Agora Verkehrswende

Towards Decarbonising Transport Thailand 2024

A Stocktake on Sectoral Ambition

Imprint

Towards Decarbonising Transport Thailand 2024

A Stocktake on Sectoral Ambition

Supported by

on the basis of a decision
by the German Bundestag

IKI is working under the leadership of the Federal Ministry for Economic Affairs and Climate Action, in close cooperation with its founder, the Federal Ministry of Environment and the Federal Foreign Office

This publication was done under the Thai-German Cooperation on Energy, Mobility and Climate (TGC EMC), a project financed by the International Climate Initiative (IKI).

PUBLISHED BY

Agora Verkehrswende
Agora Transport Transformation gGmbH
Anna-Louisa-Karsch-Str. 2
10178 Berlin | Germany
P +49 (0)30 700 14 35-000
F +49 (0)30 700 14 35-129
www.agora-verkehrswende.de
info@agora-verkehrswende.de

Agora Verkehrswende is a Berlin-based think tank that seeks to promote climate-friendly mobility. Non-partisan and non-profit, it works together with key stakeholders in the fields of politics, business, academia and civil society to decarbonise the transport system. To this end, the think-tank team develops evidence-based policy strategies and recommendations. Agora Verkehrswende was initiated in 2016 by Stiftung Mercator and the European Climate Foundation.

Authors
Yannick Thoma, Elisabeth Le Claire, Johannes Oetjen, Popponpat Yamwan

Editing
Lucais Sewell

Cover Image
Craig Schuler / shutterstock

Please cite as
Agora Verkehrswende: *Towards Decarbonising Transport: Thailand 2024 – A Stocktake on Sectoral Ambition.*

Published: February, 2024
107-2024-EN

THAILAND

2.46%
SHARE IN GLOBAL GDP (2022)

4.90%
TRANSPORT SECTOR SHARE GDP (2022)

3.96%
EMPLOYMENT IN TRANSPORT (2022)

Source: World Development Indicators, UNDP, NSO Thailand

Thailand's diverse topography includes mountains in the north, vast central plains, an extensive coastline and many islands. The majority of transport is conducted by road, with small shares for water and rail, despite a large rail network and extensive waterways. Aviation is playing an increasing role, with continuously growing GHG emissions.

Thailand has set national targets to improve energy efficiency in the transport sector, but has not yet underpinned these targets with fuel efficiency standards. Existing policy measures aim to shift demand to public transport and rail, and to support electrification. Thailand has set ambitious targets for the sale and production of light duty EVs (passenger cars and light commercial vehicles). By 2035, Thailand aims to phase out the sale of new combustion cars, with an intermediate goal of 50% zero-emission sales by 2030.

NDC

- 2025 GHG EMISSIONS PEAK
- 30–40% REDUCTION IN 2030 COMPARED TO BAU
- CARBON NEUTRAL BY 2050
- NET-ZERO BY 2065

EV TARGETS

- 50% ZEV SHARE IN NEW LDV SALES BY 2030, 100% BY 2035
- 30% ZEV SHARE IN LDV PRODUCTION BY 2030, 50% BY 2035
- 85% ZEV SHARE IN BUS PRODUCTION BY 2035

POPULATION

71.7 million people
CURRENT POPULATION (2022)

0.9%
SHARE OF GLOBAL POPULATION (2022)

EXPECTED POPULATION GROWTH: −0.5% (2020–2050)

141 people/km²
POPULATION DENSITY (2022)

61 people/km²
WORLD AVERAGE (2021)

41.8 years
AVERAGE AGE (2022)

Source: Thailand Ministry of the Interior, UN World Population Prospects 2022, World Development Indicators, Worldometer

URBANISATION

53% of total
URBAN POPULATION (2022)

77%
G20 AVERAGE

51.3%
WORLD AVERAGE

36.8 million people
TOTAL URBAN POPULATION (2022)

