ICLEI
Local Governments for Sustainability
SOUTH ASIA

Investing in **Climate Resilient Cities**

State Level Project Pipelines

Gujarat



Acknowledgements and Disclaimer

In Appreciation:

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About this Report

This report presents a state-level climate project pipeline for Gujarat, intended to support the state government, cities and financing partners in moving local climate priorities into implementation. It is aggregated from the climate action plans of five Gujarat cities: the Net-Zero Climate Resilient City Action Plans of Ahmedabad, Rajkot, Surat and Vadodara, and the Climate Action Plan of Bhavnagar.

The Ahmedabad, Rajkot and Vadodara Net-Zero Climate Resilient City Action Plans were prepared under the "Capacity Building for Low-carbon and Climate Resilient City Development in India (CapaCITIES)" project, funded by the Swiss Agency for Development and Cooperation (SDC), India. The Bhavnagar Climate Action Plan was prepared under the "Support to Global Covenant of Mayors for Climate and Energy (GCoM) in South Asia" project, funded by the European Union. Surat's Net-Zero Climate Resilient City Action Plan was prepared under the "Climate Action Plan for Surat Municipal Corporation" project, supported by C40 Cities.

This state climate project pipeline report builds on the leadership and commitment of the Government of Gujarat and the Ahmedabad, Bhavnagar, Rajkot, Surat and Vadodara Municipal Corporations, and on the contributions of the government departments, technical experts, academia and community representatives who helped shape these city climate action plans.





Message from ICLEI South Asia

The Climate Investment Imperative



Emani Kumar
Deputy Secretary General, ICLEI &
Executive Director, ICLEI South Asia

Gujarat has long led India's climate action. It was the first state to set up a dedicated Department of Climate Change, and its Viksit Gujarat@2047 vision sets out a bold goal: a developed, net-zero society by 2047. Gujarat's cities, home to nearly half its people and the engines of its economy, will largely decide whether this vision is realised.

Ahmedabad, Rajkot, Surat and Vadodara have taken the first step by preparing Net-Zero Climate Resilient City Action Plans using ICLEI's Net-Zero ClimateResilientCITIES methodology, while Bhavnagar has prepared a near-term Climate Resilient City Action Plan using the same methodology. This report brings their projects together into a state-level pipeline across nine sectors. By each plan's horizon year, these projects could cut greenhouse gas (GHG) emissions by about 129 million tCO_2e a year while delivering improved resilience to extreme heat, flooding and water stress to 39 lakh residents in the five cities.

Total climate project pipeline investment: ₹7.02 lakh crore in nine sectors by 2070
Five cities: Ahmedabad, Bhavnagar, Rajkot, Surat and Vadodara

The pipeline gives the state a consolidated view of what its cities need, in which sectors and by when. With it, departments can prioritise projects against the targets of the Viksit Gujarat@2047 vision and the State Action Plan on Climate Change, undertake the necessary feasibility studies, develop projects and match them to budgets, central missions and the Urban Challenge Fund. They can also bundle common projects across cities into state-wide programmes and offer financing partners a credible portfolio of investment-ready opportunities. I urge the state and its cities to use it to move together from plans to projects, and from projects to results.

ICLEI South Asia extends its sincere gratitude to the Government of Gujarat, the Municipal Corporations of Ahmedabad, Bhavnagar, Rajkot, Surat and Vadodara, partners, and all stakeholders who supported and shaped these plans. We are committed to working with the Government of Gujarat and its cities, alongside our partners, to take these pipelines forward into prepared, financed and implemented projects for a Viksit Gujarat and a Viksit Bharat.

With appreciation and a shared commitment towards advancing climate resilient cities!

Abbreviations

AC	Air conditioner
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
AQI	Air Quality Index
BAU	Business-as Usual
BLDC	Brushless Direct Current
C&D	Construction and Demolition
CHC	Community Health Centre
CNG	Compressed Natural Gas
CRC	ClimateResilientCities
DeWATS	Decentralised Wastewater Treatment Systems
DI	Ductile Iron
ECSBC	Energy Conservation and Sustainable Building Code
ECSBC-R	Energy Conservation and Sustainable Building Code – Residential
E-Bus	Electric Bus
EE	Energy Efficiency / Energy-Efficient
EV	Electric Vehicles
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GOBARdhan	Galvanizing Organic Bio-Agro Resources Dhan
GW	Gigawatt
HVAC	Heating, Ventilation and Air-conditioning
IEC	Information, Education and Communication
INR / ₹	Indian Rupee
IT	Information Technology
km	Kilometre
LBSAP	Local Biodiversity Strategy and Action Plan
LED	Light-Emitting Diode
LPG	Liquefied petroleum gas
MISHTI	Mangrove Initiative for Shoreline Habitats & Tangible Incomes
MLD	Million Litres per Day
ML	Million Liters
MRF	Material Recovery Facility
MT	Metric Tonnes
MW	Megawatt
NDC	Nationally Determined Contribution
NMT	Non-motorised transport
NRW	Non-Revenue Water
PAT	Perform, Achieve and Trade
PM	Particulate matter
PM E-DRIVE	Prime Minister Electric Drive Revolution in Innovative Vehicle Enhancement
PNG	Piped Natural Gas
PUC	Pollution under control
PV	Photovoltaic
RDF	Refuse-derived fuel
RE	Renewable energy
SAPCC	State Action Plan on Climate Change
SATAT	Sustainable Alternative Towards Affordable Transportation
SBM-U	Swachh Bharat Mission – Urban
SCADA	Supervisory control and data acquisition
SDG	Sustainable Development Goal
SOP	Standard operating procedure
sq. km / sq. m	Square kilometre / square metre
STP	Sewage treatment plant
SWM	Solid waste management
tCO2e	Tonnes of carbon dioxide equivalent
TPD	Tonnes per day
UHWC	Urban Health and Wellness Centre
USD	United States Dollar



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01 Setting the Context

Indian cities are the engines of the Viksit Bharat 2047 vision – and are on the front line of rising heat, floods and water stress. Building resilience and low-carbon infrastructure into today's urban investments is the way to get it right the first time

Why Cities Matter

600 MILLION
people likely to live in Indian cities by 2036

75%
of GDP expected to come from cities by 2036

44%
of India's GHG emissions come from urban areas

USD2.4 TRILLION+
urban climate investment needed by 2050

1.1 Climate Resilient Cities for a Viksit Bharat

India has set forth an ambitious **Viksit Bharat** vision of becoming a developed economy by **2047**. At the same time, India has committed to achieving **net-zero greenhouse gas (GHG) emissions by 2070**, thereby anchoring its development in a climate-conscious and sustainable pathway.

Cities serve as the country's economic and innovation powerhouses and will play a critical role in realising the vision of Viksit Bharat 2047. With 600 million people likely to live in urban areas by 2036, their contribution to the country's GDP is expected to rise from 63% currently to 75% by 2036[1]**.** This rapid urbanisation will generate significant demand for housing, infrastructure and basic services, while increasing exposure to climate and disaster risks.

