

Malaysia

Green Roads Profile

General

Road length (2022)
299,177 kilometers

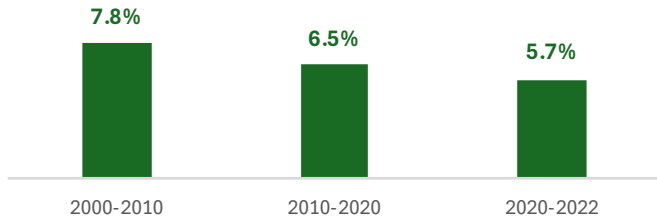
Subregion
(1) **South East Asia**

Income class
Upper middle income

Average annual growth rate of road length

Population (2024)
(1) **34.7 million**

Land area
329 thousand sqkm (2,3)



Urban population
79% (2)

Rural population
21% (2)

Gross domestic product (GDP PPP, 2022)
1.14 trillion USD (2,3)

GDP per capita (PPP, 2022)
33,525 USD (2,3)

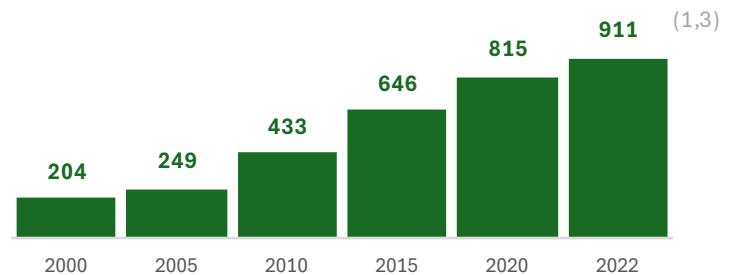
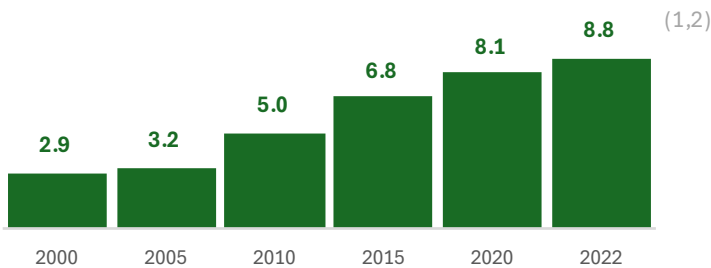
Malaysia's road network is comprised of 8.8% motorways, highways, and primary roads and 91.2% secondary roads, local roads, and other roads

Road infrastructure availability (2022)
8.8 kilometers per thousand population

Road infrastructure density (2022)
(1,2) **911 meters per square kilometer** (1,3)

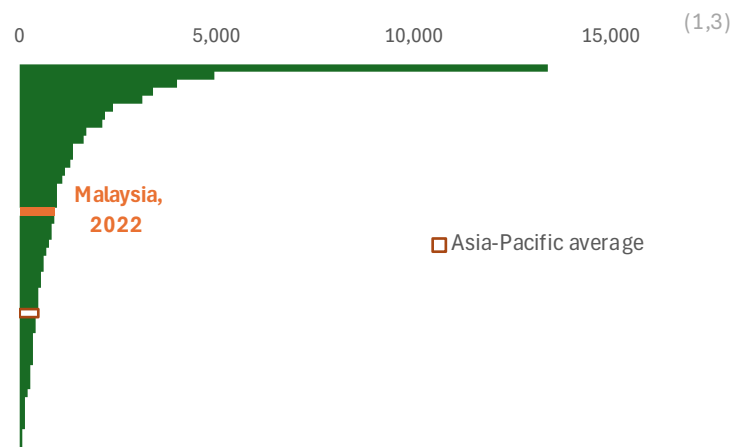
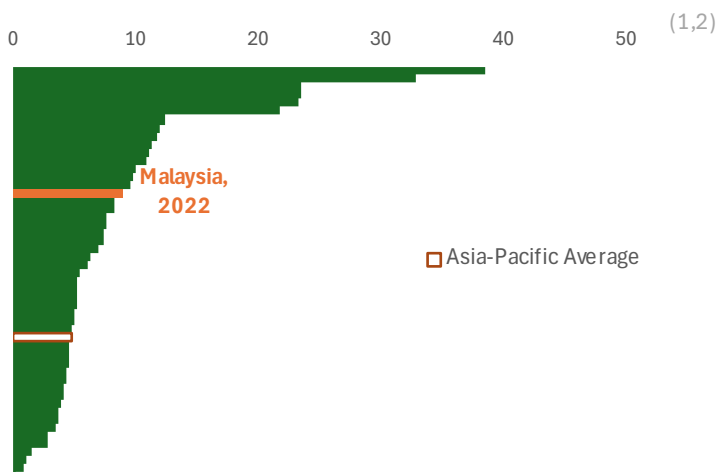
Road infrastructure availability trend, kilometers per thousand population

