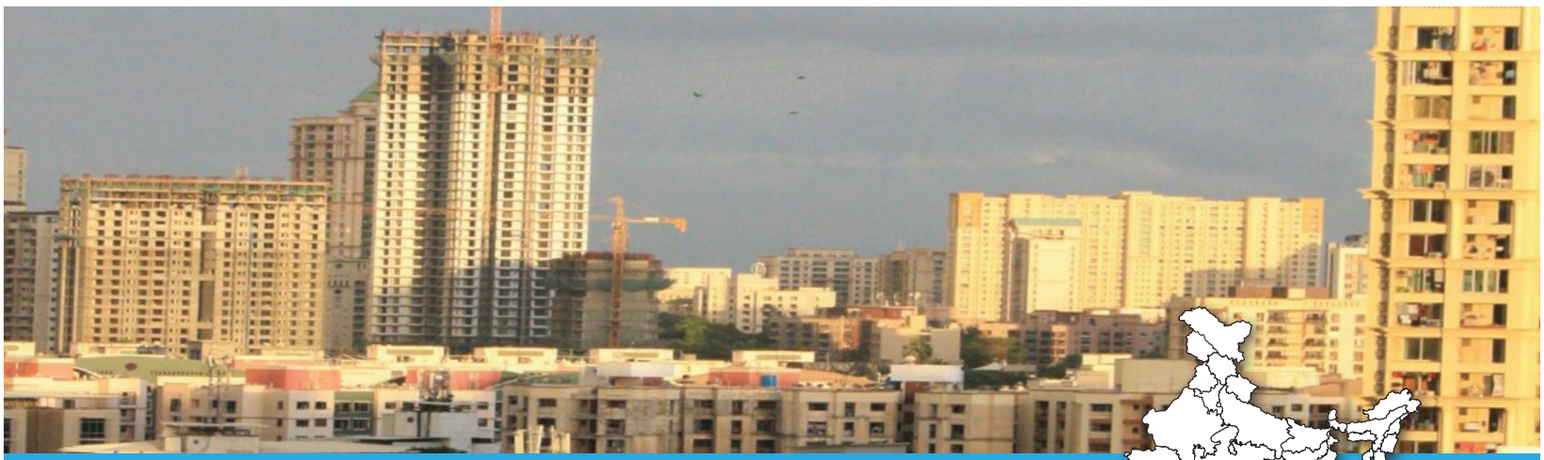
URBAN LEDS
URBAN LOW EMISSION DEVELOPMENT STRATEGIES

ठाणे महानगर पालिका, ठाणे

THANE
Smart City Ltd.
WHERE PEACE MEETS PROSPERITY



Climate Resilient City Action Plan – Thane

Climate resilience is the ability of socioecological systems to prepare and respond to climate related events, trends, or disturbances. Improving climate resilience involves enhancing sustainability through mitigation and adaptation actions to cope and/or manage current climate risks better.

Cities inhabit 3% of the world's land but account for 60-80% of energy consumption, and 75% of global greenhouse gas (GHG) emissions. Urban areas contribute to nearly 44% of India's carbon emissions, driven by transport, industry, building and waste.

India's national climate action plan (NDC) aims to reduce its GHG emissions intensity by 33% to 35% below 2005 levels by the year 2030. India's NDC strongly recognizes the role and contribution of urban areas to achieve its climate commitments and improve climate resilience. National and state-level initiatives such as the Climate Smart Cities Assessment Framework (CSCAF) and Majhi Vasundara Abhiyan are supporting urban climate action.

In line with national priorities, the Urban-LEDS II project supports participating cities on low emission and climate-resilient development to bring down greenhouse gas emissions and reduce vulnerability to climate change.

Methodology

The ClimateResilientCITIES methodology is an action planning process tailor made for local governments, providing step by step guidance for the development of a Climate Resilient City Action Plan that addresses both climate change adaptation and climate change mitigation[1]. This ClimateResilientCITIES methodology, shown below, is implemented in India and Bangladesh. The Climate Resilient Cities Methodology is a 9-step process in 3 phases: Analyze, Act and Accelerate - each unfolding into further steps - outlining how climate fragility can be assessed and climate resilient options can be explored.

