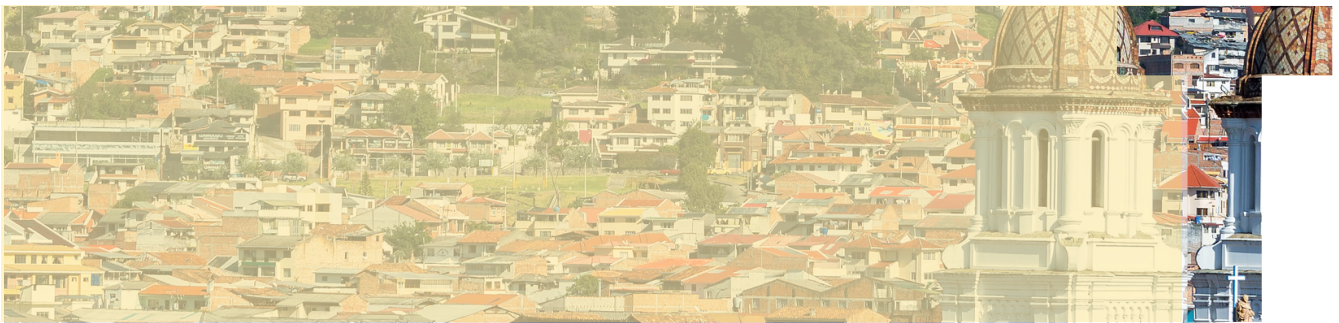


CUENCA, ECUADOR

C



CITY FEATURES



Cuenca, Ecuador's third-largest city, lies in the Andean region, surrounded by mountains and crossed by four rivers (Tomebamba, Yanuncay, Tarqui, and Machángara), shaping its landscape. Declared a UNESCO Intangible Cultural Heritage site in 1999, it preserves a historic center rich in architecture and culture. As the capital of Cuenca canton, it includes 21 rural and 15 urban parishes. Urban growth has been uneven, with economic activity concentrated in the center while expansion transforms the periphery. From 2001 to 2022, Cuenca's population grew at 1.42%, with a balanced increase between men and women.



Population
596.101
(2022)



Land area
70.59 km²



Average temperature
14°C

TRANSPORT FEATURES

Status quo and urban mobility trends ¹

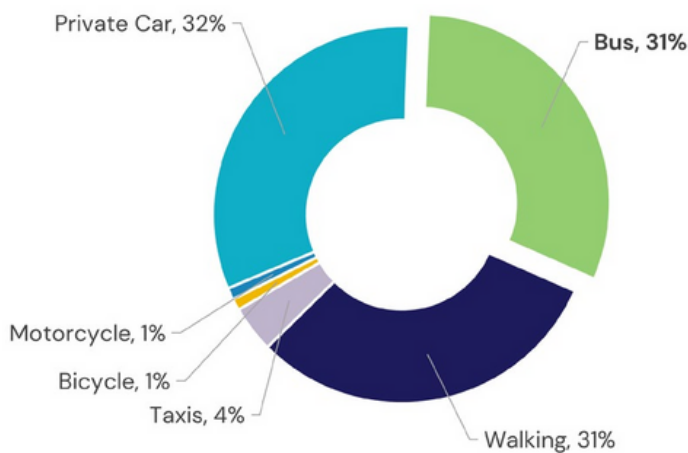
Cuenca's urban mobility has undergone significant changes in recent years, with increasing demand for both private and public transport. While the tram system has helped alleviate some congestion, the steady rise in private car ownership poses significant challenges. The increase in vehicle numbers, from 52,674 in 2006 to 125,240 in 2023, has resulted in more traffic jams, especially in the city's downtown areas, and a higher frequency of accidents caused by traffic violations. Additionally, the environmental and social consequences of this trend, including air pollution and reduced public health, are becoming more evident. However, Cuenca also has opportunities to move towards a more sustainable and equitable mobility model. These include enhancing the electric vehicle infrastructure, improving the quality and coverage of public transport, and creating more pedestrian-friendly spaces. Strengthening the integration of different transport modes, including cycling and walking, would reduce reliance on private cars and contribute to the city's environmental goals.



