How can Young Urban Researchers and Practitioners contribute to Building Resilient Cities
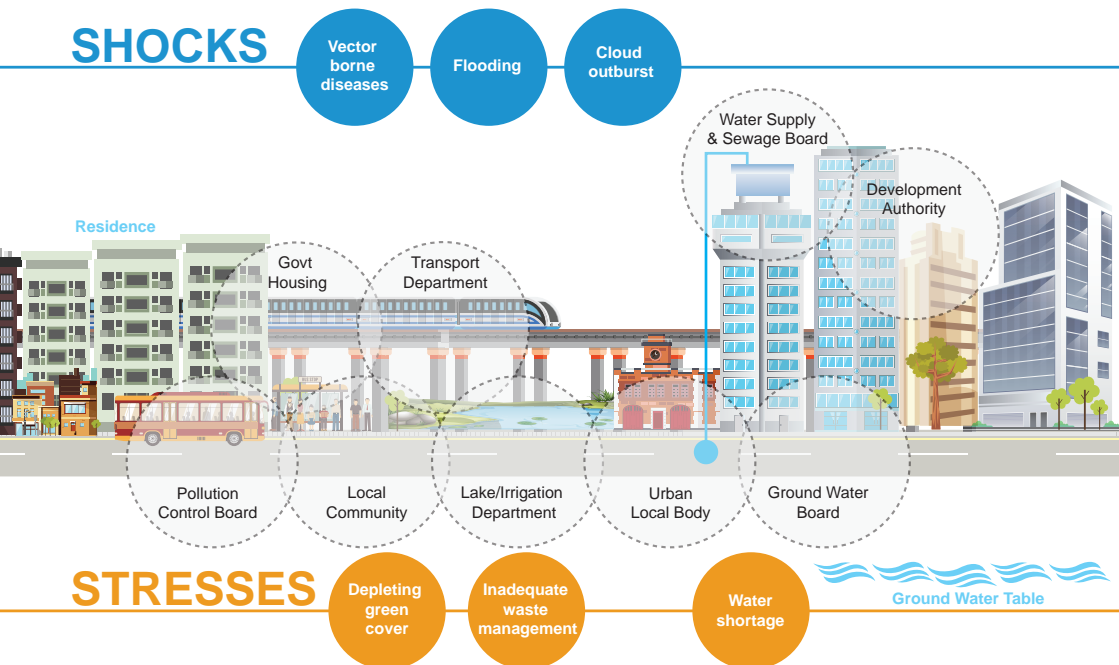

URBAN RESILIENCE UNIT

National Institute of Urban Affairs

WHY RESILIENCE

Cities are estimated to support more than 40% of India's population by 2030[1] and this scale of urbanization requires robust urban planning and management. However, poor planning and urban management are expected to cost Indian cities somewhere between $2.6 and $13 billion annually[2]. In this scenario, the consequence of extreme events such as heavy rainfall, flooding, water shortage, heat wave etc., brings additional challenges for currently stressed cities. In 2018-2019 alone, we experienced multiple such extreme events across India, wherein Chennai, Mumbai, Kerala and Orissa were severely effected. Besides the initial short-term impacts, such disasters have a long-lasting impact on the socio-economic-physical conditions of cities and its people.

Vulnerability can play a critical role in either escalating or reducing the impact of extreme events. 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 its people cope better during an extreme event. Hence, efficient planning and management of urban systems is critical not only for an urbanizing India but also for reducing the impact of extreme events.

Indian cities should aim at not only surviving and adapting to extreme conditions but also thriving despite extreme events. Urbanizing India is estimated to build 700 - 900 million sq. meters of urban land every year until 2030[1]. The future urban policy makers and practitioners who will be developing solutions for the same must become resilience thinkers in order to address current challenges in addition to future uncertainties.

SHOCKS

Vector borne diseases

Flooding

Cloud outburst

Water Supply & Sewage Board

Development Authority

Residence

Govt Housing

Transport Department

Pollution Control Board

Local Community

Lake/Irrigation Department

Urban Local Body

Ground Water Board

STRESSES

Depleting green cover

Inadequate waste management

Water shortage

Ground Water Table

21 major cities in India including **Delhi, Bengaluru, Chennai, and Hyderabad** are heading towards **zero groundwater levels** by 2020, affecting access for 100 million people

