Aichi 2030 Declaration on Environmentally Sustainable Transport (EST): Country Profile

Thailand

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Developed by:

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Thailand

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Aichi 2030 Declaration on Environmentally Sustainable Transport (EST): Country Profile (Thailand)

2024

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Thailand, a country in the South East Asia region, having Upper middle income status, was recorded to have a national population of about 72 million in the year 2024.

The urban population share in total is about 54%. The age wise distribution of the national population accounts for 19% and 24% of <18 years old (minors) and >60 years old (seniors) population, respectively. The GDP per capita (PPP) for the year 2022 was 20,679 USD.

The motorisation rate of the road transport vehicles for the year 2022, for all vehicles combined, stood at 596 vehicles per thousand population. Similarly, the rate for 2&3 wheelers, LDV, freight vehicles and buses were 311, 265, 17, and 2 respectively.

Introduction to the profiles: The Asian Transport Outlook (ATO) project serves as a comprehensive data repository that organizes transport-relevant data and information from various official and secondary sources. These profiles are meticulously crafted using data from this extensive collection and draw upon a carefully curated selection of key indicators from a pool of over 500 transport-related metrics (visit https://asiantransportoutlook.com/snd for more information).

These profiles also provide comprehensive summaries of national targets that are relevant to the Aichi 2030 Declaration goals as contained in ATO's national policy trackers. The profile is structured by goals, followed by policy insights and enumeration of sample projects by the MDBs corresponding to the 6 Goals.

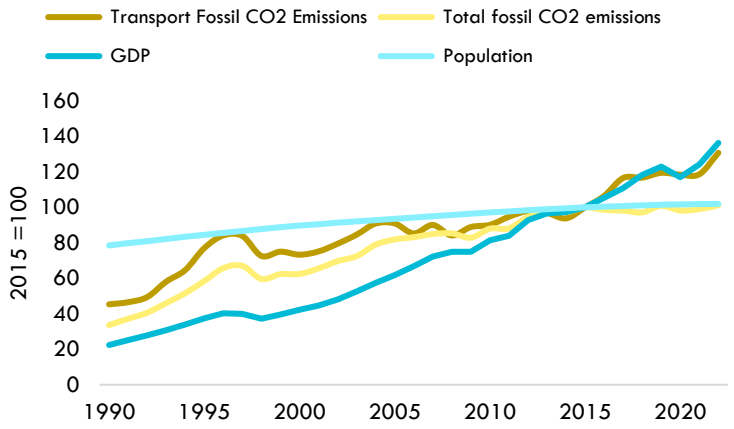
Contents:

Goal 1a – Low-Carbon (climate change mitigation):

By 2030, aim to peak transport CO2 emissions and initiate reductions in transport related CO2 emissions with the intention to move towards decarbonization of the transport sector by 2050, or shortly thereafter (Based on SDG 7.2, 9.1, 13.2, Paris Agreement)

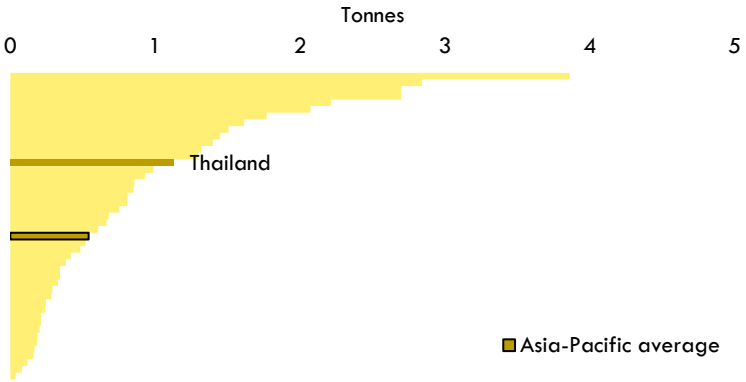
Transport CO2 emissions (fossil)

Growth of transport fossil CO2 emissions, total fossil CO2 emissions, population and GDP (PPP) (1990 - 2022)



(EDGAR, 2023)

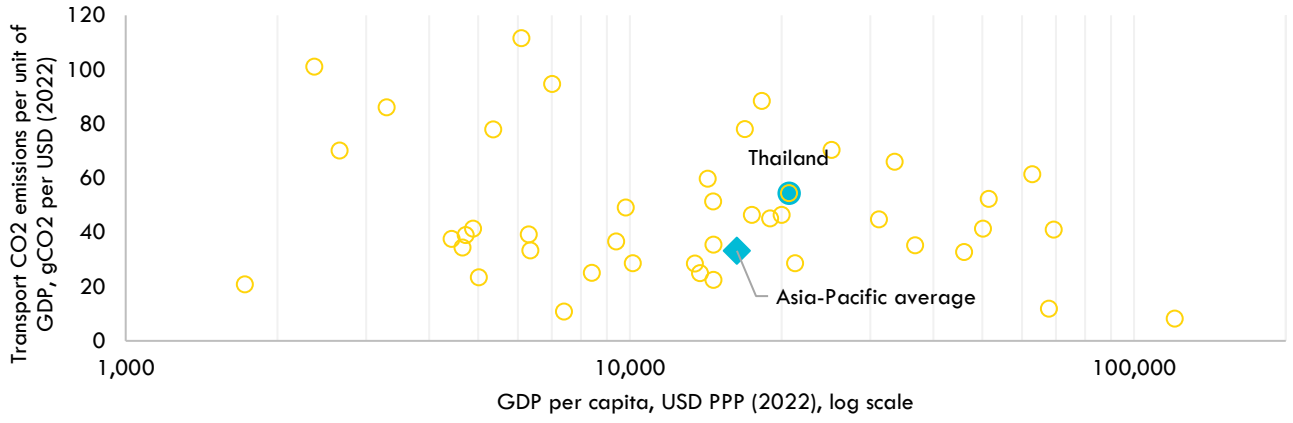
Transport fossil CO2 emissions per capita (2022)



(EDGAR, 2023)

- High motorization and emissions: Thailand has a high motorization rate (596 vehicles per 1,000 people), contributing to rising transport CO2 emissions.
- Rapid growth in transport emissions: Transport emissions are growing with a 4% annual increase between 2015 and 2022.
- Per capita emissions and intensity exceed regional averages: Thailand's per capita emissions and emissions intensity are higher than the Asia-Pacific average, indicating a need for greater decarbonization efforts.
- Road transport dominates emissions: Road transport accounts for 96% of emissions, highlighting the need to focus on this sector for mitigation efforts.

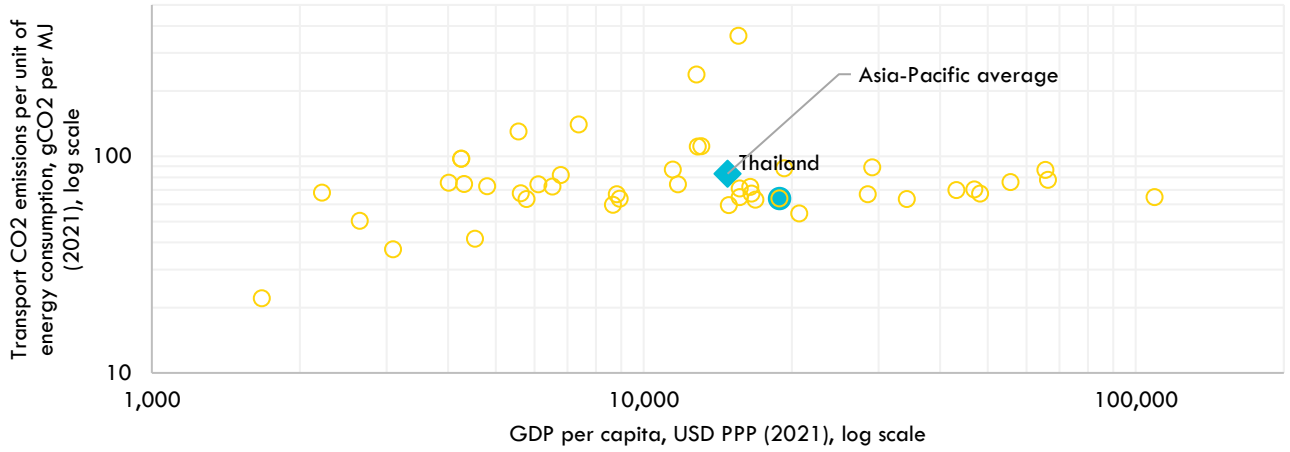
Transport CO2 emissions per unit of GDP (2022)



(EDGAR, 2023)

