

Low-carbon initiatives by Indian cities and options for achieving carbon neutrality

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The Big Picture

- In 2016 India's total GHG emissions, excluding Land Use Land-Use Change and Forestry (LULUCF) were **2,838.89 million tonne CO₂e** and **2,531.07 million tonne CO₂e with the inclusion of LULUCF**.
- India's emission intensity of gross domestic product (GDP) has **reduced by 24 per cent between 2005 and 2016**. India is **on track to meet its voluntary declaration** to reduce the emission intensity of GDP by 20-25 per cent from 2005 levels by 2020.
- India's **National Action Plan for Climate Change (NAPCC), 2008** and the **National Disaster Management Plan (NDMP), 2016**, elaborate on strategies for reducing the vulnerability of cities to climate change.
- The Smart Cities Mission (SCM) and Atal Mission for Rejuvenation and Urban Transformation, both Centrally Sponsored Schemes, were launched on 25 June 2015.
- Under the **Smart City Mission**, 100 Smart Cities have been selected through a two stage competition. A total of 5,151 projects worth INR 20,50,180 million have been included by selected 100 cities in their Smart City proposals.

The Big Picture

- **India is a vulnerable nation with respect to extreme weather events** such as cyclones and intense rainfall as well as ongoing climate change with increased impacts in the future.
- **Approximately 30 per cent of India's population is dependent on the rich, exploitable coastal and marine resources,**
- A number of urban and economic centers of strategic importance, including two of the megacities of India, **Mumbai and Chennai, are located along the coast.**
- Over 60 per cent of India's current GDP comes from the cities and towns.

S. No.	Location	Rate of change of sea-level (mm/year)	Duration of data used (years)
1.	Chennai	0.33	1916-2005
2.	Diamond Harbour	5.16	1948-2005
3.	Haldia	2.89	1972-2005
4.	Kandla	3.18	1950-2005
5.	Kochi	1.30	1939-2005
6.	Mumbai	0.74	1878-2005
7.	Paradeep	1.03	1966-2005
8.	Port Blair	2.20	1916-1964
9.	Vizag	0.97	1937-2005
10.	Okha	1.5	1964-1991

Source: MoEFCC, 2020a.

Rate of change of sea-level at 10 major ports in India

Sub-national climate actions

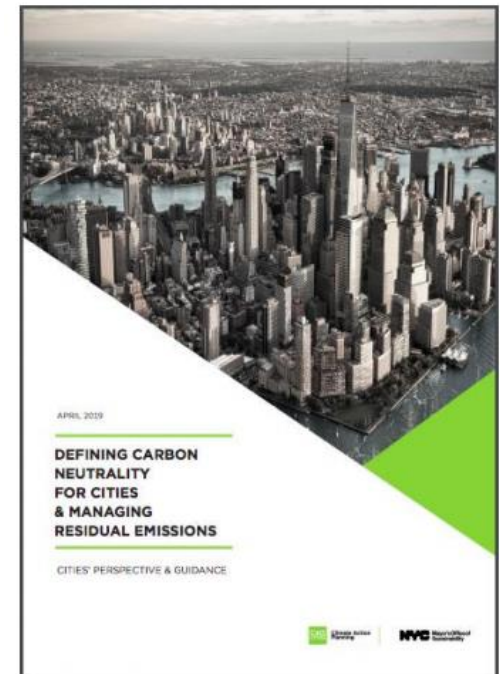
- State governments are contributing towards meeting climate goals and develops **State Action Plan on Climate Change (SAPCC)** to highlight mitigation and adaptation actions, in sync with NAPCCs.
- Several states are also working towards revising their SAPCCs as per **MOEF guidelines**:
 - As per the guidelines, SAPCCs should set out an **institutional mechanism for monitoring and evaluation** with clear reporting indicators
- Whereas **cities are participating in voluntary initiatives** (such as ICLEI SA, C40) to prepare community-wide GHG inventories and mitigation strategies
- **Climate Smart Cities Assessment Framework** developed by the Ministry of Housing and Urban Affairs (MoHUA) is used for ranking cities on climatic parameters, including energy and green building, urban planning and green cover, biodiversity, mobility, and air quality

