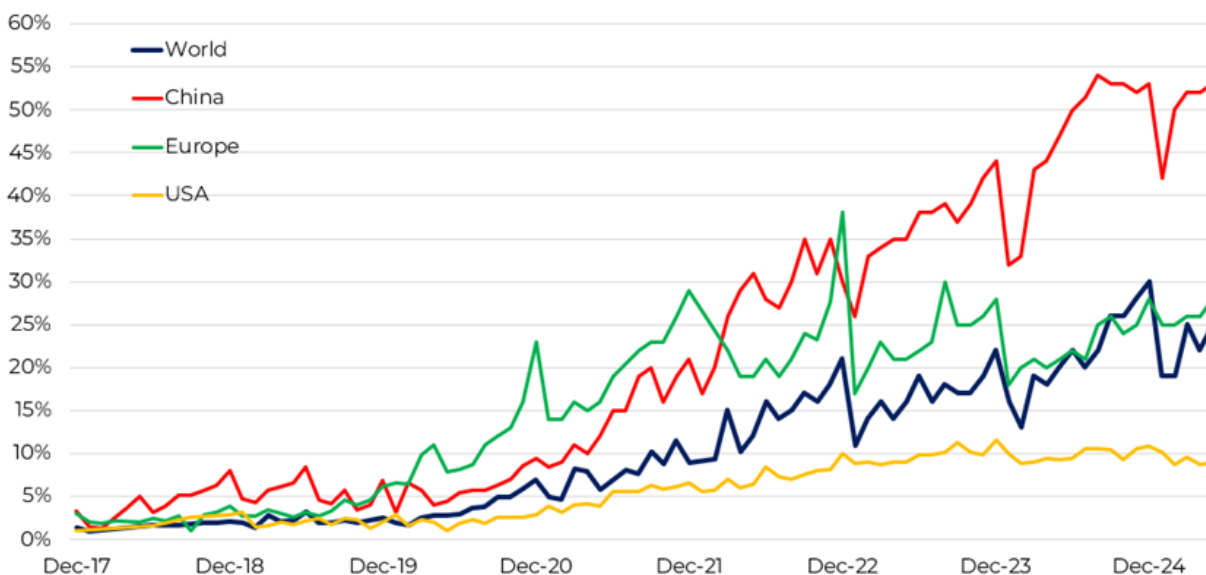


**Despite challenges in some regions, electric vehicle (EV) sales globally have continued apace over the last eighteen months. In 2024, around 17m EVs were sold, representing 19% penetration of the light autos market. This year, it looks like the world is on track for around 21m units, taking sales penetration up to around 24%. Here, we focus on the implications for oil demand brought about by the growing importance of EVs.**

Global EV sales are on track to be up around 25% this year, taking EV market share as a proportion of the total light auto sales mix up to around 24%. In many ways, this level of market penetration is remarkable, given it was only 4% in 2020. China has significantly extended its lead over the rest of the world, this despite the removal of subsidies at the start of 2023. Just over a decade ago, China's 12th Five-Year Plan (2011-2015) identified the alternative fuel industry as a strategic emerging industry, deserving of government support to help combat dangerous levels of air pollution. Fifteen years later, not only is China the largest car market in the world (purchasing around 27m of the 88m new cars sold worldwide), but also the largest EV market, accounting for around 60% of world demand and home to over 400 EV manufacturers.

**Monthly plug-in vehicle penetration rates by region**



Sources: BloombergNEF, Marklines, JATO Dynamic; Guinness Atkinson, June 2025

The European market is now in a distant second place with around 17% of global EV sales. The US lags further, making up just under 10% of global EV sales, with recent tax credit shifts from President Trump holding up growth.

