



**URBAN  
RESILIENCE  
UNIT**  
National Institute of Urban Affairs

**teri**  
THE ENERGY AND RESOURCES INSTITUTE  
*Creating Innovative Solutions for a Sustainable Future*

# MAINSTREAMING URBAN RESILIENCE

## Lessons from Indian Cities

NIUA & TERI, 2020

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# ABOUT THIS POLICY BRIEF

## Preface

Cities are estimated to support more than 40% of India's population and more than 75% of the national GDP by 2030. This pace of urbanization and associated challenges, coupled with climate risks like flooding, heat waves, etc., are aggravating the vulnerability of cities. In 2018-2019 alone, multiple extreme events across India severely affected urban areas including Chennai, Mumbai, Kochi and Bhubaneswar. Besides the initial short-term effects, such disasters have long-lasting impact on the socio-economic-physical conditions of cities and communities in terms of impacts on urban infrastructure, socio-cultural systems, and the overall quality of life. Given this scenario, building urban resilience is imperative for safeguarding urban investments and paving the way for a forward-looking, risk-aware, inclusive and integrated approach to sustainable urban development.

With an intent to strengthen the discourse on resilience building in Indian cities, the National Institute of Urban Affairs (NIUA) along with The Energy and Resources Institute (TERI) and other partners organized the Urban Thinkers Campus (UTC) – 'The Resilient City We Need' - in New Delhi in September 2019. This Policy Brief document highlights the key takeaways from the discussions held at the UTC with a focus on mainstreaming urban resilience in policy and planning, data-driven decision-making, strengthening capacities, and building partnerships for enabling development of resilient cities. While the UTC focused on the Indian scenario and this document largely draws lessons from Indian cities, the outcomes are equally relevant for cities in similar geo-climatic, socio-cultural, politico-economic contexts, especially in the Global South.

## Background

Climate change is increasingly becoming a global crisis affecting habitats and ecosystems. According to the Global Climate Risk Index 2020 released during COP25, India is fifth among the top ten countries facing loss of lives due to natural disasters over the past two decades. It has been estimated that over 22 million Indians were affected by extreme weather events in 2017 (Eckstein et al, 2019). Moreover, India is witnessing an explosive growth in urban areas with cities estimated to support more than 40% of the country's population and more than 75% of national GDP by 2030 (McKinsey Global Institute, 2010). Added to the stresses of growing urbanization, cities are also challenged with acute shocks such as flooding, earthquake, heat waves, among others, that pose risks to the urban infrastructure and services, and overall quality of life of residents. Poor urban planning and management are expected to cost Indian cities somewhere between \$2.6 and \$13 billion annually (Muthukumara et al, 2018). Furthermore, climate change impacts are estimated to cost the Indian economy almost \$1.178 trillion by 2050 if carbon emissions continue at their current rates (Tiwari & Godfrey, 2016). Thus, as cities are increasingly confronted with acute shocks and chronic stresses, it is extremely relevant for them to improve their coping capacities to achieve sustainable, inclusive, and resilient development.

To this end, international frameworks such as the Sustainable Development Goals (SDGs) 2030, Sendai Framework for Disaster Risk Reduction, Paris Climate Agreement, and the New Urban Agenda (announced at Habitat III conference), provide pathways for reducing risks of climate change. The SDG 11 "Sustainable Cities and Communities" and SDG 13 "Climate Action" together lay out indicators for reducing vulnerability of the people and building resilient infrastructure. The New Urban Agenda (NUA), in its policy section on 'Urban Ecology and Resilience', highlights the need for resilient development specifically in the next decade as 70% of the urban infrastructure demand is yet to be achieved (UN-Habitat, 2015). The Sendai Framework enlists seven





global targets wherein four targets focus on reducing future (physical, economical and infrastructure) losses, and the remaining three focus on adoption of nationwide strategies for action, increased international cooperation, and improved access to early warning systems. The Paris Agreement, for the first time, identified cities as key sub-national entities to achieve the goal of mitigating greenhouse gas (GHG) emissions and limiting global temperature rise.