Indian cities participation in global initiative on carbon neutrality

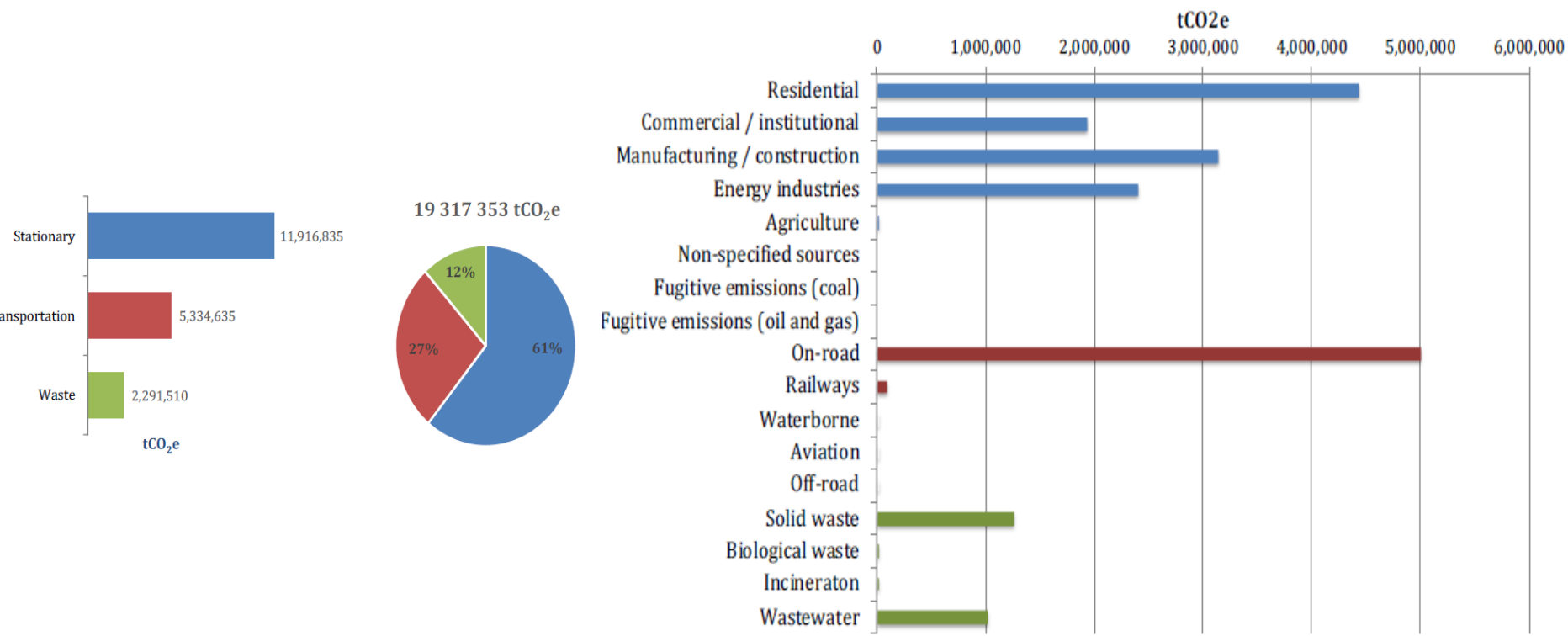
- Cities to achieve carbon neutrality by 2050 to support in achieving the global climate agenda – PARIS AGREEMENT
- **C40 Cities** developed a guidance document to assist the major cities in achieving the carbon neutrality

Approach –

- Greenhouse gas emissions from fuel use in buildings, transport, and industry (scope 1)
- Greenhouse gas emissions from grid-supplied energy (scope 2)
- Zero net greenhouse gas emissions from the treatment of waste generated within the city boundary (scope 1 and 3)
- Where a city accounts for additional sectorial emissions in their GHG accounting boundary, zero net greenhouse gas emissions from all additional sectors



Case study - Chennai City



Greenhouse Gas Emissions Inventory (FY 2015-16)

Case study – City GHG inventorization – Kolkata - 2017

- TERI supported C40 Cities Group in the preparation of Kolkata’s GHG estimation for the year 2017

c40knowledgehub.org/s/article/C40-cities-greenhouse-gas-emissions-interactive-dashboard?language=en_US

EMISSIONS MAP

Total emissions ▼

Region: South and West Asia

Country: India

City:

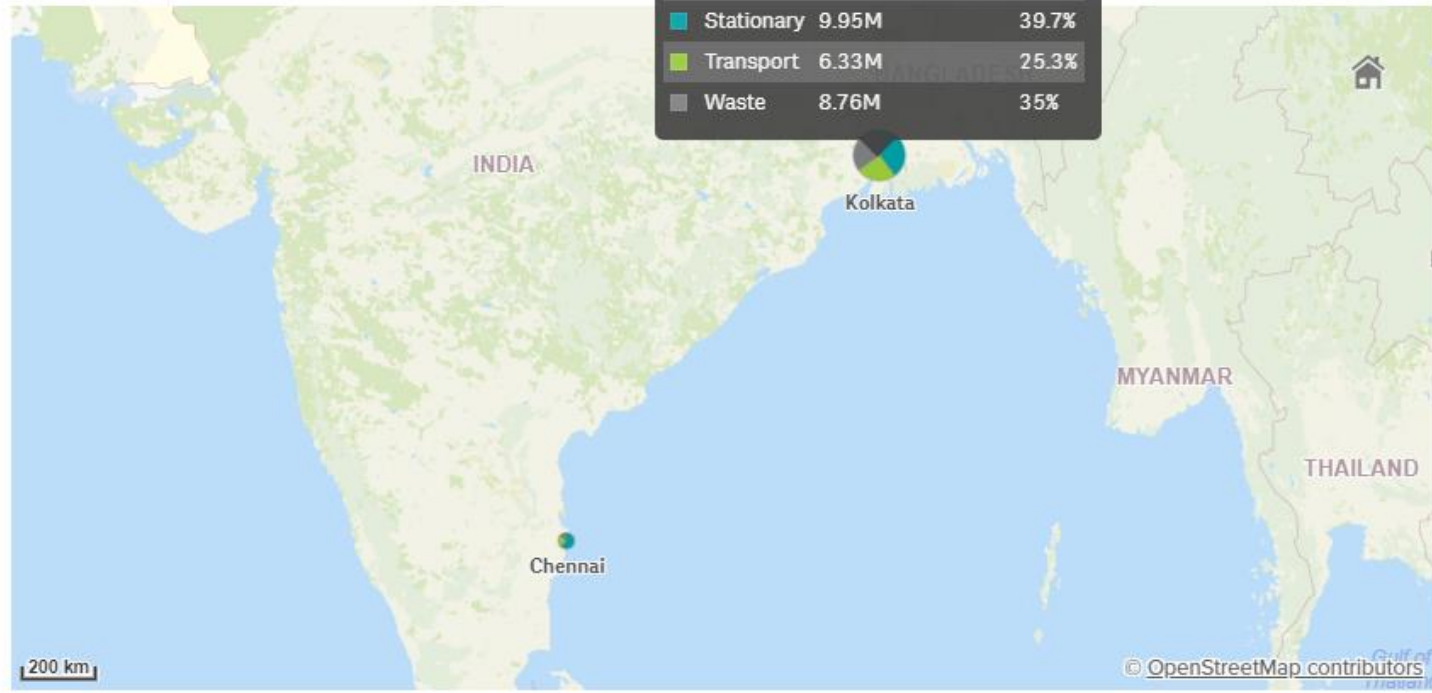
Clear Selections

Legend

- Stationary
- Transport
- Waste

Use the filters to narrow the cities displayed on the map. Choose to display total emissions or emissions per capita.

Emissions map



This map displays BASIC Emissions (stationary energy, transport and waste) as defined in the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC). The chart size is proportional to the total emissions for the most recent inventory. Note that boundaries may differ across cities.

ICLEI's Green Climate Cities (GCC) methodology

EU funded 'Urban Low Emission Development Strategy' of Rajkot mainstreamed mitigation strategies using ICLEI's Green Climate Cities (GCC) methodology

- aligned with the **Global Covenant of Mayors for Climate & Energy (GCoM) framework**



Source: https://urban-leds.org/wp-content/uploads/2019/resources/case_studies/ICLEI_cs_175-Rajkot-UrbanLEDS_2016-web.pdf

Case Study – Rajkot City

Under the project, **Rajkot** implemented a number of mitigation strategies:

Replaced energy-intensive street lights with energy-efficient LED lights on select road stretches



Solar Photo Voltaic (SPV) installations on a municipal school

Source: <https://www.tradeindia.com/fp1370779/Led-Street-Light.html> and <https://urban-leds.org/rajkot-continues-to-lead-on-ambitious-climate-action-and-bags-the-one-planet-city-challenge-national-winner-title/>