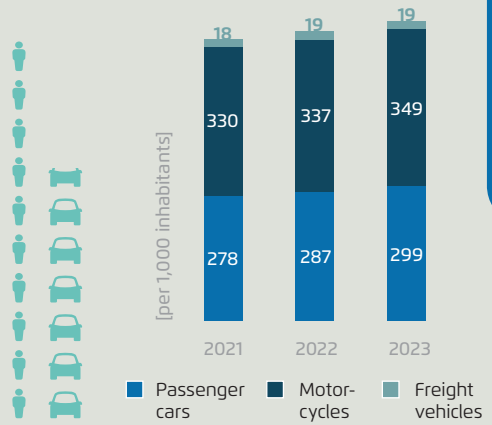
EXPECTED SHARE OF URBAN POPULATION: 69.5% (2050)

Source: World Development Indicators, World Urbanisation Indicators

MOBILITY

667 road motor vehicles per 1,000 inhabitants
MOTORISATION RATE (2022)

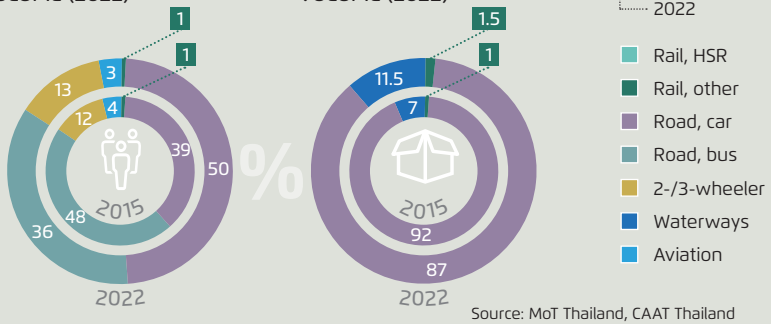
= 100 inhabitants
= 100 motor vehicles



Source: Thailand Ministry of Transport

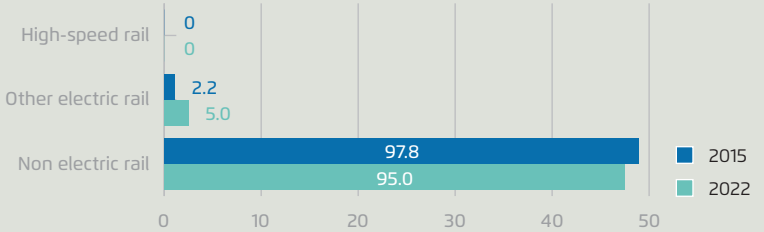
932,677 million passenger-km
PASSENGER TRANSPORT VOLUME (2022)

157,474 million tonne-km
FREIGHT TRANSPORT VOLUME (2022)



Source: MoT Thailand, CAAT Thailand

Rail infrastructure



Source: Thailand Ministry of Transport

TOTAL EMISSIONS

Total CO_2 emissions from fuel combustion in Thailand increased 310% between 1990 and 2022. CO_2 emissions in the transport sector increased 280% in the same period.

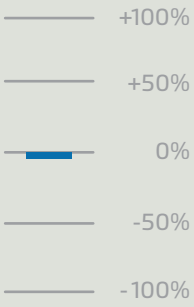
In 2022, the transport sector was responsible for 32% of total CO_2 emissions from fuel combustion. Under a business-as-usual scenario, transport emissions are projected to increase by 24% by 2030 and 58% by 2050, compared to 2020 levels.