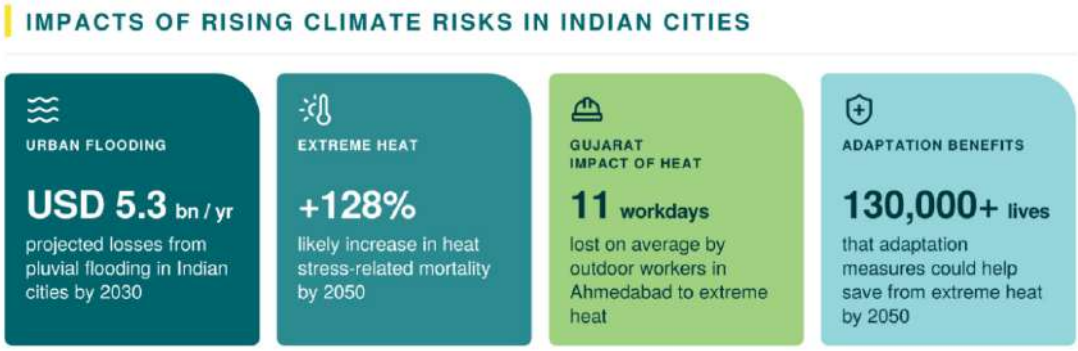
Rising climate risks in cities

Climate change is already straining urban systems, impairing service delivery and risking the health of populations. Indian cities are experiencing more frequent and intense heat, flooding, water stress and other climate-related hazards, with impacts spanning across health, livelihoods, infrastructure and economic productivity. For example, losses due to pluvial flooding in Indian cities were estimated to reach USD 5.3 billion per year by 2030, while heat stress-related mortality is likely to increase by 128% by 2050[2]**.** These impacts are particularly significant for vulnerable populations, including low-income households, informal and outdoor workers, elderly, children and women. For example, a study identified that outdoor workers in Ahmedabad lost an average of 11 workdays due to extreme heat, with at least 10% of surveyed workers requiring hospitalisation[3]

Investing in climate resilience can significantly reduce these risks and losses. The World Bank estimates that climate adaptation measures could mitigate annual urban flood-related losses of approximately USD 5 billion by 2030 and help prevent more than 130,000 deaths from extreme heat by 2050[2] . These findings demonstrate that climate resilience is not only an environmental priority, but should become an essential component of urban development, public health and infrastructure planning.

1 World Bank: A roadmap to shaping India's urban future, 2025
2 World Bank: Towards Resilient and Prosperous cities in India, 2025
3 "Rising temperatures, deadly threat: recommendations for Ahmedabad's government officials." NRDC Briefings Series, 2013





India's climate ambition and role of cities

India has matched this challenge with an ambitious climate vision and action. The 2070 net-zero commitment is backed by firm near-term targets. India achieved the target of 50% non-fossil-based installed power capacity by 2030 five years early. India's **Nationally Determined Contribution (NDC) for 2031-2035** has ramped up its targets to a 47% reduction in emissions intensity of GDP from 2005 levels and 60% of power capacity from non-fossil sources by 2035[4]. These goals dovetail with the Viksit Bharat 2047 vision and are being delivered through national policies and programmes on renewable energy (RE), high-efficiency buildings, electric mobility, water security, waste management, clean air, urban greening, and disaster resilience, as shown in Figure 1. **Atmanirbhar Bharat** complements this vision by building the domestic manufacturing base for solar modules, batteries, electric vehicles and green hydrogen.

Cities are central to delivering this ambition. Urban areas account for about 44% of India's GHG emissions[5] and will house much of the infrastructure that will shape the country's emissions and risk profiles for the decades to come. Climate action in cities also leads to wider benefits such as cleaner air, reliable water, efficient transport, cooler homes, better health, new green jobs and improved quality of life, especially for low-income groups. It supports progress towards the Sustainable Development Goals (SDGs) on good health (SDG 3), clean water (SDG 6), clean energy (SDG 7), decent work (SDG 8), sustainable cities (SDG 11) and climate action (SDG 13).



Figure 1: India's climate commitments and key sectoral policies[6]

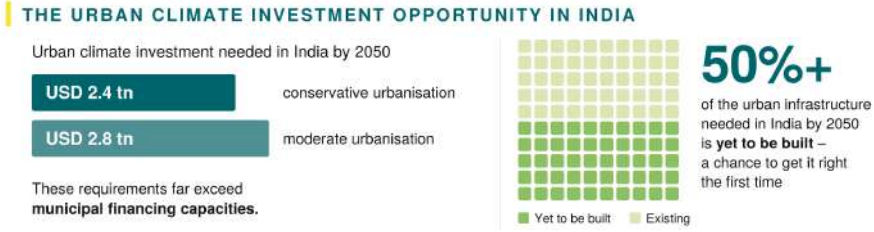
4 Government of India: India's NDC 2031-2035, April 2026
5 WWF India: Background paper on Cities and Climate Change: Indian context
6 Compiled by authors based on Government of India, NDC 2031–2035 (2026); NITI Aayog, Scenarios Towards Viksit Bharat and Net Zero (2026); and MoHUA, MNRE, MoEFCC and PIB



1.2 The Urban Climate Investment Opportunity

The scale of investment required to address these challenges is substantial. India will require more than **USD 2.4 trillion in investment by 2050** to provide climate-resilient and low-carbon urban infrastructure and services under a conservative urbanisation scenario, with estimates reaching **USD 2.8 trillion** in a moderate urbanisation scenario[2]. These investment requirements far exceed municipal financing capacities.

With over 50% of the urban infrastructure required for 2050 yet to be built[2], India has a strategic opportunity to get it right the first time. Embedding climate resilience, clean energy, and resource efficiency into new infrastructure and services from the outset can set cities on a safer, future-ready and climate-sensitive development pathway. At the same time, retrofitting and upgrading existing assets is essential to manage the climate risks cities already face and to meet growing service demand.

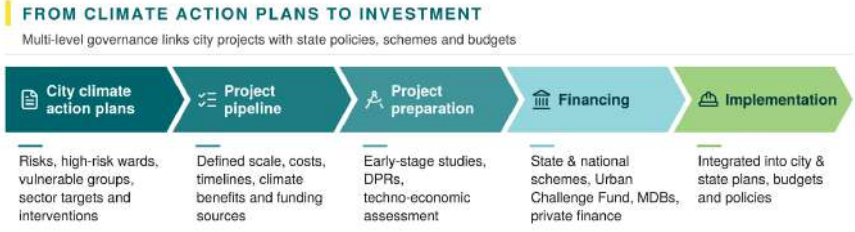


1.3 Moving from Climate Action Plans to Project Pipelines

Realising this opportunity would require states and cities to translate climate priorities into implementable investments. City-scale climate action plans provide a strong foundation by identifying climate risks, high-risk wards and vulnerable communities, as well as sectoral interventions and targets. They enable Urban Local Bodies to integrate climate-resilient interventions into city planning, budgeting and management.

State and city governments need support to translate these climate interventions into capital investment projects, including the preparation of a pipeline of viable projects, supported by climate benefits and financing strategies. With over 75% of urban infrastructure financing coming from central and state governments and only 15% funded by urban local bodies through own surplus revenues[7], city project pipelines need to be linked to state level climate and urban development priorities and financing mechanisms to drive at-scale implementation.

A pipeline of evidence-based climate projects can support state and city departments to move beyond broad strategic priorities, towards well-defined projects with clear delineation of scale, costs, timelines, benefits and funding sources. It will support cities in identifying early-stage project requirements, planning project preparation and identifying financing sources and partners. Multi-level climate governance, through coordination mechanisms and interlinked institutional structures provides a framework to connect local climate-resilient projects with state policies, departmental schemes and budgetary programmes. This helps cities identify potential funding sources and integrate climate priorities into ongoing and planned urban investments.



sources
7 World Bank (2022), Financing India's Urban Infrastructure Needs: Constraints to Commercial Financing and Prospects for Policy Action; see press release, 14 November 2022.

02 Gujarat and the Climate Project Pipelines

One of India's most industrialised states, Gujarat pioneered institutional climate action. This pipeline brings together projects from five city climate action plans prepared with ICLEI South Asia's Net-Zero ClimateResilientCities methodology – projects that could make 2.05 crore residents more resilient to climate hazards such as heat stress and urban flooding.

