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Flood Management in silchar : Challenges and Options

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Abstract

Most of the flood-prone and flood affected areas of the country are located in the northern parts mainly in the Ganga plains of the states of Uttar Pradesh, Bihar and West Bengal. The flood hazards and disasters in Uttar Pradesh, Bihar and Andhra Pradesh combined together account for 62 percent of the total damages caused by flood hazards in the country.

The delta areas of the Mahanadi, Krishna, Godavari, Cauvery rivers etc. are flooded almost every year.

It may be pointed out that there is constant increase in the frequency, intensity, spatial coverage (dimensions) and magnitude of damages of floods in India every year because of a bunch of causative factors such as rapid rate of deforestation in the source catchments of major rivers and their tributaries and consequent accelerated rate of soil erosion, increase in sediment load of rivers, siltation and rise of river beds and marked reduction in the water accommodating capacity of the river valleys; increasing urbanization, mushroom growth of settlements in the floodplains and even in the flattened (due to alleviation) valleys; encroachment of agricultural practices upon the valley sides and even down to the channels; construction of bridges, embankments and dikes etc.

Keywords : Flood, Problem, Valley, Region, Deforestation.

Introduction

Flood is one of the natural calamities which affects the whole society and the problem of flood is different from area to area, region to region and time to time. Generally we face the problem of flood at the time of rainy season but rainy season is not only the reason behind flood. Tsunami, coastal areas and many other reasons are there. But one thing is common in flood that flood always comes where there is a river or a coastal area or a place which is surrounded by water. Whether it is the city, a town, a village or any area, if they face the problem of flood they lose their property, human life, animal life and many losses. Some diseases also came only because of this flood. Whenever there is a flood, there is always a problem of diseases like Malaria, dengue and many more. At the time of flood, people also face the problem of electricity and the problem of drinking water. Flood is a natural calamity. Humans cannot stop it but we the human being can work accordingly and control this problem of flood. Besides river floods which involve extensive areas, there are localized floods such as urban floods, coastal floods, etc. The urban or city floods are in fact the result of water logging caused by extremely heavy rains (more than 250 mm within 24 hours). Such water logged floods occurred in Mumbai in the last week of July, 2005 when more than 944.2 mm of rainfall was recorded within 24 hours on July 26. Similar situation developed in Mumbai in the 1st week of July, 2006 when heavy rains occurred in couple of days (since July 2 to 6, 2006). The 2015 Chennai flood is another burning example. Coastal floods occur due to strong storm surges when a few meters high tidal waves transgress into low coastal zones but such situation does not persist for longer duration but great damage is done to human health and wealth.

The following causes may be held responsible for devastating floods of alluvial rivers. It may be pointed out that these factors should never be considered separately because it is the cumulative effects of several factors which ultimately cause severe floods.

1. heavy incessant rainfall,
2. spell of extremely heavy rainfall,
3. highly sinuous and meandering courses of rivers,
4. large-scale deforestation,
5. increased urbanization,
6. faulty agricultural practices,
7. blocking of natural flow of water etc.

Rahul Srivastava
Associate Professor
& Head,
Dept. of Economics,
St. Andrew's
College, Gorakhpur,
U.P., India

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Objective of the Study The Objectives of this Study are -

1. To identify and understand current and future flood risks and impacts they have on people and property.
2. To develop criteria to agree what is intolerable flood risks.
3. To develop and implement a program to eliminate or reduce intolerable risks.
4. To manage residual risks through improved community awareness, planning and preparedness.

Objective-1: Completing The Knowledge Base

Flood Mapping to identify risks Mapping throughout the Cachar region is currently incomplete and some information has not been included in planning schemes or made easily accessible to the public. In particular, mapping is not complete for many rural waterways for flooding. The identification and accurate mapping of flood risk areas is considered to be a critical foundation for development of sound drainage and flood management activities. A detailed understanding of flood affected areas gained through mapping is important to the development of the following aspects of flood management planning and response:-

Land Use Planning Policy and Controls These controls protect the environmental values of flood plains and prevent current flood risks increasing through inappropriate development. They also ensure that proposals that may be affected by flooding or have an adverse impact on existing flood regimes are referred to Floodplain management agencies.

Emergency Planning and Preparation Mapping identifies the areas at risk so that agencies can implement flood warnings, plan flood evacuation, relief and recovery strategies, prioritize Community information and awareness program and develop warning arrangement.

Mitigating priorities Mapping identifies safety risks and Damage potential, and assists in the development of risk reduction targets, delivery programs and works priorities. In addition to knowing where flood may occur, an understanding of flood depth, velocity, duration and rate of rise is also required to understand flood risk. Such information is usually collected in the development of flood studies that map flood extent.

Challenges Flood modeling and mapping is an expensive and specialized activity. Additional flood mapping needs to be in a format and to a standard that is consistent with the existing data and suitable for the assessment of flood mitigation options and land use planning decisions. In addition, issues associated with the collection and public release of such information, particularly through the planning scheme amendment process need to be carefully managed.

Understanding Social impacts Studies in emergency response and recovery management have emphasized the importance of extending investigations into the impact of natural disasters to include psycho-social effects on individuals and the wider community. Understanding the relative vulnerability of different communities affected by flooding can also assist in the benefit cost analysis of flood mitigation works. It can also assist in the planning and development of education and awareness, flood warning response and recovery programs. Flood Management Programs which do not seek and utilize such knowledge could fail to meet community need, lead to inappropriate targeting of resources and increase community anxiety of an already traumatic event.

Challenges Floods affect people in different ways depending upon their health, well being, economic status and other personal circumstances i.e. their vulnerability or resilience to flooding. Determining the impact of an emergency on a community is a complex task. There is currently no agreed process or tool for accessing flood damage and intangible social impacts of flooding that can be used to determine risk acceptability/tolerability threshold.