247.65 Mt CO_2

TOTAL CO_2 EMISSIONS FROM FUEL COMBUSTION (2022)

-4.3%

CHANGE IN TOTAL EMISSIONS (2017–2022)



TOTAL CO_2 EMISSIONS FROM FUEL COMBUSTION PER CAPITA

3.5
(2022)

7.4
G20 AVERAGE (2021)

4.3
WORLD AVERAGE (2021)

0.75%
SHARE IN GLOBAL EMISSIONS (2021)

t CO_2 per capita

Sources: IEA, Thailand Ministry of Energy, World Development Indicators

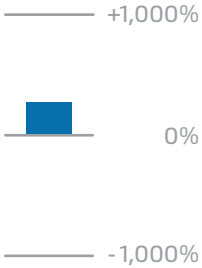
TRANSPORT SECTOR EMISSIONS

79.6 Mt CO_2

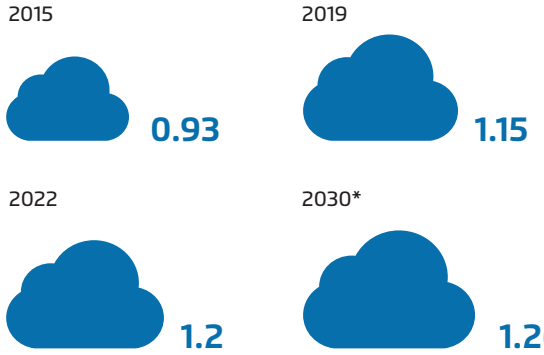
TOTAL CO_2 EMISSIONS FROM FUEL COMBUSTION IN THE TRANSPORT SECTOR (2022)

310.3%

CHANGE IN TRANSPORT SECTOR EMISSIONS (1990–2022)



TOTAL CO_2 EMISSIONS PER CAPITA IN THE TRANSPORT SECTOR



t CO_2 per capita

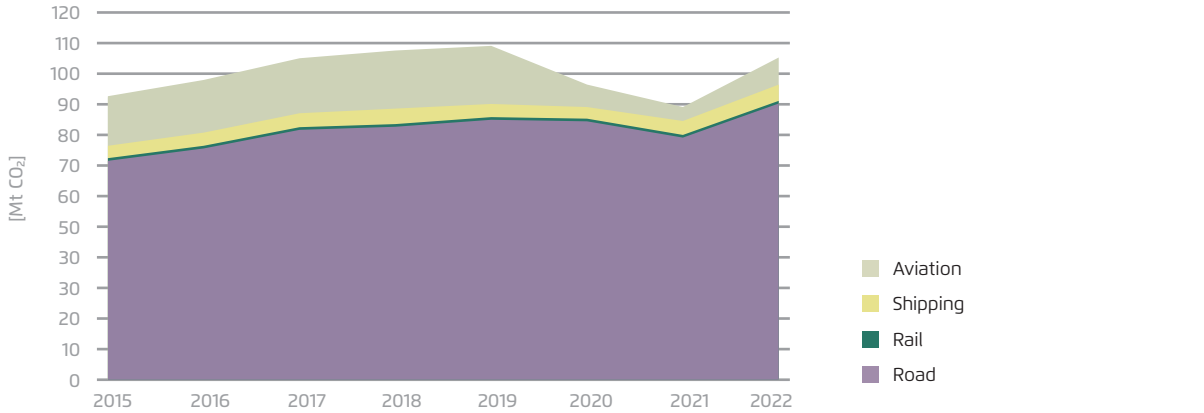
Sources: IEA, SLOCAT, UNDESA

* projected emissions under an average business-as-usual scenario

SHARE OF TRANSPORT EMISSIONS IN TOTAL CO_2 EMISSIONS FROM FUEL COMBUSTION (2019)

