Bureau of Energy Efficiency

सत्यमेव जयते
Government of India
Ministry of Power

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THIS PRESENTATION WAS SHARED BY

Alokananda Nath

GIZ

FOR THE SESSION:

“Climate Resilience in Buildings”

DURING ANGAN 2019

Knowledge Partner

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Creating Innovative Solutions for a Sustainable Future

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Climate resilience in buildings – a holistic approach

Augmenting Nature by Green Affordable New-habitat (ANGAN)

Building Energy Efficiency Conference

Climate Smart Cities Project | 9 September 2019

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Overview – Global perspective

- Buildings and construction together account for **36%** of global final energy use and **39%** of energy-related carbon dioxide emissions (2017).
- **82%** of final energy consumption in buildings was supplied by fossil fuels (2015).
- To accommodate the global urban population growth, around **2.48 trillion sq. ft** (230 billion sq. m) of new floor area have to be added to the global building stock by 2060.

The target of 30% energy intensity improvement in buildings by 2030 to meet the goals of the Paris Climate Change Agreement will become a major challenge.

Overview - India

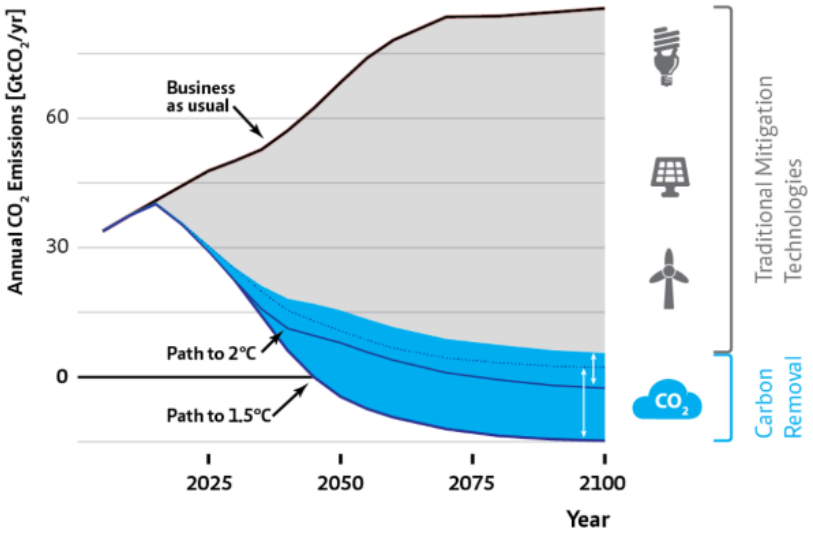
- India’s GHG emissions account for about **7%** of the global figure, making it a crucial player in combating climate change.
- Urban population is set to touch **900 million** by 2050.
- Total energy requirement is projected to grow at **6.5%** per year to support the projected growth rate.

- Building sector is expected to **grow between four to five-fold** by 2050.
- **Two-thirds of the commercial and high-rise residential structures** that will exist in 2030 are yet to be built.

Why Climate Resilience?

- Impact of climate change
  - Climate hazards and extreme weather events - heavy downpours, hurricanes, or wildfires
  - Increase in flooding and rise in sea-levels
  - Adverse impact on human health, ecosystems, flora-fauna

- Climate resilience refers to changes in processes, practices, capacities, and structures to curb potential damages or to benefit from opportunities associated with climate change (UNFCCC).



How to keep global warming below 1.5°C or 2°C (Source: MCC)

Both mitigation and adaptation measures are required by assessing the hazard, exposure, and vulnerability of various systems.

