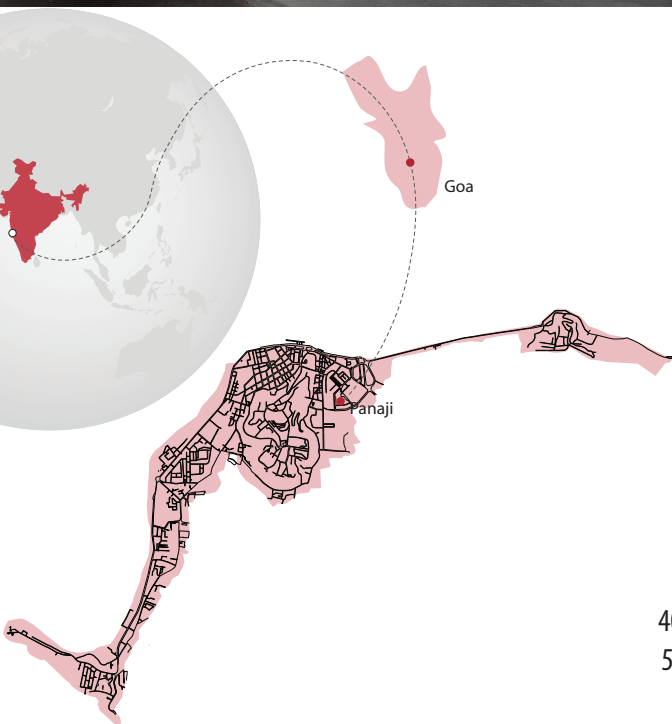


City Information Note

Panaji

City EV Readiness



City overview

Panaji is the capital of Goa, the state headquarters of the North Goa district and a prime destination for national as well as international tourists. The coastal city is located in the Tiswadi Block of North Goa district. Panaji has the Mandovi river on its northern border, the Arabian sea on its northwest and a few villages on its eastern and southern sides. The city has coastal plains with marine land forms on the west (coastal area). The high volume of tourists and a floating population drawn by tourism is emerging as one of the key economic drivers in the city.

Demographics



Population

40,017 (MC), 1.14 Lakhs (UA)
5000-15000 persons per day
(Floating population)



Area

8.12 sq. km.

