

MODULE

5



# TRANSPORT AND ENERGY



MODULE

5.1

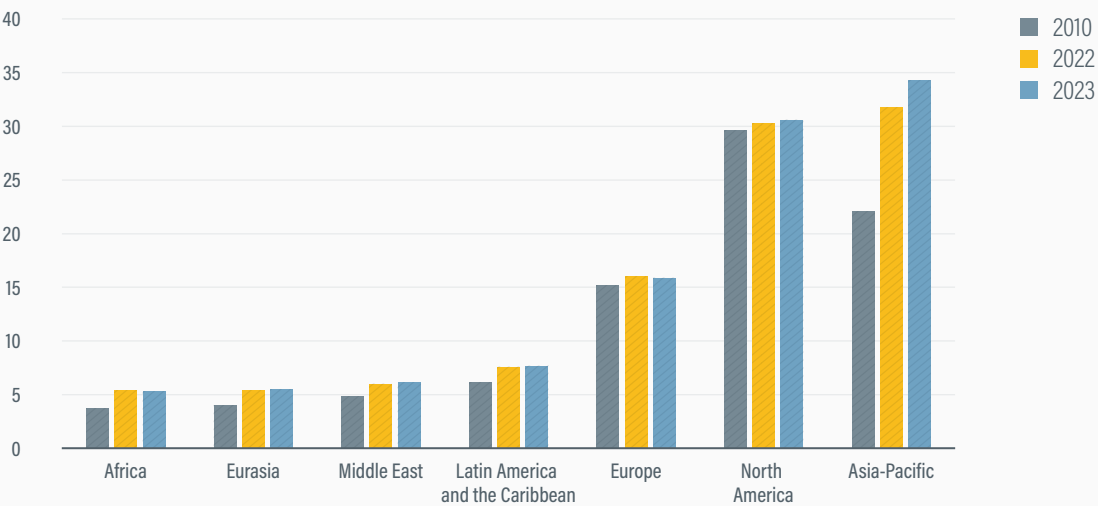


# TRANSPORT ENERGY SOURCES

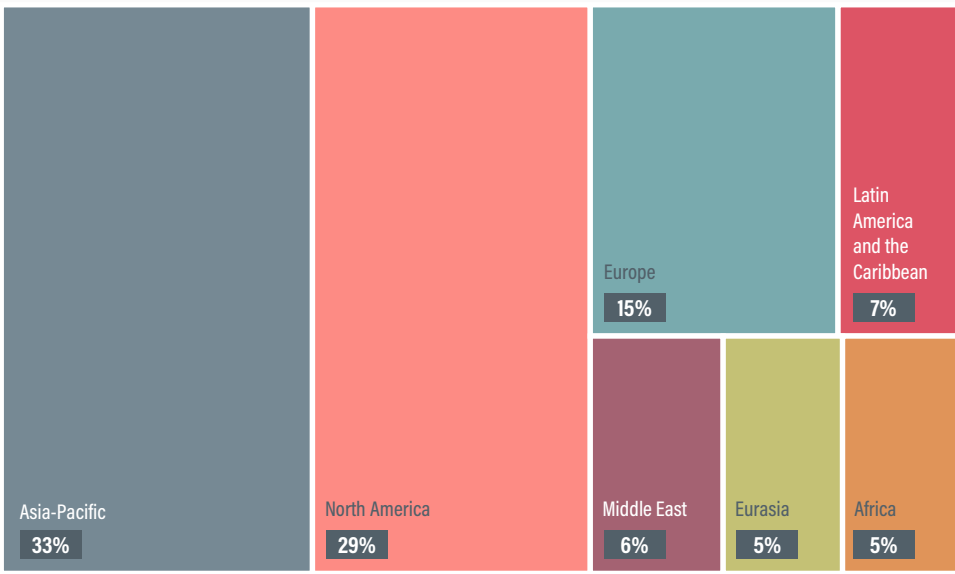


**FIGURE 1.** Energy demand in transport by region, 2010, 2022 and 2023

Transport energy demand in Exajoules

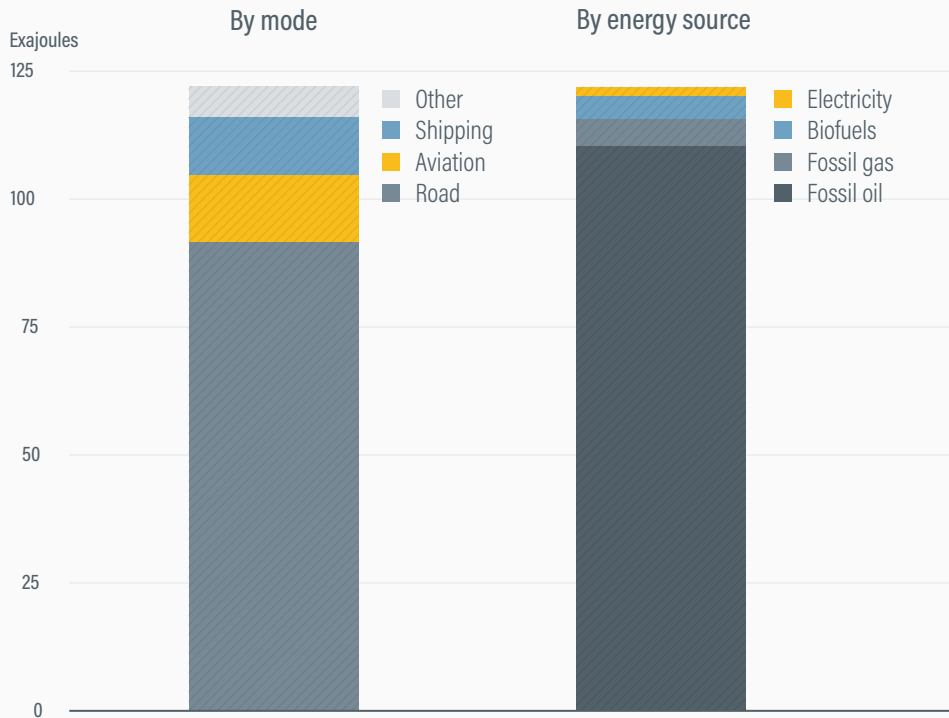


Transport energy demand in 2023



