



# MANDALAY, MYANMAR

## URBAN TRANSPORT PROFILE

December 2024

## Summary

Mandalay, the second-largest city in Myanmar, is experiencing rapid urbanization and a surge in private vehicle ownership, leading to growing concerns about traffic congestion, road safety, and air pollution. While the city boasts a relatively high road infrastructure density compared to the national average (26 kilometers per thousand capita), it lacks any rapid transit systems and relies heavily on motorcycles for personal mobility. This dominance of motorcycles, accounting for approximately 70% of the modal share, presents a significant challenge to sustainable urban transport development. Furthermore, the lack of a comprehensive urban mobility plan has hindered investments in sustainable transport infrastructure and services.

Despite these challenges, Mandalay is taking steps towards creating a more sustainable and integrated urban transport system. Recognizing the need for change, the city is developing a Sustainable Urban Mobility Plan (SUMP) focused on improving accessibility to public services and amenities, reducing congestion, and promoting cleaner modes of transportation. The SUMP aims to professionalize private bus operators, incentivize the replacement of aging bus fleets with low-carbon vehicles, and promote walking and cycling. This initiative, supported by organizations like the French Development Agency (AFD), will not only enhance the city's public transport network but also contribute to improved road safety and air quality.

However, Mandalay faces an institutional hurdle in its pursuit of sustainable urban transport. The absence of a formally defined urban transport institutional framework has led to a lack of coordination in managing and planning multi-jurisdictional functions. The lack of a lead agency to coordinate and implement urban transport strategies and policies further complicates efforts to improve the city's transport system. As Mandalay continues to grow, addressing these challenges will be crucial to ensure a sustainable and efficient urban transport system that supports the city's economic development and enhances the quality of life for its residents.

## About the Urban Transport Profiles

The Asian Transport Observatory (ATO) Urban Transport Profiles provide a comprehensive snapshot of urban transport dynamics for 40 cities in the Asia-Pacific region. These profiles compile data from official city reports, relevant sources from reputable research organizations, multilateral development institutions, international experts' reports, secondary studies, and all other research endorsed or guided by city governments. Featured cities are benchmarked against other cities, where data is available, in the region, subregional averages — and in some cases, global cities — offering valuable comparative insights. In cases where data is not available, placeholders for the graphs are retained. Each profile also includes a curated list of relevant urban transport policies and documents, presenting a concise overview of the city's policy framework. By covering a wide range of transport-related indicators, these profiles serve as a critical resource for understanding and improving urban transport systems.

## Disclaimer

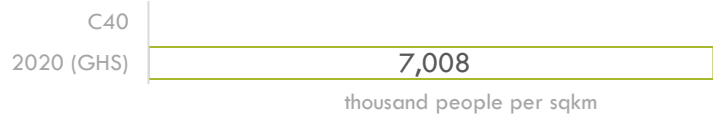
The Asian Transport Observatory (ATO) project collects, collates, and organizes data from publicly available official, as well as reputable and peer-reviewed secondary sources, which may contain incomplete or inconsistent data. It is important to note that the ATO does not generate data. Moreover, while the ATO carries out quality control and assurance of whether the data are truthfully reflected in the ATO, the ATO does not make any warranties or representations as to the appropriateness, quality, accuracy, or completeness of the data in the ATO databases, and in the knowledge products that are produced from such. Users are encouraged to scrutinize, verify, interpret, and judge the data before utilizing them.

## General

**Population** 1.7 million  
(2020) (GHS)

**Population density**

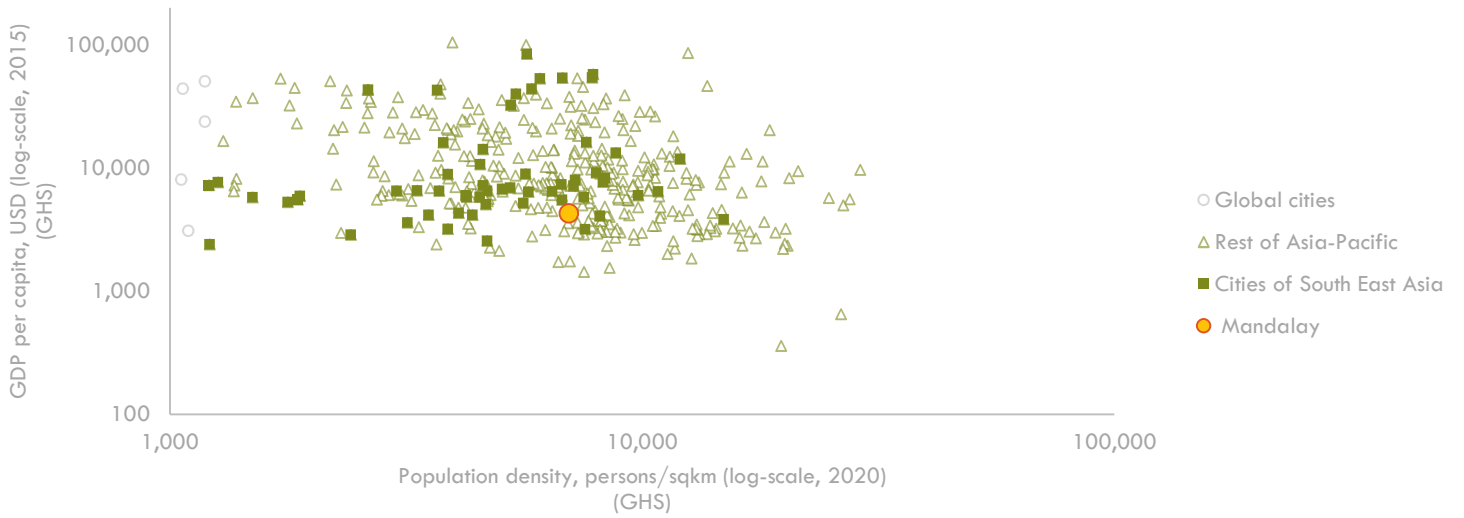
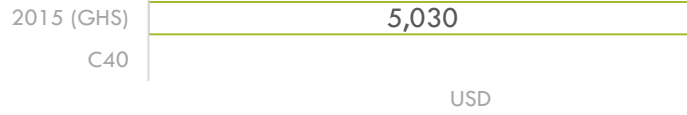
**Land area** 244 sqkm  
(2015) (GHS)



