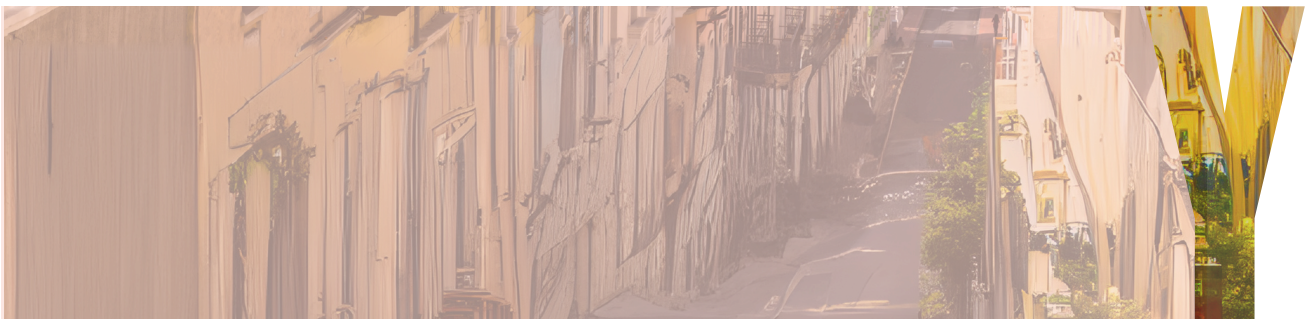
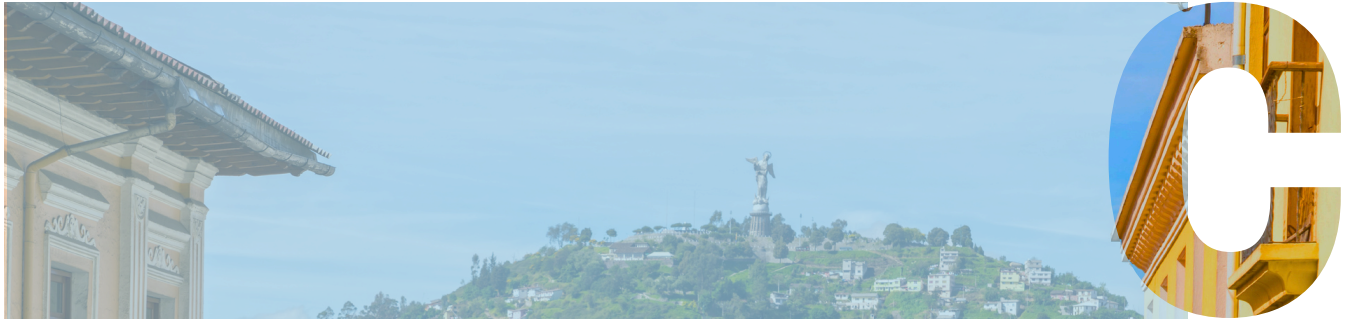


# SAN FRANCISCO DE QUITO



## 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<sup>1</sup>  
2,679,722  
(2022)



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



Average temperature  
15.6°C

## TRANSPORT FEATURES

### Status quo and urban mobility trends

The city has a well-connected public transportation network with multiple bus services. More than 50% of trips are made using public transport. However, due to the pandemic, private vehicle use has increased, leading to a decline in public transport users. Several regulatory measures have been implemented to improve service quality. The Energy Efficiency Law, the Energy Competitiveness Law for electric vehicles, and the enforcement of Ordinance 017/2020 aim to structure the Metropolitan Passenger Transport System by integrating the physical, fare, and operational elements of public transportation subsystems.