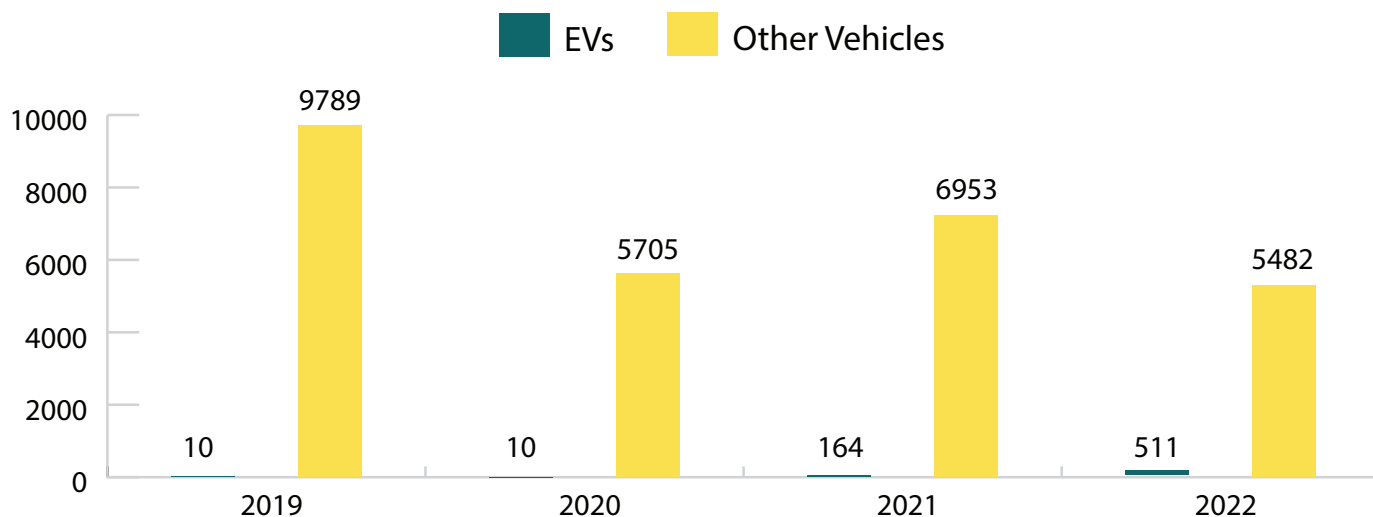


City Type

Tier-II

Vehicles Registered*

In Panaji, two wheelers comprise of almost 59% of the registered vehicles. The percentage of EVs vs other vehicles increased from 0.1% in 2019 to almost 8.5% in 2022. The registration trend of vehicles in Panaji from 2019 to 2022 is shown below:



*Information source- VAHAN Dashboard, accessed on 30th September, 2022

Background

The electric mobility revolution is gaining momentum in Indian cities and is being promoted by the central government through various incentives to reduce the country's reliance on fossil fuels and to reduce Greenhouse Gas (GHG) emissions from the transport sector. Indian cities are also aiming to integrate sustainable and low emission alternatives in urban transport. But long-term actions are required for mass adoption of e-mobility in Indian cities. ICLEI South Asia embarked on an initiative to "Support Indian Cities in Taking Leadership on Electric Vehicles (EV)" to aid the cities in identifying priority interventions and to take necessary steps towards an 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 were held with major stakeholders impacting the EV transition in cities, such as advisory groups, industry experts including the advocacy group, charging infrastructure developers, vehicle technology/OEMs and financial institutions. As part of the initiative, the ICLEI South Asia team visited Panaji on 8th – 9th September, 2022 to interact with the stakeholders, understand the existing EV transition situation in the city, as well as the challenges and opportunities and to suggest a way forward for the city.

EV related developments in Panaji

Goa Electric Mobility
Promotion Policy-2021
Introduced
December 2021



EV Subsidy discontinued
from effective date of
31/07/2022.
July 2022



GEDA invited EoI cum
tender for 40 Public
charging stations
November 2022



June 2022

State government plans
to set up 50 electric
charging stations.



October 2022

First Solar electric hybrid ferry boat
inaugurated to be used operate on
the Chorao-Panaji route only for
passengers












Key stakeholders

The stakeholders in Panaji that are related to the EV transition and with whom interactions were held during city visit are as follows:

	Stakeholders	Roles
State Government stakeholder	Gujarat Energy Development Agency (GEDA)	<ul style="list-style-type: none"> Responsible for renewable energy related policy development and implementation Implements sustainable energy program across the state Publish tender for charging station development
	Kadamba Transport Corporation (KTC)	<ul style="list-style-type: none"> Intercity and intra city bus operation Lead the procurement of e-buses when city decides for the same
	Electricity Department, Government of Goa	<ul style="list-style-type: none"> Electricity generation, transmission and distribution Provides approvals for electricity connections Ensure timebound access of required load of electricity Finalises tariff of charging electric vehicles
	Town & Country Planning Department, Goa	<ul style="list-style-type: none"> Regulation of construction of buildings, plans approval, monitoring the constructions process and allotment of housing sites in urban areas Amendment in building byelaws/rules to include EV provision
	RTO, Panaji	<ul style="list-style-type: none"> Registration of EVs and prioritise through single-window clearance.
City Government stakeholder	Corporation of the City of Panjim (CCP)	<ul style="list-style-type: none"> Finalising EV targets for the city Land Owner- Demarcate land for charging infrastructure
	Imagine Panaji Smart City Development Limited (IPSCDL)	<ul style="list-style-type: none"> Implementing projects under Smart City Mission (SCM) E-bus procurement under SCM Planning locations for charging depot of e-buses procured under SCM
Others	Vehicle Technology/ OEMs	<ul style="list-style-type: none"> EV and its parts manufacturing and supply
	NGOs	<ul style="list-style-type: none"> Cater to the technical trainings and capacity building needs of the officials

