

## CITY FEATURES



The Metropolitan District of Quito (DMQ) is the capital of Ecuador. The city is located around 2,850 masl. The majority of the population (72%) resides in the area within Quito, called macro centrality. This area has a very high concentration of urban facilities and services. However, in recent years, there have been urban expansions toward the eastern direction of the city. The economic activities are diverse and there are companies dedicated to textiles, handicrafts, supermarkets, hardware stores, and the automotive industry. Tourism has flourished with investments in the city’s historic center and other tourist attractions. Due to this influx, there is a high number of trips taking place, which needs to be taken care of when planning mobility solutions.



Population  
**2,781,641**  
 (2013)



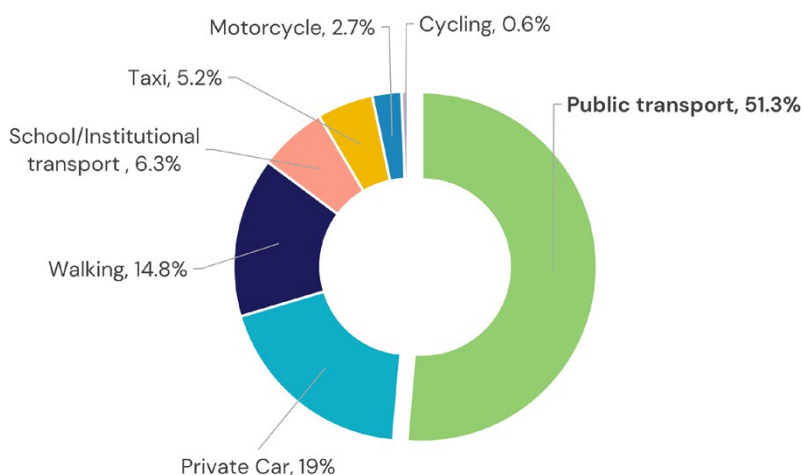
Land area  
**4,230 km<sup>2</sup>**



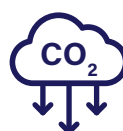
Average temperature  
**15.6°C**

## TRANSPORT FEATURES

### Modal Split<sup>1</sup>



### GHG Emission Levels



Total GHG emissions  
**5.1 million tCO<sub>2eq</sub>**  
 From road transport  
**3.01 million tCO<sub>2eq</sub>**

### Air Pollutant Levels<sup>2</sup>



|        |                              |                 |                              |
|--------|------------------------------|-----------------|------------------------------|
| PM 2.5 | <b>13.6 µg/m<sup>3</sup></b> | NO <sub>2</sub> | <b>19.3 µg/m<sup>3</sup></b> |
| PM 10  | <b>34.1 µg/m<sup>3</sup></b> | SO <sub>2</sub> | <b>2.9 µg/m<sup>3</sup></b>  |

The city has a well connected public transport network with multiple bus services. More than 50 percent of trips have been performed using public transport. Due to the pandemic, the use of private vehicles has increased, which has led to a decrease in commuters using public transport in the city. Several regulatory measures came into force for the improvement of the quality of the public transport service. The Energy Efficiency Law for electric vehicles and the implementation of Ordinance O17/2020 aim for the configuration of the Metropolitan Passenger Transport System by integrating the physical, fare and operational elements of public transport subsystems.

1 Origin Destination Survey, 2023

2 Quito Metropolitan Atmospheric Monitoring Network

# BUS SYSTEMS OUTLOOK

## Bus Trips Features



Number of bus trips  
**3,260,000 (2019)**  
**2,608,000 (2020)**



Average time  
**60 min** (conventional)  
**77 min** (BRT)



Trips by gender  
**Men 47%**  
**Women 53%**



Average distance  
**—**



Trips by purpose  
**Work 30%**  
**Study 25%**  
**Errands 24%**  
**Recreation 10%**  
**Shopping 6%**  
**Health 1%**  
**Others 4%**

More than half of the city's residents use public transport to go to work or for study purposes. The average travel time on conventional buses is 60 minutes and it takes 77 minutes on the bus rapid transit (BRT) service. A large number of administrative and commercial institutions are concentrated in the center of the city and generate a large number of trips due to the presence of such major activity areas. This leads to issues such as increasing congestion, accident rates, travel time and others.