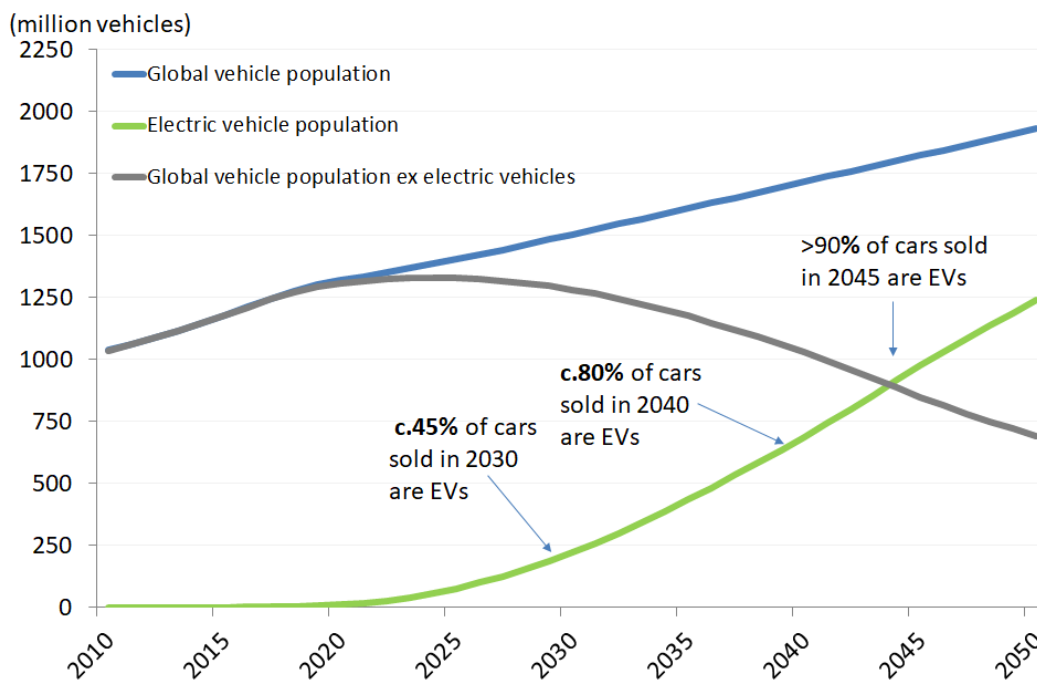
The key to accelerating EV adoption is reaching parity with internal combustion engine (ICE) vehicles for both ownership costs and function (for which range and the availability of charging infrastructure are the primary considerations). In China, the rapid adoption electrification of small cars has been underpinned by their impressive affordability, with nearly all small battery electric vehicles (BEVs) priced lower than their ICE equivalents (according to the IEA). Importantly, in 2024, BEVs also reached price parity with ICE vehicles in the SUV segment, the most popular car segment in China. We still see “sticker price” premiums for EVs in



Europe and the US, but continued growing economies of scale and falling battery costs should drive these regions towards price parity in the second half of the 2020s.

Despite the rapid growth in EV sales since 2020, the world EV fleet by the end of 2025 will still represent only around 6% of the total fleet of passenger vehicles. We expect EV sales penetration to rise to around 45% by the end of this decade, then increasing to around 80% by 2040. By 2030, this implies a passenger EV fleet of 210-220m vehicles but still representing only around 15% of the total fleet of passenger vehicles. The penetration rate of EVs in the world fleet accelerates markedly in the 2030s, meaning the vehicle population is fairly evenly split between EVs and ICE vehicles by around 2045.

**Global auto, ICE and EV population to 2050**



Source: US DoE; Guinness Atkinson estimates, August 2025

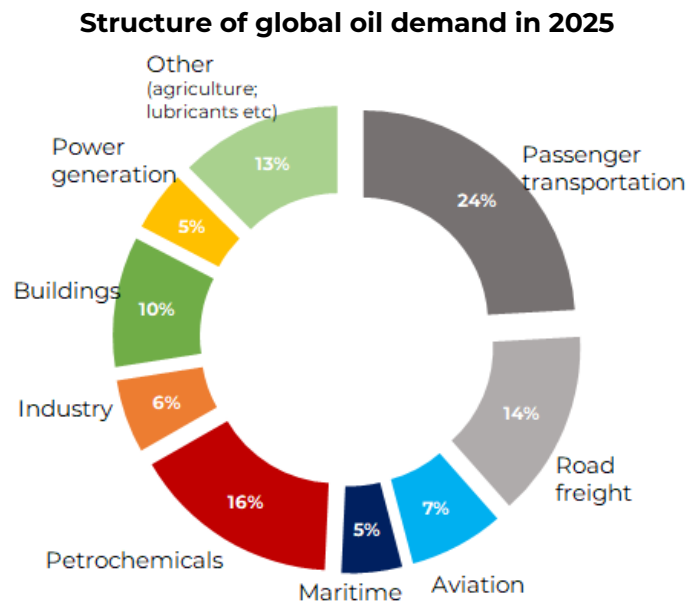
What are the implications for the ICE fleet and oil demand? Despite our relatively bullish assumptions on EV adoption, the offsetting impact of global vehicle population growth implies that the population of ICE vehicles is peaking around now, at about 1.3bn vehicles. And over the next few years, the population of ICE vehicles moves into relatively shallow decline, such that there are still around 1.2bn ICE vehicles on the roads globally in the mid 2030s, still higher than 2010.

