



International Journal of Humanities & Social Science Studies (IJHSSS)
A Peer-Reviewed Bi-monthly Bi-lingual Research Journal
ISSN: 2349-6959 (Online), ISSN: 2349-6711 (Print)
Volume-II, Issue-III, November 2015, Page No. 289-299
Published by Scholar Publications, Karimganj, Assam, India, 788711
Website: <http://www.ijhsss.com>

Natural Disaster, Especially Flood and Its Management in India: With Special Reference to Assam

Firdous Barbhuiya

Medical Social Worker, ICMR Project in NE India (SMCH), Assam, India

Abstract

India is the largest country in the South Asian region and is the second most populous country in the world with a population over 1.25 billion. Indian economy is considered as one of the fastest growing major economies in the world. However, the country is afflicted by the climatic disasters that continue to wreak havoc on its economy. The unique geo-climatic conditions make India more vulnerable to natural disasters. The north-eastern region especially Assam is prone to multiple disasters like- floods, earthquake, landslides, cyclone and occasional drought. The paper presents an overview of multiple water related disasters viz. flood, soil erosion etc. in India particularly in Assam and the various causes and consequences of flood in the region. Moreover, the world communities now stand committed to reduce the consequences of disasters. The Government of India along with the State Governments has initiated various measures and approaches to mitigate the natural disasters especially flood. This paper is an attempt to highlight the steps initiated to mitigate natural disasters. Besides, communities are the first to respond to any kind of disaster. At present, there is a paradigm shift from reactive measures to proactive measures of disaster management. The communities and their response play a vital role in minimizing the impact of disasters. Thus, here an attempt is made to analyse the community based disaster management and proactive strategies of the disaster management authorities and the community itself.

Key Words: *Disaster, Flood, Disaster management, Flood management, Community based disaster management (CBDM), Assam.*

Introduction: South Asia is the home of more than world's one fifth population. India is the largest country in the South Asian region and is the second most populous country in the world with a population over 1.25 billion. Indian economy is considered as one of the fastest growing major economies of the world. However, the country is afflicted by the climatic disasters that continue to wreak havoc on its economy. It is estimated that between 2 to 16 percent of Gross Domestic Product (GDP) of different South Asian countries get wasted every year due to natural disasters.

India has been vulnerable to a large number of natural as well as man-made disasters on account of its unique geo-climatic and socio-economic conditions. Out of 35 States and Union Territories in the country, 27 are disaster prone. In India, 59% of its areas are vulnerable to one or more hazards. The north-eastern region, especially Assam is prone to various natural disasters like earthquake, perennial floods, landslides, cyclone and occasional drought. Floods are most common and widespread of all natural disasters. India is one of the highly flood prone countries in the world.

Around 40 million hectares of land in India are prone to floods. Along with other important causes, climate change is considered to be a major factor in riverine, pluvial and coastal flooding. There has been an alarming effect of global warming on the climate of India. India is already a disaster prone area, with most disasters are being water related. The process of global warming has led to an increase in the frequency and intensity of these climatic disasters.

Assam is situated in a high rainfall area, where about 60-70% of the monsoon rain received within a span of 3 to 4 months – May to August. In Assam, $\frac{3}{4}$ of the total number of districts remain under flood water every year from June to September. The two rivers Brahmaputra and Barak with their tributaries submerge the valley every year. The various human activities on nature are also considered as the triggering factor to natural disasters including flood. Though it is not possible to control the flood disaster totally, but by adopting suitable structural and non-structural measures, the flood damages can be minimised. The world communities now stand committed to reduce the consequences of disasters. The government of India along with the state governments have initiated various measures and approaches to mitigate the natural disasters especially flood. Besides, there is a shift from reactive to proactive approaches and emphasis is laid on community based disaster preparedness and management.