 Disparities in transport energy consumption and growth rates were evident across regions. The Asia-Pacific region led with 38% of total sectoral demand in 2023 and recorded a 7% increase that year, reflecting economic development, urbanisation and an expanding middle class.

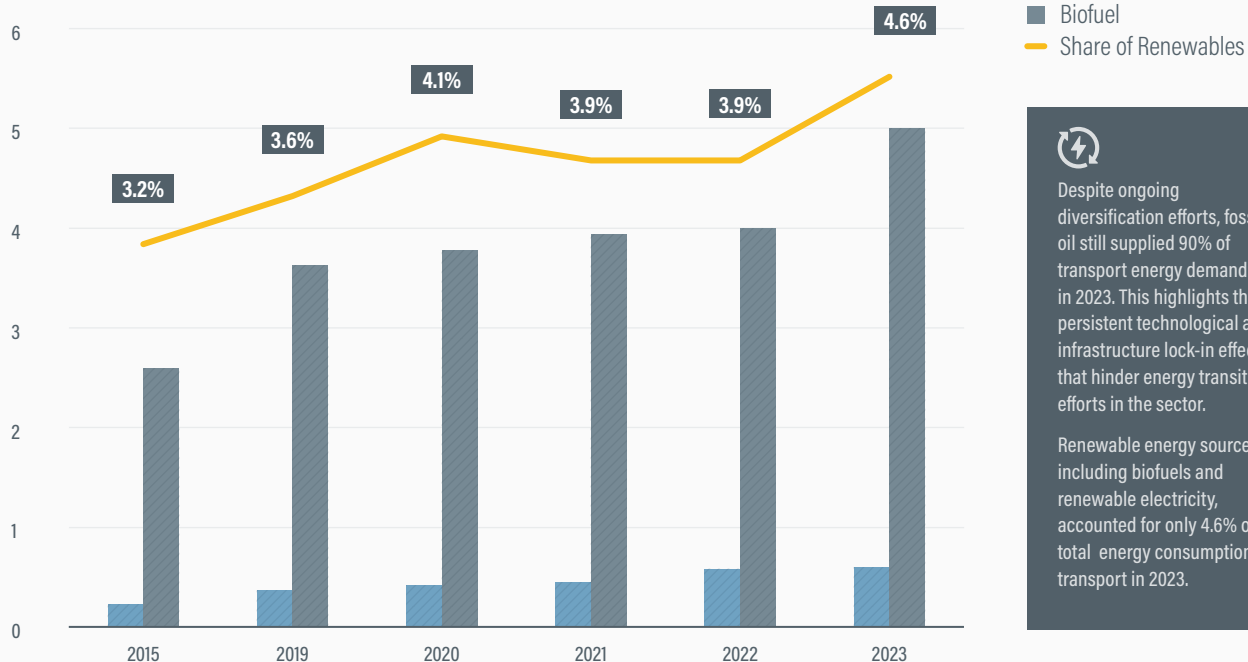
**FIGURE 2.** Energy demand in transport by sector and source, 2023



