

Medan, Indonesia

Partner city

Status of the project: ongoing technical assistance



Basic Information

Urban area: 3,151 km²

Population: 4,795,186 | Growth rate: +1.1%

GDP per capita: USD 12,400

Modal Share

Formal public transport: 1.85%

Informal public transport: 63.8%

Private cars: 5.54%

Private motorbikes or 2-wheelers: 11.7%

Taxis: 16.11% (by E-Hailing transport services (motorcycle, car - such as Gojek, Grab...):

Other: 0.2%

National GHG emissions per capita: 3.45 (tCO₂eq)

Region Capital City

Context

Located in the northern part of Sumatra Island, Medan is the capital and largest city of the North Sumatra Province and the fourth largest city in Indonesia. Its population is 2.3 million inhabitants, while its metropolitan area has 4.8 million inhabitants, and it is expected to continue to grow. Medan Metropolitan Area is composed of four Kota (cities) and two Kabupaten (regencies): Kota Medan, Kota Binjai, Kabupaten Deli Serdang and (part of) Kabupaten Karo.

Belawan, the third biggest container port in Indonesia, is located in Medan, as well as Kualanamu International Airport (the fifth busiest airport of the country). The city's economic growth rate of 6.4% is higher than the national average, which makes the Medan metropolitan area an important industrial and economic hub in Indonesia.

The Medan Metropolitan Area is facing a rapid increase of private motorised vehicles use (predominantly motorcycles). In the meantime, road lengths are increasing by only 0.8% a year. The increased number of vehicles causes congestion issues.

Public transport operates on fixed routes in Medan and consists of public passenger cars and small, medium and large buses. The area also benefits from a rail network as an alternative transport mode. It is to be noted that there is no Public Transport Authority in the City of Medan and the Metropolitan Area.

Support from the Partnership

Technical Assistance: Sustainable Urban Mobility Plan (SUMP)

Funded by: AFD

Funding amount: EUR 510,155

Implemented by: AFD through MobiliseYourCity Asia

Local counterpart: North Sumatra Province (and the representatives of the Medan Metropolitan Area authorities from Kota Medan, Kota Binjai, Kabupaten Deli Serdang and Kabupaten Karo).

Supported activities:

- Support of a SUMP process for the Medan Metropolitan Area
- Capacity development activities (after inception phase approval)
- Develop a citizen participation process and a communication plan
- Creation of an observatory on urban mobility data and GHG emissions

Status of implementation

Project start: 2020 Q3

Expected project completion: 2022 Q1

Completed outputs:

- Inception Phase
- Diagnosis
- Construction of scenarios and formulation of priority measures
- Action plan that includes indicators and budget and financing measures

Next expected outputs

- Final SUMP document
- Establishment of an Observatory on urban mobility data and GHG emissions

Projected impacts

Indicator	Impact 2035 (SUMP vs BAU)	Baseline - 2020	Projected 2035 BAU	Projected 2035 SUMP scenario
Total annual GHG emissions (Mt CO₂eq)	-0618 t CO ₂ eq	2225 t CO ₂ eq	3196 t CO ₂ eq	2578 t CO ₂ eq
Annual transport related GHG emissions per capita (kg CO₂eq)	-124 kg CO ₂ eq / capita	549 kg CO ₂ eq / capita	641 kg CO ₂ eq / capita	517 kg CO ₂ eq / capita
Access				
Increase of the proportion of the population living 750 meters or less of a mass transit stop	+7,3%	3,8%	3,8% ¹	11,1%
²Air pollution				
Decrease in mean urban air pollution of particulate matter (in µg PM _{2.5}) at road-based monitoring stations	N/A	N/A	N/A	N/A
Modal share				
Increase of the modal shares of trips by public transport, walking and cycling	Public Transport ³ : 13.7%	Public Transport: 9.6%	Public Transport: 9.6%	Public Transport: 23.3%
	NMT ⁴ : 15% of total trips	NMT: 15% of total trips	NMT: 15% of total trips	NMT: 15% of total trips
	TOTAL: 13.7%	TOTAL: 24.6%	TOTAL: 24.6%	TOTAL: 38.3%
Road safety				
Decrease of traffic fatalities in the urban area, per 100.000 inhabitants	-9.0 fatalities/100,000 hab	10.4 fatalities/100,000 hab	13.9 fatalities/100,000 hab	4.9 fatalities/100,000 hab (Target)
Affordability of public transport				
Percentage of disposable household income spent on public transport for the second quintile household income group	-15,5%	13,0%	20,5%	5,0% (Target)

Highlights

Interest in mass transit investments predominates over non-motorized transportation

In the context of the Medan area, most stakeholders see mass transit development as a leverage to improve urban mobility. This is explained by Medan being a secondary city seeking development and competing with other municipalities in Indonesia to receive support (technical and financial) from the central government for mass transit investments. Mass transit systems are capital intensive, they play a structuring role of the SUMP, and therefore they obtain the greatest interest from stakeholders.

This resulted in softer measures, such as the development of active mobility, being relegated as secondary after mass transit and other more monetizable projects. Different strategies were adopted by the consultant to highlight the importance of active mobility development: the improvement of active mobility facilities is needed by all communities; and large transit projects can be leveraged as triggers to the improvement of accessibility towards their stations.

