EduInspire - An International E-Journal
An International Peer Reviewed and Refereed Journal
Council for Teacher Education Foundation, (CTEF, Gujarat Chapter)
ISSN 2349-7076
www.ctegujarat.org
ISSN 2349-7076

EduInspire

- An International Peer Reviewed and Refereed Journal

Vol: XII
Issue: II
JUNE-2025

Council for Teacher Education Foundation,

(CTEF, Gujarat Chapter)

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Integrating Climate Resilience into Legal Framework in Urban Areas: A Blueprint for Urban Governance Reforms in India

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Abstract

With cities in India growing at an unprecedented rate, the impacts of climate change—heat waves, floods, water stress—are becoming more intense and frequent. While urban resilience is often discussed in policy spaces, it hasn't yet been meaningfully integrated into our legal and governance frameworks. This paper puts forward a blueprint for reforming urban governance in India by embedding climate resilience into legal and institutional systems. It maps existing laws and policies, highlights the key gaps, and suggests practical, scalable legal reforms—from updating planning legislation and municipal acts to incorporating resilience into building bye-laws and land use policies. The paper also explores how governance structures can be made more adaptive, inclusive, and risk-aware by drawing lessons from Indian cities and international practices. Ultimately, the goal is to enable Indian cities not just to respond to climate risks, but to plan for them proactively, with laws and institutions that support long-term resilience.

Key Words: *Urban Governance, Climate Resilience, Legal Reform, India, Municipal Law, Adaptive Planning, Urban Policy, Sustainable Cities, Climate Risk, Institutional Reform*.

Introduction

Climate resilience in urban areas is the capacity of cities to anticipate, prepare for, respond to, and recover from climate-related impacts such as heat waves, flooding, sea-level rise, and extreme weather events. The urban India is home to approx. 35% of population which contributes to around 60% of GDP. With rising trajectory of growth and development the urban areas of India are getting vulnerable to climate induced challenges such as heat waves, air pollution, rising temperatures etc. By 2030, 80% of urban India will be exposed to heat stress with cities like Delhi, Mumbai already recording higher temperatures (IMD, 2023).

Extreme rainfalls have surged threefold since 1950s causing urban flooding in 90+ cities annually (CSE, 2022). While residing, sea level threatens 42 million coastal urban dwellers (World Bank, 2021). Still India's urban legal framework remains outdated as only 4 out of 28 states have updated their town planning Acts to include climate resilience (NITI AAYOG, 2023). 75% of municipal building bye laws lack mandatory green infrastructure (MoHUA, 2022).

As cities continue to grow, integrating climate resilience into urban legal framework becomes crucial to ensure sustainable development, safeguarding the population and protecting infrastructure.

The International Panel on Climate Change (IPCC) defines resilience as — "The capacity of social, economic and environmental systems to cope with a hazardous event, trend or disturbance, responding or re-organizing in ways that maintain systems' essential function, identity, and structure while also maintaining the capacity for adaptation, learning and transformation" (IPCC, 2014).

The existing governance structure, fragmented environmental laws and regulations lack to build a resilient system to counter climate change.

CLIMATE RESILIENCE: BASIC UNDERSTANDING

CS Hollings (1973), a Canadian ecologist, for the first time defined, ―ecological resilience‖ in his seminal paper, ―resilience and stability of ecological system‖. Though it was not directly related to climate, UN in 2000 promoted climate resilience indirectly by discussing adaptation strategies as a response to unavailable climate impact in 3rd Assessment Report, 2001, IPCC.

It was in 2007, when IPCC in its AR4 Report introduced ―climate resilience‖ a key concept, defining it as ability of system to absorb disturbance while retaining its functions. In 2010, the UN Climate Treaty, Cancuan Adaption Framework Mandate National Adaptation Plan, institutionalizes resilience. Later, it became a legally binding provision on signatory nations under Article 7 of Paris Agreement, 2015.

