Cities of The Future – Climate Risk Management

The Griha Summit
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Cities and climate risk – Why does it matter?

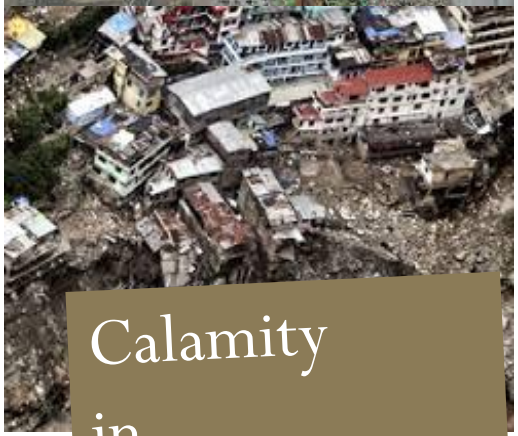
Urban areas are concentration of large population, economies, infrastructure: central to growth of the nation or the region

Over 50% of India's GDP is derived from cities - Climate change impacts can wipe out development gains and significantly reduce quality of life

Climate related Disasters cost an estimated $370 billon USD globally in 2011 (80 per cent of this was in Asia alone)

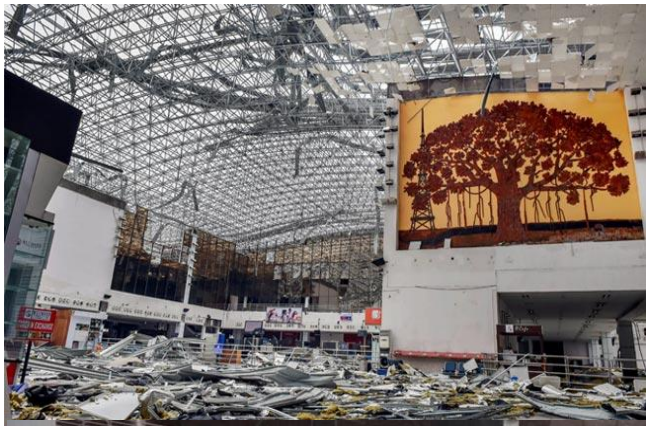
Associated social costs - Vulnerable groups are the most affected

