and shock. Moreover, annual cycles of hazards cripple people's resilience and intensify the poverty spiral. Thousands of hectares of fertile land in hundreds of villages with crops, settlements, and infrastructure have been lost to the river due to frequent shifting in the river course and erosion of river banks. Water-induced disasters have serious impact on social, economic, cultural, and political changes affecting the society as a whole.

FLOOD MANAGEMENT BY DISTRICT ADMINISTRATION:

Central Water Commission (CWC), the agency responsible for monitoring of all the rivers in the state. In case of rise in water level or any probability from the catchments area, CWC issues the warning to the SDMA/DDMA (State/ District Disaster Management Authority) for further dissemination through EWS (Early Warning System) established by the DDMA. For each village State Government has appointed a resource person (village head man) responsible for the dissemination of early warning in his/her villages during flood situation. Early warning is disseminated on time for the quick response and evacuation flood waves.

ROLE OF ASSAM STATE DISASTER MANAGEMENT AUTHORITY (ASDMA) AND SOCIAL WORKERS:

Effects of flood show that there is a need to make people bound to develop coping mechanisms which is equally applicable for the entire developing world. CBFM i.e. Community Based Disaster Management, a disaster recovery technique that attends to the important role of community healing and participation in disaster management (Victoria, 2001), with the world`s most comprehensive range of flood defense systems, offers flood protection solutions for every eventuality. Social Worker and ASDMA are playing their role in making the CBFM more effective and structured. The formation of Disaster Management Committees (DMCs) and Disaster Management Teams (DMT) at the Village and GP level (VDMC and GPDMC) is one of the major steps which can give the structured shape of community mechanisms. For development of the region it is important to address the issues relating to proper management of natural resources and minimizing loss of infrastructure and property due to recurring natural disasters like floods, landslides, erosions and earthquakes. The focus of ASDMA today has shifted from post disaster relief to disaster preparedness.

IMPLEMENTATION OF SCHEMES AND ACHIEVEMENT:

The Water Resources Department of Assam has been implementing various schemes for tackling the erosion problem and to prevent inundation of the nearby area under different funding heads-

FMP (Flood Management Programme): For the 11th Five Year Plan the Ministry of Water Resource, Government of India has given financial approval to 73 nos. of schemes (each scheme costing less than 7.50 crore) with benefited area of about 3,12,672 hectare and total cost being 43170.34 lakh. Till date an amount of 21648.18 lakh has been utilized against the schemes.

NEC (North Eastern Council): NEC has taken up two numbers of schemes with benefited area of about 24,500 hectare with an estimated cost of 1993.13 lakh. An amount of 849.866 lakh has been utilized against these schemes.

TABLE-1
Implementation and Achievement of schemes under NEC

Year	benefitted area (in hectare)	Achievement	
		Physial progress (in percentage)	Financial progress (Rs. in lakh)
2009-10	24,500	100	849.866

Source: Office of the Chief Engineer, Water Resource Department

NLCPR (Non-Lapsable Central Pool of Resources): Under NLCPR, a scheme with an estimated cost of 1150.327 lakh was taken up in Dhemaji District and has been completed successfully in an anticipated benefit area of about 10,000 hectare. Amount utilized for this scheme is 982.38 lakh.

TABLE-2
Implementation and Achievement of schemes under NLCPR

Year	Benefitted Area (In Hectare)	Achievement	
		Physical Progress (In Percentage)	Financial Progress (Rs. In Lakh)
2008-09	10,000	99.5% of work completed	983.38

Source: Office of the Chief Engineer, Water Resource Department

SCHEMES PROPOSED UNDER AEGIS OF ASIAN DEVELOPMENT BANK (ADB)

The Government of Assam is negotiated for a loan of 40000.00 lakh from the Asian Development Bank for implementation of an Integrated Flood and Erosion Mitigation Scheme to make fund available in the ratio 90:10 where State will bear 10 percent of the total cost. The project will benefit 110000 hectare with population of about 1 million of the three selected sub-project areas of Dibrugarh, Kaziranga and Palasbari and is proposed to be implemented in 6 years (2010-11 to 2015-16).

ONGOING PROJECTS:

Use of Space Technology for Project Planning-

The Water Resources Department with the technical guidance of the North Eastern Space Application Centre (NESAC) and ARSAC Guwahati has adopted the latest space technology such as the Remote Sensing (RS) and Geographic Information System (GIS) for understanding the flood, erosion and other related problems of various reaches of the Brahmaputra River.

Use of Kiramat Tubular Sand filled Mattress for Bank Protection Work-

Kiramat Tubular Sand Filled Matress is used for bank pitching work at Kamarkuchi area in Nalbari district to prevent erosion of river Pagladia. Similarly, bank protecti on work with geomatress at Desang L/B in Sibsagar district is yielding a satisfactory result. Kiramat is EMAS KIARA's erosion control system suitable for application to drainage, river and estuary bank erosion control and is a practical cost effective solution.

CONCLUSION:

Recurring Flood havoc in Brahmaputra Valley in Assam serves as the major cause of disturbance in socio-economic and environmental set up of entire region. Flood is the central factor behind huge destruction of standing crops, human and cattle life in the state of Assam. While natural hazards cannot be prevented, measures can be initiated for preventing hazards from turning into disasters by strengthening the coping capacities of the communities (Singh R.B. 2006) For development of the flood affected regions it is important to address the issues relating to proper management of natural resources and

minimizing loss of infrastructure and property due to recurring natural disasters. Flood hazard and potential flood risk from all sources need to be identified and considered at the initial stage in the planning process. Developmental processes of the districts preferentially should be located in areas with little or no flood hazard thereby avoiding or minimizing the risk. Identification and mapping of all the resources, alternative routes are required in advance along with the capacity building exercises for all the stakeholders including the community. Implementation of measures and plans needs to be scrutinized at least once in a year with involvement of people from affected areas, their feedback can help to bring new facts into light necessary in bringing changes in plans along with developing new strategies to minimize damage caused by flood.

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