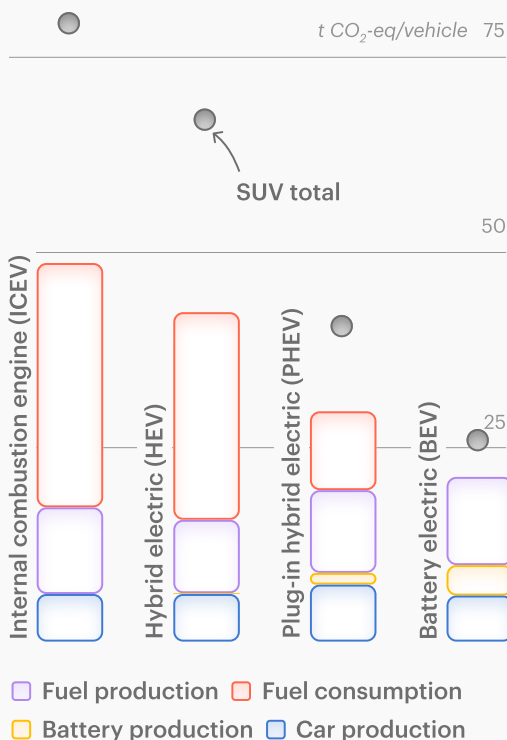


Do electric cars reduce emissions overall?

GLOBAL AVERAGE LIFECYCLE EMISSIONS BY POWERTRAIN FOR MEDIUM-SIZED AND SUV CARS, 2025, STATED POLICIES SCENARIO



While the manufacturing of battery electric cars generates more emissions than conventional cars because of the EV battery production, they produce no tailpipe emissions during vehicle use. Even when accounting for the indirect emissions associated with electricity production, battery electric cars offer emissions savings compared to internal combustion engine (ICE) cars. Globally, the lifecycle GHG emissions of a medium-sized battery electric car, driving an average of 35 km per day over 15 years (roughly the global average), are more than 55% lower than a medium-sized gasoline ICE car, assuming electricity emissions evolve according to stated policies.

When comparing ICE and battery electric cars, higher upfront emissions attributed to the production of the battery are typically offset after around 2 years of use.

Compared with hybrid cars, battery electric cars have around 50% lower lifecycle emissions. The emissions associated with plug-in hybrid electric cars largely depend on the share of kilometres driven in electric mode. Assuming an electric-driving share of 60%, close to today's global average, the GHG emissions of a plug-in hybrid electric car are 30% lower than those of a non-plug-in hybrid, though around 40% higher than a battery electric car.

The GHG emissions savings delivered by electric cars also vary widely by region, depending on the electricity generation mix. Nonetheless, battery electric cars already deliver lifecycle emissions reductions. Even in countries with a high reliance on coal-fired power generation – and therefore among the most emissions-intensive electricity sectors globally – such as South Africa, India and China, electric cars have lower lifecycle emissions than comparable gasoline vehicles.

Higher annual driving distances further amplify these benefits, making electrification particularly impactful in high-mileage markets, such as the United States, where switching to a battery electric car can cut lifetime emissions by up to two-thirds for medium-sized cars.

Larger cars see relatively greater emissions benefits from switching to electric, reflecting the lower efficiency losses of electric vehicles as vehicle size increases. On average, a battery electric SUV emits around two-thirds less over its lifetime than an equivalent ICE vehicle.

MEDIUM-SIZED BATTERY ELECTRIC AND INTERNAL COMBUSTION ENGINE CARS LIFECYCLE EMISSIONS BY COUNTRY, 2025, STATED POLICIES SCENARIO

