

METHODOLOGY

The project was carried out in two phases: (i) Phase 1 included (a) transport planning area delineation, (b) stakeholder engagement, (c) secondary data collection, primary surveys of travel pattern at household level, infrastructure audit, and petrol consumption data (Figure 2); and baseline assessment based on analysing the data collected. (ii) Phase 2 was scenario development using the City Transparency Tool (CCAT) (Figure 3) and emission projection using LEAP model. The city level transport model calculations include the high economic growth projected by the Gujarat Government under VIKSIT Gujarat 2047 document.



Secondary Data Collection

Secondary data was procured in the first visit to Rajkot by meeting various officials.



Infrastructure Audit

Infrastructure audits were conducted to assess the availability and quality of the city infrastructure



Household Surveys

The household surveys enabled to understand the demographics and travel patterns of people in Rajkot



BRTS Surveys

The BRTS surveys were conducted to understand the PT usage in the city

The Phase 1 used data collected and Traffic Assessment Zones (TAZs) used by the Low Carbon Mobility Plan, 2014.

Scenario development and emissions modelling formed the analytical core. The City Climate Analysis Tool (CCAT) was used to project urban growth, vehicle-kilometres-travelled (VKT) and per-capita travel distances across modes, incorporating socio-economic and land-use assumptions. The Low Emissions Analysis Platform (LEAP) was used to estimate energy use and pollutant emissions (CO₂, NO_x, PM_{2.5}). Five scenarios were modelled—Base Year (2023), Business-as-Usual, Enhance, Avoid & Retain, Shift, and Improve—each reflecting different combinations of land-use policy, service improvements, demand-management and technology uptake. The 2050 scenario should align with the 'Viksit Gujarat 2047' vision and India's commitment to achieve net-zero by 2070. It is equally important to understand local and contextual conditions.

Baseline Travel Characteristics

Overall, Rajkot's income-based mobility pattern is characterised by high dependence on two-wheelers, declining walking shares with rising income, minimal public transport usage, and longer trip distances for higher-income groups. These patterns underscore the need for improved public transport coverage, enhanced NMT networks, and targeted interventions to provide safe and affordable mobility options for low-income households.

Figure-2 Area wise Mode share, 2024

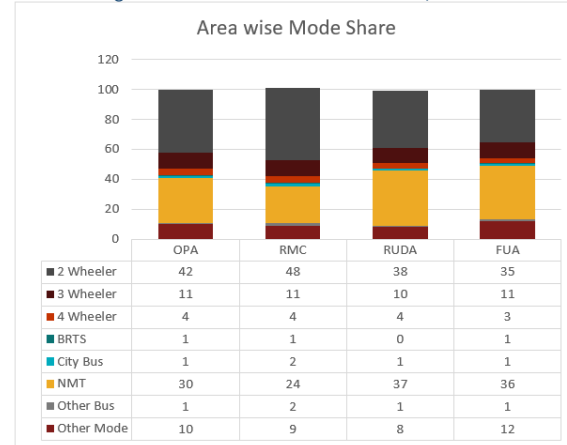


Figure-3 Mode share by Income Group, 2024

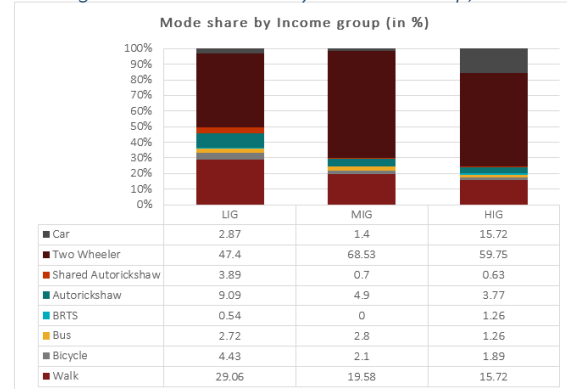


Figure-4 Trip length by Income Group, 2024

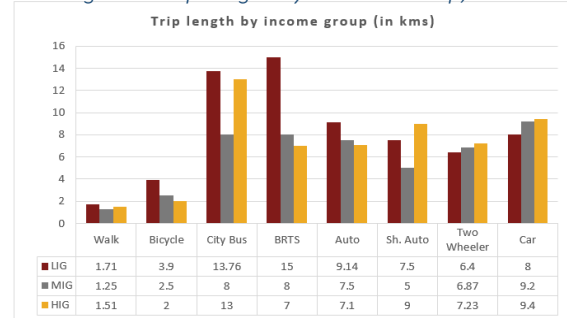


Figure-5 Average trip length across trip purpose, 2024

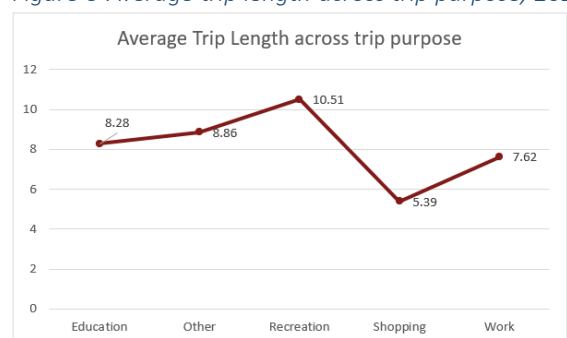
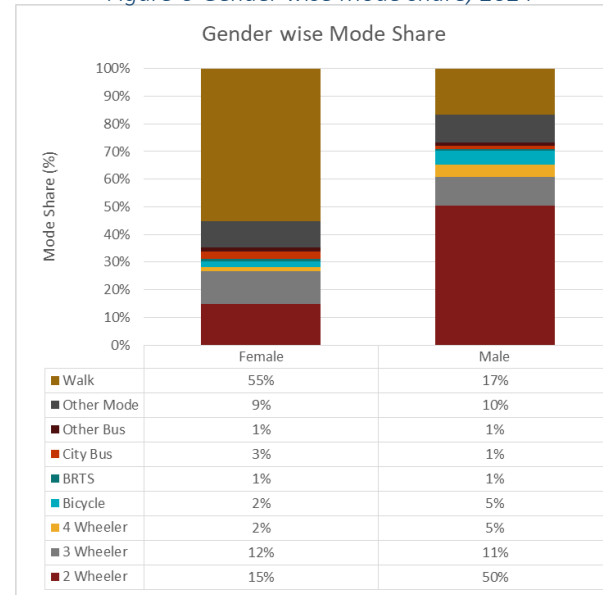


Figure-6 Gender wise Mode share, 2024



Action Plan Using ERASI Framework

Enhance Women's workforce participation

Safe commuting access

Affordable transport access

First-last mile connectivity

User-centric PT design

Retain Compact urban form

Higher FSI development

Zoning modifications

Integrated land use

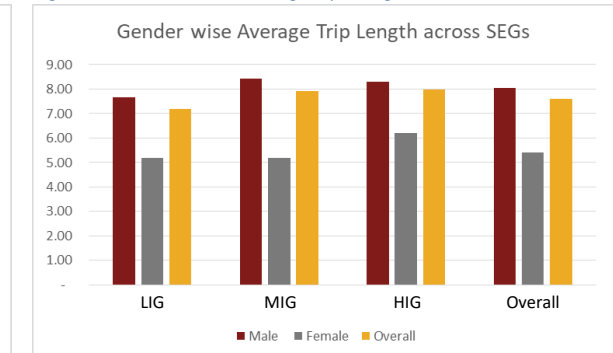
Comprehensive NMT network

Transit-oriented housing

High-density corridors

Avoid peripheral mono-functionality

Figure-7 Gender wise Avg trip length across SEGs, 2024



Private motorized modes concentrated among Male: 2W 50%, 4W 5% (women: 2W 15%, 4W 2%).

Female's trips are predominantly short-distance: Walking forms 55% of trips (men: 17%).

Higher reliance on shared/public modes among females: PT 4% and 3W 12% (men: PT 2%, 3W 11%).

Shift TOD influence zone

Arterial road expansion

Future urban roads

Public transport coverage

Universal footpaths

Dedicated cycle lanes

Improve & Eliminate PT-IPT electrification

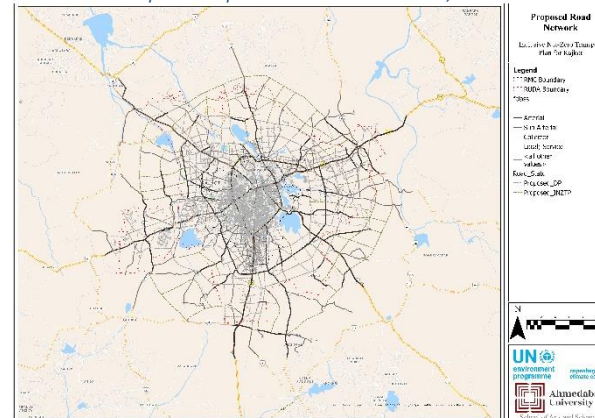
Charging infrastructure network

ITMS deployment

Cleaner fuel adoption

Sequestering CO₂ emissions

Map-2 Proposed Road Network, 2050



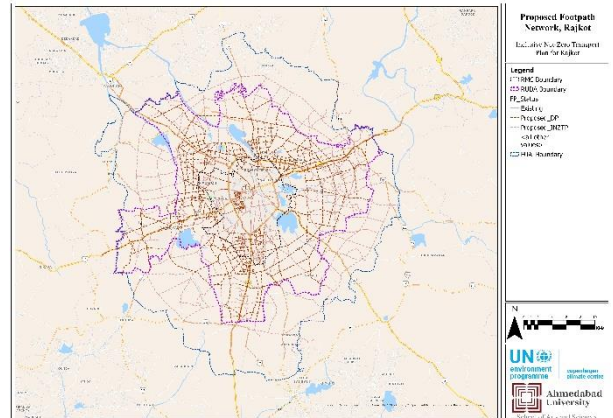
Existing road network: 2,908.45 km

BAU: DP 2031 proposed road length of 479.14 km

Shift: proposed roads: 251.72 km

Shift: road enhancement: 73.74 km

Map-3 Proposed Footpath Network, 2050



Existing Footpath network: 82 km 10.7

BAU: DP 2031 proposed footpath network length of 915 km

Shift: proposed network: 990 km