Urban India – Confronting climate change and extreme events



Calamity in Uttarakhand

Floods in Srinagar, Chennai



Hudhud, Phailin , Helen cyclones

Urban India: Confronting development challenges

Increasing population, unplanned growth and urban sprawl

Pressures on and rising demands for housing, infrastructure and services

Environmental Degradation

Resource Depletion

Marginalization of vulnerable groups

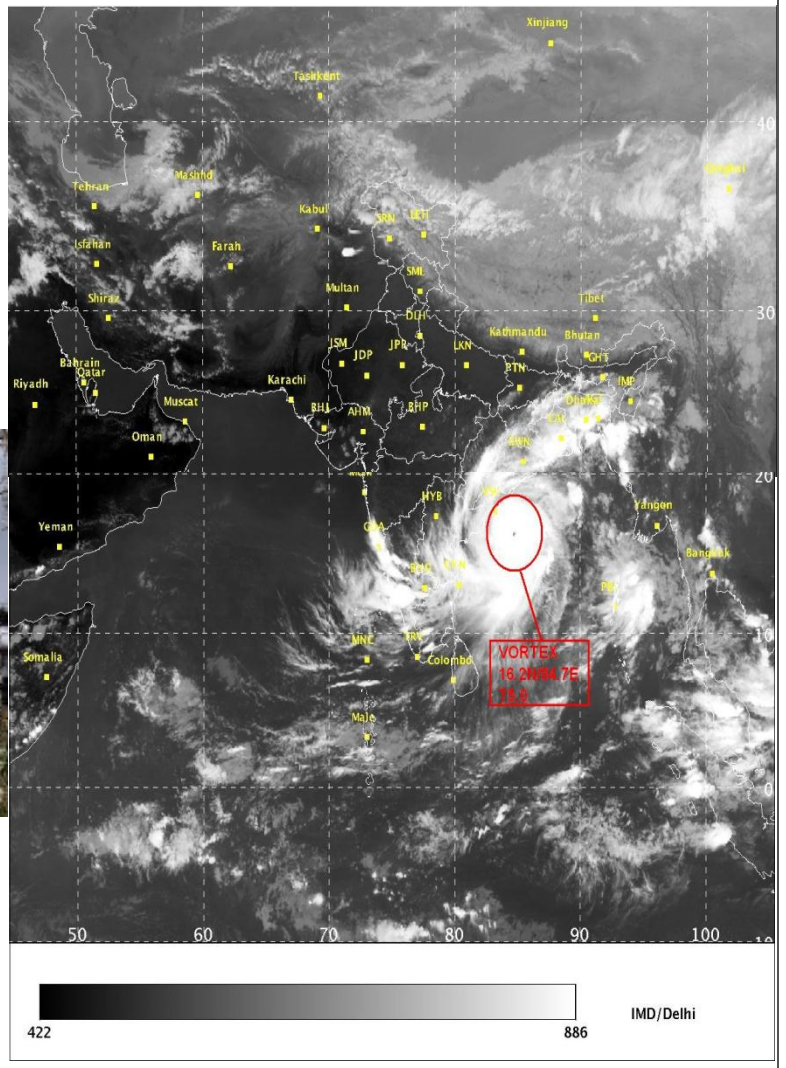
Poor quality of life

Limited resources and capacities of city governments

Source:Francesco Terzini Flickr Creative Commons

Visakhapatnam – Cyclone Hudhud

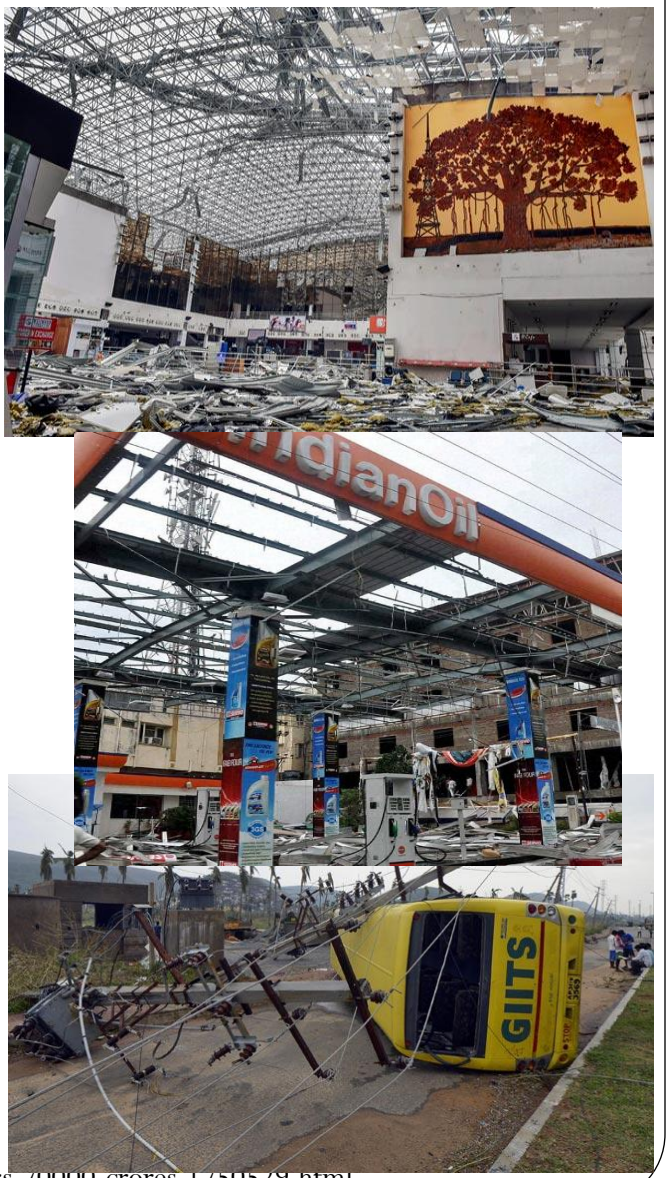
- People affected - 248,004 across 320 villages in Visakhapatnam, Vizianagaram, Srikakulam and East Godavari districts