Road infrastructure density trend, meters per thousand population



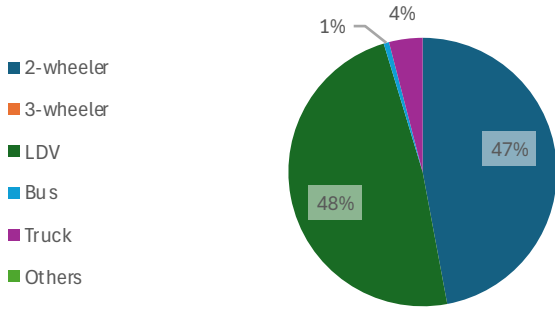
Road infrastructure availability in Asia-Pacific, kilometers per thousand population

Road infrastructure density in Asia-Pacific, meters per square kilometer



Road vehicles (2022)
34.65 million vehicles

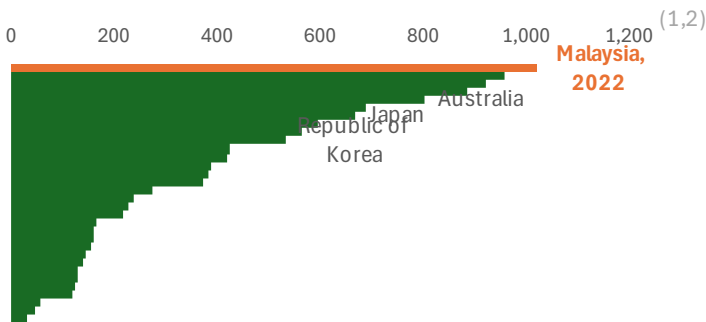
Share of vehicles by type



Motorization rate (2022)
1,021 vehicles per thousand population

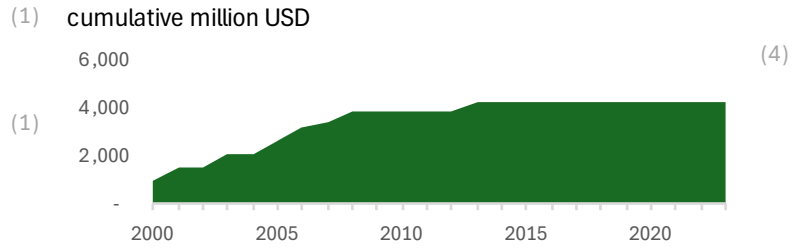
In 2000, Malaysia had 463 vehicles per thousand population. By 2022, this has increased to 1021 compared with Asia-Pacific average of 577 in 2022.

Motorization rate in Asia-Pacific, vehicles per thousand population



Road vehicles include 2- and 3-wheelers, LDVs, buses and other informal public transport, trucks, and other unclassified types

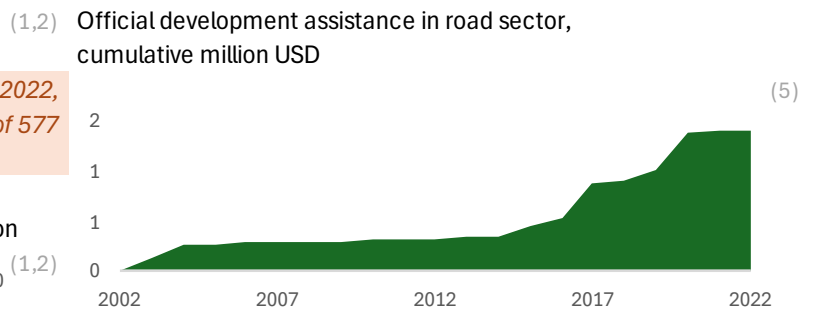
Public-private partnership investments in road sector, cumulative million USD



