E-mobility City Action Plan

Rajkot

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This work builds upon and facilitate the ongoing active support of the CapaCITIES project to Rajkot Municipal Corporation and other government agencies on the electrification transport system. The synergy between the project assisted to achieve larger impact and outcome.

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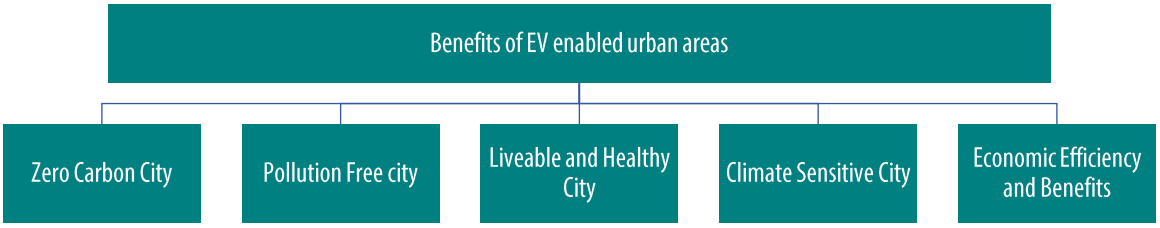
1. Background

Cities are responsible for 75 percent of global CO2 emissions, with transport and buildings being among the largest contributors and account for more than 70 percent of energy-related carbon dioxide (CO2) emissions globally. The transition to electric mobility is a promising global strategy to decarbonise the transport sector.

India has also committed to the national target to reduce the carbon footprint by 33-35 percent by 2030 below 2005 levels, increase share of non-fossil fuel-based electricity to 40 percent by 2030 and achieve net zero emissions by 2070. Transport sector being one of the impactful contributor to the emissions and consumer of about one third of the crude oil consumed in the country, a clear pathway to decarbonise this sector is required.

Historically, petroleum-based modes of transport have been the only reliable option but with the growing momentum for alternative fuel and vehicle technology electrification of vehicles is also visible. National and state governments are pledging support for EV deployment and charging infrastructure through development of supporting regulatory ecosystem, encouraging local manufacturing, charging infrastructure network development, awareness and capacity building and R&D for improved vehicle technology through EV policy and initiatives like FAME. Electrifying of transport sector along with adequate policy framework and infrastructure is essential to reach the goal of cleaner environment and carbon neutrality.



Further, a robust and accessible public/private charging infrastructure is an essential pre-requisite. In view of the situation, an alternative approach and innovation is a pressing need. Establishing contextual, appropriate and a robust way to regulate and revitalize the sector will impact at city level as well as nationwide.

With the same context, ICLEI South Asia embarked an initiative to "Support Indian Cities in Taking Leadership on Electric Vehicles (EV)" to aid the cities to identify priority interventions and take necessary steps towards accelerated transition to EVs. This initiative included several interactions and discussions with the city stakeholders during visits to 10 project cities - Coimbatore, Gangtok, Kochi, Lakshadweep, Meerut, Nagpur, Panaji, Rajkot, Shimla and Surat. Consultations with the major stakeholders impacting EV transition in cities included advisory groups, industry experts including the advocacy group, charging infrastructure developers, vehicle technology/OEMs and financial institutions. As a part of the initiative, the ICLEI South Asia team visited Rajkot from 30 June to 1 July 2022, 14 September 2022 and then on 11 November to interact with the stakeholders and understand the existing EV transition situation in the city, challenges, opportunities and to suggest a way forward.

This document has been developed as a part of the same initiative and aims to provide a conceptual guideline to city administration to achieve environmental sustainability by integrating electric vehicles and its infrastructure with city's existing plan and development. It provides a prioritized list of probable solutions and recommendation for EV infrastructure for developed area and future growth of the city. The document highlights strategies that will help city achieve the mentioned below benefits by doing citywide to area-based interventions viz – viz EV vehicle awareness, planning and design guidelines.

2. City Overview

Rajkot is the fourth-largest city in the state of Gujarat, India, after Ahmedabad, Vadodara, and Surat and is in the centre of the Saurashtra region of Gujarat. Rajkot is the 35th-largest metropolitan area in India, with a population of more than 2 million as of 2021. Rajkot is the 6th cleanest city of India, and it is the 7th fastest-growing city in the world as of March 2021.

