

CITY FEATURES



Medan, the fourth largest city in Indonesia, is located in North Sumatra Province, on a relatively flat area with approximately 0 – 50 m elevation, making it easy to develop the city and build the infrastructure. With a population of 2.4 million, the development in the city of Medan is concentrated in the middle area of the city and dominated by residential areas in the center and south of the city. Economic development in Medan is dominated by retail, construction, manufacturing, real estate, transportation, and warehouses. Medan is the gateway to the western part of Indonesia where Belawan Port and Kuala Namu International Airport, the second largest airport in Indonesia, exist.



Population
2,460,858
 (2020)



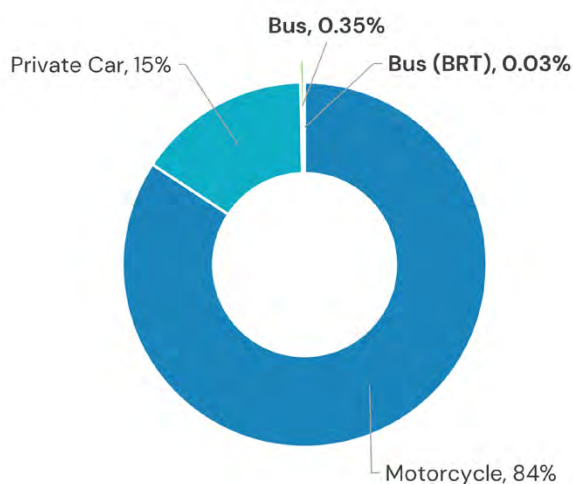
Land area
265.1 km²



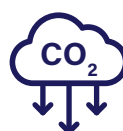
Average temperature
28.5°C

TRANSPORT FEATURES

Modal Split¹



GHG Emission Levels²



Total GHG emissions

—

From road transport

7,080,181 tCO_{2eq}

Air Pollutant Levels



PM 2.5

21.31 µg/m³

NO₂

38.62 µg/m³

PM 10

17.39 µg/m³

SO₂

39.11 µg/m³

The city of Medan is currently transforming into a metropolitan city and the hub for government, trade, education, services, and others. Activities in various sectors lead to high mobility of the residents in the city area of Medan, suburbs, and other satellite cities such as Binjai and Deli Serdang. Rapid mobility and high population consider the development of a transportation system to be an important aspect in the city. Daily mobility in Medan is currently concentrated in the land transport sector. According to the statistical data of Medan (2016), around 3000 km of land route is in good condition and 1,919 km of the route needs significant maintenance. Currently, the mode of transport is dominated by private vehicles, especially motorcycles.

¹ Central of Statistic Agency, 2020 (BPS)

² SRN KLHK

BUS SYSTEMS OUTLOOK

Bus Trips Features³



Number of bus trips
511 per day (2020)



Average time (per trip)
98 min

By 2022, an average of 410,44 residents of the city use Bus BRT for daily trips in a month, especially students and employees. Women are the main passengers who most frequently use buses on a daily basis. Bus (non-BRT) and mini-bus (Angkot) are also frequently used as modes of transport, after private vehicles, by low-income residents.

Fleet and Infrastructure

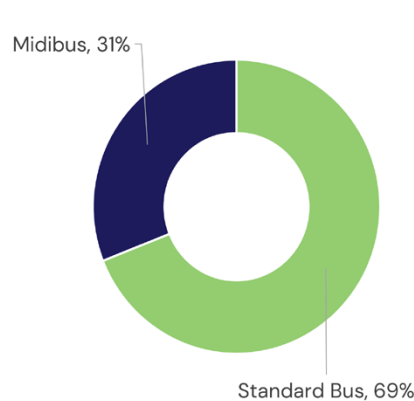


Number of buses
72

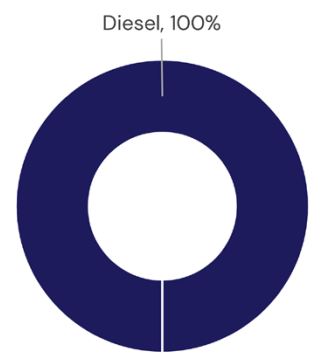


Number of routes
5 (BRT)
197 (angkot)

Buses by fleet type



Buses by fuel type



Quality of Service

The development of bus transportation in Medan is considered to be good. There are school buses and a shuttle bus program. In this program, the Department of Transport in the city of Medan plans to provide shuttle buses for workers which will be coordinated with private parties. This program is expected to reduce traffic jams due to the usage of private vehicles and support workers on their transport expense. In 2020, Medan received 1 unit of school bus assistance from the Ministry of Transportation. To support this program, several measures will be taking in preparing the distribution map and school bus routes in densely populated areas.



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3 Transportation Agency of Medan, 2022

4 Strategic Planning Document of Department of Transportation in Medan

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

D

Mini-bus (Angkot) is a privately owned 8-seat passenger vehicle, which is owned by multiple mini-bus Angkot operators. Currently, there are 19 Angkot companies with 197 routes in Medan. Mini-bus Angkot association is allowed to operate at the registered routes and collectively self-regulate. Angkot operators require a license for their operation from the Medan City Transport Agency.

E

There is a BUMD under the Medan City Transportation Service, namely PT. Medan Bus Transport operates public BRT within the city. This public company owns and operates 72 units of Medan city buses. Central and local governments are responsible for maintaining infrastructure and overseeing operations. In its first year of trial in 2021, BRT was free of charge for the residents but in 2023, the service is already being charged with e-payment method.



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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

- Large population, economy growth and the strategic location of Medan are some of the opportunities for developing the transportation system in the city.
- The Mayor of Medan is currently committed to developing BRT-based mass transportation to solve the problem of congestion and traffic in Medan City.
- According to data from Medan City transport agency, due to an increase of around 4.1% per year in the population and the high use of private vehicles, the city of Medan must immediately develop BRT transportation. The plan for 2023 is to have 440 additional units.
- The problem with public transport can be reduced by developing an integrated system in the planning and operating aspect of public transport.



Challenges

- The challenge of developing e-buses in the city is transitioning the behaviour of the residents who mostly prefers private vehicles for mobility, compared to public transport.
- Another technical challenge would be the access to financing and absence of private investment for the implementation of e-buses in the city.
- Medan also does not have adequate human resource capacity for the transition.



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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/>