Transport energy consumption

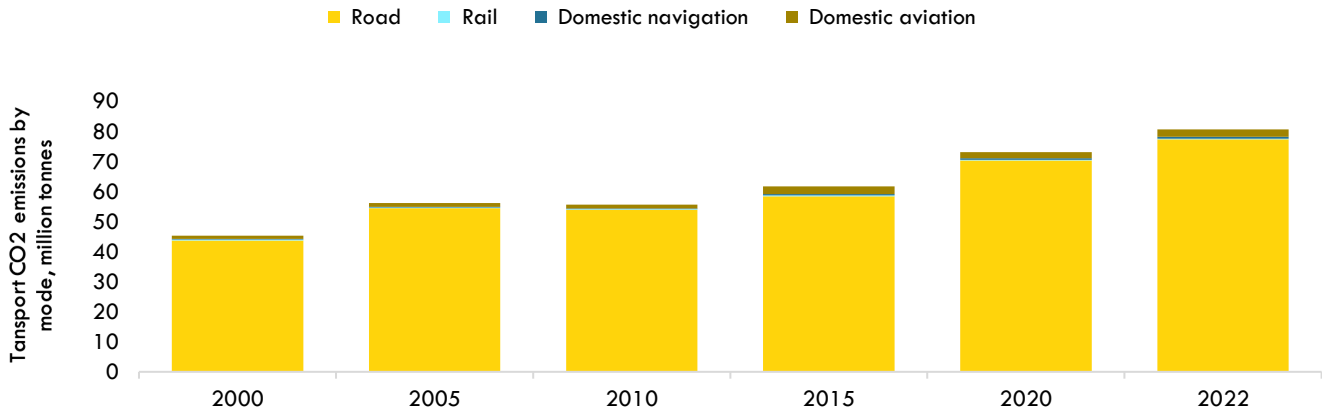
Transport CO2 emissions per unit of energy consumption and GDP per capita (2021)



(EDGAR, 2023)

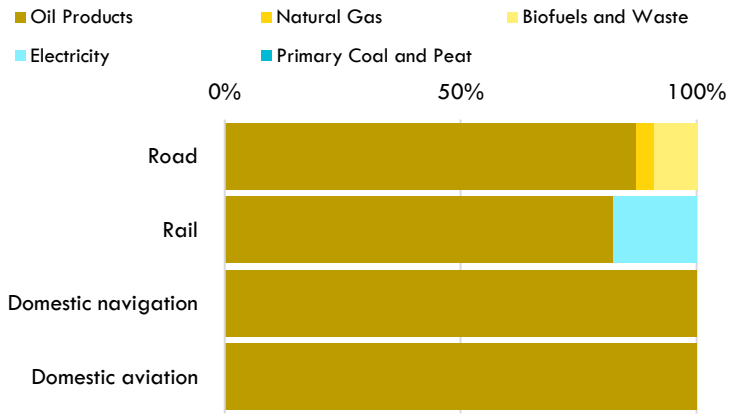
Transport CO2 emissions (fossil) and energy consumption modeshare

Growth of transport CO_2 emissions by mode



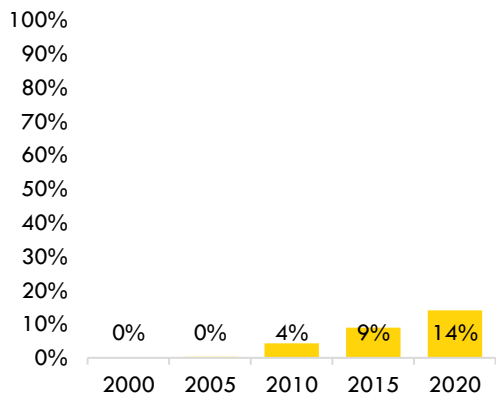
(EDGAR, 2023)

Share of transport energy consumption by mode and by source (2021)



(EDGAR, 2023)

Share of transport in renewable energy consumption:



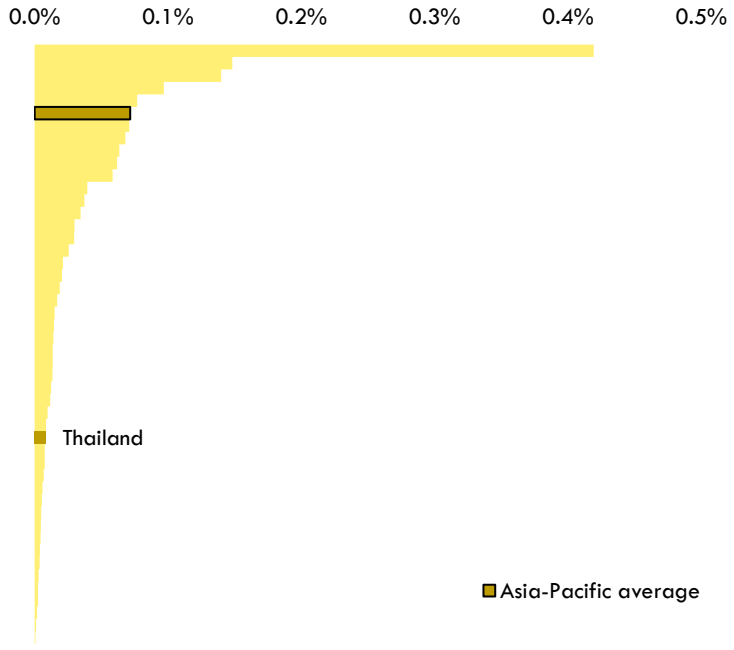
(Tracking SDG 7, 2024)

Goal 1b – Resilience:

By 2030, increase resilience and adaptive capacity of transport system to climate-related hazards and pandemics such as COVID-19. (Based on SDG 13, Paris Agreement and the Sendai Framework for Disaster Risk Reduction 2015-2030)

Estimated average annual losses to transport infrastructure due to hazards

Average annual losses to transport infrastructure due to hazards, as a share of GDP, in Asia-Pacific (2023)



(CDRI, 2023)

• Road infrastructure vulnerability: Road infrastructure is highly vulnerable to hazards, accounting for 78% of losses.

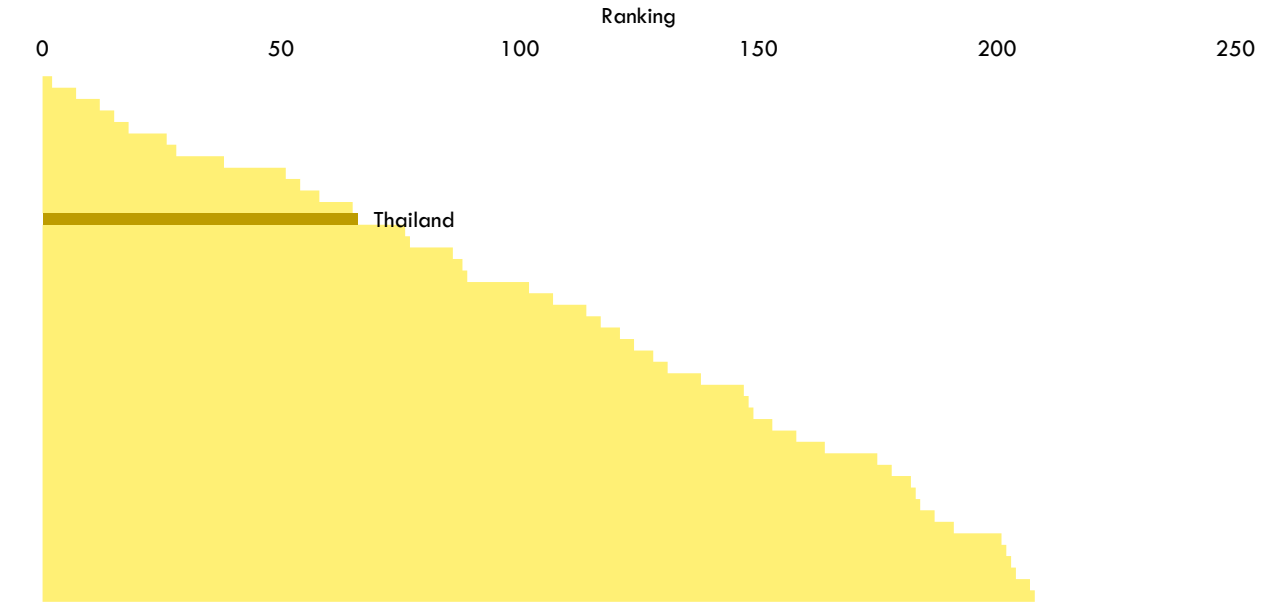
• Coastal population at Risk: 10% of the population lives in low-elevation coastal zones, exposing them to climate change-related risks.

• Moderate network redundancy: Thailand's National Road Vulnerability Index ranking indicates room for improvement in network redundancy to ensure connectivity during disruptions.

Note: National road vulnerability index ranking (NRVI), highest rank = 1 means fewer disruptions to trips after climate hazards due to sufficient network redundancy.

