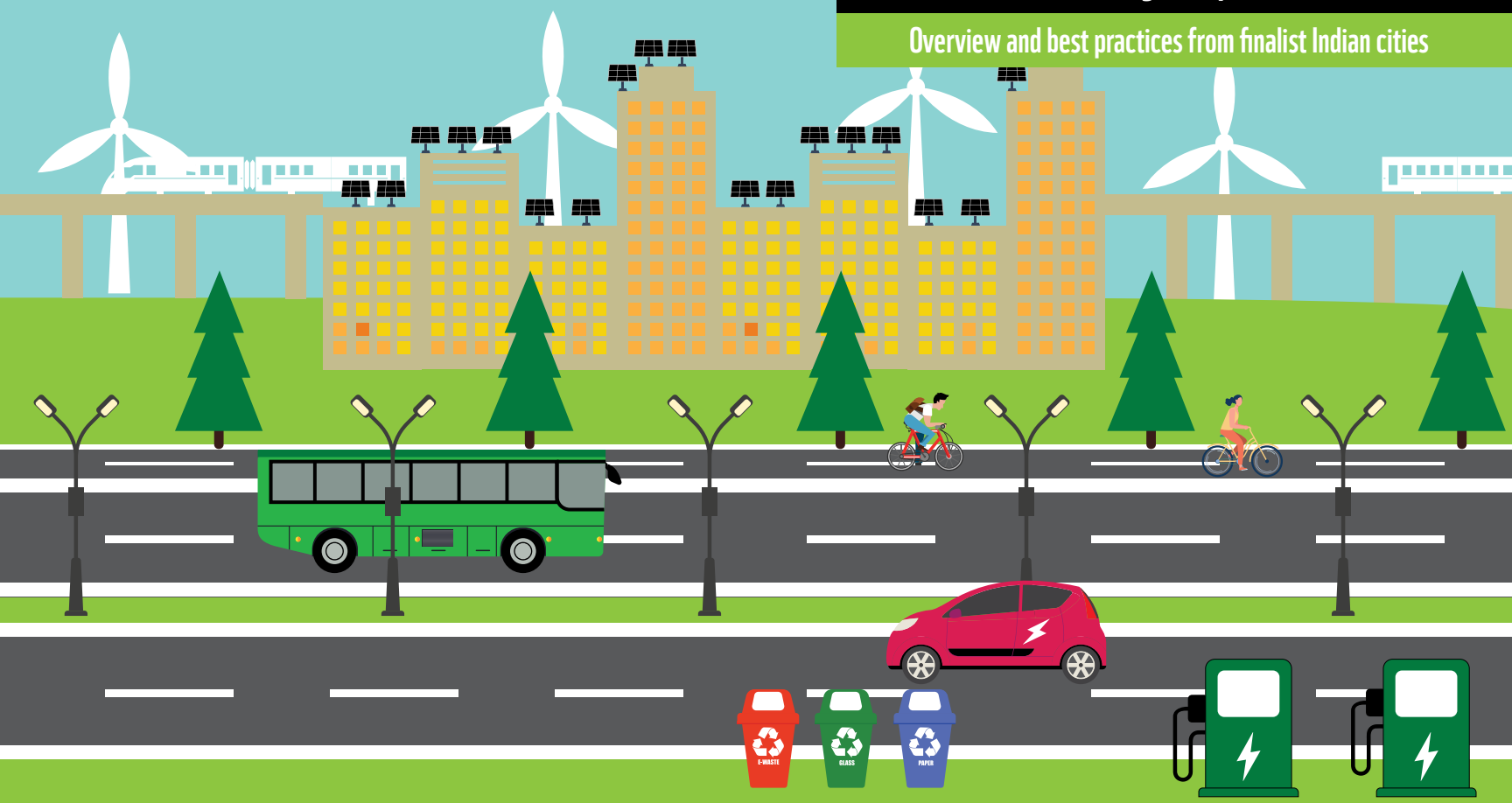WWF

INDIA

ONE PLANET CITY CHALLENGE
2019-2020

WWF's global platform for cities

Overview and best practices from finalist Indian cities

Cities and Climate Change

City Scenario at a Glance

Globally, cities account for

60-80%

of energy consumption

75 %

of carbon emissions

City Scenario in India

With a population of

30% +

living in urban areas currently

Expected to be

40%

in 2030

Nearly

44%

of India's rapidly growing carbon emissions have urban origins

Nearly 44 percent of India's rapidly growing carbon emissions have urban origins, emanating from buildings, transport, and waste, contributing to climate change.[1] Within urban areas, the megacities, metro cities, and class I cities generate 59 percent of the country's GHG emissions. Our cities are vulnerable and face huge risks of increased water stress, heat island effect, and increased frequency & severity of extreme weather events such as urban floods and droughts. Major cities in India have witnessed the loss of life/property, impact on infrastructure, incidences of epidemics, etc., during extreme climate events. Therefore, cities need to be supported to achieve low-carbon growth and decrease the vulnerability of communities and infrastructure, especially in South Asia, where the population is expanding rapidly, and a large part of the urban population still lacks access to basic infrastructure. This would require integrating climate solutions in local development plans, with long-term benefits along with synergizing local climate actions with various national/international-level goals and commitments.

At both the national and sub-national levels, India has recognized the role of local governments in tackling climate change. The National Action Plan on Climate Change (NAPCC) as well as the State Action Plans on Climate Change (SAPCC), highlight the importance of sustainable urban development with climate co-benefits.

The Urban Local Bodies (ULBs) can further facilitate climate-smart planning by mainstreaming mitigation and adaptation/ resilience actions in the development plans and implementation of the urban missions/ schemes/programmes with climate co-benefits, such as Solar Cities Mission, Pradhan Mantri Awas Yojana (Urban), National Electric Mobility Mission 2020, Swachh Bharat Mission Urban, Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Climate Smart Cities Assessment Framework (CSCAF) of the Smart Cities Mission, Nagar Van Scheme, and National Clean Air Programme (NCAP). These schemes cover sectors such as energy, mobility, transport, waste, water, and nature-based solutions (NbS), which can facilitate climate actions in the urban context.

One Planet City Challenge (OPCC)

Globally, several cities are driving change by integrating low carbon actions into local development goals and simultaneously mainstreaming climate-resilient growth. Several Indian cities are also a part of this transition and have exemplified their role in addressing climate change. To sustain this momentum, there is a need to recognize cities that are leading the shift towards a climate-resilient future and stimulate the development and wider dissemination of best practices.

WWF's global initiative for cities – One Planet City Challenge (OPCC) aims to mobilise action and support from cities in the global transition towards a low carbon climate-resilient future.

OPCC is a biennial challenge designed to highlight and reward cities that are willing and prepared to make substantial long-term efforts towards sustainability and resilience. The platform also aims at inspiring and supporting cities to become climate-smart and sustainable solution hotspots. OPCC first began in 2011 in Sweden and then expanded globally in 2012. Since 2011, about 600 cities from 53 countries across 5 continents have already participated by reporting their goals and actions to reduce carbon emissions and adapt to the effects of climate change. OPCC aims to increase ambitions in the quality and number of cities registering their climate data through the globally recognized unified reporting system hosted by CDP and ICLEI. So far, OPCC participants have reported a total emissions reduction potential of 3.9Gt GHG by 2050.

An international jury of experts reviews sustainable actions from the participating cities. After the evaluation, the best city from each country is selected as the National Winner, and one city amongst these is declared as the Global Winner. Vancouver, Cape Town, Seoul, Paris, and Uppsala were awarded the title of Global Earth Hour Capital in 2013, 2014, 2015, 2016, and 2018, respectively. In 2020, Mexico City was announced as the Global Winner among the 53 National Winners.

One Planet City Challenge 2020

WWF's OPCC aims to assess cities' unique characteristics and aid local governments and city dwellers in their actions towards a future where temperature changes stay below 1.5 °C. WWF works with city stakeholders and strengthens communication and action at the local level.

53
Countries from **6** continents in 2020

250+
Cities joined in the 2019 -20 round globally

5,700
Actions from all participating OPCC Cities

3.9Gt
GHG emissions reduction potential by 2050, reported by cities till date

OPCC - India

India was the first developing country to join the challenge in 2012. Since its inception, the India chapter of OPCC (former Earth Hour City Challenge) has been engaging with the cities by providing increased support and capacity building in scaling up their climate actions by addressing the barriers for integration of a climate focus into the cities' policies, action plans, and urban planning.