Aligned with these international frameworks, India's National Action Plan for Climate Change (NAPCC), 2008, and the National Disaster Management Plan (NDMP), 2016, detail out long, medium and short-term action plans for various stakeholders to achieve comprehensive risk reduction and sustainable development. However, given the significance of India's urban development, it is imperative to mainstream 'urban resilience' for safeguarding infrastructure investments, mobilizing

institutional resources, and improving efficiency of urban governance. This is especially important in light of the recent national urban development missions [viz. Smart Cities Mission, Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Pradhan Mantri Awas Yojana – Urban (PMAY-U) and Swachh Bharat Mission – Urban (SBM-U)] that resulted in earmarking of an overall investment of INR 6,85,758 crores in 4,041 Urban Local Bodies (ULBs) across the country (MoHUA, 2018). These include projects on affordable housing, sustainable mobility, solid waste management and sanitation, water supply and sewerage, development of open/green spaces, heritage conservation, redevelopment and renewal of core areas, and smart governance, among others. Applying a resilience lens to these programs and projects can pave the way for a forward-looking, risk-aware, inclusive and integrated urban transformation in India.



# WHAT ARE 'RESILIENT' CITIES?

## WHAT IS URBAN RESILIENCE?

Urban resilience is “the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience.”

(100 Resilient Cities, 2013)

Cities rely on a complex web of institutions, infrastructure and information for their day-to-day functioning. However, a city’s ability to maintain essential functions is threatened by both acute shocks and chronic stresses (Figure 1; 100 Resilient Cities, 2013).

A resilience thinking approach tries to investigate how the different interacting systems of people and nature – or social-ecological systems – can best be managed to

### ACUTE SHOCKS



Earthquake



Wildfires



Flooding



Sandstorms



Extreme cold



Hazardous materials accident



Severe storms and extreme rainfall



Terrorism



Disease outbreak



Riot/civil unrest



Infrastructure or building failure



Heat wave



Water scarcity



Lack of affordable housing



Poor air quality



High unemployment



Homelessness



Changing demographics



Lack of social cohesion



Poverty and inequity



Aging infrastructure



Shifting macroeconomic trends



Crime and violence



Inefficient public transportation system

**FIGURE 1** Shocks and stresses faced by cities  
Source: 100 Resilient Cities, 2013



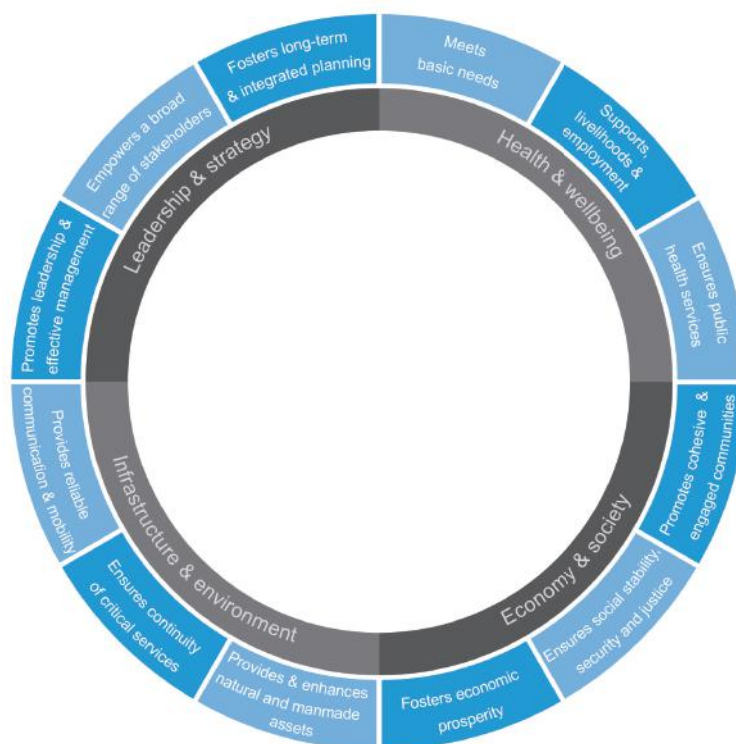
ensure a sustainable and resilient supply of the essential ecosystem services on which humanity depends (SRC, 2015).

Vulnerability can play a critical role in either escalating or reducing the impact of shocks and stresses. In essence, access to shelter, food, water, sanitation, health care, transport, reliable livelihood and employment opportunities, effective leadership, and engaged communities can reduce vulnerability, making cities and residents cope better during an extreme event. Hence, efficient planning and management of urban systems is critical not only for an overall development vision of a city but also for reducing the impact of extreme events. There are two main benefits from resilience approaches to urban planning and management. One, it minimizes future costs from shocks and stresses and leads to better designed projects; and two, helps design policies that address multiple challenges, improve services and provide social, economic and environmental co-benefits.