The State at a Glance

71.5 MILLION
people, 48.7% of them in urban areas (2023)

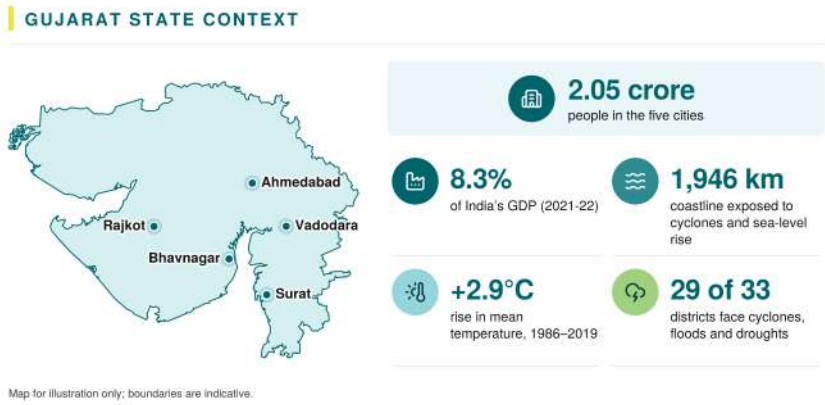
₹7.02 LAKH CR
of GDP expected to come from cities by 2036

129 $MTCO_2E$
of India's GHG emissions come from urban areas

2
key climate hazards across the five cities: heat stress and urban flooding

2.1 Gujarat State Context

Gujarat is among India's most industrialised and economically significant states, contributing about 8.3% of national GDP (2021-22) and home to an estimated 71.5 million persons (2023), nearly half of whom (48.7%) live in urban areas[8]. The five cities covered in this report - Ahmedabad, Bhavnagar, Rajkot, Surat and Vadodara - are home to about 2.05 crore people, nearly 60% of the state's urban population.



Climate risks and the state's response

With a coastline of about 1,946 km, Gujarat is vulnerable to climate-related hazards. 29 of its 33 districts, home to about 62.83 million people as of 2021, face extreme climate events such as cyclones, floods and droughts. Mean temperatures increased by as much as 2.9°C between 1986 and 2019, while rising sea levels and seawater intrusion threaten coastal cities and industrial hubs[9]. Rapid urbanisation, rising climate risks, and extreme weather events are increasing Gujarat's cities' exposure and vulnerability, underscoring the need for climate-resilient, low-emission urban development.

8 NITI Aayog (2025), Macro and Fiscal Landscape of the State of Gujarat, based on MoSPI data and the National Commission on Population, Population Projections for India and States 2011–2036
9 Mohanty, A. (2020), Preparing India for Extreme Climate Events: Mapping Hotspots and Response Mechanisms. New Delhi: Council on Energy, Environment and Water (CEEW); Gujarat findings in CEEW, 29 Districts in Gujarat Vulnerable to Extreme Climate Events, 18 May 2021



The state has responded through institutionalised climate resilience efforts. The state was the first in India to enact a dedicated Disaster Management Act in 2003 and, in 2009, became the first to establish a dedicated sub-national Department of Climate Change. The updated State Action Plan on Climate Change (SAPCC 2.0, 2022) identifies actions across eight priority sectors, including water, agriculture, coastal areas, health and infrastructure. Complementing this framework, the Gujarat Renewable Energy Policy, 2023, aims to meet 50% of the state's power requirements through renewable energy by 2030, alongside longer-term renewable energy capacity ambitions.

The state's broader development agenda is set out in the Viksit Gujarat@2047 vision, which lays the foundation for achieving a net-zero society by 2047, with urban development and industrial transformation at its core[10]. The roadmap targets meeting over 90% of industrial power demand with green energy (up from 32%) and positioning Gujarat as India's recycling capital through a circular economy. Its urban targets include piped water for all city households by 2030 and reuse of all treated wastewater by 2047 (up from 28%). It also aims to improve air quality in major cities into the 'good' category (an AQI below 50) by 2047. The vision also envisages expanding metro networks from 40 km to over 125 km by 2030, alongside green transport, energy-efficient buildings and climate-resilient

Building on these state-level efforts, Ahmedabad, Bhavnagar, Rajkot, Surat and Vadodara have developed Climate Resilient City Action Plans to drive climate action locally.

2.2 About this State-level Climate Project Pipeline for Gujarat

This report consolidates a state-level climate project pipeline based on climate projects of **five cities of Gujarat state: Ahmedabad, Bhavnagar, Rajkot, Surat, and Vadodara.** The climate projects have been collated from Net-Zero Climate Resilient City Action Plans of these cities, prepared using ICLEI South Asia's Net-Zero ClimateResilientCities Methodology and aligned with local priorities.



ICLEI's Net-Zero CRC methodology is a nine-step process designed to support cities in preparing, implementing and monitoring city-scale Climate Action Plans. It includes tools to guide baseline development (climate risk assessment, GHG inventories), conduct an urban systems gap analysis, identify and prioritise climate resilience

10 Government of Gujarat (2024), Viksit Gujarat@2047: Gujarat's Roadmap towards Viksit Bharat@2047

strategies, targets and interventions, develop bankable project proposals, identify and implement pilot projects, institutionalise climate governance and financing mechanisms and develop and implement a monitoring, reporting, and verification (MRV) system to track progress.

Moreover, the Net-Zero CRC methodology provides cities with a structured implementation pathway to translate climate action plans into on-ground projects and results. It guides cities in identifying pilot projects to test new technologies and approaches, and in building a pipeline of bankable, investment-ready projects backed by techno-economic assessments. It supports embedding of climate action into routine municipal governance through guidance on establishment of enabling governance structures, break-down of climate action plans into annual action plans, and integration of climate action into annual budgetary process through municipal climate budgeting.

Implementation is anchored in permanent Net-Zero or Climate Action Cells, with defined roles and responsibilities to steer and oversee coordination, annual planning, implementation of climate solutions and development of projects for scale-up. The CRC methodology's implementation guidance has already been put into practice by Indian cities. Permanent city-level Net-Zero and Climate Action Cells have been set up in 10 cities (Ahmedabad, Bhavnagar, Gandhinagar, Rajkot, Surat and Vadodara in Gujarat, and Coimbatore, Tiruchirappalli, Tirunelveli and Tuticorin in Tamil Nadu) to drive implementation and monitoring, with climate budgets prepared in five of these cities.

What the climate project pipeline covers

This report draws on five city-scale Climate Action Plans in Gujarat that each include a pipeline of climate projects supported by quantified mitigation and resilience benefits, cost estimates and financing strategies, and monitoring indicators. These city climate action plans cover different time horizons: Ahmedabad, Rajkot and Vadodara have a target year of 2070, while Surat's plan runs up to 2047 and Bhavnagar's until 2030. The consolidated pipeline therefore reflects each city's investments only up to its own plan horizon. Therefore, the totals to 2070 include investments for Ahmedabad, Rajkot and Vadodara up to 2070, for Surat up to 2047 and for Bhavnagar until 2030.

The state-level pipeline aggregates city projects across sectors including Built Environment and Energy, Transportation, Water Supply, Stormwater and Wastewater Management, Solid Waste Management, Urban Greening and Biodiversity, Air Quality, and Public Health System, covering both climate adaptation and mitigation priorities. Similar projects across cities are grouped together, with projects further categorised as capital investment projects and enabling measures. For each project, the report consolidates information on scale, expected climate impacts, and indicative investment requirements, and rolls these up by sector to support prioritisation and project preparation.



The investment figures in this report reflect initial estimates drawn from the city climate action plans to be refined through further detailed assessments and studies. Costs have not been estimated for certain projects and actions where limited information is available on the scale, size or design. These remain a part of the pipeline and will require costing during project preparation.