**Population density** 7 thousand per sqkm  
(2020) (GHS)

**GDP per capita**

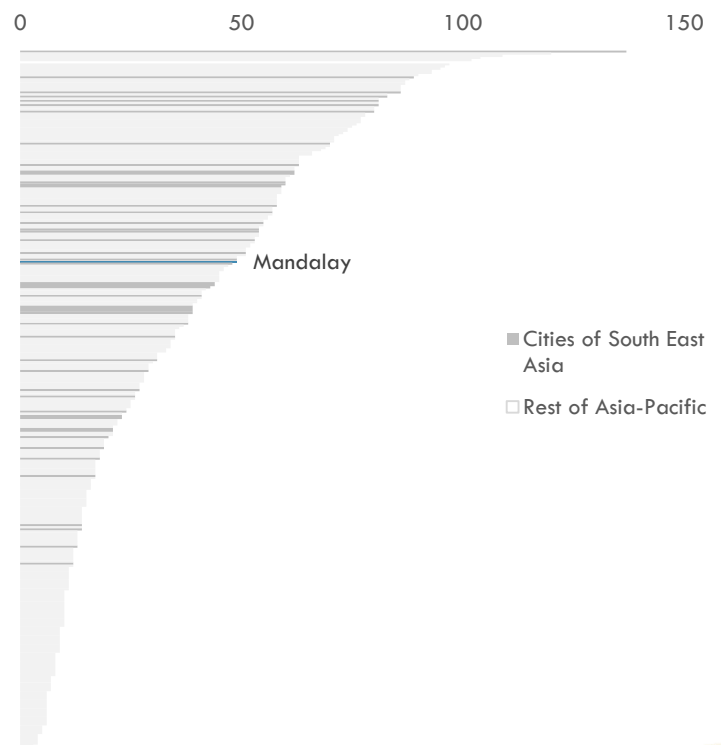
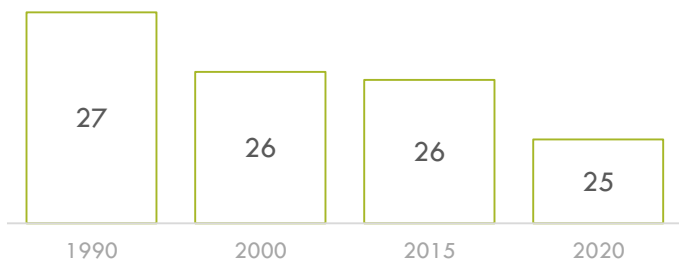
**GDP per capita** 5 thousand USD  
(2015) (GHS)



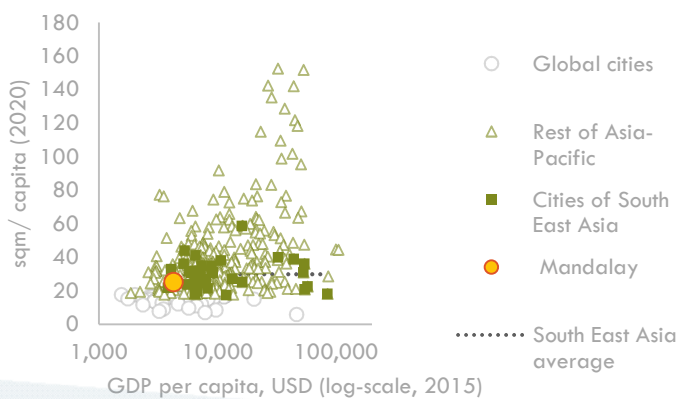
## Urban Form and Structure

**Builtup area per capita**  
sqm per capita (GHS)

**Mean block density**  
blocks per sqkm (2020) (ITDP)

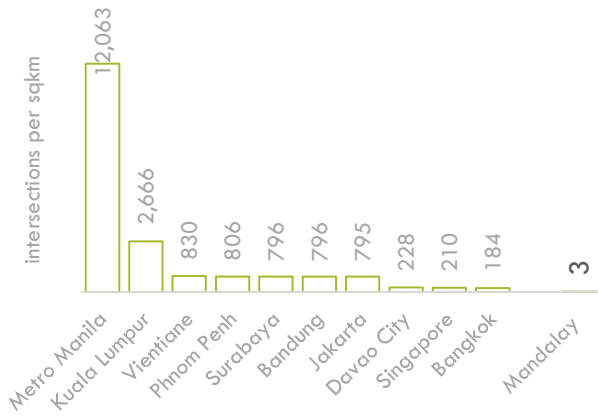


**Builtup area per capita**  
(GHS)



## Intersection density

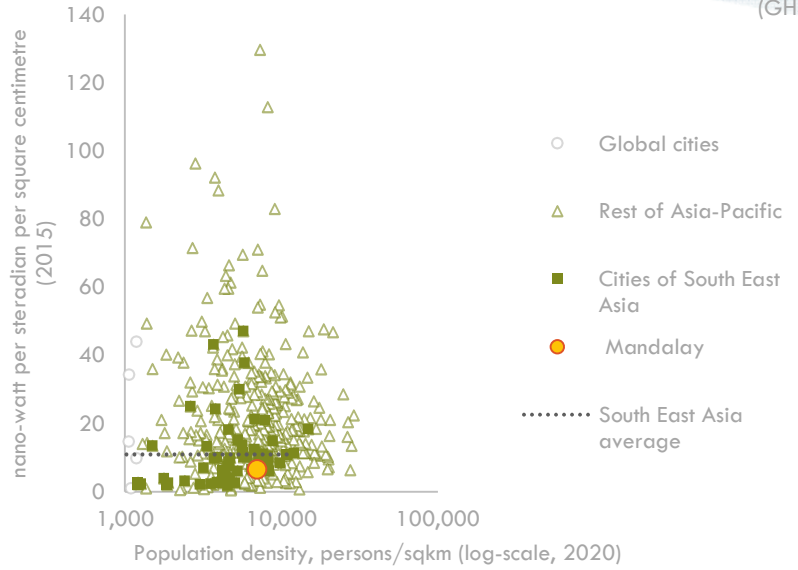
(Oke et.al. (2019) (OSM))