Concerning India, the concept of climate resilience is deeply enrooted in its indigenous knowledge and local governance. For example, we had baolis system, tank irrigation (the Eris of Tamil Nadu), flood resistance housing in Assam known as stilt houses. The stable graph of resilience stoop down in colonial era, though we had few projects like Ganga Canal (1854), Bombay

Flood Committee (1920). But the then system lacked systematic resilience.

From the post-independence era to late 200s the laws, statutes, policies all treated climate risks as ―natural calamities‖ rather than a systematic vulnerability in late 2000-2015, for the first time in India, the concept of climate resilience got embedded in national planning. Initiatives like national action plan in 2008 launched 8 missions including national water mission for water security, sustainable habitat mission for climate friendly urban planning, Gujarat's heat action plan of 2013 to address excessive heat of Ahmedabad. The major critique of these initiatives was their weak enforcement.

In late 2010's to the current years, the graph of climate resilience is moving upward with initiatives like climate smart cities assessment framework (MoHUA, 2019), National Disaster Management Fund (2021), revised urban planning guidelines (2022) etc. It is evident from the trajectory of climate residence in context of India, now we are shifting our focus to pre-emptive and adaptive measures.

LEGISLATIVE AND JUDICIAL FRAMEWORK FOR CLIMATE RESILIENCE:

India has enacted few laws and there are certain judicial pronouncements that indirectly support urban climate resilience, including the Environment (Protection) Act, 1986; the Disaster Management Act, 2005. These legal instruments provide the foundation for regulating pollution, managing disasters, and promoting energy efficiency—key components of resilient urban systems.

A- STATUTORY PROVISIONS-

1. Disaster Management Act, 2005

The Disaster Management Act, 2005 provides a legal and institutional framework for managing disasters, many of which are climate-induced. While the Act primarily focuses on preparedness, mitigation, and response to disasters, it indirectly supports climate resilience by mandating the integration of risk reduction into development planning.

Section 6 states that the National Authority shall have responsibility for enacting the policies, plans and guidelines for disaster management for ensuring effective response to disaster. In order to do the same, the National Authority may- approve the national plan; approve plans prepared by ministries or departments of government; coordinate the enforcement and

implementation of policies and plans; provide support to other countries affected by major disaster; taking any other measures for mitigating, preventing the disasters. This section provides for total of 10 responsibilities of national Authority.

Section 18 provides the same for the State Authority. The State Authority shall have responsibility for enacting the policies and plans for disaster management. The State Authority may- lay down the state disaster management policy; approve state plans in accordance to guidelines laid down by National Authority; coordinate the implementation for the state plan; to review the development plans of different departments; recommend provisions of funds for mitigation and preparedness measures. This section provides for total of 8 responsibilities of State Authority.

Section 30 outlines the powers and functions of the district Authority, which will serve as the district's planning, coordinating, and implementing body for disaster management. The Authority will take measures in accordance to the guidelines laid down by State Authority and the National Authority. The District Authority is responsible for the tasks like preparing, reviewing, and updating the district-level response plan, establishing and maintaining a mechanism for early warnings and providing accurate information to the public, coordinating and monitoring the implementation of the National Policy, State Policy, National Plan, State Plan, and District Plan, assessing the capabilities to respond to any disaster or potential disaster, monitoring the execution of plans prepared by government departments at the district level, ensuring that vulnerable areas within the district are identified, directing other authorities at the district and local levels to implement additional measures for disaster prevention or mitigation. This section provides for total 29 responsibilities for the District Authority.

2. Environment Protection Act, 1986

The Act came into picture after the Bhopal gas tragedy, this Act provides for the powers to the central government to regulate and control activities that may harm the environment. The Act facilitates the formulation of rules related to air and water pollution, waste management, and environmental impact assessments—all of which are crucial for building urban resilience to climate risks.