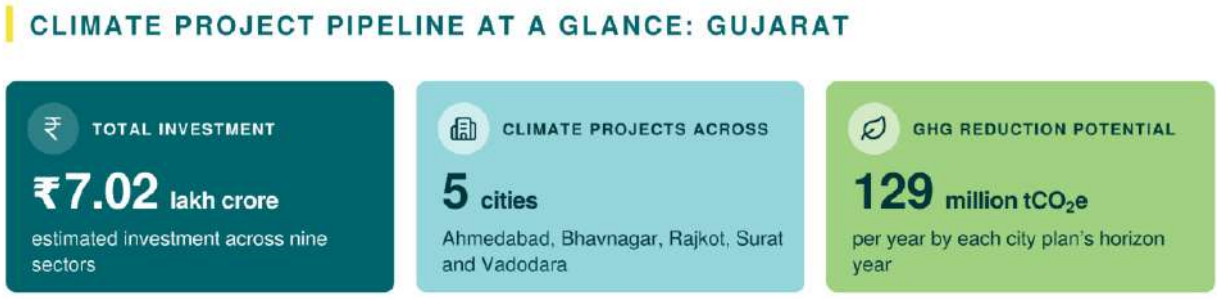
2.3 How the State can use this Climate Project Pipeline

This report brings city climate projects together into a state-level pipeline to give the state government a consolidated view of the scale, sectoral mix and timing of the climate investments its cities need, and of how these contribute to state targets on clean energy, mobility, water and resilience. It highlights investment needs shared across cities, where technical and financial support can be coordinated, and helps state departments and cities identify short-term and medium-term opportunities to build climate resilience into urban infrastructure and services. The pipeline is also intended to help mobilise support for project preparation and delivery from public finance, the private sector, multilateral development banks, development partners and philanthropies.

State and city departments can use the pipeline to move from planned interventions to implementation. Projects can be matched to the national and state schemes best placed to fund them, while those that go beyond budgetary allocations can be steered towards other sources of finance. The pipeline also helps departments prioritise and sequence projects, link them to the State Action Plan on Climate Change and annual budgets, and assign responsibilities for project preparation, so that climate projects become part of city and state plans and policies.

Project proposals can be strategically steered and designed to leverage funding from the **Urban Challenge Fund**, which has a corpus of INR 1 lakh crore for cities until 2030-31 and can support 25% of project costs on the condition that at least half of the cost is raised from municipal bonds, public-private partnerships, and bank loans[11]. The pipeline includes common climate projects across cities such as RE in municipal utilities, energy efficient (EE) pumping, green buildings, electric buses, water body rejuvenation, faecal sludge and septage management, stormwater network upgradation and nature-based drainage, material recovery facilities, and urban forest development, which can be bundled into state-wide programmes for pooled investment that delivers transformational climate benefits and outcomes.

2.4 Climate Project Pipeline at a Glance



11 Ministry of Housing and Urban Affairs, 2026: Urban Challenge Fund – Operational Guidelines

Built Environment and Energy
₹5,28,774 crore

- Scale up renewables (solar & wind) and rooftop solar
- Energy-efficient appliance retrofit in buildings
- Green buildings with efficient passive design (cool roofs, window glazing)
- Shift to clean cooking
  Climate-resilient street vending (cut off)

Transportation
₹83,420 crore

- Electrification of public bus fleets & public transport efficiency
- Development of NMT – walking & cycling infrastructure
- Shift private, commercial & delivery vehicles to electric
- Traffic management & road infrastructure improvement

Water Supply
₹25,996 crore

- Augment water treatment plant capacity & storage
- Reduce NRW – DI network replacement, smart meters & SCADA
- Renewables & energy-efficient pumping in water supply
- Rejuvenation of lakes, rivers & groundwater recharge

Wastewater Management
₹24,562 crore

- Construction & upgradation of STPs with tertiary treatment
- Methane capture & renewables in wastewater treatment
- Sewerage network rehabilitation & expansion
- Decentralised treatment (DeWATS) & faecal sludge (cut off)

Urban Greening and Biodiversity
₹17,466 crore

- Scientific tree plantation to increase urban green cover
- Green avenues, urban parks & open spaces
- Micro-habitats, pollinator gardens & green corridors
- Rain gardens in waterlogging-prone areas

Solid Waste Management
₹14,819 crore

- Zero waste wards with 100% segregation at source
- Composting, bio-CNG & bio-methanation plants
- Waste-to-energy plants, eco-parks & MRF / RDF facilities
- Sanitary landfills & biomining of legacy waste

Stormwater Management
₹6,829 crore

- Expand, enhance & maintain stormwater drainage networks
- Multipurpose water plazas with groundwater recharge
- Nature-based solutions – bioswales & percolation wells
- Protection & rejuvenation of natural drains

Air quality
₹530 crore

- Vehicular emission control & monitoring of old vehicles
- Good construction practices & dust control
- Enforcement of industrial pollution norms

Public Health System

- Heat-health early warning & heatwave action plans
- Retrofit health centres with climate-resilient features
- Expand healthcare facilities & bed capacity
- Climate-sensitive disease surveillance & response

Notes: *Cost is not estimated for Public Health projects due to limited available information on project scale, size or design and these require further detailed technical assessments.*

Phasing of Pipeline Investment (₹ crore) by 2070, five cities

₹1,04,156 CRORE	₹2,18,672 CRORE	₹3,79,575 CRORE
UPTO 2030	2030-2050	2050-2070

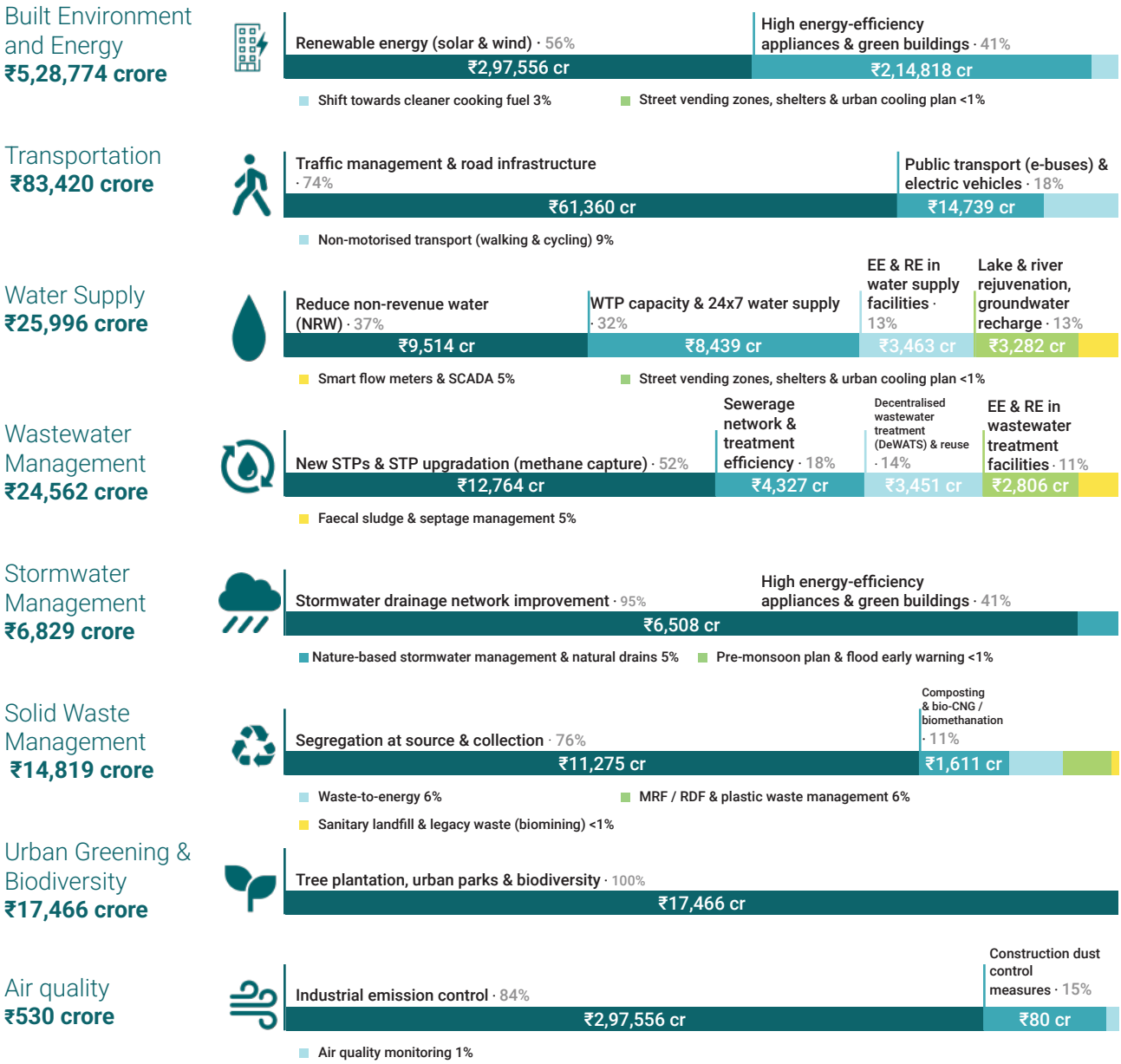
Notes: *Investments up to 2030 cover all five cities. Bhavnagar's climate action plan has a target year of 2030 and Surat's climate action plan runs up to 2047. Therefore, investments after 2030 exclude Bhavnagar, and investments after 2050 cover Ahmedabad, Rajkot and Vadodara only.*