¹ Cuenca Mobility and Public Space Plan 2015–2025, 2015

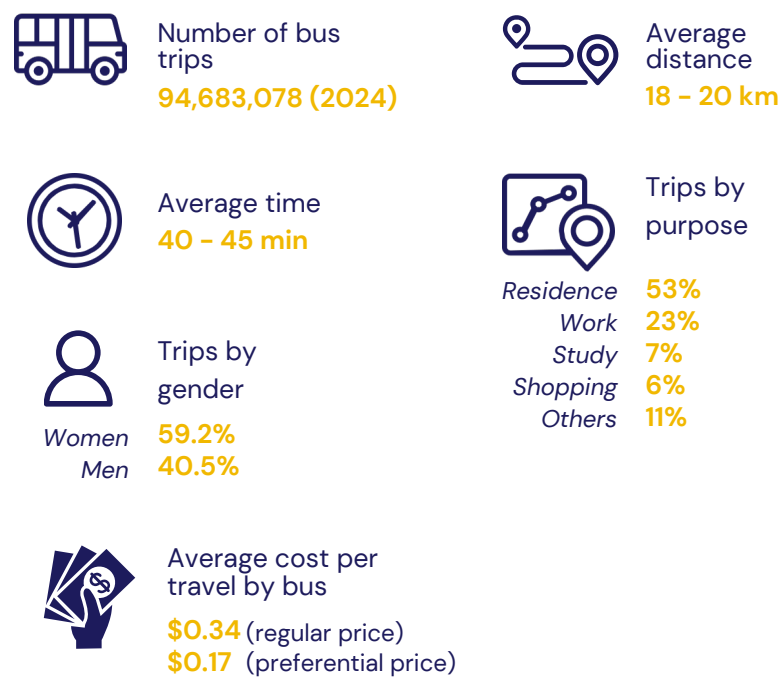
TRANSPORT FEATURES

Modal Split¹



In the canton of Cuenca there are about 1.6 million daily trips. Of the trips made, the preference of use is as follows: public transport 31%, cab and car 36%, walking 31%, motorcycle 1%, bicycle 1%. Since 2020, the tramway system has been in operation, transporting about 540,000 passengers monthly. Cuenca's vehicle fleet has been increasing in recent years from 52,674 in 2006, 105,178 in 2014, and reaching 125,240 by 2023. The steady increase in private car use in Cuenca has been associated primarily with increased levels of congestion, especially in the city center, and traffic accidents in which drivers continue to be the main culprits for disrespecting traffic signals.

Bus Trips Features



1 Cuenca Mobility and Public Space Plan 2015–2025, 2015 (Note: Latest modal split data does not take into account trips currently undertaken by tram, which started operation in 2020.)

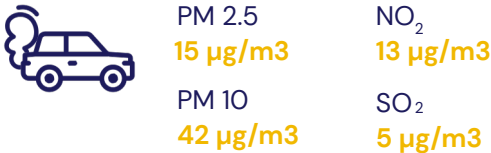
2 CAF – Latin America Development Bank & French Development Agency (2018). Data from 2016.

3 Cuenca Air Quality Report, 2025

GHG Emission Levels²



Air Pollutant Levels³



In 2023, Cuenca recorded 258,340 daily bus trips. Regular fare passengers validated 22.32 times per month, while preferential fare users averaged 19.28. The majority of public transport users are women and students, with buses primarily serving the poorest 40% of the population. Service operates in three peak periods: 6:00–7:30 a.m., 11:30 a.m.–2:00 p.m., and 5:00–6:30 p.m. The network provides extensive coverage, connecting both urban and rural parishes. Key destinations include the historic center, industrial park, and educational institutions. In the afternoon, passenger flows shift toward the peripheral parishes, reflecting the return of residents to their homes after work or study.

BUS SYSTEMS OUTLOOK

Fleet and Infrastructure



Number of buses⁴

567



Number of bus routes

38 (urban)

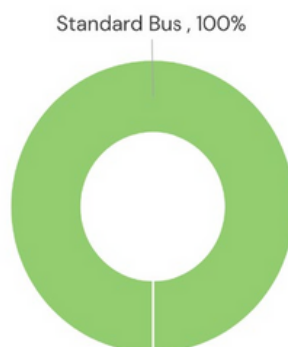
67 (rural)



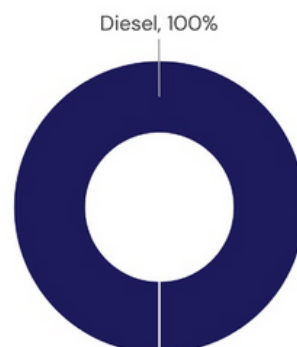
2,700 bus stops

3 bus depots

Buses by fleet type



Buses by fuel type



Cuenca's public transport fleet is currently 100% diesel-powered, with standard buses (12.9m, 90 passengers) operating across urban and rural routes. However, the city is in the pre-contractual phase for the definitive designs to electrify the main routes of its public transport network. The completion of this consultancy will guide the future acquisition of electric buses, marking a significant step toward sustainable mobility. While diesel remains the dominant fuel source, these efforts align with Cuenca's goal of reducing emissions and improving air quality.

Quality of Service⁵

The public transportation service in Cuenca enjoys 93% approval due to its extensive coverage, connecting urban, rural, and peripheral areas. However, 7% of users believe coverage and service quality need improvement. Increasing traffic congestion has led to 5% to 10% longer travel times, making public transit less competitive. Although 11 km of exclusive bus lanes exist in the historic center, private vehicles frequently invade them, causing delays. The flat fare system ensures affordability, and while the 475-bus fleet has seen gradual renovations over the years—with the most recent update in 2020 involving 160 buses—it still operates at 95% capacity during peak hours, leading to overcrowding. Accessibility remains a challenge, as buses have five steps to the platform, making it difficult for people with disabilities. While 22% of buses have lifts, their use is limited. Future plans include reactivating exclusive bus lanes, introducing new corridors, and implementing smart traffic systems to improve efficiency and service quality.