Climate change vulnerability

National road vulnerability index (NRVI) ranking (2023)



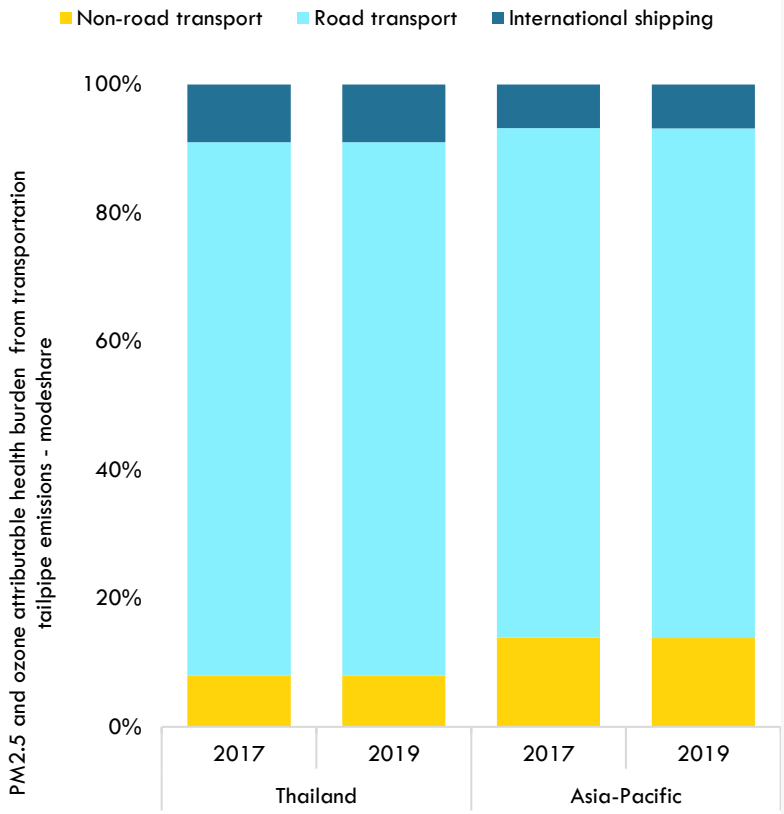
(Koks, et al., 2023)

Goal 1c – Air pollution:

By 2030, reduce air pollution and contamination caused by traffic, including PM2.5, other air pollutants and noise. (Based on SDG 3.9, 11.6).

Transport air pollution health impact

Transport air pollution health impact (PM 2.5)

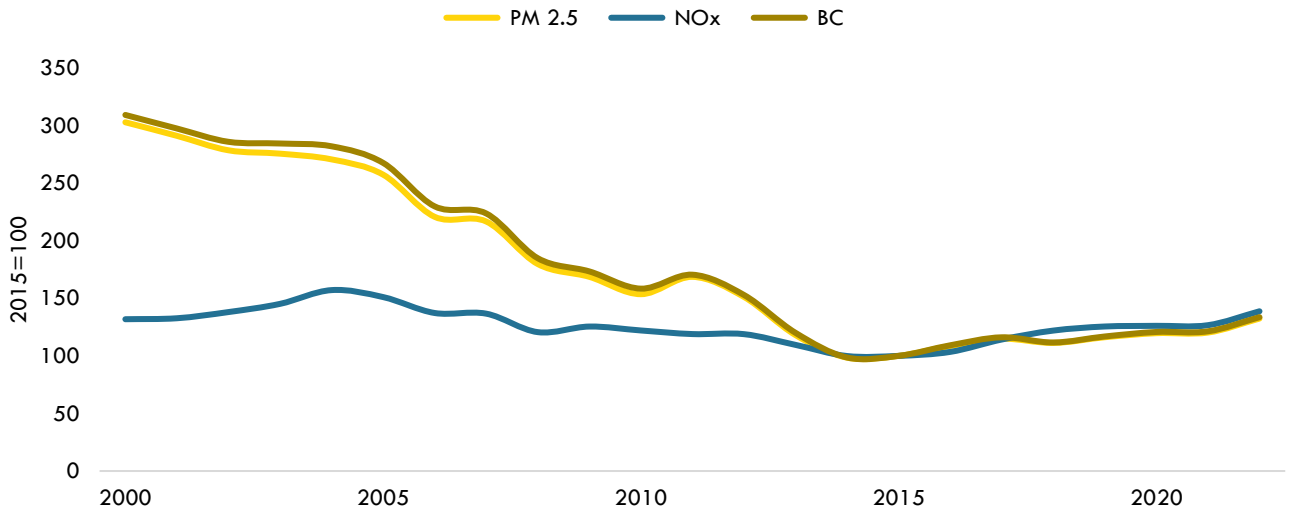


(McDuffie et al., 2021)

- Air pollutant emissions growth: Emissions of PM2.5, NOx, and BC from road transport have increased despite GDP growth, emphasizing the need for cleaner vehicles and fuels.
- Road transport's significant contribution: Road transport is a major contributor to air pollution, particularly NOx and BC emissions.
- High death toll: Deaths due to PM2.5 and ozone pollution from transport are increasing, with road transport being a major contributor.
- In Thailand, the total attributable deaths due to the PM2.5 and ozone air pollution from the transport sector changed from 2,950 to 3,263 between 2017 to 2019.
- The numbers for Asia-Pacific were about 236 thousand and 253 thousand, respectively, for the same time period.

Transport air pollutant emissions

Growth of road transport air pollutant emissions



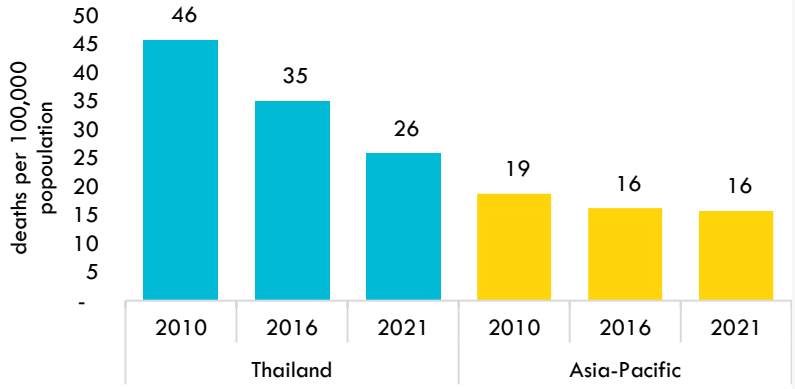
(EDGAR, 2023)

Goal 2 – Road safety:

By 2030, halve the number of deaths and injuries from road traffic accidents in Asia compared to 2020, with specific attention to vulnerable road users. (Based on SDG 3.6 and second UN Decade of Action on Road Safety 2021 – 2030, Stockholm Declaration on Road Safety)

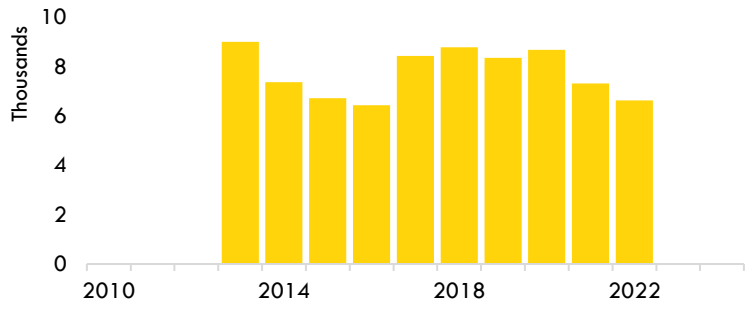
Road traffic crash fatalities

Road traffic crash fatality rate



(WHO, 2023)

Road traffic crash fatalities (absolute values)

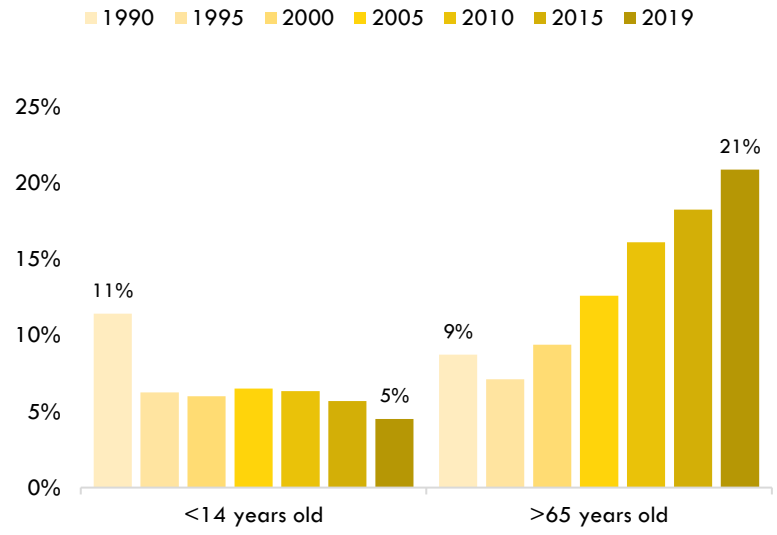


(Country official statistics)

- High fatality rate: Thailand's road traffic fatality rate is significantly higher than the Asia-Pacific average.
- Economic burden: Road crashes represent a significant economic cost, estimated at 7% of GDP.
- Vulnerable road users: Pedestrians and cyclists are particularly vulnerable, with a low share of safe infrastructure.