The pipeline consolidates the climate projects in the Climate Resilient City Action Plans of Ahmedabad, Bhavnagar, Rajkot, Surat, and Vadodara, grouping similar actions across the cities.

Together, the climate projects across nine sectors sum up to an estimated investment of **INR 7.03 lakh crore**. By each city plan's horizon, cumulatively these projects are expected to reduce GHG emissions by **129 million tCO_2e every year**, and the adaptation projects will benefit **2.05 crore residents** across the five cities.
Renewable energy accounts for 43% of the estimated investment, followed by energy-efficient buildings and

appliances at 29%. Public transport, including its electrification, non-motorised mobility, and improvement of road infrastructure and traffic management, contributes 12% of the investment. The remaining investment is distributed across water supply, wastewater and stormwater management, solid waste management, urban greening and biodiversity and air quality.

Estimated investment by action within each sector (₹ crore)



Note: *Costs are not estimated for some projects and actions due to limited available information on project scale, size or design, and these require further detailed technical assessments. Therefore, certain action types show limited cost contribution.*

** EE – Energy Efficiency; MRF – Material Recovery Facility; NRW – Non-Revenue Water; RDF – Refuse-derived Fuel; RE – Renewable Energy; SCADA – Supervisory Control and Data Acquisition; STP – Sewage Treatment Plant; WTP – Water Treatment Plant.*



Estimated GHG emission reduction by action within each sector (million tCO2e per year)

Built Environment and Energy
111.69 million tCO_2e/yr



- Shift towards cleaner cooking fuel 4%

Transportation
11.47 million tCO_2e/yr



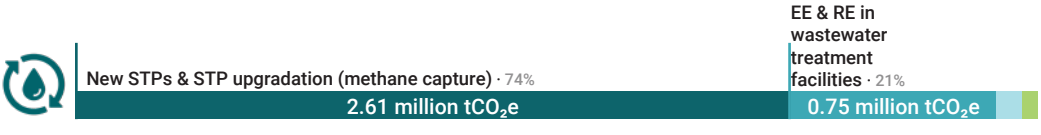
- Non-motorised transport (walking & cycling) 9%

Water Supply
1.60 million tCO_2e/yr



- Reduce non-revenue water (NRW) 6%

Wastewater Management
3.51 million tCO_2e/yr



- Sewerage network & treatment efficiency 3%
- Decentralised wastewater treatment (DeWATS) &

Solid Waste Management
0.69 million tCO_2e/yr



- Segregation at source & collection

03 City Snapshots: Profile and Climate Targets

Profiles of the five cities – their size, climate hazards, risk and vulnerability, emissions and the mitigation and adaptation targets set in their climate resilient city action plans.

Cities in Numbers

5 CITIES
home to ~60% of Gujarat's urban population

102 OF 128
wards assessed as at climate risk across 5 cities

31.8 $MTCO_2E$
combined city-scale GHG emissions (2021)

2030 . 2047. 2070
horizon years of climate resilient city action plans: 2030 for Bhavnagar; 2047 for Surat; 2070 for Ahmedabad, Rajkot and Vadodara

FIVE GUJARAT CITIES COMPARED Profile, emissions, risk and targets

	Ahmedabad	Surat	Vadodara	Rajkot	Bhavnagar
Population lakh	71.8	78.8	25.6	20.5	8.1
City area sq km	481	462	220	162	119
Density persons / sq km	14,935	17,064	11,618	12,638	6,774
GHG emissions $MtCO_2e$	15.09	10.43	3.04	2.35	0.9
Per capita emissions tCO_2e / person	2.1	1.32	1.25	1.15	1.2
Population at climate risk % of city	76.8%	93.2%	55.3%	83.7%	53.9%
Mitigation target GHG reduction below BAU	91% below BAU by **2070** Net-zero target	74.3% below BAU by **2047** Net-zero target	88.2% below BAU by **2070** Net-zero target	82% below BAU by **2070** Net-zero target	16.3% below BAU by **2030**



Ahmedabad

City area: 481 sq. km (48 wards, 7 zones)

Total population (2021): 71.8 lakh

Population density (2021): 14,935 persons per sq. km

Total households (2021): 15.9 lakh

Climatic condition: Hot and semi-arid; Average annual rainfall: 975 mm

Key climate hazards:

- **Extreme heat:** temperature to rise by 1 - 3°C; 5 - 30 more heatwave days
- **Urban floods:** rainfall to increase by 20 - 60 mm; extreme rainfall events to increase by up to 0.25 events

Climate risk and vulnerability index: 38 of 48 wards at risk; 55.1 lakh persons (76.8%)

- Extreme: 10 wards, 13.4 lakh (18.6%)
- High: 18 wards, 28.2 lakh (39.3%)
- Moderate: 10 wards, 13.5 lakh (18.9%)

Fragile urban systems: Water supply, Wastewater, Stormwater, Solid waste, Transport and Health

Economic activities: Trade, commerce and industry

City-scale GHG emissions (2021): 15.09 million tCO2e; 2.1 tCO_2e per capita

Key emitting sectors: Industries (45%), Residential buildings (24%), Transport (16%), Commercial (11%)

Climate Target:

Mitigation – City-scale GHG emissions:

- 55.5% reduction below BAU by 2030
- 79.2% reduction below BAU by 2050
- 91.0% reduction below BAU by 2070

Adaptation goal: Enhance water, flood and heat resilience for all through policy interventions, infrastructure development, nature-based solutions and the adoption of circular economy principles.

