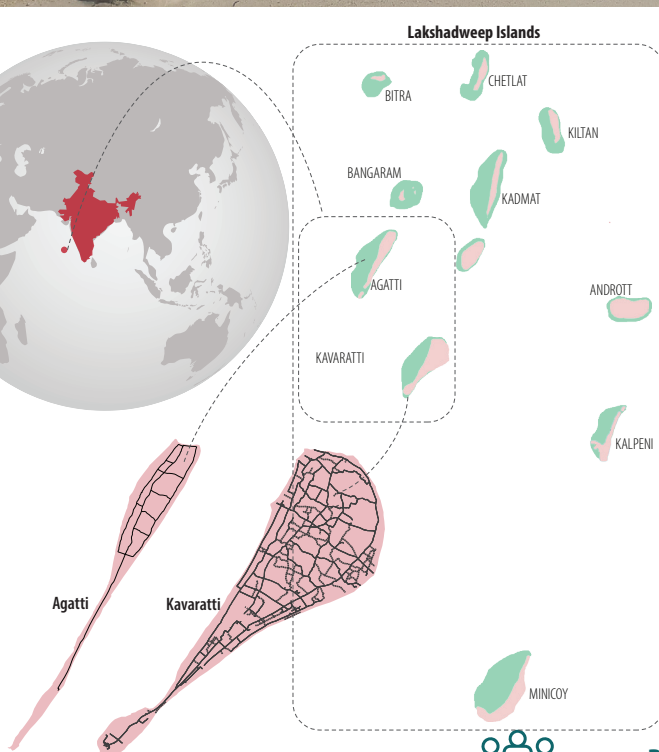




## City Information Note

# Lakshadweep

## EV Readiness



## City overview

Lakshadweep is a uni-district and India's smallest union territory, and the only coral island chain in the country. It is an archipelago consisting of 36 islands, including 12 atolls, three reefs, five submerged banks and ten inhabited islands. The islands of Agatti, Amini, Andrott, Bitra, Chetlat, Kadmat, Kalpeni, Kavaratti, Kiltan and Minicoy are inhabited and Bangaram island is purely used for tourism. The Lakshadweep Administration, Government of India, is also keen on developing eco-tourism projects in the islands of Lakshadweep.

Kavaratti is the capital and the principal town of the UT. All islands are located 220 to 440 km away from the coastal city of Kochi in Kerala, in the Arabian Sea. The natural landscapes, the sandy beaches, abundance of flora and fauna and the absence of busy lifestyle enhance the mystique of Lakshadweep.

Entry to Lakshadweep islands is restricted and an entry permit issued by Lakshadweep Administration is required to visit these islands.

## Demographics



### Population

64,473 (Census 2011)