Thane City Profile

The city of Thane is one of Maharashtra state's major cities and the district headquarters. Thane is included in the Mumbai Metropolitan Region and is one of the 18 urban centers. Owing to large industrial development and its proximity to the metropolis of Mumbai, Thane city has exhibited marked improvement in generating increased revenues and utilized these for economic growth, improved services and expanded infrastructure. The city is also known as Lake City because of its 35 lakes.

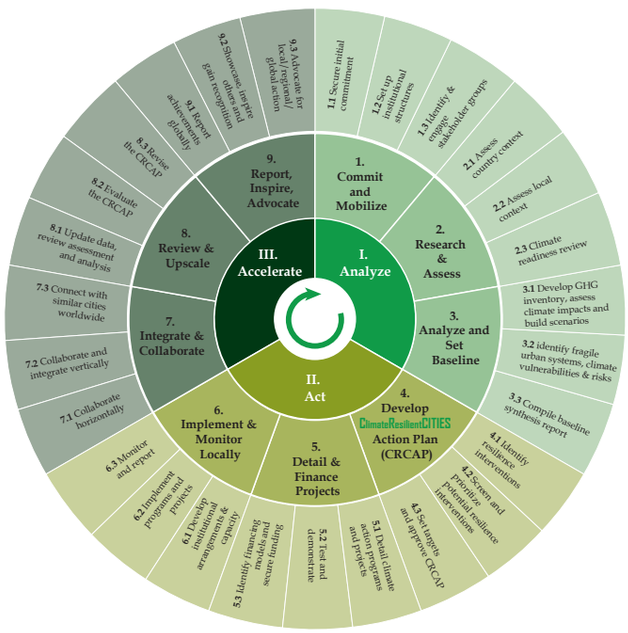


Figure 1: ClimateResilientCITIES Methodology

Coordinates: 72° 58' 41.1168" E (Long) and 19° 13' 5.9880" N (Lat)
Population: 1.84 million (Census 2011)
Area: 128.23 sq. km.
No of administrative zones: 9
Electricity consumption: 1,677 million kWh (2017-18)
Water supply: 480 MLD (2018-19)
Waste generation: 100 TPD (2018-19)
Local Authorities: Thane Municipal Corporation, Thane Smart City Ltd., Mumbai Metropolitan Region Development Authority

[1] This process builds on ICLEI's Cities for Climate Protection (CCP) campaign, ICLEI's flagship mitigation program, the Green Climate Cities (GCC) program and ICLEI's adaptation toolkit, the ICLEI Asian Climate Change Resilience Network (ACCCRN) Process or IAP toolkit.

Climate Resilient City Action Planning for Thane

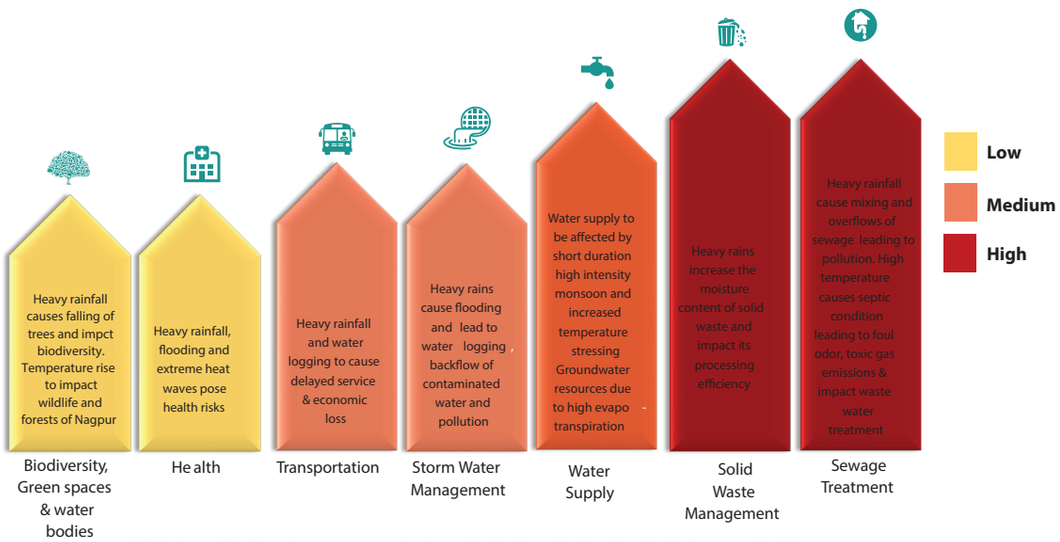
The Climate Resilient City Action Plan developed by the city, through the Urban-LEDS II project, has been guided by the step-by-step process of the Climate Resilient CITIES Methodology.