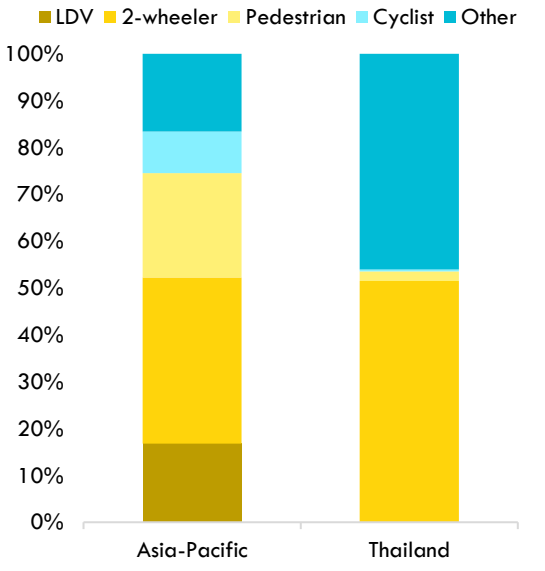
Share of vulnerable groups

Share of road crash fatalities by age



(GBD, 2021)

Share of road crash fatalities by mode



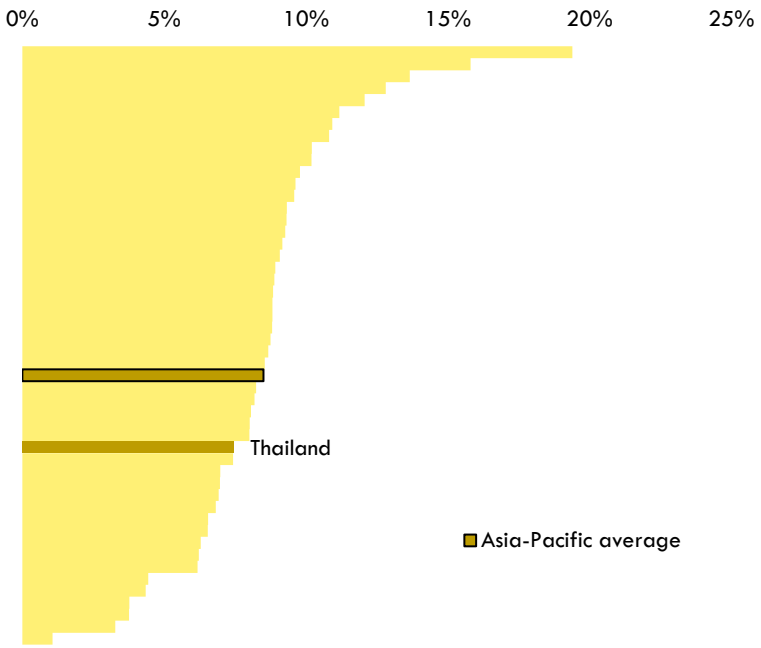
(WHO, 2023)

Goal 3 - Economic sustainability:

By 2030, realize sustainable economic and employment growth by leveraging science, technology and innovation and green investments in quality passenger and freight transport infrastructure and services in a manner that fully incorporates environmental and social impacts throughout the lifecycle of the transport infrastructure and services, (Based on SDG 8.4, SDG 9.1, 12.1 and 12.c)

Transport sector and GDP

Transport as a share of GDP

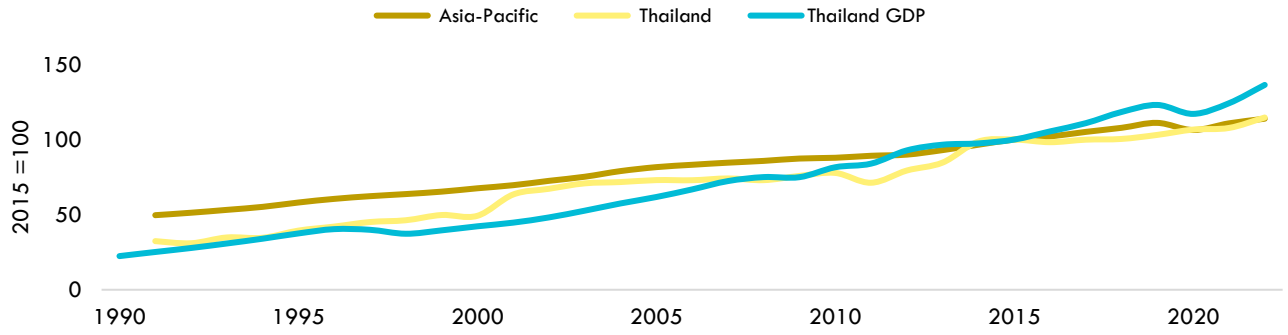


(UN, 2023)

- Declining transport sector contribution: The transport sector's contribution to GDP has decreased, indicating potential challenges in economic sustainability.
- Moderate employment growth: Employment in the transport sector has grown moderately, with a relatively low female share.
- Limited ODA and PPP: Official Development Assistance and Public-Private Partnership investments in the transport sector have been limited.
- Logistics performance: Thailand's logistics performance ranking has declined, suggesting room for improvement in efficiency and competitiveness.

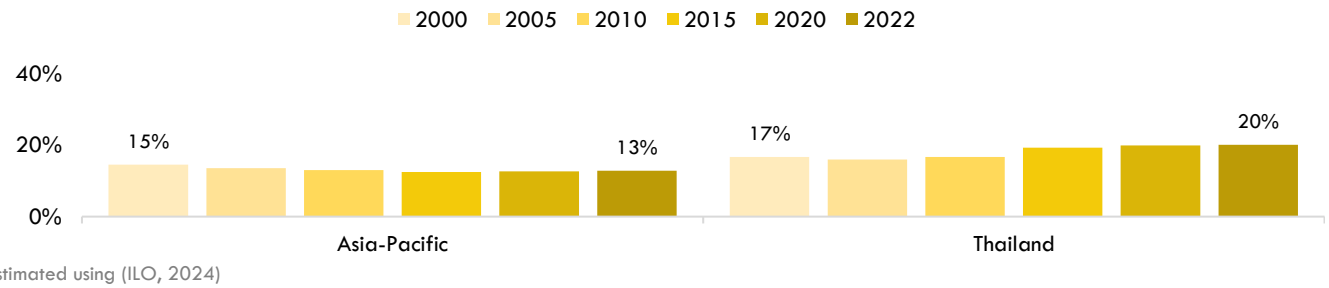
Transport employment

Growth of transport sector employment



(ILO, 2024)

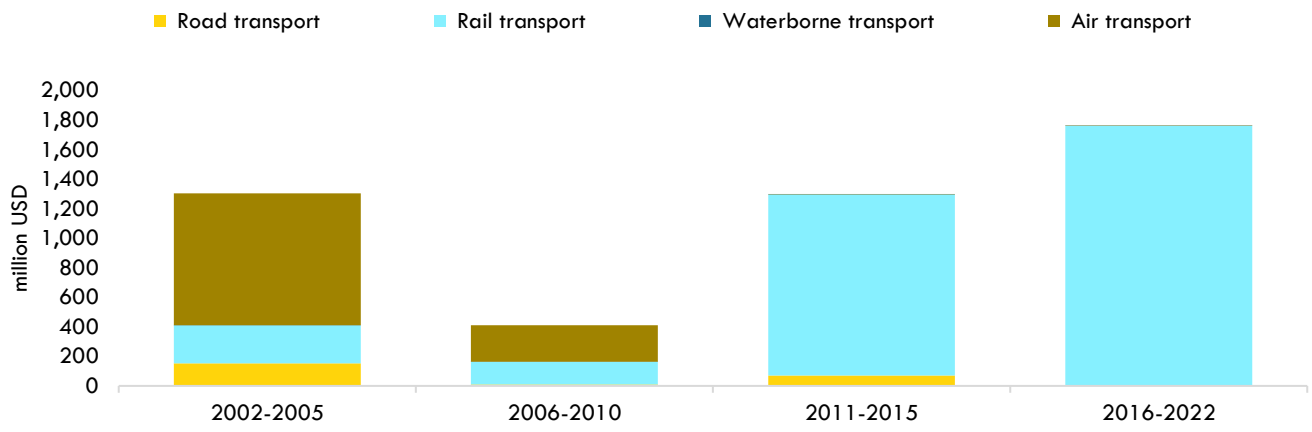
Female share in the transport employment



Estimated using (ILO, 2024)