A city can become resilient if its people are healthy and have access to basic services; if its people are safe,

socially cohesive with reliable employment supporting a sustainable economy; if the city's ecosystem, infrastructure and services are well-balanced catering to the well-being of its people; and if the city leadership and local communities work together in driving integrated planning (WEF, 2015). In the resilience literature, these are termed as the four dimensions of the City Resilience Framework (CRF) as seen in Figure 2 (ARUP & Rockefeller Foundation, 2015):

- **Health & Well-being** - of everyone living and working in the city - focus on *People*
- **Economy & Society** - the systems within the society and economy that enable urban populations to live peacefully and act collectively - focus on *Organisations*
- **Infrastructure & Environment** - the quality of physical infrastructure and ecosystems that protect, provide and connect us - focus on *Places*
- **Leadership & Strategy** - appropriate leadership and strategy, enabling the city to learn from the past and take timely action - focus on *Knowledge and Institutions*



**FIGURE 2** City Resilience Framework  
Source: ARUP & Rockefeller Foundation, 2015





# MAINSTREAMING URBAN RESILIENCE: CHALLENGES AND ENABLERS

With an intent to strengthen the discourse on mainstreaming urban resilience and identify the key enablers for strengthening resilience building of Indian cities, NIUA in partnership with 100 Resilient Cities (100RC), now Global Resilient Cities Network (GRCN), pioneered by The Rockefeller Foundation; UN Habitat - India; TERI; Centre of Excellence for Governance, Ethics and Transparency (CEGET) at Global Compact Network India; the International Urban Cooperation (IUC) program funded by European Union, India, and the Global Challenges Forum Foundation organized the Urban Thinkers Campus (UTC) – ‘The Resilient City We Need’ – in New Delhi on 25th and 26th September 2019.

The two-day campus was conducted as a mix of urban labs and a national policy forum focusing on what ‘resilience’ means for cities in the Indian context and how local governments, and planning and development agencies can build their capacities to formulate and implement resilient urban solutions. More than 150 representatives from UN agencies, bi-lateral organizations, international networks, city governments, urban policy makers, city managers, civil society, private sector and academia deliberated on the ways and means to implement the resilience agenda for cities in India (Figure 3). The discussions focused on mainstreaming resilience in policy, governance and urban financing; data-informed decision-making; strengthening capacities and developing partnerships for enabling resilient cities. Additionally, the national policy forum deliberated on

leveraging the SDGs, maximizing co-benefits of climate action and disaster risk reduction, and urban innovation.

The following sections elaborate on some of the key challenges and enablers that were highlighted during the UTC for Indian cities.

## Institutional and Policy Frameworks

The main objective of key national urban missions launched by the Ministry of Housing and Urban Affairs (MoHUA), Government of India, is to improve the overall quality of life of urban dwellers through provision of sustainable infrastructure and services, and smart governance. It is felt that though the objectives of the missions broadly align with SDG targets, there is some extent of disconnect at the local level. For instance, local development agendas and municipal budgets of cities do not consciously align or account for activities that may be directly categorized as ‘sustainable’ or be attributed to achievement of SDGs. In addition, there is a lack of coordination and information-sharing among various government departments, public utilities and development authorities, sometimes leading to parallel exercises and duplicity of efforts. Thus, it is imperative to move beyond a silo-based approach to a cross-sectoral and integrated approach for building sustainable and resilient cities. Strengthening local institutional capacities, data-driven governance, and multi-stakeholder participation at each step will be critical to this process.



FIGURE 3 Participants of the National Policy Forum at the UTC



It was highlighted that a 'proactive' approach to planning, rather than a 'reactive' approach, will also enable mitigating climate risks and evaluating performance of cities in a regular manner for informed decision-making and commitment towards sustainable development. Experience from Indian cities has shown that with community awareness, presence of local champions, and handholding and capacity building, cities can devise and implement resilience building strategies as well as bring about behavioural changes to incorporate diverse and inclusive measures for addressing climate change issues.