Natural Disaster, Particularly Flood in India: A Special Reference to Assam: Flooding is a major natural hazard in India that inflicts sufferings to millions specially poor and vulnerable sections of the society. India is affected by severe floods on an average, every third year. Out of the total geographical area of 329 million hectares more than 40 million hectares is prone to floods. According to National Flood Commission, the flood affected area has gone up to 49.815 million ha by 2010. On an average, every year 8 million hectares of land is affected, which results in a loss of more than 1600 lives along with damages of crops and other public utilities. It is calculated that the annual damages to crops, infrastructure and public utilities by flood is more than 1800 crores (GOI, 2011). Besides, the monetary value of the flood damage is showing an increasing trend. The weaker and vulnerable sections of the society are worst affected by all kinds of disaster including flood. Thus, the nation is losing a good percentage of its GDP on disasters, which is creating hindrance to the progress of the economy.

The north-eastern region of India is badly affected by multiple natural disasters. Assam is one of the most vulnerable and flood distressed states of India. It is called the gateway to the north-east India, and is also known as the land of Red River and blue hills. Moreover, Assam is one of the most seismically active region in the world. Apart from this, various other disasters like river bank erosion, landslides, drainage congestion, etc. strike the region because of frequent flood. The Brahmaputra and Barak along with their tributaries cover Assam and other north-eastern states. The maximum rain fall in India is recorded in the Brahmaputra valley, about 2500 millimetres (mm) and Assam experiences incessant rainfall during the monsoon season (Pal, Singh and Walia, 2013). The National Flood Commission had estimated that 31.60 lakh hectares land of Assam is vulnerable to floods, against 335.16 lakh hectares for whole India. Assam thus accounts for 9.4 percent of total flood prone area of the country. Due to floods, Assam suffers a loss of Rs. 3,100 crores in the past five decades. According to a report of National Flood Commission, out of 31 lakh hectares of vulnerable land, only 16 lakhs could be protected from floods in the last 53 years. Due to perennial flood, the state has not been able to achieve the desired progress and prosperity despite having vast natural resources.

According to Assam State Disaster Management Authority (ASDMA) in September, 2012 flood

situation in 20 districts of Assam worsened to such an extent that 29,14,008 lakh people in 3,354 villages have been affected by flood and caused extensive damage to cropland, infrastructure including roads and bridges. About five and half lakh people took shelter in relief camps or in the raised platforms. At present also floods have struck Assam and the situation is critical. As per the report released by ASDMA, 62 people have lost their lives and over 16.29 lakhs were hit by the flood. Moreover rising of Brahmaputra River and its tributaries have flooded 21 districts of the State. The report also added that over 1.62 lakhs people have been displaced due to the flood and forced them to take shelter in 178 relief camps (The Assam Tribune, September 6, 2015). The flood has not receded yet and during the course of time the figure may rise.

The Brahmaputra Valley in Assam is one of the most hazard-prone regions of the country, with more than 40% of its land (3.2 million hectares) susceptible to flood damage. The water yield of Brahmaputra basin is among the highest in the world. The recurrence of flood and erosion is the burning problem of Assam. The Brahmaputra river region consists of the rivers Brahmaputra and Barak and their tributaries. The catchments of these rivers receive very heavy rainfall ranging from 110 cm. to 635 cm. a year which occurs mostly during the months of May / June to September. Eighty percent of the precipitation takes place in the period of monsoon. As a result, floods in this region are severe and quite frequent. Further, the rocks of the hills, where these rivers originate are fragile and susceptible to erosion thereby causing exceptionally high silt charge in the rivers. These, coupled with inadequate carrying capacity of the rivers are responsible for causing floods and other problems. In addition, the region is subjected to severe and frequent earthquakes which cause numerous landslides in the hills and upset the regime of the rivers. That's how, the two rivers Brahmaputra and Barak with their tributaries drain the valley and bring untold miseries to the people. Besides, it is evident from various indicators and publications of Government agencies that the nature and impacts of floods have become far more catastrophic and wide-ranging and also the flood prone area in India including Assam has been increasing dramatically.

Causes and Consequences of Flood

Causes of flood in Assam: There are several natural and human factors responsible for recurrent flood in Assam. The unique geographic setting of the region, high potential monsoon rainfall, excessive precipitation, inadequate drainage capacity, massive deforestation, land use changes, excessive siltation, accelerated rate of basin erosion, seismic activity, high population growth especially in flood prone belt, and emissions of greenhouse gases causing global climate change are some of the important factors which causes flood in Assam. In addition, some other causes of flood are – filling up of low lying areas by construction of buildings, temporary flood control measures and reckless urban development etc.

