

## **Impact of Floods in India: An Overview**

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### **ABSTRACT**

Floods are the most frequent type of natural disaster and occur when an overflow of water submerges land that is usually dry. Floods are often caused by heavy rainfall, rapid snowmelt or a storm surge from a tropical cyclone or tsunami in coastal areas. Floods can cause widespread devastation, resulting in loss of life and damages to personal property and critical public health infrastructure. Between 1998-2017, floods affected more than 2 billion people worldwide. People, who live in floodplains or non-resistant buildings, or lack warning systems and awareness of flooding hazard, are most vulnerable to floods. Between 80-90% of all documented disasters from natural hazards during the past 10 years have resulted from floods, droughts, tropical cyclones, heat waves and severe storms. Floods are also increasing in frequency and intensity, and the frequency and intensity of extreme precipitation is expected to continue to increase due to climate change. Floods also damage power transmission and sometimes power generation along loss of drinking water treatment and water supply. Lack of clean water combined with human sewage in the flood waters raises the risk of waterborne diseases, which can include typhoid, cholera and many other diseases depending upon the location of the flood.

**Key Words:** Submerges, Snowmelt, Devastation, Infrastructure, Precipitation waterborne etc.

### **Introduction**

A flood is generally defined as the overflow of large amounts of water on the earth's surface, causing destruction. Floods can occur due to many reasons like as a result of strong rains, incoming waves from the ocean, or the failure of dams or levees. Floods can happen suddenly or gradually over a long period and can last up to many days or weeks or even longer, depending upon the type and extent of the flood. Out of all the natural disasters, floods are the most common, seen all over the country at certain times. Floods have a negative social, economic, and environmental impact on both persons and communities. Depending on the location and intensity of flooding, as well as the susceptibility and value

of the natural and built environments they touch, the Effects Of Floods are both positive and negative vary dramatically. Floods can have various effects, including good and bad, depending on where they occur, how quickly they move, how vulnerable they impact nature and built infrastructure, and so on. Floods have adverse social, economic, and environmental effects on individuals and communities.

## **2. Objectives of the Study**

1. To study the concept of Flood.
2. To study the types of floods in India.
3. To study the effects of floods in India.
4. To study the causes of floods in India
5. To study the methods of flood management in India.

## **3. Methodology of the Study**

The present study has been descriptive; the data for this study were obtained from secondary sources. The secondary data has been collected from various references which already existed in published form; part of the paper is based on literature review the method comprising of collecting all the available papers relating to the theme and selecting relevant papers/books for the review purpose. Selection of the paper is done on the basis of their relevance and contribution to the body of knowledge. The author has made an attempt to do primary reading of the selected papers which will constitute the core of this review study

## **4. Concept of Flood**

A flood is an overflow of water on land. Sometimes a river might receive extra water, either from heavy rains or other natural disasters. When this happens, the water overflows from its normal path in the river bed and onto the dry land. During a flood, people should move themselves and their most precious belongings to higher ground quickly. The process of leaving homes in search of a safe place is called evacuation. Floods occur at irregular intervals and vary in size, duration and the affected area. Water naturally flows from high areas to low lying areas. This means low-lying areas may flood quickly before it begins to get to the higher ground. Floods can also occur in rivers when the flow rate exceeds the capacity of the river channel, particularly at bends or meanders in the waterway. Floods often cause damage to homes and businesses if they are in the natural flood plains of rivers.

## **5. Types of Floods**

### **i. River floods**

Rivers are channels of water that make their way through the landscape eventually ending in an ocean or other body of water. Rivers tend to have natural changes in the amount of water flowing through them, but sometimes periods of intense rainfall can cause them to overflow and spread out into surrounding areas. The chance of flooding is made worse if the land around rivers has surfaces that are poorly drained or sloped towards the river, causing more water to flow straight into the river.

### **ii. Coastal floods**

When water from the sea rises and flows onto the land, that is known as a coastal flood. During strong storms like hurricanes, wind and pressure push water far into land in what is known as a storm surge. Sea level rise is a consequence of global warming, and also results in flooding in low-lying areas, with the risk increasing as polar ice continues to melt. Another type of coastal flood is a tsunami. Tsunamis are dramatic events where a massive wave is caused by earthquakes in the ocean. The sheer force of a tsunami can reach far inland.

### **iii. Sewer floods**

Sewers are critical infrastructure to cities to ensure waste is properly disposed of and water does not pool in streets or basements and cellars, but sometimes it's not enough. Intense rain or debris clogging sewer systems can result in backups, with sewage spilling back out onto roads and in homes. No matter if it's a city of ten thousand or ten million, sewers need to be managed and maintained to prevent flooding.