Vulnerability Assessment

The baseline situation analysis of the urban systems in the city has been carried out in Thane. Vulnerability of each of these systems to projected climate change impacts of increase in temperature and increase in precipitation, were assessed and climate risk was analysed. Solid waste, water, storm water, sewerage, transportation, health, biodiversity and green spaces were identified as the vulnerable urban systems. Climate vulnerability of wards and actors was analysed for each of these urban systems. Vulnerability maps were then prepared for each fragile urban system and overlayed together to identify the vulnerability hotspots.

IoT based early warning sensors for urban flooding & water logging installed at Thana College, Thane

Climate Projections: Thane will see 68-78% increase in minimum temperature and extreme rainfall will range between 10-14% more by 2030 as compared to that from 1971-2000.



* Risk Score (likelihood x consequence) – Low: 1-4; Medium: 5-10; High: 11-20; Extreme: 20-25

Figure 2: Climate Risks and Vulnerability Assessment for Thane City

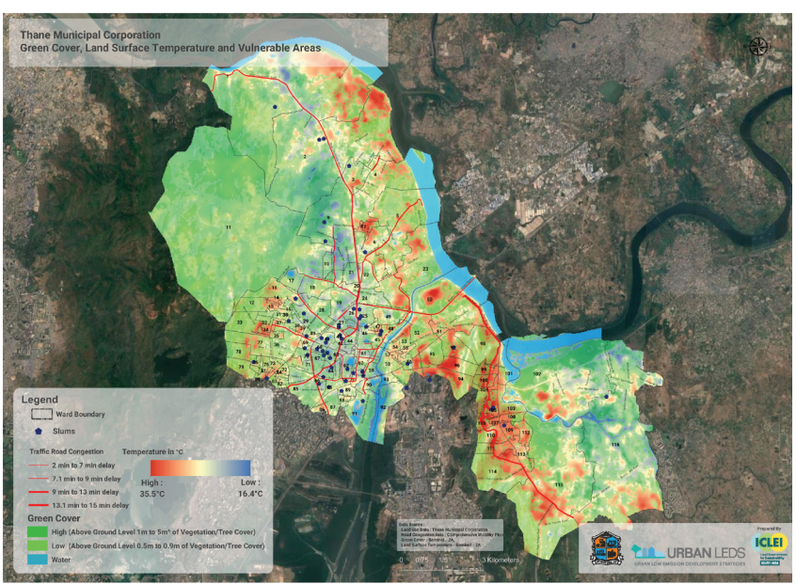


Figure 3: Green Cover, Land Surface Temperature and Vulnerability Areas, Thane Municipal Corporation

