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Mains Practice Questions

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Q. Account for the huge flooding of million cities in India including the smart ones like Hyderabad and Pune. Suggest lasting remedial measures. (UPSC GS-1 Mains 2020)

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Approach

- Start the answer by briefly mentioning the major cause of the frequent occurrence of urban floods.
- Discuss the various factors responsible for frequent Urban Flooding.
- Discuss the remedial measures to address urban floodings.
- Conclude suitably.

Introduction

As climate variability and extreme weather events increase, urban flooding becomes more and more common in many Indian cities, like Hyderabad.

While the untimely heavy rains can be attributed to climate variability, the urban flooding is mainly due to unplanned urbanization.

Body

Reasons For Frequent Urban Flooding

- **Inadequate Drainage Infrastructure:** Cities like Hyderabad, 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 their original built-up area. However, not much was done to address the absence of adequate drainage systems.
- **Cities Becoming Impervious:** 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, a non-porous construction material that makes the soil impervious).
Moreover, irreversible damage has been done to the city by property builders, property owners, and public agencies by flattening terrain and altering natural drainage routes.
- **Poor Implementation of EIA:** Even with provisions of rainwater harvesting, sustainable urban drainage systems, etc., in regulatory mechanisms like the Environmental Impact Assessment (EIA), adoption at the user end and enforcement agencies remains weak.

Remedial Measures For Urban Flooding

- **Holistic Engagement:** Urban floods 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.
- **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 them.
 - New porous materials and technologies must be encouraged or mandated across scales to improve the city's capacity to absorb water.
 - Sponge cities may deploy technologies like bioswales and retention systems, permeable material for roads and pavement, drainage systems that allow stormwater to trickle into the ground, green roofs, and harvesting systems in buildings.
- **Water Sensitive Urban Design:** These methods take into consideration the topography, types of surfaces (permeable or impervious), natural drainage and leave very less impact on the environment.
 - Vulnerability analyses and risk assessments should form part and parcel of city master plans.
 - Watershed management and emergency drainage plan should be clearly enunciated in policy and law.
- **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.

Conclusion

Overburdened drainage, unregulated construction, no regard for the natural topography, and hydro-geomorphology all make urban floods a man-made disaster.