Rajkot

City area: 161.86 sq. km (18 wards, 3 zones)

Total population (2021): 20.5 lakh

Population density (2021): 112,638 persons per sq. km

Total households (2021): 4.32 lakh

Climatic condition: Hot and semi-arid; Average annual rainfall: 1,130 mm

Key climate hazards:

- **Extreme heat:** temperature to rise by 0.5 - 3°C; 5 - 40 more heatwave days
- **Urban floods:** rainfall to increase by 20 - 40 mm, with up to 0.5 more extreme rainfall events a year

Climate risk and vulnerability index: 15 of 18 wards at risk; 17.1 lakh persons (83.7%)

- Extreme: 7 wards, 8.1 lakh (39.4%)
- High: 5 wards, 5.7 lakh (28.1%)
- Moderate: 3 wards, 3.3 lakh (16.3%)

Fragile urban systems: Water supply, Wastewater, Transport, Solid Waste, Health and Parks & Gardens

Economic activities: Trade, commerce, and industries

City-scale GHG emissions (2021): 2.35 million tCO_2e; 1.15 tCO_2e per capita

Key emitting sectors: Residential buildings (27%), Transport (24%), Commercial (22%), Industries (19%)

Climate Target:

Mitigation – City-scale GHG emissions:

- 55.5% reduction below BAU by 2030
- 79.2% reduction below BAU by 2050
- 91.0% reduction below BAU by 2070

Adaptation goal: Transform into a sustainable, liveable, and climate-resilient city through strategic planning and policy interventions, and improve adaptive capacity to stand against water scarcity, urban flooding, and urban heat challenges.

Vadodara

City area: 220.33 sq. km (19 wards, 4 zones)

Total population (2021): 25.6 lakh

Population density (2021): 11,618 persons per sq. km

Total households (2021): 5.4 lakh

Climatic condition: Hot and Dry;
Average annual rainfall: 1,116 mm

Key climate hazards:
- **Extreme heat:** temperature to rise by 1 - 3°C; 5 - 30 more heatwave days
- **Urban floods:** rainfall to increase by 20 - 60 mm

Climate risk and vulnerability index: 13 of 19 wards at risk; 14.2 lakh persons (55.3%)
- Extreme: 5 wards, 5.9 lakh (22.9%)
- High: 2 wards, 2.4 lakh (9.4%)
- Moderate: 6 wards, 5.9 lakh (22.9%)

Fragile urban systems: Water supply, Wastewater, Solid waste, Transport, Health and Parks & Gardens

Economic activities: Industry and IT

City-scale GHG emissions (2021): 3.04 million tCO_2e; 1.25 tCO_2e per capita
Key emitting sectors: Transport (36%), Residential buildings (32%), Industries (14%)

Climate Target:
Mitigation – City-scale GHG emissions:
- 46.8% reduction below BAU by 2030
- 62.7% reduction below BAU by 2050
- 88.2% reduction below BAU by 2070

Adaptation goal: Enhance water, flood and heat resilience through policy and planning interventions, including the integration of blue-green infrastructure and circular economy concepts for creating a sustainable, liveable, and climate-conscious city.

Surat

City area: 461.64 sq. km (30 wards, 9 zones)

Total population (2021): 78.8 lakh

Population density (2021): 17,064 persons per sq. km

Total households (2021): 17.5 lakh

Climatic condition: Hot and semi-arid;
Average annual rainfall: 1,186 mm

Key climate hazards:
- **Extreme heat:** temperature to rise by 0.5 - 3°C by 2070; 5 - 30 more heatwave days; 20 - 60 more hot days
- **Urban floods**: heavier single-day rainfall (up to 50% of annual rainfall in one day)

Climate risk and vulnerability index: 29 of 30 wards at risk; 76.7 lakh persons (93.2%)
- Extreme: 11 wards, 29.8 lakh (36.2%)
- High: 13 wards, 35.6 lakh (43.3%)
- Moderate: 5 wards, 11.3 lakh (13.7%)

Fragile urban systems: Water supply, Wastewater, Stormwater, Solid waste, Transport, Health, Parks & Gardens, and Streetlights

Economic activities: Trade & Commerce

City-scale GHG emissions (2021): 10.43 million tCO_2e; 1.32 tCO_2e per capita
Key emitting sectors: Industries (40%), Transport (26%), Residential buildings (20%), Commercial (7%)

Climate Target:
Mitigation – City-scale GHG emissions:
- 46.3% below BAU by 2030
- 54.8% below BAU by 2035
- 74.3% below BAU by 2047

Adaptation goal: Build resilience to climate extremes such as high temperature and intense rainfall to safeguard municipal services and urban systems, prioritising vulnerable communities for a more liveable, sustainable and equitable future.



Bhavnagar

City area: 119 sq. km (13 wards, 3 zones)

Total population (2021): 8.1 lakh

Population density (2021): 6,774 persons per sq. km

Total households (2021): 2.5 lakh

Climatic condition: Hot and semi-arid, coastal; Average annual rainfall: 677 mm

Key climate hazards:

- **Extreme heat:** Increase in average temperature, heat wave events and number of hot days and nights
- **Urban floods**: rainfall is expected to increase while extreme rainfall events are expected to decrease

Climate risk and vulnerability index: 7 of 13 wards at risk; 4.3 lakh persons (53.9%)

- High: 6 wards, 3.7 lakh (45.8%)
- Moderate: 1 ward, 0.7 lakh (8.1%)

Fragile urban systems: Water supply, Wastewater, Stormwater, Transport, Solid Waste and Health

Economic activities: Port, Trade, Commerce and Industries

City-scale GHG emissions (2021): 0.90 million tCO_2e; 1.2 tCO_2e per capita

Key emitting sectors: Residential buildings (26%), Transport (25%), Commercial (23%) and Industries (19%)

Climate Target:

Mitigation – City-scale GHG emissions:

- 16.3% below BAU by 2030

Adaptation goal: Evolve into a climate-resilient, sustainable, and liveable city. Through strategic planning and policy interventions, enhance adaptive capacity to address challenges such as water scarcity, urban flooding, and urban heat.

04 Climate Projects by Sector

Sector-wise pipeline of climate projects presented as tables listing the capital investment projects and enabling measures, with scale up to 2070, expected climate impacts and benefits, and indicative investment requirements

Sectors in Focus

9
sectors with climate projects: Built Environment and Energy, Transportation, Water, Wastewater, Stormwater, Solid Waste, Urban Biodiversity, Public Health and Air Quality

2.05 CR
residents benefiting from climate projects

Sector-wise Projects

Built Environment and Energy

₹5,28,774 crore investment by 2070

112.68 Mt CO_2e/yr reduction potential

Project and scale by 2070	Climate impact and benefits	Estimated cost by 2070*
Capital Investment Projects		
Green-certified buildings: 19.8 lakh residential and 8.8 lakh commercial and institutional units certified to green building standards	**GHG emissions reduction:** 2.51 million tCO_2e/yr **Beneficiaries:** 44.6 lakh persons	INR 14,248 crore
Energy-efficient lighting and appliance retrofit in buildings. •2,114.9 lakh LED fixtures (residential 1,088.1 lakh; commercial and institutional 537.4 lakh; industrial 489.4 lakh) •715.2 lakh BLDC/energy-efficient fans (residential 345.3 lakh; commercial and institutional 95.3 lakh; industrial 274.6 lakh) •245.2 lakh energy-efficient refrigerators (residential 93.2 lakh; commercial and institutional 152.0 lakh) 202.4 lakh energy-efficient ACs/HVAC (residential 17.0 lakh; commercial and institutional 165.1 lakh; industrial 20.4 lakh)	**GHG emissions reduction:** 24.49 million tCO_2e/yr	INR 1,97,689 crore
Energy-efficient water pumps in buildings: 1.9 lakh energy-efficient pumps in residential buildings	**GHG emissions reduction:** 0.06 million tCO_2e/yr	INR 2,843 crore