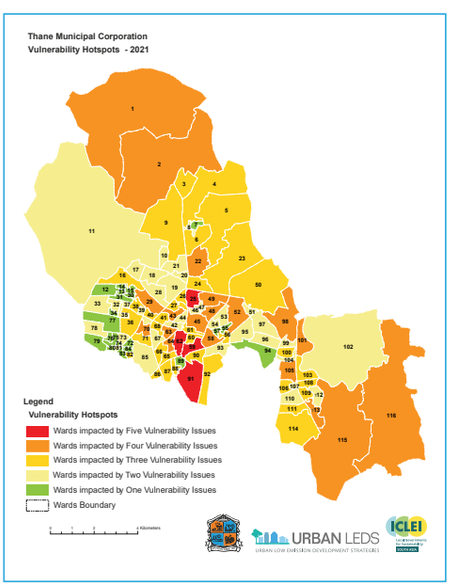


Figure 4: Vulnerability Hotspots of Thane City

GHG Emissions Inventory

Economy-wide GHG emissions inventories for the city were developed for years 2013-14 to 2017-18. The 2017-18 inventory indicates GHG emissions of 2.29 million tonnes of CO_2e, which translates to per capita GHG emission of 1.02 tCO_2e.

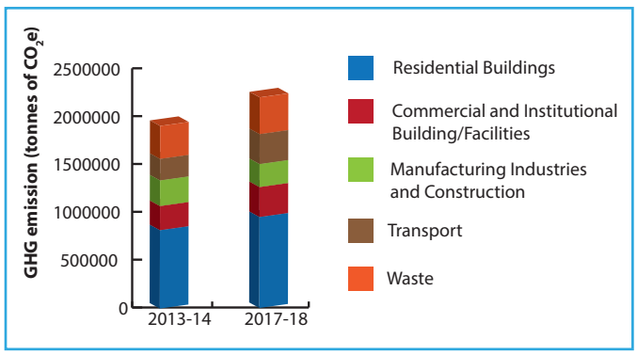


Figure 5: Trend of GHG Emissions in Thane 2013-14 versus 2017-18

The Climate Resilient City Action Plan (2021-25) proposes actions with an annual GHG emission mitigation potential of 22% by 2025-26 over the 2017-2018 baseline.