Road transport continued to dominate energy consumption in transport, accounting for 75% of demand in 2023. Passenger cars represented 38% of total energy consumption in transport, heavy-duty trucks 22%, aviation 10%, and shipping 9% reflecting the energy-intensive nature of air travel despite its smaller share of total passenger kilometres seasoned revenue passenger kilometres reaching around 700 revenue billions passenger kilometre for aviation and shipping's notable energy efficiency in per tonne-kilometre of freight moved.

**FIGURE 3.** Renewable energy consumption in transport, 2015-2023

Energy consumption in Exajoules

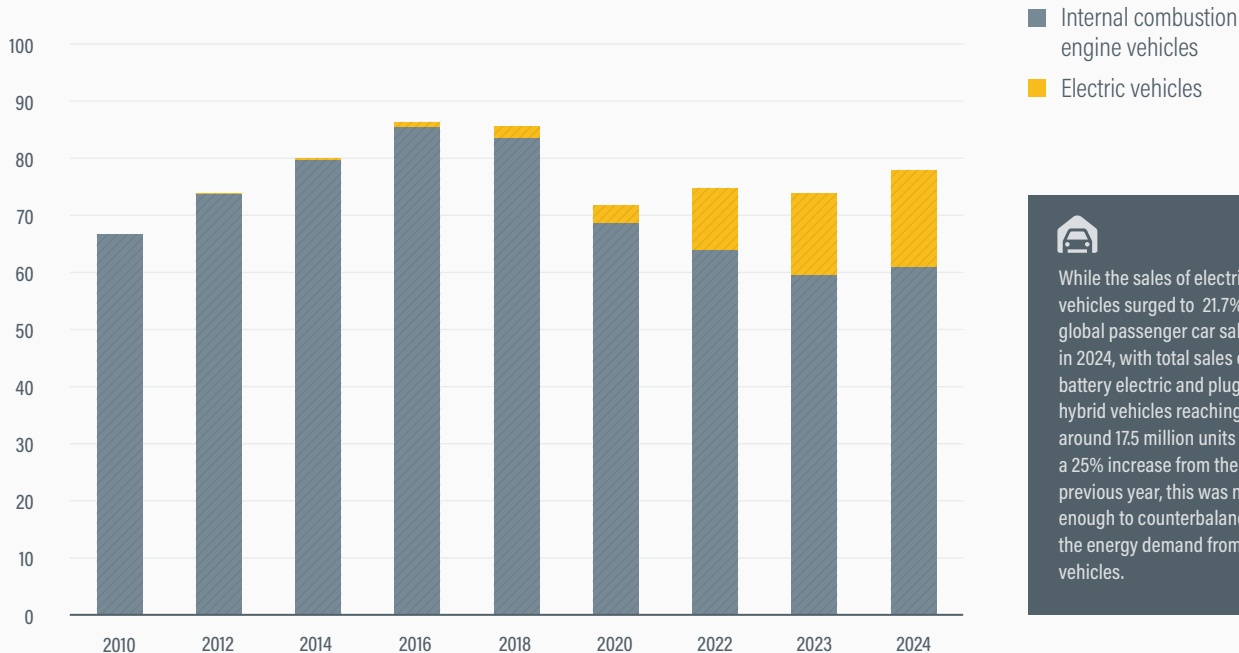


Despite ongoing diversification efforts, fossil oil still supplied 90% of transport energy demand in 2023. This highlights the persistent technological and infrastructure lock-in effects that hinder energy transition efforts in the sector.

Renewable energy sources, including biofuels and renewable electricity, accounted for only 4.6% of total energy consumption in transport in 2023.