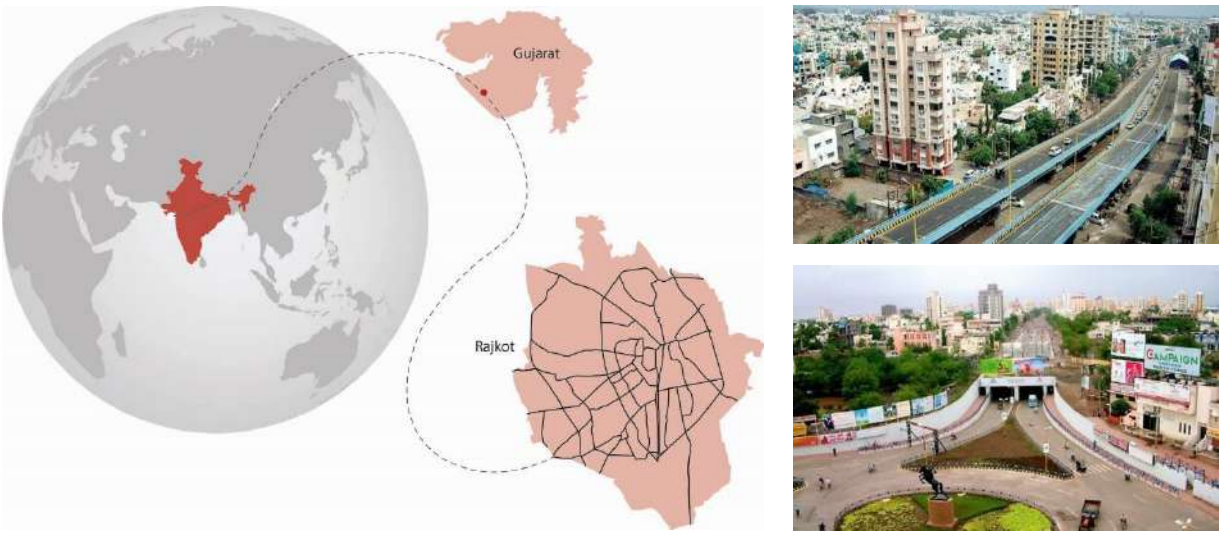


Figure 1: Location map of Rajkot (left), Rajkot city pictures (left)

Rajkot city has population of about 1.8 million residing in an area of 161.86 sq.km (2016) lying on the area with hot to moderate hot and dry climate. The city contains the administrative headquarters of the Rajkot District, 245 km from the state capital Gandhinagar, and is located on the banks of the Aji and Nyari rivers. Rajkot was the capital of the Saurashtra State from 15 April 1948 to 31 October 1956, before its merger with Bombay State on 1 November 1956. Rajkot was reincorporated into Gujarat State on 1 May 1960.

2.1. Electric vehicle ownership in Rajkot

As per the data accessed from VAHAN Dashboard, Rajkot has been witnessing almost 14% rise in the registered vehicles after the pandemic in 2020. In Rajkot, two wheelers contribute to about 71.5% of the total registered vehicles, followed by four wheelers (20%) and freight vehicles (4%). The registration trend of EVs vs other vehicles from 2019 to 2022 is as below:

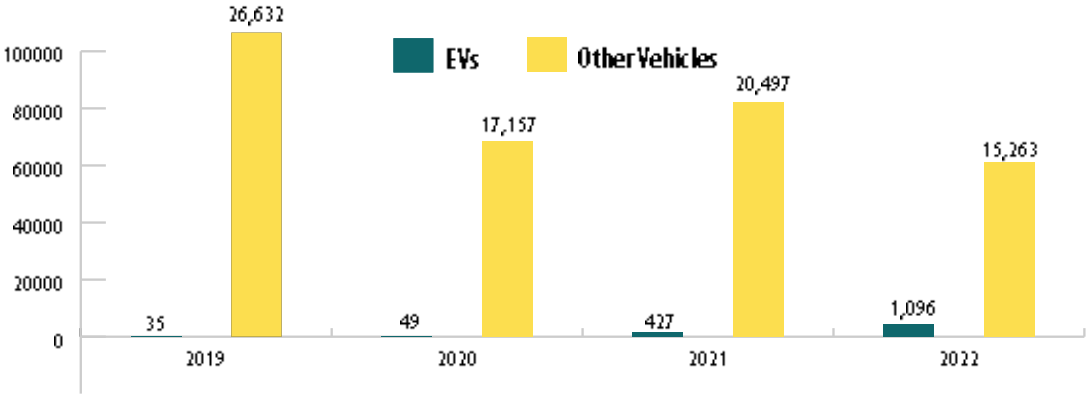


Figure 2: Electric vehicles and other vehicles registered in Rajkot from 2019 to 2022 (30 September 2022)
Information source – VAHAN Portal accessed on 30 September 2022

3. Situation Analysis

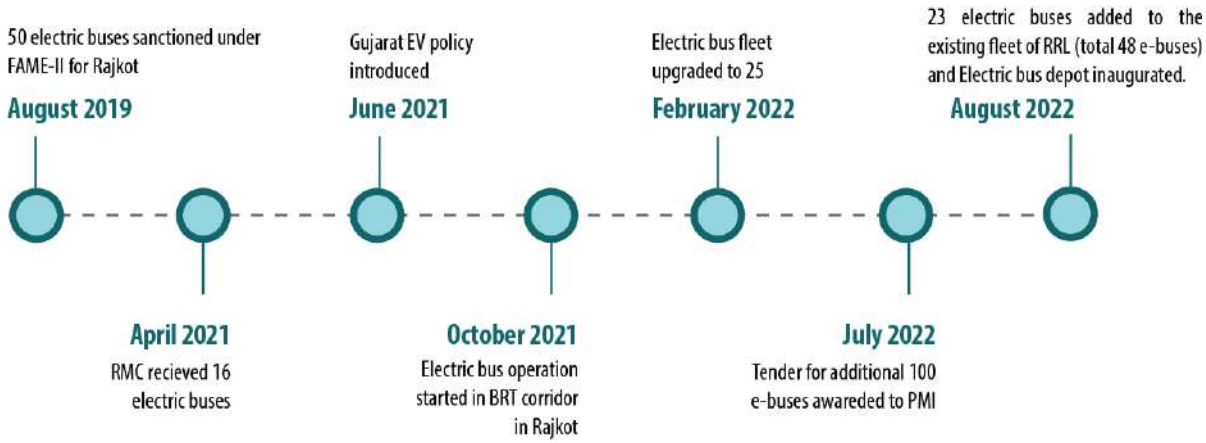
3.1. Policy Framework to Promote E-Mobility in Rajkot