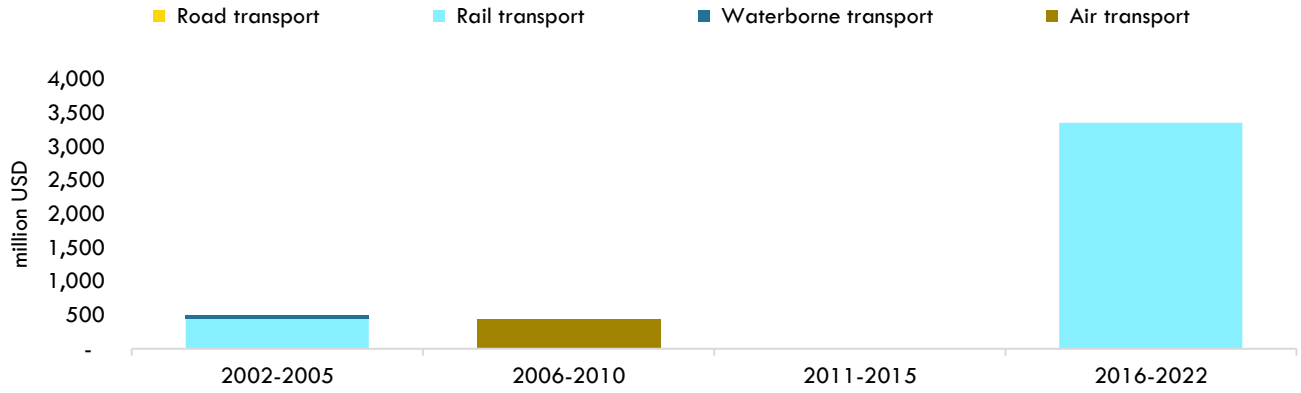
Transport investments

Official development assistance for Transport



(OECD, 2022)

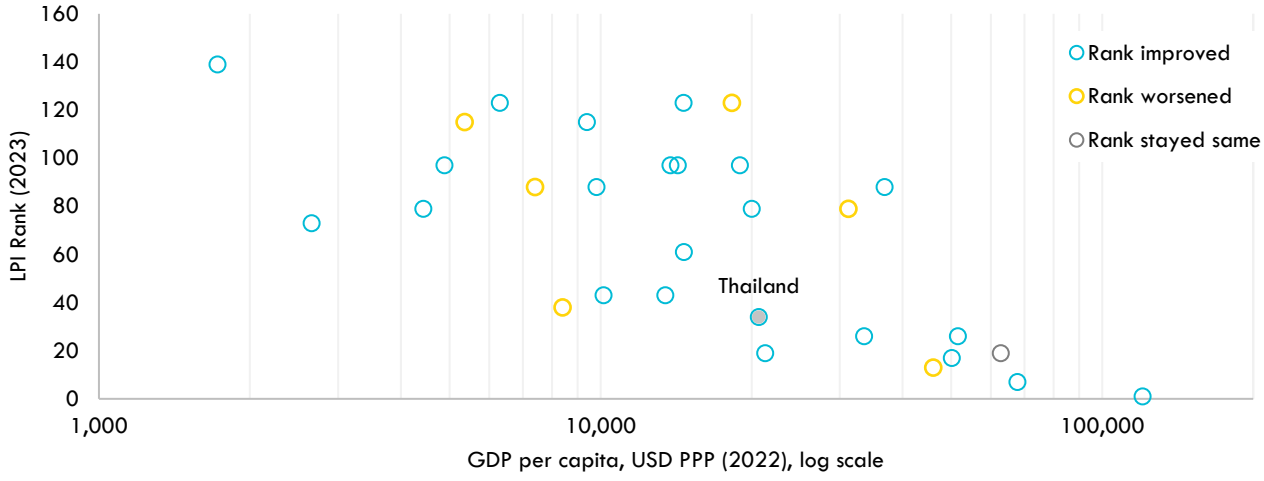
Public Private Partnership in Transport



(WB, 2023)

Freight sector

Domestic Logistics Performance Index, Rank change (2016 - 2023)



(WB, 2022)

Goal 4 - Rural access:

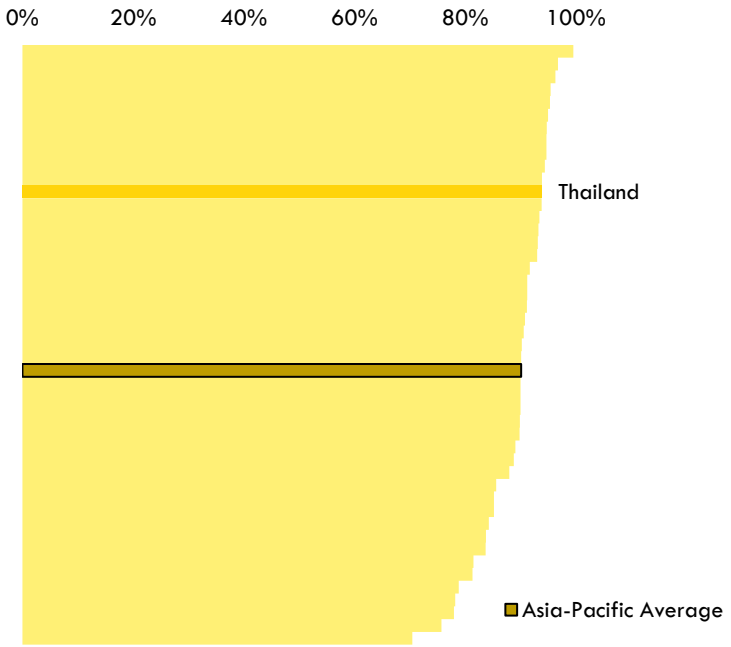
By 2030, realize accessible, inclusive, safe, affordable, and resilient rural transport infrastructure and services, thus facilitating improved access to markets, basic utilities and services including health and education by the farming community, and other rural population including physically disabled and vulnerable groups (Based on SDG 2 and SDG 9.1)

Rural access

Rural access index

(CIESIN-rural, 2023)

Share of Secondary and Tertiary roads in Total road network



(ATO and Country estimates)

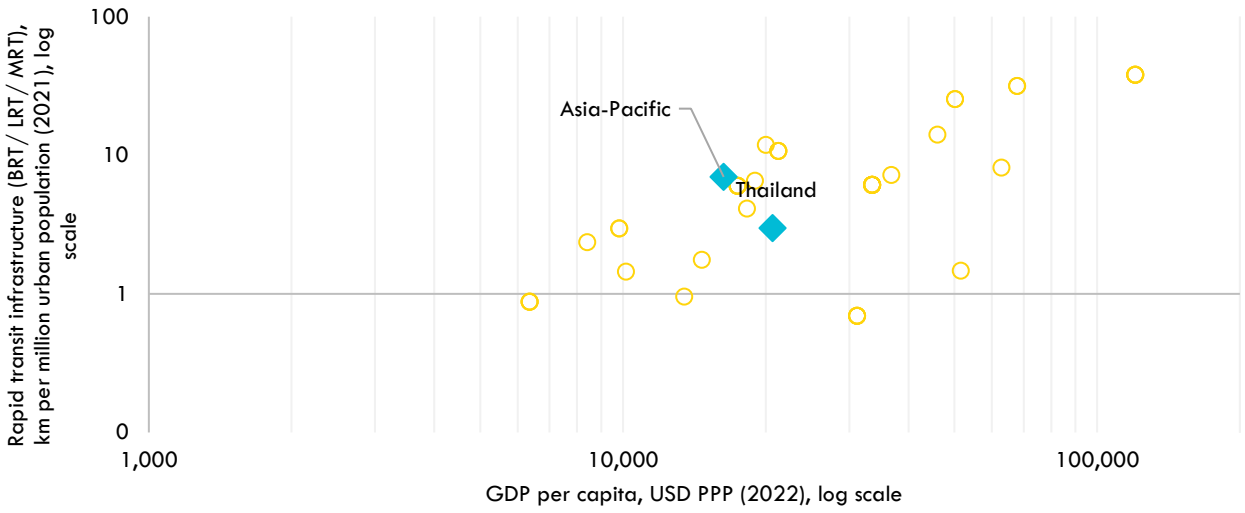
- Good rural access: A high percentage of the rural population has access to all-weather roads, exceeding regional and global averages.
- Remaining challenges: Despite good overall access, a significant number of people still lack decent rural access.

Goal 5 - Urban access:

By 2030, ensure access to accessible, inclusive, safe, efficient, affordable, and sustainable transport facilities, systems and services for urban dwellers, including physically disabled and vulnerable groups through the development of urban transport infrastructure and services (Based on SDG 11.2 and 11.7)

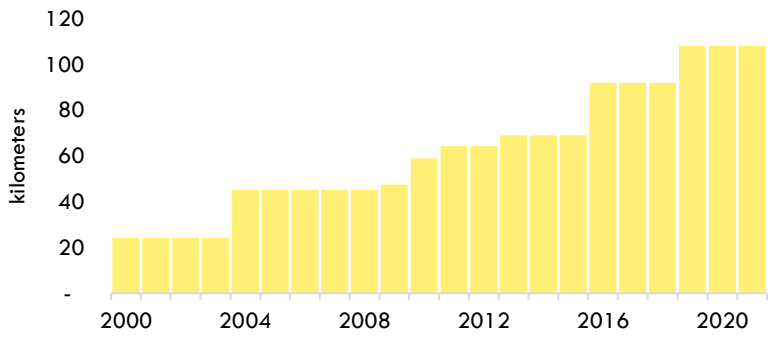
Urban rapid transit infrastructure

Rapid transit infrastructure to resident ratio (RTR)



(ITDP, 2022)

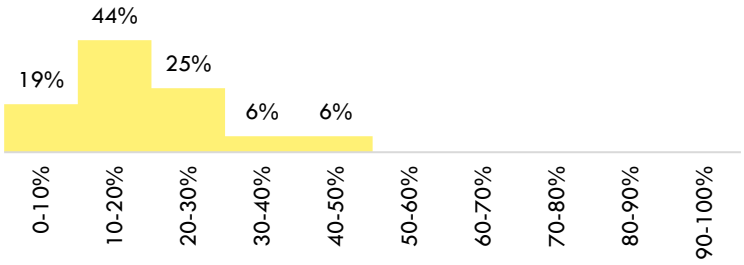
Urban rapid transit infrastructure length



(ITDP, 2022)

Urban access

Share of cities by level of urban access (out of 32 cities)



(CIESIN-urban, 2023)

- Limited rapid transit: Urban rapid transit infrastructure is limited, with only one city having such a system.