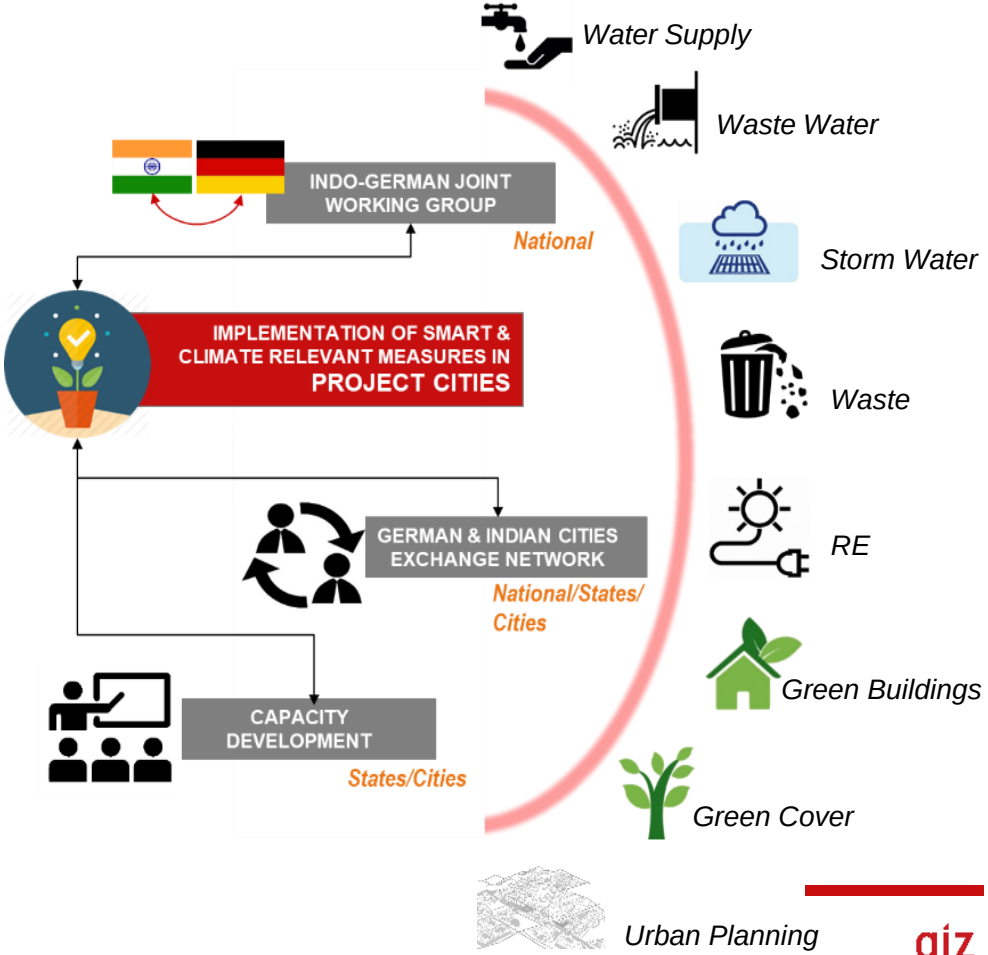
Climate Smart Cities Project

Objective

Anchor climate-friendly solutions for urban infrastructure projects and area-based development in planning and implementation of Smart Cities

