NEXT IAS

DAILY EDITORIAL ANALYSIS

TOPIC

Urban Floods in India

URBAN FLOODS IN INDIA

In Context: Cyclone Michaung recently made landfall in Andhra Pradesh causing floods in Chennai.

Reasons of Chennai Floods
• Tamil Nadu's capital is located in a **rain-shadow area**, which gets most of its precipitation from the **northeast monsoon**, including **cyclonic storms**. • In recent years, Chennai, like several parts of the country, has been experiencing **short-duration spells of intense rainfall**. • The Chennai district administration has placed a large measure of the blame on the **sea pushing back the water** through the **canals**.

Urban Floods

- **About:**
  - Increased incidence of **high-intensity rainfall in short duration** is mainly responsible for urban floods.
  - It is **further compounded** by unplanned growth, encroachment of natural water bodies, poor drainage system, etc.
  - Urban flooding is **significantly different from rural flooding** as urbanization leads to developed catchments, which increases the flood peaks from 1.8 to 8 times and flood volumes by up to 6 times.
    - Consequently, flooding **occurs very quickly due to faster flow times.**
- **Causes:**
  - **Weather systems:** A special feature in India is that we have **heavy rainfall during monsoons**.
    - There are other weather systems also that bring in a lot of rain.
    - Storm surges can also affect coastal cities/ towns.
  - **Dam water:** Sudden release or failure to release water from dams can also have a severe impact.
  - **Urban heat island:** The urban heat island effect has increased rainfall over urban areas.
  - **Climate Change & sea level rise:** Global climate change is resulting in changed weather patterns and increased episodes of high-intensity rainfall events occurring in shorter periods.
    - Then the threat of sea-level rise is also looming large, threatening all the coastal cities.
    - Cities/towns located on the coast, on river banks, upstream/ downstream of dams, inland cities and in hilly areas can all be affected.
- **Consequences:**
  - Urban areas are densely populated and people living in vulnerable areas suffer due to flooding, sometimes resulting in **loss of life**.
  - It is not only the event of flooding but the secondary effect of exposure to **infection** also has its toll in terms of human suffering, loss of livelihood and, in extreme cases, loss of life.

Urban Challenges & Floods in India

- There has been an increasing trend of urban flood disasters in India over the past several years whereby major cities in India have been severely affected.
- **Poor maintenance:** These capacities have been getting very easily overwhelmed whenever rainfall of higher intensity has been experienced.
  - The systems very often do not work to the designed capacities because of very poor maintenance.
- **Encroachment & Habitations: Encroachment** is a major problem in many cities and towns.
  - Natural streams and watercourses have formed over thousands of years due to the forces of flowing water in the respective watersheds.
  - **Habitations** started growing into towns and cities alongside rivers and watercourses.

- As a result of this, the flow of water has increased in proportion to the urbanization of the watersheds.

- **Loss of drains:** Ideally, the natural drains should have been widened (similar to road widening for increased traffic) to accommodate the higher flows of stormwater.
  - But on the contrary, there have been large-scale encroachments on the natural drains and the river floodplains.
  - Consequently, the capacity of the natural drains has decreased, resulting in flooding.
- **Improper disposal systems:** Improper disposal of solid waste, including domestic, commercial and industrial waste and dumping of construction debris into the drains also contribute significantly to reducing their capacities.
  - It is imperative to take better operations and maintenance actions.
- **Insufficient policy attention:** Even though urban flooding has been experienced over decades in India, sufficient attention was not given to planning specific efforts to deal with it.

Government Initiatives

- **Role of States & ULBs:** Management of urban flooding falls under the **purview of the State Governments** and the **Urban Local Bodies / Urban Development Authorities** who are responsible for maintaining the drainage and sewerage system.
  - Several **initiatives** have been taken by the **Union Government to encourage** groundwater recharge and other nature-based solutions to tackle urban flooding in flood-prone areas.
  - **NDMA Guidelines:** As a part of its mandate, the National Disaster Management Authority (NDMA) has made efforts to prepare the National Guidelines on Management of Urban Flooding.
  - **Master Plan for Artificial Recharge to Groundwater - 2020:** The plan has been prepared by the Central Ground Water Board (CGWB) in collaboration with States/UTs envisaging the construction of about 1.42 crore rainwater harvesting and artificial recharge structures in the country to harness 185 Billion Cubic Meter (BCM) of water.
  - **Jal Shakti Abhiyan (JSA):** GOI is implementing Jal Shakti Abhiyan (JSA) in the country in which special emphasis is being given for rainwater harvesting/groundwater recharge.
  - **Amrit Sarovar Mission:** The mission has been launched to develop and rejuvenate 75 water bodies in each district of the country to celebrate Azadi ka Amrit Mahotsav for rainwater harvesting/recharge.
  - **AMRUT:** Under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) 2.0 Scheme, provisions have been made for harvesting the rainwater through stormwater drains into a water body (which is not receiving sewage/effluent) & creation/ strengthening of stormwater drains around water body.
  - **The National Water Policy (2012):** The policy is formulated by this Ministry inter alia advocates that the conservation of rivers, river corridors, water bodies and infrastructure should be undertaken in a scientifically planned manner through community participation.
  - **Urban Flood Mitigation Project:** India's maiden urban flood mitigation project worth Rs 561 crore under the National Disaster Mitigation Fund (NDMF).

Suggestions & way ahead

- **For Chennai:**
  - The suffering caused by the latest floods **should push the state government** to **expedite the drainage revamp system**.
  - More will need to be done to build the flood-prone city's defences. After the 2015 floods, experts had reasoned that planners should **re-think construction projects on wetlands.**
  - Recently, the PM approved India's first project to tackle urban floods

- **Overall:**
  - The **storage capacities of water bodies** and water courses and/or associated wetlands, the flood plains, ecological buffer and areas required for specific aesthetic recreational and/or social needs **must be managed** in an integrated manner to maintain ecological balance.
  - Urban **settlements, encroachments** and any **developmental activities** in the protected upstream areas of reservoirs / water bodies, key aquifer recharge areas that **pose a potential threat** of contamination, pollution, reduced recharge and those endanger wild and human life should be **strictly regulated.**

DAILY MAINS QUESTION

What are the causes & consequences of the increasing trend of urban flood disasters in India? Suggest ways to manage & prevent Urban Flooding.