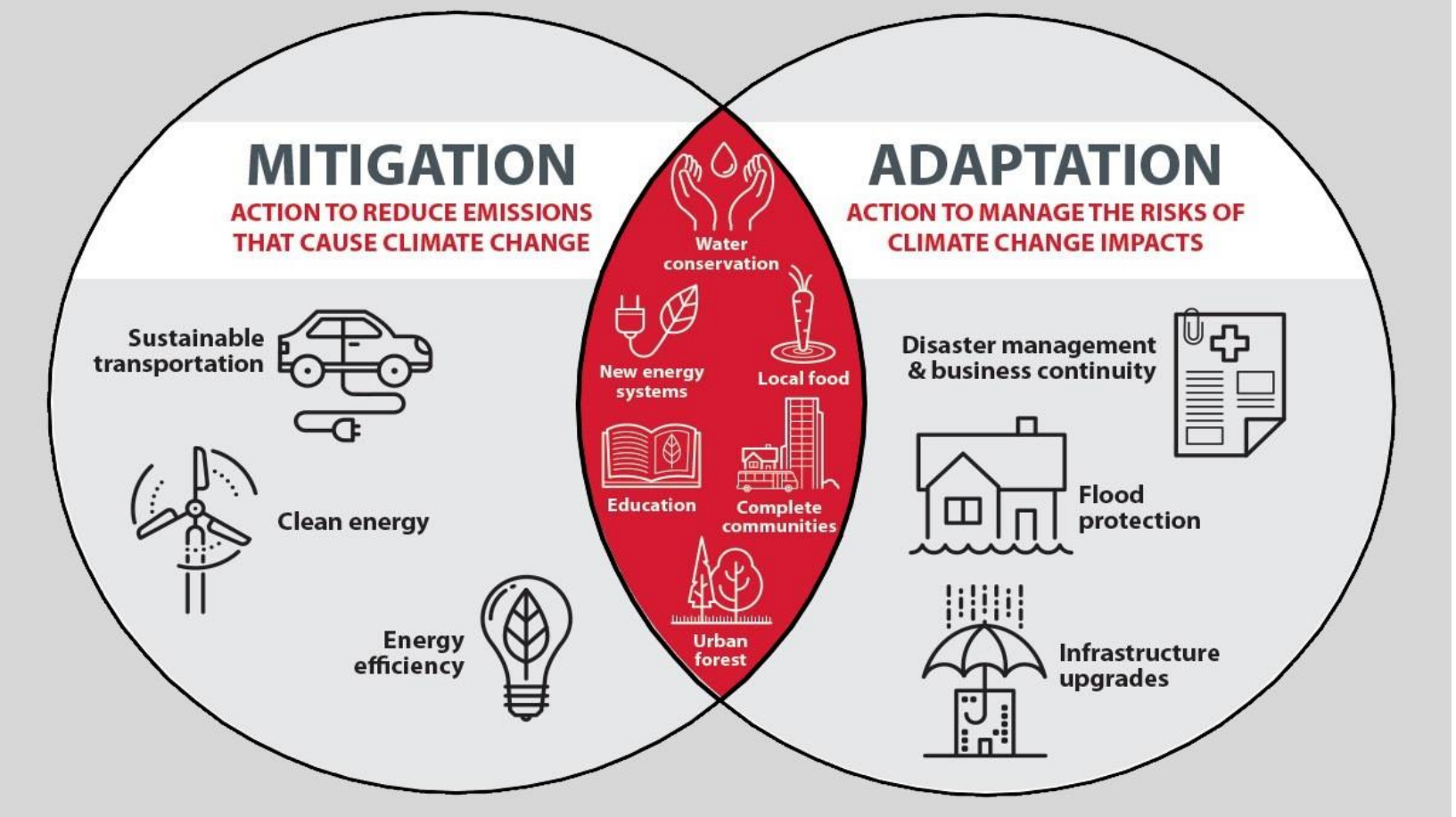
Case Study – Thane City

Under the **Green Thane initiative**, more than 6 lakh trees were planted within a period of four years on degraded forest lands, roadsides and dividers, with the help of local leaders, NGOs, and citizens



