

# **Mains Practice Question**

**Q.** Urban areas are increasingly susceptible to disaster risks due to unplanned development and overcrowding. Suggest strategies for making urban infrastructure and communities more resilient to disasters. (250 words)

26 Jun, 2024 GS Paper 3 Disaster Management

## Approach

- Introduce by mentioning rising urbanization and pressure on urban infrastructure
- Highlight how unplanned development and overcrowding make cities disaster magnets
- Suggest strategies for making urban infrastructure and communities more resilient
- Conclude by mentioning relevant SDG.

## Introduction

ision The United Nations projects that by 2050, nearly 70% of the global population will reside in urban areas, placing unprecedented pressure on urban infrastructure and systems.

Urbanization is a global phenomenon, but when it happens haphazardly, it creates a recipe for disaster.

#### **Unplanned Development and Overcrowding Make Cities Disaster Magnets Due to:**

- Reduced Capacity to Absorb Impacts:
  - · Blocked Drainage Systems: Unplanned construction often leads to encroachment on natural drainage channels and wetlands.
    - This reduces the city's capacity to absorb heavy rainfall, leading to flash floods and waterlogging.
    - Example: Gurugram's chronic waterlogging is partly attributed to blocked storm water drains due to unplanned constructions.
  - Increased Surface Runoff: Uncontrolled expansion replaces natural landscapes with concrete jungles.
    - This reduces the infiltration of rainwater into the ground, leading to increased surface runoff and overwhelming drainage systems.
    - Example: The rising number of heatwaves days in Delhi is linked to the reduction in green cover due to unplanned urbanization.
  - **Overburdened Infrastructure**: Existing infrastructure like power grids, water supply systems, and transportation networks were not designed to handle the surge in population that comes with unplanned development.
    - This leads to overloading and increased risk of failure during disasters.
    - **Example**: Power outages become more frequent and widespread during extreme weather events in cities with overloaded electrical grids.
- Limited Access and Evacuation Challenges:
  - Narrow Streets and Congestion: Unplanned development often disregards the need for wide roads and open spaces.
    - This creates congested cityscapes with narrow streets, hindering emergency

response and evacuation efforts.

- **Example:** The **2011 tsunami in Japan** highlighted the dangers of congested coastal areas with limited evacuation routes/
- **Informal Settlements and Slums:** Overcrowding often leads to the proliferation of informal settlements and slums in high-risk zones like floodplains or hillsides.
  - These settlements lack basic infrastructure and are difficult to access during disasters.
- Social and Economic Vulnerabilities:
  - **Livelihood Loss and Displacement:** Disasters disproportionately impact the poor and marginalized living in high-risk areas.
    - Loss of homes, businesses, and infrastructure can lead to economic hardship and displacement.
    - **Example:** The **Chennai floods in 2015** severely affected low-income communities living in coastal areas.
  - Limited Access to Resources: Overcrowding can strain resources like healthcare and sanitation.
    - This leaves communities less prepared to cope with the aftermath of a disaster and increases the risk of disease outbreaks.
    - **Example**: The **Covid-19 pandemic** highlighted the challenges of managing public health emergencies in densely populated areas.

### Strategies for Enhancing Urban Resilience:

- Risk-Informed Urban Planning: Implement comprehensive land-use planning that incorporates disaster risk assessments.
  - Developing and enforcing building codes tailored to local hazards, and restricting development in high-risk areas.
  - Example: Tokyo's strict building codes ensure earthquake resistance.
- Upgrading Infrastructure: Retrofit existing buildings and infrastructure to withstand disasters.
  - Improve drainage systems to prevent urban flooding and develop multi-purpose resilient infrastructure.
    - **Example: Rotterdam's water squares,** which serve as both public spaces and flood control measures.
- Green Infrastructure and Nature-Based Solutions: Preserve and expand urban green spaces to reduce the heat island effect and absorb flood water.
  - Implement green roofs and permeable pavements, and restore urban wetlands and mangroves for natural flood protection.
  - Singapore's ABC (Active, Beautiful, Clean) Waters Programme is a notable example.
- Early Warning Systems and Emergency Response: Develop integrated early warning systems for various hazards, establish community-based disaster response teams, and create evacuation plans with designated safe shelters.
- **Smart City Technologies:** Utilize IoT sensors for real-time monitoring of infrastructure and environmental conditions.
  - Implement **AI-powered predictive maintenance systems** and develop mobile apps for disaster alerts and information dissemination.
  - **Example: Rio de Janeiro's Operations Center** integrates data from multiple agencies for effective disaster management.
- Inclusive Resilience Strategies: Address the vulnerabilities of marginalized communities in disaster planning.
  - Ensure **accessibility of disaster information and services for all group** s and promote social cohesion for community-based resilience.
  - **Surat's inclusive climate resilience strategy,** focusing on slum communities, is a significant example.

## Conclusion

Unplanned development and overcrowding are **ticking time bombs** when it comes to disaster preparedness. By prioritizing **sustainable urban planning, investing in resilient infrastructur**e, and

empowering communities, we can mitigate these risks and build safer cities for the future and move towards achieving **SDG 11: Sustainable Cities and Communities.** 

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