Over the years,

26 cities

across 16 states from India have been part of the challenge

New Delhi, Coimbatore, Thane and Rajkot have been selected as the national winners from India in the previous editions.
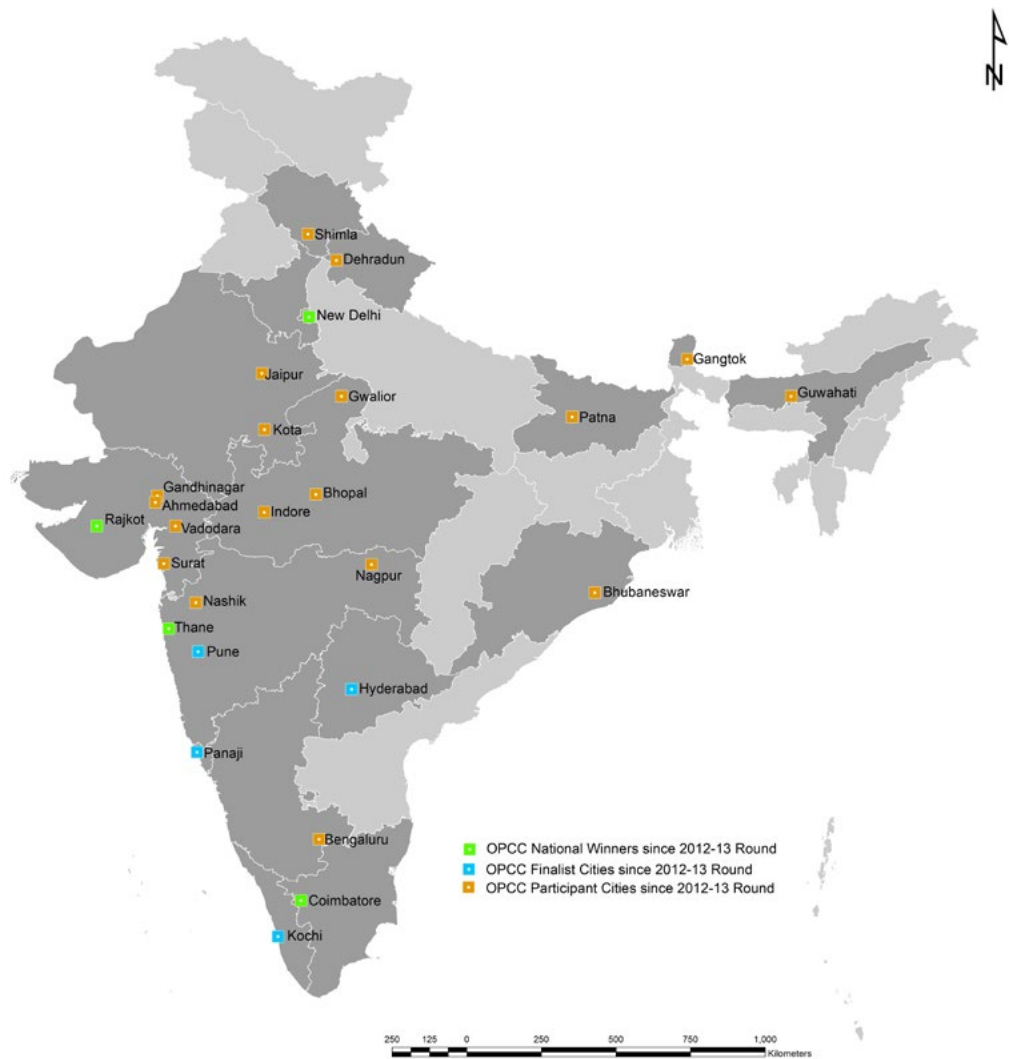
OPCC 2019-20

Eight Indian cities participated in 2019-20, namely, Gangtok, Guwahati, Indore, Kochi, Nagpur, Panaji, Pune, and Rajkot. Kochi, Nagpur, and Rajkot emerged as finalists from India among over 50 finalists globally. **Rajkot was selected as the National Winner from India for the third consecutive time.**

8 Cities

from India joined in the 2019-20 round

- Shimla
- Dehradun
- New Delhi
- Jaipur
- Gwalior
- Kota
- Gandhinagar
- Ahmedabad
- Rajkot
- Vadodara
- Indore
- Bhopal
- Surat
- Nashik
- Nagpur
- Thane
- Pune
- Hyderabad
- Panaji
- Gangtok
- Guwahati
- Patna
- Bhubaneswar
- Bengaluru
- Coimbatore
- Kochi

- ■ OPCC National Winners since 2012-13 Round
- ■ OPCC Finalist Cities since 2012-13 Round
- ■ OPCC Participant Cities since 2012-13 Round

250 125 0 250 500 750 1,000
Kilometers

Map Prepared By: IGCMC, WWF-India

RAJKOT

With its efficient low-carbon actions coupled with community engagement, Rajkot aims to combat climate change with a commitment to reduce 14 percent of the total annual GHG emissions across key sectors by the year 2022-23. Rajkot's win for the third consecutive round of OPCC is a testimony to its vision for a climate-smart future. The city was the first in India to include district cooling in its Smart City Plan and one of the six 5-star rated cities as per the Star Rating of Garbage Free Cities under Swachh Bharat Mission Urban (SBM-U) for the assessment year 2019-20.

WWF | 50 YEARS IN INDIA

NATIONAL WINNER 2020

RAJKOT

ONE PLANET CITY CHALLENGE

21 December 2020
NEW DELHI

Rajkot wins global climate change challenge third time

Nimesh Khakhariya | TNN | Updated: Jun 24, 2020, 16:17 IST

RAJKOT: Saurashtra's commercial capital Rajkot has once again pipped other Indian cities to bag the prestigious title of 'National Capital of India 2019-20' bestowed by World Wide Fund for Nature (WWF) for efforts taken to reduce carbon dioxide emission and tackling climate change.

WWF, the international organization that is championing the cause of reducing human impact on the environment, picked Rajkot above cities like Nagpur, Kochi, Panaji, Pune, Guwahati, Gangtok and even Indore, which had been voted India's cleanest cities earlier.

GREEN POWER

Solar power generated	Place (fitted with PV system)
750,000	RMC buildings
220,000	Aji Water Treatment plant
48,000	Affordable housing schemes
4.5 million kWh/yea	Residential, commercial and institutional buildings

Solar power figures are in kWh/year, Source: RMC Data for year 2019-20

In the year 2019-20, Rajkot has reduced conventional energy consumption by 17.26 million kilo watt hour (KWH) and reduced greenhouse gas emissions by 14,000 tonnes, by embracing solar in a big way and other projects. In fact, Rajkot has won his title three times now - in 2016-17, 2018-19 and 2019-20.

Smart city of Rajkot declared the National Winner of WWF's global One Planet City Challenge 2020

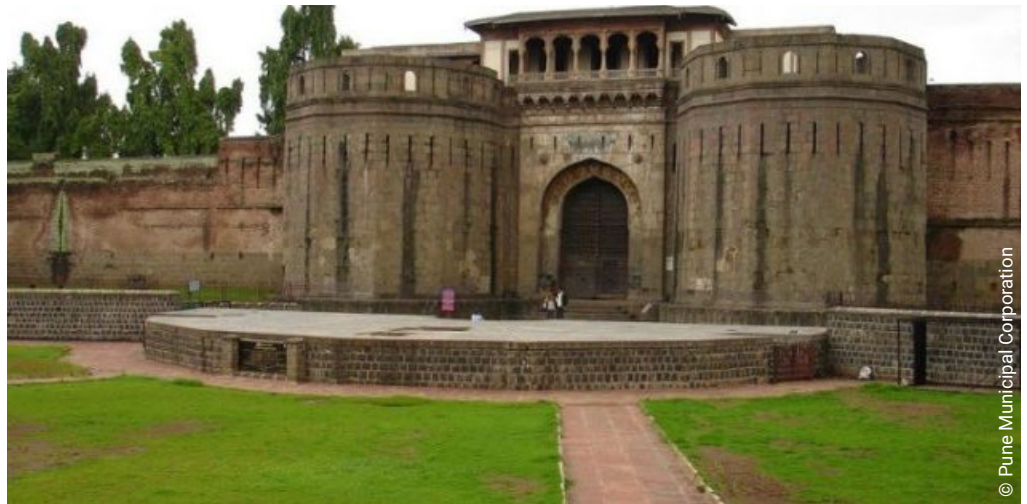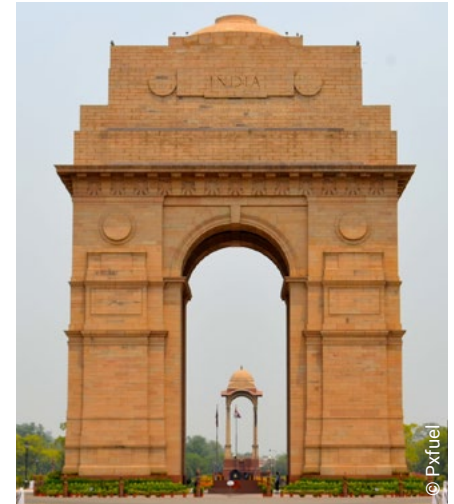By India Education Diary Bureau Admin - July 11, 2020

New Delhi : The One Planet City Challenge is WWF's biennial global challenge that recognizes cities for their ambitions and innovative actions in sectors such as energy, buildings, transport, and waste, to power the global transition to a low-carbon, climate-resilient future. Rajkot, the fourth largest city of Gujarat, once again bagged the coveted title of the National Winner from India in WWF's Global One Planet City Challenge (OPCC) 2020. Besides Rajkot, seven other Indian cities, namely Gangtok, Guwahati, Indore, Kochi, Nagpur, Panaji and Pune were among over 255 cities from 53 countries that participated in OPCC 2019-20 edition. After an initial evaluation by WWF and ARUP – a global consultancy, a 27-member international jury comprising urban sustainability experts reviewed the data to select one city from each country as the National Winner, and a Global Winner. Mexico City has been announced as the Global Winner among the 53 National Winners this year.

Rajkot, with its strong low-carbon actions coupled with community engagement, aims to combat climate change with a commitment to reduce 14% of the total annual GHG emissions across key sectors by the year 2022-23. Rajkot's win for the third consecutive round of OPCC since 2016 is a testimony to its vision for a climate-smart future. The city is also the first in India to include district cooling in its Smart City Plan and is also one of the six 5-star rated cities in the recently announced results of Star Rating of Garbage Free Cities under Swachh Bharat Mission Urban (SBM-U), for the assessment year 2019-20.

Best Practices from OPCC Finalist Cities in India

This section highlights the best practices related to sustainable urban development and local climate action in some of the OPCC cities in India. In focus are primarily the finalist OPCC cities since 2012. Among the Indian OPCC (erstwhile EHCC) cities, Rajkot has been the national winner in three consecutive rounds in 2016, 2018, and 2020, respectively. Delhi, Coimbatore and Thane were the national winners in 2013, 2014 and 2015, respectively. Pune was a finalist in 2015, 2016 and 2018, and Panaji in 2018. Nagpur and Kochi were among the finalist cities in 2020.

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© Pxfuel

© Coimbatore Municipal Corporation

© Pune Municipal Corporation

RAJKOT, Gujarat

(2020: National Winner; 2018, 2016: National Winner; 2015 Finalist)

Smart Ghar – III

Rajkot implemented the Smart Ghar III initiative to build eco-friendly low-cost dwelling units under the Pradhan Mantri Awas Yojana (PMAY) to provide affordable residences with thermal comfort and low energy consumption to the lower-income groups. Post-construction, final testing showed that the indoor temperature peak decreased by 6°C, and remained below 30°C for an increased number of hours.