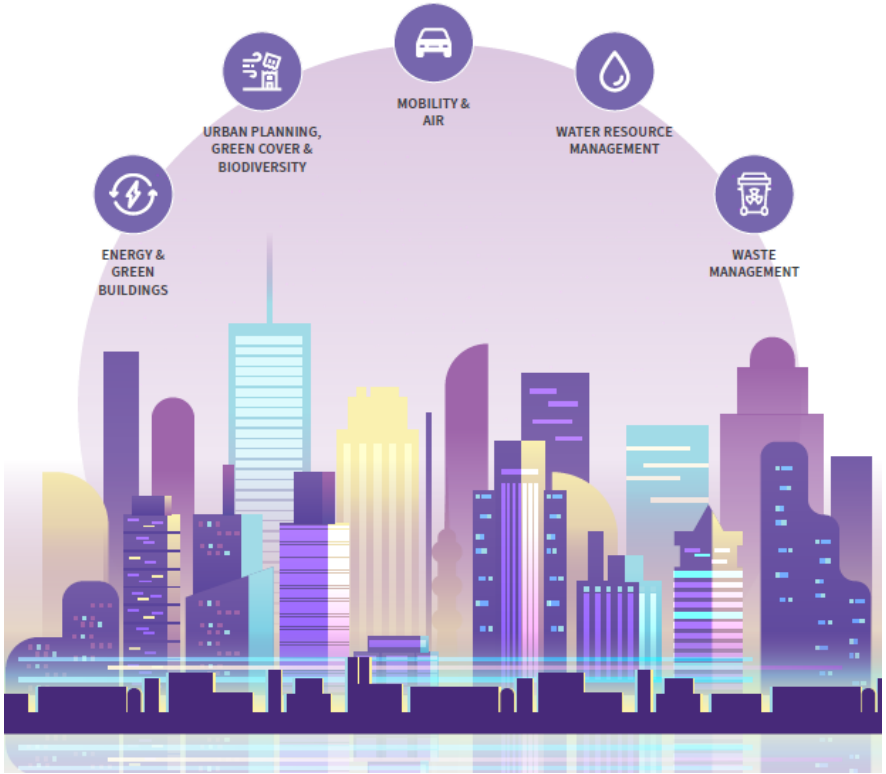
Project Partners

- Ministry of Housing & Urban Affairs
- States: Kerala, Odisha, Tamil Nadu
- Cities: Kochi (Kerala), Bhubaneswar (Odisha), Coimbatore (Tamil Nadu)



ClimateSMART Cities Assessment Framework

MoHUA launched the ClimateSMART Cities Assessment Framework in February 2019 under the Smart City Mission.



Need for the framework

- Cities account for GHG emissions, also at severe risk from climate change
- Need for steps in consonance with the NDCs for India and towards the SDGs of the UN
- Navigating a plethora of indices, frameworks, terminologies and necessary actions
- Bringing together different departments, plans and data points towards a single aim