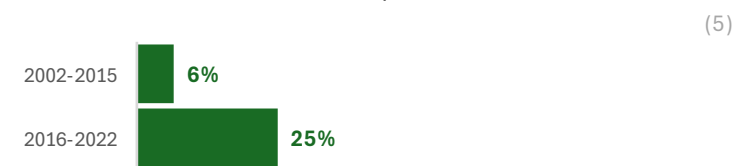
Share of road in total public-private partnership investments



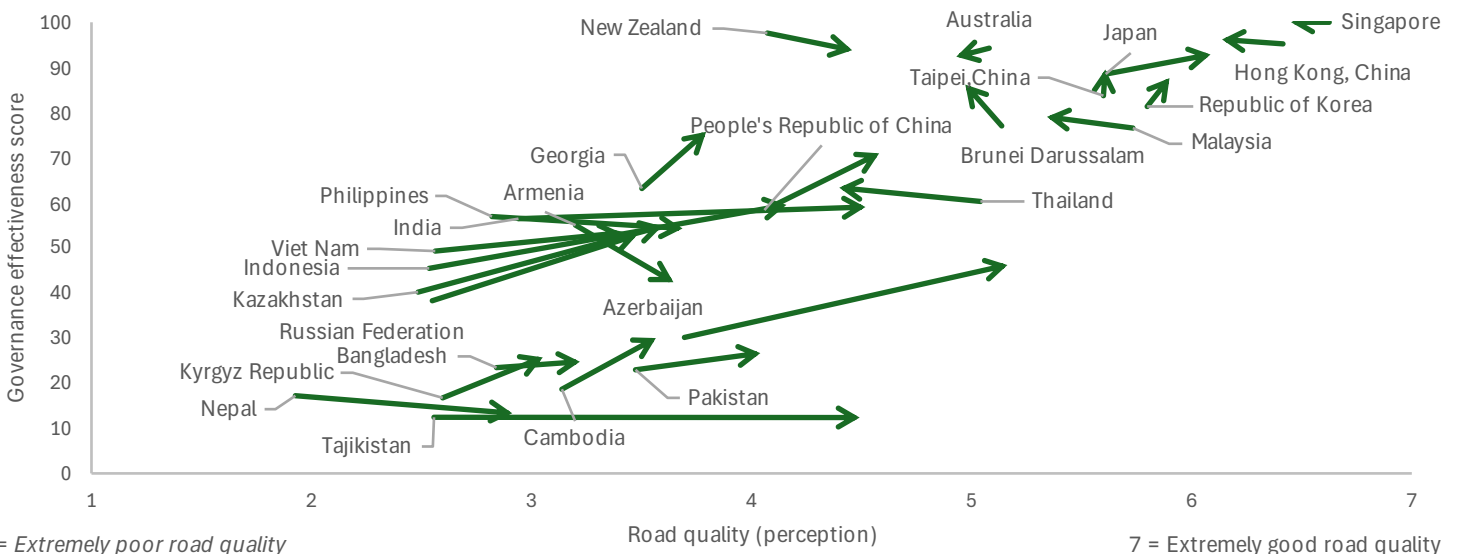
Official development assistance in road sector, cumulative million USD



Share of road in total official development assistance



Road quality (perception) vs. governance effectiveness score (2009-2019)



Developed with the support of:



Quality of Life and Fostering Inclusive Growth

Rural access index (2023)
85%

(6)

Based on 2015 estimates, only 71% of the population could reach the nearest city in 30 minutes, another 10% could reach in 1 hour, and another 12% could reach only after 3 hours.