¹ With assumption of population growth in parallel of organic angkot routes.

² Absence of data due to Medan current capacity of air quality measurements (lack of monitoring station).

³ Estimated public transport users as forecasted in multi-modal transport model. 99% are estimated in informal public transport systems.

⁴ Not included in multi-modal transport model.

The study area should be defined before Component 1: Inception

The SUMP area is a key determinant of the SUMP action plan, and depth of analysis for all aspects of mobility. Indeed, a wide area involving many administrations results in a macro-level analysis leading to guidelines, while a more limited area might result in results with a more defined scope and therefore more practical. The study area can be set early during the ToR preparation so that the adequate budget and timeline for the obtention of practical results can be estimated before the start of the SUMP process.

Gender and social inclusion issues in mobility were highlighted and should be maintained

During the SUMP preparation, gender challenges in urban mobility for the Medan context were assessed. SUMP forums allowed the representatives of vulnerable communities (women, disabled, elderly, children) to raise their concerns regarding urban mobility, and to share their insights to make it more inclusive. The vulnerable groups expressed their appreciation for their involvement in the consultation process, an unprecedented activity for most of them. Their involvement should be maintained in future mobility planning initiatives of the province and cities/regencies of Mebidangro.

Stakeholder commitment and expectations of the SUMP must be clarified early

A firm explanation is needed from the implementing organization to the local stakeholders to ensure that all expectations are aligned on the outcome of the SUMP (level of detail, scope, follow-up, modes, technical depth, macro/micro level, etc.). Moreover, a constant engagement by the donor is needed to secure stakeholder commitment towards the preparation of the SUMP and the implementation of proposed projects. It is important that this commitment is addressed with high-level government officials by the funding partner, to further secure support and assistance from operational government actors during the SUMP elaboration.

Data availability and uniformity among regions was a significant challenge in the diagnosis phase

The diagnosis phases faced challenges, particularly related to data gaps among the different jurisdictions within the study area. Socio-economic and mobility information is heterogeneous in cities and regencies of the same province. The consultant has led an important consolidation work during the diagnosis component in order to ensure data quality and uniformity, but this effort implied delays. This could be accommodated in the next SUMP by anticipating the implications of having a wide study area (with several administrations) and/or providing more time to conduct the diagnosis.

Technical knowledge on sustainable urban mobility shared during the training sessions could be further disseminated to wider audiences, cities and regions

The SUMP process included multiple training sessions to enhance the technical capacity of the Mebidangro agencies in sustainable urban mobility planning. The knowledge products, developed with a bottom-up approach, and corresponding to each of the four phases of the SUMP preparation, can be generalized and used in other SUMP, e.g. through MobiliseYourCity's Communities of Practice.

COVID-19 impacted most of the SUMP preparation but forced innovation

COVID-19 restrictions also impacted the feasibility of most workshops and efficiency of discussions with local stakeholders. More time was needed throughout the SUMP components to obtain conclusive insights and reach consensual conclusions with stakeholders.

Despite the COVID challenges, the team successfully adapted to the situation and was able to undertake surveys, stakeholder engagement and workshops by taking advantage of new methodologies including a mobile application for safe surveys, online platforms to discuss and share documents, with live translation (English and Indonesian) and maintain engagement in online discussions. Furthermore, mobility was analysed at a deeper level thanks to cellular data to cope with the reduction of movements during the pandemic. While the COVID-19 pandemic limited essential activities, the mobility planning process benefited from innovative tools.

The SUMP's data collection was the biggest program of this kind in Indonesia

The program for data collection for the SUMP Mebidangro was the largest ever conducted in Indonesia. It involved more than 100 surveyors for primary data collection – counting and interviews (household surveys, traffic surveys, origin-destination surveys). More than 15,000 households and 45,000 individuals were directly interviewed. The consultant engaged with the national cellular telecommunications provider to gather information on travels before and during the COVID-19 pandemic: trips of more than half of the area population were studied, amounting to approximately 2 million inhabitants. Secondary data collection also occurred by engaging and consulting more than 30 institutions throughout Mebidangro's provincial, city and regency agencies.

Given the COVID-19 pandemic during data collection process – which forced the government to implement mobility restrictions, trip patterns deviated from normal conditions, posing a challenge to modelling and planning transportation for the long term. To reconstitute a "normal" situation and evaluate current trips at levels not impacted by the pandemic restrictions, the consultant engaged with the cellular provider to normalize observed trips. The consultant and the telecommunications provider jointly developed a robust methodology to extract and consolidate movements information, and making the data fit for modelling and forecasting future trips. This methodology can now be used in other programs in and outside Indonesia.

Metropolitan-scale Monitoring, Reporting and Verification (MRV): set a national benchmark and generalize the method

During the SUMP preparation and following MobiliseYourCity requirements, the consultant prepared a robust Monitoring, Reporting and Verification framework for the local counterpart to be used in future years. Step by step, the requirements were defined for the local context, before the methodology was explained through different workshops and trainings, with a focus on identifying and updating indicators and using the monitoring dashboard. Setting up the MRV framework was well accepted by the stakeholders thanks to several detailed and contextualized workshops conducted. As a national framework for MRV on urban mobility does not exist at national scale in Indonesia, the MRV work of Medan SUMP can open the way to its replication in other Indonesian cities or help define a centralized MRV system at the national level.