



Mains Marathon

Day 40: It is time for a 'sponge cities' mission in India. Discuss this statement in the light of handling urban floods. (250 Words)

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Approach / Explanation / Answer

- Start with writing what do you mean by Sponge city and why there is a need for sponge cities mission.
- State the measures that can reduce urban floods.
- Conclude suitably.

Answer

A sponge city is a city that is designed to **passively absorb, clean and use rainfall in an ecologically friendly way that reduces dangerous and polluted runoff**. Associated techniques include **permeable roads, rooftop gardens, rainwater harvesting, rain gardens, green space and blue space such as ponds and lakes**.

As the incidence of climate variability and extreme weather events increases, urban flooding becomes more and more common. While the untimely heavy rains can be attributed to climate variability, the urban flooding is largely due to unplanned urbanization. Overburdened drainage, unregulated construction, no regard to the natural topography and hydro-geomorphology all make urban floods a man-made disaster.

Main reasons for Urban Floods

- **Inadequate Drainage Infrastructure:** Cities like Hyderabad and Mumbai rely on a century-old drainage system, covering only a small part of the core city. In the last 20 years, the Indian cities have grown manifold with its original built-up area. As the city grew beyond its original limits, not much was done to address the absence of adequate drainage systems.
- **Terrain Alteration:** Lasting irreversible damage has been done to the city by property builders, property owners, and public agencies by flattening terrain and altering natural drainage routes.
- **Reducing Seepage:** Indian cities are becoming increasingly impervious to water, not just because of increasing built up but also because of the nature of materials used (hard, non-porous construction material that makes the soil impervious).
- **Lax Implementation:** Even with provisions of rainwater harvesting, sustainable urban drainage systems, etc., in regulatory mechanisms like the Environmental Impact Assessment (EIA), adoption at user end as well as enforcement agencies remains weak.
- **Encroaching Natural Spaces:** The number of wetlands has reduced to 123 in 2018 from 644 in

1956. The green cover is only 9%, which ideally should have been at least 33 per cent.

Measures that can be taken to reduce Urban Flooding

- **Need For Holistic Engagement:** Urban floods of this scale cannot be contained by the municipal authorities alone. Floods cannot be managed without concerted and focused investments of energy and resources. The Metropolitan Development Authorities, National Disaster Management Authority, State revenue and irrigation departments along with municipal corporations should be involved in such work together. Such investments can only be made in a mission-mode organisation with active participation of civil society organisations on the metropolitan scale.
- **Developing Sponge Cities:** The idea of a sponge city is to make cities more permeable so as to hold and use the water which falls upon it. Sponge cities absorb the rainwater, which is then naturally filtered by the soil and allowed to reach urban aquifers. This allows for the extraction of water from the ground through urban or peri-urban wells. This water can be treated easily and used for the city's water supply.
- **Wetland Policy:** There is a need to start paying attention to the management of wetlands by involving local communities. Without doubt, terrain alteration needs to be strictly regulated and a ban on any further alteration of terrain needs to be introduced. To improve the city's capacity to absorb water, new porous materials and technologies must be encouraged or mandated across scales.
 - Examples of these technologies are **bioswales and retention systems, permeable material for roads and pavement, drainage systems** which allow storm water to trickle into the ground, **green roofs and harvesting systems in buildings**. Bioswales are made along roadsides so that rainwater from the road flows towards them and percolates into the ground.
- **Drainage Planning:** Watershed management and emergency drainage plans should be clearly enunciated in policy and law. Urban watersheds are micro ecological drainage systems, shaped by contours of terrain. There is a need to consider natural boundaries such as watersheds instead of governance boundaries like electoral wards for shaping a drainage plan.
- **Water Sensitive Urban Design:** These methods take into consideration the topography, types of surfaces (permeable or impervious), natural drainage and leave very little impact on the environment. Vulnerability analyses and risk assessments should form part and parcel of city master plans. In a changing climate, the drainage infrastructure has to be built considering the new 'normal'.
- **Convergent Approach:** These can all be delivered effectively through an urban mission along the lines of the **Atal Mission for Rejuvenation and Urban Transformation (AMRUT), National Heritage City Development and Augmentation Yojana (HRIDAY) and Smart Cities Mission**.

Urban Flood management will not just help control recurring floods but also respond to other fault lines, provide water security, more green spaces, and will make the city resilient and sustainable.

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