In addition, rooftop solar panels installed on the buildings provided energy for running elevators, pumping water from integrated collection systems, and lighting the neighbourhood streetlights. The initiative is providing 1,176 families a better quality of life.[2]

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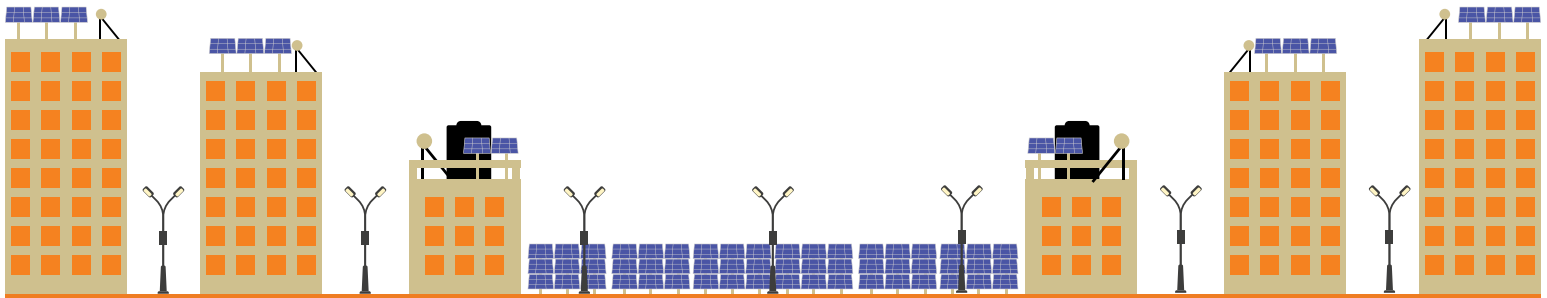
Energy Efficient Street Lighting

Rajkot Municipal Corporation (RMC) was the first ULB in Gujarat to successfully retrofit all existing conventional street lights with energy-efficient Light Emitting Diode (LED) lights within three months using the Energy Saving Company (ESCO) model. The initiative resulted in 60 percent energy savings and GHG emission reduction of about 7,000 tCO_2 eq.

The retrofitting of conventional street lights also led to improved illumination levels and aesthetic appearance, enhanced public safety and security, and provided a better quality of life for the citizens.[3]

© Rajkot Municipal Corporation

# NAGPUR, Maharashtra

(2020, Finalist)

Project Green Light

Nagpur undertook one of the largest environment-friendly LED street lighting projects intending to replace 1,36,000 streetlights by 2020. Till 2019, more than 1,20,300 specially designed programmed LED lights had been installed in the city to replace the conventional street lighting system. This project aimed to save more than 40 percent of annual electricity in the city, with considerable reductions in GHG emissions. In addition to the energy savings, the specially designed LEDs ensured optimum lux levels with uniform spread across the roads, leading to improved visibility.[4]

Treating Wastewater for Reuse in Thermal Power Generation

To meet the increased water demand in the thermal plants operated by Maharashtra Generation Company Ltd. (MahaGenCo) near Nagpur, the company signed a build-operate-transfer (BOT) end-user contract with the Nagpur Municipal Corporation (NMC). Under the contract, NMC supplied raw wastewater, while MahaGenCo was responsible for transportation and treatment of the wastewater in its plant with secondary and tertiary treatment facilities. The contract ensured a regular supply of raw wastewater to the power plant while providing NMC with a constant source of revenue and additional environmental, social, and health co-benefits.[5]
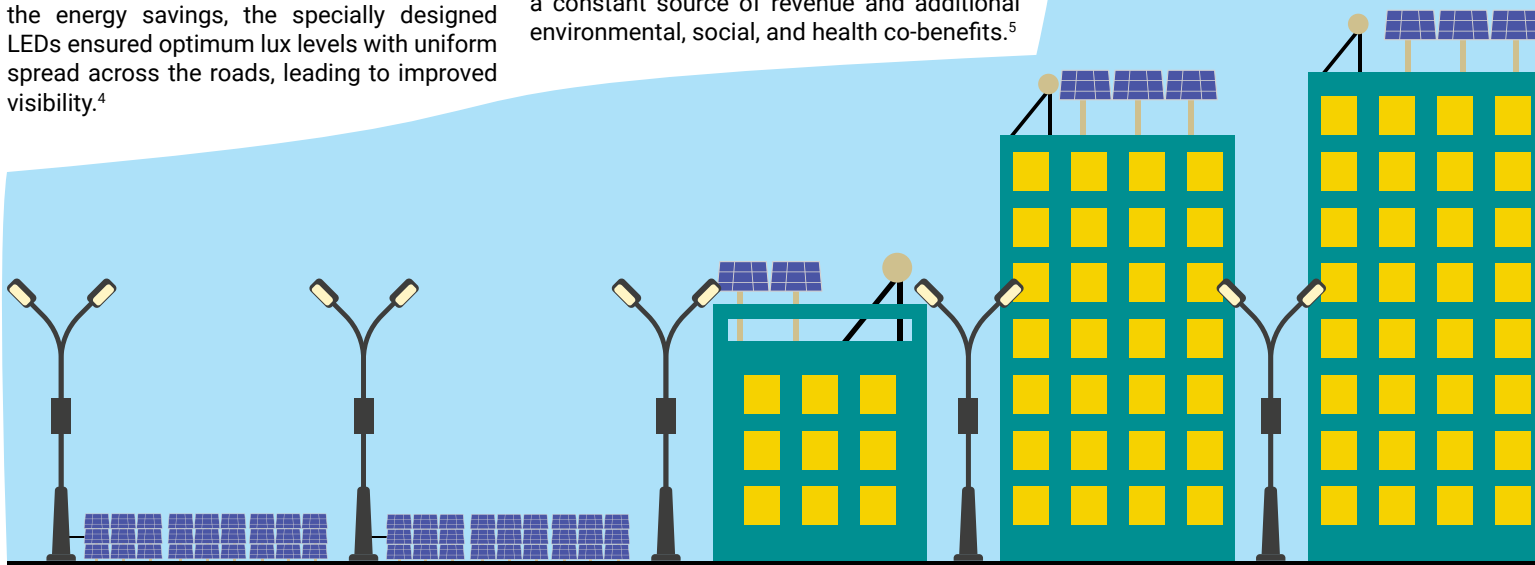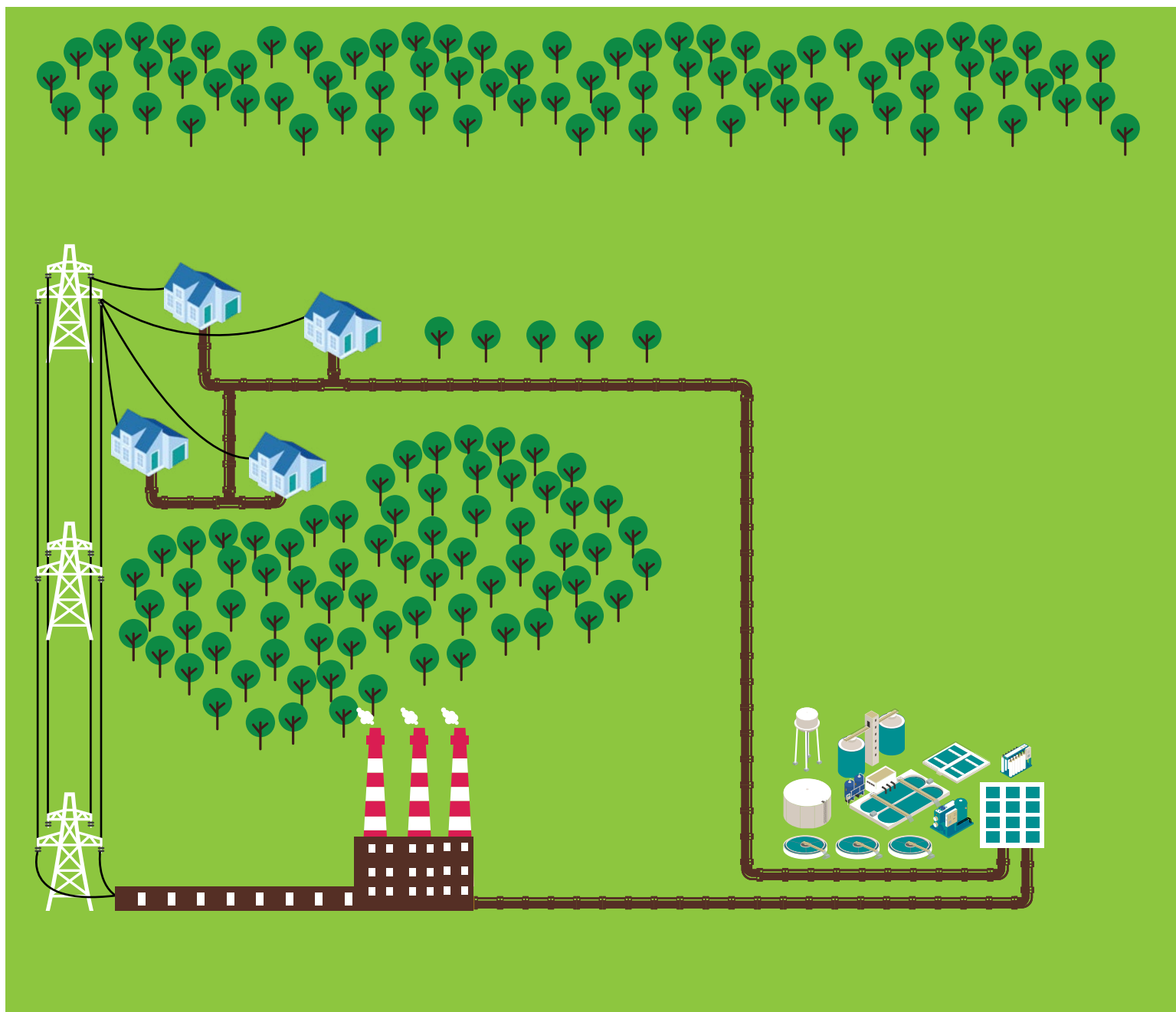
KOCHI, Kerala

(2020, Finalist)

Solar-powered Kochi Airport

Cochin International Airport Ltd (CIAL) is the first fully solar-powered airport in the world. It was inaugurated in August 2015 with a 12MWp plant comprising 46,150 solar panels across 45 acres, producing 50,000 to 60,000 units of electricity per day for operational functions, technically making the airport 'absolutely power neutral'. The excess electricity is routed into the grid of the Kerala State Electricity Board (KSEB).