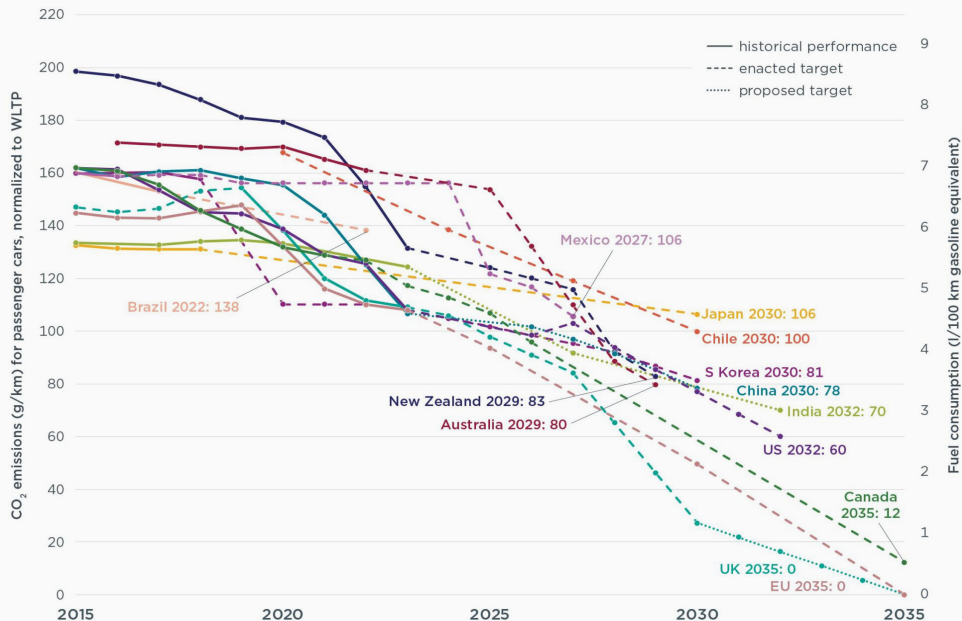
**FIGURE 4.** Global sales of internal combustion engine vehicles and electric vehicles, 2010-2024

Sales of four-wheeled vehicles in millions



While the sales of electric vehicles surged to 21.7% of global passenger car sales in 2024, with total sales of battery electric and plug-in hybrid vehicles reaching around 17.5 million units – a 25% increase from the previous year, this was not enough to counterbalance the energy demand from ICE vehicles.

**FIGURE 5.** Equivalent passenger car CO<sub>2</sub> emissions and fuel consumption in countries with mandatory vehicle efficiency or emission standards, 2015-2035



Note: UK fleet-average targets estimated based on non-ZEV CO<sub>2</sub> emissions and ZEV mandate.

Canada 2035 target is estimated based on Canada's 2035 ZEV mandate.

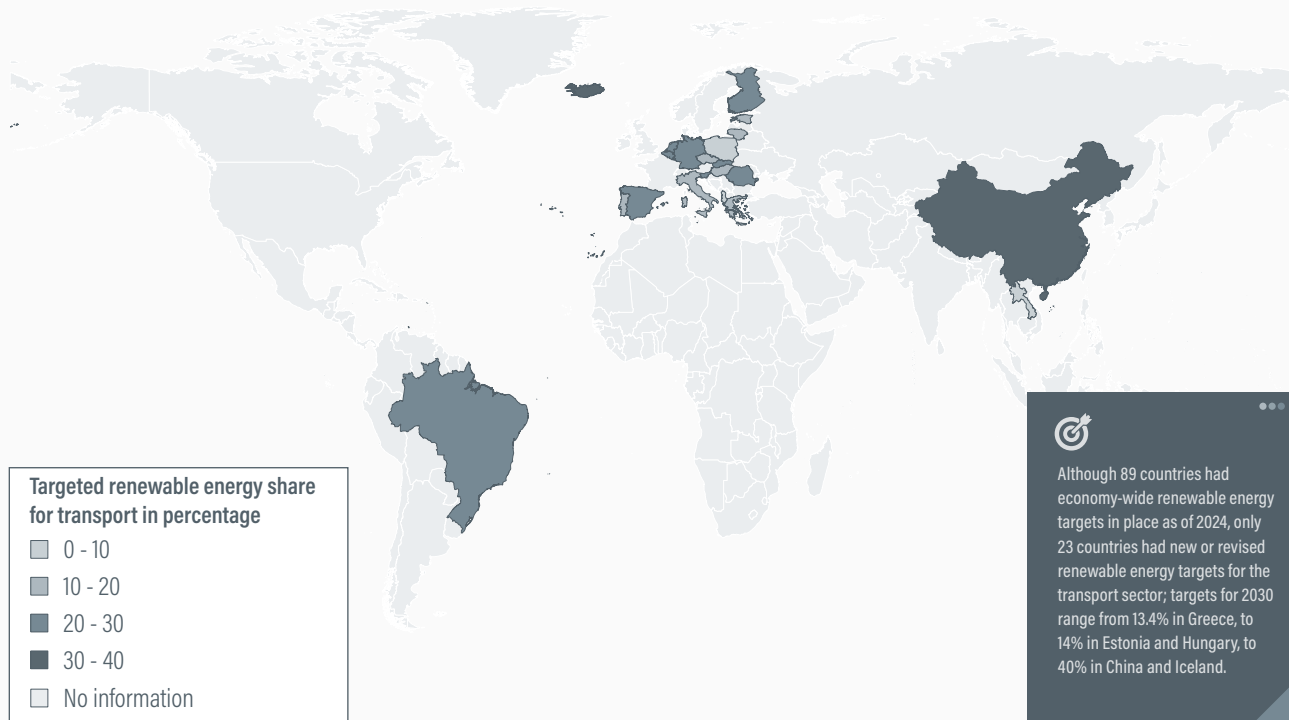
The U.S. 2027 target and beyond reflect the changes in the credits flexibilities including off-cycle and A/C credits.