- (1) The maximum rainfall in India is recorded in Brahmaputra valley about 2500 mm. Near about 80% of the shower takes place during the monsoon months, from June to September. Thus heavy rainfall within the short period of time is the prime cause of flood in the region (Mukherjee and Prasad, 2014).
- (2) The Brahmaputra is one of the major sediment transporting rivers of the world. Its annual sediment load is estimated about 397 million tonnes. The river has the highest sediment yield next to Yellow River in China. Its tributaries also carry high sediment load, which is more than 1,000 tonnes per square kilometres per year (Mukherjee and Prasad, 2014). The high sediment load in the river leads to reduction in the carrying capacity of river and it results in overtopping of banks and inundation of surrounding land, causing flood.

- (3) Deforestation is one of the important causes of flood in Assam. Continued deforestation has led to massive amount of top soil coming down during rains. The soil flows into river and the river water collects a tremendous amount of silt and sediment which raises the level of the river beds. That make impossible for the main channel to cope with the vast volume of water received during the rains. When trees are cut down their roots can no longer bind the soil and soil erosion occurs.
- (4) The rivers in the region flows towards their downstream. Therefore, excessive rain and snowmelt water flows down. This high rate of water deposited together with the limited width of the valley and gently flattened that lead to tremendous drainage congestion and causes flood in the plains. The river Brahmaputra itself occupies a width of six to ten km. at most places. Both the Brahmaputra and Barak plains are surrounded by hills and mountains. Whenever there is rainfall in the hills and mountains water rushes down to the limited plains from extensive catchment areas, causing flood in the plains.
- (5) Encroachment on the riverine areas is another major cause of aggravating flood problem in the Brahmaputra valley. Encroachment of large number of wetlands by migrants that serve as natural reservoirs like beels, swamps and marshes has also reduced the retention capacity of drainage system.
- (6) Snowmelt is another cause of flood. However, snowmelt is a gradual process and does not always cause floods. But when glaciers holding large quantity of bounded water melt suddenly, that causes severe flooding. The rivers originating from the Himalayas in the north are fed by snowmelt from glaciers.
- (7) Human activities like thoughtless development and improperly planned various infrastructure in the catchment areas such as roads, railways, embankments, settlement areas and land use policies obstruct the natural drainage in the catchment areas resulting in flood.

Consequences of flood:

Furthermore the various causes of flood results in significant consequences in the affected area and its living being. Impacts of flood in NE India particularly Assam encompass the following:

- (a) Food shortage occurs because of loss of standing crops and stored food grains are destroyed during flood. This also results enormous loss for the farmers.
- (b) Housing one of the basic needs in a civilised society. Villages that come in the midst of the flood course, suffer the maximum damage.
- (c) Flood endangers the lives of humans and other species. Livestock remains as the supplementary source of income for the rural population. As a consequence of flood, a huge number of livestock succumb to the fury of floods.
- (d) Drinking water and sanitation also become major problem during and aftermath of floods. Drinking water sources get mixed with mud, as a result, the flood affected area faces acute safe drinking water crisis. Moreover, changing landscape often poses sanitary problems, especially for women and adolescent girls. Open defecation too becomes a challenge in such circumstances.
- (e) Lack of adequate food, safe drinking water and sanitation facilities coupled with stressed living environment often results in psychological and physiological infirmity. The problems get further aggravated due to lack of financial capability to address the problem.
- (f) Damaged canal network and sand cast borings results in total destruction of irrigation facilities in the flood affected areas. However, loss of agricultural equipment, seeds and fertilizers during floods worsen the state of agriculture (Mukherjee and Prasad, 2014).

- (g) The community infrastructure facilities (roads, transports, electricity, drainage, schools, health centres, community centre, public drinking water sources and community sanitation units) are destroyed during flood.
- (h) Floods also give rise to other serious problems like soil erosion, landslides, drainage congestion etc. In addition, disasters may outbreak epidemics. Disasters can increase the transmission of communicable and infectious diseases.