This plant is expected to produce 18 million units of power annually, and over the next 25 years, avoid carbon dioxide emissions by more than 3 lakh metric tonnes, which is equivalent to planting 3 million trees.[6]

Further, in January 2021, CIAL also commissioned one of the biggest solar floating plants in Kerala, having a capacity of 452KWh. With this, the total installed capacity of the airport has increased to 40 MWp, helping the airport produce around 1.6 lakh units of power a day as against its daily consumption which stands at around 1.3 lakh units.[7]

Local Biodiversity Strategy and Action Plan

Kochi is the first city in India to have developed a scientifically informed and participatory Local Biodiversity Strategy and Action Plan (LBSAP). This action plan articulates the method to implement the vision, strategic objectives, and actions necessary for the conservation and protection of biodiversity in the city. The Kochi LBSAP was supported by the Integrated Sub-National Actions for Biodiversity Supporting Implementation of the National Biodiversity Strategy and Action Plan (INTERACT - Bio) project.

The city aims to mainstream biodiversity conservation into urban planning. It has developed a vision to conserve its biodiversity, maintain the uninterrupted flow of ecosystem services, and ensure sustainable, safe, and climate-resilient development by managing its mosaic of ecosystems through a participatory planning approach. This LBSAP is based on the inputs received during multiple consultation meetings at the city and ward levels and discussions with councillors of the Municipal Corporation, and subject matter experts.[8]
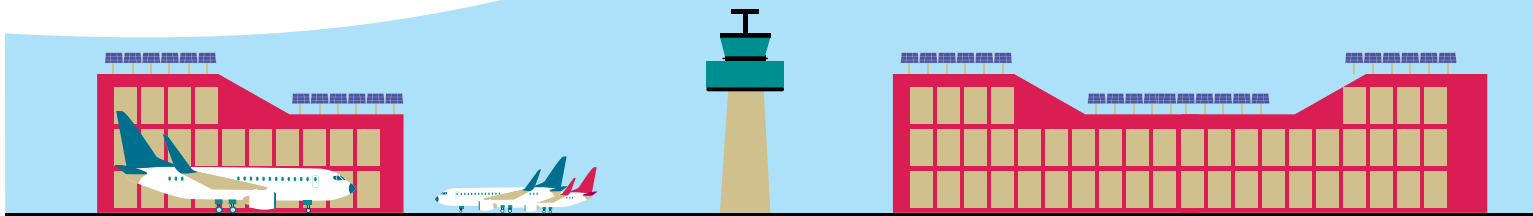
PUNE, Maharashtra

(2018, 2016, 2015 Finalist)

Non-Motorised Transport (NMT) Initiatives

Pune has set the benchmark for a walking-and cycle-friendly city. To ensure transformation on the ground, the city has adopted the policies, plans, and guidelines, implemented street design programmes, and embedded institutional reforms. Some of the NMT related initiatives undertaken by the city are: Comprehensive Mobility Plan (CMP)- envisioning the increase of the modal share of NMT and public transport to 90 percent by 2031, Walk Smart Pedestrian Policy- prioritising pedestrians and cyclists over vehicles, Parking Policy- aiming to discourage private vehicle use, Urban Street Design Guidelines (USDG)- providing design templates/standards for streets of different Right-of-Way (ROW) and street elements, Comprehensive Bicycle Plan- to improve the cycling infrastructure in the city, and Public Bicycle Sharing (PBS) System- to promote bicycles as an efficient mode of commute and last-mile connectivity, Urban 95 Programme- for creating walkable, mixed-use neighbourhoods that cater to the basic needs of infants, toddlers, and caregivers within a 15-minute walking distance.[9]

Pune was the first Indian city to adopt Urban Street Design Guidelines. The city aims to redesign over 100 km of streets. In addition, 50 km is being redesigned under the Smart Cities Mission. Pune has also developed over 1000 kilometres of other major and minor streets as per the USDG, focusing on pedestrians and cyclists. The Comprehensive Bicycle Plan envisages the creation of over 400 kms of cycle-friendly streets. Pune piloted a dockless PBS system with 4000 cycles and 800 cycle parking locations across the city.[9]

Pune's Maximum Solar City initiative

Upon completing one year of the Smart City Mission, Pune Smart City launched 50 rooftop solar projects with the aim to deliver over 200 MW of rooftop solar capacity across the city by 2020. Aligned with India's goal to achieve 100 GW of solar by 2022, of which 40 GW is from rooftop solar, Pune aspires to become a 'Maximum Solar City.'

The city will benefit from improved energy sufficiency, cost savings for consumers, and environmental sustainability. In line with the Smart City Mission's guideline to generate at least 10 percent of electricity through renewables within the city, Pune aims to generate 15-20 percent of electricity through rooftop solar installations by undertaking Local Area Developments of Aundh, Baner, and Balewadi. The project will cover the entire city of Pune, with Aundh-Baner-Balewadi being the special focus areas. This initiative provides a platform for the demand and supply side of rooftop PV to interact and continue to find lower prices for the citizens at acceptable quality levels of power generated.[10]
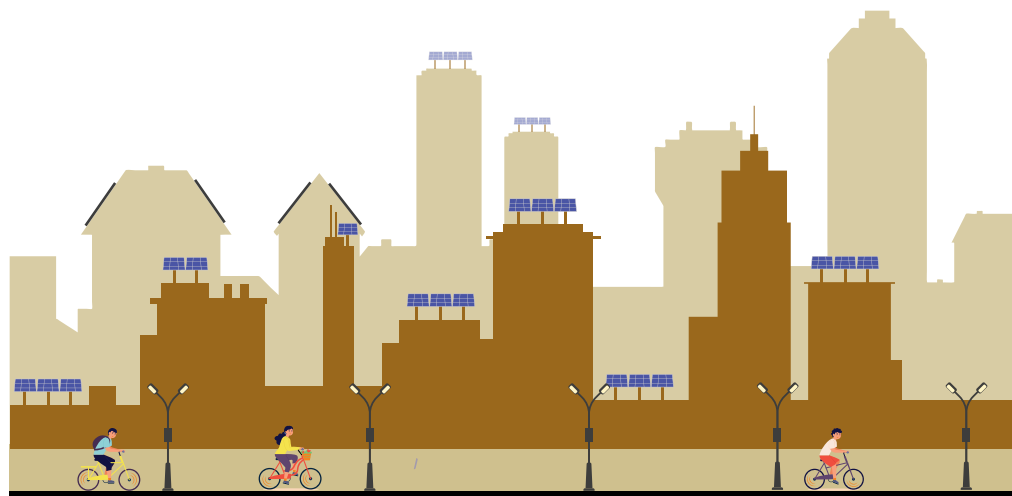
PANAJI, Goa

(2018 Finalist)

Decentralized Solid Waste Management System Towards a Bin-Free & Landfill-Less City

Panaji launched a massive comprehensive city revitalization campaign called "Bin Free in 2003" to improve sanitary conditions and the solid waste management (SWM) system of the city. It aimed at reducing waste generation through behavioural change among city residents towards waste management and segregation, leading to a 100 percent bin-free city with 100 percent success in door-to-door waste collection and waste segregation at source. It also emphasized mass awareness and extensive community engagement through the adoption of city-wide waste reduction measures. The campaign covered various aspects of SWM in Panaji and adopted an integrated approach to strategize the activities to be undertaken in the city.

The collected waste was segregated at the source into eight waste streams. Modifications and innovations were made in the waste collection instruments to ensure effective door-to-door waste collection services throughout the city. The establishment of material recycling stations and decentralized composting units were also undertaken to effectively manage dry and wet waste. Besides these, adoption of extended producer responsibility (EPR) initiatives through innovative strategies and fostering tie-ups with recycling units was also facilitated for efficient management of recyclables, hazardous waste, as well as e-waste being generated in the city. Simultaneously, extensive campaigns and community engagement drives to increase mass awareness levels about the initiative and SWM issues were launched across the city.[11]

COIMBATORE, Tamil Nadu

(2016 finalist; 2014 National Winner)

Combined Waste Treatment and Solar PV Initiative

Coimbatore City Municipal Corporation (CCMC) has planned to install a 2 MW ground-mounted grid-connected solar PV power plant close to a proposed 30.53 MLD capacity sewage treatment plant (STP), at Vellalore compost yard in Coimbatore district.