Source: http://www.downtoearth.org.in/content/hudhud-death-toll-mounts-35

Hudhud - Estimate of Loss and Damage

- Fishing and related activities- 400 boats damaged and 72 sunk
- Eastern Power Distribution Company of Andhra Pradesh Limited- Rs 40,000 crore
- Navy- Rs 2000 crore
- Loss to airport infrastructure – Rs 500 crore
- Vizag Port- Rs.300 crore
- Road length- 2250km damaged
- Electricity poles, towers, communication network disrupted
- Industries- Rs 10,000 crore



Source: http://www.firstpost.com/india/hudhud-live-death-toll-at-26-naidu-says-losses-could-be-at-rs-70000-crores-1750529.html

Visakhapatnam - Resilience building

USAID-Climate Change Resilient Development (CCRD) program

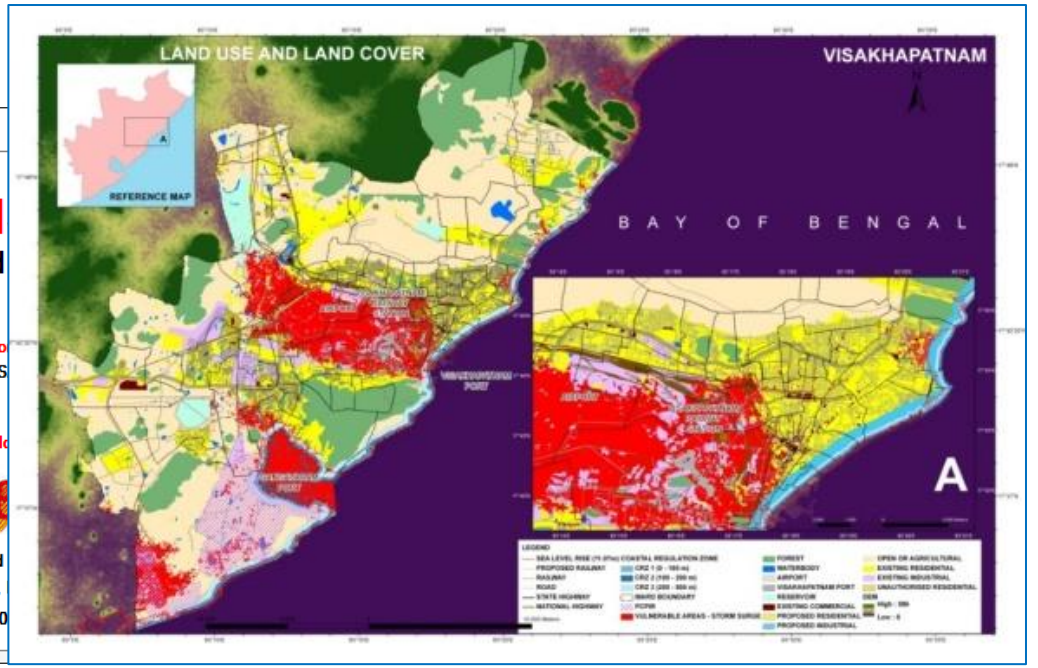
Inventorying and mapping of infrastructure assets

Database Management System (DBMS)

