Gist of RSTV Big Picture- Assam Floods: Tackling the Deluge

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What's in the News?

- Assam floods of 2020 (Brahmaputra river floods) continue to threaten life and property with nearly 40 lakh people estimated to be affected.
- Initial flooding started in May 2020 due to heavy rainfall, consequently resulting in the rise of water level in River Brahmaputra.
- The damage incurred-
    - Out of the 33 districts in Assam, 27 have been affected by the floods.
    - Over 3,000 villages are currently inundated and about 1.3 lakh hectares of crops are estimated to have been damaged.
    - As per the Assam State Disaster Management Authority (SDMA), the inundation has so far claimed the lives of over 80 people.
    - In the Kaziranga National Park, over 75 animals have died, while over 120 others have been rescued.
    - This is not a one-off phenomenon, but an annual affair in Assam.

Underlying problem behind annual flooding in Assam:

- River Bharamaputra emanates in the Tibetan plateau, where the temperature is rising every decade by 0.42%, caused by an increased melting of glaciers and snow caps. This has resulted in a larger flow of water into the downstream.
- Assam being located downstream of the river is becoming more affected by floods.
- River Brahmaputra takes a sharp turn at Goalpara village, causing maximum red alerts and flooding in that area.
- Construction and human settlements in the flood plains of river Bhramaputra and its tributaries have caused obstructions in the natural flow of water in the flood prone regions.
- Highway and railway lines have been constructed parallel to the Bhramaputra River, to act as a bunt for preventing excess water from flowing into the inland. This also prevents the outflow of water from the inland areas into the river, causing localized, rainfall based flooding.

Why is Assam in particular so prone to recurrent flooding?

- **Climatic condition:**
    - With tropical monsoon rainforest climate, Assam, a temperate region experiences heavy rainfall and humidity.

  - Typically the South-West monsoon causes heavy rainfall from June to September.
  - Onset of the monsoon season is accompanied by damage causing heavy showers and winds called 'bordoisila'.
- **Widespread jhum cultivation practice:**
  - The traditional slash-and-burn cultivation in hilly areas of Assam is called jhum or shifting cultivation.
  - The burning of the vegetation removes the upper protective layer of soil from the land, making it more prone to erosion by rain.
  - A large amount of soil and dead materials of the plants flow and get deposited into the river basin.
- **Large silt deposit in the floodplain:**
  - Many tributaries bring large amounts of water and silt from Arunachal Pradesh as well as Barak valley .
  - The silt the water really cuts the river margins and it gets deposited in the river basin. This makes the basin progressively shallow.
- **Climate Changes:**
  - Rising temperatures have caused increased rainfalls and flash floods in the last few years.
  - Heavy rain has decreased the water carrying capacity of Brahmaputra river and its tributaries.
- **Wetland encroachment:**
  - The soil in wetlands acts as a natural sponge in absorbing excess water.Plants and roots in marshy land also slow down the progress of floods.
  - Increasing population in the state has resulted in farming activity and construction in the wetlands.
- **Dams built on Brahmaputra river & its tributaries:**
  - Dams discharge huge water during rainfall for their safety because they cannot sustain so much hydrostatic pressure.
- **Nature of River Brahmaputra:**
  - The tendency of river Brahmaputra of changing its course frequently and the river having a large number of tributaries.
- **Denudation on either side of the river.**
- **Failure of desilting program:**
  - Failure of the implementation of desilting program as they are temporary and expensive.

Infrastructural challenges in Assam associated with floods:

- Major as well as arterial roads in most districts got submerged in water.
  - National Highway 37 submerged at many places in the Kaziranga National Park.
- Train services got disrupted as water affected railway tracks at several places.
- Almost all the powers stations are invariably situated near the rivers because they draw water from the river to cool down the equipment and pump back the hot water into the river. The flooding damaged the electricity supply in many districts.
- Delays in provision of relief and rehabilitation of the flood victims.

Technological Solutions :

- Appropriate meteorological forecasting - To enable a warning system for predicting the intensity and scale of floods so that rescue measures can be planned accordingly.
- Creating artificial embankments and restoring existing ones which have become ineffective.
- River Dredging - An initiative for dredging in river Bhramaputra for reducing the sediment load of the river is already being undertaken by the government of Assam.
- Integrated flood management programme by the Government of India.
- Monitoring and mapping of changes in the river course using satellite imagery.

- Flood inundation mapping and monitoring to enable better research and policy making.

Why are floods important for the North East region?

- Soils in the North East region are laterite soil which are deficit in nutrition. The river water helps to supplement the soil with rich nutrients needed by the thick vegetation and long living trees of this region.

Best way forward:

- Flood plain zoning- preventing human settlement or agriculture in wetlands and most hazardous flood zones.
- Reconsidering typology of houses in the flood prone areas. Stilted houses made with bamboo are usually more resistant to damage.
- Social infrastructure including schools, hospitals and community centres need to be located at a safe distance from the flood prone regions.
- Encouraging vegetation in the wetlands and near the riverbanks to act as a buffer against floods.