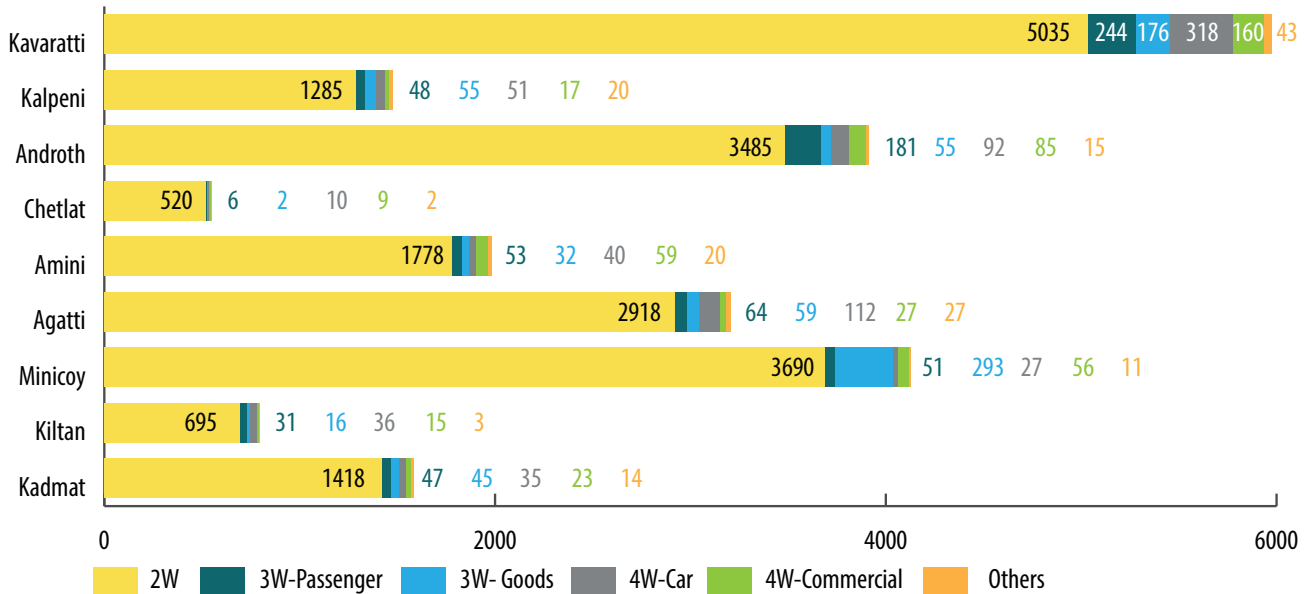
### Area

M.C.- 32.69 sq km

Island	Population	Area (sq. km)	Maximum Length & width (km)
Agatti	7560	3.84	6, 1
Amini	7656	2.60	3, 1.5
Andrott	11191	4.90	4.66, 1.43
Bitra	271	0.105	0.57, 0.28
Chetlat	2345	1.40	2.68, 0.59
Kadmat	5389	3.20	8, 0.55
Kalpeni	4419	2.79	NA, NA
Kavaratti	11221	4.22	5.8, 1.6
Kiltan	3946	2.20	3.4, 0.6
Minicoy	10447	4.80	11, NA

## Vehicles Registered\*

The small size of islands of Lakshadweep encourages people to use of two wheelers comprise almost 84%-94% of total the registered vehicles. The following bar chart shows the registration trend of EVs vs other vehicles from 2019 to 2022 :



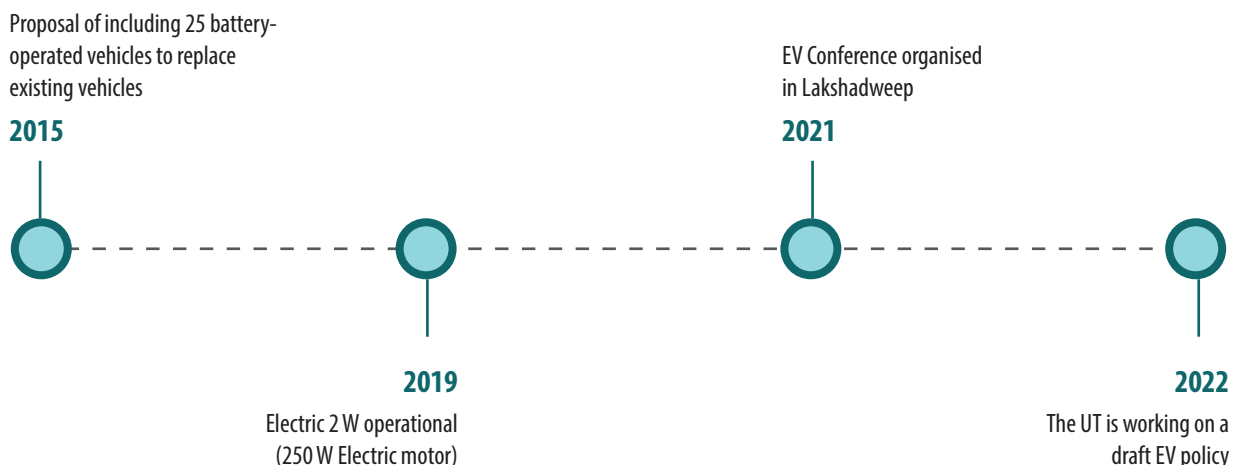
\* Information source: RTO Office Kavaratti, September 2022

## Background

Electric mobility revolution is gaining momentum in the Indian cities and is being promoted by the Central government through various incentives to reduce country’s reliance on fossil fuels and reduce the GHG emissions from the transport sector and aims for 30% of registered vehicles to be electric in 2030. Indian cities are also aiming towards sustainable, low emission alternatives to be integrated in urban transport yet long term actions are required for mass adoption of e-mobility in cities of India. ICLEI South Asia embarked on an initiative to “Support Indian cities in taking leadership on EVs” to support the cities to identify its priority intervention and take steps towards accelerated transition to EVs.

This initiative included interactions and discussions with the city stakeholders during city visits to 10 project cities and consultations with the advisory group and industry experts including the advocacy group, charging infrastructure developer, vehicle technology/OEMs and financial institutions as major stakeholders impacting EV transition in cities. As a part of this initiative, the team visited the Kavaratti and Agatti Islands of Lakshadweep Islands from 19th – 25th September 2022 to interact with the stakeholders and understand the existing EV transition situation in the city, challenges, opportunities and further suggest a way forward for the UT.

## EV related developments in Lakshadweep





## Key stakeholders

The stakeholders in Lakshadweep which are related to EV transition and were interacted during the visit are as follows:

	Stakeholders	Roles
Lakshadweep Administration	Transport Department	<ul style="list-style-type: none"> <li>Finalising the EV Targets for Lakshadweep</li> <li>Developing and updating EV Policy</li> </ul>
	Power Department	<ul style="list-style-type: none"> <li>Finalising the tariff for charging EVs</li> </ul>
	Town Planning & Urban Development	<ul style="list-style-type: none"> <li>Developing and overseeing policies related to town planning</li> </ul>
	Environment department	<ul style="list-style-type: none"> <li>Providing approvals for setting up RE infrastructure on the islands.</li> </ul>
	Lakshadweep Development Corporation Limited (LDCL)	<ul style="list-style-type: none"> <li>Acquiring, operating, and maintaining passenger and cargo ships.</li> <li>Developing value added products from fish and coconut (abundantly available)</li> </ul>
	RTO, Kavaratti	<ul style="list-style-type: none"> <li>Registration of vehicles in Kavaratti</li> </ul>
Kavaratti Island stakeholder	Electricity Department	<ul style="list-style-type: none"> <li>Providing approvals for electricity connections for charging EVs</li> </ul>
	Smart City Limited Kavaratti	<ul style="list-style-type: none"> <li>Floating tenders, selecting organisations for implementing the smart city projects and monitoring of the same.</li> </ul>

## State EV Policy

Lakshadweep is working on EV policy





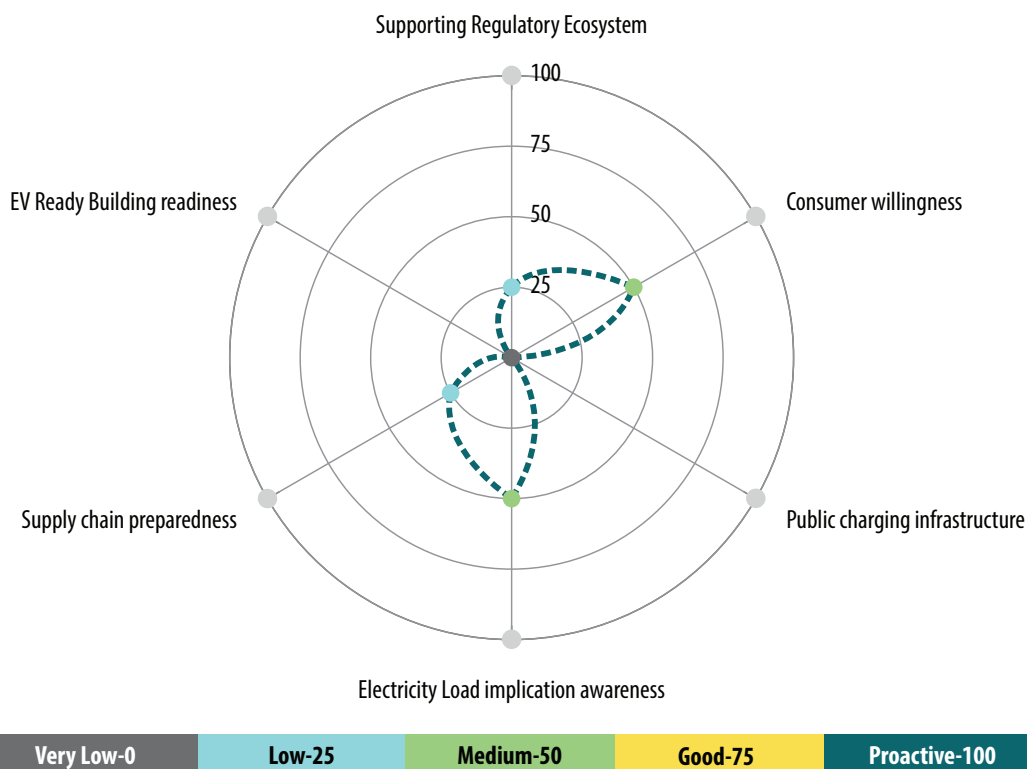
## City- EV related actions-status\*

This information was collected during the visit to islands, through interactions and discussions with government and private stakeholders related to EVs in Lakshadweep.

<h3>Policy and Advocacy</h3> <ul style="list-style-type: none"> <li>• UT/State level Policy- Yes</li> <li>• City level Policy- No</li> <li>• Initiatives- No</li> </ul>	<h3>Charging Infrastructure</h3> <ul style="list-style-type: none"> <li>• City wide public charging network- No (yet to initiate discussion for a commercial vehicle charging station network; public charging stations not required for private vehicles, due to small size of islands)</li> <li>• E-bus charging depot- No (Buses are not operational in the islands, only ICE three wheelers are used as shared mobility mode)</li> </ul>
<h3>Financial Incentives</h3> <p><b>UT level - Yes</b></p> <ul style="list-style-type: none"> <li>• 15% subsidy for E-2W and E-4W</li> <li>• 50% subsidy (max. Rs. 50,000) for E-rickshaws</li> </ul> <p><b>Island level- No</b></p>	<h3>Vehicle Technology - Supply chain</h3> <ul style="list-style-type: none"> <li>• No service centres - There are electric 2-W (250-watt electric motor) models that have to be sent to the mainland for repair and maintenance whenever required.</li> </ul>







## City Readiness

The Lakshadweep Islands 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 has been rated on the basis of the responses of dealers of EV and discussions with the city government officials.

There is a need to focus on cleaner ways to generate electricity to integrate EVs in the existing fleet of vehicles. The observations from city readiness assessment includes the following:

	The regulatory ecosystem is under development as the government is working on a draft EV policy and has already introduced a financial subsidy for purchase of E-2W, E-4W and E-rickshaws.
	The consumer awareness is comparatively better as the residents are already using E-2W (below 250-watt electric motor). An increase in local repair shops and improved awareness will encourage more people to shift to EVs.
	The officials of the electricity department in Kavaratti are aware about the expected electricity load implications and are ready to plan for this demand rise but are not yet prepared for the same.
	As the islands have a maximum length of 11 km and mazimum width of 2.8 km, the users will prefer to charge their EV at home than at public fast charging points. These public chargers will be required when EVs facility is developed for tourists.
	Currently there is focus on EV ready building readiness though it may increase with an the increase of EVs for owners residing in multi-storeyed buildings
	Supply chain preparedness is quite low as all the vehicles have to be taken to tha mainland for all types of repair and maintenance, limited maintenance facilities are available locally.

## Observations

A high level of dependence of the islands on diesel for generation of energy is a big deterrent to EV adoption. The cost of generating electricity from DG sets is currently around INR 32/ unit (depends on the diesel prices), which is provided to the users at a subsidized rate of INR 6/unit. If the tariff of EV charging is also the same rate, the financial losses will multiply. Thus, RE based electricity generation is necessary and the Lakshadweep Administration is working towards it as a first step towards vehicle electrification.

Electric two-wheeler (below 250-watt electric motor) are already being used by the residents of Lakshadweep; these are not required to be registered with the RTO but there is a need to enumerate these vehicles to understand the rise in demand for electricity and the requirement for a local repair facility. The islands of Kavaratti and Agatti have large populations of government officials and can be encouraged to transition to EVs. There are no public transport buses; instead fuel-based autos are largely used as a shared mobility mode. The electrification of these autos will be a high impact area for EV adoption.