Updated Nov 2024



By 2024, a total of 13 countries had established or proposed fuel efficiency or greenhouse gas emission standards for passenger vehicles or light commercial vehicles and trucks. Although these regulations lacked global reach, they applied to more than 85% of all passenger vehicle sales, guiding the strategic decisions of major vehicle manufacturers worldwide.

**FIGURE 6.** Renewable energy targets in the transport sector, as of 2024



MODULE

5.2

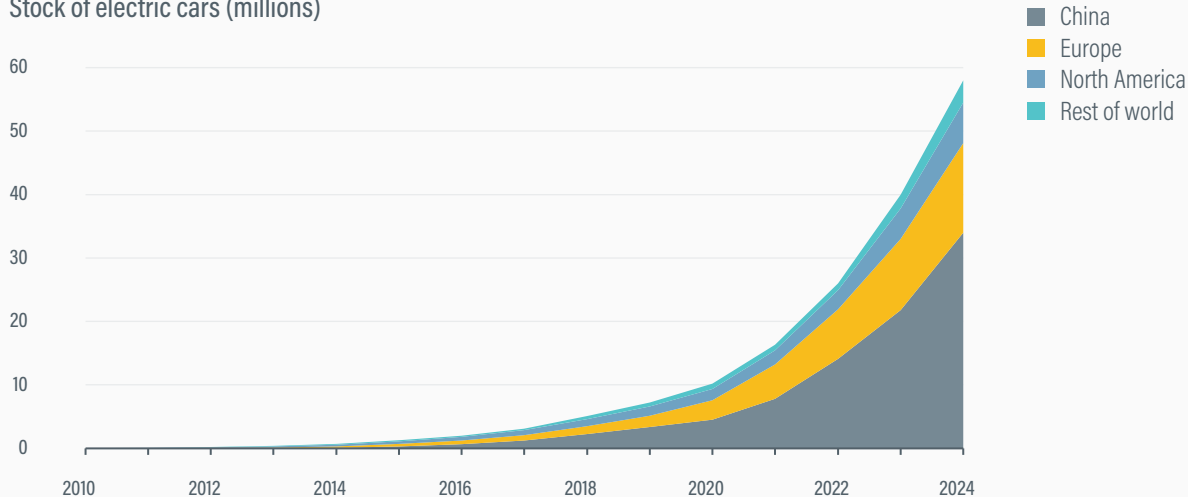