Source: Thailand Office of Transport and Traffic Policy Planning

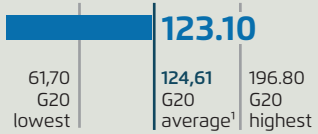
Transport sector emissions by subsector



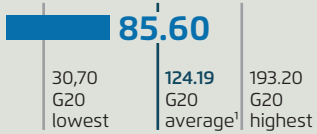
Source: Ministry of Energy Thailand

ENERGY

GASOLINE PRICE (2024)
US cents/litre

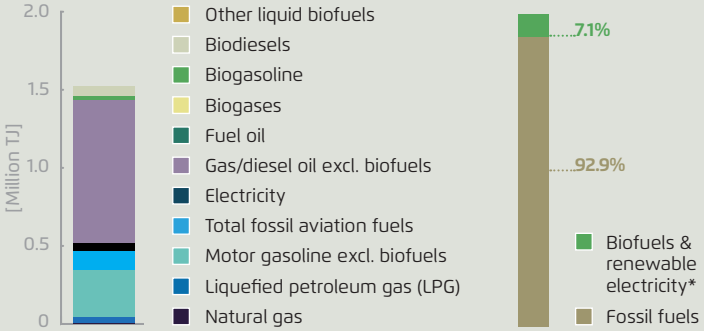


DIESEL PRICE (2024)
US cents/litre



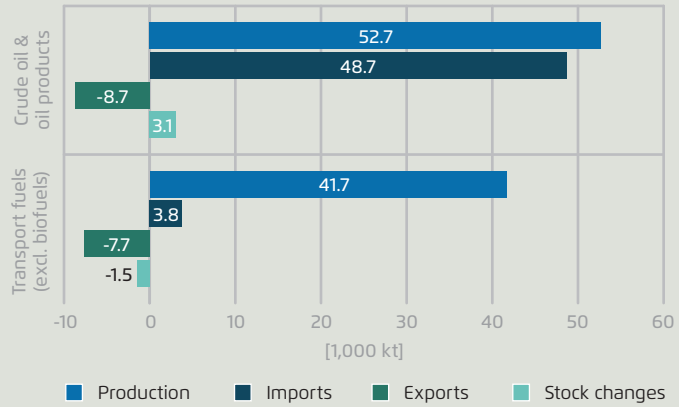
Source: Globalpetrolprices.com*

Energy use in transport by fuel



*electricity split calculated based on share of renewables
Year: 2022
Source: Thailand Ministry of Energy

Fuel supply and use



Year: 2022
Source: Thailand Ministry of Energy

ELECTRIC VEHICLES

492,942 vehicles
TOTAL STOCK OF ELECTRIC CARS (2023)

2.3%
SHARE OF ELECTRIC CARS IN TOTAL PASSENGER CAR STOCK (2023)

12%
MARKET SHARE OF ELECTRIC CARS IN NEW SALES (2023)

Note: Preliminary 2023 data
Source: Thailand Ministry of Transport, Paultan.org, Bangkok Post

ELECTRIC CAR FLEET BY VEHICLE TYPE (2015 VS. 2023)

+6,397.7%
TOTAL FLEET GROWTH (2015–2023)

Source: EVAT, Thailand Ministry of Transport

PUBLICLY ACCESSIBLE CHARGING INFRASTRUCTURE

4,806*
SLOW CHARGE (2023)

3,896*
FAST CHARGE (2023)

28,789*
SLOW CHARGE
G20 AVERAGE (2021)

43,927*
FAST CHARGE
G20 AVERAGE (2021)

Source: EVAT, IEA EV Data explorer
*number of units

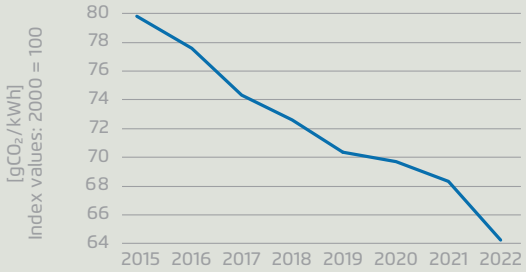
Battery reuse and recycling
- There is no regulation or policy in place that requires or promotes the re-use or recycling of batteries.

LINKAGES TO THE ENERGY SECTOR

Natural gas is the dominant fuel source for power generation in Thailand. In 2016, a competitive bidding scheme with a feed-in tariff as ceiling price replaced earlier support schemes. While initial auctions were technology-specific for biogas and biomass, subsequent rounds were open for hybrid solutions, combining multiple generation technologies.