State EV Policy

Goa state EV policy key points:

 <p>Vision is to establish Goa as a model state of International Standards for EVs across passenger and commercial segments along with supporting charging infrastructure</p>	 <p>Effective for 5 years from the date of notification</p>
 <p>Target of 30% of vehicles registered in Goa from 2025 to be electric. 50% of ferries, jobs creation, encourage start-ups, service units for repair of vehicles and batteries</p>	 <p>50% of new public transport buses to be EVs (2021-25)</p>
 <p>Promote conversion of diesel powered marine fleet trawlers, (fishing boats, ferry boats, etc) into hybrid (solar+ electric)</p>	 <p>Encourage new e-autos instead of ICE equivalents, e-rickshaws and e-carts , electrification of low capacity, short haul delivery LCVs and e-four wheelers</p>
 <p>Ride hiring service providers shall be allowed to operate e-two wheeler taxis, operators renting two wheelers to tourists, to switch to electric two wheelers by 2025.</p>	 <p>Specific areas to be identified like – Panjim Smart City, Heritage Zones, Tourist Zones, Airport and Railway stations etc. which will move towards 100% mandatory electric vehicles by 2025.</p>
 <p>Changes in building byelaws for EV ready parking Charging station at every 25 km on highways and 3 km within city limits.</p>	