Rajkot is working on its draft EV policy and currently Gujarat Electric Vehicle Policy 2021 is followed by the city to promote e-mobility in Rajkot. Highlights of the Gujarat EV Policy 2021 are as follows:

- Effective for four years i.e. till 1 July 2025
- Target to support 2 lakh EV purchase for four years.
- Promote transition to EVs and develop Gujarat as manufacturing hub for EVs and ancillary equipment.
- Subsidy for purchase of EVs and capital subsidy on equipment/machinery for first 250 commercial public charging station
- Encourage startups and investment in the field of electric mobility and related sectors and improve air quality by reducing air pollution.
- Exemption from road tax and registration fee for five years.

3.2. Rajkot's EV journey

Rajkot has already embarked on a journey for electrification of transport. It has a fleet of 48 electric buses and is about to launch its first set of public charging stations for electric vehicles.



In addition to the above EV related tasks, Rajkot has also invested in terms of research, study plans and policies to address issues of climate change, clean air and several other environment related initiatives. These include Climate resilient city action plan, Low carbon comprehensive mobility plan, REN 21, Action plan for control of air pollution in city, etc. These are briefly discussed in the annexure 2 of this document.

3.3. Key stakeholders in Rajkot

	Stakeholder	Roles
City Government Stakeholders	Rajkot Municipal Corporation (RMC)	- Finalise EV targets for the city - Land owner- Demarcate land for charging infrastructure - Operates buses in the city

	Paschim Gujarat Vij Company Ltd.(PGVCL)	- Gives approvals for electricity connections - Finalse tariff of charging vehicles - Ensures timebound access of required load of electricity
	Rajkot Urban Development Authority (RUDA) , RMC	- Develops policies related to building - Approves building plans
	Rajkot Rajpath Limited (RRL)	- Operate BRTS buses. - Finalise the routes of BRTS buses.
	Regional Transport Office (RTO), Rajkot	- Prioritises registration process for EVs through single-window clearance.
Others	NGO and Institutions	- Encourage usage of electric public transport among all users. - R&D
	Builder's Associations	- Ensure implementation of recommendations proposed in GDCR for EV ready buildings
	Industry Associations	- Promote and spread awareness on EVs - Ensure implementation of GDCR proposed with green mobility within industrial estate
	OEMs	- Ensure EV and its parts manufacturing and supply

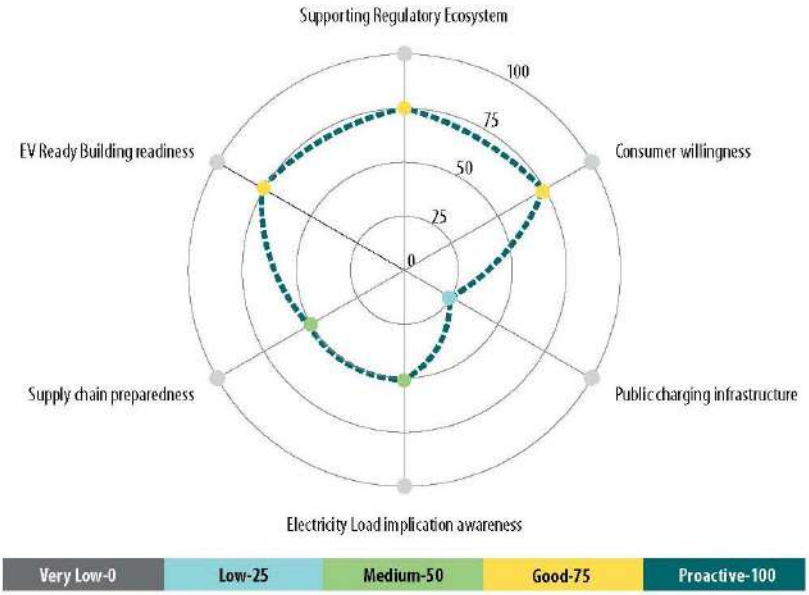
3.4. Key E-mobility initiatives in Rajkot

The city administration led by RMC is attempting for accelerated EV transition through actions to improve the EV ecosystem and encourage people to shift to EVs. The following table summarises the initiatives undertaken by the government departments in the city.

Initiative	Key Stakeholders	Description
Regulatory – EV policy	RMC	The Rajkot EV policy is being developed by the government.
Electrification of public transport	RMC, RRL, PGVCL, e-bus operator	48 e-buses are operational in Rajkot (as per the information received in August 2022). The city has plans to procure 150 e-buses.
Plan to develop charging stations for EVs	RMC, PGVCL, RUDA, Charging Point Developer (CPO)	Charging points for two wheelers and four wheelers are planned to be developed at various locations in the city.
Awareness and capacity building	RMC Third Party Consultant/ Technical Consultant	Awareness and PR campaigns are run by PGVCL for using renewable energy and shifting towards green and clean energy.

