

## **COURSE : DISASTER MANAGEMENT (MA/ MSc PART I)**

### **Paper : VII**

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### **Topic : Flood Prone Areas in India**

#### **INTRODUCTION**

Flood denotes inundation or accumulation of water. In other words, it results from an imbalance between inflow and outflow of water. Floods can occur through heavy rains, dam failure, rapid snow melts, riverblockages or even bursting of water rains. Floods result in damage, deaths and injuries, and create problems in drinking water supply and food shortage. There are three types of floods i.e. flash floods, river floods, and coastal floods. Flash floods are generally events of hill areas where sudden very heavy rain over a limited area can cause string flow. River floods occur due to heavy inflow of water from heavy rainfall, snowmelt, and short intense storms. Flooding in rivers is also caused by inadequate capacity within the banks of the river to contain high flows, river banks erosion and silting of riverbeds, synchronization of flood in main and tributary rivers, and flow retardation due to tidal and backwater effects. Coastal floods are caused due to tsunami or heavy rainfall from cyclones and the storm surge associated with a cyclone.

#### **FLOODS IN INDIA**

The major flood prone regions in India are Punjab, Haryana, most of the Gangetic plains including Uttar Pradesh, North Bihar and West Bengal, the Brahmaputra valley, coastal Andhra Pradesh and Orissa, and southern Gujarat.

Though the north Indian plains are more vulnerable to floods than the southern ones, the flood-prone areas in the country can be broadly classified into three divisions – the Ganga Basin, the Brahmaputra and Barak Basins and the Central Indian and Deccan Rivers Basins. A brief description of these follows:

1. **Ganga Basin:** The Ganga Basin gets flooded mostly in the northern part by the northern tributaries of the Ganga River. The badly affected states of the Ganga basin are West Bengal, Bihar and Uttar Pradesh. Besides the Ganga, rivers like Sarada, Rapti, Gandak and Ghagra causes flood in eastern part of Uttar Pradesh. The Yamuna is famous for flooding Haryana and Delhi. Bihar experiences massive dangerous flood every year. River Burhi, Bagmati, Gandak, Kamla along with many small rivers contribute to floods in Bihar. In West Bengal, rivers like Mahananda, Bhagirathi, Damodar, Ajay etc. cause floods because of tidal effects and constricted river channels.

2. **Brahmaputra and Barak Basins:** The banks of the Brahmaputra and Barak Rivers get flooded due to the Surplus water in the Brahmaputra basin and the Barak basin. These rivers, along with their tributaries, flood the northeastern states like West Bengal, Assam and Sikkim. The Jaldakha, Teesta and Torsa Rivers often overflow their banks and cause flooding in northern West Bengal, Manipur and Sikkim.
3. **Central India and Deccan Rivers Basin:** In Orissa, the deltaic area formed by the Mahanadi, Baitarni and Brahmani Rivers is thickly populated. Quite often these rivers overflow their banks, causing destruction in the area. Southern and central India observes floods caused by the rivers Narmada, Godavari, Tapti, Krishna and Mahanadi due to heavy rainfall. Cyclonic storms in the deltaic regions of Godavari, Mahanadi and Krishna occasionally flood the coastal regions of Andhra Pradesh, Orissa and Tamil Nadu.

From this understanding, it may be concluded that Bihar is India's most flood-prone State, with 76% of the population in the North Bihar living under the recurring threat of flood devastation. According to some historical data, 16.5% of the total flood affected area in India is located in Bihar while 22.1% of the flood affected population in India lives in Bihar. Apart from Bihar, the badly affected states of the Ganga basin are West Bengal and Uttar Pradesh. Besides the Ganga, rivers like Sarada, Rapti, Gandak and Ghagra causes flood in eastern part of Uttar Pradesh. The Yamuna is famous for flooding Haryana and Delhi. Bihar experiences massive dangerous flood every year.

Cyclones invariably bring with them devastating floods. 13 coastal states and Union Territories in the country are affected by tropical cyclones (TCs) and associated floods. Four states – West Bengal, Andhra Pradesh, Odisha, Tamil Nadu – and one UT (Puducherry) on the east coast, and Gujarat on the west coast are more vulnerable to the TCs.

<b>State</b>	<b>Area liable to floods (Million Ha)</b>
Uttar Pradesh	7.34
Bihar	4.26
Punjab	3.70
Rajasthan	3.26
Assam	3.15
West Bengal	2.65
Haryana	2.35
Orissa	1.40

Andhra Pradesh

1.39

Gujarat

1.39