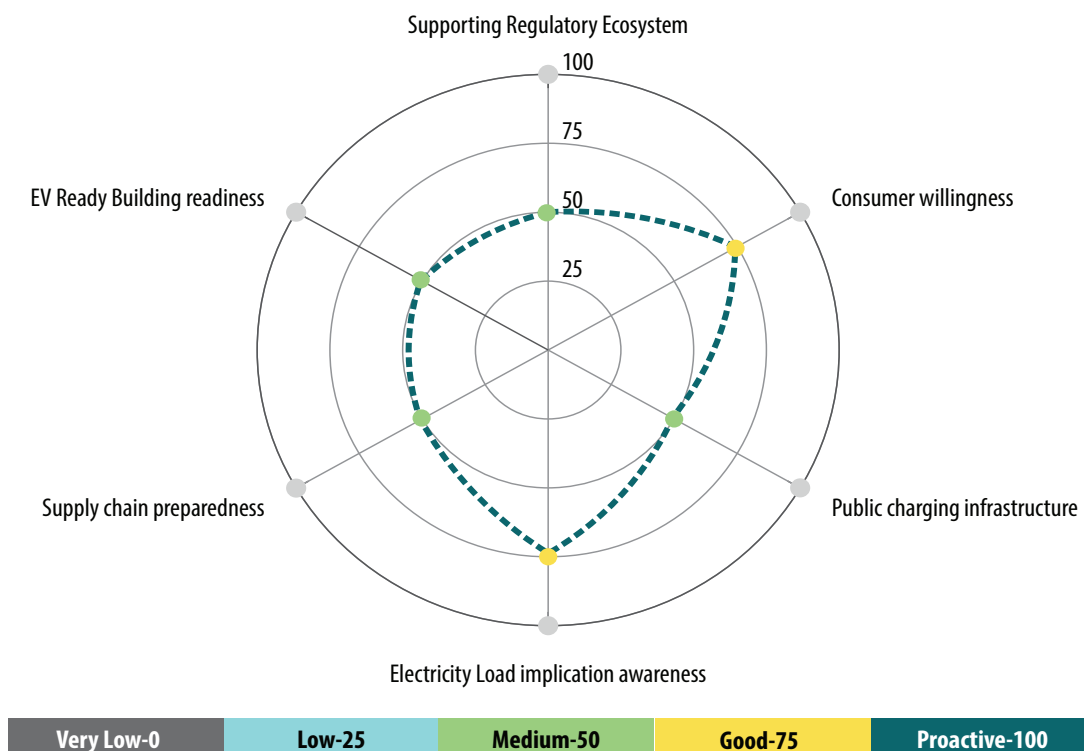
City- EV related actions-status*

This information was collected through interactions and discussions with government and private stakeholders related to EVs during the city visit.

<p>Policy and Advocacy</p> <ul style="list-style-type: none"> State level Policy- Yes City level Policy- No Initiatives- Yes (Charging Infrastructure- Concessional land for charging stations) 	<p>Charging Infrastructure</p> <ul style="list-style-type: none"> Public charging stations(PCS)- Yes (6 PCS existing in the city, 8 locations finalised, EoI for installing more PCS underway) Electric bus charging - No (E-buses not operational, 2 locations for bus depot identified, 36 charging points for e-bus planned)
<p>Financial Incentives</p> <p>State level - No (Financial incentives withdrawn w.e.f 31.07.2022)</p> <p>City level- No</p>	<p>Vehicle Technology</p> <ul style="list-style-type: none"> Charging locking system creates problems when mud deposits on that setup. Fire safety hazard







City Readiness

Panaji EV readiness was synthesized after the parameters impacting the EV transition were assigned scores. **Twenty- five parameters were listed under 6 categories**, which are supporting regulatory ecosystem, supply chain preparedness, consumer willingness*, public charging infrastructure, EV readiness in buildings 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:



*Consumer willingness rating is based on the responses from dealers of EV and discussion with the city government officials.

Panaji is taking initiatives for adoption EVs which include procurement of two-electric two wheelers by CCP, development of PCS, pilot of solar-electric hybrid ferry, finalise location of 8 PCS and 2 e-bus depot with 36 charging points, plan for development of charging stations and procurment of 150 e-buses by CCP and 48 e-buses by the IPSCDL for city and state operations. Electric three wheelers are also being used for last mile delivery of goods in the city by private players. The observations from city readiness assessment includes the following:

	The existing regulatory ecosystem at the state level requires actions related to guidance on EV charging, E-bus charging depot and electricity load.
	Consumer willingness is good but has been impacted by the withdrawal of state subsidy and fire incidences in EVs. Majority of customers of EV include those with average trip length of about 80 to 100 km per day.
	Six PCS already existing in different parts of the city, some restaurants and hotels also have EV charging spaces for their guests. Further discussions related to public charging infrastructure is underway, 8 locations have been finalised for PCS and
	The officials in the Power department were aware about the additional infrastructure required for setting up charging stations the need to upgrade the city grid readiness, 2 substations are proposed in Goa to cater to the expected rise in demand of electricity.
	Supply chain preparedness in the city is developing as the vehicle sellers provide replacement to the EV users in case any EV part needs replacement and will take time.
	The officials are aware about the need for an amendment and have developed a draft note on the amendments in the building byelaws for the inclusion of EV charging spaces and suggestions were invited for the same. It suggests reservation of 20% parking spaces for EVs if a group housing has more than 10 residential units.

Observations

The key challenges identified after visiting Panaji and interacting with the stakeholders are as follows:



Finalising strategic locations of bus depot and PCS



Lack of awareness among users and operators related to EV performance, operation and charging



High cost of EV restraining buyers to buy EVs without subsidy



Lack of clarity related to the roles of stakeholders



Loan for EV is disbursed on ex-showroom price while for ICE, it is for the on-road price



Lack of mandate for the government fleet to transition to EVs



Losses to the Electricity Department - Supply electricity at a subsidised rate (INR 3.5/ unit) to the PCS developer and develop supporting infrastructure also.

