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 billion 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

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

**CRIS DB**

**Version 1.0**

**Infrastructure and Services Database**

**Supported By**
USAID

**Developed By**
The Energy and Resources Institute
Durbari Seth Block, IMC Complex, Lodi Road, New Delhi - 110 003, INDIA
Tel (+91 11) 2468 2100 and 4150 4900, Fax (+91 11) 2468 2144 and 2468 2145

**Login Details**

- **User name:**
- **Password:**

**Log in**  **Exit**

**Infrastructure**

- **Climate**
- **Critical Infrastructure**
- **Disaster Management**
- **Energy**
- **Industry**
- **Social Infrastructure**

This database demonstrates an urban infrastructure inventory where sector wise forms can be accessed to record and update information to support.

Urban development and climate resilience planning efforts

The system besides providing features like recording and updating information for various asset types also enables retrieving desired information by using the search filter option. Currently this is a standalone database system that runs on a personal computer which can be accessed by authorized users.

**Storm Water**

- **State:**
- **City:**
- **Zone:**

**Acre (in hect.)**

**Flooded Area (in hectares)***

**Unflooded Area (in hectares)***

**Length (in km)***

**Major Storm Water Drain***

*Required Fields
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

• 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

Source - Resilient Chennai: Summit on Urban Flooding, February 2016, Briefing Note
Chennai - Gearing up to be SMART

• 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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