(a) Night time light intensity studies illustrate urban forms and patterns by mapping human activity, infrastructure, and connectivity, offering insights into urban sprawl, density variations, and transport network

## Night time light intensity (a)

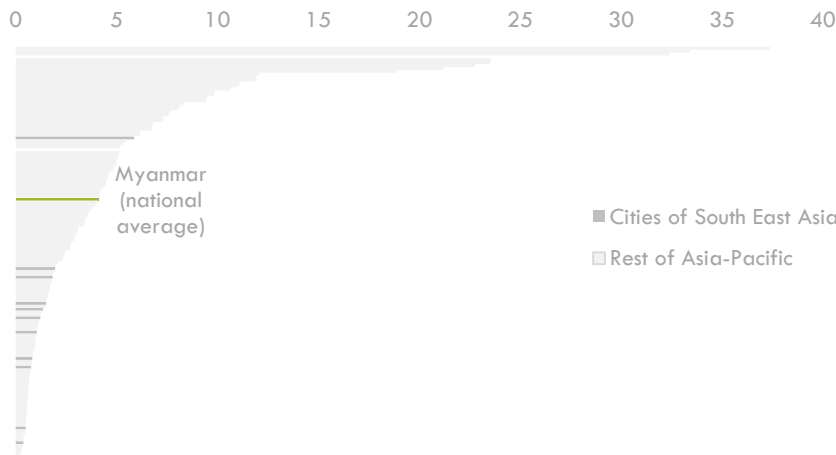
(GHS)



## Urban Transport Infrastructure

### Road availability

kilometers per thousand population (2019) (Oke et.al. (OSM) and GHS)



### Road kilometers n.d.

### Rapid transit infrastructure

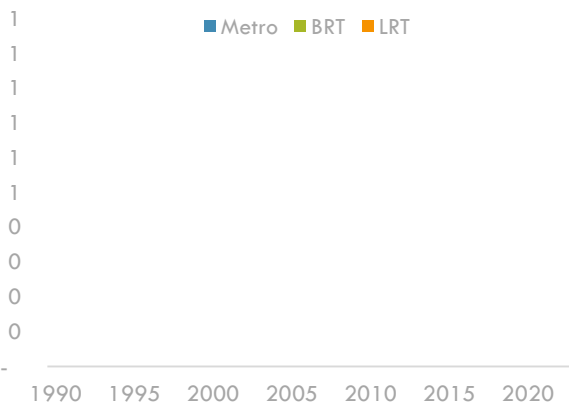
(2024) (TE)

■ Under construction ■ Planned

BRT LRT Metro

### Rapid transit infrastructure

kilometers (ITDP, Primary data)



**BRT** none

**LRT** none

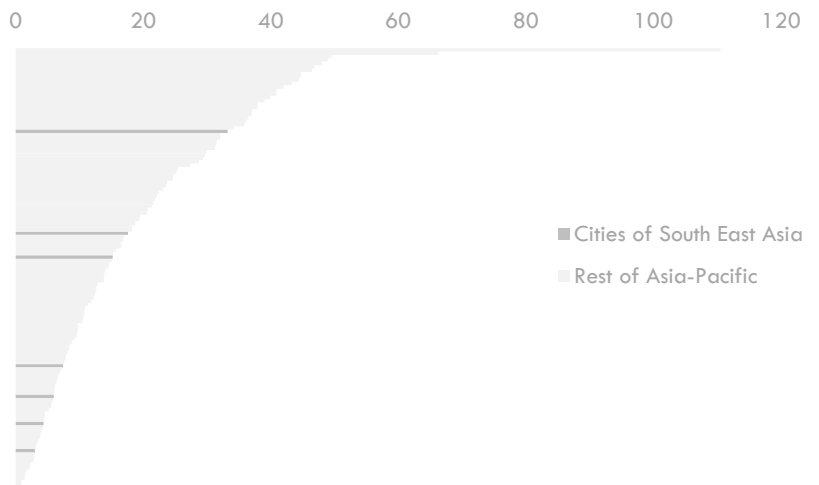
**Metro** none

**Total** none

(2023) (ITDP)

### Rapid transit availability

kilometers per million urban population (2021) (ITDP, Primary data)



### Approximate transit coverage n.d.

## Transport Activity and Services

### VKT per capita

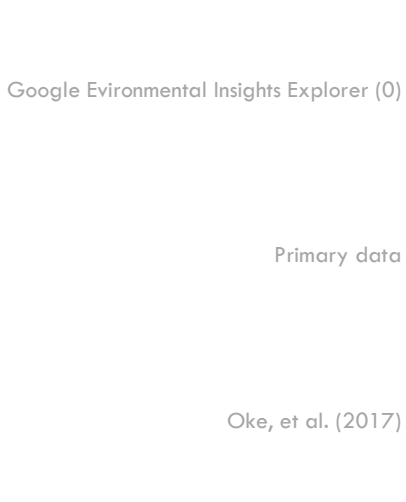
Vehicle-kilometer per capita (2022) (ClimateTrace)