Section 3 grants the central government the authority to implement measures to protect

and improve the environment. This authority allows the government to take comprehensive actions to enhance environmental quality and prevent pollution. These measures include coordinating efforts with state governments, planning and executing nationwide programs to prevent and control environmental pollution, establishing standards for the emission and discharge of pollutants, examining manufacturing processes and materials that may cause pollution, conducting premises inspections, and establishing and recognizing environmental laboratories. This section outlines 14 areas in which the central government is empowered to act. Section 5 provides for the power of central government to give direction.

B- JUDICIAL PRONOUNCEMENTS

1. **Vellore Citizens Welfare Forum v. Union of India (1996)1**

The Supreme Court has emphasized that there is a need for sustainable development to protect ecological resilience. The case highlighted that there is importance of safeguarding natural resources in order to maintain the environment's ability to withstand and recover from ecological stress. The Court held that the degradation of environment diminishes the ecological resilience hence, making regions more vulnerable to climate- related disasters.

2. **The Ganga River Pollution Case – M.C. Mehta v. Union of India(2017)2**

The court ordered for strict implementation of environmental laws. The authorities are to be established which will deal with matters of river separately. There should be public awareness about the environment.

3. **In Re: Coastal Regulation Zones (CRZ) Rules, 2018 – Supreme Court of India3**

The Court highlighted the significance of safeguarding coastal ecosystems such as mangroves and wetlands, recognizing their vital role in strengthening climate resilience against rising sea levels, storm surges, and cyclones. Preserving these coastal habitats helps bolster the resilience of both communities and ecosystems to the effects of climate change.

4. **National Green Tribunal (NGT) – M.C. Mehta v. Union of India (2017)4**

This case directed authorities to take measures to improve urban resilience by incorporating climate adaptation strategies, including green infrastructure and flood management. The NGT addresses urban climate resilience through sustainable planning. The Court highlighted the

importance of climate-resilient infrastructure and sustainable urban planning to protect vulnerable populations from climate change effects like flooding and rising sea levels.

5. **Supreme Court of India – Writ Petition (Civil) No. 946 of 2020 (Climate Change and Disaster Preparedness)**

The Court called for integrating climate resilience into disaster management policies, emphasizing community-based adaptation and Focuses on strengthening resilience at community levels to withstand climate shocks.

IDENTIFIED GAPS IN CURRENT LEGAL FRAMEWORK

1. The national policy on disaster management under the disaster management act though periodically updated but does not mention climate change adaptation or resilience building strategies.
2. The disaster management plans are often generic and focuses on immediate disaster response than proactive climate adaptation measures
3. Lack of coordination among agencies, lack of clarity, broad and generic responsibilities lead to gap in climate adaptation measures.
4. Funds are not specifically allocated for ecosystem based resilience or climate adaptation infrastructure like the environment protection act 1986 does not specify dedicated funding system for climate resilience projects.
5. The regulations issued under environment protect act 1986 are: Pollution centric and lack measures for climate resilience.
6. Enforcement of environment standards is weak and limits monitoring climate resilience practices.
7. Lack of unified comprehensive legal framework dedicated specifically to urban climate resilience hampers coordinative actions.
8. The national urban transport policy 2006 which promotes sustainable urban transport solutions provides no legal requirement to incorporate climate resilience measures into urban transport planning.
9. The smart city mission 2015 promotes sustainable and resilient urban development lacks binding legal requirements to integrate climate resilience uniformly.
10. The national action plan of climate change 2008 includes mission on

sustainable habitat, promoting energy efficiency green building practices etc but, it lacks specific mandates for urban resilience.

COMPARATIVE ANALYSIS: INTERNATIONAL MODELS

The South African Climate Change Act, 20245 specifically addresses urban climate resilience by embedding climate adaptation into the legal responsibilities of municipalities. It requires all municipalities—particularly metros and district municipalities—to carry out formal climate change needs and response assessments within one year of the publication of the National Adaptation Strategy and Plan. Based on these assessments, municipalities must develop Climate Change Response Implementation Plans tailored to local vulnerabilities such as urban flooding, infrastructure heat stress, and water scarcity. These plans are legally mandated to be integrated into each municipality's Integrated Development Plan (IDP), which governs spatial planning, infrastructure investment, and service delivery. Furthermore, the Act creates Municipal Forums on Climate Change, which coordinate climate actions and facilitate vertical alignment with provincial and national adaptation efforts. The Act also obliges municipalities to revise their policies, zoning schemes, and infrastructure plans to reflect future climate risks. Through these legally binding mechanisms, the Act positions urban resilience as a core function of local government, ensuring cities are not only planning for climate impacts, but are held accountable for implementing adaptation on the ground.