## Fleet and Infrastructure



Number of buses  
**3,220**

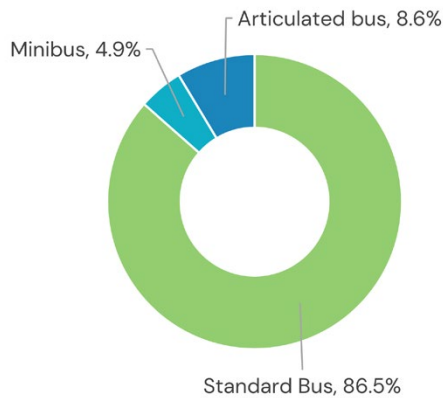


Number of bus routes  
**248**

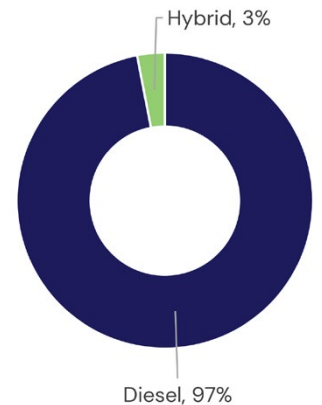


**6000** bus stops  
**155** bus depots

Buses by fleet type



Buses by fuel type



## Quality of Service

The network of different bus routes has good coverage and also reaches the city's disadvantaged areas but has low service quality. The bus fare is affordable for the majority of the population. The bus service usually runs at the scheduled time and their frequency during the day and night varies depending on time and sector. It has been observed that generally, the bus runs at 70 percent of its capacity although, that varies on particular times and routes. So, travelling in the bus is considered comfortable, except during peak hours, when it gets a little uncomfortable. However, the transfer time is considered acceptable by the commuters. It is relatively safe and accessible for women, children, and the elderly to use the bus system, however, this may not be considered the case during peak hours.



## Existing Business Model<sup>3</sup>

The municipality is responsible for setting the route, fares and schedules. It also offers subsidies, tax exemption on spare parts, rolling stock and fuel subsidy.

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

**A** There are 4 BRT corridors, two of which are operated by the Empresa Pública Metropolitana de Pasajeros (the articulated fleet is owned by this company and the bi-articulated fleet was acquired by the municipality and given on loan for its useful life), and the other two are operated by private companies. The operation by private companies is carried out by means of an operating contract that defines the characteristics of the operation. The fare is defined by the Metropolitan Council.

**B** In conventional and integrated transportation, it has a corridor operated by private operators. In the same way, the contract regarding the operation defines the characteristics of the operation. The contract specifies that the private operator is in charge of providing the rolling stock, as well as the maintenance of the stops, which are municipal property. The Metropolitan Council is responsible for defining fares.



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## E-BUS ADOPTION APPROACH

2020

Study on the purchase and feasibility of the implementation of electric buses

2023

Implementation of at least 10% of the fleet per route with electric buses

2022

Market study for the purchase of 26 fully electric trolleybuses (overhead contact line plus battery)

2023

Consulting contract regarding the implementation of an electric public transport project is in analysis phase

<sup>3</sup> 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 (pilot project)

1 Type A  
(BYD, K9G)

1 Type B  
(BYD, K11A)



### Passenger capacity

Type A  
90 pax

Type B  
160 pax



### Battery features

Type A  
Capacity **324 kWh**  
Range **250 km/charge**

Type B  
Capacity **438 kWh**  
Range **250 km/charge**

## E-Bus Business Model

The bus operators are the ones who own and operate the system and charge the fee. The municipality is responsible for maintaining the infrastructure (stops, streets), regulating and supervising the system. It also offers subsidies such as tax exemption on spare parts, rolling stock and fuel subsidies. The main problem is the lack of common funds at the district level and among the operators, along with the presence of informal transport.

## Opportunities and Challenges to Scaling E-Bus Fleets



### Opportunities

- The Quito 2020 Climate Change Action Plan mentioned an action to promote the progressive replacement (2025–2040) of the public bus fleet with zero emission technology.
- The Energy Efficiency Law has specified that as of the year 2025, all the vehicles that are incorporated must only be electric.
- National Electromobility Strategy for Ecuador 2021 seeks to contribute to the decarbonization and sustainable transport.
- The city planned to have a new BRT Corridor called “Labrador – Carapungo”, operated by electric units (trolleybuses or 100% electric buses) in 2024.
- The city aims to have 100% zero-emission public transport by 2040.



### Challenges

- One of the biggest limitations during the bidding process is that the contracts do not have the budgetary certification to face the investment, therefore, there are still weaknesses in financial matters. The problem is that the gap between the social tariff determined by authority and the technical one is very large. That deficit is not covered by any institution or fund. There is still missing a regulatory framework to close these gaps for advancing the adoption of electric buses.

### Acknowledgements

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### Publisher

ICLEI – Local Governments for Sustainability. e.V. © 2023  
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The publication should be cited in full as: “ICLEI – Local Governments for Sustainability (2023). TUMI E-bus Mission City Network – Profile: San Francisco de Quito, Ecuador. Bonn, Germany”.

### 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](mailto:tumi-network@iclei.org) or visit <https://sustainablemobility.iclei.org/tumi/>



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