### Trips Mode share (b)

Share, %

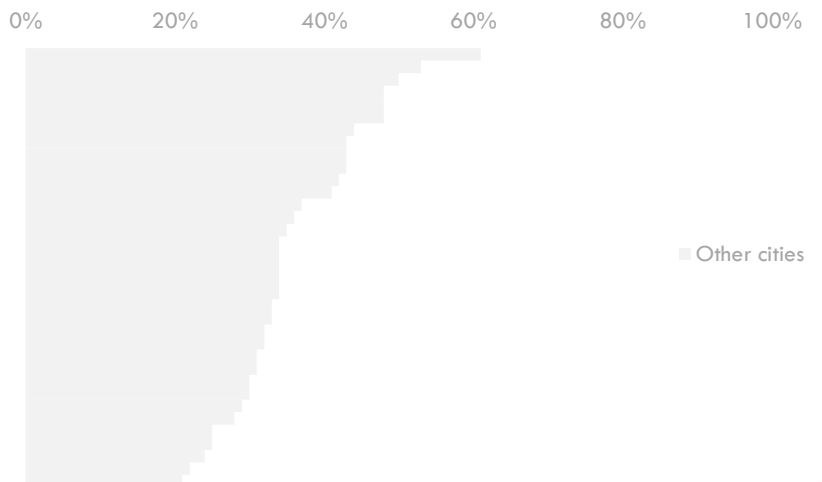
■ Walking and cycling ■ Private ■ Public transport (bus, ferry, informal public transit, etc)



(b) The methodologies used for mode share assessments vary across different studies, making direct comparison of results inadvisable. Specifically, the Google Environmental Insights Explorer derives its assessments from mobile data analysis, while primary data studies typically rely on survey-based approaches. In contrast, the study by Oke et al. utilizes a combination of secondary data sources.

### Congestion level

Percent increased travel time vs. uncongested conditions (2021) (TomTom)

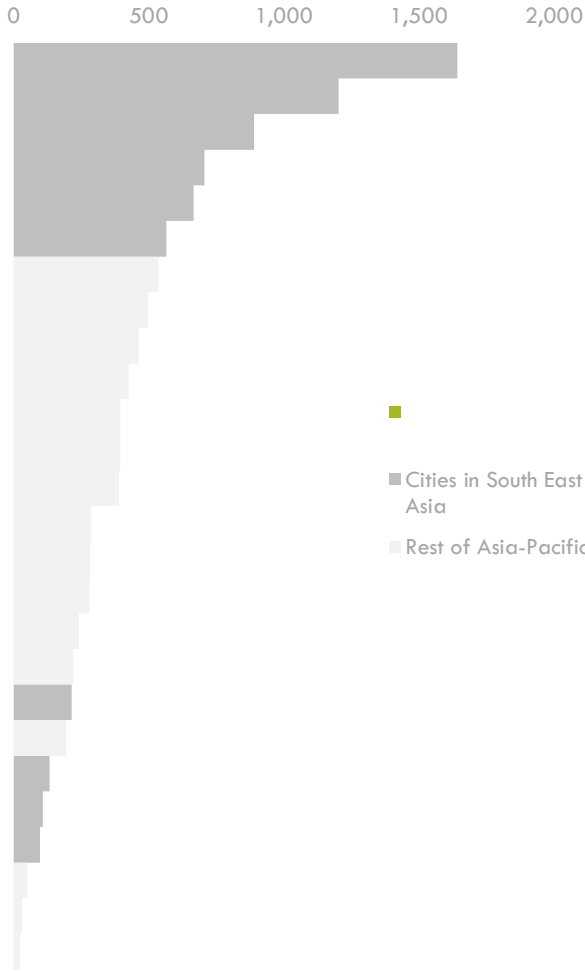


Metro ridership n.d.

Congestion ranking n.d.

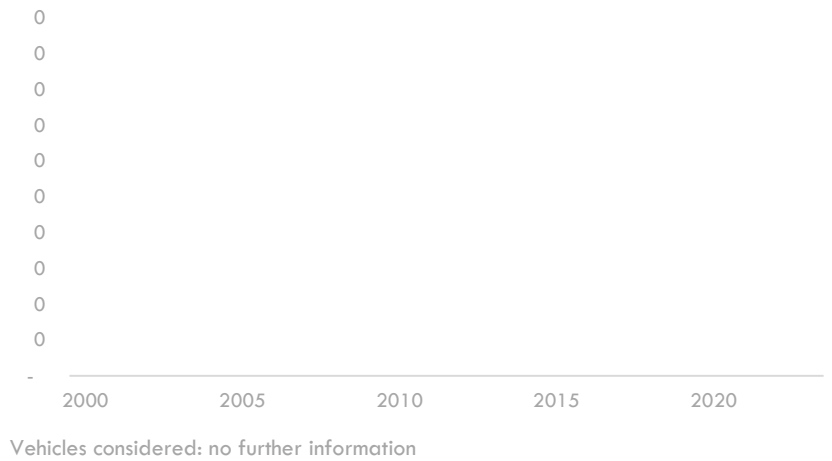
## Vehicle motorization

Vehicles per thousand population (Primary data)



## Vehicles registered (c)

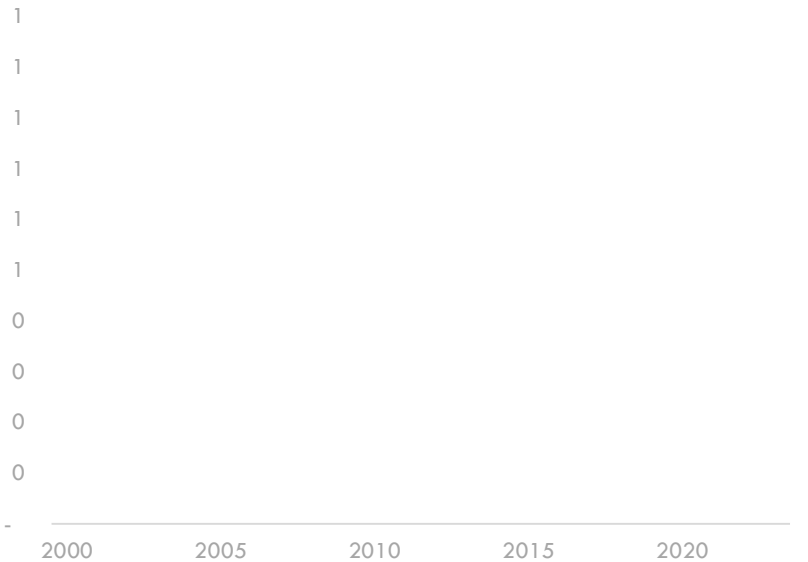
Thousand vehicles (Primary data)