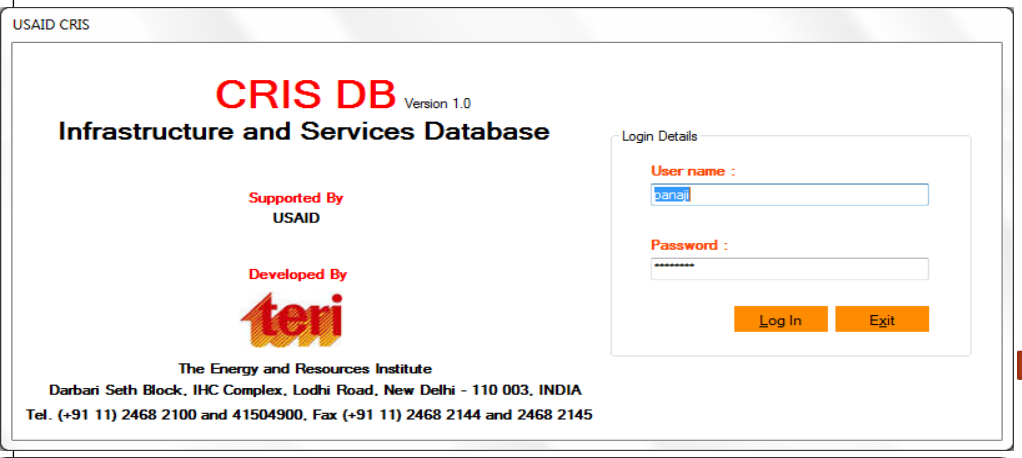
Vulnerability mapping w.r.t sea level rise

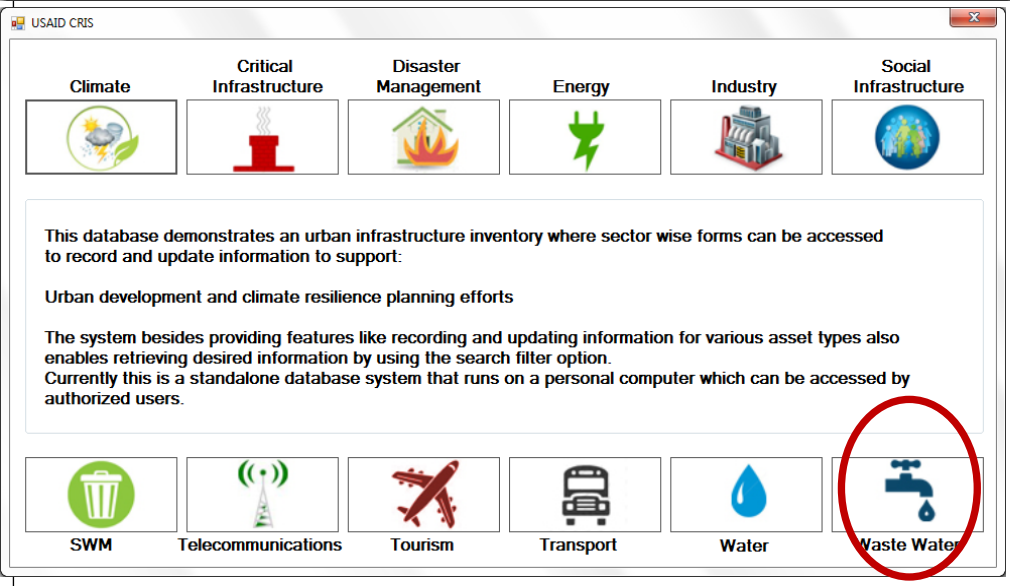
Resilience Strategy

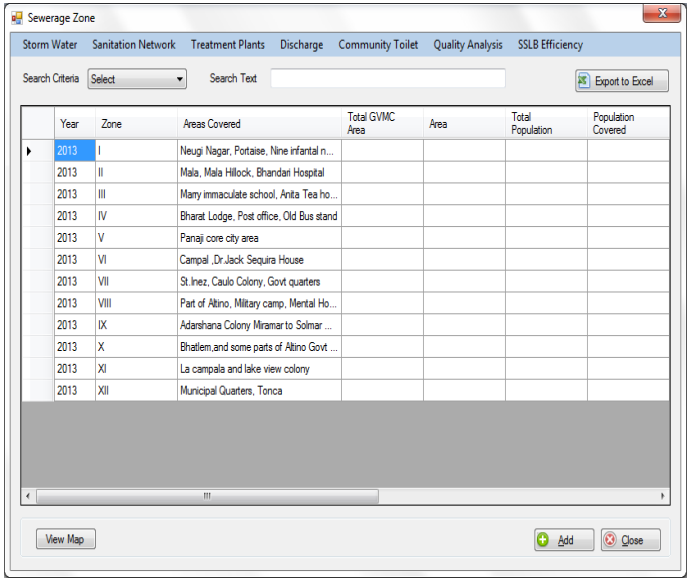
- Man-made and natural infrastructure resilience
- Sector specific recommendations
  - Structural interventions
  - Planning considerations
  - Regulatory requirements
  - Capacity needs

