

# Flood in North Bihar : A case study of Baghmati Basin in Bihar

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Flood in North Bihar is the most common disaster occurring every year causing huge loss of lives and properties. North Bihar is the playground of eight major rivers in the left hand of Ganga from west to east. Major tributaries of Ganga i.e. Ghagra, Gandak, Budhi Gandak, Baghmati, Kamla. Kosi and Mahananda are the prominent cause of floods in North Bihar. All these rivers are perennial and fed by melting snow throughout the year but during monsoon it receives huge rainfall in the tarai of Nepal as well and due to silting of the bed, water overtops the bank and inundates the low lying areas in the various basins of North Bihar. Flood is the situation when the water level of river increases and submerges the adjacent areas. There are few types of floods as follows.

## Types of Flood :-

- i. Flash flood
- ii. Coastal flood
- iii. Urban flood
- iv. River flood
- v. Ponding or Pluvial flood

**i. Flash flood :-** In the sloppy areas, when heavy rain causes, the rain water is collected on the slope and runs down with high speed. The water comes together in the river bed and water level rises fast and creates flash flood.

**ii. Coastal flood :-** Coastal flood happens when the coast is flooded by the sea. Due to severe storm or wind pushes water up and creates high wave this is called coastal flood.

**iii. Urban flood :-** Urban flood is the type of flood when the drainage system fails in the cities and water spreads all over the area is called urban flood

**iv. River or Fluvial floods :-** Due to extreme rain when the water crosses the river banks and spreads all around is known as fluvial or river floods.

**v. Pluvial flood :-** It is just like an urban flood. But main factor is puddles or ponds of the area which fills and spills over due to rain.

Flood is a natural phenomenon caused by erratic rainfall. It is an ancient activity done by the nature for nature now a days it becomes anthropogenic activity and human suffers a lot. Before proceeding the discussion we must go through the causes of flood and its impact. There are two types of causes categorized as natural cause and anthropogenic cause or human cause.

Natural causes are high intensity rainfall, meandering courses of river, risen river beds and blocking of free flow river water whereas deforestation and urbanization are two main human factors.

The state of Bihar is prominent for flood some of the areas which is flood prone areas and almost every year flood problem arise there. Among these areas Baghmati Basin is one of them. This basin is covered with many rivers i.e. Baya, Bagmati, Burhi Gandak and their tributaries. The Bagmati itself has many tributaries the Lal Baya, the Bhuregi, the Lakhandai, the Adhwara or Little Bagmati. This is the major reason the river basin has been flooded every year during rainy seasons.

Actually Baghmati is one of the perennial river which originates from the Shivpuri range of hills in Nepal at an intersection of 27°17' W. parallel of latitude and 85°17' E. meridians of Longitudes. It enters in Indian territory in Bihar from the village Sorwatica in Sitamarhi Districts.

The river has a total length of 589 km. out of which 394 km. flows in Bihar itself draining maximum area of 6500 sq.km. Flooding in Baghmati basin bring untold misery in Sitamarhi, Sheohar, Muzaffarpur, Darbhanga, Samastipur and Khagaria Districts. This is due to the vast catchment areas of such rivers. When heavy rainfall takes place in the mountains, rivers discharges much water in the master stream of Ganga but during such action outlet of water is smaller than the vast catchment area and thus flood problems arises.

Second reason of flooding in this river is the gentle slope of the river drainage. It is about 3 inch per km. which creates obstacle of the water discharging.

Third reason is the changing courses of the rivers. In Bihar Kosi, Kamla, Baghmati and Bhutahi Balan are Badnam for their this activity.

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The Baghmata is the most important rivers in between Burhi Gandak and the Kosi . After entering Indian Boundary this river spills into three channels and rejoin together near village joriahi at about 2.5 km. South of Darbhanga - Narkatiaganj section of railway line . Lalbakya is a right bank tributary of the Bagmati . It latter joins the former near Dewapur just downstream of Khoripakar.

The River Bagmati once again tried to avulse into the Purani Dhar below Khoripakar during floods in the year 1983. The Purani Dhar takes off near village Behwa and is also called the Belwa Dhar. This detail is enough to understand that this river frequently and adversely affected flood scenario in this area. Bagmati is also notorious for swiftly changing its course . Its large catchment area receives heavy down pass during rainy season making its current very rapid and cascading. Velocity of its current is 10 km. per hour or more.

The Ganga is the trunk river when it is in spate the courses other tributaries are often obstructed so that the water is spread over larger areas of their influences. Sometime changes of river courses also lead to heavy damages.

Inspite the natural causes of flood there are several man made causes too. The major reason is in Bihar unnecessary constructions of embankment. Due to this silt deposition exerted, river bed and the adjacent areas within the embankment have got higher land than the cultivable land lying outside of the embankment. Due to this flood, water spread over the lower land side. Water velocity of the water in this area causes serious problem by destructing houses and other infrastructures.

Sometime for the protection of Dam or any embankment excess water discharged other side it becomes more hazardous. There is no linking between all rivers.

Deforestation is another important man made problem. In Terai regions of Nepal having thick forest controlled the velocity of water but due to Deforestation in such areas lead to uncontrolled situation of flood.

After all discussion it is proved that flood in North Bihar especially in Baghmata river is if a natural disaster. North Bihar is witnessed as high magnitude zone of floods. There are 28 districts in Bihar which are affected by floods every year.

Where there are some advantages of flood i.e. it helps to deposit fertile soil in this area. Sometime flood clears the blocked routes of the

drainages. Deposition of silt enriches the cultivable land. Deposition of clay soil helps to work Brick kiln industries as they get soil to form bricks. It also enriches the water level of the surfaces.

But there are a lot of disadvantages too. Furious flood destroy to standing crops human lives, Cattles, Wealth and infrastructures flood also cause erosion of land.

After the discussion we came to a conclusion that flood is a natural process and it cannot be stopped altogether but can be controlled by different measures. To reduce intensity of flood in Bihar many structural and non structural measured are used. Embankments are the most common structural measure used but it needed to identify the common flood zones and developing flood forecasting and working system. We can control flood by following the measure written below.

- a) By afforestation and banned the cutting of trees in the upper catchment area.
- b) By improving discharging linkage.
- c) By constructing wells or reservoirs at different heights.

Ultimately people have to learn to live with flood. We can't resist or stop it but can reduce its intensity to save our lives.

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