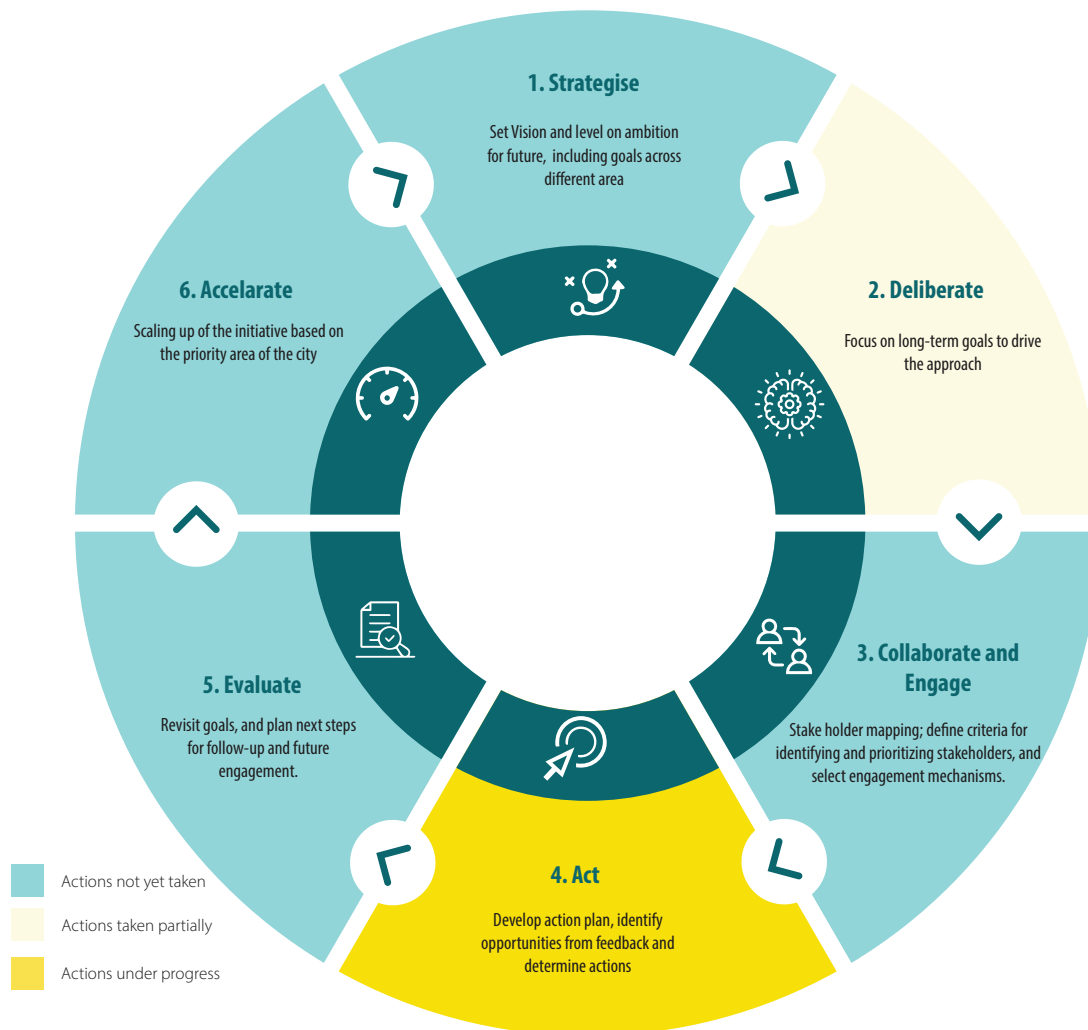
The suggestions from the city which may be useful in EV adoption include a guidance document for estimating the approximate cost of designing and developing a bus depot in different parts of India considering different soil types and terrains, guidance by the Government for expected rise in electricity load as per the expected rise in EVs, matching the VAT from ICE vehicles with the revenues from the charging stations.