Vehicles considered: no further information

## Bus fleet (operational)

Bus (and other public transport) fleet (Primary data)

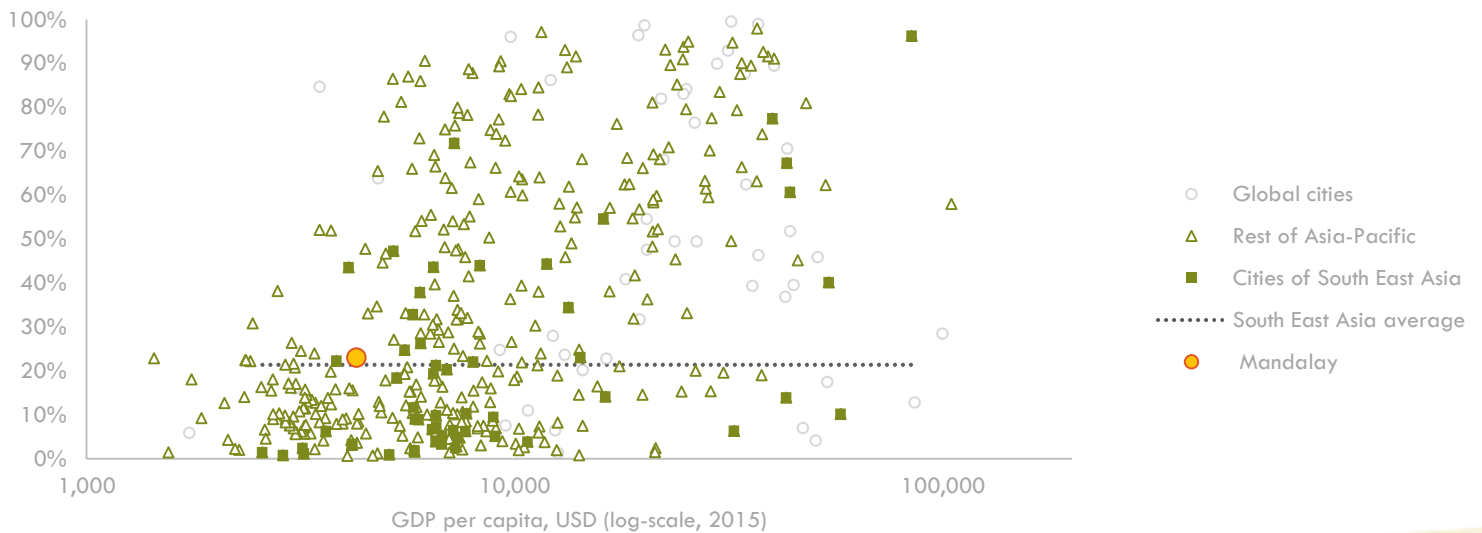


(c) It should be noted that, in most cases, scrapped vehicles are not de-registered, which may result in slightly inflated numbers.

## Urban Access

### Access to urban public transport

Share of population with convenient access to public transport (2023) (CIESIN)



## Access to urban public transport (d) - by source

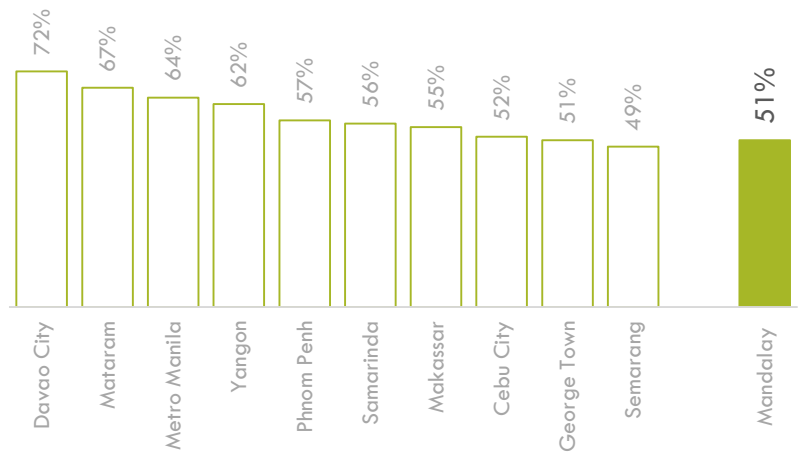
Share of population with convenient access to public transport



(d) "Access to urban public transport" is computed as share of population who live within a walking distance (along a street network) of 500m to a low capacity public transport system (eg bus, tram) and 1000m to a high capacity public transport system (eg trains, ferries, etc). Only public transport stops which are mapped are included in the analysis which may include both formal and informal stops. Many cities (mostly in the developing countries) have informal public transport systems which are not fully mapped - meaning that they may record higher levels of access to public transport than reported in this dataset.