The solar plant will be installed under captive mode by CCMC, and excess generation will be exported to the grid and compensated with all other High Tension (HT) consumption by the corporation. The power generated from the proposed solar power plant is planned to be evacuated through a 22kV transmission line to Pothnur Sub-Station of TANGEDCO.[12]
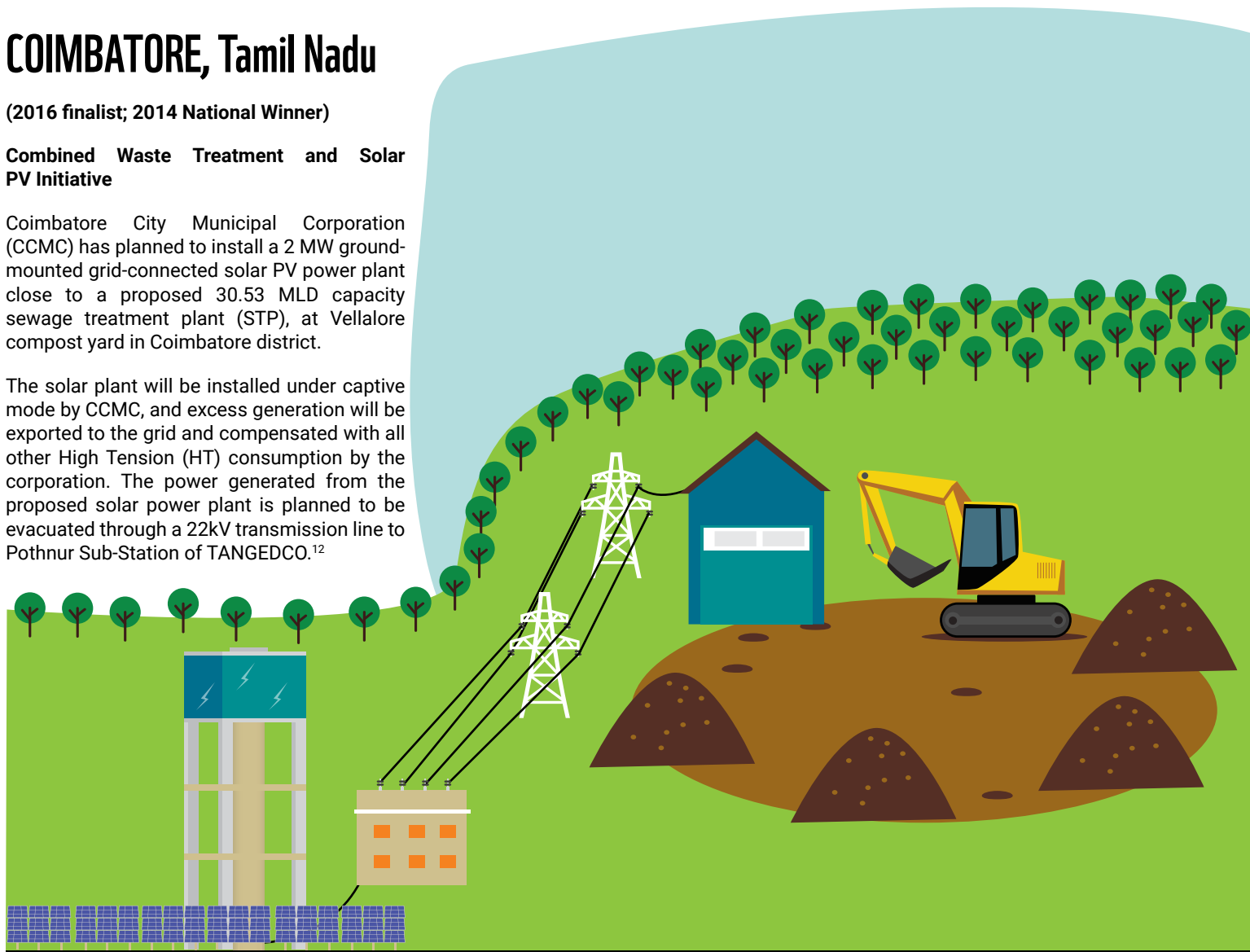
THANE, Maharashtra

(2015 National Winner)

Implementing Low Carbon Measures in Municipal School, Thane

A first-of-its-kind "net-zero energy municipal school" in Thane implemented low-emission measures, such as energy efficiency retrofits, a 15 kW grid-interactive Solar PV system with potential for net-metering, and other measures, such as smart metering, rainwater harvesting, as well as solid waste management interventions.

The school's energy consumption reduced considerably, with renewable energy providing 68 percent of the energy. This resulted in savings of 18,020 units of electricity and reduction of 15 tonnes of CO_2e emissions in two years since its implementation in 2016. Thane Municipal Corporation also connected the system to the electrical grid through net metering in 2017.[13]

Green Smart City

To cope with the rapid urbanisation and the consequent depletion of green spaces, Thane Municipal Corporation initiated a drive of planting 5 lakh trees in 3 years starting from 2015.

Considering the scarce availability of land within the city, degraded forest land was identified within the city limits for the plantation drive in association with the Forest Department. This initiative would lead to conservation of the fast depleting biodiversity of Thane City and restrict further erosion of soil, hence reducing landslides in the hilly areas around the city. The plantation drive also restricted the loss of freshwater due to runoff during the rainy season in these degraded forest lands and recharged the water table in the high-water scarcity areas.

The initiative was implemented in collaboration with citizens, NGOs and students, which also created awareness regarding the importance of environment conservation and further generated employment for the tribal youths in the areas.[14]
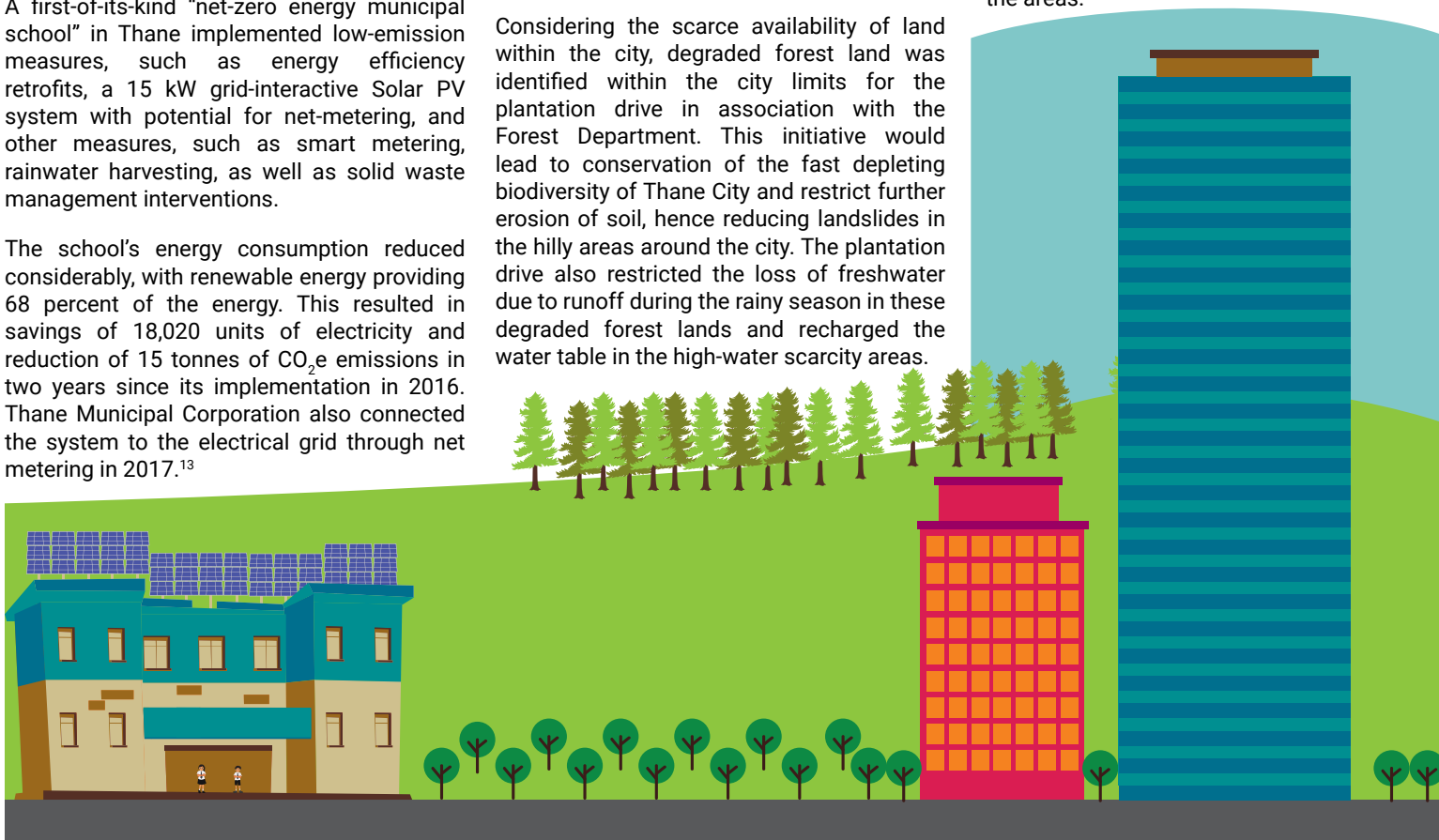
NEW DELHI, Delhi

(2013 National Winner)

Delhi's EV Policy 2020

Delhi Electric Vehicle Policy 2020 launched in August 2020, aims to achieve the overarching objective of improving Delhi's air quality and create an entire supply-chain ecosystem for electric vehicles in the city. The policy intends to accelerate the pace of adopting e-vehicles across segments, especially in the mass category of two-wheelers, public/shared transport vehicles, and goods carriers.

The policy that will be valid for the coming three years seeks to drive the rapid adoption of Battery Electric Vehicles (BEVs) to contribute to 25 percent of all new vehicle registrations by 2024. The Delhi government is targeting the induction of 35,000 electric two, three, four-wheelers and buses, along with 1,000 electric vehicles for last-mile deliveries, and 250 public charging and battery swapping stations. Under this scheme, road tax and registration fees for all battery electric vehicles have been waived off for the next three years.

The collective target is estimated to amount to 500,000 EVs and 4.82 million tonnes in CO_2 emissions savings. The fiscal incentives being offered would be in addition to the demand incentives available in the central government's FAME II scheme.[15]

Delhi Metro's Green Initiatives

The Delhi Metro spread over 450 kms (including Phase IV) has enabled the modal shift of an average 56.61 lakh per day (upto January 2020) to a sustainable mode of public transportation.

The Delhi Metro has been a forerunner in quantifying climate change benefits from its operations. Delhi Metro Rail Corporation (DMRC) has already registered three projects under Clean Development Mechanism (CDM) and Gold Standard, which are expected to reduce approximately 5.7 lakhs tCO_2 emissions annually. These projects include regenerative braking, modal shift, and energy efficiency. Delhi Metro was also the first-ever metro and railway system in the world to be registered with the Gold Standard Foundation.