### **iv. Flash floods**

A sudden rush of water in low-lying areas as a result of rain is known as a flash flood. As the name implies, flash floods happen suddenly and with little warning. Very dry areas are particularly prone to flash flooding when rain storms hit because the dry ground is not able to absorb the water well. Flash floods can also be man-made, caused by dams bursting as we discussed earlier. The sudden nature of flash floods makes them particularly dangerous to humans who can find themselves in the midst of rushing water without warning.

## **6. Effects of floods**

### **i. Human health**

Floods have caused some of the most deadly disasters in human history. Not only being direct causes of death, but flood waters can also bring diseases like cholera, especially sewer floods. The subsequent destruction of infrastructure also hampers the supply of clean water. Minor floods can cause

homes to build up mould and mildew, leading to respiratory illness in some people. The mental impact of flooding is another big risk. Seeing your home destroyed or losing the lives of loved ones can take a major toll on an individual's and community's mental wellbeing.

## **ii. Infrastructure**

The power of floods is enough to topple homes and buildings in some cases, and the electricity supply can get cut as well. When flood waters remain and block roads or other methods of transportation, rescuing people and bringing supplies becomes much more challenging. The use of boats and helicopters is often necessary to help relieve people stuck in a flood-stricken area. The damage can last much past flood waters receding; homes flooded with even a centimeter of water might need costly repairs. Water and moisture damage building foundations and structural components, meaning they need inspection and repairs to make sure they are safe to be in.

## **iii. Environment**

Of course, floods can also result in the death of any plants or wildlife stuck in their path, as well as contaminating habitats. The local water supply can also become contaminated with pathogens and algae ruining groundwater quality. It's not all bad with flooding, however, as sediment from the floods can help replenish nutrients in the soil improving the growth of plants. While flooding can contaminate groundwater, it's also important to help refill groundwater supplies. Finally, wetland environments that become too dry also benefit from flooding to refill them. As

# **7. Causes of Floods**

## **i. Rainfall**

Periods of excess rainfall can overflow rivers, ponds, and lakes, causing them to overflow and flood. The rain does not even have to be particularly intense, but if it rains constantly over a long period of time it might be too much for bodies of water to handle. Most rain showers don't lead to floods as a lot of the water gets absorbed into the ground or bodies of water rise but not enough to overflow.

## **ii. Geology and vegetation**

The type of land and plants of an area also heavily impact the risk of flooding. Certain rocks and soils absorb water more easily than others, and plants can help absorb water too. Typically, a more barren landscape is more susceptible to flooding with little water able to absorb into the ground. A heavy rainstorm in a desert is rare but when it does happen, flooding can be intense! Areas downhill are at higher risk of flooding too, with gravity forcing water into areas like valleys.

### **iii. Man-made**

Features of the human environment can also cause flooding. We mentioned earlier how certain types of rocks and soils can absorb water more easily than others, and man-made surfaces like concrete are very bad at absorbing water. Cities require complex sewer systems to allow water to move away from our roads otherwise water from rain storms would have nowhere to go. Dams are structures meant to hold water back in a river and slowly release it but sometimes they can fail, causing catastrophic flooding.

## **8. Methods of Flood Management**

Some flood control techniques date back to ancient times. These techniques include building floodways, terracing hillsides to restrict flow downstream, and planting vegetation to hold surplus water. Levees, lakes, dams, reservoirs, and retention ponds are other methods for storing extra water during floods. Some other techniques to manage floods are

### **i. Construction of Dams**

Many dams and the reservoirs they are connected to have flood control and protection as one of their primary goals. In order to provide a specific amount of room for flood waters to fill, many large dams include flood-control reservations where the level of a reservoir must be kept below a particular elevation before the start of the rainy/summer melt season.

### **ii. River Defences**

Rivers are frequently carefully controlled because they are prone to flooding in many nations. Levees, reservoirs, and weirs are utilized as defenses to stop rivers from overflowing their banks and prevent flooding.

### **iii. Floodplains and Groundwater Replenishment**

By redirecting extra water onto terrain that can soak it up, groundwater can be refilled. Through the use of the ground as a natural reservoir, this method can lessen the effects of future droughts.

## **9. Conclusion**

Floods might be frightening, but it is up to us as individuals to ensure they don't interfere with our daily lives. Ponds, lakes, and other water reservoirs should all be kept in good condition. Flooding can be prevented by enhancing the soil's properties and making it easier for water to absorb. Floods have also occurred in areas, which were earlier not considered flood prone. An effort has been made in these Guidelines to cover the entire gamut of Flood Management. Eighty per cent of the precipitation takes place in the monsoon months from June to September. The rivers a bring heavy sediment load from

catchments. These, coupled with inadequate carrying capacity of rivers are responsible for causing floods, drainage congestion and erosion of river-banks. Cyclones, cyclonic circulations and cloud bursts cause flash floods and lead to huge losses. It is a fact that some of the rivers causing damage in India originate in neighboring countries; adding another complex dimension to the problem.

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