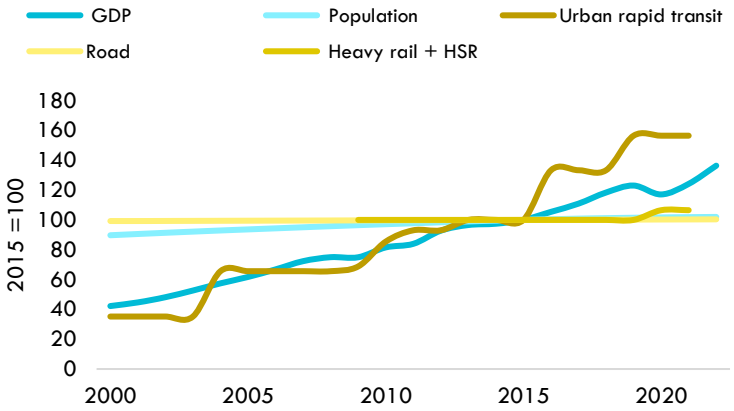
- Low urban access: A small percentage of the urban population has access to public transport within walking distance.

Goal 6 - National access and connectivity:

By 2030, facilitate inclusive multi-modal national (including rural-urban) and regional (cross-border) connectivity through the provision of sustainable multi-modal freight and passenger transport infrastructure and services (Based on SDG 9.1)

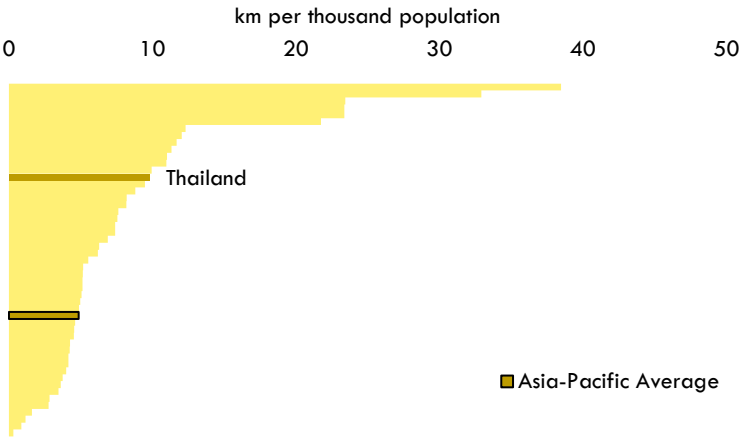
Transport infrastructure

Growth of transport infrastructure



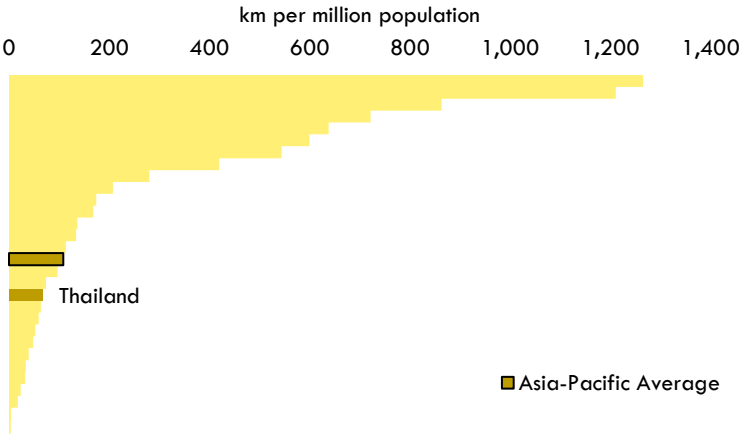
(IRF, 2024) (UIC, 2024) (ITDP, 2022) (ATO and Country estimates)

Road transport infrastructure availability (2022)



(IRF, 2024) (ATO and Country estimates)

Rail transport infrastructure (including HSR) availability (2021)

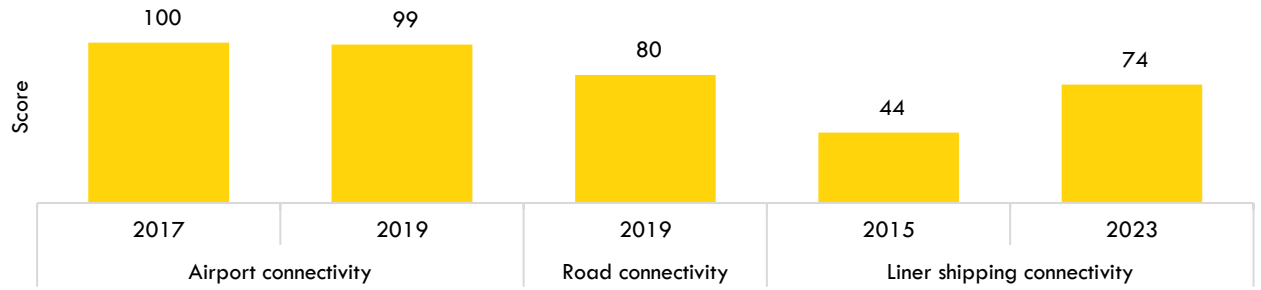


(UIC, 2024)

- Extensive road network: Thailand has an extensive road network, but heavy rail infrastructure is limited compared to the regional average.
- Declining bus services: The bus motorization index has decreased, indicating potential challenges in public transport availability.
- High air connectivity: Thailand has a high IATA airport connectivity score.
- Improved shipping connectivity: Liner shipping connectivity has improved significantly.
- Moderate container port traffic: Container port traffic is moderate compared to other countries in the region.
- Widespread mobile network coverage: Mobile network coverage is extensive.
- Growing internet use: Internet use has increased substantially.

Transport connectivity

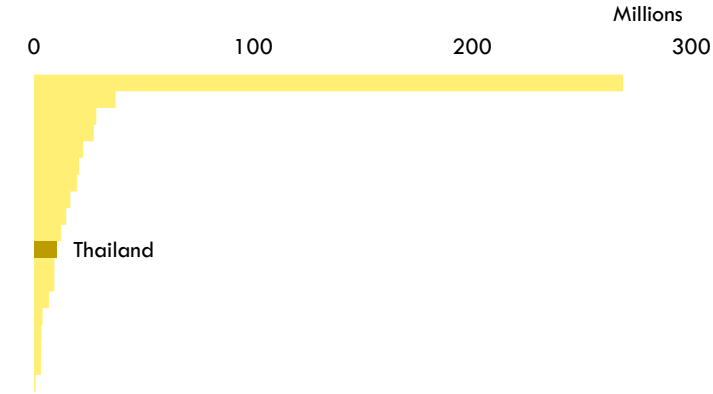
Transport connectivity



(WEF, 2018) (UNCTAD, 2024)

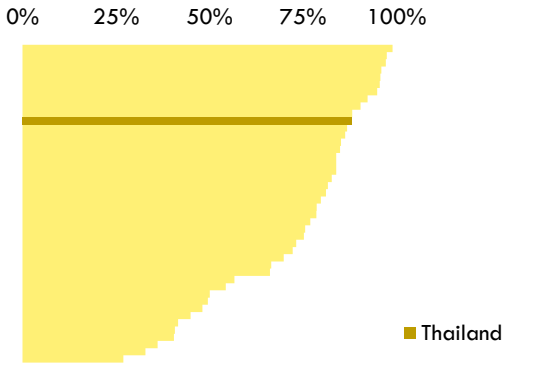
ICT

Container port traffic (TEU)



(UNCTAD, 2024)

Percentage of individuals using the internet (2022)



(ITU, 2023)

Transport Policy insights:

The insights are based on the transport policy trackers developed by the ATO. Trackers include analysis of policy measures and targets from all the transport relevant policy documents for a country published after the adoption of the Aichi 2030 Declaration, i.e. 2021.

