

CITY FEATURES

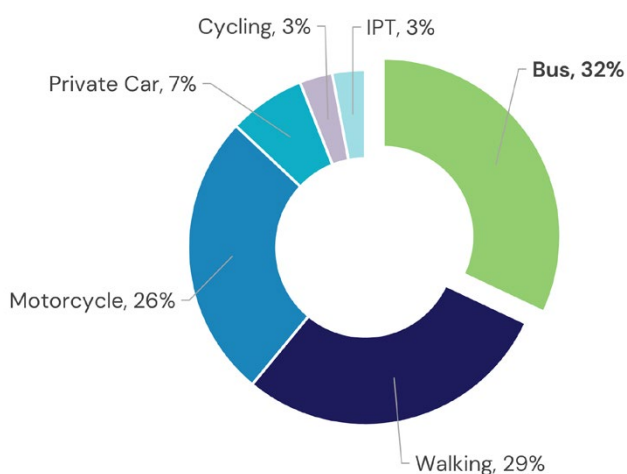


Bhopal, the capital of the state of Madhya Pradesh in India, is a fascinating amalgamation of scenic beauty, old historic flavor and modern urban planning. It is very well connected to all corners of the country. Bhopal is known as “City of Lakes” for its various natural and artificial lakes with two major lakes named as The Upper and Lower Lake. The existence of 14 perennial lakes and water bodies in Bhopal makes it conspicuous. The city ranks as one of the greenest cities in India. The city has emerged as a multifunctional regional hub of socio-political and economic activities. Bhopal has a strong economic base with numerous large and medium industries operating in and around city areas like IT Park, Manideep, Govindpura, among others, as well as the Pilukhedi industrial area.

	Population		Land area		Average temperature
	2.123 millions (2021)		413.85 km²		33.8°C

TRANSPORT FEATURES

Modal Split¹



GHG Emission Levels²



Air Pollutant Levels³

PM 2.5	46.02 µg/m³	NO ₂	27.75 µg/m³
PM 10	117.08 µg/m³	SO ₂	22.27 µg/m³

The city of Bhopal provides the urban bus system and Bus Rapid Transit system (BRT) as public transport options for commuters. The city is known to have one of the successful BRT systems in the country. Walking and cycling account for 32 percent of commuters in the city. Under motorised private modes, the two-wheeler is one of the predominant transportation modes in Bhopal, accounting for 26% of trips. The per capita trip rate (PCTR) is observed to be 0.96, excluding the intra-zonal trips. With the rapid increase in the population of the city, it is observed that there is an increase in the share of private vehicles in the city.

1 Bhopal City Link Limited

2 Climate Change and Environment Action Plan of Bhopal District, 2022

3 Central Pollution Control Board, Delhi

BUS SYSTEMS OUTLOOK⁴

Bus Trips Features



Number of bus trips (ridership)

2019 BRT+City Bus 126,000	2022 BRT+City Bus 162,000
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Average time
80 min



Average distance
192 km

Nearly 32 percent of city commuters use public transportation, which includes city bus and BRT services. Last year, around 162,000 trips per day were taken by passengers using public transport buses. The city bus service covers all the major origins and destinations, which includes commercial centers and other market areas in the city. It also covers 4 railway stations and 5 bus depots in Bhopal along with prominent central government institutions like AIIMS, Indian Institute of Science Education and Research, and other central educational institutions. The nature of bus users is regular and captive. Bus trips are performed for various purposes, like for work, education, shopping and social purposes.

Fleet and Infrastructure



Number of buses
368

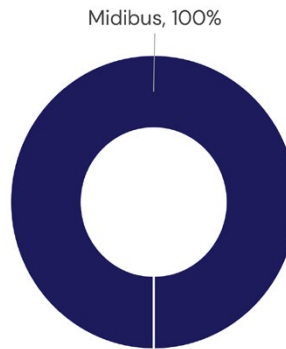


Number of routes
22

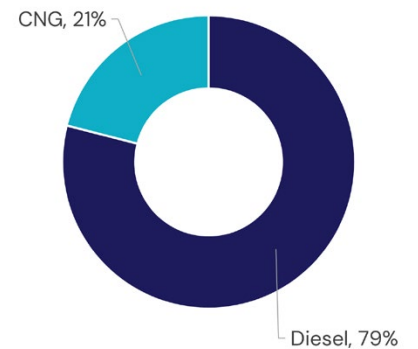


360 bus stops
5 bus depots

Buses by fleet type



Buses by fuel type



Quality of Service

The city bus service including the Bus Rapid Transit service covers the municipal and the peri-urban area (upto 25 kilometers outside adjoining the Municipal boundary) of Bhopal. The BRT system has a dedicated corridor and usually runs on time, while the city bus service runs on a shared carriageway. In core city areas, dense development and encroached roads resulted in traffic jams that cause each journey to extend over the normal scheduled time by 15 minutes. The city bus service offers pocket-friendly fares which start from INR 07 and is considered an affordable price for every commuter. Although the travel is comfortable, buses are overcrowded during peak times and rush hours. The BCLL also provides a subsidised pass system for regular commuters along with a real time tracker and e-transaction through the mobile application. Women, children and senior citizens can ride the buses conveniently. The buses also have reserved seats for women, handicapped and elderly people.



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4 Bhopal Citylink Limited, Bhopal

Existing Business Model⁵

A

Model A: Vertically integrated, private operator in BRT/integrated system

B

Model B: Divided responsibilities in BRT/integrated system

C

Model C: Large, more formal, private operator in traditional service

D

Model D: Small, informal, private operator in traditional service

E

Model E: Government-run system

B

Bhopal City Link Limited (BCLL) as a public sector company, is responsible for the operation of bus transport in Bhopal city. The buses are operated on a Gross Cost Contract (GCC) model and Net Cost Model (NCC) and the amount leftover is covered through Viability Gap Funding (VGF). The ownership of the fleet is with the operator till the contract period. The construction and maintenance of Bus Queue Shelters are on the PPP model (BOOT) against advertisement rights and transferred to BCLL after the contract period. BCLL put it on for advertisement model after taking over from a private agency. The financing of buses and other infrastructure through grants and budgetary allocations are given by the state and central government to BCLL. The collection of fares and advertisement revenue has been used for the operational cost of public transport buses.



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⁵ Based on Accelerating a market transition in Latin America: New business models for electric bus deployment, P4G, Zebra and Dalberg, 2020

OPPORTUNITIES AND CHALLENGES FOR ADOPTION OF E-BUS FLEETS



Opportunities

- With a high public transport share of 32 percent in the city, people are happy to use buses to commute, which can be enhanced with better service and user friendly infrastructure combined with improved real time information in the electric bus system.
- Bhopal is yet to introduce electric buses in the city bus service. It is a great opportunity to plan activities from scratch like depot upgradation, charging infrastructure and better route planning, so that the system can be more efficient.
- The city has a well spread base network of bus routes and it will help BCLL in identifying the priority routes for the electrification of city bus services, based on characteristics and ridership on these routes.



Challenges

- Private operators cannot afford to switch to electric buses due to the hefty capital cost. FAME-II like schemes needs to be extended to facilitate the switch to electric buses because it reduced the capital cost of procurement and assisted the authorities.
- Lack of trust among the private operators due to less technical and operational competencies related to electric buses makes them feel less confident to adopt this technology.
- The lack of skilled manpower and technological awareness of charging infrastructure among depot officials creates difficulties in setting up a depot for electric buses and acts as an obstacle in the transition process for operation of electric buses.



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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/>