Kerala Declares Tidal Flooding a State-Specific Disaster

Mains: *GS III – Disaster Management*

Why in News?

In a significant policy move, the Government of Kerala has declared tidal flooding caused by sea-level rise and high tides as a “State-specific disaster.”

What are tidal floods?

- **Tidal floods** – These are also known as "sunny day" or nuisance flooding, are the temporary inundation of low-lying coastal land, roads, and infrastructure during exceptionally high tides, such as full or new moons, rather than from storm surge or heavy rain.
- **Causes** – Primarily driven by high tides (often called "king tides"), but intensified by rising sea levels and, in some cases, distant storms.
- **Impact** – While not usually life-threatening, they cause significant disruption by flooding roads, overwhelming storm drains, and damaging infrastructure.
- **Frequency** – Increasing in frequency due to climate change-induced sea-level rise.
- **Characteristics –** Occur in coastal cities and low-lying areas, often during calm, sunny weather.
- **Tidal Flooding in Kerala –** Tidal flooding along Kerala’s coastline is a recurring phenomenon wherein the level of the Arabian Sea temporarily rises above a defined threshold, leading to inundation of low-lying coastal areas.
- Unlike storm surges caused by cyclones, tidal flooding:
    - Occurs twice daily due to regular tidal cycles.
    - Intensifies during full moon and new moon phases (spring tides).
    - Becomes more severe when high tides coincide with coastal storms and adverse meteorological conditions.
- This phenomenon is particularly acute in nine coastal districts of the State. Areas such as Vypin, Chellanam, Edakochi, and Perumbadappu in Kochi Corporation, along with Kumbalanghi panchayat, frequently experience seawater ingress into residential zones through rivers, backwaters, and canals.

Why Declare a Routine Phenomenon a Disaster?

- **Ordinary process** – The SDRF provides assistance for disasters arising from extreme or unforeseen events such as cyclones, floods, or earthquakes.
- However, tidal rise is a regular natural process and does not automatically qualify as a disaster under existing norms.

- **Legal basis** – The basis for Kerala's move lies in Section 2(d) of the Disaster Management Act, 2005, which defines a disaster as a catastrophe or natural phenomenon that causes substantial loss of life, property, or livelihood and disrupts community life.
- **Justification of The State government –** They reasoned that when tidal flooding leads to recurrent loss of life, livelihood, and shelter, it transcends being a mere natural occurrence and falls within the statutory definition of a disaster.
- By declaring it a State-specific disaster, Kerala has operationalized a legal mechanism to extend financial relief to victims, thereby addressing a long-standing policy gap.

What are the geographic and topographic vulnerability of Kerala?

- Kerala's distinct physiography significantly amplifies the impact of tidal flooding:
- **Low-Lying Coastal Plains –** Parts of Alappuzha district, especially the Kuttanad region, lie below sea level.
- **Proximity to Sea Level –** The commercial city of Kochi is situated barely above sea level, making it highly susceptible to sea incursion.
- **Dense River and Backwater Network –** High tides cause seawater to travel inland through rivers, canals, and backwaters, increasing the spatial spread of flooding.
- Water crossing the High Tide Line (HTL) often constitutes dangerous sea incursion, affecting habitations and infrastructure.
- In contrast to other coastal States with relatively higher elevations or different coastal geomorphology, Kerala's narrow coastal belt and intense human settlement heighten vulnerability.

What are the socio-economic impact of coastal flooding?

- Tidal flooding directly affects nearly 10% of Kerala's population. The impacts are multi-dimensional:
- **Livelihood Loss –** Fisherfolk, coastal farmers, small traders, and daily wage workers face recurrent income disruptions.
- **Agricultural Damage –** Saline water intrusion degrades soil quality, affecting paddy cultivation in coastal and below-sea-level areas.
- **Infrastructure Damage –** Roads, houses, and public utilities are frequently damaged.
- **Public Health Risks –** Stagnant saline water increases the risk of waterborne diseases.
- Additionally, unregulated land use has resulted in houses and structures being built in floodplains and puramboke lands adjacent to water bodies.
- Excessive siltation and reduced river depth further impede natural drainage, aggravating flood intensity.
- Unlike monsoon-induced flooding, tidal flooding can occur year-round, thereby increasing chronic vulnerability and necessitating sustained institutional response.
- **Broader climate change context –** Although tidal cycles are natural, rising sea levels due to climate change have amplified their impact.
- Global sea-level rise, coastal erosion, and increased frequency of extreme weather events have combined to make previously manageable tidal events more destructive.
- Kerala's declaration reflects adaptive governance in response to evolving climate risks.

What are the other state-specific disasters in Kerala?

- **Previously declared disasters** – Kerala has previously notified several hazards as State-specific disasters, including:
  - Coastal erosion
  - Lightning
  - Strong winds
  - Soil piping
  - Heatwave and sunstroke
  - Human-wildlife conflict
  - A recent example includes the shipwreck of MSE Elsa 3 off the Kerala coast in May 2025.
- The vessel, carrying over 643 containers, capsized approximately 14.6 nautical miles off the coast in the Arabian Sea.
- Considering the potential environmental, economic, and social consequences—such as oil spills and drifting debris—the State declared the wreckage a State-specific disaster.
- This illustrates Kerala's proactive use of statutory provisions to manage emerging risks.

What are the significance of the decision of Kerala?

The declaration of tidal flooding as a State-specific disaster has multiple implications:

- **Financial Relief –** Victims can now receive SDRF assistance for loss of life, property damage, and livelihood disruption.
- **Policy Innovation –** Kerala sets a precedent for other coastal States facing similar challenges.
- **Institutional Recognition –** It formally acknowledges slow-onset and recurrent climate-linked hazards within disaster management frameworks.
- **Improved Preparedness –** It encourages systematic data collection, risk mapping, and mitigation planning.

What should be done?

- While financial assistance is crucial, long-term resilience requires structural and policy interventions.
- **Integrated Coastal Zone Management (ICZM) –** Strengthening coastal defenses, mangrove restoration, and regulated development.
- **Scientific HTL Mapping –** Updating coastal regulation boundaries using advanced geospatial tools.
- **Drainage and Desiltation –** Enhancing river depth and improving backwater flow to prevent water stagnation.
- **Climate Adaptation Planning –** Incorporating sea-level rise projections into urban planning and infrastructure development.
- **Community-Based Disaster Management –** Training coastal communities in early warning and preparedness measures.

What lies ahead?

- Kerala's recognition of tidal flooding as a State-specific disaster represents a progressive and climate-sensitive governance approach.
- By leveraging the legal framework of the Disaster Management Act, the State has bridged a policy gap and extended social protection to vulnerable coastal communities.
- As sea levels continue to rise and climate variability intensifies, such adaptive and localized disaster management strategies may become increasingly necessary across India's coastline.

Reference

[The Hindu| Tidal Waves in Kerala]

