

Road

Potential impact of reductions:

~ 2.3 Gt CO₂

Overall progress rating:

Good

State of play 2022 & Progress since COP 26

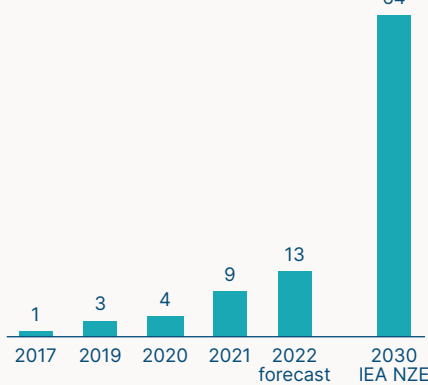
- Significant progress has been made towards road transport decarbonisation, underpinned by record sales of electric vehicles and ambitious country and automaker targets that commit to ending production of new Internal Combustion Engine (ICE) vehicles.
- Globally, 13% of passenger sales are set to be electric in 2022, and EV sales have already reached over 20% in key markets like China and Europe, exceeding forecasts from previous years.¹
- Falling battery prices are bringing EVs' costs closer to that of ICEs. EVs are projected to out-compete ICEs on both total cost of ownership and sticker price in most markets within this decade, though pressure on commodity prices could push this back slightly.²
- Extension of charging infrastructure must keep pace with EV deployment.

Progress & Bottlenecks

Passenger Vehicles

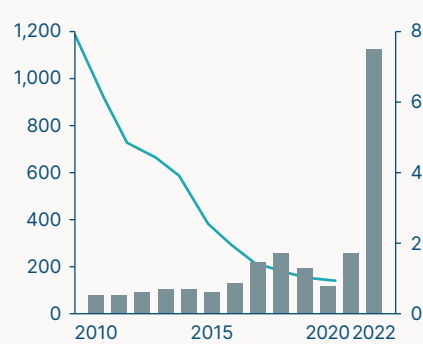
EV passenger vehicles³

% of global sales



Battery and lithium price development⁴

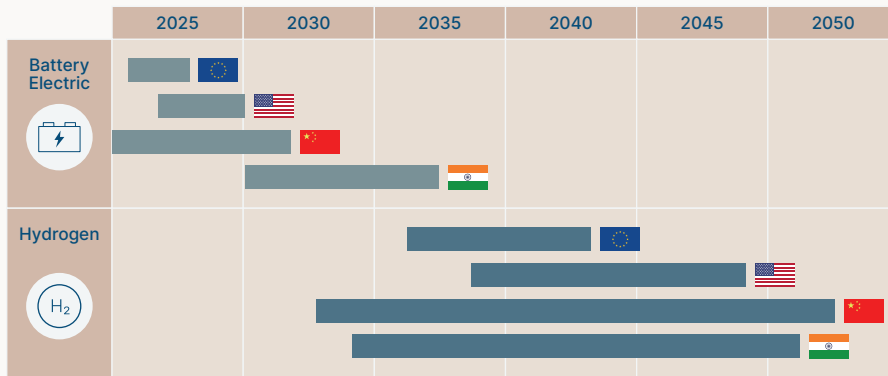
\$ per kWh for a battery (left) lithium carbonate per metric ton in 1000 USD (right)



- EVs are scratching at an upfront cost parity with ICEs. Current rising commodity prices for inputs to EVs risks pushing back this development in the near term, but we don't expect input prices to continue to be high in the medium term. Overall, the impact of the recent lithium price spike increases total EV prices by around 4%.⁵
- To date, 39 countries and 14 automotive manufacturers have signed the COP26 Declaration on accelerating the transition to 100% zero emission cars and vans, committing to 2040 globally and no later than 2035 in leading markets.⁶
- Ending subsidies to petrol and diesel would accelerate the EV transition.

Commercial Vehicles

Break-even vs Diesel: Total cost of ownership of zero emission trucks varies depending on usage, technology development and policy choices⁷

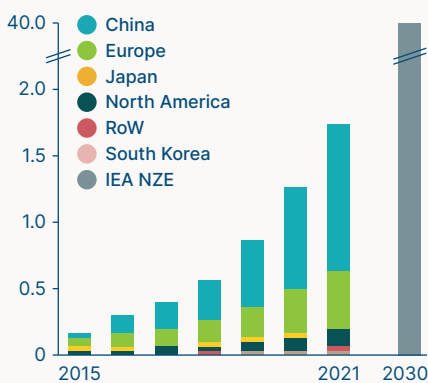


- For heavy duty vehicles, higher upfront vehicle costs will be outweighed by lower operating costs over the vehicle's lifetime.⁷
- However, policy support is required to kick off sales through favourable market conditions and guidance for infrastructure development behind electric, biofuel, and hydrogen powered trucks.

Charging Infrastructure

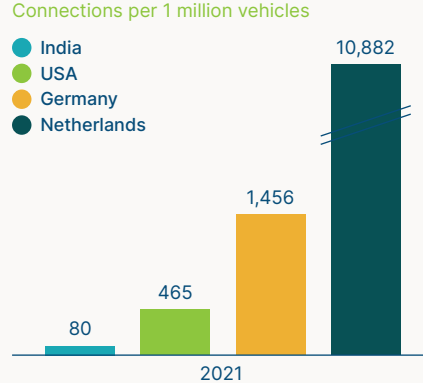
Public EV charging connectors³

million charging connectors



Public charging connectors normalised by vehicle fleet³

Connections per 1 million vehicles



- While the amount of charging stations is growing globally, it needs to accelerate to keep pace and support sustained EV deployment.⁸
- EV charging deployment is unevenly distributed among countries, overall most countries are lagging behind targets.⁹
- Private investment is leading the way in charging development, but additional public support will likely be required to a) reach high charging coverage and b) accelerate rollout.
- The European Parliament is pushing to impose sanctions on members states that do not meet the EU directive target for charging infrastructure (overall EU is lagging behind with 380k to 680k in 2020).¹⁰

SOURCES: (1) IEA (2021) Global EV Outlook 2021, BloombergNEF (2022) Long-term Electric Vehicle Outlook; (2) BloombergNEF (2022) Long-term Electric Vehicle Outlook; (3) IEA (2021) Global EV Outlook 2021; (4) US Geological Survey (2022), BloombergNEF (2022) Long-term Electric Vehicle Outlook; (5) BNEF and Transport&Environment (2021) Hitting the EV Inflection Point, Systemiq analysis for the Energy Transitions Commission (2022); (6) COP26 declaration on accelerating the transition to 100% zero emission cars and vans; (7) Mission Possible Partnership (2022) Making Zero Emission Trucking Possible; (8) BCG (2021) How Governments Can Solve the EV Charging Dilemma; Strategy& (2022) 5,3 Mio. E-Autos zu wenig: Elektro-Ladefläche bedroht Klimaziele; (10) Electrive (2022) EU Parliament may punish delays in charging infrastructure roll-out.