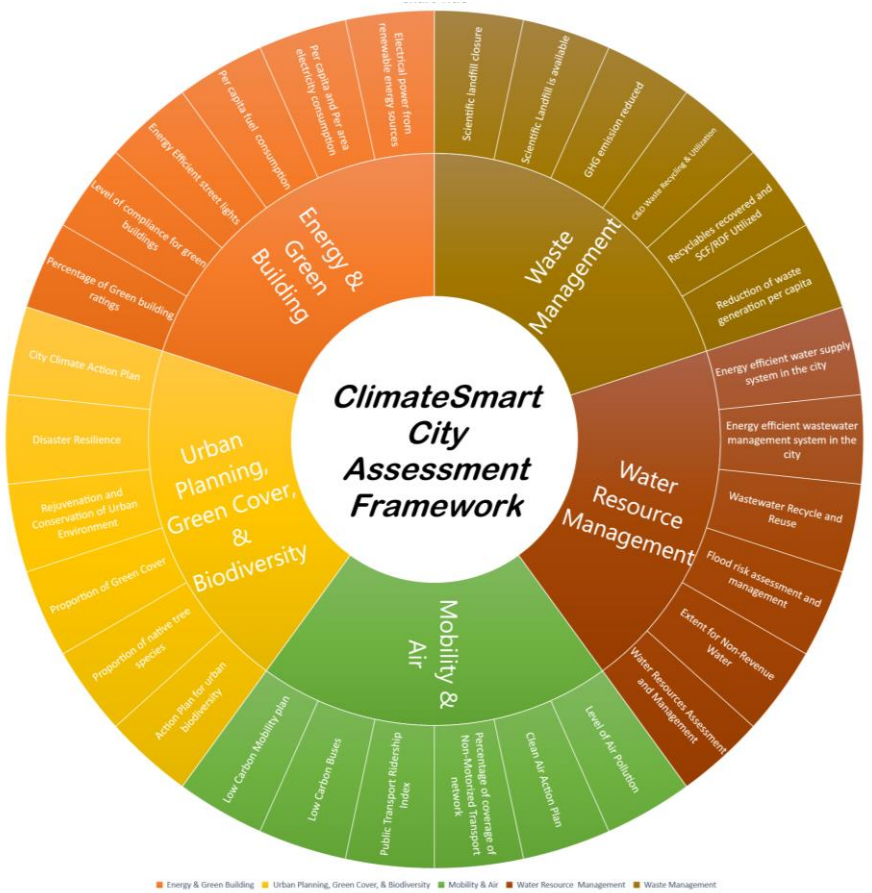
www.smartnet.niua.org

ClimateSMART Cities Assessment Framework

5 Thematic Areas with 30 indicators:

- **Energy and Green Buildings**
- **Urban Planning, Green Cover and Biodiversity**
- **Mobility & Air Quality**
- **Water Resource Management**
- **Waste Management**

Energy & Green Buildings	Electrical power from renewable energy sources
	Per capita and Per area electricity consumption
	Per capita fuel consumption
	Energy Efficient street lights
	Level of compliance for green buildings
	Percentage of Green building ratings



ClimateSMART Cities Assessment Framework

Thematic Area: Energy and Green Buildings

Indicator:

- Level of compliance for green buildings

Levels ->	0	1	2	3	4
Criteria/ Sub-indicators/ Progression Levels	Compliance procedures only available at state level	Inclusion of Energy Conservation Building Codes (commercial & residential) and other certified green building parameters notified in city Development Control Regulations (DCRs)	Third party Pre-Certification given to upto 5% of new buildings sanctioned in city under any green building certification	Third party Pre-Certification given to 6-10% of new buildings sanctioned in city under any green building certification	Third party Pre-Certification given to more than 10% of new buildings sanctioned in city under any green building certification

ClimateSMART Cities Assessment Framework

Thematic Area: Energy and Green Buildings

Indicator:

- Percentage of buildings securing third party green building certification upto minimum level at completion state

Levels ->	0	1	2	3	4
Criteria/ Sub-indicators/ Progression Levels	No green buildings certified	Upto 10% BUA in the base year are certified	Upto 40% BUA in the base year are certified	Upto 60% BUA in the base year are certified	All buildings in the base year are certified

Zooming out of the buildings and looking at the system

- Buildings sector offers near-term, highly cost-effective opportunities to curb energy demand growth rates, even to reverse them in developed economies.
- Moving beyond the building envelope and focusing on the site planning and resource use as well

Source: Barrfoundation

Holistic approach for building climate resilience

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Zooming out of the buildings and looking at the system

Sustainable Cities

There are third-party rating systems available at city level in India that broadly look into:

- Policy and governance
- Master planning
- Ecology and natural resource conservation
- Mobility
- Resource efficiency, energy & water
- Waste management
- Quality of life

Source: Barrfoundation

Zooming out of the buildings and looking at the system

- Reducing urban heat island effect
- Increasing green cover in urban areas
- Protecting local biodiversity
- Integrated water management
- Improved waste management practices
- Community engagement
- Livelihood management

Source: Barrfoundation

✓ **Policies and actions addressing these aspects are required at the city level**

✓ **Changing user behaviours and attitudes**

✓ **Strengthening institutions and governance frameworks**

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Registered offices
Bonn and Eschborn

Alokananda Nath, Technical Expert
Climate Smart Cities

B-5/2, Safdarjung Enclave, New Delhi 110029
T +91 11 49495353
F +91 11 49495391

E alokananda.nath@giz.de
I www.giz.de

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Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices
Bonn and Eschborn

Friedrich-Ebert-Allee 36 + 40
53113 Bonn, Germany
T +49 228 44 60 - 0
F +49 228 44 60 - 17 66

Dag-Hammarskjöld-Weg 1 - 5
65760 Eschborn, Germany
T +49 61 96 79 - 0
F +49 61 96 79 - 11 15

E info@giz.de
I www.giz.de

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH