In the city, sustainable modes of transportation account for more than 60% of all commuting trips; walking and cycling comprises 48% of trips and public transportation accounts for 14% of trips, including intermediate public transport (IPT). The city has a bus rapid transport and an urban bus system to reach from one place to another, using public transport. Apart from that, the motorcycle is considered the most preferred private mode for travelling by the city’s population. The issues related to traffic jams and rising pollution are reaching worse levels, due to the surge in private modes of transportation. Despite this, the city is making efforts to transition to electric mobility in both private and public transport modes.

1 Low Carbon Comprehensive Mobility Plan, Rajkot 2014
2 CapaCITIES Project- Rajkot GHG Emission Inventory, 2020
3 Gujarat State Pollution Control Board
BUS SYSTEMS OUTLOOK

Bus Trips Features

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of bus trips</td>
<td>21,323 BRT</td>
<td>14,751 BRT</td>
</tr>
<tr>
<td></td>
<td>33,933 Non-BRT</td>
<td>21,569 Non-BRT</td>
</tr>
</tbody>
</table>

Average time

- **30 min** BRT
- **—** Non-BRT

Average distance

- **217 km** BRT
- **166 km** Non-BRT

Only three percent of the bus trips out of the total trips have been used by commuters to serve their travel needs within the city. Although, people belonging to all the different age groups use buses as a mode of transport for end to end connectivity and to reach activity nodes of the city. The trips using the city bus service which runs through the major part of the city are more, compared to the trips by buses operating in the bus rapid transit network. On average, buses in the bus rapid system take around half an hour to complete their trips, while trip by city bus service takes more time to reach their destination.

Fleet and Infrastructure

Number of buses: 139

Number of bus routes:

- 1 BRT
- 45 Non-BRT

18 BRT bus stops

495 Non-BRT bus stops

3 Bus depots

Buses by fleet type

- Minibus, 35%

Buses by fuel type

- Electric Battery, 35%
- Standard Bus, 65%
- Diesel, 65%

Quality of Service

Bus transport is convenient and connects all the major origin and destination points of the city. The buses reach up to fringe areas and cover the core of the city. The existence of bus rapid transit routes which run on a dedicated corridor make travel faster and passengers reach their destination on time. However, city buses use the shared carriageway, thus facing jams during peak hours that delays travel time by 10–15 minutes on these routes. The fare structure is considerably affordable to all sections of society. Passengers are, though, inconvenienced during peak hours because of overcrowding in the buses. Even so, due to GPS tracking and cameras, buses are safe for all categories of people.

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Rajkot Rajpath Limited (RRL) is a special purpose vehicle incorporated by Rajkot Municipal Corporation, which is responsible for providing an efficient public transport system in the city. The buses are operating on the Gross Cost contract model and Rajkot Rajpath Limited pays per km cost, including the maintenance of buses to the private operators. The Rajkot Rajpath Limited and Rajkot Municipal Corporation are responsible for the construction and maintenance of bus stops. The investment for procuring buses and other infrastructure is from the State Government through multiple schemes and through the Central Government FAME-II scheme. The revenue from fare collection has been used as operational cost and subsidy from the State Government for electric buses supported the electrification of public transport in the city.

With the divided responsibilities, the public sector owns the bus fleet and the private sector is responsible for the operation and maintenance of the buses via public concession. The ownership of the fleet will remain with Rajkot Rajpath Limited after the end of the contract.

**Existing Business Model**

- **Model A:** Vertically integrated, private operator in BRT/integrated system
- **Model B:** Divided responsibilities in BRT/integrated system
- **Model C:** Large, more formal, private operator in traditional service
- **Model D:** Small, informal, private operator in traditional service
- **Model E:** Government-run system

_B_ With the divided responsibilities, the public sector owns the bus fleet and the private sector is responsible for the operation and maintenance of the buses via public concession. The ownership of the fleet will remain with Rajkot Rajpath Limited after the end of the contract.

**E-BUS ADOPTION APPROACH**

- **August 2019**
  - 50 electric buses sanctioned under FAME-II Scheme of Govt. of India
- **September 2019**
  - 1st Tender of 50 e-buses was floated
- **April 2021**
  - First batch of e-buses delivered to Rajkot Rajpath Limited by PMI
- **July 2022**
  - Second contract for 100 e-buses awarded to PMI
- **August 2019**
  - Airport Authority of India funded INR 12.50 crores under its CSR Initiatives
- **February 2021**
  - 2nd Tender of 100 e-buses was floated
- **October 2021**
  - First service of e-buses initiated

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4 Based on Accelerating a market transition in Latin America: New business models for electric bus deployment, P4G, Zebra and Dalberg, 2020
E-bus Fleet Technical Features

Number of e-buses
48 (PMI, model Lito)

Passenger capacity
30 pax

Battery features
Capacity 102 kWh
Range 150 km/charge

E-bus Business Model

Rajkot Rajpath Limited (RRL) is responsible for running electric buses in the city. The RRL pays per km cost under the Gross Cost model to the private company PMI India for operating and maintaining the electric buses. The fare is collected by conductors provided by the operator through an electronic ticketing machine. There is support from the National and State government through multiple schemes to cover the cost of buses. The decision regarding fares, routing and scheduling has been taken by Rajkot Rajpath Limited.

Opportunities and Challenges to Scaling E-Bus Fleets

Opportunities

- The subsidy under the Chief Minister Urban Bus Service Scheme for the operation of electric buses, has reduced the cost of operation substantially as it offers INR 25 per km for the operation of buses.
- There are bright opportunities to switch to public transport, especially, since according to LCCMP Rajkot, electric buses should account for more than 20 percent of buses in the share of public transport, even though buses account for a mere 3 percent share of public transport.
- Previous deployment of electric buses and lower operating costs than Internal Combustion Engine buses offer potential to increase the proportion of e-buses in public transport.

Challenges

- Due to supply shortage, lack of technical and operational knowledge on electric buses among private operators makes them feel at risk about this technology. So, strengthening of the electric bus fleet is a challenge for the city.
- The transition to private modes due to changes in people’s perception towards using public transport buses is posing a threat to public transportation, and as a result, electric buses.
- Due to the lack of a long term financial roadmap for electric buses, it is tough for private players to take up the electric buses confidently.

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About the TUMI E-Bus Mission

Funded by the German Ministry for Economic Cooperation and Development (BMZ), a core group of organizations supports cities in their transition toward electric bus deployment. For more information please contact: tumi-network@iclei.org or visit https://sustainablemobility.iclei.org/tumi/