Approach

Following steps of discussion and consultation with city stakeholders during city visits, industry experts and advisory group was followed to develop the six step approach:



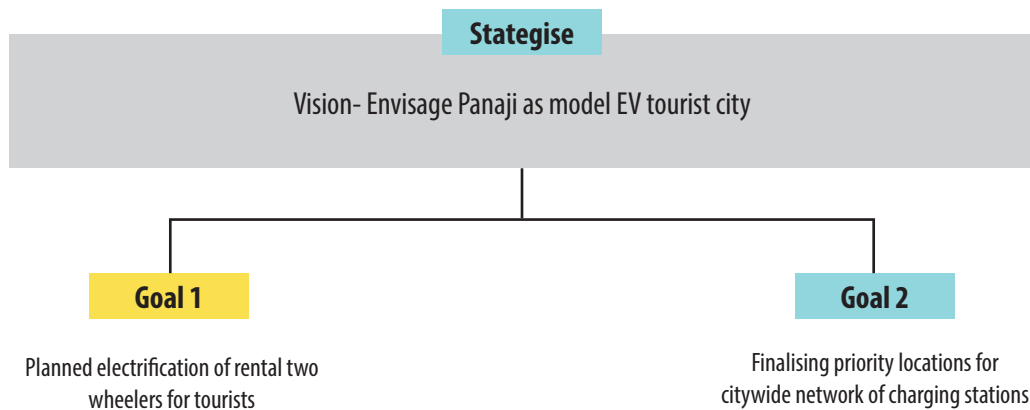
The six-step approach which Panaji should preferably follow to address the challenges identified above are as follows:



As per discussions, Panaji is currently focusing on the step of 'ACT' through EV procurement and deployment with a partial focus on the step of 'DELIBERATE', further focus is required on the other steps of the approach along with a clear set of targets and strategies for Panaji.

Recommendations

The city should appoint a nodal person/ nodal team which leads the EV initiative and is assigned with all the tasks related to EV adoption. Further, planned electrification of rental two wheelers and finalising strategic locations for citywide network of charging stations, are two major recommendations as per the analysis of city readiness, challenges and opportunities. The description of these two strategies as per the 6-step approach recommended for Panaji is as follows:



Goal 1 Planned electrification of rental two wheelers for tourists				
Deliberate	Collaborate and Engage	Act	Evaluate	Accelerate
Demand analysis	<ul style="list-style-type: none"> CCP RTO, Panaji Third party consultant Rental two wheeler owner/ operators 	<ul style="list-style-type: none"> Documentation of existing rental fleet size and willingness of owners to transition to EVs Understand the expected demand for the number of EVs, charging infrastructure and electricity Incentives for transitioning the fleet to EVs Awareness sessions for the rental fleet owner/operator 	<ul style="list-style-type: none"> Impact of transitioning from ICE to EVs Percentage increase in willingness to transition to EVs 	<ul style="list-style-type: none"> Develop a plan for phased transition of existing tourist vehicles to EVs
Supporting charging infrastructure	<ul style="list-style-type: none"> CCP Electricity Department, Goa Town & Country Planning Department Charge Point Operators (CPOs) and E-Mobility Service Provider (e-MSPs) 	<ul style="list-style-type: none"> Finalise the location for PCS in consultation of relevant stakeholders of EVs Approvals from CCP, Electricity department, Town Planning department Additional power infrastructure required (if any) and attached financial obligations of each stakeholder 	<ul style="list-style-type: none"> Charging points at major tourist locations developed as per demand and functioning Percentage of utilisation of these EV chargers 	<ul style="list-style-type: none"> Setting up more charging stations as per the demand
Phased transition of rented two wheelers to electric two wheeler	<ul style="list-style-type: none"> CCP Electricity Department, Goa Rental two wheeler owner/ operators Charge Point Operators (CPOs) and E-Mobility Service Provider (e-MSPs) 	<ul style="list-style-type: none"> Develop an action plan/ strategy for a phased transition of rental two wheelers to EV Consultation with all the stakeholders to ensure acceptability Pilot project to improve confidence among the rental two wheeler operator/ owners. Ensure supply of expected electricity demand for charging infrastructure 	<ul style="list-style-type: none"> Transition of all the existing rental two wheelers to EVs 	<ul style="list-style-type: none"> Strategy for centralised electric two wheeler renting system for accelerated transition to EVs