## People near services (both healthcare and schools) (e)

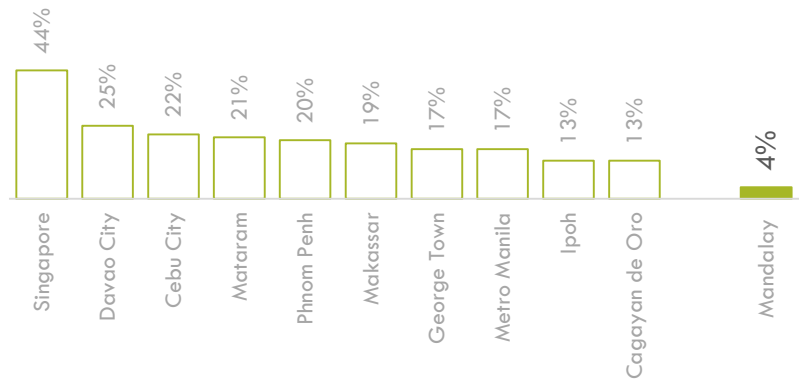
(Share of population) vs. highest 10 cities in South East Asia (2020) (ITDP)



(e) People Near Services measures the percentage of the city's population living within a 1km walk of both healthcare and education. These services are especially vital for babies, toddlers, and their caregivers, who should be able to reach them on foot.

## People near car-free places (f)

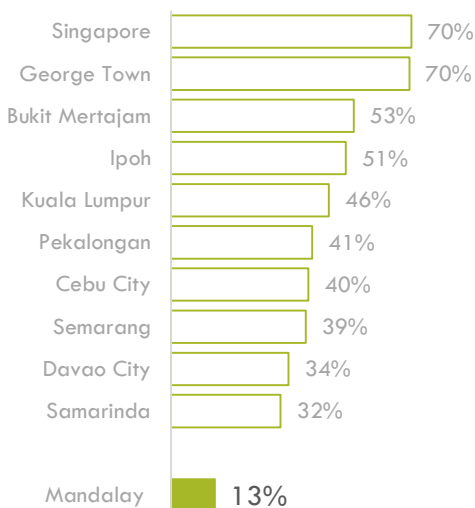
(Share of population) vs. highest 10 cities in South East Asia (2020) (ITDP)



(f) Percentage of the city's population that lives within 100m of a car-free place. These car-free places include pedestrian-only alleyways, nature trails, playgrounds, pedestrianized squares, and anywhere else that is not used by cars and trucks (except, in some cases, emergency vehicles).

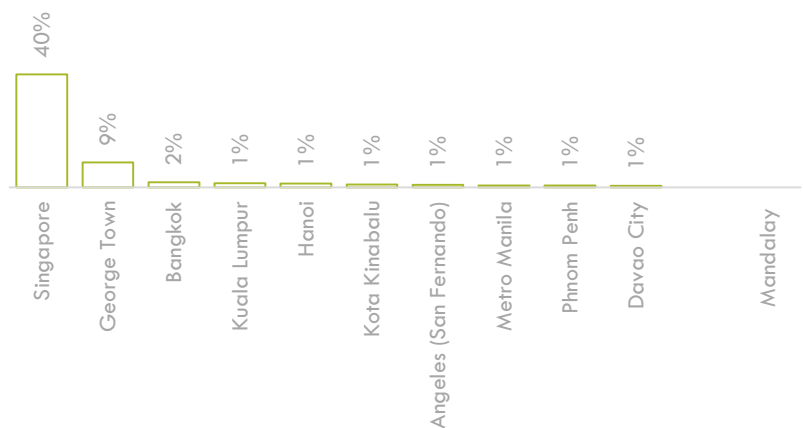
## People near open public space

(Share of population) vs. highest 10 cities in South East Asia (2020) (UN Habitat)



## People near protected bikelanes

(Share of population) vs. highest 10 cities in South East Asia (2020) (ITDP)



Transport externalities

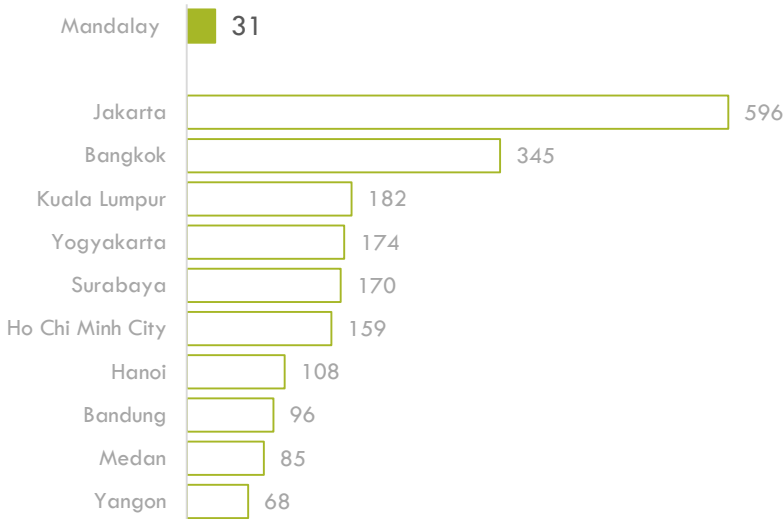
Road transport - CO2 emissions

Thousand tonnes (2022) (ClimateTrace)



Road transport - N2O emissions

Tonnes (2022) vs. highest 10 cities in South East Asia (ClimateTrace)



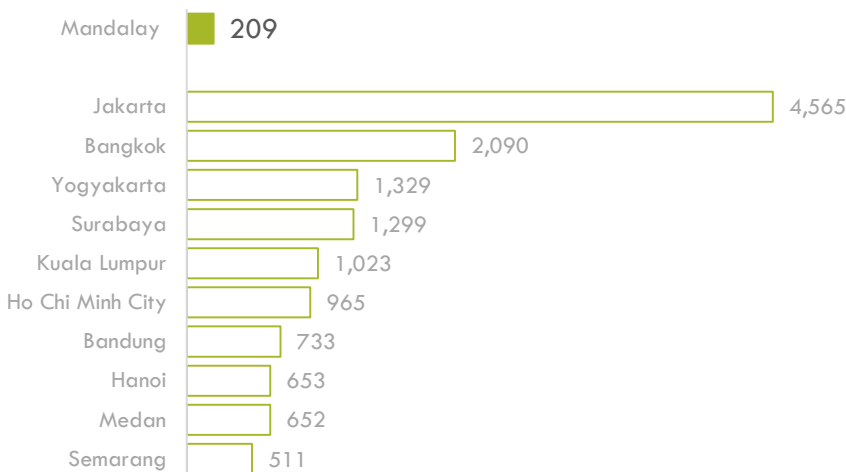
Population exposure to disasters

Share of population (2015) (GHS)