Water scarcity

124 AMRUT Cities and **18 Smart Cities** are prone to high risk of flooding

Flooding
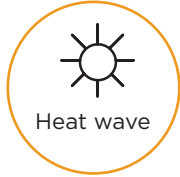
Heat wave

Heat waves in India are estimated to **increase** by **75-fold** in a business-as-usual scenario
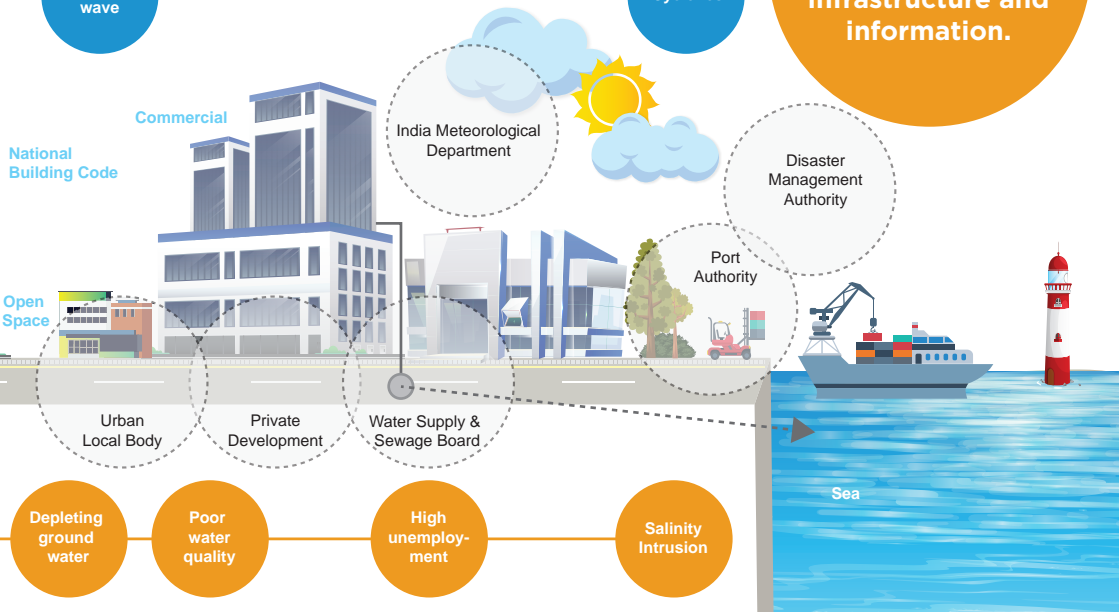
Source : Data compiled by URU

1. *McKinsey Global Institute. 2010. India's Urban Awakening: Building inclusive cities, sustaining economic growth.*
2. *Muthukumara, M., et al. 2018. South Asia's Hotspots: The Impact of Temperature and Precipitation Changes on Living Standards., Washington DC: World Bank: South Asia Development Matters.*

As an urban practitioner, how do you respond to complex urban challenges with the rise of increasing extreme events

?

Heat wave

Cyclones

Cities rely on a complex web of institutions, infrastructure and information.

Commercial

National Building Code

India Meteorological Department

Disaster Management Authority

Port Authority

Open Space

Urban Local Body

Private Development

Water Supply & Sewage Board

Sea

Depleting ground water

Poor water quality

High unemployment

Salinity Intrusion

UNDERSTANDING

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."
Rockefeller Foundation, 2013

A city's ability to maintain essential functions is threatened by both acute shocks and chronic stresses.

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

CHRONIC STRESSES

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

RESILIENCE

Resilience requires a cross sectoral learning and application

Consider a city with well connected transport and communication system but comes to a standstill during a flood. Reason being lack of well-maintained and networked storm water drains and lack of permeable surfaces.

Consider a city with several public spaces and active citizens but experiences disease outbreaks. Reason being lack of robust solid waste management.

Consider a city that provides adequate housing and livelihood opportunities but experiences heat waves resulting in loss of lives. Reason being absence of green cover.

These illustrations that are most relevant to Indian cities highlight the interdependence of urban systems and ascertain the significant need for cross sectoral approach contributing to resilience building. 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
➤ If the city leadership and local communities work together in driving integrated planning.

4 pillars of Resilience

As a young urban researcher, practitioner or a policy maker, you may have a specific focus, however, you need to think holistically and across the sectors. Adopt the resilience approach highlighted below to help guide you bring value in addressing shocks and stresses.

Seven Qualities of A Resilient City

Reflective
Using past experience to inform future decisions

Resourceful
Recognising alternative ways to use resources

Inclusive
Prioritise broad consultation to create a sense of shared ownership in decision making

Integrated
Bring together a range of distinct systems and institutions

Robust
Well-conceived, constructed and managed systems

Redundant
Spare capacity purposively created to accommodate disruption

Flexible
Willingness and ability to adopt alternative strategies in response to changing circumstances

WHAT **YOU** CAN DO TO

Become a resilience ambassador

Drive the resilience discussion in your student network and professional associations. Create awareness and sensitize your peers to address urban challenges keeping in mind the impacts of shocks and stresses.