• Focus on Low-Carbon and Air Pollution: Thailand has been active in policy development, adopting 23 documents since 2015, with a notable increase since the Aichi 2030 Declaration. These policies predominantly focus on climate change mitigation (Goal 1a), evident in both extensive coverage (91%) and target setting (67%). Air pollution (Goal 1c) also receives significant attention, while other goals, such as resilience, road safety, and various access-related goals, have less comprehensive coverage and fewer targets. These 63 targets, some extending as far as 2065, underscore Thailand's commitment to addressing its environmental and sustainability challenges, particularly in decarbonization and air quality improvement.

Transport relevant policy documents

Red - Poor coverage; Orange - Moderate coverage; Green - Extensive coverage

Doc. No.	Document Name	Year	Goal 1a	Goal 1b	Goal 1c	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6
1	Climate change Master Plan 2015-2050	2015								
2	Oil Plan 2015-2036	2015								
3	Intended Nationally Determined Contribution (INDC)	2015								
4	Thailand Energy Efficiency Development Plan 2015-2036	2015								
5	Thailand Automotive Industry Situation and Master Plan	2015								
6	Transport Infrastructure Development Strategy 2015-2022	2015								
7	Thailand Industrial Development 4.0 Strategy for 20 years (2017-2036)	2016								
8	Strategic Plan of the Ministry of Transport 2017-2021	2017								
9	Thailand's Action Plan to Reduce Aviation Emission Version 2021	2021								
10	Alternative Energy Development Plan 2018-2037	2018								
11	Strategies for the Development of Thailand's Transport System for a 20-Year Period (2018-2036)	2019								
12	National Strategy 2018-2037	2019								
13	Thailand. Biennial update report (BUR). BUR 3.	2020								
14	Updated Nationally Determined Contribution - THA	2020								
15	Thailand Greenhouse Gas Reduction Action Plan for Transport Sector	2021								
16	Mid-century, Long-term Low Greenhouse Gas Emission Development Strategy	2021								
17	Voluntary National Review 2021	2021								
18	Ride-Hailing Vehicles Via Electronic System B.E. 2564	2021								
19	Thailand Road Safety Master Plan 2022-2027	2022								
20	Thailand's Electric Vehicle policies	2022								
21	Thailand's 2nd Updated Nationally Determined Contribution	2022								
22	The Thirteenth National Economic and Social Development Plan (2023-2027)	2023								
23	Action Plan on Thailand Logistics Development 2023-2027	2023								

(ATO National policy tracker)

Poor coverage
Moderate coverage
Extensive coverage

Transport relevant national targets

Doc. No.	Target	Year	Goal 1a	Goal 1b	Goal 1c	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6
3	**Intended Nationally Determined Contribution (INDC)**									
	the PDP sets a target to achieve a 20% share of power generation from renewable sources in 2036 AEDP aims to achieve a 30% share of renewable energy in the total final energy consumption in 2036	2036	x		x					
	Thailand intends to reduce its greenhouse gas emissions by 20 percent from the projected business-as-usual (BAU) level by 2030.	2030	x		x					
10	**Alternative Energy Development Plan 2018-2037**									
	Increase the oil percentage in 2020 to 19 percent and continue to increase towards the end of the plan year. 2037 to 23 percent	2037	x		x					
9	**Thailand's Action Plan to Reduce Aviation Emission Version 2021**									
	Aviation Fuel saved by 0.3% Fuel efficiency Improvement by 0.3%	2050	x							
	Aviation Greenhouse gas reduction by 0.3%	2050	x							
11	**Strategies for the Development of Thailand's Transport System for a 20-Year Period (2018-2036)**									
	Logistics costs per gross domestic product (GDP) = Present (2016) 13.9% Target (2036) 11.9 percent Transportation costs per gross domestic product = Present (2016) 7.5% Target (2036) 6.7 percent	2036	x				x			x
	Proportion of public transport users traveling in Bangkok and its vicinity = Present (2015) 31.28% Target (2036) 50.38% Proportion of public transport users in intercity travel = Present (2015) 50.28% Target (2036) 61.12%	2036	x		x	x				
	Proportion of fatalities from public transport accidents to passenger traffic traveling on all public transpor = Present (2015) 8.48% Target (2036) 2.77 percent	2036				x				
	Proportion of the volume of freight by rail = Present (2015) 1.4% Target (2036) Percent 10% Proportion of volume of water transport = Present (2015) 11.44% Target (2036) 19 percent	2036	x		x	x				
	energy consumption in the transportation sector to the energy consumption of the whole country = Present (2015) 36.6% Target (2036) to reduce energy use from normal case by 15%	2036	x							
13	**Thailand. Biennial update report (BUR). BUR 3.**									
	Thailand aims to increase the percentage of renewable energy in gross final consumption to 24.08 % by 2030.	2030	x		x					
	reduce GHG emissions by 20% from the projected BAU level by 2030	2030	x		x					
14	**Updated Nationally Determined Contribution - THA**									
	Thailand intends to reduce its greenhouse gas emissions by 20 percent from the projected business-as-usual (BAU) level by 2030.	2030	x		x					

16	**Mid-century, Long-term Low Greenhouse Gas Emission Development Strategy**									
	To achieve the targets under Thailand's LEDS, the share of liquid biofuel use will have to increase from 8% in 2030 to 34% of total final energy consumption in 2050.	2030	x		x					
	To achieve the targets under Thailand's LEDS, the share of liquid biofuel use will have to increase from 8% in 2030 to 34% of total final energy consumption in 2050.	2050	x		x					
	increase the share of electric vehicles to be at least 30% by 2030	2030	x		x					
	It aims to increase the portion of renewable power generation from 17.29% in 2019 to 30% of total power requirement in 2037 which accounts for 29,358 MW.	2037	x		x					x
	Policy direction to increase the share of new renewable electricity generation to be at least 50%	2050	x		x					
	Thailand's first NDC indicates an emission reduction of 20% from the projected business-as-usual (BAU) level by 2030.	2030	x		x					
	Thailand aims to peak its greenhouse gas emissions in 2030, with the ambition to move towards net-zero greenhouse gas emissions as early as possible within the second half of this century, and towards carbon neutrality by 2065	2030	x							
	Thailand aims to peak its greenhouse gas emissions in 2030, with the ambition to move towards net-zero greenhouse gas emissions as early as possible within the second half of this century, and towards carbon neutrality by 2065	2065	x							
	increase energy efficiency by reduce energy intensity at least 30% by 2037	2037	x							
	Under Thailand's LEDS, the transport sector needs to increase the energy efficiency to 68% of total final energy consumption in 2050.	2050	x							
	41.0 MtCO2eq mitigation	2030	x							
15	**Thailand Greenhouse Gas Reduction Action Plan for Transport Sector**									
	Thailand intends to reduce greenhouse gas emissions by 20% to 25% above emission levels. Greenhouse gas emissions in normal cases within the year 2030	2030	x		x					
	In this regard, transportation from the energy and transport sectors has the combined potential as of 2030 (2030) to reduce greenhouse gas emissions by 41 MtCO2e as additional measures .	2030	x							
17	**Voluntary National Review 2021**									
	According to the Mass Rapid Transit Master Plan in the Bangkok Metropolitan Region (M-MAP), the Government aims to finish 103 metro stations by 2029.	2029	x		x	x			x	
19	**Thailand Road Safety Master Plan 2022-2027**									
	In 2027, the number of people killed in traffic accidents must be less than 8,474, or 12 per 100,000 people. The number of serious injuries from road accidents in 2027 must be less than 106,376. 1.	2027				x				
21	**Thailand's 2nd Updated Nationally Determined Contribution**									
	Thailand intends to reduce its greenhouse gas emissions by 30 percent from the projected business-as-usual (BAU) level by 2030.	2030	x							

23	**Action Plan on Thailand Logistics Development 2023-2027**									
	The proportion of freight moved by rail to total freight volumes = An average of 7 percent (2023-2027)	2027	x		x					
	Customs (LPI) = Rank 25th or a score of not less than 3.20 Logistics Quality and Competence = Rank 25th or a score of not less than 3.60 E-commerce value of transport and logistics sectors = An average growth rate of 10 percent (2023-2027)	2027	x		x					x
	Transport cost to GDP reduces to 5 percent	2027	x				x			x
22	**The Thirteenth National Economic and Social Development Plan (2023-2027)**									
	The number of automotive workers upskilled to EVs and employed in the new industry increases by 5,000 by 2027.	2027	x		x	x				
	The number of public charging stations/fast chargers increases by 5,000 by 2027 Supporting the reinforcement of electrical grids to sufficiently meet the constant charging demand of increasing EV use, together with separating electricity bills for EV charging from other electricity usage.	2027	x		x					x
	Thailand manufactures 380,250 ZEVs, accounting for 17 per cent of all vehicles, by 2027. No fewer than 40,000 vehicles are converted into modified EVs by 2027. The export value of EVs or parts increases by 5 per cent per year, or Thailand's export value of EV parts increases by 5 per cent per year.	2027	x		x					
	The value of investment in automotive-related science, technology, research and innovation increases by 20 per cent per year. The number of workers undertaken EVs training development is not less than 30,000 by 2027.	2027	x		x	x	x			x
	There are 282,240 EVs (zero-emission vehicles (ZEVs) with new registrations, which include battery-powered electric vehicles [BEVs] and fuel-cell electric vehicles [FCEVs]), accounting for 26 per cent of all vehicles, in use in Thailand by 2027. The combined value of investment promotion for the EV and parts industry is no less than 130 billion baht by 2027. The number of businesses in the EV supply chain increases by no less than 14, and there are investments in key EV technology in Thailand by 2027. The proportion of entrepreneurs who can transform their businesses increases by 10 per cent by 2027.	2027	x		x		x			x
	As a result, the Thai government has expedited the development of a comprehensive EV system and set a vision for Thailand to become one of the world's important production bases of EVs and their parts with an emphasis on the development of zero emission vehicles (ZEV), which include battery-powered electric vehicles (BEV) and fuel-cell electric vehicles (FCEV), setting targets by 2030 at 440,000 units in domestic use (50 per cent of all vehicles) and 725,000 units in production (30 per cent of all vehicles).	2030	x		x					
	The proportion of renewable energy in the final energy consumption increases by no less than 24 per cent by 2027.	2027	x		x					
	Reduction of overall GHG emissions (energy and transport/ industry/waste management) by no less than 20% from business-as-usual (BAU) level	2027	x		x					