The cities of Pune, Chennai and Surat appointed a Chief Resilience Officer (CRO) to lead the city's resilience efforts and to coordinate inter-departmental resilience action. With support from 100RC (now GRCN), these cities then came up with a City Resilience Strategy, identified robust and risk-resilient infrastructure projects, and established governance and monitoring systems such as an End-to-End Early Warning System in Surat (Table 1). Similarly, as part of the Asian Cities Climate Change Resilience Network (ACCCRN) initiative, Gorakhpur and Guwahati came up with integrated city resilience strategies for the short, medium and long-term (TERI, 2013). While Guwahati introduced a resilience check as part of the building permission process by integrating flood resilience principles in the 2014 revised Building Construction (Regulation) Byelaws, Gorakhpur prepared ward-level resilience action plans focusing on monitoring, maintenance and upgrade of critical infrastructure assets and services to minimize risk from urban floods. These

initiatives also provided co-benefits for improved quality of life in the slum areas of the two cities.

While many such pocketed efforts have been made by various cities across the country in the last decade, it was generally felt that there is a need to replicate and scale-up these actions at the national level. The discussions during the UTC highlighted the need for an overall roadmap for institutionalising such efforts in the urban planning process and mainstreaming resilience in the urban discourse. To this end, it was felt that the most crucial entry point would be the recently formulated National Urban Policy Framework (NUPF) by MoHUA. While the NUPF does mention 'resilience' and environmental sustainability in its *sutras* or principles, it needs to translate the same into its action areas. Another recent initiative of MoHUA – the development and launch of the "ClimateSMART Cities Assessment Framework" (CSCAF) – was also positively acknowledged. The objective of the assessment framework is to provide a clear roadmap for Indian cities towards combating climate change by assessing their current 'climate' performance in various sectors, such as energy & green buildings, urban planning, mobility & air quality, and water & waste management. Some of the CSCAF indicators also align with SDG targets and it is expected that once adopted on an annual basis, as envisioned, this evaluation will also help cities in reporting on other international targets such as those of Sendai Framework and India's Nationally Determined Contributions (INDCs). As of January 2020, only the 100 Smart Cities have reported in one round on this framework (MoHUA, 2019a).



FIGURE 4 Urban Data Lab



FIGURE 5 Resilience Design Lab with Youth



Another key example of mainstreaming urban resilience that was highlighted is the institutionalisation of the Urban Resilience Unit (URU) within NIUA. Established as a national level strategy unit in collaboration with 100RC (now GRCN), URU aims at promoting and supporting the development of resilient cities across India (NIUA, 2019).

## Data-driven Decision-making

Around the world, planners, policy makers, civil society groups and other stakeholders use data to help them make informed decisions that have positive impacts on their city. Data can enable stakeholders to be better prepared against shocks and may also support them in allocating resources in preparation for growth and alleviate stresses within a city, building the overall resilience of their city. The Urban Lab on Data-driven Decision-making at the UTC highlighted that the need for data for resilience building is well understood by experts among various stakeholder groups (Figure 4). However, operational and technical challenges constrain the usage of data for decision-making.

Today, many stakeholder groups, including but not limited to ULBs, are generating data on a variety of urban issues. However, the main challenges in using data sets are that the data are not always available at the required scale or resolution and that data are not collected at a frequency that supports day-to-day decision-making. Given that many non-governmental stakeholders are collecting data more frequently and/or at a more granular scale, this data can be more useful as evidence for decision-

making. For example, some businesses and civil society organizations are crowdsourcing information locally, obtaining near real-time and granular data for decision-making. Also, educational institutions are conducting primary research at the community scale, so their data is relevant for problem-solving at the neighbourhood level. However, it was recommended that standard data models and methodologies be in place for data collection and processing. This would enable more datasets to be used for decision-making across stakeholder groups. For instance, the cities of Panaji and Visakhapatnam in India developed a database management system (DBMS) in 2014 with support from USAID and TERI. The DBMS brought together all data on the cities' infrastructure and services – natural and manmade assets and networks – at one platform, in standardised formats, with an objective to take informed decisions for resilience building (TERI, 2014).