Rural population without access to all-season roads (2023)
1.09 million

(2,6)

Logistics performance index score (2023)

3.6/5

(10)

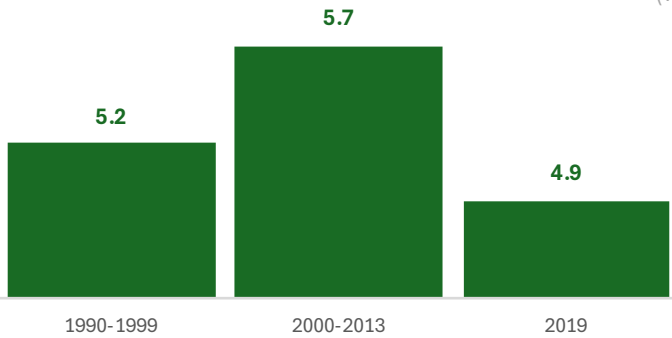
| Infrastructure score

(7)

3.6/5

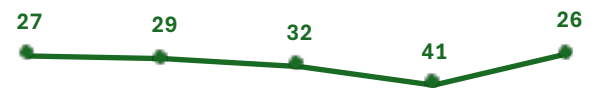
(10)

National street network disconnectedness index



This indicator is a summary scalar measure for street-network sprawl describing connectivity of local street networks across the world

Logistics performance index ranking trend

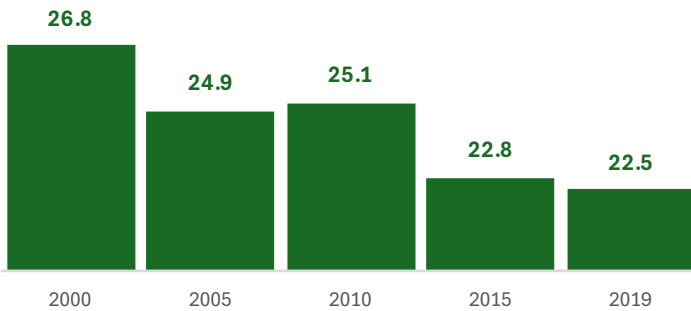


(10)

Road crash fatalities (2019)
7.2 thousand deaths

(8)

Road crash fatality rate per 100 thousand population



Asia-Pacific average is 15.7 fatalities per 100 thousand population

Percent of firms choosing transportation as their biggest obstacle - Manufacturing (2015)

(2,8)

5.6%

(11)

Percent of respondents answering high/very high - Level of Fees and Charges on Road transport

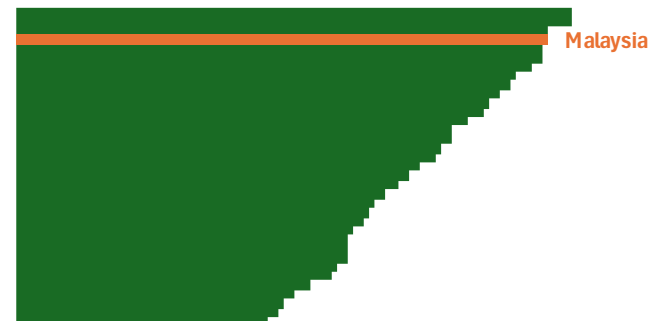
n.d.

(11)

Level of fees and charges for less than full truck loads are considered

Mean speed in Asia-Pacific, kilometers per hour (2022)

0 20 40 60 80 100 120 (9)



Mean speed (2022)
101 kilometers per hour

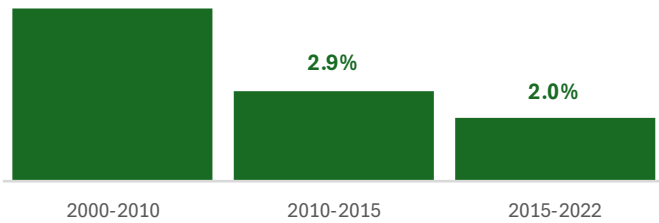
(9)

Employment in transport sector (2022)
987.8 thousand employees

Share of transport sector in total employment (2022)
 (12) **6.0%** (12)