The key challenges identified after visiting Lakshadweep and interacting with the officials are:



High cost of electricity generation from DG sets; need for RE based electricity generation



Lack of EV related understanding among drivers of government EVs



Lack of technical capacity of local EV service centres



Vehicles need greater maintenance due to high atmospheric salinity



Unidentified number of E-2 wheelers (<250 Watt Electric engine)



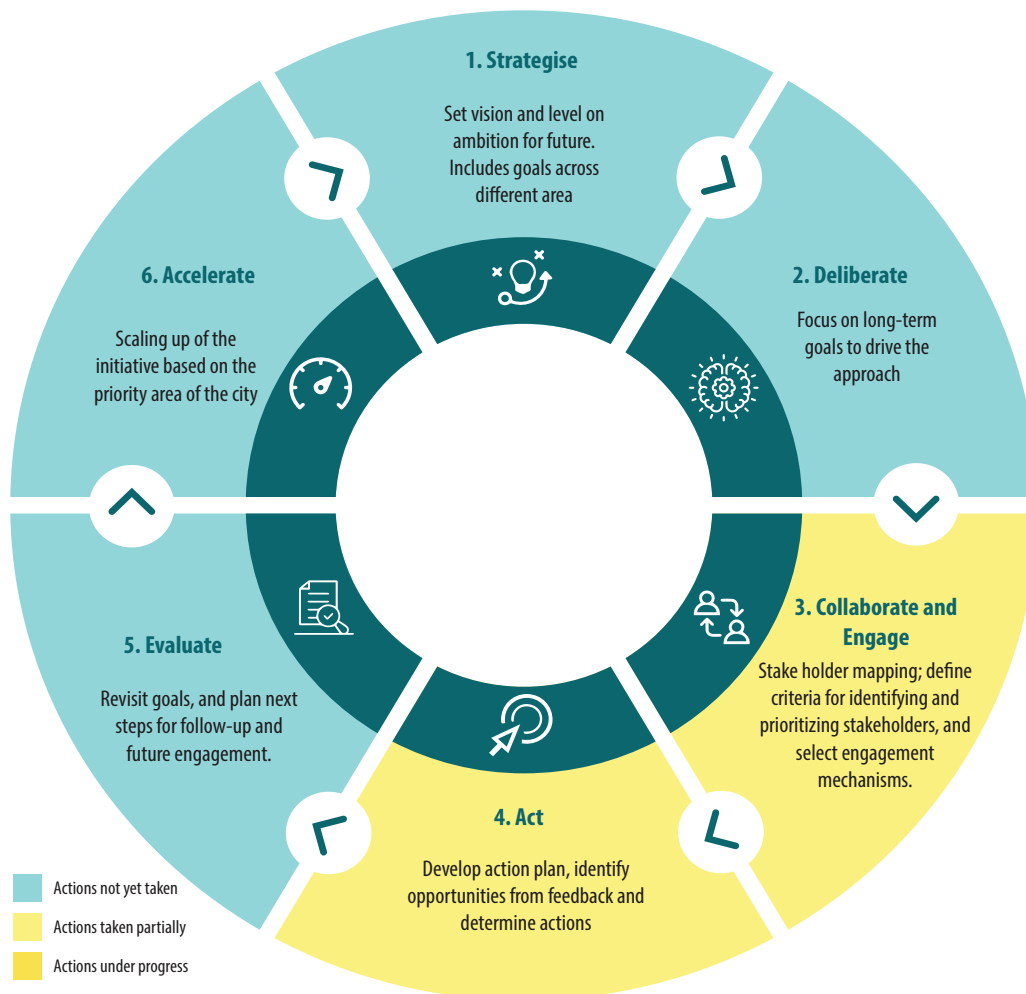
Petrol transported to the islands only for vehicles, in addition to diesel

## Approach

A series of discussions and consultations were held with industry experts and advisory group and city stakeholders (during the city visit) to develop the approach for cities. The process is illustrated below:



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



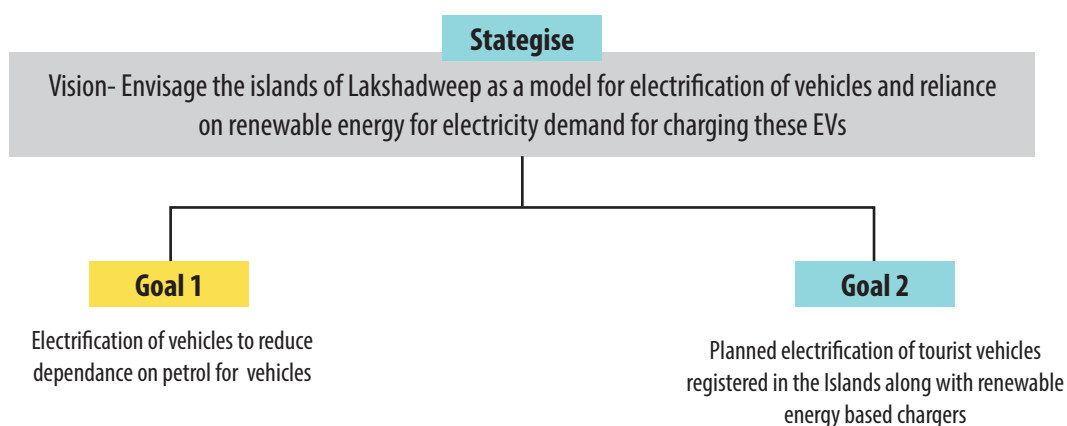
As per the discussions, Lakshadweep is currently focusing on the steps of COLLABORATE & ENGAGE and ACT though discussions among stakeholders and developing a draft EV policy. They are currently experimenting with ways to generate electricity from renewable energy (RE) sources like wind and solar as currently, electricity is generated using DG sets and electrification of vehicles without RE based electricity generation, will add to the existing load to transport diesel from the mainland.

## Recommendations

Lakshadweep should focus on an integrated plan of RE based electricity generation along with electrification of vehicles followed by sensitisation of operators and users and developing technical capacity for local repairing of EVs.

The islands should appoint a nodal person/ nodal team/ depute someone in the existing administration, that will lead the EV initiative and will be assigned tasks related to EV adoption. Further, in Lakshadweep, electrification of transport sector is not feasible until the electricity is generated from diesel on the islands, it may be practical to shift to EVs after setting up **renewable energy** based electricity generation facility.

Further, when the admistration decides on shifting to EVs to phase out petrol based vehicles, specially two wheelers which comprise almost 84-94% of the registered vehicles, then electrification of the two wheeler vehicles shall be initiated as a priority action, (especially those used for goods transport) which will improve user’s confidence and reduce emissions from the transport sector. Another priority sector is planned electrification of tourist vehicles registered in the Islands along with renewable energy based chargers.



Goal 1 - Electrification of vehicles to reduce petrol import for vehicles				
Deliberate	Collaborate and Engage	Act	Evaluate	Accelerate
Assess the existing electric two wheelers (below 250 Watt, which are not registered with the RTO)	<ul style="list-style-type: none"> <li>Transport Department</li> <li>RTO</li> <li>Local NGOs/ third party consultants</li> <li>EV owners</li> </ul>	<ul style="list-style-type: none"> <li>Enumerate the existing electric two wheelers (below 250 Watt) through a notification for the same from the transport department.</li> <li>Document the electricity demand for charging these vehicles</li> <li>Plan and develop a facility for generation of electricity through RE sources wherever possible</li> <li>Assess the expected shift to EVs in future</li> </ul>	<ul style="list-style-type: none"> <li>Assess the existing number of electric two wheelers and the electricity required for charging</li> <li>Electricity generated from RE sources and its capacity to cater to the demand for EV charging</li> </ul>	<ul style="list-style-type: none"> <li>Action plan to scaling up the RE based electricitiy generation facility to cater to the electricity demand for charging all EVs and future demand for the same.</li> </ul>
Encourage electric two wheeler use	<ul style="list-style-type: none"> <li>Transport Department</li> <li>Electricity Department</li> <li>Local NGOs</li> </ul>	<ul style="list-style-type: none"> <li>Incentives to shift from petrol vehicle to EV</li> <li>Awareness sessions for sensitisation of users</li> <li>End of life solution for discarded petrol based vehicles</li> <li>Database of existing number of electric two wheelers in the islands (unregistered- less than 250 watt motor)</li> </ul>	<ul style="list-style-type: none"> <li>Percentage of people willing to transition to EVs</li> <li>Expected reduction in petrol imports for private vehicles in the islands</li> </ul>	<ul style="list-style-type: none"> <li>Developing an action plan for a phased transition of two wheelers to EVs (especially petrol run)</li> </ul>
Phase out and replace existing petrol-run two wheeler with EVs and new buyers to transition to EVs	<ul style="list-style-type: none"> <li>Transport Department</li> <li>Electricity Department</li> <li>RTO</li> </ul>	<ul style="list-style-type: none"> <li>Sensitisation of users</li> <li>Develop local service centres for repairing of electric two wheelers</li> <li>Encouraging buyers to shift to electric two wheelers</li> </ul>	<ul style="list-style-type: none"> <li>Reduced demand for imported petrol for private vehicles</li> </ul>	<ul style="list-style-type: none"> <li>Phased transition of all petrol two wheelers to EVs</li> </ul>