Renewable energy for buildings and industries (rooftop and captive solar and wind): 59.7 GW rooftop/captive solar and wind (solar 51.0 GW; wind 8.7 GW)	**GHG emissions reduction:** 78.27 million tCO_2e/yr	INR 2,96,594 crore
Solar water heater installation in buildings: 5.6 lakh households, hospitals and hotels	**GHG emissions reduction:** 0.60 million tCO_2e/yr	NR 961 crore
Clean cooking: switch from liquified petroleum gas (LPG) to piped natural gas (PNG) and solar-powered electric cooking •PNG replacing LPG use (Ahmedabad, Bhavnagar) Solar-powered electric cooking replacing LPG use, supported by 3.6 GW of solar PV	**GHG emissions reduction:** 4.50 million tCO_2e/yr	INR 16,053 crore
Solar and LED retrofit of municipal buildings and streetlights: solar PV for meeting street-light energy demand, LED streetlighting and street-lighting control (Bhavnagar, Surat)	**GHG emissions reduction:** 0.01 million tCO_2e/yr	INR 35 crore
Cool roofs in new and existing buildings: cool roofs for 64 lakh residential and 7.4 lakh commercial and institutional units	**GHG emissions reduction:** 1.00 million tCO_2e/yr	Not estimated
Sustainable vernacular architecture in buildings: passive design, shading, efficient glazing and other climate-responsive features aligned with ECSBC and Eco Niwas Samhita; green industrial areas	**GHG emissions reduction:** 0.24 million tCO_2e/yr Beneficiaries: 8.0 lakh persons	Not estimated**
Enabling measures (policy, regulatory and programme support)		
Urban cooling programme and green building policy: hotspot-based urban cooling action plan combining heat-risk mapping, physical cooling measures, early warning system, green roofs and rooftop/vertical gardens	**GHG emissions reduction:** 1.00 million tCO_2e/yr **Beneficiaries:** 59.6 lakh persons	INR 11 crore
Heat-resilient street vending zones and cooling shelters: vending and market areas upgraded with cooling design, heat-resilient surfaces, drinking-water facilities, drainage and other basic services	**Beneficiaries:** 10.1 lakh persons	INR 339 crore
Capital Investment Projects		
Public transit system expansion: electric bus fleet and metro integration •7,615 additional E-buses with renewable energy-powered charging Mode shift: 57.1 lakh trips from personal vehicles to public transport	**GHG emissions reduction:** 2.17 million tCO_2e/yr	INR 14,734 crore
Expansion of non-motorised transport infrastructure: mode shift to walking and cycling: 23.3 lakh trips	**GHG emissions reduction:** 1.24 million tCO_2e/yr	INR 7,322 crore
Electrification of private, commercial and freight vehicles •Electric conversion of 210 lakh cars, two-wheelers, three-wheelers and commercial vehicles Freight: 3.9 lakh light, medium and heavy goods vehicles	**GHG emissions reduction:** 8.07 million tCO2e/yr	Not estimated

Notes: **All sectoral and action totals combine city climate action plans with different end years - Bhavnagar until 2030, Surat until 2047 and Ahmedabad, Rajkot and Vadodara until 2070*
***Across all sectors, costs are not estimated for certain actions due to limited available information on project scale, size or design and these require further detailed technical assessments*



Citywide intelligent traffic management, junction and road improvements, and parking management	**Beneficiaries:** 204.8 lakh persons	INR 61,360 crore
Enabling measures (policy, regulatory and programme support)		
EV policy and charging infrastructure plan (Bhavnagar)	**Beneficiaries:** 8.1 lakh persons	INR 5 crore

Water Supply

₹26,277 crore investment by 2070

1.60 Mt CO_2e/yr reduction potential

Project and scale by 2070	Climate impact and benefits	Estimated cost by 2070
Capital Investment Projects		
Water source augmentation: 12,000 ML storage barrage (Ahmedabad); additional water treatment capacity for growing areas	**Beneficiaries:** 122.3 lakh persons	INR **6,942** crore
24x7 metered supply, NRW reduction and SCADA: universal water metering, smart flow meters and water-efficient fixtures; DI pipe replacement in critical zones; citywide SCADA	**GHG emissions reduction:** 0.60 million tCO_2e/yr **Beneficiaries:** about 144 lakh persons	INR 12,288 crore
River and lake restoration: 262 lakes restored (Ahmedabad 100; Surat 110; Vadodara 40; Bhavnagar 10; Rajkot 2); Sabarmati, Tapi, Aji and Vishwamitri river restoration.	**Beneficiaries**: 204.8 lakh persons	INR 3,306 crore
Renewable energy installation for water supply facilities: 250 MW wind and 289 MW solar	**GHG emissions reduction:** 0.83 million tCO_2e/yr	INR 3,271 crore
Energy-efficient pump retrofit in water supply facilities: 3,763 EE pumps installed	**GHG emissions reduction**: 0.17 million tCO_2e/yr	INR 192 crore
Rainwater harvesting and groundwater recharge: recharge wells in residential complexes; rainwater harvesting in institutional and industrial units	**Beneficiaries:** 100.8 lakh persons	INR 250 crore
Climate-resilient drinking water access: water ATMs in heat-affected areas, prioritising slums and low-income areas	**Beneficiaries:** 35.2 lakh persons	INR 21 crore
Enabling measures (policy, regulatory and programme support)		
Integrated water security plan: city-wide plan for demand management, conservation, greywater and treated wastewater reuse, and dual-plumbing norms	**Beneficiaries:** 126.0 lakh persons	INR 7 crore



Wastewater Management

₹24,562 crore investment by 2070

3.50 Mt CO_2e/yr reduction potential

Project and scale by 2070	Climate impact and benefits	Estimated cost by 2070
Capital Investment Projects		
Sewer rehabilitation, STP upgrade and tertiary treatment for reuse: rehabilitate ageing sewer networks; optimise pumping to improve STP utilisation; tertiary treatment	**Beneficiaries:** about 129.2 lakh persons	INR 14,435 crore
Performance improvement and optimisation of aerobic STP capacity (2,427 MLD)	**GHG emissions reduction:** 0.09 million tCO_2e/yr	INR 1,148 crore
Low-carbon anaerobic STPs with biogas recovery: 5,076 MLD anaerobic STP capacity with biogas capture	**GHG emissions reduction:** 2.61 million tCO_2e/yr	INR 1,507 crore
Renewable energy installation for wastewater facilities: 184 MW wind and 281.5 MW solar	**GHG emissions reduction**: 0.66 million tCO_2e/yr	INR 2,704 crore
Energy-efficient pump retrofit in wastewater facilities: 1,763 EE pumps installed	**GHG emissions reduction**: 0.09 million tCO_2e/yr	INR 102 crore
Septage and sludge management: septage collection and treatment for septic tanks; sludge treatment infrastructure	**Beneficiaries:** 15 lakh persons	INR 1,208 crore
Decentralised treatment and reuse of treated wastewater for gardening in properties above 20,000 sq. m built-up area: 6.0 lakh households with decentralised treatment	**GHG emissions reduction**: 0.05 million tCO_2e/yr **Beneficiaries:** 15 lakh persons	INR 3,451 crore
Mechanised sludge dewatering systems at existing STPs	**Beneficiaries:** 204.8 lakh persons	Not estimated
Enabling measures (policy, regulatory and programme support)		
Holistic action plan and strategies for reuse and recycling of wastewater	**Beneficiaries:** 99.3 lakh persons	INR 6 crore