While many countries have integrated climate resilience into national strategies, urban planning guidelines, or environmental regulations, few have enacted exclusive, standalone legislation focused solely on climate resilience.

Instead, resilience is typically embedded within broader climate change acts or sectorial laws. For example, in the United States, climate resilience is addressed through local building codes and programs like New York City's Local Law 97, which indirectly enhances resilience by requiring energy-efficient retrofits, but it is not governed by a dedicated federal resilience law. In the United Kingdom, the Climate Change Act 2008 mandates national adaptation planning, and the National Planning Policy Framework encourages climate-resilient development, yet neither is

exclusively focused on urban resilience. Similarly, Australia promotes resilience through instruments like Water Sensitive Urban Design policies and certain state-level planning laws (e.g., Victoria's planning scheme amendments), but lacks a unified legal framework dedicated to urban climate adaptation. These examples show that while climate resilience is acknowledged and increasingly acted upon, it is typically fragmented across environmental, infrastructure, and planning laws, rather than consolidated into a single legislative instrument—unlike South Africa's Climate Change Act, which clearly mandates urban-level resilience planning and implementation.

RECOMMENDATION

A- Recommendations from UN

The Global Programme of Action for Disaster Risk Reduction (GPADR) for a Resilient Urban Future is a strategic initiative led by the United Nations Office for Disaster Risk Reduction (UNDRR) aimed specifically at building resilience in urban areas against the growing threats posed by climate change and disasters.

1. Integrate Disaster Risk Reduction into Urban Planning and Development: Conduct risk and vulnerability assessments to identify hazards specific to urban contexts.
2. Strengthen Local Governance and Institutional Capacity: Establish or enhance local disaster risk management authorities or forums.
3. Promote Inclusive and Equitable Resilience Strategies: Prioritize the needs of vulnerable and marginalized populations, ensuring their participation in resilience planning.
4. Invest in Resilient Infrastructure and Nature-Based Solutions: Encourage the use of nature-based solutions (NbS) such as urban green spaces, wetlands restoration, and permeable surfaces to manage flooding and heat.
5. Enhance Early Warning Systems and Emergency Preparedness:

- Develop and maintain multi-hazard early warning systems tailored to urban settings.
- Build community awareness and preparedness through education and drills.
- Strengthen response mechanisms to minimize impacts when disasters strike.

6. Mobilize Financial Resources and Innovative Financing Mechanisms

- Facilitate access to climate finance and international funds dedicated to urban resilience.
- Encourage public-private partnerships for funding resilience projects.
- Develop incentives and insurance schemes to support resilient investments.

B- Proposed Legislative Provisions for Enhancing Urban Climate Resilience in India

1. Need for Mandatory Formulation of Urban Climate Resilience Action Plans (U-CRAPs):

Each Urban Local Body (ULB) shall be legally mandated to develop and periodically update an Urban Climate Resilience Action Plan (U-CRAP), integrating localized climate risk assessments, vulnerability mapping, and adaptive capacity analysis. These plans must be aligned with national climate policy frameworks and integrated into city development and master plans.