# ROAD VEHICLE ELECTRIFICATION

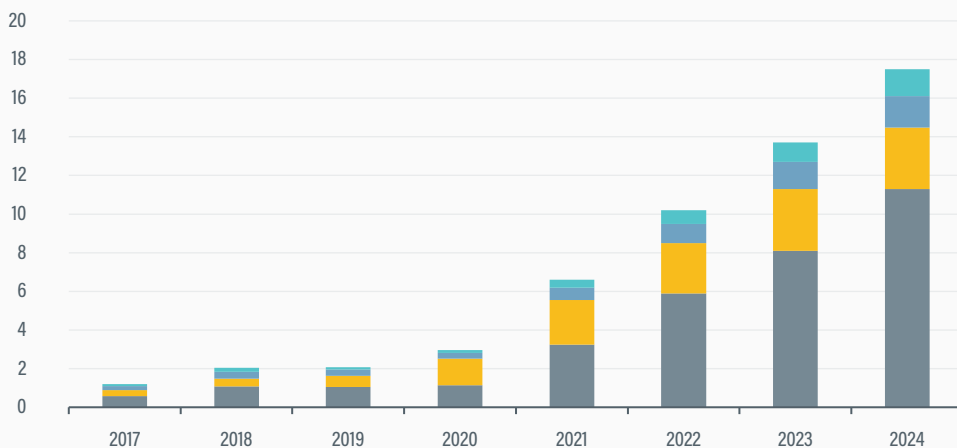


**FIGURE 1.** Electric passenger car stock (top) and sales (bottom), 2010-2024

Stock of electric cars (millions)



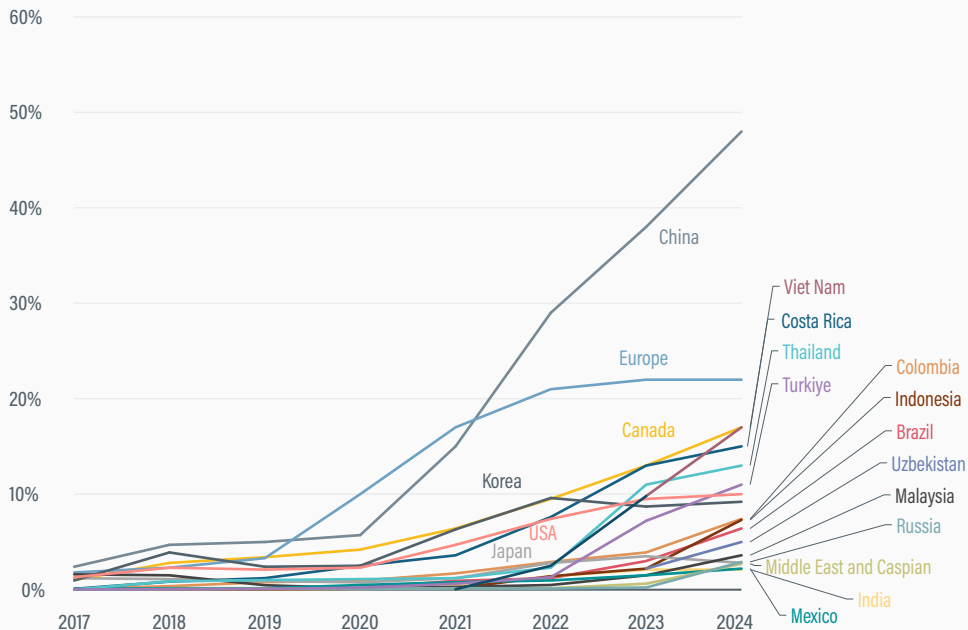
Electric passenger car sales (millions)



In 2024, global sales of electric cars (including battery electric vehicles and plug-in hybrid electric vehicles) increased more than 25% - to total 17.5 million units - meaning that over a fifth of global sales of passenger cars were electric.