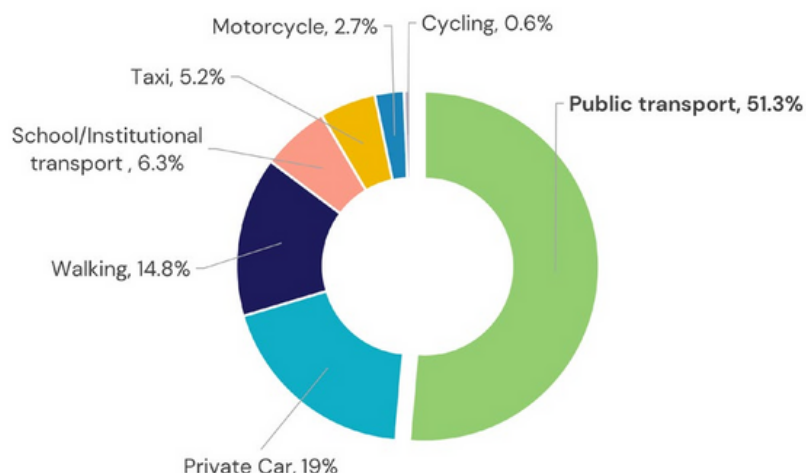


<sup>1</sup> Ecuador Instituto Nacional de Estadística y Censos (INEC), 2022.

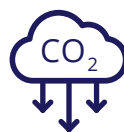


## TRANSPORT FEATURES

### Modal Split



### GHG Emission Levels



Total GHG emissions

**7,6 million tCO<sub>2eq</sub>**

From road transport

**3,01 million tCO<sub>2eq</sub>**

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



PM 2.5

**13,6 µg/m3**

NO<sub>2</sub>

**19,3 µg/m3**

PM 10

**34,1 µg/m3**

SO<sub>2</sub>

**2,9 µg/m3**

Quito's transportation system is dominated by public transit, which accounts for 51.3% of all trips. Private vehicles make up 19%, while walking represents 14.8% of trips. The city's air quality ranges from "Good" to "Moderate"<sup>3</sup>. The main sources of emissions are energy, transport, waste, and AFOLU (Agriculture, Forestry, and Other Land Use)<sup>4</sup>. Total greenhouse gas emissions are 7.6 million tCO<sub>2eq</sub>, with road transport contributing 3.01 million tCO<sub>2eq</sub>. Efforts to improve public transport efficiency and promote sustainable mobility are crucial for reducing emissions and enhancing air quality in the city.

### 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%**



Trips by purpose

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



The network of bus lines has good coverage and reaches disadvantaged areas of the city, but service quality is low. Bus fares are affordable for most of the population. Buses generally run on schedule, with frequency varying by time of day and location. On average, buses operate at 70% capacity, though this depends on the time and route. Traveling by bus is considered comfortable except during peak hours when it can be crowded. Transfer times are generally acceptable. The system is relatively safe and accessible for women, children, and the elderly, though this may not always be the case during peak hours.