## Goal 2 - Planned electrification of tourist vehicles registered in the Islands along with renewable energy based chargers

Deliberate	Collaborate and Engage	Act	Evaluate	Accelerate
Demand analysis	<ul style="list-style-type: none"> <li>Transport Department</li> <li>SPORTS Lakshadweep</li> <li>Vehicle operators</li> <li>RTO (Kavaratti/Agatti/other islands)</li> </ul>	<ul style="list-style-type: none"> <li>Understanding the existing fleet size and willingness to transition to EVs</li> <li>Mapping the expected demand for EVs, charging infrastructure and electricity</li> <li>Planning incentives for transitioning the fleet to EVs</li> </ul>	<ul style="list-style-type: none"> <li>Impact of transitioning from ICE to EVs</li> <li>Percentage increase in willingness to transition to EVs</li> </ul>	<ul style="list-style-type: none"> <li>Develop a plan for phased transition of existing tourist vehicles to EVs</li> </ul>
Charging infrastructure development with integrated RE based electricity generation	<ul style="list-style-type: none"> <li>Electricity Department</li> <li>Town Planning Department</li> <li>Transport Department</li> <li>SPORTS Lakshadweep</li> <li>Charge Point Developer and Operators (CPOs) and E-Mobility Service Provider (e-MSPs)</li> <li>Third party consultants for RE based electricity</li> </ul>	<ul style="list-style-type: none"> <li>Finalising the location for public charging station on each Island.</li> <li>Applying for approvals from Electricity department, Environment department, Town Planning department, and Transport Department</li> <li>Develop a setup for generating electricity from RE sources</li> <li>Identify and develop the additional power infrastructure required (if any) and attached financial obligations</li> </ul>	<ul style="list-style-type: none"> <li>One/two charging stations on each Island developed as per demand and functioning</li> <li>Percentage of utilisation of these EV chargers</li> </ul>	<ul style="list-style-type: none"> <li>Setting up more charging stations as per the demand</li> </ul>
Bulk aggregation of tourist vehicles on Islands of Lakshadweep	<ul style="list-style-type: none"> <li>Transport Department</li> <li>Electricity Department</li> <li>SPORTS Lakshadweep</li> <li>OEMs</li> <li>NBFC</li> </ul>	<ul style="list-style-type: none"> <li>Develop an action plan/ strategy for bulk purchase of vehicles to be used for tourists on major islands (Kavaratti, Agatti and other islands as suggested by the officials)</li> <li>Mapping the Expected EV demand and electricity demand for charging infrastructure</li> <li>Assessing and ensuring grid readiness</li> </ul>	<ul style="list-style-type: none"> <li>Transition of all tourist vehicles to EVs</li> </ul>	<ul style="list-style-type: none"> <li>Transition of 100% tourist fleet to EVs</li> </ul>

## Way Forward

Clear set of targets and priorities for Lakshadweep, focusing on island-specific solutions, will improve the output of EV adoption. Further, the Lakshadweep Administration should prioritise the strategies following for an aggressive push towards EVs:



Target of electricity generation from renewable energy sources



Electrification of commercial vehicles



Electrification of Government fleet



Awareness programme to sensitise users and the drivers of government vehicles related to EVs



Electrification of shared mobility



Electrification of privately owned vehicles, specially (two wheelers), after understanding the existing Electric two wheelers operating in the Islands



Improve grid readiness



Develop technical capacity for EV repair on the Islands

### Acknowledgement

ICLEI South Asia would like to express its sincere gratitude to the officials from Transport Department, RTO Kavaratti, Power Department, Electricity Department, Environment Department, Town Planning Department in Lakshadweep for their insights and guidance. The inputs from the Advisory Group members were crucial in finalising 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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