Goal 2 Finalising priority locations for citywide network of charging stations				
Deliberate	Collaborate and Engage	Act	Evaluate	Accelerate
Location and accessibility	<ul style="list-style-type: none"> ● CCP ● Electricity Department, Govt. of Goa ● Town & Country Planning Department, Goa ● Goa Hotel & Restaurant Association (GHRA) 	<ul style="list-style-type: none"> ● Finalising location as per data driven analysis of EV charging demand ● All time accessibility to the charging locations ● Finalise locations considering major tourist spots in and around Panaji. ● Collaboration with restaurants/cafe/ hotels to setup charging facility in their premises. ● Guideline for designing the charging station integrating recreational spaces where the users may wait/utilise their time till their vehicle is charged. ● Fast/slow charger installation decision 	<ul style="list-style-type: none"> ● Visibility and all time access from roads to the charging stations 	<ul style="list-style-type: none"> ● Scaling up the charging network to locations in and around Panaji
Approvals and additional infrastructure	<ul style="list-style-type: none"> ● CCP ● Town and Country Planning Department, Goa ● Charge Point Operators (CPOs) and E-Mobility Service Provider (e-MSPs) ● GHRA 	<ul style="list-style-type: none"> ● Ensuring effective electricity grid readiness ● Approvals from CCP, Electricity department, Town & Country Planning ● Ensure timebound access of required load of electricity ● Additional supporting infrastructure required and its implications on related stakeholders 	<ul style="list-style-type: none"> ● Percentage of usability of charging stations 	<ul style="list-style-type: none"> ● Scaling up the charging network to areas in and around Panaji
Operation and billing	<ul style="list-style-type: none"> ● Charge Point Operators (CPOs) and E-Mobility Service Provider (e-MSPs) ● GHRA 	<ul style="list-style-type: none"> ● Finalising the operational model ● Operation and maintenance ● Tariff and tariff collection ● Safety and security of equipment 	<ul style="list-style-type: none"> ● Sustainable operation of charging stations 	<ul style="list-style-type: none"> ● Scaling up the charging network to areas in and around Panaji

Way Forward

Panaji should have a clear set of targets and prioritise on the following actions for accelerate EV adoption:



Strategy for centralised bike/car sharing system and phase out the existing rented tourist vehicles and transition to EVs



Strategy for finalising priority location for citywide charging infrastructure network



Guidance for financial and locations considerations for PCS and e-bus charging depot



Awareness programs to sensitise public about the do's and don'ts related to EVs



Mandate for Electrification of Government fleet (Municipal Corporation vehicles)



End of life solution for batteries of EV



Solar-Electric hybrid ferries for passenger transport pilot on more routes



Encourage a mix of alternative fuel for vehicles

Acknowledgement

ICLEI South Asia would like to express its sincere gratitude to the officials from Corporation of the City of Panaji, Imagine Panaji Smart City Development Limited (IPSCDL), Town & Country Planning Department, Goa, Gujarat Energy Development Agency (GEDA), Kadamba Transport Corporation (KTC), Electricity Department Govt. of Goa, RTO Panaji and OEMs in Panaji for their insights and guidance. The inputs from the Advisory Group members were crucial in finalizing the document.

Disclaimer

This document includes preliminary recommendations and the way forward, based on interactions, fieldwork and background research and may require detailing as per the dedicated studies.

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