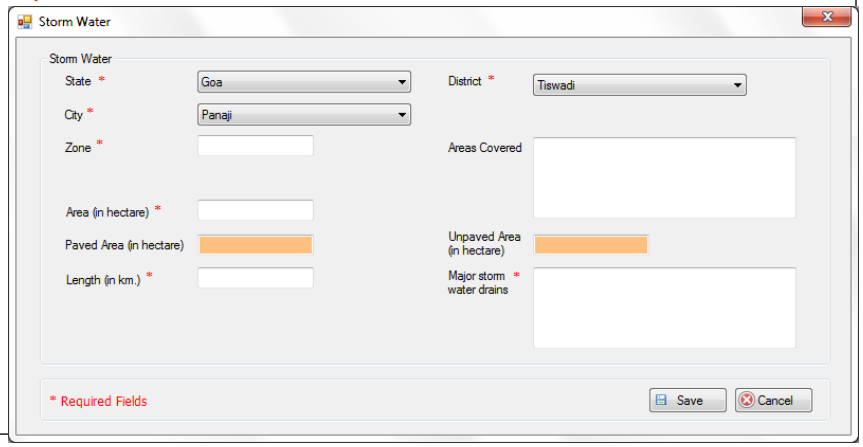


Database Management System for urban climate resilience planning



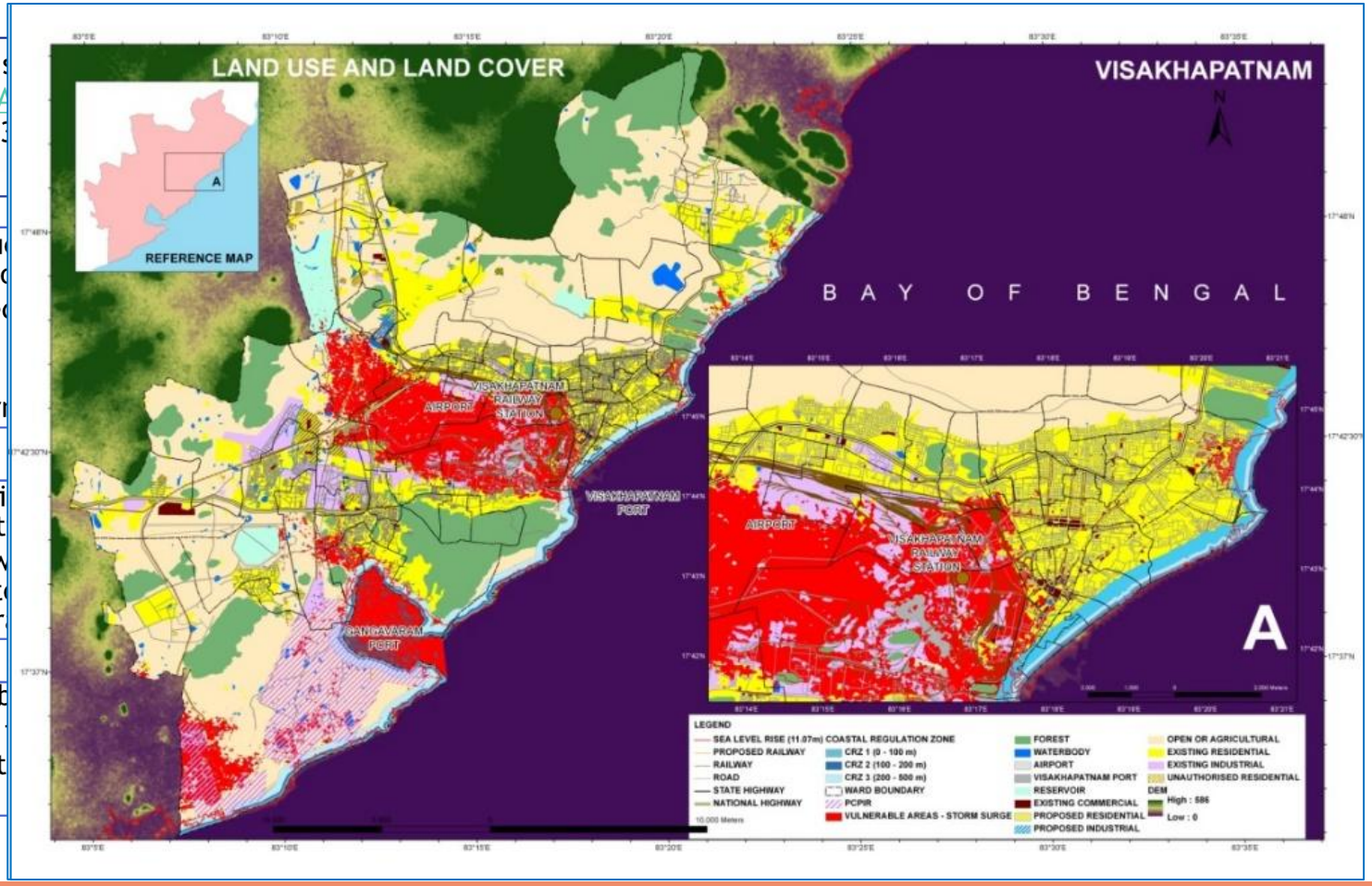






Vulnerability Mapping

- **DEM** — DEM data s… sources – A… (2011) at 3…
- **Plotting SLR and storm surge scenarios**
  - SLR valu… projectio…
  - Observe… m)
  - 1 m SLR
  - 4 m stor…
- **Vulnerability mapping**
  - Scenari… themat…
  - Areas w… SLR/ st… ‘vulner…
- **Output**
  - Vulnerab…
    - Shape …
    - Layout…



Scenarios mapped

- Scenario 1: Based on TERI’s SLR model projections
- Scenario 2: Based on observed SLR trend (with GIA corrections)
- Scenario 3: Based on 1 meter sea level rise assumption
- Scenario 4 (For Vizag only): In case of cyclonic events with surge height of 4m