3.5. City readiness for e-mobility transition

Rajkot city readiness was synthesized after scoring the parameters impacting EV transition. Twenty-five parameters were categorized under six categories including supporting regulatory ecosystem, supply chain preparedness, consumer willingness*, public charging infrastructure, EV ready building readiness and electricity load implication awareness. The scoring of the city was based on the information collected during city visits. The readiness of the city was assessed as follows:



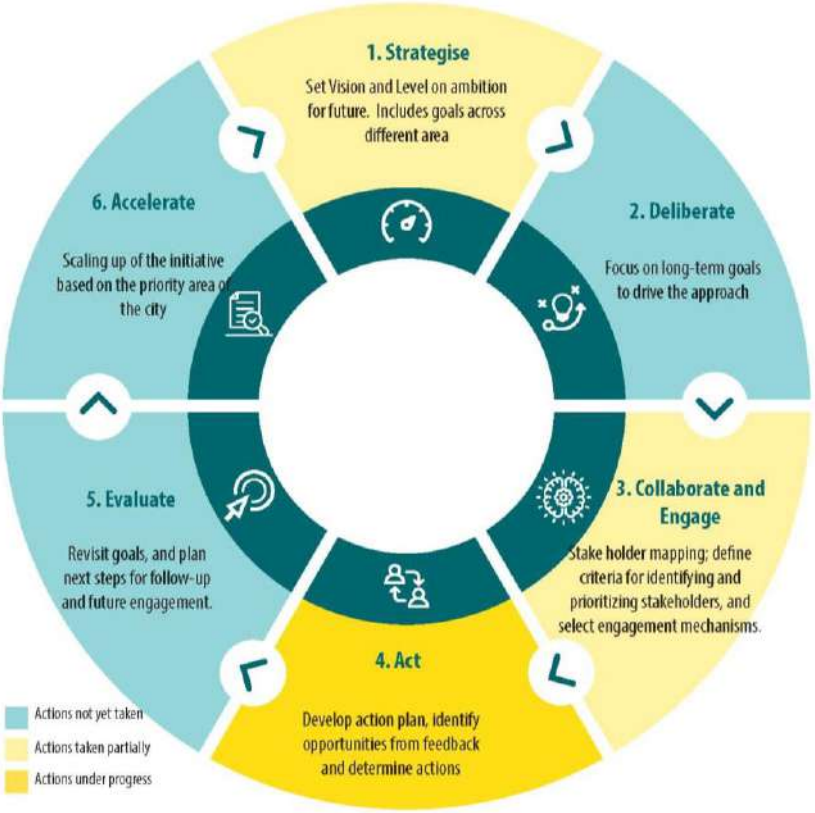
Rajkot city is taking initiatives, to encourage users to transition to EVs through improving the existing EV operations in the city to encourage and sensitise the users, encouraging EV ready buildings, grid readiness for the same. The approval of 150 e-buses that will replace existing diesel buses in the city will lead to 100% electrification of public transport (buses) in Rajkot.

4. City Level Action Plan for Rajkot for faster transition towards E-Mobility

4.1. City's Engagement Approach

A series of discussion and consultation with industry experts and advisory group and city stakeholders (during city visit) was conducted to develop the approach for cities. The process is as illustrated below:

The six-step approach which Rajkot should preferably follow to address the challenges identified above are as follows:



As per discussions, Rajkot city is currently focusing on the step of 'ACT' through procurement of 48 e-buses and their operation in the city. It is also partially focusing on the steps of 'STRATEGISE' and 'COLLABORATE & ENGAGE', as the city is working towards city level

draft EV policy and discussing the same with the related stakeholders. Rajkot further requires focus on the other steps of approach along with a clear set of targets and strategies.

4.2. City visit and interaction with the stakeholders in Rajkot

ICLEI South Asia team interacted with RMC and other stakeholders multiple times to understand the existing situation, challenges and suggest a way forward for Rajkot. After virtual discussion with RMC officials, the team visited Rajkot to interact with the stakeholders related to EVs on 30 June to 1 July 2022 to discuss the approach (illustrated in the section above) and mapped the existing status of EVs in the city. Second in-person meeting was held on 14 September 2022 to discuss the draft recommendations for the city and then on 11 November 2022, a combined consultation and brainstorm session was held with the RMC officials and other stakeholders where the recommendations and the way forward was presented to the city and comments were incorporated.


Interactions with the officials of RMC and other stakeholders related to EVs


Interactions with the officials of RMC and e-bus charging in depot


Chakda operating as and important freight vehicle in Rajkot (left) , E-bus operating on the roads of Rajkot (right)

4.3. Strategy Development

4.3.1. Visioning and goal setting

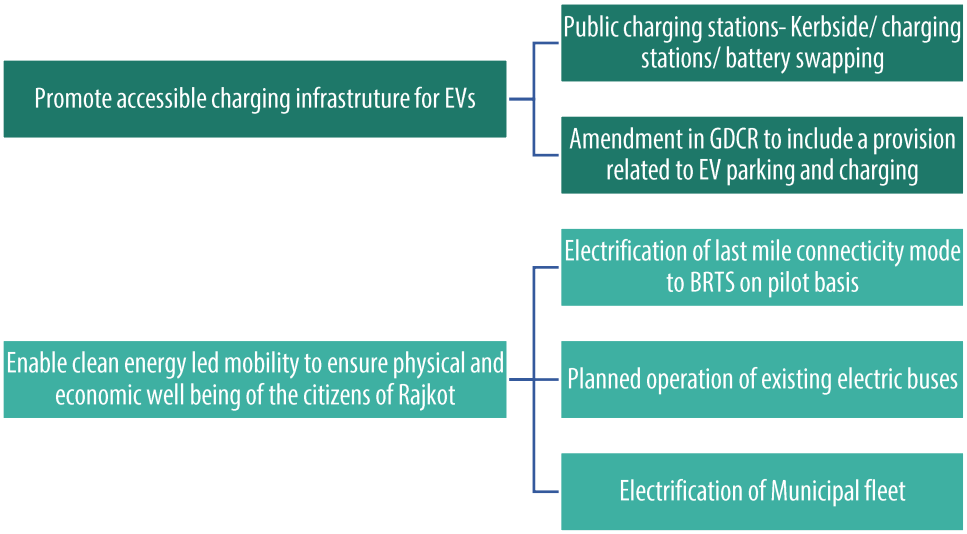
Setting up a powerful yet realistic vision for the city is the first crucial step towards making radical changes for the city and its citizens. A clear vision helps to set goals and identify strategies, proposals and multi sectoral interventions that may be implemented to make a city EV enabled. The project team and RMC gathered inputs from the stakeholders, industry experts and other representatives after the feedback gathered from the meetings and workshops.

Vision- The strategy finalised by RMC after series of discussions and interaction, in line with the draft EV policy focuses on "Encouraging electric mobility adoption to ensure physical and economic well-being for the citizens of Rajkot."

City goals- The specific goals to achieve the vision for the city includes the following listed to develop accessible charging infrastructure with a focus on EV readiness in the buildings, reduce barriers related to EV adoption and improve consumer willingness through electrification of shared mobility for last mile connectivity to BRTS.

Two major goals on which the city may focus for encouraging electric mobility adoption to ensure physical and economic well-being of the citizens include promote accessible charging infrastructure development and improve the confidence of public for EVs.

The strategies to achieve these goals are as follows:



4.3.2. Description

Strategy	Deliberation	Stakeholders	Actions
Public charging station development	Existing and future demand	RMC, Third party consultant, industry players	- Estimate the expected rise in EV demand and charging infrastructure in future. - Need for public charging/swapping station
	Feasibility and suitability of chargers	PGVCL, RMC, charging/swapping station developer	- Finalise the number and type of charging stations required as per demand
	Location and accessibility	RMC, PGVCL, RUDA	- Finalise the locations as per the data driven analysis of demand covering major locations in the city. - Ensure accessibility of the charging stations - Integrate recreational spaces where EV charger user may wait/utilise their time

	Roles and responsibilities of related stakeholders	RMC, PGVCL, RTO, RUDA, RRL, Builders association, Industry players, OEMs	- Combined meeting to discuss the roles and responsibilities of all the stakeholders. - Ensure that all the civil works and installations are assigned to the related stakeholders
	Discussion, development and way forward	RMC, charging point Operators and e-mobility service provider (CPOs and e-MSPs), PGVCL, RUDA	- Ensuring electricity grid readiness - Tendering for EV charging/swapping ecosystem - Approvals from various departments - Procurement and installation of additional infrastructure (transformer, substation equipment, safety equipment as per need, cables, lines, meters) - Development of EV charging ecosystem in a phased manner - Encourage private entities to develop charging facilities through awareness and incentives - Tariff fixation and collection system - Safety and security of equipments - Awareness related to locations of EV charging ecosystem. - Develop a management and monitoring system and review the usage of charging station to understand the daily usage and decide on future opportunities to install charging station as per need.
Amendment in GDCR to include a provision related to EV parking and charging- To ensure accessible charging infrastructure, a clear set of guidelines in GDCR for inclusion of EV charging provision in new buildings and retrofitting in old buildings is required which will be useful to improve the confidence among the buyers.	Existing GDCR and parking regulations, need for amendment - Currently, in some cases, users residing in multistoried buildings face difficulty in setting up charging facility for their EVs at common spaces of their residential society/ apartments due to resistance from other residents/ society.	RMC PGVCL RUDA Architect/Builder's Association Third Party Consultant RWA	- Discussion with the stakeholders to decide the points to be added in the GDCR for EV related provisions. - Calculate the EV bays by vehicle types (two/four wheeler) - Rise/expected rise in electricity load due to EV charging - Document and analyse the issues and challenges faced by EV users residing in multistoried buildings - Develop a guideline document with recommendations to be incorporated in GDCR
	Amendment in GDCR for new buildings. Also, the consideration of additional electricity load implications should also be added to ensure that the builders take permission for the electricity load necessary to cater to the additional demand for EV charging.	RMC PGVCL RUDA Architect/Builder's Association	- Incorporate requirement of power outlets capable of providing EV charging for 100% residential parking space ensuring the setbacks of the building are related - Provision for additional electricity load for EV charging - EV charging ready spaces for 20% of parking spaces in new buildings - Requirement of NoC from PGVCL (grid readiness, load calculations), Chief Electricity Inspector (standards and electrical safety) and Fire Inspector (fire safety) during approval of building plans stage - Capacity building of officials and builders to apply for electricity load considering the additional load for charging EVs. - Ensure safety and security of charging equipments and other installations

			- Develop guideline for design considerations, probable design solutions for charging infrastructure, accessibility, approvals and tariff
	Amendment/ provision for retrofitting in existing buildings to include EV charging and parking provision	RMC PGVCL RUDA Architect/Builder/ Contractor	- Analysis of existing building type, use, demand - Guideline for design considerations, design solutions for charging infrastructure, accessibility, approvals and tariff for charging - Provision for additional electricity load for EV charging - Requirement of NoC from the PGVCL, CEI and fire inspector for retrofitting - Ensure safety and security of charging equipment and other installations

Objective 2- Enable clean energy led mobility to ensure physical and economic well-being of the citizens of Rajkot

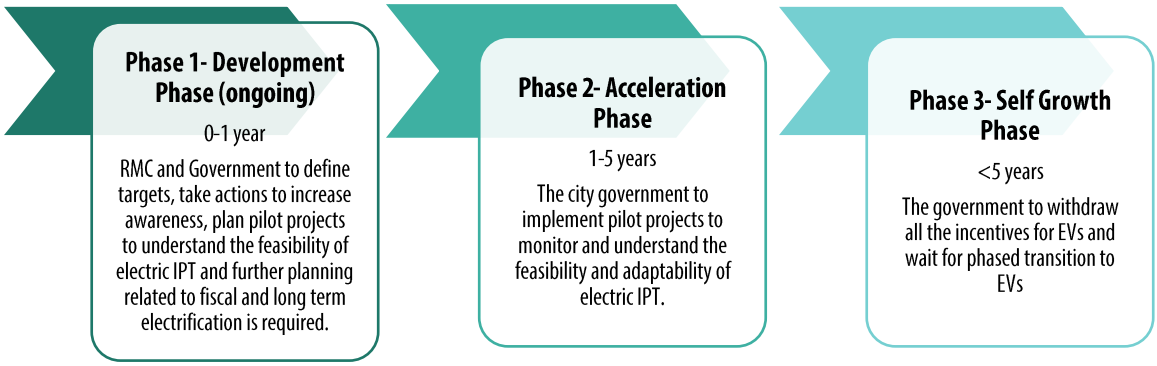
Rajkot EV policy with city level targets and incentives are under development focused on the electrification of the vehicles. The city is working on draft EV policy which is planned to be notified in due course of time, this is expected to create an acceleration in EV transition in the city. The following strategies with details are actions to be taken up by the city stakeholders:

Strategy	Deliberation	Stakeholders	Actions
Electrification of shared mobility for last mile connectivity to BRTS	Existing IPT and last mile connectivity mode	RMC RUDA Charging point developer and operator Third party consultant	- Understand and document the existing IPT mode used for last mile connectivity and fills the gaps of public transport. - Identify the percentage of fuel IPT vehicles, routes and distance covered - Understand the requirements expected to be fulfilled by the IPT mode - Explore the possibility of shifting to electric IPT (e-auto and/or cycles) for last mile connectivity.
	Procurement and operation decision	RMC RTO Traffic Police E-Auto Association	- Finalise the procurement model and operation in the city including the routes, distance, frequency - Finalise the tariff for e-autos - Awareness and capacity building of operators and drivers of e-autos - Develop and promote the service stations for repair and maintenance of EVs
	Phased transition to E-autos	RMC RTO Traffic Police E-Auto Association OEMs/manufacturer	- Mandate of allowing only EVs to be registered for last mile connectivity. - Allow registration of those number of EVs which can be managed. - Scrapping incentive for the existing fuel based IPT vehicle drivers willing to shift to e-autos - Awareness and capacity building for operation and maintenance of e-autos
Electrification of freight vehicles (chakdas) used for last mile delivery of goods	Freight vehicle requirements and phase-out plan for Chakdas	RMC Traffic Police Goods vehicle association Market association Freight vehicle operators	- Understand the existing requirements of freight vehicle, types of goods transported, weight, areas where these are used. - Feasibility assessment - electrification of freight vehicles used for last mile delivery of goods - Develop a Phase-out plan/Strategy based on end of life of registered freight vehicles - Pilot project to understand the feasibility of e-LCV
	Public charging infrastructure/kerbside charging/ swapping	RMC PGVCL	- Data driven methodology to identify the priority locations - parking locations for freight vehicles

	facility for electric freight	Eligible Charge Point Developer (CPOs) Goods vehicle association Market association	- Understand the need for public charging/swapping facility for freight vehicles - Finalising the siting, technical specifications, type and design for the most suitable charging facility - Ensure safety and security of equipment - Taking the approvals required from PGVCL, land owner - Finalising the operation model and payment collection system
	Demand aggregation for bulk procurement of electric freight vehicles (LCVs) replacing the chakdas	RMC Goods vehicle association Shopping Complex owners Market association Freight vehicle operators	- Data driven analysis to develop a strategy for demand aggregation and bulk procurement of electric LCV which can be used for last mile delivery of goods by shopping complex/ marts/ shop owners - Encourage the scale up of e-LCV procurement by operators of goods vehicles used for delivery
Planned operation of existing e-buses	Existing e-bus operation, challenges	RRL E-bus operator	- Document and analyse the routes of E-buses and their operation. - Understand the challenges in operation and maintenance of e-buses - Capacity building and training for staff and operators of e-buses - Plan the charging depot locations and opportunity charging locations preferably in a way to reduce the dead kilometers
	Scale up operation of e-bus in a planned manner	RRL RMC E-bus operator	- Scale up the operation of e-bus on routes as per demand - Charging and maintenance facility for the e-buses considering the routes and exploring the possibility of opportunity charging facility at existing bus depot in the city
Electrification of Municipal Fleet	Existing municipal fleet and size	RMC Other Government offices Third Party Consultant	- Existing fleet size and age of vehicles - Expected demand for EVs, charging infrastructure and electricity - Feasibility study for each fleet type to understand the financial resources required and usage feasibility - Encourage procurement of electric municipal fleet for all the new vehicles
	Supporting infrastructure and approvals (if required)	RMC PGVCL Charge Point Developer and Operators (CPOs) and E-Mobility Service Provider (e-MSPs)	- Finalise the location for charging in the office premises - Approvals from Torrent Power/DGVCL - Additional power infrastructure required (if any) and attached financial obligations
	Demand aggregation for bulk purchase	RMC OEMs NBFC PGVCL other government departments including RRL, RUDA, RSCDL and others	- Develop an action plan/ strategy for scaling up the pilot of electrification of municipal fleet - Projected increase in electricity demand, charging infrastructure - Grid readiness - Programs to encourage government offices to transition to EVs - Training and capacity building for operators/drivers of municipal fleet.

4.4. Roadmap for Rajkot

As discussed above, Rajkot is planning and attempting to take initiatives to accelerate the transition to EVs and moving towards electrification of its bus fleet (public transport). The roadmap to faster adoption of EVs of the city is as follows:



Phase 1- Development Phase

This is the phase, when the city must define targets and planning to take actions along with starting to take these actions gradually. The actions required in addition to the existing actions in this phase are as follows:

	Action details
Regulatory- EV policy	- Rajkot is working on Draft EV Policy, this should be finalised considering the long term targets an notified - Define target, visions and actions to be taken by the city to ensure faster adoption of EVs in a phased manner. - Plan for EV ready buildings: amendment in GDCR - EV enabled on/off street parking guideline and policy
Nodal Committee	- Rajkot Municipal Corporation should form the EV Policy Managing Committee (nodal committee) and combined meeting with all the relevant stakeholders so that they are aware about the committee and its functions.
Demand projections and database	- EV demand assessment and projections - Estimate the future demand for charging infrastructure - Expected rise in demand for electricity for charging EVs - Initiate compilation of data to develop a database related to EV operations (public transport, IPT and private vehicles)
Public Transport and IPT	- Continue the operation of e-buses and document the operation and plan to scale up the operation accordingly. - Promote electric IPT(e-autos preferably) for last mile connectivity to the BRTS
Government vehicles and corporate vehicles electrification	- Encourage electrification of government fleet as a part of EV policy - Define initiatives/incentives (if any) for the RMC staff/other government office staff shifting towards EV - Encourage the adoption of EV by the corporate offices on pilot basis
Charging stations	- Encourage private players to develop charging stations in the city and highways - Integrate the database of all operational charging station and update the list of locations of these stations on the website of RMC - Awareness among the public related to charging stations, tariff and locations in the city.
Fiscal planning	- Alignment with national and state level incentives - Fiscal outlay planning, tax rebates, incentives - Non-monetary incentives (recognition, priority, etc.)
Awareness and capacity building	- Organise events for awareness of public related to EVs, their performance and maintenance - Awareness related to EV ready buildings - Interaction among the stakeholders and capacity building

Phase 2- Acceleration Phase

The city government needs to take initiatives and actions to encourage market and people to shift towards EVs

	Action details
EV readiness in buildings	- Amendment to include a provision of EV parking and charging in buildings - Consideration of expected electricity load rise
Quick gain projects	- EV enablement at public campus and destinations (park, tourist, religious establishment) - Model projects (e.g., EVCI at affordable housing) - Light house projects (e.g., RE integrated PCS at major locations in the city)
Scaling up the operation of e-buses and integrate e-IPT	- Scaling up the operation of e-buses based on the operation data analysis - Phase out the existing chakdas in the city by electric IPT (e-auto) for last mile connectivity and shorter distances. Ensure that all the new registered IPT is an electric vehicle. As the manufacturing of chakdas has been discontinued, phasing out existing chakdas operating in the city with electric alternative can be more aggressive. - Develop charging stations for E-IPT along the BRTS corridor.
Encourage government and corporate offices to transition to EVs	- Encourage RMC officials willing to transition to EVs - Encourage the scaling up of pilot project of electrification of fleet of corporate offices if found feasible during the pilot phase. - Encourage more corporate offices to take up the electrification model (if feasible)
Skill development	- EV repair and service skill development - Capacity building for EV drivers/operators
Database	- Develop a database of EV demand transition for conscious future actions related to EV adoption acceleration
EV economy	- Partnership with EV related industries (battery, spares, accessories) - PPP with large business hubs for O&M
Integration with existing policies	- Climate resilient city action plan - Low carbon comprehensive mobility plan - Action plan for control of air pollution in Rajkot

Phase 3- Self Growth Phase

The government should withdraw all the incentives (financial and others) related to encouraging people to shift to EVs, although the programs to develop the EV support ecosystem should continue along with the monitoring of the development and operations.