DMRC has also installed a 500KWp solar power plant at the Dwarka Sector 21 metro station to meet its power requirements sustainably.[16]
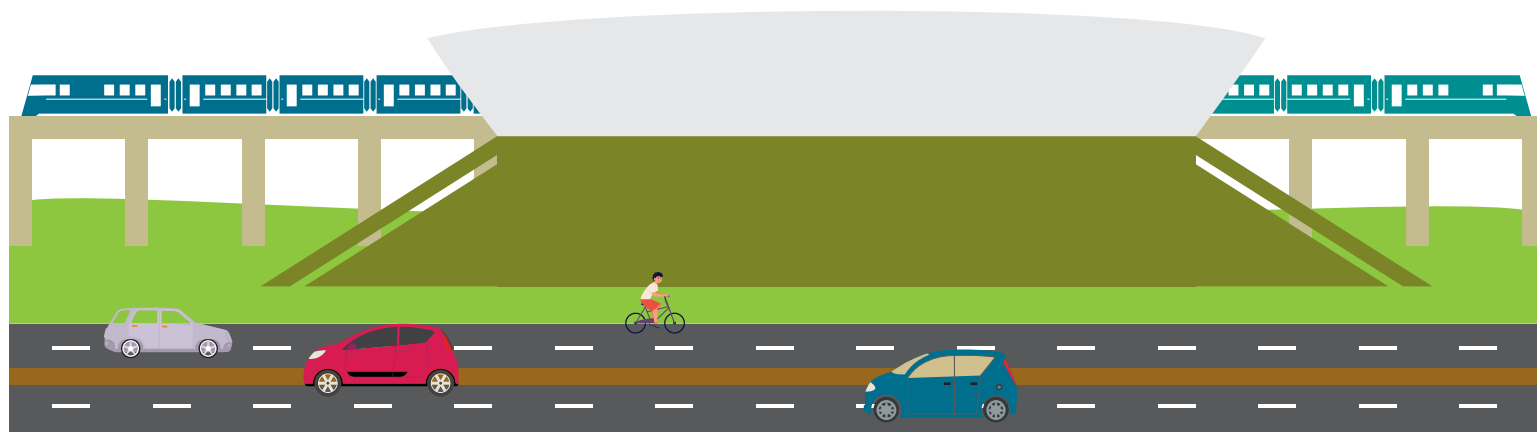
Key Sectoral Initiatives by OPCC Finalist Cities in India

This section captures some of the key sectoral initiatives undertaken by Indian OPCC finalist cities over the years from 2012 – 2020 to provide an overview of the cities' interventions for transition to a climate smart future. Climate actions across sectors such as energy, waste management, mobility, nature-based solutions, and community engagement & awareness building, as reported by the cities through OPCC, and supplemented by information from secondary sources are presented here.

⚡ Energy

Enhancing energy efficiency

Replacement of street lights with energy-efficient LED lights

Rajkot

Around 2.2 lakh 30W CFL and 100W incandescent bulbs replaced with 9W LED bulbs, 42,000 55W tube lights replaced with 20W LED tube lights, and more than 18,000 conventional 50W fans replaced with energy-efficient fans under the UJALA scheme till December 2019.*

Nagpur

Nagpur aimed to replace 1,36,000 streetlights by 2020. Till 2019, more than 1,20,300 specially designed LED lights had been installed. This project aimed to save more than 40 percent of electricity annually, with considerable reduction in GHG emissions.[17]

Kochi

Kochi aims to replace 43,500 street lamps, comprising of both sodium vapour lamps and tube light-fitted street lamps with LED-equipped street lights.[18]

Pune

Pune aims to upgrade 70,000 existing conventional street lights to energy- efficient LED lights that would provide energy savings of 30-50 percent. About 16,000 high-pressure sodium vapor streetlights have been replaced with LED fittings.[19]

Panaji

Panaji has undertaken the replacement of 5,560 existing high energy consuming fittings to energy-efficient LED street lights, which will reduce the street light connected load to 50 percent, resulting in energy savings.[20]

Coimbatore

Coimbatore is replacing 58,878 conventional street lights with LED lights across 60 wards. Of those, 12,687 have already been replaced with LED bulbs. Few hundred tube lights, nearly 1,500 CFL, over 30,000 sodium vapour and metal halide will also be replaced.[21]

Thane

Thane has replaced 8,000 high-pressure sodium vapour street lamps with LEDs, resulting in annual energy saving of 5.33 million kWh and avoiding 4385 tonnes of CO_2eq. GHG emissions.[22]

New Delhi

New Delhi has installed LEDs in all buildings, street lightings (covering nearly 700 kms), hoardings and advertisements. In the long run, it is expected to save nearly 100 MW of electricity per annum.*

Enhanced adoption of RE

Solar installations

Rajkot

12,331 kWp solar rooftop PV installed in residential, educational, commercial, industrial, and municipal buildings.*

Nagpur

Potential of over 27 MW of rooftop solar identified in government buildings. In addition, 42 MW solar PV systems to be installed in Nagpur Municipal Corporation (NMC) office buildings, hospitals, schools, infrastructure facilities, streetlights etc. with the potential to generate 6,89,85,000 units /annum.*

Kochi

Cochin International Airport became the first in the world to completely operate on solar power. Comprising 46,150 solar panels laid across 45 acres, Cochin airport's solar power plant produces 50,000 to 60,000 units of electricity per day to be consumed for all its operational functions.[23]

Pune

12kW solar PV system, consisting of 48 solar panels, each having a capacity of 250W, installed in the Pune Municipal Corporation (PMC) building.*

Panaji

30 kW solar PV plant installed in Raj Bhavan, the official residence of Governor of Goa. The generated power is being used for streetlights and gardens within the premises. In addition, 100 KW of solar is proposed for installation across various institutions.[24]

Coimbatore

600 kW of solar PV installed across offices, schools, bus stations, maternity centres, canteens, sewage treatment plants, and water pumping stations.*

Thane

One of the first cities to mandate the use of solar water heating system in municipal buildings. A 160 TR capacity solar-based air conditioning system has been installed by Thane Municipal Corporation (TMC).*

New Delhi

Solar water heaters mandatory in all buildings above 500 sq meters area.*

21 MW of solar PV installed across 150 school buildings. This project is expected to reduce annual power bill of schools besides generating revenue from the sale of surplus electricity to the discoms.[25]

New Delhi
Tax incentives for solar installations

All Delhi Govt. Housing Societies provided with solar water heating systems at 30 percent subsidy from Energy Efficiency and Renewable Energy Management Centre.*
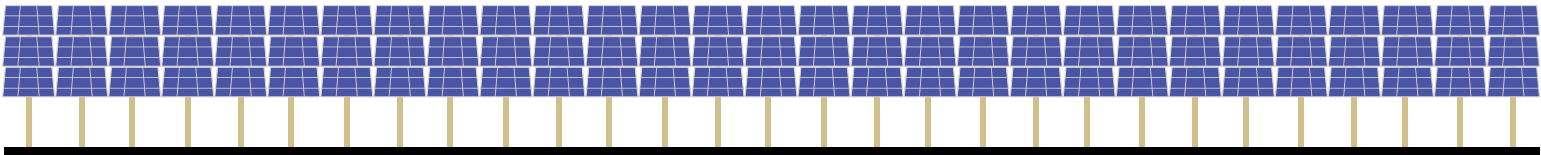
Waste Management

Collection / Composting

Rajkot

Decentralized facilities set up to treat 2 TPD garden waste at 11 sites and 1.5 TPD vegetable waste at 6 sites.

Compost generated by 18 waste-to-composting plants (5MT capacity each) being utilised in Rajkot Municipal Corporation (RMC) gardens.*

Nagpur

Home composting and waste segregation at the source is being encouraged.*

Kochi

Eco-friendly solid waste management system for the high-rise apartments with focus on health, hygiene and safety measures envisaged by CREDAI Kochi.[26]

Pune

Solid waste management system improved through door-to-door collection of approximately 150 tonnes of dry recyclable waste every day, from more than 4 lakh households through Solid Waste Collection and Handling (SWaCH)- a joint effort of PMC and the waste pickers' union.

Tax rebate for vermicomposting facilities.[27]

Panaji

100 percent collection and segregation of waste at source.

Campaigned for "Bin Free City in 2003" for improved solid waste management system in the city. It involved door-to-door collection and segregation of waste leading to recycling and composting.[28]

A pilot Zero Waste Management project was initiated in Ward 23 to demonstrate all the stages of effective solid waste management through community participation to achieve the goal of zero waste-to-landfill. This led to the minimisation of dry

Coimbatore

waste processing at the compost yard and the collection of 250 tonnes of recyclables in one year.

Clean & Green Madukkarai initiative resulted in 100 percent participation of the community in effective waste

disposal. This has led to 75 percent of waste being effectively recycled, reducing the amount of waste reaching landfills. The source segregation of household waste and its door-to-door collection has also increased to 100 percent.[29]

Recycling / Recovery

Rajkot

A 100 TPD construction and demolition waste recycling plant proposed.*

Kochi

Recycling and plastic shredding unit established by the city and managed by CREDAI. The collected dry material is sold to generate revenue for the CREDAI workers.[30]

Waste To Energy

Rajkot

100 kWh electricity generated by 5 MT waste-to- biomethanation plant being utilized to power 40 streetlights.

7.5 MW waste-to- energy plant proposed to treat 600 MT waste per day.*

Nagpur

Proposal for bio-methanation for solid wet waste being prepared.*

Kochi

Agreement with the concessionaire to set up and operate a plant to produce 10 MW of electricity from waste in Kochi.[31]

Pune

700 MT municipal solid waste-to-energy plant set up which feeds electricity into the grid.[32]

Thane

Installed 15 T capacity biomethanation plant that produces 600 m³ methane per day which is used as supplementary fuel in boilers.*

Implemented the Integrated Municipal Waste Processing Complex at Ghazipur. The waste-to-energy plant will produce 12 MW of electric power using 1,300 tonnes

New Delhi

of municipal solid waste per day, diverting around 15 percent of Delhi's municipal solid waste and addressing the environmental problems of open dumpsites. Besides this, two other

waste-to-energy plants, Timarpur - Okhla waste-to-energy plant (1800 MTD) and Narela waste-to-energy plant (2000 MTD) are also operational in Delhi.[33]
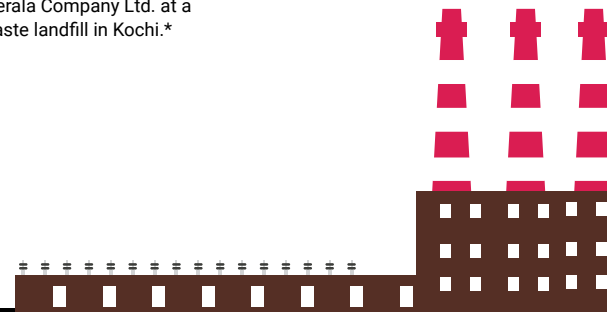
Disposal

Rajkot

Scientific capping of the first and second cell of Nakrawadi landfill dumpsite and construction of leachate collection ponds at the landfill site undertaken.[34]

Kochi

Collection, transportation and disposal of domestic hazardous waste initiated through Clean Kerala Company Ltd. at a designated waste landfill in Kochi.*

Mobility

Low Carbon Public Transport

Rajkot

10.7 km Bus Rapid Transit System (BRTS) operational out of the proposed 63 km long network.