Thus, flood often damages property and endangers the lives of humans and other living beings. All these causes and consequences coupled together to affect the public health of the flood hit area. Flood disrupts the normal life and often become obstacle in the path of progress and also destroy a good percentage of the GDP.

Major Steps Initiated to Mitigate Natural Disaster especially Flood: The geo-climatic conditions as well as high degree of socio-economic vulnerability make India one of the most disaster prone countries in the world. The country is mostly affected by water related disasters. India, particularly Assam has always been plagued by the recurrent and devastating floods. The history of mitigating steps taken by the Indian government can be traced back to 1953, when the unprecedented floods struck India, and at that time the first national policy in this regard was formulated. Following it, several committees, policies and programmes were constituted in the country. Most notable of them are:

1. **Policy Statement – 1954:** In 1954, after the unprecedented flood, the Ministry of Planning, Irrigation and Power formulated the Policy Statement with the objective to curb and confine the flood to a maximum extent and to take all such measures that is possible to save lives from the harmful and devastating impact of flood.
2. **High Level Committee on Floods – 1957 & Policy Statement on Floods – 1958:** A High Level Committee on floods submitted its report in December, 1957 which was considered by the Central Flood Control Board. Some of the important recommendations are
 - Importance on measures mainly which require small scale investments, viz. flood plain zoning, flood forecasting and warning etc.
 - Priorities for soil conservation works relating to flood control should be as catchment areas of multi-purpose dams, Himalayas with their foothills etc.
 - In general, embankments are satisfactory means of flood protection when properly designed, executed and maintained, but a suitable combination of this method with other methods such as storage dams, detention basins, etc. is usually more efficient and should be adopted as resources permit.

Again, another Policy Statement of 1958 underlines that substantial diminution of flood related distress is possible.

3. **National Flood Commission, 1980:** National Flood Commission released its report in 1980 and recommended a long list of activities. Some of the important recommendations are:
 - Data collection for providing information on their long term performance and their impact on various socio-economic factors.
 - Legislation and enforcement by States to prevent unauthorized river bed cultivation and encroachments into drains etc.

- Reporting of flood damage for protected and unprotected areas situated between the embankments.
 - Legislation for flood management.
 - A comprehensive dynamic and flexible approach to the problems of flood as a part of a comprehensive approach for the utilization of land and water resources.
4. **National Water Policy (1987/ 2002/ 2012):** National Water Policy, 1987 was adopted by National Water Resource Council, which emphasised that adequate flood cushion should be provided in water storage projects to facilitate better flood management. While it recognised that physical flood protection works like embankments and dykes will continue to be necessary”, it laid emphasis on adoption of non-structural measures for minimization of losses, such as flood forecasting and warning and flood plain zoning etc.

National Water Policy of 2002 guides to have a master plan for flood control and management for each flood prone basin. It also recommends that there should be strict regulation of settlements and economic activity in the flood plain zones along with flood proofing, to minimize the loss of life and property on account of floods.

National Water Policy of 2012 gave emphasis to treat water as economic good and there is a need to promote its conservation and efficient use. The objective of the National Water Policy is to take cognizance of the existing situation, to propose a framework for creation of a system of laws and institutions and for a plan of action with a unified national perspective.

In India, a two tier system of flood management exists as briefly described below:

State Level Mechanism – the State level mechanism includes the Water Resources Departments, State Technical Advisory Committee and Flood Control Board. In some States, the Irrigation Departments and Public Works Departments also look after flood matters.

Central Government Mechanism – The Union Government has set up following organizations and various expert committees to enable the State Governments in addressing flood problems in a comprehensive manner:

Brahmaputra Board: The Government of India set up Brahmaputra Board under Brahmaputra Board Act, 1980 under the Ministry of Water Resources. It is entrusted with the responsibility to do survey and investigations in the Brahmaputra and Barak valley. It prepares master plan to control floods, bank erosion and improvement of drainage system. The Board also works for standard specifications for construction, operation and maintenance of dams and other projects.