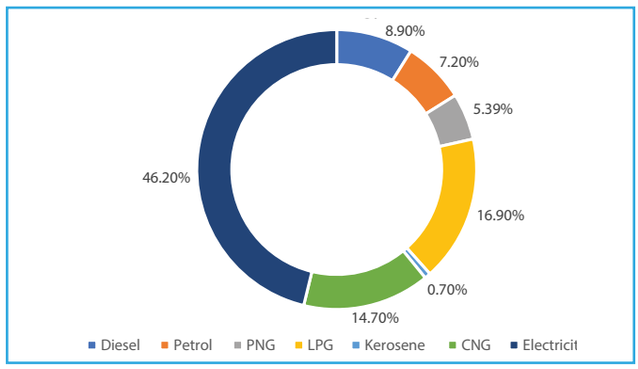


Figure 6: Sectoral Share of Energy in 2017-18

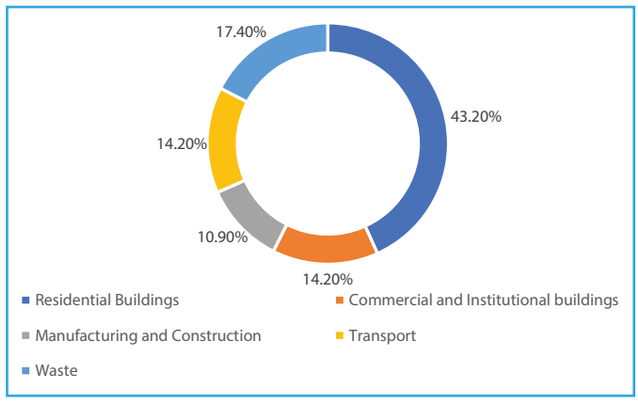
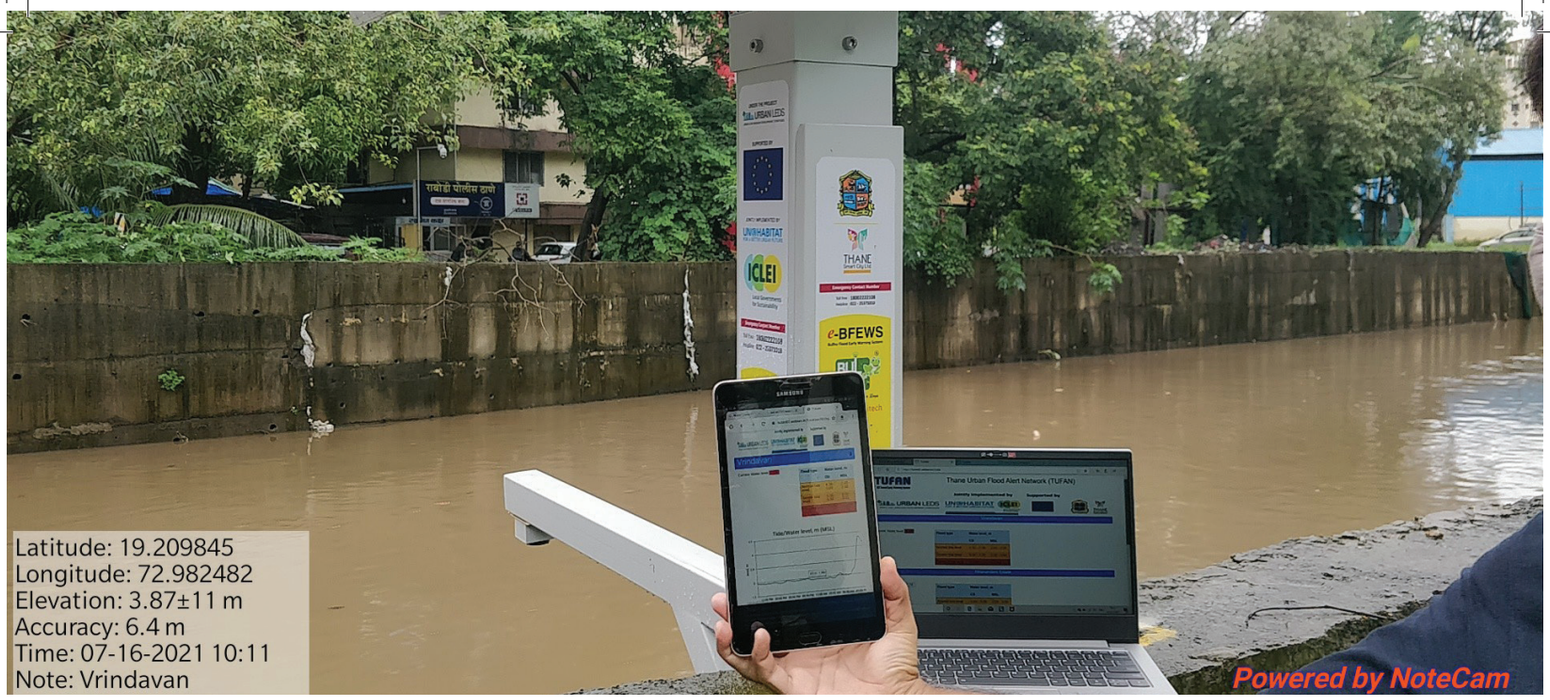