Visakhapatnam - Gearing up to be SMART

Smart City
MISSION TRANSFORM-NATION

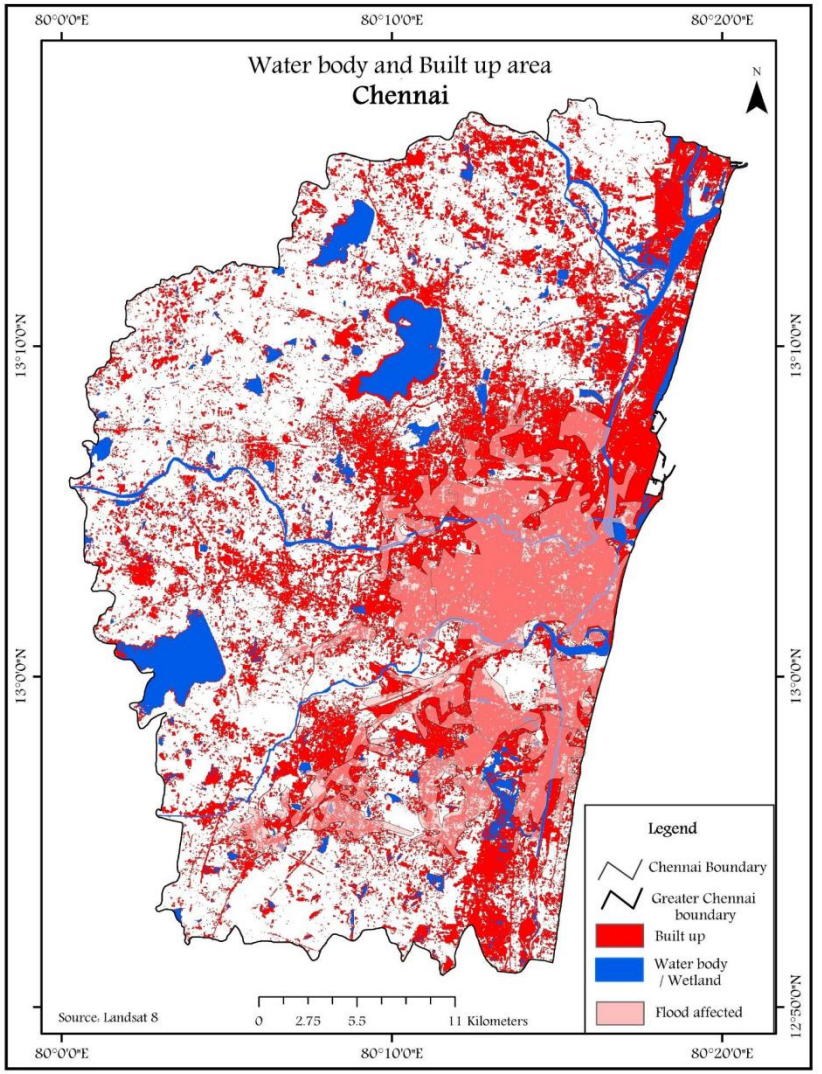
- Vision –

A Healthy and Livable City, A Resilient City, A Vibrant City

- Strategies –
  - Building resilient infrastructure and ensuring sustainable energy availability
  - Shore protection infrastructure
  - Disaster management system based on ICT infrastructure - Early warning and evacuation systems
  - Enhanced disaster management through improved urban governance

Chennai Floods

- In November 2015, Chennai witnessed one of its worst rainfalls in history, with a record 1218.6 mm of rain in the month– three times its average monthly rainfall
- An estimated 1.4 million families have been affected by the floods, of which 50,000 families lived on the banks of the Adyar, Cooum and Buckingham canal.
- The floods have caused an estimated damage of INR 3,000 crore to public infrastructure alone.



Source - Resilient Chennai: Summit on Urban Flooding, February 2016, Briefing Note

Chennai – 100 Resilient Cities

- Improved urban governance for resilience building- onus on Greater Chennai Municipal Corporation
- Chief Resilience Officer – coordinating multi-departmental dialogue and convergence
- Conserving urban ecology and watershed based drainage management – wetlands, marshes and lakes
- Use of ICT for disaster management systems

PIONEERED BY THE ROCKEFELLER FOUNDATION

100 RESILIENT CITIES

Source - Resilient Chennai: Summit on Urban Flooding, February 2016, Briefing Note

Chennai - Gearing up to be SMART

Smart City
MISSION TRANSFORM-NATION

- Vision –

A universal cultural hub for safe and sustainable living with enhanced mobility, smart urban infrastructure and become more resilient to the physical, social and economic challenges.

- Strategies –
  - Storm water management, water management, solid waste management
  - Enhanced disaster management through use of ICT - Flood warning and monitoring system
  - Disaster management system and SOPs for emergency situations

Summing Up - Climate Risk Management in Urban Areas

- Prepare the cities to withstand climate change related gradual impacts like change in precipitation, temperature and sea level rise

- Equip the city equally to respond to disasters and extreme events
  - Disaster risk mitigation
  - Post-disaster management and resettlement

- Drive the city towards sustainable development encompassing environmental benefits

Summing Up- Key Enablers

- **Policy and mandate** at national and state level
- **Integration of climate agenda** with city development agenda
- **Institutionalization** of urban climate resilience planning.
- Use and involvement of **local expertise** to generate context specific locally driven solutions
- **Capacity building** and awareness generation to generate momentum and facilitate action at all levels
- **Access to knowledge** on climate variability and change
- **Data management** and updating to facilitate decision making

Thank you!

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