Ganga Flood Control Commission: It was set up by the Government of India in 1972 for preparation of comprehensive plan of flood control for Ganga basin and also to work for the proper implementation of the flood management schemes and programmes.

However, In India, earlier national five year plans did not mention about disaster management. The tenth five year plan (2002-2007) for the first time had a detailed chapter entitled Disaster Management. Disaster mitigation and prevention were adopted as essential component of development strategy. During the eleventh five year plan (2007-2012) disaster management has emerged as a high priority to the country. Moreover, the Govt. of Assam has constituted the Assam Integrated Flood and Riverbank Erosion Risk Management Agency to execute the Assam Integrated Flood and Riverbank Erosion Risk Management Project. This project aims to promote economic growth and poverty reduction by enhancing the security against the flood and riverbank erosion

damages across the State.

That's how, Govt. of India together with the State Governments have worked on flood management and control. All the flood management measures fall broadly into two categories:

- *Structural*: involving construction of embankments, dams, reservoirs, detention basins, inter-basin transfer of water, rising of villages etc.
- *Non-structural*: including flood plain zoning, watershed management, flood forecasting, disaster mitigation and preparedness etc. (Sinha, 2008).

In recent times, the natural disasters also received global concern. In 1989, the UN General Assembly declared 1990-2000 as the International Decade for Natural Disaster Reduction (IDNDR) with the objective to reduce the loss of lives and property and restrict socio-economic damage through concerted international action. Moreover, flood continues to pose significant and complex challenges throughout the world in both developing and developed countries. International community makes an effort to cope with the situation. The concept of Integrated Flood Management (IFM) has been evolved which is within the broader concept of Integrated Water Resources Management (IWRM). Furthermore, in May, 1994, the IDNDR workshop held in Yokohama prepared a plan of action for disaster reduction called the Yokohama Strategy. It gave guidelines for Natural Disaster Prevention, Preparedness and Mitigation Shifting the focus and emphasis from disaster management to disaster prevention and preparedness. Thus disaster management has shifted its focus from response centric approach to prevention and preparedness approach.

Disaster Management Act, 2005: A permanent set up of disaster management began in India in the decade of 1990s with the establishment of Disaster Management Cell under the Ministry of Agriculture, which was later shifted to the Ministry of Home Affairs in 2002. On December 2005, the Disaster Management Act was enacted which was a landmark step towards disaster management in India. The systematic and institutional structure for disaster management in India was initiated following the implementation of Disaster Management Act, 2005. The Act seeks constitution of National Disaster Management Authority (NDMA), State Disaster Management Authority (SDMA) and District Disaster Management Authority (DDMA) at national, states and district levels respectively. It also envisages development of National Institute of Disaster Management as centre of excellence. The National Disaster Response Force (NDRF) is to be established for effective and prompt response. The NDRF will be multi-disciplinary, multi-skilled high-tech force for all types of disasters. Thus, a hierarchical structure of disaster management evolved in India.

The NDMA has the responsibility of laying down the policies, plans and guidelines for effective disaster management. NDMA is also responsible for coordinating the enforcement and implementation of the policies and plans for disaster management. SDMA is constituted in all the States and Union Territories which works alike the NDMA within the jurisdiction of state. DDMA works in coordination with the district administration and local bodies – panchayat, municipalities for the implementation of disaster management strategies. That's how, disaster management in India is functioning in a systematic and institutional mechanism. Moreover, for each of the disaster, there is a nodal ministry which works out the key responsibilities. Thus, for flood mitigation and management, Ministry of Water Resources is the key and nodal ministry.

Community Based Disaster/ Flood Management & Various Approaches: The increasing frequency and severity of disasters and their impact on individual, communities, society, environment and other economic aspects have rapidly boosted the scope of Community Based

Disaster Management (CBDM). For any kind of disaster, community is the first to respond to it. The effects of all kinds of disaster including flood varies from community to community, and community preparedness and response plays a pivotal role here. In this respect, Geneva based World Meteorological Organization (WMO) has taken initiative in exploring a new approach.