In 2018, auctions were halted due to the high reserve power margin. However, the Thailand Board of Investment offers some tax and non-tax incentives for projects, including renewable power generation.

CO_2 intensity of power



Source: Thailand Ministry of Energy

Existing targets for renewable electricity generation

- At least 50% renewable energy share in power generation capacity by 2050
- 6 GW PV by 2036

Source: REN21

The role of hydrogen

- Thailand is studying the potential of green hydrogen in the power sector and some areas of transport
- Hydrogen is included as 'alternative fuel' in the Alternative Energy Development Plan, with the aim to reach 12 GWh of production by 2036

Source: EGAT, PTT, Mori Hamada & Matsumoto et al. 2022

AMBITION

NDCs and national climate targets

General NDC targets
- 30–40% reduction in GHG emissions in 2030 compared to BAU
- Net-zero GHG emissions target by 2065, with emissions peaking in 2025 and carbon neutrality reached by 2050

Transport related measures
- Support for electrification across all modes of transport
- Measures to improve energy efficiency in transport
- Measures to promote, support and develop sustainable modes of urban transport
- Development of rail- and waterways

Future targets at national level
- Reduce GHG emissions in the transport sector by 42.4 $MtCO_2$ by 2030
- Achieve 30% energy efficiency savings in 2037
- 573 km of additional high speed rail by 2027

National EV deployment targets
- 50% share of ZEVs in new LDV sales (30% in production) by 2030
- 85% share of ZEVs in bus production by 2035
- 12,000 public fast charging stations and 1,450 battery swapping stations by 2030

National ICE phase-out commitments
- 100% share of ZEVs in new car sales by 2035

TRADE-OFFS

Sustainability of biofuels

No measures to ensure sustainability of biofuels were found.

Subsidies

[No Data]

COVID

Thailand experienced a 6.1% GDP contraction in 2020. While GDP growth of 1.5% and 2.6% were registered in 2021 and 2022, respectively, the economy is still struggling to return to pre-crisis levels of activity.

Overall mobility declined approximately 60% during the first wave of the pandemic in spring 2020. Emissions fell by almost 10% in 2021 compared to 2019, but have since overtaken their pre-crisis levels and were 3% higher in 2022 than in 2019.

Source: IMF, Apple, Google, Thailand Ministry of Energy

IMPLEMENTATION

Mobility

✔ **National programmes to support shift to public transport**	• Public transport infrastructure development • Promotion of shared mobility and multimodal transport • Urban Traffic Management • Joint ticket system • Transit-oriented urban development • Park and ride • Feeder system development
✔ **Measures to support low-carbon freight logistics**	• Rail and waterway infrastructure development • Logistics and backhaul management improvement programmes • Introduction of battery-powered trains • Electrification programme for trucks
✔ **National-level measures to support new mobility services**	• Shared mobility • Mobility as a service
✔ **National measures to support non-motorised transport**	• Non-motorised transport for first and last mile • Car free zones

Energy

Energy/carbon emission standards for light duty vehicles (LDV)	Introduction of CO_2 emissions standards under discussion, introduction of Euro 5 standard for pollutants in 2024 (LDV)
Energy/carbon emission standards for heavy duty vehicles (HDV)	No standard
✔ **Pricing instruments**	Vehicle tax based on level of CO_2 emissions
✔ **Mandatory vehicle labelling**	Mandatory vehicle labelling including fuel economy and CO_2 emissions.
✔ **Support mechanism for electric vehicles & charging infrastructure**	• Purchase subsidies and import tax waiver for EVs • Reduced excise tax for electric and hybrid vehicles • Public-private partnerships for charging infrastructure investment • Incentive scheme for the domestic production of battery cells for EVs

Source: Thailand national sources