With the Smart Cities Mission, many cities across India are setting up Integrated Command and Control Centres (ICCC) and beginning to promote open data and data sharing. However, there is ambiguity around protocols regarding the quality, collection, sharing, storage, format and ownership of data. Many of these factors constrain stakeholders from using data as decision support and for research purposes. Concerns regarding the sharing of data and consequentially, the quality and privacy of data sets were raised. Furthermore, the ownership and storage of data were also highlighted as challenges. City/local governments felt that the city should be responsible for the storage of data on a public platform and therefore could monitor data sharing.

Another challenge that was raised during the working session included the format of uploading data as currently different agencies upload data sets in different formats, rendering comparison and interoperability extremely challenging. Therefore, there is a need for a standard data framework that addresses the above challenges, specifies guidelines, methodologies, formats and operational frameworks to ensure data is available and can be utilized effectively by decision-makers. To this end, MoHUA is in the process of developing data standards, protocols and taxonomies as it is setting up the National Urban Data Observatory and the India



**FIGURE 6** Participants developed 'decision questions' in Data Lab





Urban Data Exchange (IUDX) for optimal utilization and sharing of the data that will be collected by various stakeholders (MoHUA, 2019b). Moreover, Niti Aayog has recently announced the development of a National Data and Analytics Platform (NDAP) to make government data accessible to stakeholders in a user-friendly manner.

While the Lab stressed the value of collation and management of urban data for research and analysis, business operations and logistics, and improved service provision, the participants were not very clear on the specific 'decision questions' to use that data in a way that would support in taking action and decision-making (Figure 6). This essentially indicates the limited local capacity with cities and stakeholders for using data only for its reflective and diagnostic qualities rather than using it to inform decision-making processes. NIUA's Data Observatory initiative with the city of Chennai focuses on addressing this gap by providing use cases and capacity building for defining resilient solutions to challenges, such as water scarcity and flooding.

## Developing Partnerships

Participants agreed that multi-stakeholder collaboration is imperative in resilience building initiatives. Moreover, bringing together multiple stakeholders, developing city-to-city and public-private partnerships and continued civic engagement were also identified at the UTC as some of the key requirements for resilience building (Figure 7). It was highlighted that stakeholders



**FIGURE 7** Urban Lab on Developing Partnerships for resilience building

working in the urban space may not necessarily reach out to each other for co-designing solutions due to competing mandates, access to limited information, and absence of a shared goal. Added with diversified interests, the private sector especially needs more incentives to work collaboratively. Another limitation for successful partnerships and collaborative approaches to planning has also been lack of continued engagement of the local community and the city authorities themselves to promote resilience processes.

It was stressed that exploring synergies, collaboration and networking between cities, governments and institutions provides a platform for peer-learning to strengthen capacities and embed resilience thinking within the urban planning processes. For instance, as part of the 100 RC network (now GRCN), the CROs and government officials of member cities have had the opportunity to learn from, engage and interact with other cities across the world through conferences, workshops, city visits, curated network sessions and design thinking exercises to enable knowledge-sharing and peer-to-peer learning. Member cities also had access to an innovative Platform of Partners from different sectors (private, public, and non-profit) that offer solutions, services, and support for development and implementation of resilient strategies (100 RC, 2019). Similarly, the Regional Covenant of Mayors for Climate and Energy in the state of Gujarat, India, that includes eight member cities facilitated by IUC India, is supporting city-level voluntary action to combat climate change in the state. The network works closely with the Global Covenant of Mayors (GCoM) for peer learning with European cities on developing multi-stakeholder partnerships and devising resilient solutions. At the same time, the cities collaborate closely within the regional network in Gujarat. For instance, with its decade long experience of working on climate change action and resilience building, Surat City is sharing key lessons learnt with other fellow member cities through a series of meetings and workshops in this ongoing initiative.

The participants stressed the importance of promoting public-private partnerships to bridge the required 'resilience' investments, innovation and technology. However, this would need a consortium of multiple stakeholders as it may usually not be possible with the



public or private sectors alone. It was highlighted that while the private sector may help bridge the gap, the process would have to be driven and owned by the city as governments and partners often have very different perspectives, informed by their different social roles and mandates. The experiences from numerous non-government sector facilitated networks and initiatives such as 100RC and ACCCRN among others have shown that such initiatives may help establish the partnerships for knowledge exchange, capacity building and technical support. However, they need to be institutionalised in the formal planning and governance frameworks to have positive impacts for imbibing resilience in city budgets, resource mobilization, design and delivery; and in sustaining civic and political commitment in the long-term.