<sup>2</sup> Quito Metropolitan Atmospheric Monitoring Network

<sup>3</sup> ICA

<sup>4</sup> Plan de Acción de Cambio Climático de Quito, 2020

# BUS SYSTEMS OUTLOOK

## Fleet and Infrastructure



Number of buses  
**3,354**

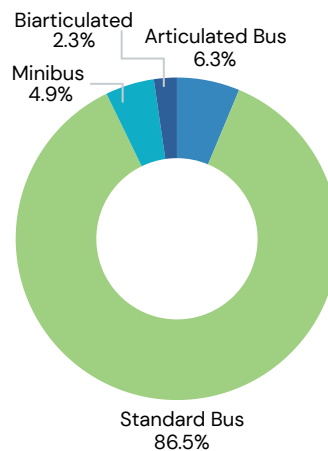


Number of bus routes  
**254**

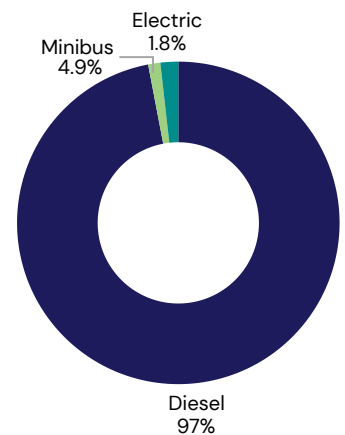


**6000** bus stops  
**155** bus depots

Buses by fleet type



Buses by fuel type



## Quality of Service

The public transport bus service in Quito provides extensive coverage, reaching 85% of the city's areas, including peripheral and underserved zones. Efforts are underway to expand this to 95% through route and frequency adjustments. However, bus travel is slower compared to private transport, averaging 77 minutes per trip versus 40 minutes. The city has several dedicated bus corridors, such as Trolebús (22.5 km) and Ecovía (20.9 km), improving efficiency. A fare integration system (SIR) is being implemented to streamline payments. During peak hours, buses reach high occupancy levels of 8 passengers per square meter, impacting comfort. Nonetheless, buses comply with national safety and accessibility regulations, ensuring inclusivity for women, children, elderly passengers, and individuals with disabilities.



## Existing Business Model<sup>5</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.



## 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

2025

Testing of 60 Yutong electric trolleybuses, and set to launch by late March.

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>5</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



### Model/Brand

1 bus Type A  
(BYD, K9G)

1 bus Type B  
(BYD, K11A)



### Battery features

Capacity  
Range

Type A  
324 kWh

250 km/charge

Type B  
438 kWh

250 km/charge



### Passenger capacity

Type A  
90 pax

Type B  
160 pax

## 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. 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.

## Opportunities and Challenges to Scaling E-Bus Fleets



### Opportunities

- Strong legal and regulatory framework supporting electric mobility (Quito 2020 Climate Change Action Plan; Energy Efficiency Law; National Electromobility Strategy for Ecuador).
- Lower electricity costs due to hydroelectric power generation, making electric buses more cost-effective.
- There is potential for reducing emissions and improving air quality, particularly in urban centers.
- Opportunities to enhance the public transport system with zero emission transport.
- Potential for integration with other sustainable mobility solutions, like cycling and pedestrian infrastructure.



### Challenges

- High initial investment required for electric buses and charging infrastructure.
- Limited political will and inconsistent prioritization of electric mobility in government agendas.
- Challenges in coordinating with private operators and integrating new fleets into existing transport systems.



## OVERALL FRAMEWORK

### Policy

In Quito, the Secretaría de Movilidad is the main body responsible for mobility planning, with key roles played by the municipal operator (Empresa de Pasajeros de Quito), Empresa Eléctrica de Quito, and the Secretaría de Ambiente. National and local policies support the transition to electric buses, with local and national regulations enabling transport decarbonization. The city's Master Plan for Sustainable Mobility (PMMS) outlines strategies for electric mobility and includes specific targets for electrifying bus fleets. Additionally, the Energy Efficiency Law and Quito's Climate Action Plan drive efforts to reduce greenhouse gas emissions and promote sustainable mobility across various sectors.

### Financing

Currently, the municipality is working on a draft ordinance for Electric Mobility, which will include incentives to support its adoption. As of now, no specific financing sources have been established for the electrification of transport. The majority of operators are private, and they are actively seeking potential financing sources or municipal guarantees to secure the necessary credits for initial investments. Possible future sources of funding could include public-private partnerships (PPP), national development banks, or international financial institutions that support sustainable transport initiatives.

### Impact

The city's objectives for climate action and sustainable mobility are outlined in the PLAN Maestro De Movilidad Sostenible Distrito Metropolitano De Quito – PMMS DMQ, which includes goals for reducing emissions and improving public health. These objectives are also part of the Quito Climate Action Plan. Although specific emission reductions are not detailed, the initiatives aim to contribute to these broader goals. The city has a portfolio of projects in progress, including bus fleet electrification. Key stakeholders include manufacturers, importers, private banking, and energy distributors. Ensuring an inclusive transition involves policies supporting vulnerable communities, with green jobs as a key strategy for engaging minorities and affected workers.



# TUMI E-bus Mission City Network – Profile

## SAN FRANCISCO DE QUITO, ECUADOR



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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.

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