Disaster management is a series of activities that include risk assessment, preventive measures, preparedness to cope with the future disasters, emergency response, recovery and reconstruction. Good development and community preparedness can reduce the impact of disaster. Over the past couple of years, the Government of India has brought a paradigm shift in the approach to disaster management. The Ministry of Home Affairs, Govt. of India has taken initiatives to work with the local people at the local level. It also works with NGOs to prepare people for different climatic disasters by mobilizing various resources.

ASDMA focuses on five mission areas of CBDM, which basically cover three phases of disaster– before, during and after the disaster.

- i. Preparedness
- ii. Prevention
- iii. Mitigation
- iv. Response
- v. Recovery and rehabilitation

There is a paradigm shift from relief of Government to preparedness at community level. The change in approach from post-disaster emergency response to proactive pre-disaster interventions has laid emphasis on measures like prevention, preparedness and mitigation.

Actions undertaken in the pre-disaster phase (i.e. *before* flood) are

- a) Raise community awareness about flooding and flood protection measures.
 - Include flood awareness and preparedness in school programmes.
 - Publicize flood risk areas, warning signs and evacuation plans.
 - Collect the local history of flooding and mark areas mostly affected.
- b) Conduct risk assessment
 - Prepare seasonal calendars for predicting the climatic disasters and risk areas. Flood maps identify risks to individuals, enable preparation of emergency response plans, and determine where flood protection measures must be taken. They are also great tools for community education and awareness.
 - Install sign posts marking possible flooding levels in the community.
 - Prepare community plans of action that explain what to do in case of flooding.
- c) Undertake structural measures
 - Build dams, reservoirs, embankments, dikes, detention basins, floods channels and flood walls, which help to reduce flood.
 - Protect well water from contamination, as flood waters often carry toxic materials, including raw sewage, animal waste, oil, and chemicals etc.
- d) Undertake non-structural measures

- Have a good early warning system in place. Local and regional weather information can be used to let the public know when flood may hit. Steps can be taken to increase protection with advance warning system, such as placing emergency response teams on high alert and preparing emergency shelters.
 - Educate people about the causes, risks and warning signs of floods.
- e) Land planning
- Prevent construction of building and unplanned development on flood-prone lands. Use land along rivers for parks or ecological reserves.
 - Protect wetlands and flood plains.
 - Maintain natural vegetation and forest cover in wetlands and flood plains. Trees help the soil to hold water.
 - Restore and protect degraded wetlands and flood plains. These areas can store large amount of flood water.
 - Make room for rivers to flow naturally. Creating more space for rivers, flood plains, and wetlands which will be a major contribution to flood prevention and protection.
 - Some forms of legislation can be regarded as preventive step, e.g. Land use regulations to prevent unplanned development of infrastructure on vulnerable sites, such as the disaster prone areas of a flood plain.
- f) Increase building resilience
- Elevate the homes, schools and public buildings above flood level. Ensure that important appliances, such as heating and electrical systems, are raised high above flood level.
 - Use water-resistant building materials, such as concrete or ceramic, in areas where frequent flooding occurs.

Actions undertaken *during* the flood situation

- a. Evacuation: It should be based on a pre-flooding plan, which includes provision for elderly, young and disabled with adequate water, sanitation, food and lodging facilities.
- b. Plan for post-flooding damage assessments.
- c. Work with schools, enterprises, government and non-governmental organizations to ensure that normal activities can continue as much as possible during the flood.
- d. Finding work even temporary may be very important for some of the evacuees.
- e. Continue schooling and social and commercial activities such as markets, are important for evacuees to provide a sense of normalcy.

Activities undertaken *aftermath* of the flood

- A. Conduct and publicize impact assessments.
- B. Develop recovery plans which ensure people can quickly rebuild their homes and other required infrastructure.
- C. Assist people in returning to their homes and communities as quickly as possible, but not so soon that it is dangerous.
- D. Ensure flood victims have fair and easy access to information on relief and recovery services and assistance which may be available.

- E. Provide appropriate assistance to the elderly and other disadvantaged groups who need additional assistance.
- F. Draw lessons from the impact of floods and enhance measures to prevent or mitigate these impacts in the future.