The “Climate Smart Cities Alliance” being set up by MoHUA in India is one such example for an inclusive dialogue and broad-based, collaborative action at the national level. It is envisioned that the diverse skills, strengths and resources of partners (including city authorities, government entities, research organizations, NGOs, rating and audit agencies, citizen groups, universities, research organizations, international agencies, sector umbrella organizations, etc.) will come together to cohesively plan for climate action within and across cities (MoHUA, 2019c).

## Strengthening Capacities

City leaders play an important role in championing resilience, and urban planners and city engineers play an important role in implementing resilience strategies (Figure 8). Therefore, it is important to understand the landscape of local capacities of not only the currently responsible city managers and practitioners but also future urban planners and managers for building resilient cities. The UTC focused on peer learning and exchange between stakeholders, discussing available proof of concepts in India and latest global developments, understanding the capacity needs of local leaders and practitioners to implement resilience actions, and fostering resilience thinking among future urban planners.

Lack of local technical expertise and institutional capacities of ULBs was one of the key constraints highlighted by the participants for resilience building. It was felt that though capacity building programs are being implemented under various national urban missions, they need to be contextualised to take cognizance of locally relevant shocks, stresses and climate risks. It is equally important to leverage local knowledge and available expertise from non-government sector and academia. Delivery of targeted training to various stakeholder groups within the city based on roles and mandates, use of local language, and appropriate duration and frequency of programs can lead to effective results for long-term capacity building and development of a ‘cadre’ of urban resilience practitioners. It was suggested that the National Urban Learning Platform (NULP) could be an appropriate framework to incorporate these measures.

When it comes to fostering resilience thinking among future urban planners, a theory-cum-practice-based approach was recommended by the participants, wherein resilience principles are included in the theory modules and applied in the urban planning and design ‘studios’ on live urban challenges and communities. To this end, NIUA’s ongoing initiative with five urban planning and design schools in India and 100RC’s Resilience Accelerator Program with Columbia University were highlighted as a proof of concept. A special feature of the UTC was the ‘Resilience Design Lab’ (Figure 5) wherein graduate level students were encouraged to come up with innovative solutions for sustainable and resilient cities. More than 35 students from five urban planning schools across India participated in this session and devised solutions focusing on building social, economic, and physical resilience of communities through a design-thinking approach.

The participants also highlighted the need for fostering research and local innovation for developing resilient urban solutions. The need for promoting urban innovation by private sector, research and academia alongside improvement in institutional capacities was highlighted. Experience from initiatives across the globe has shown that local innovation in planning and designing people-centric spaces (E.g. Oases in





Paris, and Water Plazas in Rotterdam); implementation mechanisms, for instance land management (E.g. use of TDR for flood risk management in Norfolk, Virginia); promotion of social entrepreneurship and partnerships with the non-government sector (E.g. collaborative



action for enhancing resilience of informal settlements in Durban); and use of technology for resilience planning and management (E.g. crowdsourcing of data in Da Nang, Vietnam) can go a long way in building resilience of cities and communities (100 RC, 2019).



**FIGURE 8** City Urban Lab on Mainstreaming Resilience Strategies

In India, CITIIS (City Investments to Innovate, Integrate and Sustain) is an example of a challenge-driven infrastructure development program being implemented by MoHUA with an aim to foster sustainable, innovative and participatory approaches to build projects within the Smart Cities Mission. Supported by the French Development Agency (AFD) and the European Union (EU), 15 projects are part of a unique experimentation laboratory helping to highlight and address specific issues faced by cities across India in developing innovative and resilient approaches for urban renewal projects. Table 1 provides a list of other successful case examples of cities formulating and implementing resilient urban solutions in India.

