Mains Practice Question

Q. "Disasters in India are often a result of development choices rather than natural hazards alone." Examine how unplanned urbanization has contributed to increasing disaster risk. (250 words)

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Approach:

- Introduce the answer by briefing about the rising urbanisation and disaster issues related to it
- Give key arguments to how Disaster Risk is increased due to Unplanned Urbanization
- Suggest Measures to Promote Sustainable Urbanization and Reduce Disaster Risk
- Conclude suitably

Introduction:

In India, urbanization has grown rapidly over the last few decades, with more than **34% of the population now living in cities**. However, this **unplanned urbanization** has led to significant vulnerabilities, increasing disaster risks.

- Rather than being merely the result of natural hazards, many disasters in India are exacerbated by **poor urban planning, infrastructure deficits, and environmental degradation,** which make urban areas more susceptible to extreme weather events, floods, and other natural calamities.

Body:

Increased Disaster Risk Due to Unplanned Urbanization:

- **Urban Heat Island Effect and Extreme Heatwaves: Unplanned urbanization** in cities like Delhi has significantly worsened the **Urban Heat Island (UHI) effect,** where built-up areas become significantly hotter than their rural surroundings.
    - For instance, in 2024, **Delhi recorded a scorching 49.9°C**, and the Indian Meteorological Department (IMD) reported a rise in heatwave days from 2000–2020.
- **Flooding and Drainage System Collapse:** Unplanned urban sprawl leads to impermeable surfaces (paved roads, concrete buildings), preventing the natural absorption of rainwater.
    - The heavy urbanization of flood-prone areas, combined with climate change-induced extreme rainfall, has made urban areas like Bengaluru and Chennai highly susceptible to recurring flood events.
- **Coastal Vulnerability and Sea-Level Rise**: Cities along India's extensive coastline, such as Mumbai and Kochi, face rising risks from sea-level rise, coastal erosion, and saltwater intrusion.
    - Unchecked urban expansion along these areas has led to the destruction of **mangroves,** which serve as natural barriers against storm surges and erosion.
    - The **2019 Cyclone Vayu** and **Cyclone Biparjoy in 2023** displaced thousands, causing significant infrastructure damage.
        - The **coastal zone** is further threatened by **unsustainable port expansion** and sand mining, which weaken the natural defences against storm surges.
- **Water Scarcity and Droughts:** Unplanned urbanization exacerbates water scarcity in cities.

Over-extraction of groundwater, coupled with pollution and poor water management systems, has led to water stress in cities like Chennai and Bengaluru.
    - **Over-reliance** on groundwater has caused declining water tables (especially in Punjab) and put enormous stress on **water supply systems**, leading to shortages during the dry season.
- **Risk of Earthquakes in Seismic Zones:** Many urban areas, especially in northeast India and Himalayan states, are located in seismic zones prone to earthquakes.
    - However, unplanned and informal construction in these areas, without adherence to building codes, increases the risk of large-scale devastation during seismic events.
    - For example, in Sikkim, where the 2023 glacial lake burst resulted in massive flooding and loss of life, informal urbanization on fragile lands compounded the damage.
- **Environmental Stress and Resource Management Challenges:** Urban centers in India are also facing mounting environmental stresses, including pollution, waste mismanagement, and inadequate waste disposal systems, which have compounded the effects of climate change-induced disasters.
    - Cities like **Delhi, Mumbai, and Kolkata** face chronic air and water pollution, which significantly affects public health during disasters like heatwaves and flooding.
        - The absence of green infrastructure and pollution control measures exacerbates these challenges.

Measures to Promote Sustainable Urbanization and Reduce Disaster Risk:

- **Integrated Urban Planning and Zoning Regulations:**
    - **Sustainable land use** policies should prioritize resilient urban infrastructure and protect ecologically sensitive zones, such as floodplains, coastal areas, and steep slopes.
    - **Zoning regulations** should prevent construction in high-risk areas (e.g., flood-prone regions, earthquake zones).
- **Green Infrastructure and Urban Ecosystem Services:**
    - **Increasing green cover** by promoting urban forests, parks, and green rooftops can significantly mitigate the Urban Heat Island (UHI) effect and reduce temperatures in cities, thereby lowering the impact of heatwaves.
    - **Rainwater harvesting, wetland restoration,** and the creation of urban water bodies can enhance stormwater management, reducing the risk of urban flooding caused by poor drainage.
    - Encourage the use of **permeable materials** for roads and pavements to allow better water absorption and reduce waterlogging.
- **Climate-Resilient Infrastructure and Building Design:**
    - **Disaster-resistant construction** standards must be incorporated into building designs. Urban areas should adopt climate-resilient materials to withstand extreme weather events like floods, heatwaves, and cyclones.
    - **Investing in resilient infrastructure** such as **elevated roads, flood barriers, and stormwater drains** designed to handle intense rainfall events can mitigate flood risk in urban areas.
- **Sustainable Mobility and Reducing Carbon Footprint:**
    - Promoting **public transport** and non-motorized transportation (walking, cycling) can reduce the urban carbon footprint and air pollution, a critical factor during heatwaves.
    - Encouraging electric vehicles and car-free zones can reduce air pollution and contribute to cleaner, healthier cities.
    - **Smart traffic management and reduced vehicular congestion** also play a role in reducing urban stress and enhancing overall resilience.
- **Efficient Waste Management and Pollution Control:**
    - Waste segregation and composting should be incentivized at the household and community level to reduce the burden on landfills, which are often a source of contamination and fire hazards.
    - **Circular economy principles** must be adopted to ensure waste minimization and resource efficiency, reducing environmental degradation.

Conclusion:

As **John F. Kennedy** once said, ***"The time to repair the roof is when the sun is shining."*** India must invest in sustainable urban planning, disaster-resilient infrastructure, and environmental management to mitigate the increasing risks and protect its growing urban populations from the looming threat of natural disasters.