Concession for students and elderly people on public transport, and introduction of e-ticketing and mobile-based application for Rajkot Mass Transport Service (RMTS) and BRTS buses.[35]

Nagpur

Metro railway being adopted for local transportation.*

Pune

16 km long BRTS in place with approximately 67,000 daily ridership.

31km long metro network under construction.

Subsidies provided to 16,000 auto-rickshaws to convert to CNG fuel.[36]

Panaji

Buses being procured for a light BRTS to cater to different street sizes.*

New Delhi

Delhi Metro, carrying about 57 lakh passengers daily, with a total length of 48.06 km under Phase 1 & 2 and expected to increase to 41.04 km under Phase 3, saved 1,12,500 megawatt-hours of power generation by restricting and reusing power on its trains through regenerative braking. Currently, the Delhi Metro saves carbon emissions of 20,850 tonnes per annum.[37]

Non-Motorised Transport (NMT)

Rajkot

Bicycle sharing scheme introduced to promote NMT. A dedicated 21.4 km cycle track created along the BRTS corridor with 24 cycle rental stations and 195 cycles.

Project 'Green Ways' has been proposed to provide more cycling and pedestrian tracks for safe and secure NMT in the city.*

Pune

The first city to have dedicated cycle department within the municipal corporation.[38]

Panaji

Public bicycle sharing system proposed.

NoMoZo (Non-motorized Transportation Zone) was created to generate awareness about car-free streets and ease of mobility to pedestrians.[39]

Coimbatore

Using the NMT Network Plan, Coimbatore aims to set the ground to improve the safety and convenience for NMT users (pedestrians, cyclists, and e-bikes), and increase the modal share of NMT. This will also promote the usage of public transport.[40]
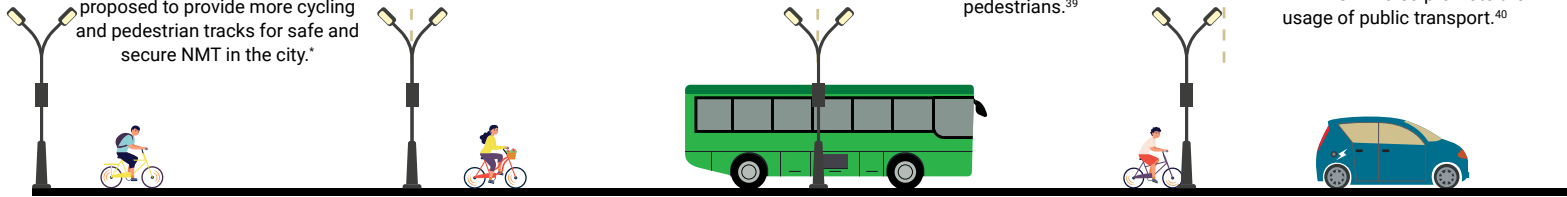
Electric Vehicles / Low Emission Vehicles

Rajkot

11 diesel buses being replaced with electric buses along with the provision of solar PV system for charging.

9 electric bikes procured for RMC official field visits.*

Nagpur

1,256 e-rickshaws, 5 e-Buses, about 200 e-Cars, and 50 CNG buses introduced.

RTO tax exemptions provided for e-vehicles.*

Kochi

Recently signed a declaration with MobiliseYourCity- an international platform aiming to facilitate the transformation towards low-carbon, safe, clean, reliable, and affordable urban transport systems.*

Thane

Announced subsidized charging rates for 3 years. Free charging in the 1st year, and 50 percent and 20 percent subsidy would be provided in charging rates for the 2nd and 3rd year, respectively.[41]

New Delhi

Delhi Electric Vehicle Policy 2020 aims to improve Delhi's air quality and create an entire supply-chain ecosystem for electric vehicles in the city. The Delhi government is targeting the induction of electric vehicles, public charging, and battery swapping stations.[42]

Planning

Emission Reduction Target

Pune

Comprehensive mobility plan developed to emphasise on sustainable modes of transportation, along with street re-design guidelines and public parking policy.*

Coimbatore

The implementation of the Integrated Sustainable Urban Transport Systems for Smart Cities (SMART-SUT) project is in progress to promote low-carbon mobility and implement sustainable urban transport projects.*

Kochi

Kochi has committed to a 25 percent reduction in their transport-related greenhouse gas emissions by 2030,compared with a business-as-usual scenario, and at least 50 percent reduction by 2050.*

Thane

Thane collaborated with Eco-Cities India in 2018 to accelerate a shift towards the adoption of e-vehicles for commuters. Through this project, a 43 percent reduction in CO_2 emission (3,981 tonnes per day) is expected in 2021 vis-a-vis a business as usual senario (5,687 tonnes per day).[43]

Panaji

Intelligent transportation system- a central command and control centre for multi-modal public transport system including NMT, to be operated.*

Nature Based Solutions

Afforestation

Rajkot

Based on recommendations provided in the study report on the vegetative cover of Rajkot city, RMC has started a tree plantation drive, with a plan to plant 1 lakh saplings.*

Nagpur

City's first Miyawaki Urban Forestry project on Bhandewadi dumping ground being implemented after clearing a part of the area using the bio-mining technique. Over 15,000 trees of indigenous species have been planted with a reported survival rate of more than 90 percent.[44]

Pune

Warje Urban Forest in Pune is the first-ever urban forestry project in Maharashtra. The ULB later planted around 9,500 plants with a height of 6-8 feet that are now transformed into trees with a height of 9-10 feet.[45]

Thane

More than 6 lakh trees planted on degraded forest lands, roadsides, reservation plots, dividers, etc. within a period of four years with the involvement of local leaders, celebrities, NGOs, students, and citizens.[46]

Biodiversity Register

Nagpur

Nagpur unveiled an illustrated urban biodiversity map of the city, under the People's Biodiversity Register (PBR). Further, recording of the local knowledge with validation, perception, and attitude of people about conservation is being carried out for the city.[47]

Kochi

Kochi has prepared a Biodiversity Register initiated by the State Biodiversity Board, which aims to mainstream and integrate biodiversity conservation and management into the planning process at the national, sub-national, and local levels.*

Pune

Biodiversity Management Committee has been established, and People Biodiversity Registry is being prepared. A book titled "Jivasch" on Biodiversity of Pune city has also been published.*

Panaji

Illustrated natural asset map of the city released under the INTERACT-Bio project. The illustrated map portrays the biodiversity wealth and critical ecosystems of the city. It will support the city government in undertaking integrated planning and raising awareness among citizens about urban biodiversity.[48]

Coimbatore

People's Biodiversity Register (PBRs), will be created in 12 blocks in Coimbatore.[49]

Green Open Spaces/ Parks

Nagpur

The Ambazari Biodiversity Park developed with facilities such as a 15 km cycle track, 18 nesting stands, 8 bird hides, 2 e-rickshaws, a water deck, adventure sports for kids, benches, 10 steel, and 7 RCC watchtowers.[50]

Kochi

Parks and green spaces being developed in the city under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT).[51]

Coimbatore

Singanallur Lake in Coimbatore city declared as an 'Urban Biodiversity Conservation Zone' (UBCZ). Since 2016, several efforts have been undertaken to give a facelift to the lake's ecology, including four patches of Miyawaki forests, and the planting of nearly 1,000 palm saplings.[52]

New Delhi

The Yamuna Biodiversity Park comprising of native flora and fauna has been developed to act as a natural conservation site for a specific group of endangered plants.

The Aravalli Biodiversity Park (ABP) being developed to bring back the lost biodiversity of Delhi Aravallis. The other objective of ABP is to promote environmental awareness.[53]

Planning

Kochi

Kochi has been selected for the Cities4Forests initiative, which helps cities from around the world connect with and invest in forests. With this, Kochi would attempt to conserve better, manage, and restore forests.[54]

New Delhi

Delhi Development Authority (DDA) approved the draft 'Green Development Area' policy to provide an integrated framework for the development of land falling in the designated green belt and Low-Density Residential Area (LDRA), as per the Master Plan of Delhi 2021.[55]
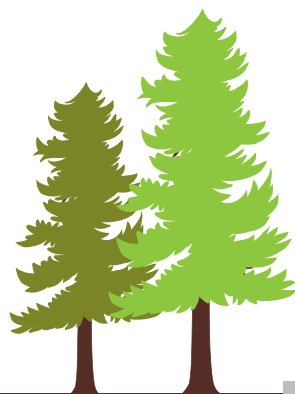
Green Building

Rajkot

In Rajkot, green building design standards in the social housing scheme is implemented through the Smart Ghar III project. Energy guidelines or manual for different types of buildings focussing on the building envelope, design, material use, EE and RE are also planned.*

Nagpur

In Nagpur, green building concept will be incorporated in projects like affordable housing, schools, hospitals etc., to make human settlements inclusive, safe, resilient, and sustainable.*

Kochi

Smart City Kochi has won the FM Excellence Award for 2019- 2020 for ecological sustainability in recognition of the IT townships' go-green efforts that save energy, conserve water, recycle waste, avoid plastic and promote overall cleanliness.[56]

Pune

Pune was the first Indian city to adopt Eco-Housing programme in 2007-08 to promote rating for green buildings and encourage developers to adopt the Eco-Housing criteria. It is presently run under the GRIHA rating system.[57]