Average annual growth rate of transport sector employment
5.5%

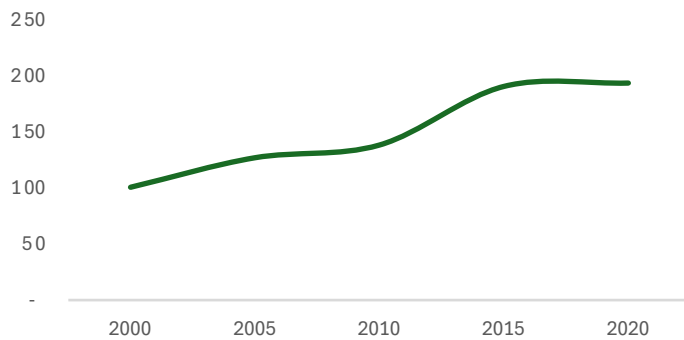
Share of females in total transport sector employment (2022)
 (12) **19.0%** (12)



Decarbonization

Road transport energy consumption trend
 Assuming 2000 value as base (100)

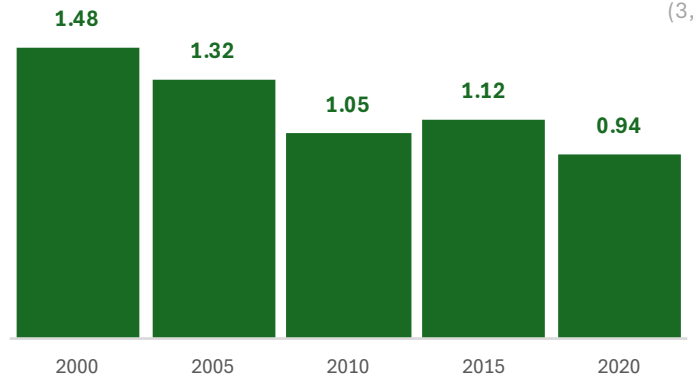
(13) **99% of Malaysia's transport energy consumption is in the road sector.**



Between 2000-2010, Malaysia's road transport energy consumption grew 3.2% annually. Between 2010-2020, road transport energy consumption grew 3.4% annually.

Road transport energy intensity with GDP, TJ per USD (PPP)

(3,13)



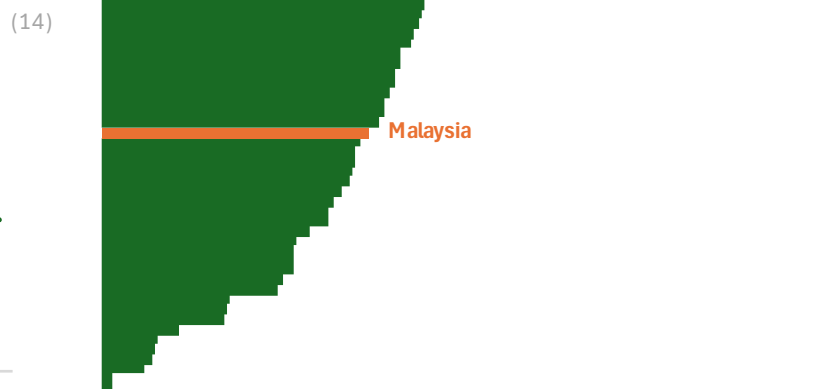
Asia-Pacific average is 0.4 MJ per USD in 2020

Grid emission factor (2022)
605.8 gCO2 per kWh

Grid emission factors in Asia-Pacific, gCO2 per kWh

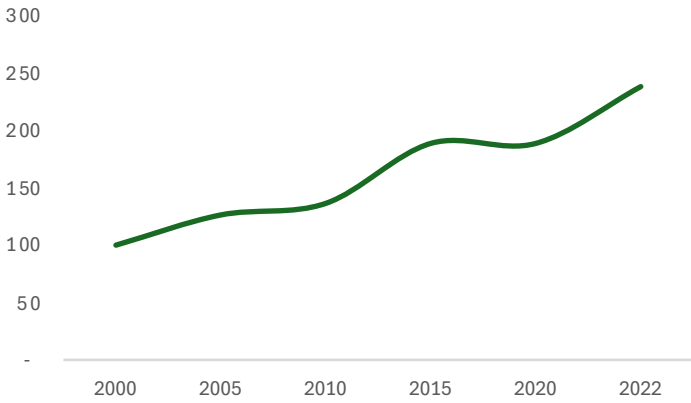
(14) 0 200 400 600 800 1000 1200 1400 (14)

