6. Climate Resilient - Environment

India's rapid urbanization is colliding with severe climate risks like floods and heatwaves, exposing deep vulnerabilities. Building climate-resilient cities through sustainable planning, strengthened governance, and green infrastructure is now a critical economic and social imperative.

Introduction - The Need for Climate-Resilient Cities

Trigger - Recent urban floods in Punjab highlight the urgent need for cities that can withstand climate change.

Urgency - India's urban population is set to touch 1 billion in 25 years, creating massive megacities.

Goal - Building climate-resilient cities is crucial to protect lives, the economy, and ecosystems.

Current Urban Vulnerabilities in India

Flooding - Over two-thirds of the urban population will face surface flooding, with losses projected at $30 billion by 2070.

Extreme Heat - "Urban heat islands" raise night temperatures by 3–5°C, increasing deaths and reducing productivity.

Transport Disruptions - One-fourth of roads are flood-prone, causing mobility to collapse.

Housing Risks - Over half of the housing needed by 2070 is yet to be built, risking embedding vulnerabilities.

Weak Services - Poor waste, water, and energy systems worsen floods, pollution, and health crises.

Why India Needs Climate-Resilient Cities

Rapid Urbanisation - India's urban population will nearly double to 950 million by 2050. Since half the infrastructure for 2070 is yet to be built, now is the time to build it right.

Rising Climate Risks - Cities face increasing floods, heatwaves, cyclones, and sea-level rise. The IPCC warns Indian cities are among the world's most vulnerable.

Economic Imperatives - India loses billions yearly to urban disasters. Heat stress alone could cost 34 million jobs by 2030.

Social Justice - Nearly 35% of urban residents live in vulnerable slums. Resilience planning protects the poor, women, children, and migrants.

Environmental Sustainability - Resilient cities protect natural buffers like wetlands and green cover, which absorb water and regulate temperature.

Better Governance - Building resilience requires fixing weak city governments (ULBs) and fragmented planning.

Global Commitments - It aligns with India's Panchamrit targets (Net Zero by 2070) and global goals like SDG 11 (Sustainable Cities).

Significance of Building Climate-Resilient Cities

Saves Lives & Livelihoods - Reduces deaths from floods and heatwaves (e.g., Ahmedabad Heat Action Plan) and protects the income of the urban poor.

Boosts Economy - Resilient infrastructure (e.g., storm-water drains) minimizes disaster losses and attracts global investment.

Protects Environment - Conserves wetlands, lakes, and green belts (e.g., East Kolkata Wetlands) and promotes renewable energy.

Promotes Social Equity - Ensures inclusive planning for slum dwellers and vulnerable groups, preventing the rise of "climate refugees."

Strengthens Governance - Requires strong city governments (ULBs) with the power to enforce building codes and disaster plans (e.g., Mumbai Climate Action Plan).

Future-Proofs Urban Growth - Ensures that new infrastructure built for the growing population is sustainable from the start.

Key Challenges in Building Resilient Cities

Weak Urban Local Bodies (ULBs) - Lack skilled staff (planners, engineers) and are financially dependent on state governments.

Fragmented Governance - Multiple agencies (municipalities, development authorities, water boards) work in silos, leading to blame-shifting during crises.

Financial Constraints - Cities have a low revenue base (property tax collection is below 40%) and struggle to access climate finance.

Unplanned Growth - Construction on wetlands and floodplains (e.g., Bengaluru) and weak enforcement of building codes make cities structurally vulnerable.

Social Inequality - The urban poor and migrants living in informal settlements on high-risk land are the most affected by climate disasters.

Global Best Practices and India's Initiatives

Global Best Practices

Rotterdam (Netherlands) - "Water plazas" that act as parks in dry seasons and flood-storage tanks during rains.

Shanghai (China) - "Sponge City" program using permeable pavements and green roofs to absorb rainwater.

Singapore - Extensive urban greenery to reduce heat and a NEWater project to recycle wastewater for security.

Copenhagen (Denmark) - "Cloudburst Management Plan" with green corridors and smart tunnels to manage heavy rain.

Medellín (Colombia) - "Social urbanism" using cable cars and parks to make hillside slums more resilient and integrated.

India's Key Initiatives

National Policies - National Action Plan on Climate Change (NAPCC) and State Action Plans (SAPCCs).

Urban Missions - Smart Cities Mission, AMRUT (for water & sanitation), and PMAY-Urban (for housing).

Disaster Management - National Disaster Management Plan (NDMP) and city-level Heat Action Plans (HAPs).

Ecology - Nagar Van Yojana (Urban Forest Scheme) to reduce heat island effects.

Finance & Tech - Use of Green Bonds (Pune, Indore) and GIS-based risk mapping.

Way Forward - A Roadmap for Resilience

1. **Urban Planning & Housing** - Enforce climate-sensitive building codes. Promote compact city designs with mixed land use. Integrate green-blue infrastructure (parks, lakes, urban forests).
2. **Flood Management -** Upgrade to smart storm-water drainage systems. Protect and restore urban wetlands and floodplains. Use permeable pavements and rain gardens (nature-based solutions).
3. **Heat Resilience** - Scale up Heat Action Plans nationwide with cooling centers. Create green corridors and promote cool roofs with reflective paint.
4. **Transport Resilience -** Build flood-proof elevated corridors and metro lines. Develop multi-modal networks (metro, bus, cycling) so alternatives exist during crises. Promote electric buses and pedestrian-friendly designs.
5. **Municipal Services -** Adopt zero-waste models like Indore's. Build resilient water and energy systems (e.g., solar micro-grids).
6. **Governance and Finance -** Empower and train city governments (ULBs). Use Public-Private Partnerships (PPPs) and issue more Green Bonds. Introduce city-level climate budgets.
7. **Technology and Capacity Building** - Use GIS for hazard mapping and AI for predictive flood/heat models. Deploy IoT sensors in drains and water pipelines for early warnings. Invest in continuous training for urban planners and disaster managers.

Conclusion

Building climate-resilient cities is a constitutional duty (under Articles 21, 48A, 243W) and a global responsibility. By aligning with Sustainable Development Goals (SDGs) 11 and 13, India can ensure its urban future is one of growth, equity, and sustainability.

Source - https - //www.thehindu.com/news/national/punjab/encroachments-climate-change-may-have-led-to-punjabs-worst-floods-in-decades/article70022750.ece