	Action details
Updation and monitoring	- Updating the Surat EV policy document/amendment stating the changes - Awareness among the builders/contractors and architects related to increase in demand for EVs and its supporting infrastructure, EV charging provision integration in buildings as per the demand - Discontinue all the financial incentives to the EV buyers
Continuous operations and management across all phases	- EV committee and its roles - Survey and analysis - Digitalization and information management for database - Awareness campaigns for drivers, operators, users, support infrastructure developers, government officials and all the related stakeholders. - Identifying revenue generating streams - Exploring new / innovative partnerships - Continuous monitoring, evaluation and verification
Integration of EV in Long term planning documents such as MP, LAP, DPs etc...	- Making EV an integral part of city's visioning - EV and EV related infrastructure to be planned and designed within the city's development policy, master plans and other notified documents - Update GDCR to provide for changing EV adoption - Long term fiscal planning and O&M Strategy for EV infrastructure

5. Annexure

5.1. Annexure 2: Summary of climate related initiatives in Rajkot

5.1.1. Climate Resilient City Action Plan

The Climate Resilient Cities methodology was followed to develop the Climate Resilient City Action Plan for Rajkot. The Climate Resilient Cities Action Plan Process is a 9-step process in 3 phases: Analyse Act and Accelerate - each unfolding into three steps - outlining how climate fragility can be assessed and climate resilient options (to achieve low emissions development and climate adaptive development) can be identified and integrated into urban development policies, plans, and processes. It consists of a wide range of tools and guidance notes to support Local Governments to deliver effective Local Climate Action.

Rajkot City has adopted this methodology for preparing its Climate Resilient City Action Plan. The Climate Resilient City Action Plan is the result of implementing steps 1 to 4 in Rajkot City. The tools provided in the toolkit have been adapted to suit the purposes of the city.

5.1.2. Climate Resilient Cities Action Plan

The ClimateResilientCITIES methodology is an action planning process tailor made for local governments, providing step by step guidance for the development of a Climate Resilient City Action Plan that addresses both climate change adaptation and climate change mitigation. This process builds on ICLEI's Cities for Climate Protection (CCP) campaign, ICLEI's flagship mitigation program, the GreenClimateCities (GCC) program, and ICLEI's adaptation toolkit, the ICLEI Asian Climate Change Resilience Network (ACCRN) process or IAP toolkit.

5.1.3. Low-Carbon Comprehensive Mobility Plan – Rajkot

Rajkot is one of three Indian cities participating in UNEP's project on 'Promoting Low-Carbon Transport' as a case study for preparation of a Low-carbon Comprehensive Mobility Plan (LCMP). The LCMP, with a horizon period of twenty-years (2011-2031), would consider the development of a Municipal Corporation area as well as the villages and industrial areas coming up around the city. Thus, the Rajkot Urban Development Authority (RUDA) area has been considered as the study area. The twenty-year horizon period is divided into three sub-horizons that are considered for planning programs and projects. It includes a five-year horizon period (2011-2016) for short-term plans for the RMC area, and a ten-year period (2011-2021) for medium-term interventions for the RMC and outgrowth areas. The RUDA area consists of 483km2, which includes the 104km2 area of Rajkot Municipal Corporation (RMC). The RMC consists of 59 wards, which were further divided into 394 smaller units called Traffic Analysis Zones (TAZs), each covering an average area of 0.72km2.

5.1.4. REN21: Rajkot

Rajkot has committed to reducing its greenhouse gas emissions 14% by 2022-23 (from 2015-16 levels). Energy consumption in residential buildings totalled 606 million kWh in 2015-16, accounting for around half of all electricity consumption and contributing 35% of GHG emissions from economy-wide activities in the city. Recent efforts have focused on reducing energy consumption and enhancing energy efficiency in residential buildings. The Capacity Building for Low Carbon and Climate Resilient City Development project (CapaCITIES) has helped maximize the use of renewables in the city, reducing the need to tap into the predominantly coal-based national grid. Because of its efforts in low-carbon action and community engagement, Rajkot Smart City was selected as the national winner of WWF's Global One Planet City Challenge in 2020. Other noteworthy initiatives in Rajkot that support this award include the installation of 9,629 kWh of grid-connected solar PV systems on residential buildings (with a further proposed 500 kWh on municipal buildings); retrofitting of 63,178 public street lights with light-emitting diodes (LEDs), resulting in annual energy savings of 11.5 million kWh; the implementation of Smart Ghar III, an affordable green home concept aimed at maintaining indoor thermal comfort with minimal climate impact; and plans to replace diesel buses with electric ones, along with the provision of solar PV charging.

5.1.5. Action Plan for Control of Air Pollution in City of Gujarat (Rajkot)

The major sources of air pollution in Rajkot city are road dust, vehicular emission, domestic fuel burning, open waste burning, construction activities, industrial emissions etc. Gujarat Pollution Control is regularly monitoring the ambient air quality at Rajkot

through 3 manual stations operated as per CPCB guidelines under NAMP & SAMP. Particulate Matter (PM10 & PM2.5) has been identified as main air pollutant as it is found above the prescribed national standards, as per the report.

This is mainly due to re-suspension of road dust, emission from vehicles, construction activities, burning of domestic fossil fuels, open burning of solid wastes, transportation of construction materials such as sand, soil and others. The report illustrates and lists details.

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