	Thailand has announced its goal to reduce its greenhouse gas (GHG) emissions and implement measures regarding climate change after 2020 when the GHG emissions were set to be reduced by 20 to 25 per cent in comparison with a business-as-usual level of GHG emissions in 2030, meaning that total GHG emissions are to be no more than 444 million tons of carbon dioxide equivalent	2030	x		x					
	Thailand's carbon neutrality target by 2050 and realize Thailand's intention to reach net zero GHG emission by 2065 — according to a statement by the Thai Prime Minister to the 26th Conference of the Parties (COP 26) of the United Nations Framework Convention on Climate Change (UNFCCC)	2050	x							
	Thailand's carbon neutrality target by 2050 and realize Thailand's intention to reach net zero GHG emission by 2065 — according to a statement by the Thai Prime Minister to the 26th Conference of the Parties (COP 26) of the United Nations Framework Convention on Climate Change (UNFCCC)	2065	x							
	Air pollution (PM2.5) and GHG emissions from the transport industry decreases by 4 per cent per year.	2027	x		x					

(ATO National policy tracker)

Transport relevant sample projects:

A sample list of projects by the MDB highlights their focus with respect to the Aichi 2030 Declaration Goals.

Transport relevant projects

Year	Project name	Amount (million USD)	Goal 1a	Goal 1b	Goal 1c	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6
2024	Thailand Resilient Transport Connectivity and Irrawaddy Dolphin Conservation Project	149	x	x	x	x	x	x		x
2022	Preparing the Climate Resilient Connectivity for the Eastern Economic Corridor Project: the Intercity Motorway No. 7 (Extension to Link with U-Tapao Airport)	1	x	x	x	x	x			
	Thailand: U-Tapao International Airport Expansion Project	431		x		x	x			x
2023	Supporting Poverty Eradication and Sustainable Local Economic Development	300								
2024	Planning Urban Bus Networks in Regional Cities and Promoting Local Administrative Participation in Public Transport Management	0.1						x	x	
2024	Developing Sustainable Government Subsidy Models for Road Public Transport Systems	0.3						x	x	
2024	Feeder Planning for Safe Travel and Sustainability in Bangkok Metropolitan Region	0.1							x	
2025	Integrating Public Bus Services with the Development of Dual-Track Rail Systems	0.1						x		

(MDB Projects database)

References:

Asian Transport Outlook (ATO) + Country. (2024). ATO estimates based on Country Official Statistics	(ATO and Country estimates)
Asian Transport Outlook (ATO) + UNEP. (2024). ATO analysis of UNEP Index using latest data	(ATO analysis of UNEP data)
Coalition for Disaster Resilient Infrastructure (CDRI). (2023). Building & infrastructur. https://giri.unepgrid.ch/facts-figures/building-infrastructures	(CDRI, 2023)
Socioeconomic Data and Applications Center (SEDAC). (2023). SDG Indicator 11.2.1: Urban Access to Public Transport, 2023. https://sedac.ciesin.columbia.edu/data/set/sdgi-11-2-1-urban-access-publictransport-2023	(CIESIN-urban, 2023)
Socioeconomic Data and Applications Center (SEDAC). (2023). SDG Indicator 9.1.1: The Rural Access Index (RAI), 2023. https://sedac.ciesin.columbia.edu/data/set/sdgi-9-1-1-rai-2023	(CIESIN-rural, 2023)
Asian Transport Outlook (ATO). (2024). ATO National policy tracker. The trackers are based on the national level policies.	(ATO National policy tracker)
Emissions Database for Global Atmospheric Research (EDGAR). (2023). EDGAR - Emissions Database for Global Atmospheric Research. https://edgar.jrc.ec.europa.eu/	(EDGAR, 2023)
Ember. (2023). Yearly electricity data. https://ember-climate.org/data-catalogue/yearly-electricity-data/	(EMBER, 2023)
Global Burden of Disease (GBD). (2021). GBD Results. http://ghdx.healthdata.org/gbd-results-tool	(GBD, 2021)
International Council on Clean Transportation (ICCT). (2023). https://theicct.org/	(ICCT, 2023)
International Energy Agency (IEA). (2022). Fossil Fuels Consumption Subsidies 2022. https://www.iea.org/reports/fossil-fuels-consumption-subsidies-2022	(IEA, 2022)
International Monetary Fund (IMF). (2024). Climate Change Dashboard. https://climatedata.imf.org/pages/access-data	(IMF, 2024)
International Road Federation (IRF). (2024). https://irfnet.ch/data-statistics/4	(IRF, 2024)
International Trade Centre (ITC). (2024). Trademap. https://www.trademap.org/	(ITC, 2024)
Institute for Transportation and Development Policy (ITDP). (2022). Rapid Transit Database. https://www.itdp.org/rapid-transit-database/	(ITDP, 2022)
International Telecommunication Union (ITU). (2023). Statistics. https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx	(ITU, 2023)

Koks, et al. (2023). A global assessment of national road network vulnerability. https://iopscience.iop.org/article/10.1088/2634-4505/acd1aa	(Koks, et al., 2023)
McDuffie et al. (2021). Global Burden of Disease-Major Air Pollution Sources. https://costofairpollution.shinyapps.io/gbd_map_global_source_shinyapp/	(McDuffie et al., 2021)
Organisation for Economic Co-operation and Development (OECD). (2022). Data Explorer. https://stats.oecd.org/Index.aspx?DataSetCode=CRS1#	(OECD, 2022)
International Organization of Motor Vehicle Manufacturers (OICA). (2023). Statistics. https://www.oica.net/production-statistics/	(OICA, 2023)
Tracking SDG 7. (2024). The energy progress report. https://trackingsdg7.esmap.org/	(Tracking SDG 7, 2024)
International Union of Railways (UIC). (2024). https://uic-stats.uic.org/	(UIC, 2024)
UN. (2023). Downloads. https://unstats.un.org/unsd/snaama/Downloads	(UN, 2023)
UN. (2018). Environmental Vulnerability Indicators. https://www.un.org/development/desa/dpad/least-developed-country-category/evi-indicators-ldc.html	(UN, 2018)
UN. (2021). Energy Statistics. https://unstats.un.org/unsd/energystats/	(UN, 2021)
UN. (2022). Population Database. https://population.un.org/wpp/	(UN, 2022)
UN Conference on Trade and Development (UNCTAD). (2024). Statistics. https://unctadstat.unctad.org	(UNCTAD, 2024)
UNEP. (2023). Global Materials Flow Database. https://www.resourcepanel.org/global-material-flows-database	(UNEP, 2023)
World Bank. (2022). https://data.worldbank.org/	(WB, 2022)
World Bank. (2023). PPI Database. https://ppi.worldbank.org/en/ppi	(WB, 2023)
World Economic Forum (WEF). (2020). Global Competitiveness Report Special Edition 2020. https://www.weforum.org/publications/the-global-competitiveness-report-2020/	(WEF, 2018)
World Helath Organisation (WHO). (2023). Global Status Report on Road Safety 2023. https://www.who.int/teams/social-determinants-of-health/safety-and-mobility/globalstatus-report-on-road-safety-2023	(WHO, 2023)
International Labour Organization (ILO). (2024). Statistics. https://www.ilo.org/global/statistics-and-databases/lang--en/index.htm	(ILO, 2024)
Asian Transport Outlook (ATO). (2024). ATO compilation of the MDB projects. The database is a compilation of the transport relevant projects undertaken by 3 MDBs - ADB, AIIB and World Bank having the project approval year 2019 or after.	(MDB Projects database)
Country official statistics. (varies). Country official statistics in the form of statistical yearbooks, handbooks, databanks etc.	(Country official statistics)

GDP data is sourced from (WB, 2022) and Population data from (UN, 2022)