**FIGURE 2.** Market shares of electric cars in selected markets, 2017-2024

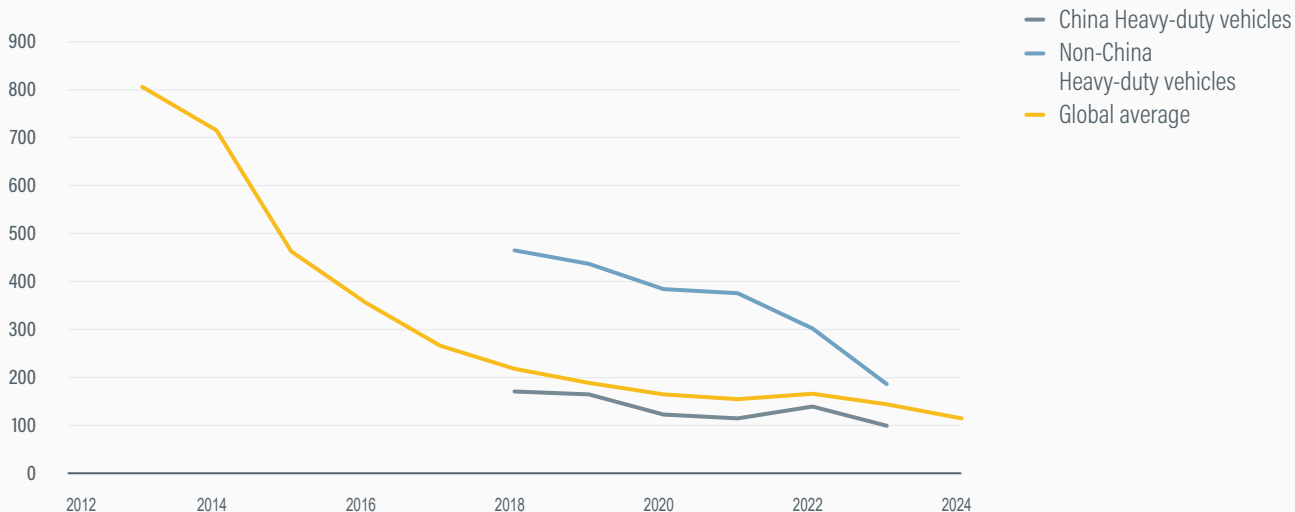
## Electric car market share



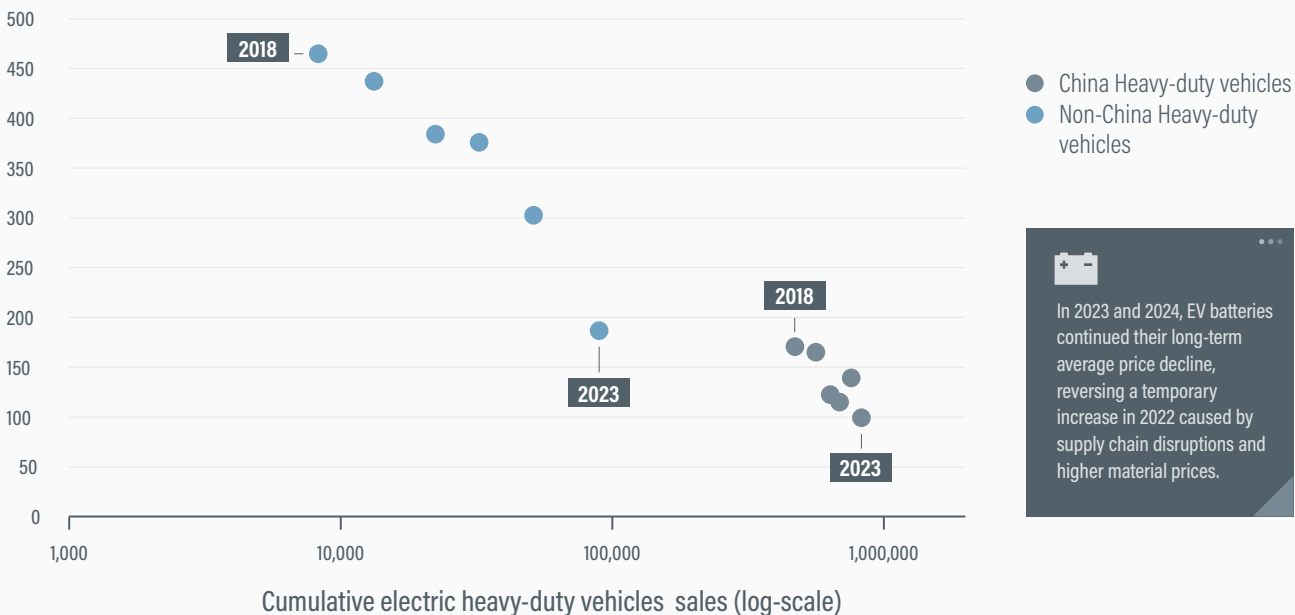
During 2023 and 2024, electric car shares expanded from a handful of dominant markets (China, Europe, Canada, the United States, Japan and the Republic of Korea) towards a broader group of emerging markets and developing countries (Viet Nam, Costa Rica, Thailand, and Turkey, followed closely by Colombia, Indonesia, Brazil and Uzbekistan).

**FIGURE 3.** Battery price development from 2012-2024 (left) and compared with cumulative production (right)

Battery pack price, USD (2024)/kWh



Battery pack price, USD (2023)/kWh



**FIGURE 4.** Oil displacement through electric vehicles, 2020-2024

Oil displacement (million barrels per day)