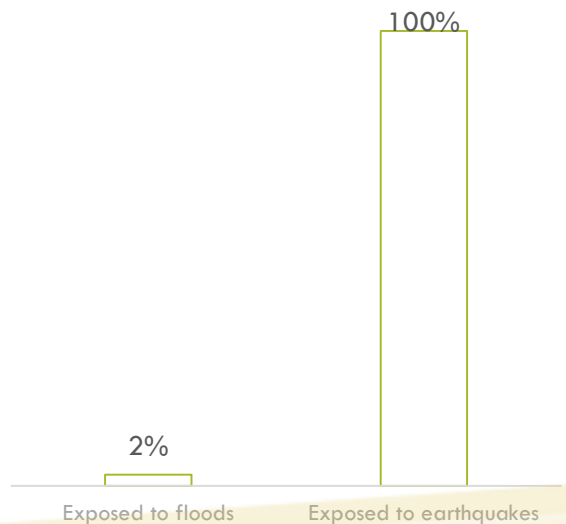
Road transport - CH4 emissions

Tonnes (2022) vs. highest 10 cities in South East Asia (ClimateTrace)



Urban built-up area exposure to disasters

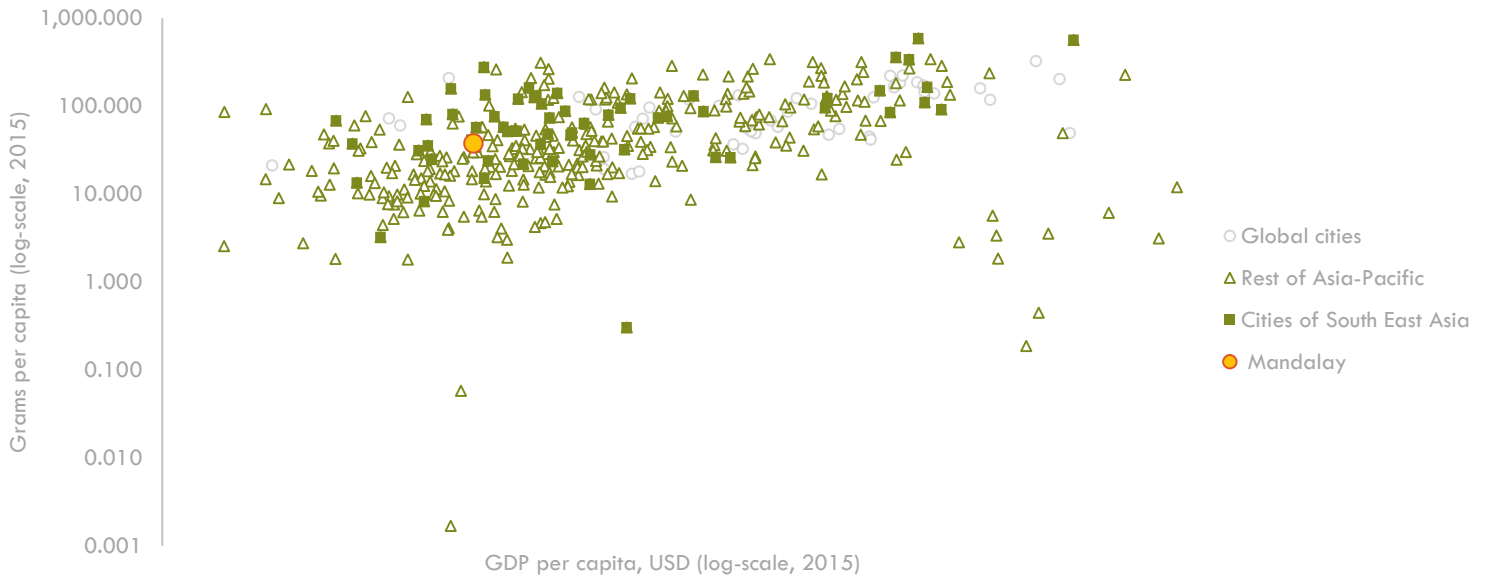
Share of urban area (2020) (GHS)





## Transport PM 2.5 emissions

(GHS)



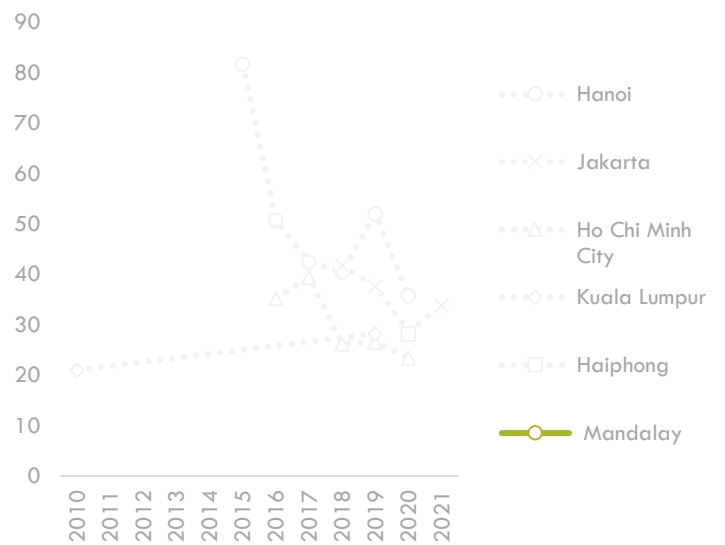
## NO2 concentration

ug/m3 (vs. highest 5 cities in South East Asia) (WHO)