Figure 7: Sector-wise GHG Emission in Thane in 2017-18

Sectors	Key interventions	Mitigation Potential (tCO_2e)	Overall Climate Resilience Impact
Solid Waste	600 TPD waste to energy and 2 TPD plastic waste to fuel plant, Decentralized biomethanation and composting plants, Efficient segregation and collection, Material recovery facility, Scientific closure of landfill and Solar farm	265,604	Highest potential to reduce carbon emissions. PPP model will reduce the cost
Buildings -Residential	RE: Solar PV, Solar water heating, EE: Lighting fixtures (LED), fans and star rated appliances like ACs, energy audits and common lighting, water pumping and elevators in high rise buildings, green buildings	177,258	Reduction of GHG emissions. Participation by citizens and IEC activities will help
Buildings- Commercial & Industrial	District Cooling Systems (DCS) at Kopari URP, green buildings. RE: Solar PV, Solar water heating system at hotels, hospitals, EE: Lighting fixtures (LED), fans and star rated appliances like ACs, energy audits, , Waste minimization, circular economy, extended manufacturer's responsibility	34,152	Reduction of GHG emissions, Participation by Private sector and citizens. IEC activities
Transport	Electric buses with solar PV at depot, CNG buses to replace diesel, Electric cars for TMC with solar PV, Electric cars– taxis for last mile connectivity, CNG vehicles, electric mobility framework, NMT, Pedestrian friendly walkways	15,677	Reduction of GHG emissions, improved air quality, reduced traffic congestion
Street Lighting	Energy Efficient Street Lighting (Expanding Energy Service Companies network and routine replacement), GIS mapping and online monitoring	6443	Reduced GHG emissions, better visibility & safety
Municipal Buildings	Reduction of heat ingress through adopting heat prevent measures; Solar PV systems, Energy Efficient fixtures (LED lights, fans, ACs)	678	Reduced GHG emissions, visibility, awareness
Water	Integrated Urban Water Management (IUWM), Integrated Water Resource Management (IWRM), Integrated Groundwater Management, Catchment Management Plan, Reduction in Non-Revenue Water (NRW), EE pumping, Solar PV systems at pumping station and WTP, Energy and water audits, Revising tariff structure, Water ATMs	9,611	Improved water management, better health and lower emissions
Sewerage	Solar PV systems at pumping station and STPs, EE pumps, Operating STPs on full capacity, Regular monitoring of private STPs, Reuse of water at gardens, dual plumbing, Fecal sludge management policy	1,866	Reduction in methane & emissions, contamination & health issues
Storm water	RWH with regular monitoring, IoT based storm water grid, Hydro-geological studies, Flood management plan and implementation, Early warning system and flood lines, Sustainable urban drainage systems		Improved ground water level, reduced fresh water pumping
Biodiversity	Carbon sequestration potential of Urban Forestry. Biodiversity kiosks.	49	
Disaster mgt, Pollution control and Health	Heat action plan, Clean air action plan, Science based tree management, Nature based solutions, Source apportionment study and early warning system for air pollution, Monitoring health and climate risks, Institutional capacity- Pollution Control Cell to Environment and Climate Change Cell, Disaster Management, Climate Change Task Force		Improved resilience of the city and health of citizens. Helps to plan necessary precautionary actions
Total		**511,338**	



Data captured by early warning system for urban flooding and water logging installed at Vridavan Society, Thane

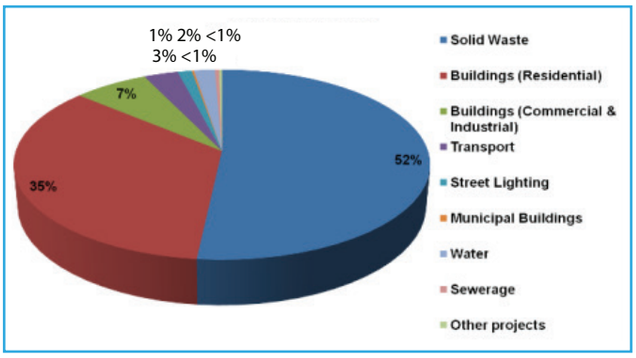


Figure 8: Sector-wise Mitigation Potential of CRCAP-Thane

The Accelerating climate action through the promotion of Urban Low Emission Development Strategies (Urban-LEDS II) project is a global initiative being implemented in more than 60 cities in eight countries. Urban-LEDS II supports participating local governments on low emission and climate resilient development to reduce greenhouse gas emissions and to adapt to climate change.

The project is funded by the European Commission and implemented jointly by UN-Habitat and ICLEI – Local Governments for Sustainability. It follows on from the first phase (Urban-LEDS I) that took place from 2012 to 2015.

ICLEI South Asia is leading implementation of Urban-LEDS II in India and Bangladesh with support from UN-Habitat.

Project Duration: 2017-2021

Model cities in India: Nagpur & Thane (deep-dive implementation), Rajkot (knowledge-sharing)

Satellite cities in India: Coimbatore, Gwalior, Panaji, Pimpri-Chinchwad, Shimla (learning cities)

Supported by

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