Grid emission factor trend, gCO2 per kWh

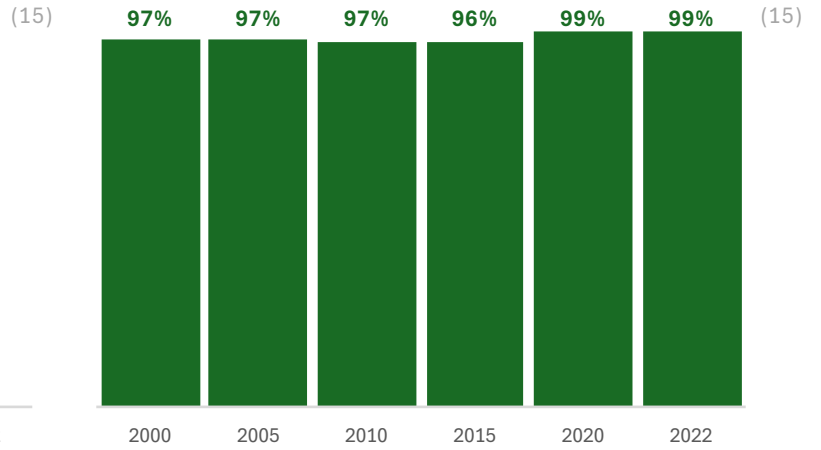


Road transport CO2 emissions trend

Assuming 2000 value as base (100)



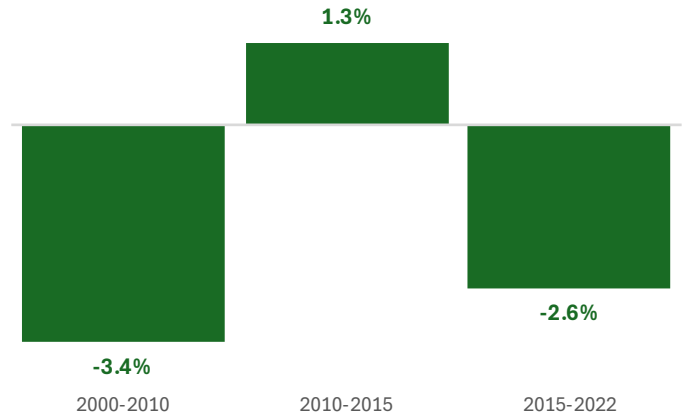
Share of road transport in total transport CO2 emissions



Between 2010-2019, Malaysia's road transport fossil CO2 emissions was growing 4.3% annually. After the COVID-19 pandemic, road transport CO2 emissions was growing 12.4% annually.

Road transport CO2 emissions intensity with GDP trend

(3,15)

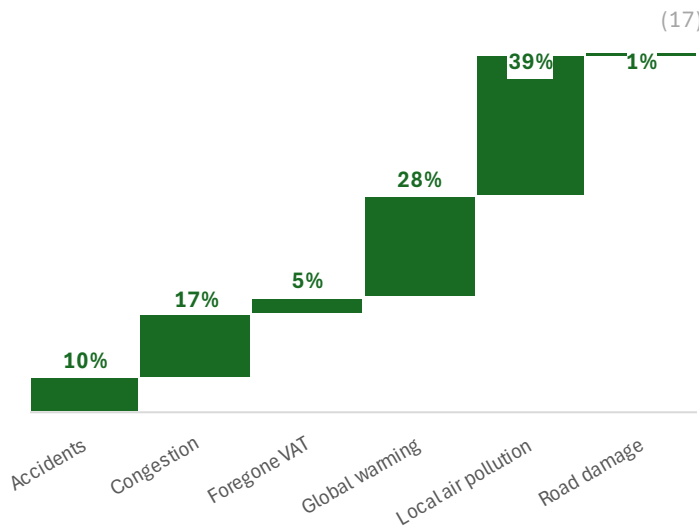


Transport fossil fuel subsidies, cumulative from 2010 to 2022

34.59 billion USD

5.6% of Asia-Pacific total

Implicit fossil fuel subsidies due to externalities



Data includes all sectors and all fuel types

Climate Resilience and Disaster Preparedness

Expected annual damages to road and rail infrastructure due to hazards (2019)
99.31 million USD