2. Heat Stress Management and Urban Cooling Infrastructure

All urban centers, particularly those identified as high-risk under IMD temperature projections, shall implement comprehensive Heat Action Plans (HAPs). Legislation shall mandate:

- The deployment of passive cooling interventions (e.g., cool roofs, reflective paving, and increased vegetation cover),
- Urban canopy expansion through scientifically guided afforestation programs,

3. Integrated Urban Water and Drainage Systems

Urban areas shall adopt Integrated Urban Water Management (IUWM) principles to enhance water security and flood resilience. This shall include:

- Legal requirements for rainwater harvesting in new constructions,

4. Institutionalization of Blue-Green Infrastructure and ―Sponge City‖ Principles

Municipal authorities shall incorporate blue-green infrastructure in land use and zoning regulations to enhance urban absorption capacity. The Act shall enable:

- Regulatory incentives for permeable surfaces in private and public development,
- Restoration of degraded wetlands, urban rivers, and riparian zones,
- Establishment of nature-based solutions as integral components of climate adaptation strategies.

5. Climate-Resilient Affordable Housing and Urban Habitat

The Act shall mandate climate-sensitive design norms in government- subsidized housing schemes, particularly under the Pradhan Mantri Awas Yojana (PMAY).

6. Climate-Responsive Urban Mobility

The Act shall prioritize equitable, low-emission transport systems through:

Legal provisions for mandatory inclusion of Non-Motorized Transport (NMT) infrastructure in all new urban road projects, Expansion of electric public transport with climate resilience audits of transport infrastructure

7. Dedicated Urban Climate Resilience Financing

A Climate Resilience Fund for Urban India (CRF-UI) shall be established under the Ministry of Housing and Urban Affairs (MoHUA), with mechanisms for direct fiscal transfers to ULBs. The fund shall prioritize:

- Capacity-building of municipal staff,
- Pilot demonstration projects in climate-vulnerable cities,
- Scaling of community-based adaptation projects.

8. Participatory Urban Climate Governance

- To enhance legitimacy and accountability, the Act shall provide for:
- Institutionalization of Urban Resilience Committees comprising civil society, urban planners, marginalized groups, and academic experts,
- Participatory budgeting for climate adaptation projects,
- Mandated public disclosure of resilience metrics and adaptation progress.

9. Institutional Architecture and Inter-Governmental Coordination The Act shall establish a National Urban Climate Resilience Authority (NUCRA) with state-level subsidiaries to coordinate implementation, facilitate technical support, and monitor outcomes. Climate Cells shall be institutionalized within municipal corporations to serve as dedicated implementation arms.

10. Integration with Existing Legal and Policy Instruments

The Act shall harmonize with and supplement existing frameworks, including:

- The Environmental Protection Act, 1986,
- The Disaster Management Act, 2005,
- The Real Estate (Regulation and Development) Act, 2016,

- Relevant state-level urban development and planning acts.

CONCLUSION

The imperative to integrate climate resilience into India's urban legal framework has become increasingly urgent in the face of escalating climate risks that threaten the sustainability, safety, and livability of our cities. This study has examined the multifaceted concept of climate resilience and identified critical gaps and loopholes within the existing statutory and judicial frameworks governing urban development. It has also highlighted the limitations of fragmented governance structures and the absence of explicit legal mandates addressing climate adaptation in urban contexts.

Through a comparative analysis with international legal frameworks, the study underscores valuable lessons and best practices that can inform India's approach to embedding resilience into urban governance. These global examples demonstrate the efficacy of dedicated climate legislation, institutional reforms, and enforceable urban resilience plans that align legal mandates with scientific risk assessments and community needs.

The recommendations proposed herein provide a comprehensive blueprint for legislative and institutional reforms that are both contextually relevant and legally robust. Enacting a dedicated Urban Climate Resilience Act, mandating climate- sensitive urban planning and development, strengthening judicial capacities, and establishing dedicated financing mechanisms will collectively enhance India's ability to anticipate, absorb, and recover from climate shocks.

Ultimately, the legal system of India stands at a critical juncture to catalyse transformative legal reforms that reconcile rapid urbanization with the imperatives of climate justice and sustainability. By adopting and operationalizing the proposed legal reforms, India can pioneer a resilient urban governance model that safeguards the rights and futures of its urban populations, especially the most vulnerable, while fulfilling its national and international climate commitments.

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