**TABLE 1** Case examples of Urban Resilience initiatives from India

City - Initiative	Key Features
<p><b>Pune – City Resilience Strategy</b></p> 	<ul style="list-style-type: none"> <li>• Office of Resilience headed by a Chief Resilience Officer (CRO) and supported by Strategy partners and Platform partners for financial and technical inputs.</li> <li>• The CRO oversaw developing a City Resilience Strategy.</li> <li>• The Strategy illustrates 40 resilience building actions that can be implemented over 50 projects each of which has a resilience value that can help in prioritization.</li> </ul>
<p><b>Chennai – Urban Horticulture</b></p> 	<ul style="list-style-type: none"> <li>• The Chennai CRO in collaboration with the Tamil Nadu Horticulture Department and local NGOs are driving a horticulture project in Chennai to address food access and security for the urban poor, better waste management and urban heat.</li> <li>• Through trainings by local NGOs on rooftop gardening techniques, communities across the city are able to grow nutritious food to increase health outcomes. Trainings also encourage communities to harvest rainwater and use drip irrigation to maximize water efficiency.</li> <li>• Rooftop horticulture is also linked to waste management through segregation of waste and demand for compost, which benefits the city’s waste management agency.</li> <li>• Rooftops with gardens have been shown to reduce roof surface temperatures and the city aims to scale this initiative to address heat stress in the city.</li> </ul>



**Indore – Integrated Disease Surveillance Project**



- Intends to reduce human vulnerability by detecting early warning signals of disease outbreaks to ensure appropriate response.
- The real-time surveillance system is meant to support public health workers in monitoring and responding effectively.
- Project required the analysis of the existing SOPs of public health surveillance organisations, developing a new and improved system, training medical practitioners and public health workers and integrating the system with other relevant services.

**Surat – End to End Early Warning System for Ukai and Local Floods**



- With the objective to reduce the damage caused by floods by reducing their intensity, the project reduces human vulnerability especially of the economically weaker sections by -
  - installing weather systems and data transfer mechanisms from catchment to reservoir to city,
  - developing weather and flow prediction models, and
  - improving existing flood preparedness.
- The project is implemented by Surat Climate Change Trust.

**Gorakhpur – Urban community-based micro resilience model of ward exposed to climate and hydro-meteorological risks**



- Impacts of climate change were experienced by certain wards where basic services like drinking water, sanitation, solid waste were limited.
- This was dealt with through decentralized planning and improvements in accountability.
- Ward-level community institutions organized monthly meetings, prepared action plans on a monthly basis and monitored their implementation by municipal bodies.

Source: Compiled by authors



# WAY FORWARD

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Given the scale of challenges associated with urbanization that are aggravating the vulnerability of cities to shocks and stresses, there is a need to embed resilience within the urban development discourse; and a *'people-centric'* approach lies at the core of this process.

**Mainstreaming resilience into national urban policies, infrastructure investment programs and city planning processes** will enable local governments in prioritizing and financing resilience projects. A clear understanding of what urban resilience entails can help sharpen the focus of national level policies such as the National Urban Policy Framework. Moreover, developing/updating risk-informed building byelaws, and urban and infrastructure planning guidelines can have a direct consequence on building cities that are capable of absorbing shocks and stresses. This would also require institutional frameworks, implementation mechanisms, and enforcement and regulatory frameworks that are aligned to the urban resilience agenda. While it is important to demarcate clear roles and responsibilities for various institutions and stakeholders to enable efficient delivery of functions, it is equally important to strengthen mechanisms for inter-department coordination – both within and between the institutions – to ensure knowledge sharing and cohesive action. Besides channelling the city budgets to embed resilience in every project, ULBs can illustrate demand for resilience solutions from the market.

**Bringing together different stakeholders to champion and prioritize the urban resilience agenda** is crucial as resilience action requires a cross-cutting, multi-level and multi-stakeholder engagement, and strong commitments and cooperation not just amongst various city level agencies and utilities, but also between businesses and communities. A proactive and forward-

thinking role of ULBs on one hand, and continued participation and involvement citizens, on the other, can mobilize financial resources, support infrastructure development, and align political commitment to improve city resilience and implement the sustainable development agenda. Identifying and strengthening social connect and community-based resilience building measures has demonstrated effective action across the globe. Maintaining processes to facilitate top-down and bottom-up communication that empower and build awareness of the local community is equally important. This will also enable informed government initiatives. Private sector and civil society can play a key role to this end.

**Informed decision-making through data-driven governance and performance monitoring** not only allows city managers to visualize trends and analyse data to develop the most efficient strategies to address shocks and stresses for resilient urban growth, it also helps evaluate successes and benefits for scaling up resilience initiatives. As more and more cities promote data sharing amongst stakeholders, there is a need of a framework to guide cities and stakeholders in setting up these platforms with clear standardized operational procedures regarding data sharing, privacy, collection, quality, ownership and format. There is also a knowledge gap regarding using data in an actionable manner to solve problems and inform decisions. This can be addressed through the development of use cases and technical assistance to cities. Development of easy-to-use resilience models, tools and toolkits utilizing the urban data will enable cities identifying more resilient and sustainable development paths and prioritize investments. Moreover, integrating data-sharing mechanisms across institutions dealing with critical services can improve responsiveness to risks and shocks.