Stormwater Management

₹6,829
crore investment by 2070

Adaptation
resilience-focused projects

Project and scale by 2070	Climate impact and benefits	Estimated cost by 2070
Capital Investment Projects		
Stormwater drainage upgrade with flood early warning: drainage network extended and pumping stations augmented in flood-prone wards; 5,700+ km of stormwater lines to be constructed; flood early warning (Bhavnagar, Surat)	**Beneficiaries**: 54.4 lakh persons	INR 6,508 crore
Nature-based stormwater management measures: 100 water plazas (Ahmedabad 30; Surat 30; Vadodara 25; Rajkot 9; Bhavnagar 6); bioswales at 36 traffic junctions (Ahmedabad 20; Rajkot 16); 50 percolation wells (Ahmedabad); tree box filters; permeable footpaths.	**Beneficiaries:** 46.6 lakh persons	INR 296 crore
Natural drain restoration: 54 natural drains, creeks and canals (Rajkot 19 vokdas; Vadodara 17 kaans, 37.5 km natural drain network; Bhavnagar 10 nalas and creeks; Surat 6 creeks incl. 4.1 km Koyli creek; Ahmedabad Kharicut and Gota-Godhavi canals).	**Beneficiaries:** 22.4 lakh persons	INR 12 crore
Enabling measures (policy, regulatory and programme support)		
Citywide watershed and aquifer mapping to guide drainage and recharge investments; water resource conservation and augmentation plan; implementation of pre-monsoon action plan	**Beneficiaries:** 104.4 lakh persons	INR 13 crore



Solid Waste Management

₹14,819 crore investment by 2070

0.64 Mt CO_2e/yr reduction potential

Project and scale by 2070	Climate impact and benefits	Estimated cost by 2070
Capital Investment Projects		
Zero Waste Wards, through effective municipal waste collection and segregation: 100% source segregation and 100% collection efficiency, with upgraded primary and secondary collection; IEC for source segregation, lifestyle changes for waste reduction and prevention of littering; decentralised dry waste collection centres for C&D waste, recyclables, biomedical waste and e-waste; 2,245 electric/ CNG collection vehicles (Surat)	**GHG emissions reduction:** 0.02 million tCO_2e/yr	INR 6,508 crore
Waste-to-energy plants for non-recyclable waste: 6,109 TPD capacity across five cities (Ahmedabad 3,011, Surat 1,232, Rajkot 1,000, Vadodara 820, Bhavnagar 46 TPD)	**GHG emissions reduction:** 0.50 million tCO_2e/yr	INR 944 crore
Wet waste processing facilities •2,001 TPD composting capacity •11,040 TPD bio-CNG/biomethanation capacity 1,000 decentralised biogas units (Surat)	**GHG emissions reduction:** 0.17 million tCO_2e/yr	INR 1,611 crore
Sanitary landfill with landfill gas capture: new 11 lakh MT landfill with 25-year life (Ahmedabad); new scientific landfill at Umber with landfill gas capture rising from 50% (2030) to 75% (2047) and capping of Khajod site (Surat); Phase 1 scientific landfill near Nari village (Bhavnagar); scientific landfill at Makarpura-Jambuva (Vadodara); landfill gas capture at all sites	**Beneficiaries:** 204.8 lakh persons	INR 53 crore
Legacy waste bio-mining and dumpsite remediation: biomining of remaining legacy waste (Ahmedabad 39 lakh MT at Pirana; Vadodara 5 lakh MT at Makarpura); biomining of legacy waste near Bhatar STP and at the sanitary landfill cell at Khajod (Surat); biomining of legacy waste at Nakrawadi site in Rajkot	**Beneficiaries:** 196.7 lakh persons	INR 30 crore
Plastic waste recovery and processing: automated MRFs (4,865 TPD); plastic waste action plans; plastic buy-back mechanisms	**GHG emissions reduction:** -0.05 million tCO_2e/yr **Beneficiaries:** 23.2 lakh persons	INR 905 crore
C&D waste processing plant: 25 TPD C&D waste processing plant (Bhavnagar)	**Beneficiaries:** 8.1 lakh persons	INR 1.1 crore
Enabling measures (policy, regulatory and programme support)		
Holistic Waste Management Plan for the city: Scientific waste characterisation to plan collection and processing; IEC on waste reduction and lifestyle change	**Beneficiaries:** 204.8 lakh persons	INR 6 crore



Circular economy measures: Eco-park framework for MRFs, recyclers and alternative-material manufacturers; formalisation of rag pickers; incentivized reverse logistics system; material recovery innovation labs	**Beneficiaries:** 78.8 lakh persons	Not estimated
Construction and Demolition (C&D) Waste Policy: Rajkot, Vadodara, Surat and Bhavnagar	**Beneficiaries**: 133 lakh persons	Not estimated

Urban Greening and Biodiversity

₹17,466 crore investment by 2070

Adaptation resilience-focused projects

Project and scale by 2070	Climate impact and benefits	Estimated cost by 2070
Capital Investment Projects		
Urban forests, parks and green avenues: 193 sq. km urban forest; new parks and gardens; green avenues, traffic islands, green roofs and walls	**Beneficiaries:** 204.8 lakh persons	INR 17,464 crore
Enabling measures (policy, regulatory and programme support)		
Preparation of a City Local Biodiversity Strategy and Action Plan (LBSAP)	**Beneficiaries:** 204.8 lakh persons	INR 2 crore
Green roofs and vertical greening on walls of public and residential buildings (Ahmedabad)	**Beneficiaries:** 18 lakh persons	Not estimated
Ecological restoration, rain gardens and green corridors: degraded sites restored; microhabitats and green corridors created	**Beneficiaries:** 204.8 lakh persons	Not estimated
Reservation of land for green areas in town-planning schemes	**Beneficiaries:** 204.8 lakh persons	Not estimated
Rain gardens in areas susceptible to waterlogging to enhance retention time	**Beneficiaries:** 46 lakh persons	Not estimated

Air Quality

₹530 crore investment by 2070

Co-benefits health and liveability benefits

Air Quality | Total investment by 2070: INR 530 crore

Project and scale by 2070	Climate impact and benefits	Estimated cost by 2070
Capital Investment Projects		
100 Air quality monitoring sensors (Bhavnagar)	**Beneficiaries:** 8.1 lakh persons	INR 6 crore

Note: *Cost is not estimated for Public Health projects due to limited available information on project scale, size or design and these require further detailed I assessments.*



Enabling measures (policy, regulatory and programme support)		
Vehicular emission control: strict monitoring of old vehicles through PUC checking and anti-fuel-adulteration drives; scrapping of 15-year-old vehicles, with scrapping yards and incentives for private and commercial owners	**Beneficiaries**: 204.8 lakh persons	Not estimated
Industrial emission control enforcement and cleaner fuels: pollution control devices and cleaner fuels in 3,000+ industrial units (Ahmedabad, Surat) and red- and orange-category units in other cities; PM trading scheme; enforcement of polluter-pays framework – (environment improvement charge on industries by pollution category; with the revenue used for air quality improvement)	**Beneficiaries**: 204.8 lakh persons	INR 450 crore
Construction dust control: dust and C&D waste standards in construction permissions, supported by digital monitoring; dust-control and Environmental Clearance conditions at construction sites above 20,000 sq. m, including ready-mix concrete plants	**Beneficiaries**: 204.8 lakh persons (incl. 25.2 lakh in priority areas in Ahmedabad & Vadodara)	INR 80 crore

Public Health System

To be costed
during project preparation

Adaptation
resilience-focused projects

Project and scale by 2070	Climate impact and benefits	Estimated cost by 2070
Capital Investment Projects		
Climate-resilient healthcare infrastructure (retrofit of UPHCs/ CHCs/UHWCs and hospitals; additional facilities) (Rajkot, Surat)	**Beneficiaries:** 99.3 lakh persons (incl. 3.9 lakh slum dwellers in Surat)	Not estimated
Enabling measures (policy, regulatory and programme support)		
Heat-health early warning, heatwave action plans and climate-sensitive disease surveillance [Surat]	**Beneficiaries:** 56.4 lakh persons	Not estimated





Investing in Climate Resilient Cities
State level Project Pipelines: Gujarat

2026