Thus, it is by community preparatory methods that the most significant of flood damage and loss of potential can be made. The strong preparedness and more effective coping strategies help the communities to survive from huge loss of disaster.

Conclusion: Disaster is an event or series of events, which gives rise to casualties and damages of properties, infrastructure, environment, essential services and means of livelihood on such a scale which is beyond the normal capacity to cope with. India is the country which is mostly affected by water related disasters because of its geo-climatic conditions. North-eastern states are vulnerable to multiple hazards, among them flooding is the frequently occurring problem of Assam. Flood hit a large number of people every year in the state that results huge loss of lives and properties. Flood triggers some other serious problems like river bank erosion, landslides, and epidemics etc. which makes the life more miserable.

To attain the state of sustainable development, it is very much crucial for a nation or state to manage disasters accurately by minimizing the maximum damage. Thus, it is imperative to address the issues relating to proper management of natural resources and reducing loss of lives, infrastructure and property due to recurring natural disasters like floods, landslides, erosions and earthquakes etc. Disaster management requires multi-disciplinary and proactive approach for effective response. The focus of disaster management today has shifted from post disaster relief to disaster preparedness. The GOI-UNDP programme on Disaster Risk Management also did a lot on these lines and established the base for disaster preparedness and mitigation. It is true that there have been a lot of progress in disaster management strategies than the earlier, but it is not up to the mark and adequate enough. At present also a huge number of people are affected by flood every year and the severity of the disaster is increasing day by day. We need more investments in disaster management and there is a need of more improvisation in the said field.

Community is the focal point of all kinds of disaster. The local community is the main centre of community based disaster preparedness programme because it is the community which is adversely affected by a disaster and more importantly, it is the first responder to the event. That's why; the Govt. is putting emphasis on preparedness at community level. The various prevention, mitigation, preparedness and recovery measures outlined under the basic three phases (pre, during and post) of disasters mentioned above are aimed at building up the capabilities of the communities, voluntary organizations and government functionaries at all levels. The ultimate goal is to make the society a safer place. Thus, there is a need of integrated and multi-dimensional approach through collective efforts, synergy of national capacities and people's participation.

References:

1. Bronstert Axel. (2003). Floods and Climate Change: Interactions and Impacts. *Risk Analysis*, 23(3).
2. GOI (August, 2004). *Disaster Management in India: A Status Report*. Nation Disaster Management Division, Ministry of Home Affairs, Govt. of India.
3. GOI (2011). *Disaster Management in India*. Ministry of Home Affairs, Govt. of India.

4. Department of Water Resources. *Flood Management Measure and Future Vision in Assam*. Govt. of Assam, Dispur, Assam.
5. Govt. of Assam. (2010-11). *Flood and Flood Control Measures*. Economic Survey, Assam.
6. International Federation of Red Cross and Red Crescent Societies (July, 2012). *Disaster Relief Emergency Fund (DREF) India: Assam Floods*.
7. IIT, *Management of Water Resource*, IIT, Kharagpur, Version 2.
8. Mukherjee, N. & Prasad Eklavya. (2014). *Situation Analysis on Flood and Flood Management*, IUCN, International Union for Conservation of Nature.
9. Pal Indrajit, Singh Siddharth & Walia Abhinar. (October, 2013). Flood Management in Assam, India: A Review of Brahmaputra Floods, 2012. *International Journal of Scientific and Research Publications*, 3(10).
10. Park, K. (2009). *Preventive and Social Medicine*. Jabalpur, India: M/s Banarsidas Bhanot.
11. Saikia Mondira. (January, 2013). The Flood in Golaghat District: Causes, Impacts and its Remedies. *IJCAES Special Issue on Basic, Applied and Social Sciences*, III.
12. WHO. (2002). *Floods: Climate Change and Adaptation Strategies for Human Health*. WHO Regional Office.
13. Yadav, N.P. & Gangabhushan M. (January, 2013). A Study on the Role of Assam State Disaster Management Authority (ASDMA) and Social Worker: Some aspects of Community Based Flood Management in Assam. *The Echo: A Journal of Humanities and Social Sciences*, I (III).