Source: <https://smartnet.niua.org/csc/assets/pdf/urban-planning/CS3.pdf>

Options for achieving climate resilient low carbon growth

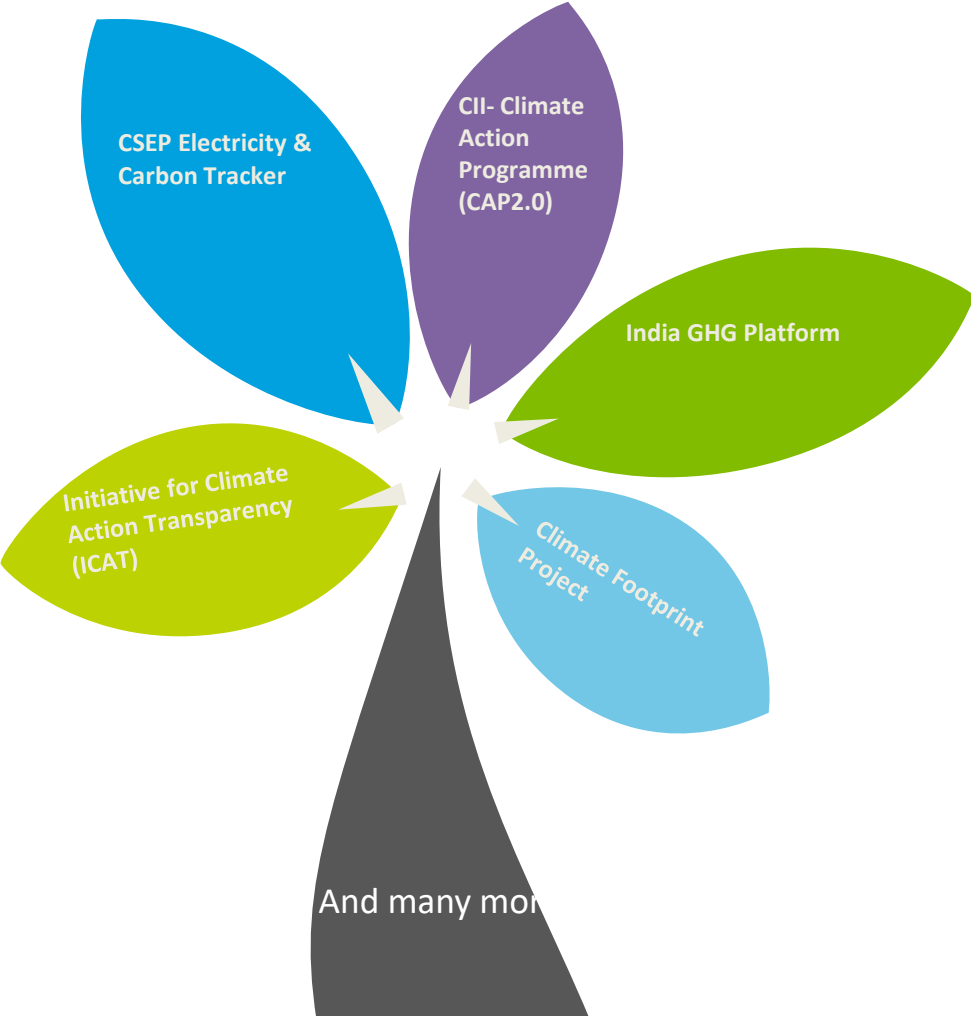



Source: (Calgary City Council, 2018)


UT of Ladakh and Carbon Neutrality


- The Hon'ble Prime Minister announced on 6 February 2020 to develop Ladakh, the nation's newest UT, as a carbon-neutral region. Carbon neutrality for Ladakh is not a mitigation goal, but a development vision
- GoI has announced a Special Development Package for Ladakh for the year 2019-20 (INR 40,000 million) and 2020- 21 (INR 30,000 million).
 - A 7500 MW solar park is being built in Ladakh for electricity and infrastructure development in the region


Non-party initiatives supporting climate actions




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Initiative for Climate Action Transparency
 TERI in partnership with UNEP DTU Partnership is **developing MRV & MEL frameworks** for mitigation (buildings, RE & transport) and adaptation (Agriculture) policies and actions.
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CSEP Electricity & Carbon Tracker
Near-real-time tracker that shows electricity generated by source (eg Renewable, Thermal) at a national level. It also shows total **electricity-based CO₂ emissions every 5 minutes** and CO₂ emissions per kWh.
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CII-Climate Action Programme (CAP 2.0)
 Aims to **build capacity of the Indian industry on climate action** by recognising best practices on climate change mitigation and adaptation
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India GHG Platform
 Led by Vasudha Foundation, CEEW, C-STEP, ICLEI and WRI India. It provides an independent **estimation and analysis of India's GHG emissions** across the sectors Energy, Industry, AFOLU and Waste.
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Climate Footprint Project
 Led by the Climate Group in partnership with TERI and Ricardo EE is **providing technical support to the states of Chhattisgarh and West Bengal** to enhance MRV of GHG emissions and mitigation actions.

Thank You!

For any queries, please contact:

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