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The European Union's programme for India

India-EU Clean Energy and Climate Partnership (CECP)

International Conference- Climate Crisis 2.0: Mobilizing Finance for Coastal Cities

Session II: A Global Dialogue on Transformative Mitigation & Adaptation for Coastal Cities

Net Zero Energy (NZE) Tourist Location, Kochi

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About EU Clean Energy and Climate Partnership (EU-CECP)

The **overall objective** of the project is to **reinforce cooperation** between EU and India on **Clean Energy and Climate Action** with a view to ensure a secure, clean, affordable and reliable energy supply for all and to progress in the implementation of the Paris Agreement.

Key Focus Areas:

Energy Efficiency (ECBC, NZEB, Smart readiness indicators (SRI) for buildings)

Large scale solar PV with MNRE

solar PV rooftop envisaged under CECI

Off-shore wind energy

Grid scale battery energy storage

Smart grid

Cold Chain

FICEP / Sustainable Financing / Climate Proofing Investment

Waste to Energy

Biofuel

Access to modern energy

Gas

Energy dialogue/Climate dialogue/JWG meetings



Policy Dialogue:
Exchange of
experiences, best
practices & views



Cooperation: Research
and Innovation,
providing technical
solutions, Financial
investment in
Renewable energy and
Energy Efficiency and
Business

Policy Dialogue between EU and India
in the areas of clean energy, energy
efficiency and climate change
strengthened

Cooperation between India, EU and
EU member states strengthened

The **key stakeholders** are: **MNRE, MOP, BEE, MOEFCC**, as well as other National and State Agencies in the area of Clean Energy and Climate Change in India.

About EU Clean Energy and Climate Partnership (EU-CECP)



Clean energy and Climate action are areas in which the objectives of the EU and India strongly converge



Importance of cooperation between India, EU and EU MS in clean energy transition



EU and India as natural partners with well advanced collaboration and partnership in the areas of clean energy and climate action



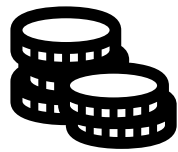
EU processes, businesses, best practices and technologies which can provide hands on solutions in clean energy transition in India

**Horizon
2020**

Potential opportunities provided by the EU's Horizon 2020 programme in supporting research and innovation activities



Effectiveness of bringing together European and Indian businesses, stakeholders, scientists and civil society



Importance of European Investment Bank (EIB) and other European financial institutions on sustainable finance



Show role of financing instruments in promoting uptake of clean energy solutions (particularly EU solutions) in the Indian context



Importance of clean energy transition and commitments in implementation of the Paris Agreement



Research and innovation opportunities for Indian and EU civil society in the area of clean energy and climate action

Net Zero Sites

Objective:

A study to provide a framework for achieving energy efficiency and offsetting energy demand via renewable integration or clean energy sources at the selected tourist locations in India.



Energy you
PRODUCE



Energy you
CONSUME



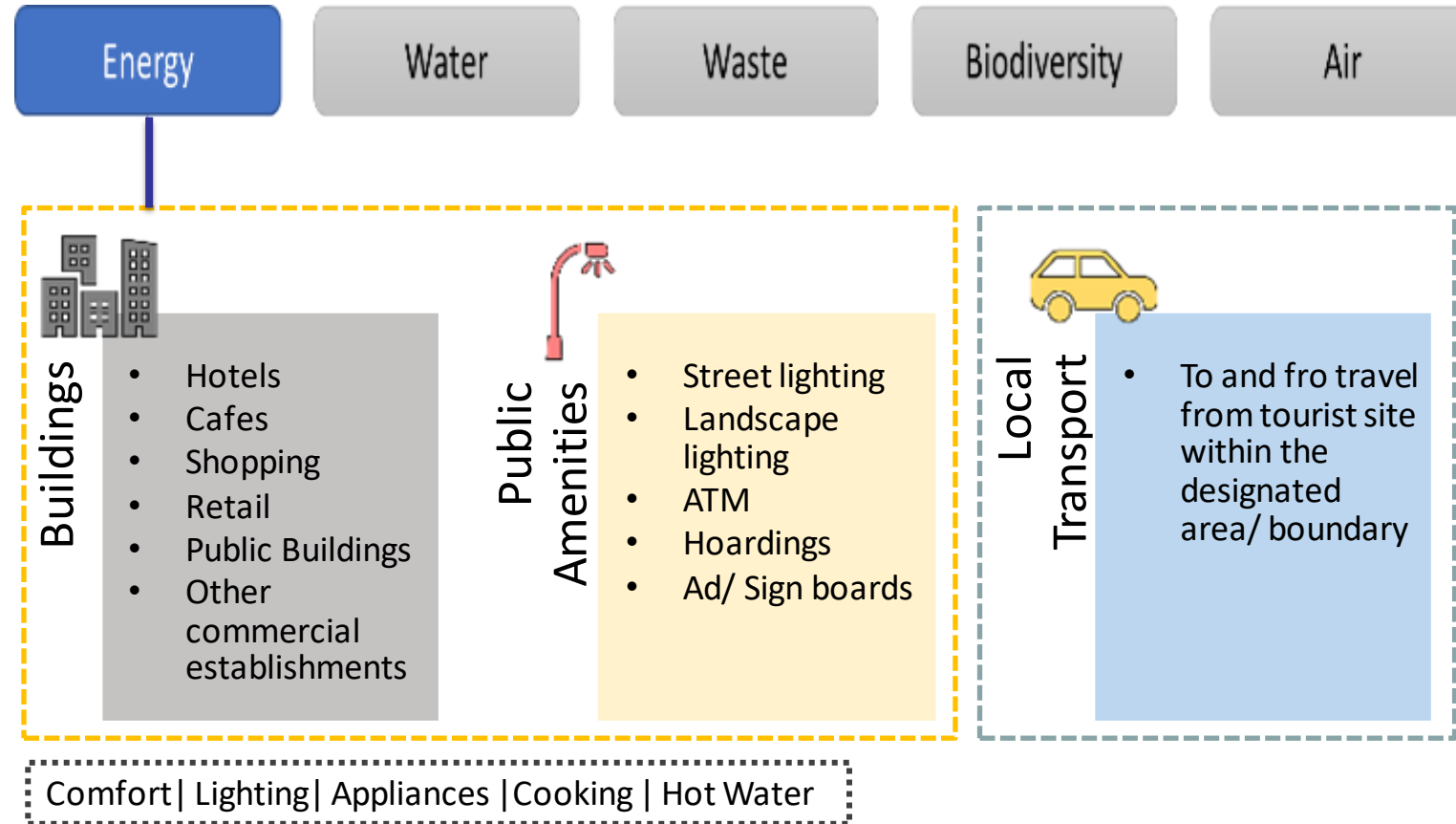
Net Zero
Energy

Scope & Intent

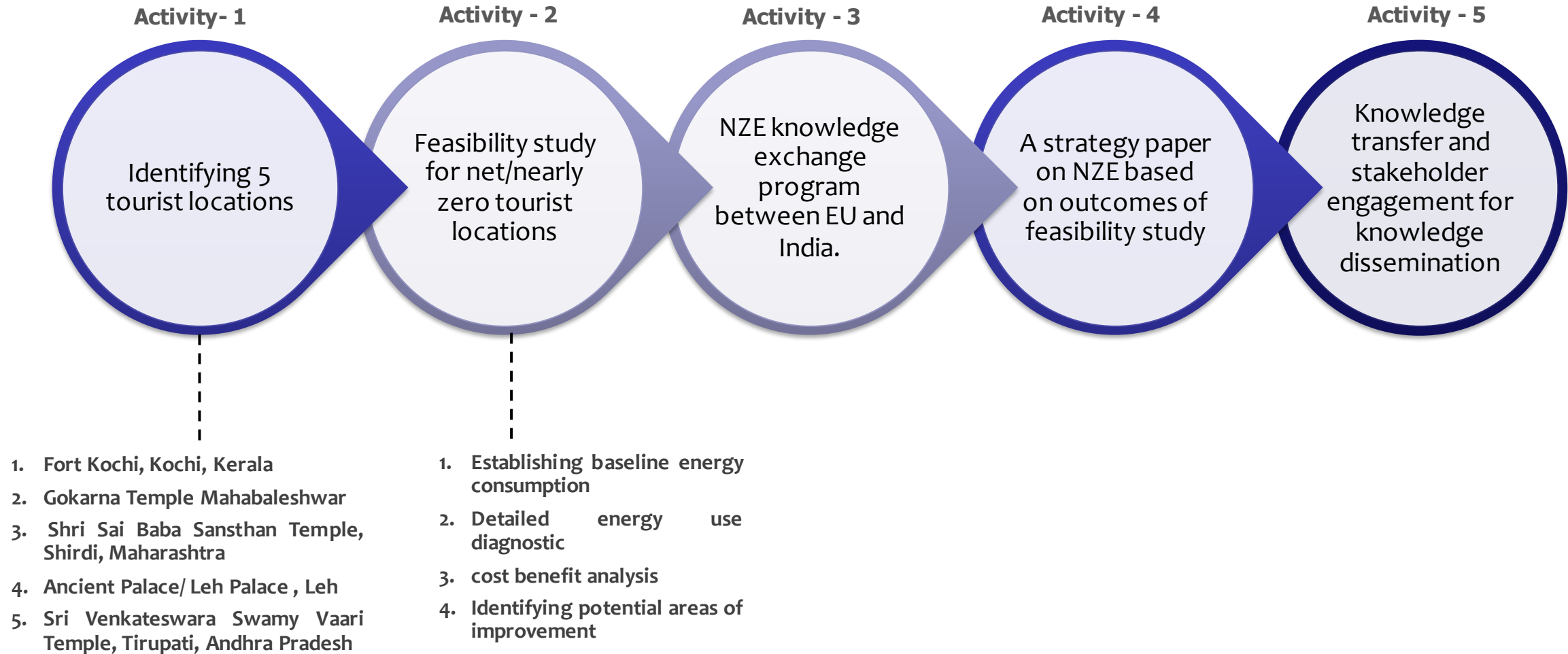
The focus of the proposed study is to provide strategy in two-folds:

1. To reduce the energy consumption of the tourist site and its surroundings to almost zero

2. Meet the remaining consumption through clean energy sources, leading towards a Net Zero Energy development



Project Approach



Selected NZE Tourist location

Gokarna Temple Mahabaleshwar



Shri Sai Baba Sansthan Temple, Shirdi, Maharashtra



Ancient Palace/ Leh Palace , Leh, Ladakh



Sri Venkateswara Swamy Vaari Temple, Tirupati, Andhra Pradesh



Fort Kochi, Kochi, Kerala



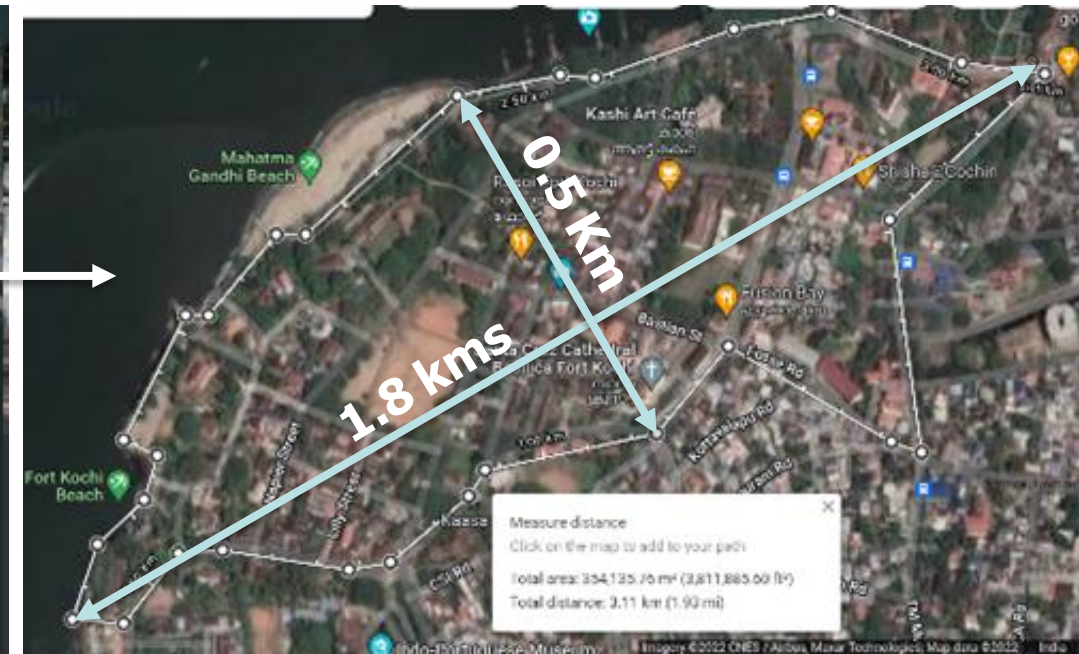
Climate:

At Fort Kochi, Surface temperatures range between 20–35 °C (68–95 °F). The current record high temperature is 38 °C; the lowest is 17 °C. Kochi falls under **Warm and Humid climate** zone.

Character:

Fort Kochi is a heritage tourist location. The houses are built in the Portuguese style of architecture, was one of the pioneering structures that paved the way for the construction of European buildings in Fort Kochi.

Site Boundary



Fort Kochi, Kerala

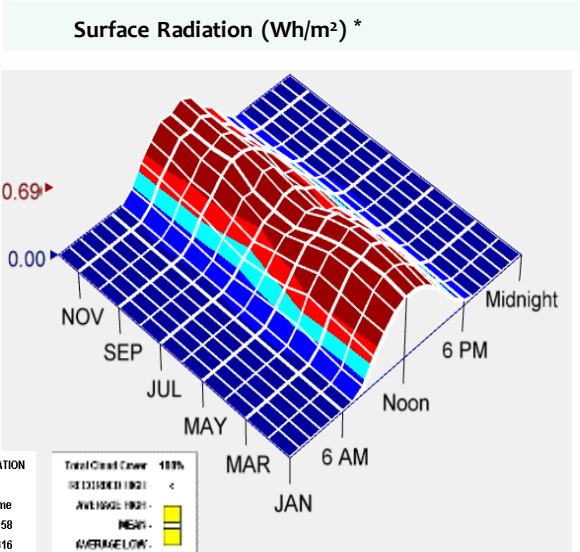
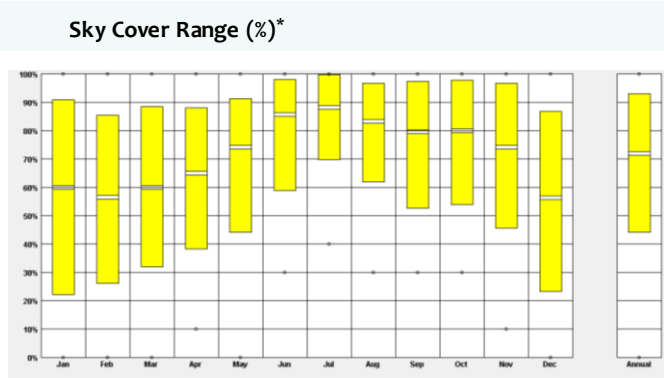
Physical Boundary and Contour Map for Fort Kochi



The perimeter of the physical boundary for fort Kochi is 3.2 km (approx.). The site is located in a low altitude, costal terrain and in an urban environment.

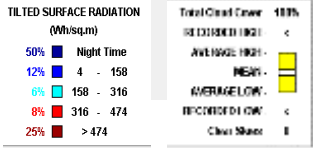
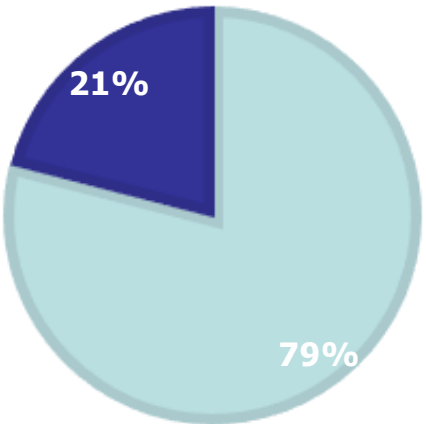


Solar PV Utilization potential for Fort Kochi



BUILDINGS CATEGORIZATION

■ Non- Residential ■ Residential



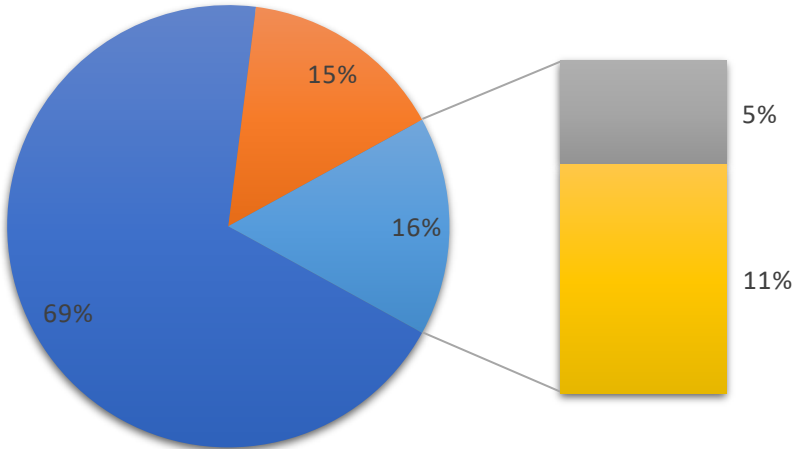
The area receives good solar radiation with surface radiation > 474(Wh/m2) for 25% of the time of the year.
The sky is mostly cloudy hence, the utilization of Solar PV can be limited.



Land use categorization



Energy Consumption pattern



■ Commercial Buildings ■ Residential Buildings ■ Public Amenities ■ Street Lights



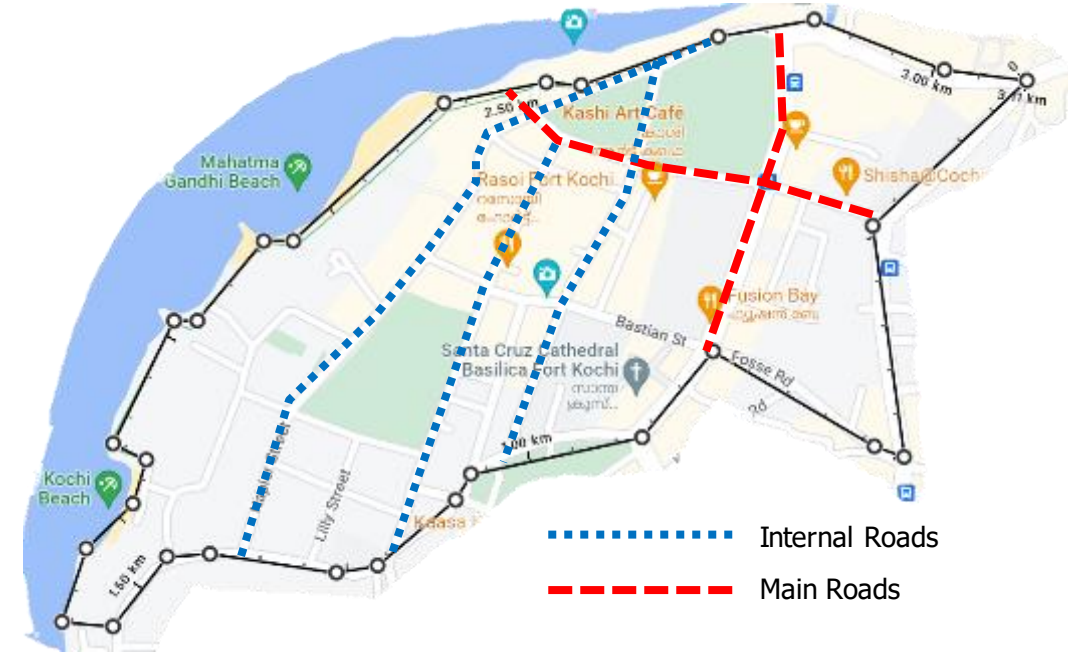
Buildings Typology



All the buildings at the site are **heritage buildings** almost **250 to 300 years old**. The buildings have **steep pitched roof** and **openings** at all sides for **cross ventilation**. The windows are with **shading devices** and **wooden screens** to provide shaded indoor spaces. Majority of the residential buildings have been converted into heritage hotels.



Mobility Pattern

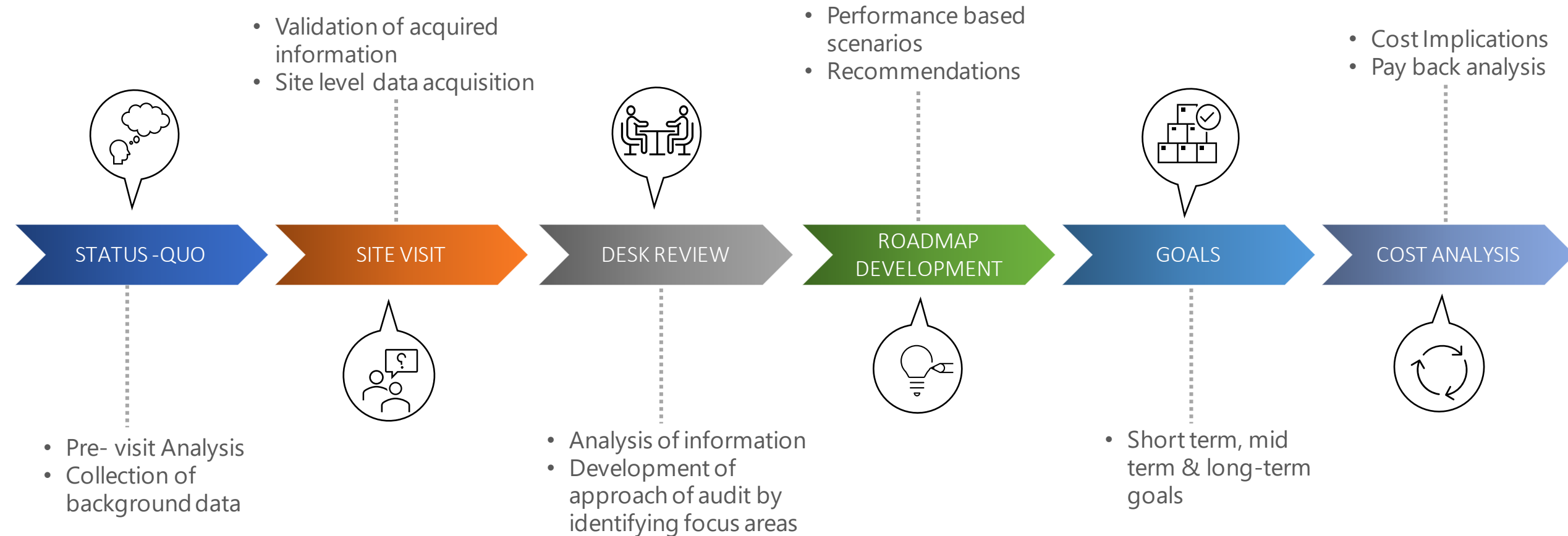


Majority of the population at site commute through **ferry** from main city to Fort Kochi. Within fort kochi local people commute through **two wheelers, cycles or cars**. Since it is a tourist site, visitors prefer **walking** or commuting through **auto-rikshaws**.

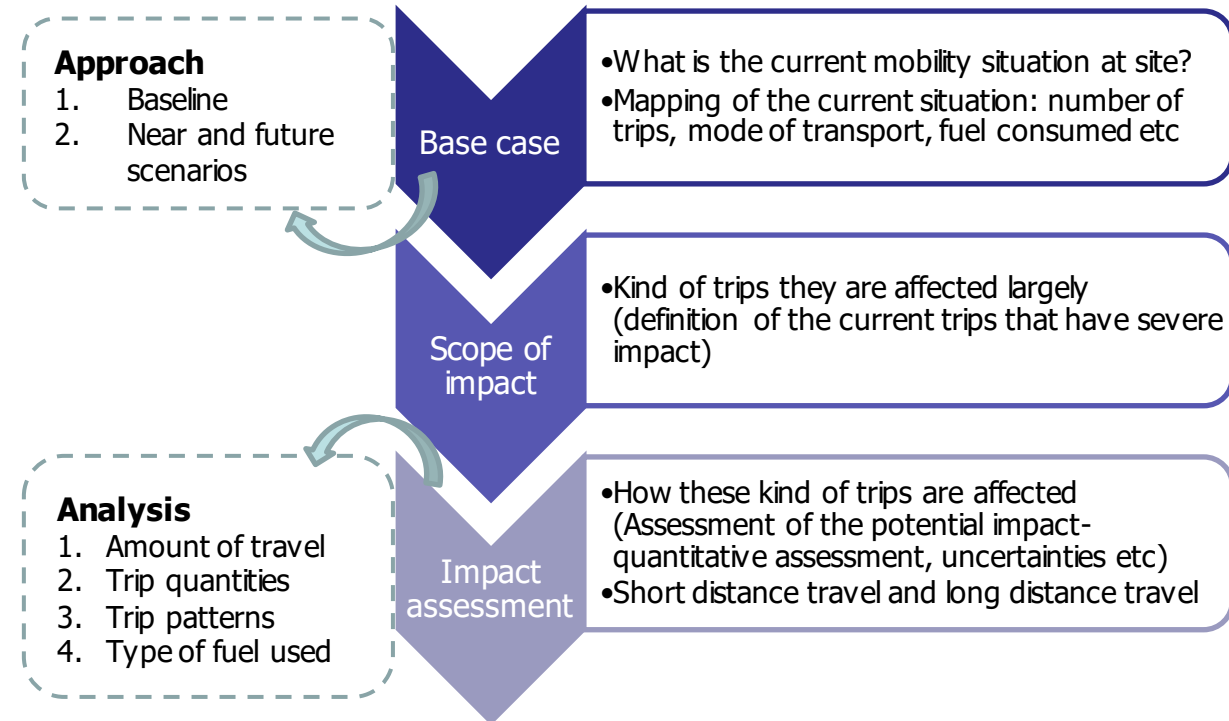
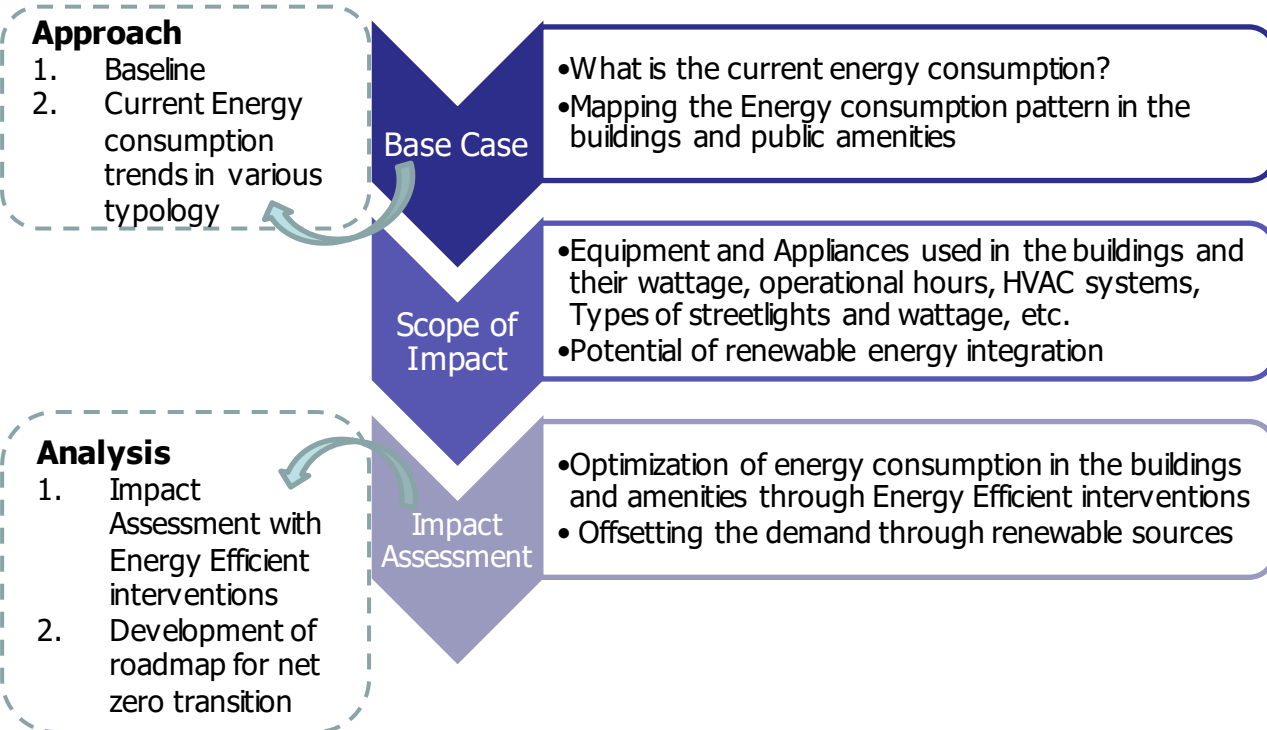
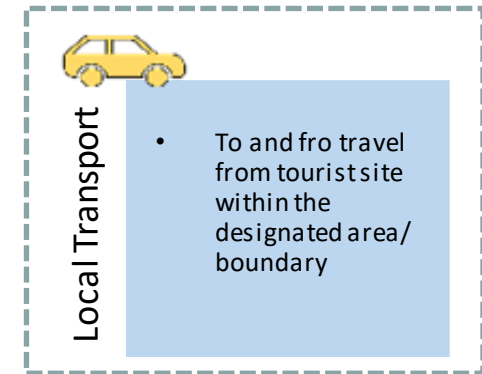
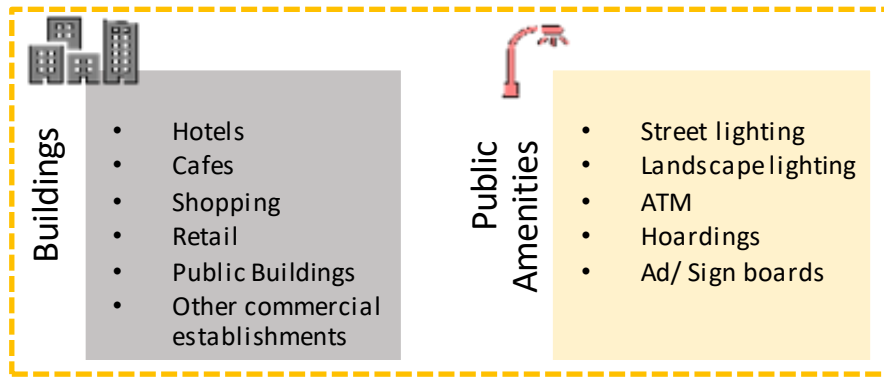


Methodology

Steps for the Conducting the study:



Analysis



Data Analytics and Output

A Mathematical model is prepared to analysis the data and generate the following outputs:

Output 1

Data analytics to understand the energy demand of all buildings and public amenities around the tourist location.

Output 2

Understanding the exiting fuel-mix scenario, for defined infrastructure.

Output 3

Identifying energy conservation measures for different building typologies, based on the data collected.

Output 4

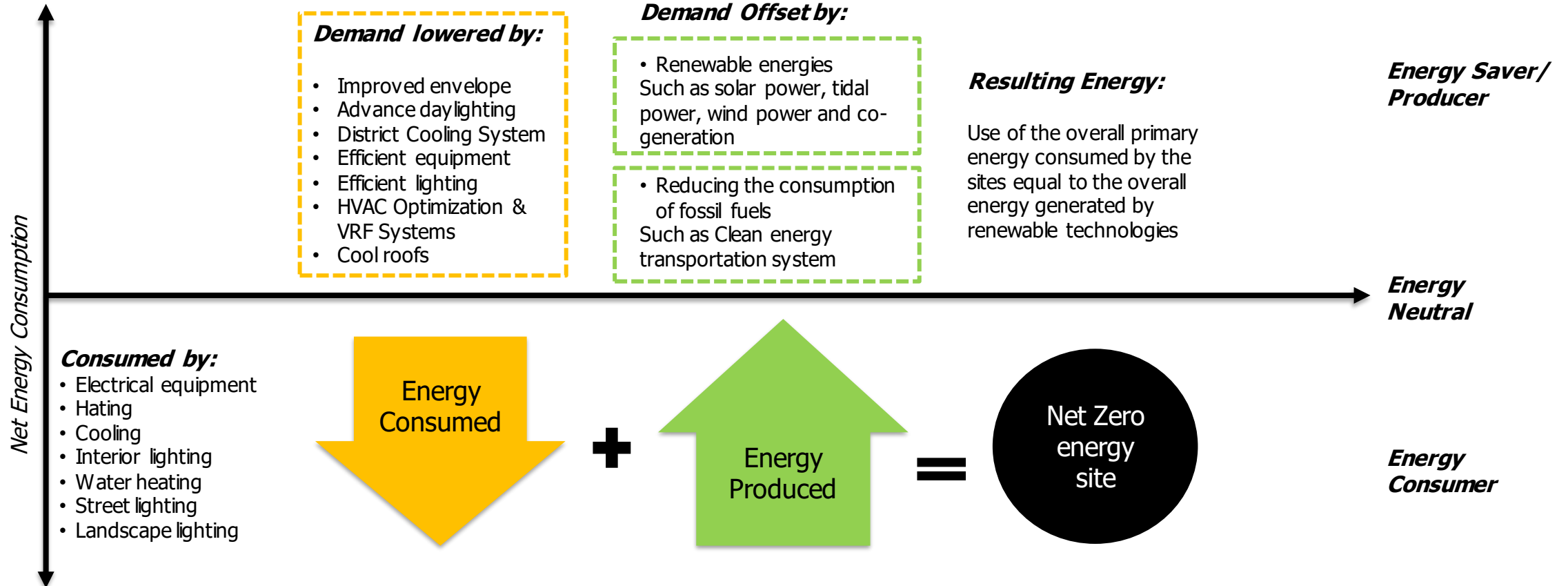
A comprehensive plan for off-setting remaining energy demand through appropriate mechanisms.

Output 5

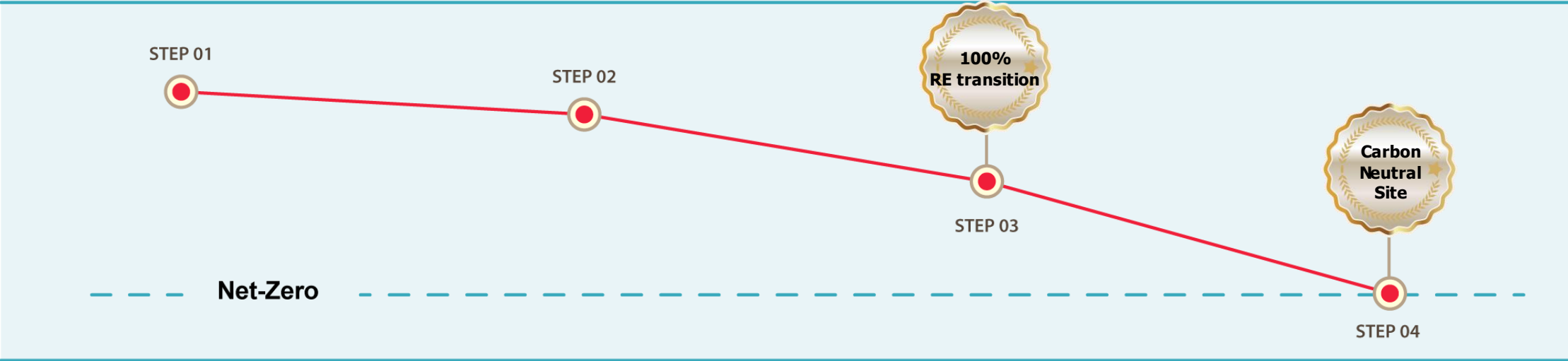
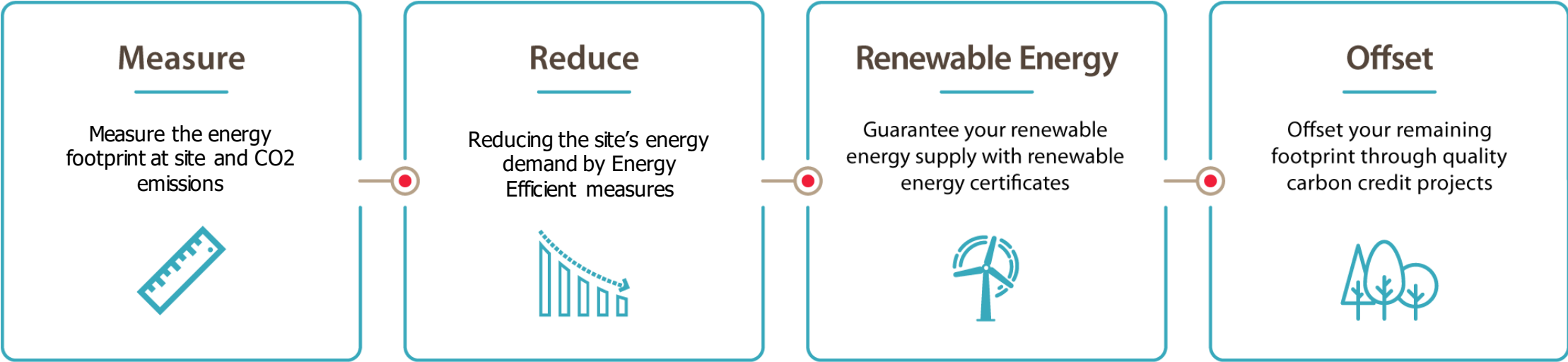
Suggesting a plan for continuous monitoring of the net zero status for the tourist location.



Strategies to achieve Net Zero



Roadmap to achieve Net Zero Energy transition



Way Forward

1. Development of net zero transition roadmap for next 30 years (by 2050)

2. National Strategy Paper for Net Zero Tourist locations

3. Knowledge Dissemination on Net Zero Sites





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Thank You