Panaji

The Goa 2035: Vision and Road Map (Report of Goa Golden Jubilee Development Council) highlights the need for green buildings and green infrastructure for Goa. The Town and Country Planning Department of Goa further plans to make a synopsis for encouraging stakeholders to embrace green buildings.[58]

Thane

Thane implemented "net-zero energy municipal school" through low-emission measures such as EE retrofits, 15 kW grid-interactive Solar PV system, with potential for net-metering, and other low- emission measures such as smart metering, rainwater harvesting, etc.[59]

New Delhi

In Delhi, the metro stations under the third phase are designed and being constructed as 'green buildings' with provisions for CO_2, water and energy savings. IGBC has conferred Platinum rating to 100 metro stations, 5 receiving sub-stations (RSS), and DMRC residential societies for adopting green building initiatives such as use of solar power, energy- efficient equipments, etc.[60]

Community Engagement & Awareness

Rajkot

A district-level energy park established in Rajkot to increase public awareness on clean energy applications.[61]

Nagpur

Capacity building of ULB officials conducted regarding the risks and hazards. In addition, Nagpur Smart City has been active in displaying the alerts and messages on precautionary measures to the citizens via digital displays placed at various prominent locations in the city.[62]

Kochi

An audio-visual awareness campaign was initiated to inform apartment complexes regarding segregation of waste at source. Almost 90 percent of the apartments in the city are covered under this campaign.[63]

Pune

Indradhanushya Environment Education and Citizenship Centre was set up in 2012 to provide students a platform to perform and recognise their potential in terms of knowledge and awareness for the environment. PMC Care version 2 - an app to connect PMC with citizens was also launched. Pune publishes Environment Status Report every year since 1996.[64]

Panaji

TRASH (Thinking, Reflecting and Acting for Sustainable Habitat)- an awareness programme on recycling, being run in the city. In addition, the 'WASTE WISE' programme was initiated to educate students on waste management.[65]

Coimbatore

Coimbatore featured in the Guinness Book of World Records for organising the "Largest Recycling Lesson" in 2015, involving around 13,000 students.[66]

New Delhi

The Delhi government under its Bhagidari scheme promoted broad-based civic participation in local governance, led campaigns on water conservation, water harvesting, anti-plastic and anti-littering.[67]

Citizen Engagement through We Love Cities

We Love Cities is a public engagement campaign that allows people across the world to express support for sustainable urban development by voting for their favorite finalist city from WWF's One Planet City Challenge and providing improvement suggestions for these cities.

WWF

♥ WE LOVE CITIES

THE CAMPAIGN

SEP – OCT 2020

54 Cities on 6 continents = 112,000,000 citizens represented

Open to finalist cities in WWF's One Planet City Challenge. Based on the cities' data submitted on CDP and ICLEI's unified reporting platform. Validated by an international jury of experts.

CAMPAIGN QUEST

To engage as many citizens as possible in sustainable city development via welovecities.org, social media and on the ground actions in cities.

GLOBAL RESULTS

IN ONLY 4 WEEKS:

1.2M GLOBAL VOTES

As citizen validation for the cities' sustainability targets and actions.

79K CITIZEN SUGGESTIONS

Improvement suggestions submitted by citizens committed to creating more sustainable cities. Suggestions shared with cities.

4.6M SOCIAL MEDIA ENGAGEMENTS

In WWF and participating cities' social media – enabling sustainable local communities.

80M REACH ON SOCIAL MEDIA

Accumulated globally in all channels.

HOORAY BATANGAS!

Batangas is the winner of the We Love Cities campaign with 295,000 interactions (votes, suggestions and social media combined).

LOCAL ACTIVITIES

THE CITIES' JOURNEY TO SUSTAINABILITY

Participating cities were ultra creative in engaging their citizens in the campaign despite limitations posed by the global pandemic. Love was shared through art exhibits on city streets, mayors' appearances on television, photo competitions, and more!

Loja, Ecuador, went all in and engaged its proud citizens to show their love. From television news coverage to support of local business, the city really put itself and its sustainability efforts out there!

Park City, USA, called upon local artists to express their love through colorful paintings on recycled wooden backdrops displayed on the city's main street. The results were beautiful!

In **Banda Aceh, Indonesia,** the mayor really lead by example and encouraged the citizens to vote and post their improvement suggestions through a series of videos. Lovely photos full of people proudly voting for their city were a treat to see!

THANK YOU FOR YOUR LOVE AND SUPPORT – WE ♥ YOU!

© Rohan Paradkar

Instagram photo competition: "**My city in motion**", where people across the globe were invited to participate by sharing photos that portrayed sustainable urban transportation in their city. Rohan Paradkar's photograph from Nagpur, India was chosen as a the winning photograph amongst the 644 entries that were posted worldwide with the hashtag **#WeLoveCitiesPhotos.**

Vox Pop

This section presents the voice of the people. It compiles the suggestions provided by citizens for improvement of their cities (the three finalist cities for 2019-20) through the We Love Cities campaign.

Nagpur

Infrastructure
- Provide environment-friendly infrastructure services like transportation, power, and waste.
- Construct porous roads to facilitate the percolation of water.

Waste
- Encourage segregation of waste at source.
- Promote circular economy in industries.

Mobility
- Promote CNG vehicles, phase out fossil fuel-based vehicles, and gradually shift to electric vehicles (EVs).
- Design better footpaths to encourage walking.

Energy
- Install solar-powered streetlights and traffic lights.
- Encourage mandatory installation of solar panels on new buildings.

Rajkot

Infrastructure
- Install water meters to minimise piped water supply wastage.
- Introduce mandatory recycling of water along with maintaining green cover.

Waste
- Recycle water to implement a zero-waste model.
- Encourage home composting of organic waste.

Mobility
- Promote electric vehicles and encourage cycling by developing adequate infrastructure.

Energy
- Promote white roofs and Solar PV installation in new buildings.
- Encourage clean technology in new constructions.

Kochi

Infrastructure
- Promote rainwater harvesting DEWAT (Decentralised Waste Water Treatment) system.
- Promote mandatory adoption of rainwater harvesting in offices and encourage RE at household-level.

Waste
- Encourage on-site management of waste and giving up plastic.

Mobility
- Encourage NMT, EVs and public transport (including the high-speed rail) along with inland waterways.

Climate Adaptation and Resilience
- Undertake periodic cleaning of the canals and conservation of mangroves to mitigate flood risk.
- Protect low-lying areas from sea level rise.

WWF-India Climate Change and Cities Engagement 2019-20

Perception Study on Sustainable Mobility in Bengaluru

A survey was conducted in the city of Bengaluru to understand the perception of citizens, government officials, and civil society about different aspects of sustainable mobility. Besides understanding the perception of challenges and opportunities for sustainable mobility, the aim was to gauge the level of general awareness regarding the adoption of sustainable mobility to address climate change, and co-benefits in terms of improved air quality.
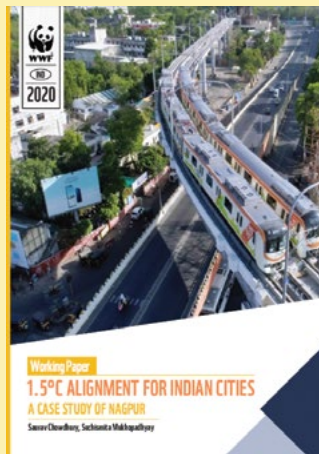
Working Paper on 1.5°C alignment for Indian Cities – A Case Study of Nagpur

Based on the information reported by Nagpur under the OPCC platform, a deep dive assessment was conducted to analyse the alignment of the city's climate actions with the state, national, and global 1.5°C climate goals. Using the OPCC evaluation methodology, the paper provided recommendations for strengthening city-level climate actions in line with 1.5°C goal and achieving greater alignment with the national/subnational climate agenda.


Background Paper on Cities and Climate Change – The Indian Context

The paper provides an overview of the role of cities in addressing climate change, from a mitigation and adaptation perspective, in the Indian context. More specifically, it delves into the developments regarding the recognition of cities as stakeholders in the national climate agenda and policy, finance, and support from different organisations.

WWF-India and Centre for Study of Science, Technology and Policy (CSTEP) organized a Webinar on '**Sustainable Mobility and Climate Change**' – a perspective of Bengaluru on June 5, 2020. The webinar convened relevant stakeholders for a dialogue on challenges & opportunities for sustainable mobility in Bengaluru and its role in addressing climate change and the related issue of air pollution. The discussions were based on the findings of a "Perception survey on sustainable mobility in Bengaluru" carried out by WWF-India.
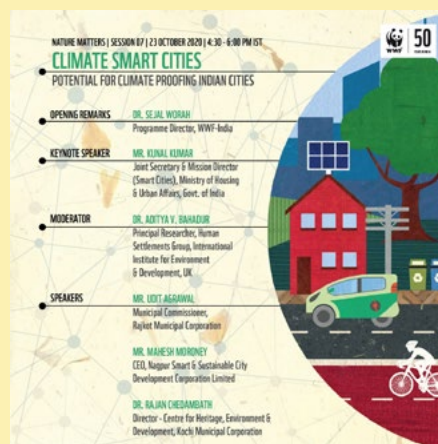
WWF-India organized a session on '**Climate Smart Cities: Potential for climate-proofing Indian cities**' on October 23, 2020, during the 'Nature Matters' webinar series as part of its 50 years journey. The session convened senior policymakers and city representatives to share insights into challenges, opportunities, successes, and ways to implement progressive actions, plans, and policies to address climate change. The discussions further sought to explore coordinated approaches at the local, state, and national levels to facilitate the transition towards a climate-smart future for Indian cities.

WWF-India in partnership with NIUA Climate Centre for Cities (C-Cube) organized a webinar on '**Climate Proofing Smart Cities**' on December 21, 2020, in conjunction with a Virtual OPCC Felicitation Ceremony. The webinar provided a platform for OPCC cities to present best practices and successes in addressing climate change. The deliberations further delved on the role of cities as stakeholders in the climate and sustainability agenda.

Endnotes

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