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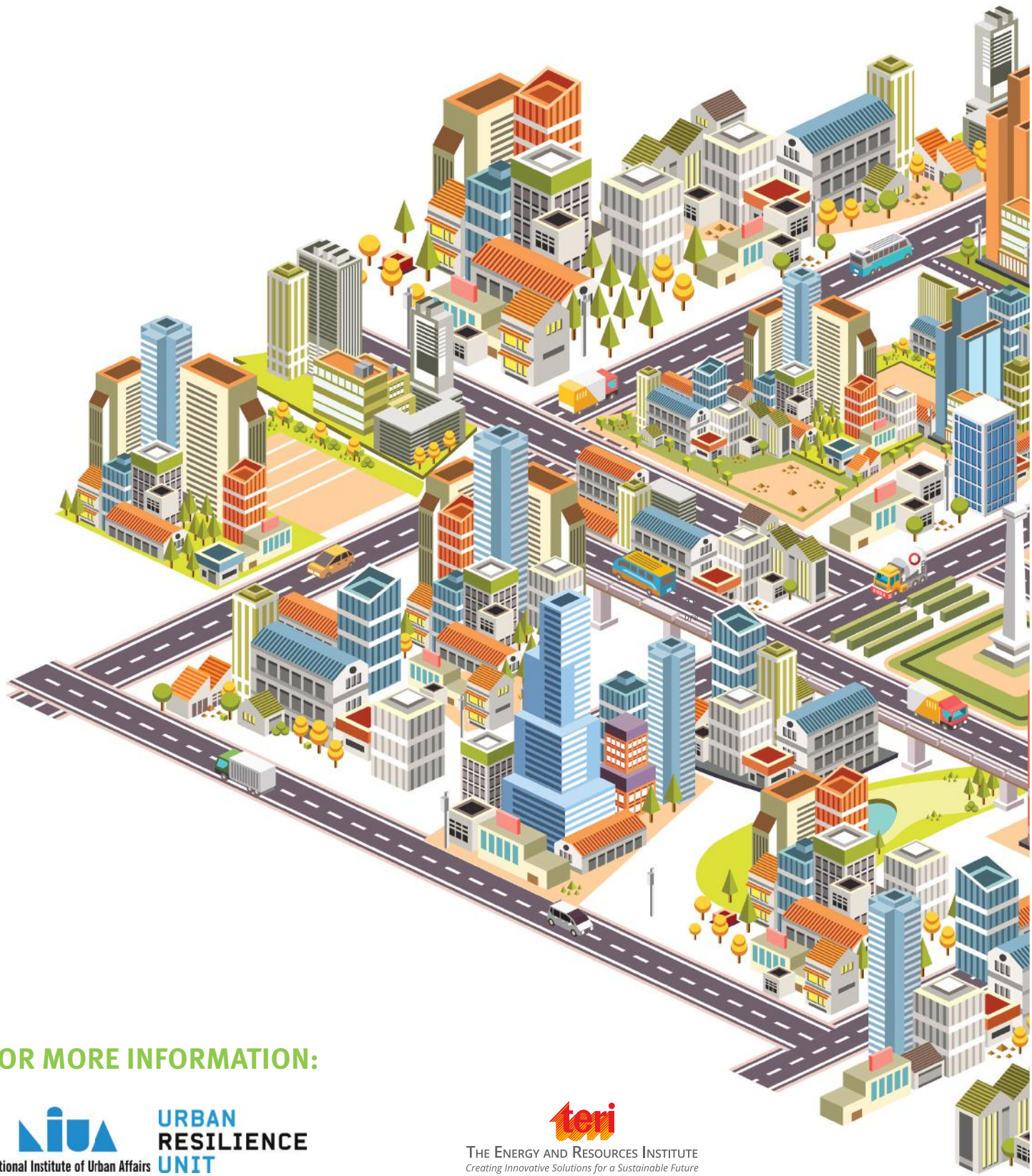
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