Objective 2: Potential Long Term Future Pressures on Existing Drainage System

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Development established areas in Increased number of dwellings in an area may result in increased hard surface coverage depending on the design of the development and existing conditions.

If this occurs, an increase in runoff volumes and an increase in peak flows can be expected. Unless managed, this increased runoff could result in reduction in drainage infrastructure performance in some areas. To a lesser degree, the replacement of older and smaller structures by large new dwellings will also have a effect even when no increase in number of dwellings occurs.

In the areas where infrastructure cannot be upgraded, a more flexible range of Activities may be appropriate, such as:-

1. Education and awareness programs
2. Flood warning systems
3. Revision of planning policies and control
4. Water sensitive design and development of the area
5. Storm water capture and reuse.

Challenges It is difficult to plan and fund infrastructure to cater for the impacts of dispersed infill development as the exact timing and location of such development is not always known. There are some areas where it is not possible, practical or affordable to undertake works to accommodate additional runoff and a variety of flood management measures will be required to manage flood risks.

Climate Change The management of the impacts of climate change resulting from global warming is a worldwide challenge.

The change in rainfall pattern is more likely to result in an increase in overland flows rather than reverie flooding because the short, sharp nature of these intense storms results in sudden large volumes of runoff water, Side entry pity struggle to cope with these volumes of water, and overland flows results. In areas where side entry pits struggle to cope with these volumes of water, and overland flows results. In areas where side entry pits can cope with the volume of water the pipes fill quickly, again leading to overland flows.

Another predicted impact of global warming is a rise in sea levels resulting from a number of factors such thermal expansion of sea mass and melting ice shelves.

Challenges Knowledge regarding climate change is constantly changing. Ongoing strategic research and understanding the impacts of climate change on drainage system I a state and national issue that agents flood management agencies at all levels.

The implications of changed weather patterns on the intensity and duration of storms in the region are not well understood. We need to undertake sensitivity analysis of the impacts of different rainfall intensities on various sized catchments to determine which area will be most sensitive to the possible impacts of climate change.

Objective 3: An Agreed Approach To Managing Existing Regional Flood Problems

An Agreed Approach To Managing Existing Regional Flood Problems Overland flows, or flash flooding, are by far the most common cause of this type of flooding. Most people living in those areas are unaware of the flood risk.

In most cases, flash flood events occur with little warning, last only an hour or less, are relatively shallow, slow moving and pose little risk of drowning. However there are some areas where the combination of the water depth and velocity pose threats to human safety.

A number of measures are used by agencies to manage existing flood risks in the region. However, it is clear that there is significant existing exposure to flood risks in the region and all of these risks cannot be managed in the same way.

In many cases, reducing risk using structural measures is too costly, not physically practicable or necessary. In other cases, risks may be still unacceptable even with actions to provide warnings, emergency response and recovery arrangements.

Challenges Determining an acceptable balance between structural works and non structural measures, and levels of protection within an agreed risk management framework that maximizes community wellbeing and sustainability is a key challenge for flood management agencies undertaken research, consult and agree with stakeholders around what is intolerable flood risk so that we can determine a safe and acceptable level of flood protection for both general and particular situations.

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Socio-Psychological dimensions of Flood Management

A specific flood in a reach can result in flood damage depending on the position of human activities the flood plain, the type of human activities in the flood plain and the structural and nonstructural flood control, There is what we call primary flood damage and they are categorized into direct and indirect losses. The direct losses include municipal property and public lands, residential and other buildings in urban areas, moveable equipment in buildings in urban areas, property of other public authorities, agricultural land, crops and harvest, livestock and other animals, fixed improvements and other equipment on farms. The indirect losses are in productive manpower, returns from resources like agricultural land and delays in transportation and other services. Flood disasters may be political or economical events which influence the hierarchical organization upsetting economics balances. They cause social disorganization and massive migration as social events. They may produce trauma, fear, stress and shock as psychological events.

The social impact of Flooding

The social impact has the consequence of altering the way in which people live, work, play, relate to on another, organizing to meet their needs and generally cope as members of a society. Floods cause social disruption which can seriously undermine the quality of life of individuals and affected communities.

The social aspects of vulnerability to flood can be used as tool to develop policies that can minimize risk and maximize the ability of communities to anticipate and adapt to the flood hazard. Investigations into the past floods impact will characterize the social aspects of vulnerability of individuals and communities. It is difficult to generalize the relationships suffered because the same event may have different effects on the adjacent households. If communities have to adapt to the flood hazard, there is a long-term increase in coping capacity which can arise from combined exclusions. Poverty causes disasters and disasters worsen poverty which then gives rise to feelings of vulnerability and fatalism. The people who live in flood plain areas are often poor people because they cannot buy legal land and they end up occupying vacant land along the riverside. It is also found out that many planned settlements are also built on landfills in the lowland areas.

Conclusion

The flood events have revealed considerable weaknesses in the way flood calamities are being addressed. Information on the extent of the flood affected areas and the extent of the damages are still not well known and collected data show conflicting information. The unpreparedness and lack of procedures to assess the extent and damage caused by floods damage has affected the allocation and mobilization of emergency assistance and the readiness of local institutes and agencies to offer effective support.

The experience of the MRCS and the FAO assisted project have been instrumental in developing a better understanding of the dynamics of the floods in developing procedures to better assess flood behavior and in defining various answers to prevent and restrict the damage caused by floods. As a result, several short- medium- and long-term solutions have been recommended to minimize negative impacts of floods and to mitigate damage in a more sustainable way.

Solutions to overcome the effect of floods can be found can be found at different levels and in different sectors, and involves cooperation and coordination at international, national, provincial and field levels. The suggestions to the solutions can be classified as follows:

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