(18)

National road vulnerability index ranking (2023)
51st out of 208 countries

(20)

Share of road in total transport infrastructure in multihazard average annual loss to transport infrastructure (2023)
58.5%

(19)

Share of population in low elevated coastal zones (2018)
5.1%

(21)

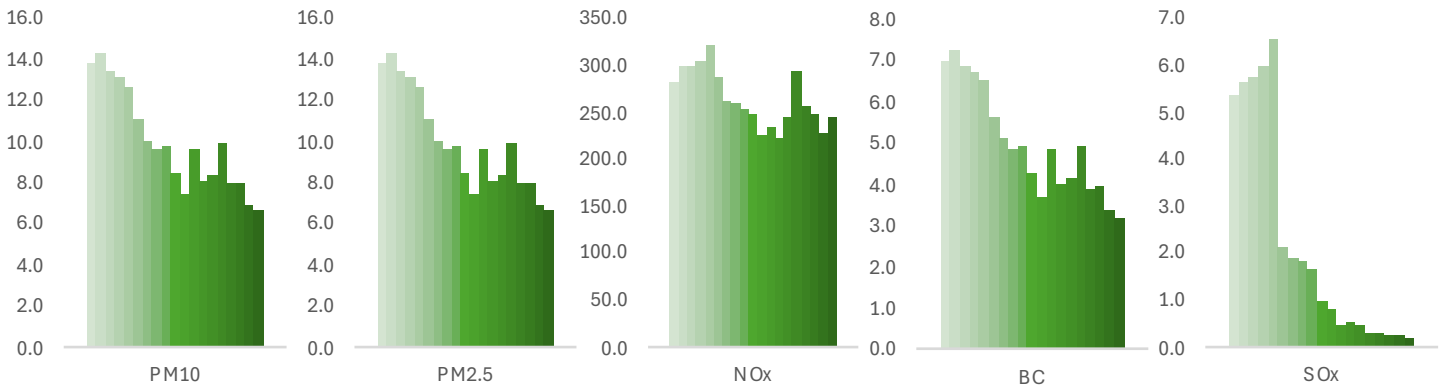
Pollution, Water and Land Management, Preserving Biodiversity, and Sustainable Materials

Paved roads (2020)
74%

(1)

Road transport air pollutant emissions, thousand tonnes (2000-2018)

(15)



In 2022, road transport contributed 48.7%, re-suspended dust contributed 50.4% in transport PM10 emissions. In total, road transport contributed about 14.1% in total PM10 emissions in Malaysia.

Deaths due to occupational exposure to diesel engine exhaust
 | 2000-2010 | 2011-2018
579 deaths | **683 deaths**

(22)

Terrestrial and marine protected areas (2022)
8.8%

(3)

Share of biofuels in road transport energy consumption (2020)
3.3%

(13)

Terrestrial protected areas
13.3%

(% of total land area)

Marine protected areas
5.6%

(% of territorial waters)

(3)

Domestic consumption per capita, tonnes (2024)
 | Malaysia | Asia-Pacific
21.3 tonnes | **13.8 tonnes**

(23)

Forest area (2021)
58.0%

(% of land area)

(3)

Domestic consumption is the total amount of materials directly used in the economy (used domestic extraction plus imports), minus the materials that are exported.

Developed with the support of:



Policy Measures

Policy document	Year	Road-related measures
National Land Public Transport Master Plan	2013	Measures to improve rural-urban connectivity
Road Transport Act 1987	2013	Road-side vehicle technical checks, Vehicle inspection and maintenance, National speed law, Road-side checks on overloading
Green Technology Master Plan 2017-2030	2017	Active transport infrastructure expansion, Vehicle taxes, Reference to finance mechanisms within country, Development of transport plan/ policy
Low Carbon Mobility Blueprint 2021-2030	2021	Active transport infrastructure expansion, General infrastructure improvements, Vehicle inspection and maintenance, Road charging and tolls, Investment required for specific projects, Ecodriving
National Transport Policy 2019-2030	2019	Active transport infrastructure expansion, Prevention of construction of roads, General infrastructure improvements, Performance-based transport maintenance contracts, Routine transport asset maintenance, General transport asset management, Reference to finance mechanisms within country
Twelfth Malaysia Plan 2021-2025	2021	Active transport infrastructure expansion, General infrastructure improvements, Disaster notification/ early warning system, Reference to finance mechanisms within country, Adaptation-related education and training, Measures to improve rural-urban connectivity, Road infrastructure expansion, Development of transport adaptation/ emergency/ disaster plan/ policy, Adaptation transport laws, regulations and programmes, Road-side checks on overloading, Ecodriving, General adaptation measures
Malaysia Road Safety Plan 2022-2030	2022	General infrastructure improvements, Vehicle inspection and maintenance, Automated enforcement of speed limits, Technical standards for road infrastructure, Implementation of vertical deflections on roads, Upgrading high risk locations for road safety, Audits/ star rating for existing roads for road safety
Global Status Report on Road Safety 2018	2018	Design standards for sidewalks and bicycle paths, Upgrading high risk locations for road safety, National road safety strategy, National speed law, Audits/ star rating for existing roads for road safety, Audits/ star rating required for new road infrastructure for road safety
National Automotive Policy 2020	2020	Vehicle inspection and maintenance, General transport finance, Investment required for specific projects
National Energy Policy 2022-2040	2022	Fossil fuel subsidy elimination
Malaysia Rail Supporting Industry Roadmap 2030	2014	Reference to finance mechanisms within country, Request for financial support to develop transport
Logistics and Trade Facilitation Master Plan 2015-2020	2015	General transport asset management, Reference to finance mechanisms within country
Clean air action plan	2010	Vehicle inspection and maintenance, Measures to improve rural-urban connectivity
National Physical Plan_Chapter 7 (Implementation)	2020	General infrastructure improvements, Reference to finance mechanisms within country
National Policy on Climate Change Malaysia. Biennial update report (BUR). BUR 2. National Communication (NC). NC 3.	2009	General transport finance, General adaptation measures
Updated Nationally Determined Contribution - MYS	2021	Disaster monitoring and risk assessment for transport infrastructure
Railways Act 1991	2012	Reference to finance mechanisms within country
Road Safety Opportunities and Challenges: Low- and Middle-Income Country Profiles	2020	Vehicle inspection and maintenance, Implementation of vertical deflections on roads

Policy Targets

Policy document	Target year	Road-related targets
Twelfth Malaysia Plan 2021-2025	2025	Constructing and Upgrading Rural Paved Roads = 2,800 km

Notes



(*) Policy measures and targets were extracted from policy documents as listed in the ATO National Transport Policies Database

<https://bit.ly/ATOpolicyrepository>

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- (16) Fossil Fuels Consumption Subsidies 2022 (IEA, 2022), <https://www.iea.org/reports/fossil-fuels-consumption-subsidies-2022>
- (17) Climate Change Dashboard (IMF, 2024), <https://climatedata.imf.org/pages/access-data>
- (18) Koks, et al. (2019), <https://www.nature.com/articles/s41467-019-10442-3>
- (19) Coalition for Disaster Resilient Infrastructure (CDRI, 2023), <https://giri.unepgrid.ch/facts-figures/building-infrastructures>
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- (21) Environmental Vulnerability Indicators (UN, 2018), <https://www.un.org/development/desa/dpad/least-developed-country-category/evi-indicators-ldc.html>
- (22) Global Health Data Exchange (GBD, 2019), <https://vizhub.healthdata.org/gbd-results/>
- (23) Global Materials Flow Database (UNEP, 2023), <https://www.resourcepanel.org/global-material-flows-database>

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This profile was developed by Asian Transport Outlook in support of TA-6756 Improving Infrastructure Sustainability Through Better Asset Management – Developing a Green Roads Toolkit and Guidance for ADB Projects. The ATO is an initiative developed under TA-6763 REG: Accelerating Innovation in Transport - Asian Transport Outlook: Phase 3 (55119-001) of the Asian Development Bank (ADB) and is also being supported by the Asian Infrastructure Investment Bank (AIIB) through Purchase Order No. CW39446 AIIB Support: Asian Transport Outlook Phase 3.

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