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⁴ Mobility Management Department. NOTE: 475 buses in urban service and 92 buses in rural service.

⁵ Cuenca Mobility and Public Space Plan 2015–2025, 2015

Existing Business Model ⁶

Currently, 38 lines, operated by seven private transport operators, make up the public bus system in Cuenca. The network was modified in 2023 and include both trunk lines and non-trunked lines. The trunk lines primarily run in a north-south direction across the city, while the non-trunked lines serve as feeder services with more varied and often radial patterns.

- 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

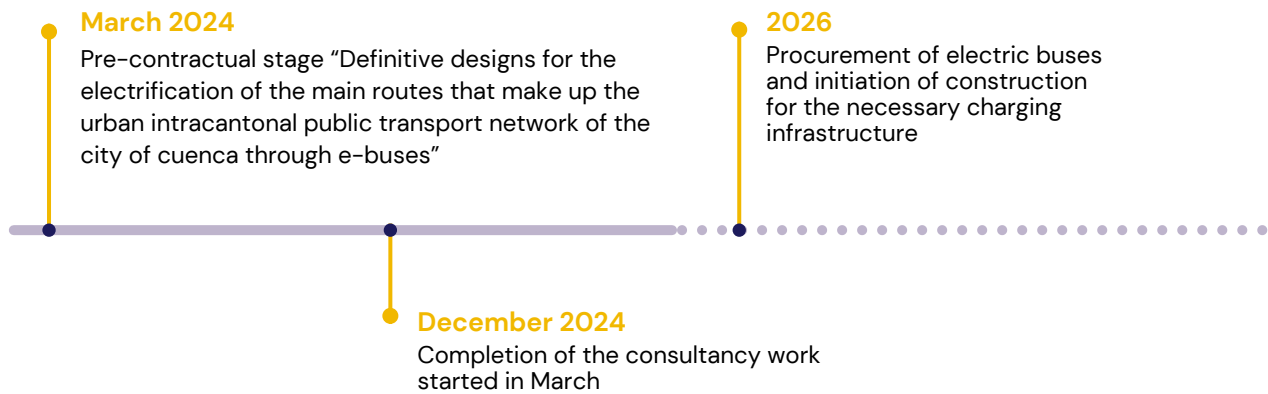
C

The public bus system in Cuenca is operated by seven private transport companies, which became associated with the Chamber of Urban Transportation of Cuenca (CTC) in 2000. In 1999, the Municipal Transport Unit was created, which now corresponds to two entities: the first is the Dirección General de Gestión de Movilidad (name adopted in 2019), responsible for planning the city's transport system, and the second is EMOV EP (established in 2012), responsible for overseeing the operation of the transport system. Currently, all seven transport operators are responsible for acquiring, operating, and maintaining the bus fleet.



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

E-BUS ADOPTION APPROACH⁷



Opportunities and Challenges to Scaling E-Bus Fleets



Opportunities

- Support from environmental regulations and incentives
- Access to financing and funding opportunities
- Reduction of operational costs in the long term
- Improvement in air quality and reduction of emissions
- Use of clean energy to power the fleet
- Renewal of the current fleet, ensuring modern and efficient transport
- Enhancing Cuenca's image as a sustainable city



Challenges

- High upfront costs of electric buses and necessary infrastructure
- Need for negotiations with private transport operators
- Ensuring that 50% of the fleet transitions to electric
- Limited charging infrastructure and potential for grid instability
- Addressing the technical and operational challenges of electric vehicle maintenance

⁷ GAD Municipal de Cuenca. "CHBE-003-2024 Estudios Electrificación Rutas de Transporte Público.

OVERALL FRAMEWORK

Policy

Cuenca is advancing in the electrification of public transport under the General Directorate of Mobility and EMOV EP, responsible for planning and implementation. At the national level, the Energy Efficiency Law requires new buses to be electric starting in 2025. Cuenca has developed an electromobility plan with the goal of incorporating electric buses, integrating them with the tramway and new terminals. There are challenges, such as charging infrastructure and financing. At the same time, the network of bicycle paths and public bicycles is being expanded to promote sustainable mobility and reduce emissions, in line with national environmental objectives.

Financing

Financing for the electrification of transportation in Cuenca includes access to credit through the German Development Bank (KfW) through the Development Bank of Ecuador (BDE). Although other sources of financing have not been established, possible mechanisms are being evaluated. The financial sustainability of the project will depend on the structuring of new investment schemes and government support. In addition, the project seeks to optimize the use of its own revenues and financing from national development banks to ensure the viability of the transition to cleaner and more efficient mobility.

Impact

The advance in electrification of Cuenca's bus fleet is expected to contribute significantly to reducing greenhouse gas emissions and improving air quality, positively impacting public health. The city is currently advancing its Sustainable Urban Mobility Program, which includes electrification initiatives. Key stakeholders in this transition include the Cuenca Transport Chamber, bus operators, disability rights representatives, and research centers. Their involvement is crucial for ensuring an inclusive, efficient, and well-integrated shift towards a cleaner public transportation system.



TUMI E-bus Mission City Network – Profile

CUENCA, 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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