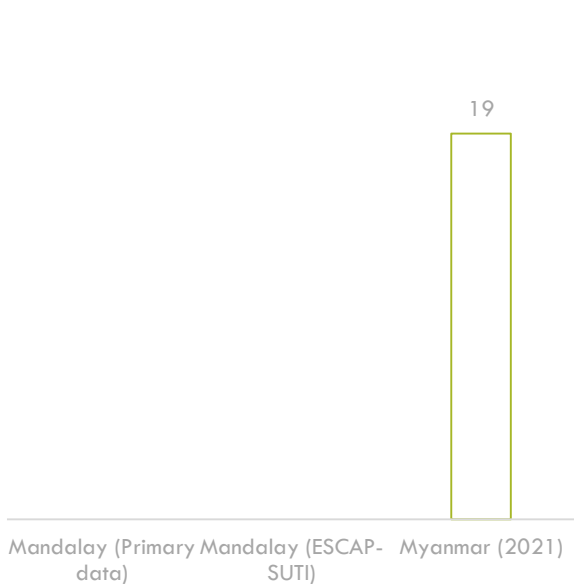
## PM 2.5 concentration

ug/m3 (vs. highest 5 cities in South East Asia) (WHO)



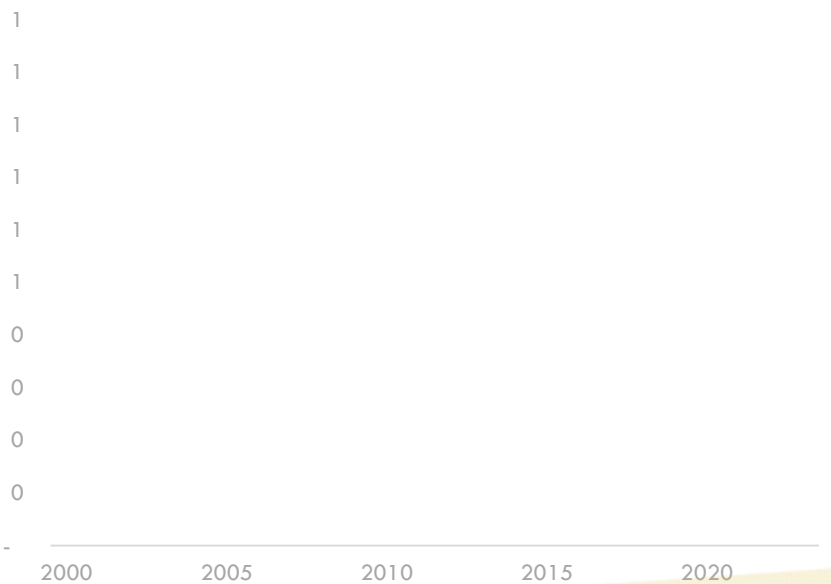
## Road crash fatality rate

Deaths per 100,000 population



## Road crash fatality rate

Deaths per 100,000 population (Primary data)



Transport related Indices

Container port performance index

Index is resultant of the sum of a weighted average of indices for each of the five vessel sizes: feeders (<1,500 TEUs), intra-regional (1,500–5,000 TEUs), intermediate (5,000–8,500 TEUs), neo-Panamax (8,500–13,500 TEUs), and ultra-large container carriers (>13,500 TEU)

Mandalay n.d.

Critical Infrastructures Spatial Index for the transportation sector

CISI is an index that spatially explicit indicates the coverage or lack of transport infrastructure. The CISI is expressed in a dimensionless value ranging between 0 (no CI intensity) and 1 (highest CI intensity). The index aggregates high resolution geospatial information on multiple CI assets per CI system

Mandalay 0.02/1.00  
(2020) (GHS)

SUTI Geometric Mean

The geometric mean in the Sustainable Urban Transport Index (SUTI) by UNESCAP is a mathematical approach to aggregate scores across its 10 sub-indicators, including public transport ridership, safety, affordability, air quality, and access to transport

Mandalay n.d.

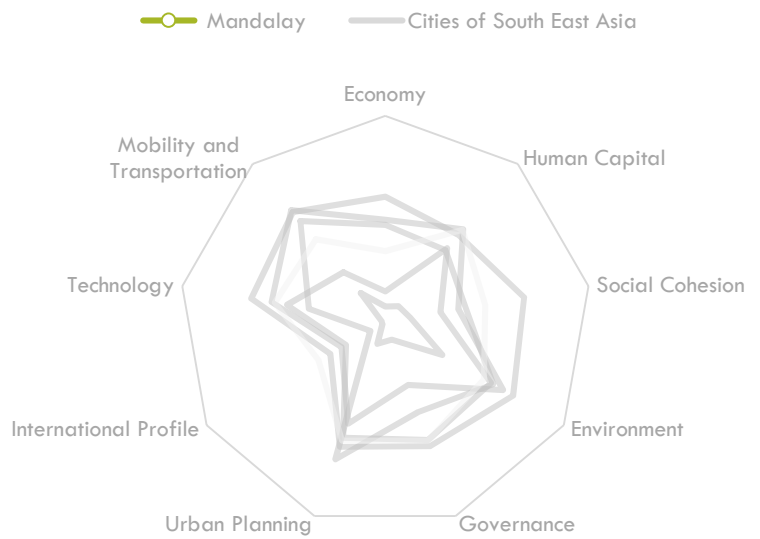
Cities in Motion index ranking

The Cities in Motion Index (CIMI) is a composite indicator evaluating cities across nine dimensions—governance, urban planning, technology, environment, international profile, social cohesion, human capital, mobility, and economy—focusing on sustainability and quality of life. It uses a weighted aggregation model to combine sub-indicators for a holistic assessment of urban performance

Mandalay n.d.

Cities in Motion index ranking by subcomponent

Ranking (vs. other Cities of South East Asia) (2024) (IESE)



## Transport relevant policy documents

Year published	Document name
2016	Urban Development Plan for Regional Cities - Mandalay, Patheingyi and Mawlamyine
n.d.	Mandalay City Development Concept Plan Vision 2040.

## References

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