Push boundaries in your research and practice, dive deep into resilience and break siloes

Focus your research on filling gaps and bringing value to the future of resilience building. Think beyond your focus - be it urban design, urban/environmental planning, architecture, urban management, policy making, governance etc., to bring resilience value in your work. Collaborate across disciplines to experiment and innovate resilience solutions.

In order to address flooding in the inner areas of Rotterdam, the city came up with an innovative and inspiring solution called the water squares, part of the city's integrated flood management strategy. The unused squares in the inner areas of the city were converted to water squares combining rainwater storage facility with open public spaces. With intensive public participation, the investment made in an infrastructure like rainwater storage facility was made visible, accessible and enjoyable contributing to the neighbourhood regeneration.

Instead of building infrastructure to store rain water, the water squares in Rotterdam aimed at multi-utility solution resulting in enhanced quality of life.

The resilience approach

Map shocks and stresses

Analyze their correlation

Investigate the impact of top shocks and stresses on the 4 pillars of resilience

Understand the issues and aspirations of stakeholders

Identify ways to leverage ongoing development programs

Flooding is a major concern in this area

Walls abutting the lake have collapsed in many places

There is no access to see the lake. Is that why the residents do not seem to care about the lake?

Some kids mentioned that they do not have space to play.

I have seen people dump solid waste into the lake!

That is because they do not have solid waste collection on a regular basis.
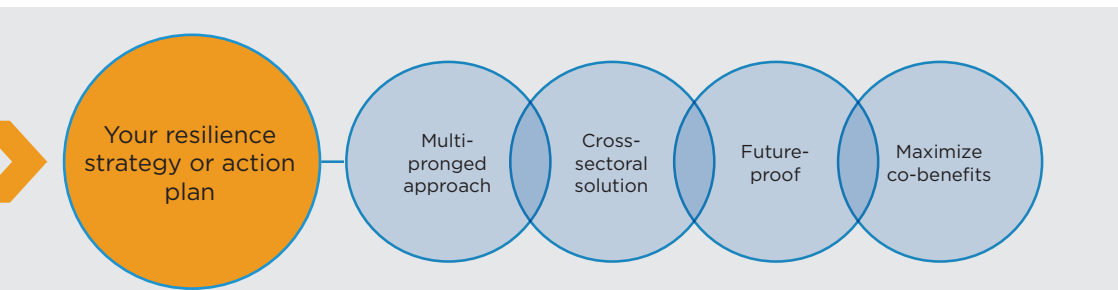
BUILD RESILIENT CITIES

SML - Short, medium, long term

To bring about resilience transformation, developing coherent short, medium and long term strategies are important. The Chennai Resilient strategy has focused on 5 missions defined through stakeholder engagement and has developed 17 goals and 86 actions to respond to the key shocks, stresses and challenges over a period of 5 years. In your academic and professional work, developing policies, plans and strategies for cities, focus on addressing immediate issues that contribute in achieving the long term aim.

Maximize development co-benefits

Building resilience usually supports a city in achieving development co-benefits. Paris, through the resilience strategy has been transforming its schools into 'oasis', cooling islands to address urban heat island effect and the risk of storm water flooding. Paris has 761 schools with 60,000m² of asphalt paved schoolyards that are not accessible to its citizens, although most of them live less than 200m from a school. By replacing the impermeable surfaces of the schoolyards with permeable surfaces, it is estimated that the surface temperatures in Paris will reduce by 10% and that there will be 4 to 16 mm of increase in water absorption. The city has been able to maximize co-benefits by opening up the schoolyards to its neighbourhoods. The oasis provides respite to vulnerable people during heat waves and the city also aims to build inclusive and cohesive communities by leveraging these spaces.

You can assess the cascading impacts of your strategy or action plan and pay attention to maximizing development co-benefits in addition to building resilience.

About the Urban Resilience Unit

Established in collaboration with 100 Resilient Cities, pioneered by the Rockefeller Foundation, the Urban Resilience Unit (URU) at the National Institute of Urban Affairs (NIUA) is promoting and supporting the development of resilient cities across India.

Join the URU – Knowledge Network

In a changing world where cities are facing increasingly complex challenges, building resilience is key for cities to not just survive and adapt but thrive too. While we support cities in building resilience, we believe it is important to involve and engage with future urban policy makers and practitioners. They are the future and they need to be able to respond to today's needs while planning for tomorrow.

Everyone has a part to play!

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