Also relevant is the fuel efficiency of the ICE portion of the market, which will improve, and will put further pressure on oil demand growth from the ICE fleet. In the US for example, at the end of July 2023, the National Highways Administration proposed new fuel economy standards for passenger cars and light trucks built 2027-2032. However, in July 2025, Congress in the US passed the “One Big Beautiful Bill”, which eliminated all civil penalties for noncompliance with fuel economy standards for passenger car and light truck fleets—effectively stripping enforcement teeth from the standards. We still expect fuel efficiency improvements in the US, but less than the 2% annual improvement previously anticipated.

Taken together, we continue to believe a growing global auto fleet, improving fuel efficiency and EV penetration points to oil demand from cars and other light vehicles peaking this year.

### How important is oil demand from road transport in the context of total oil demand?

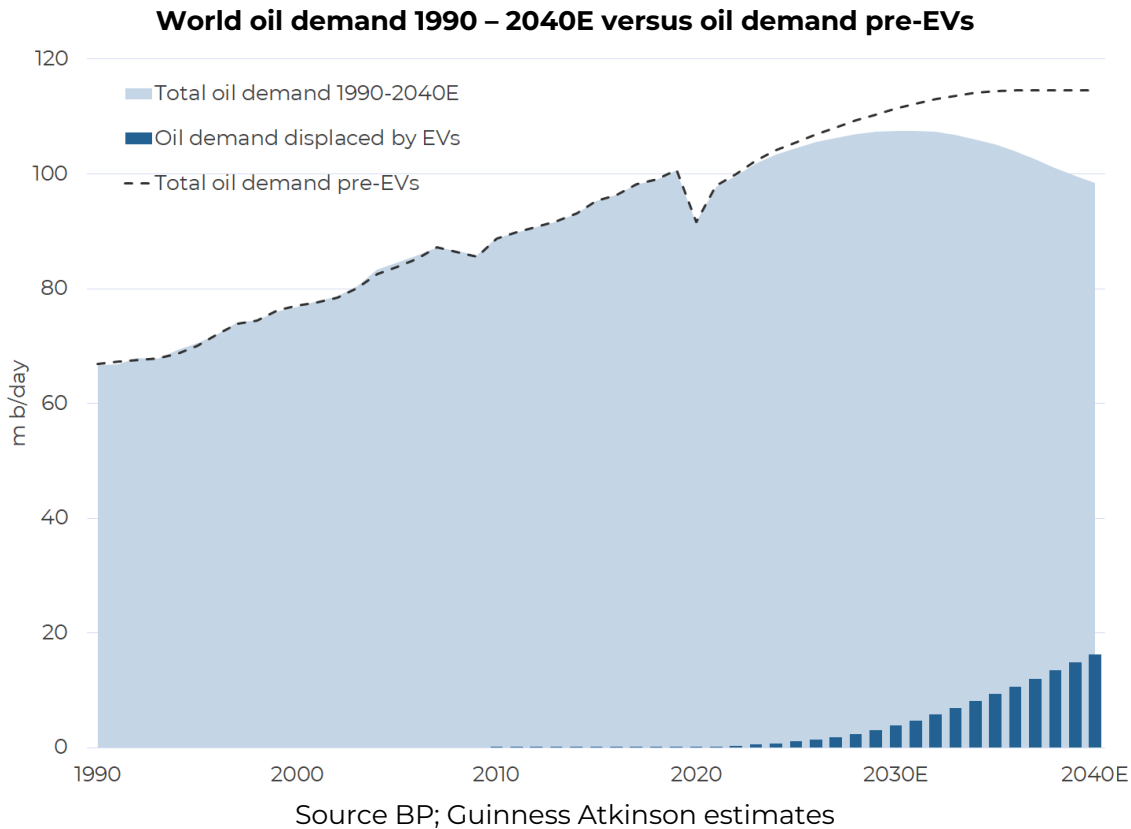
Given how much EVs are talked about, there is a danger of overestimating the impact of road transport electrification on global oil demand. Cars and light trucks account for around 24% of global oil usage, with heavy vehicles accounting for around 14%.



Source: IEA; Guinness Atkinson estimates

We expect oil demand from road freight to continue to grow this decade, peaking around 2030 (so around 5 years later than light auto demand), then moving into steady decline. Here, the electrification of the truck fleet is offset by road freight ton-miles around the world more than doubling over the next twenty-five years. Meanwhile other key categories of oil use, particularly those with no electric alternatives on the horizon like aviation and petrochemicals, will continue to put upward pressure on oil demand. Credible forecasts suggest jet fuel demand rising from around 7m b/day currently to around 18m b/day by 2050, as aviation miles per person double globally over that timeframe. In the plastics sector (a subset of petrochemicals), demand of 10m b/day may also double by 2050. According to Thunder Said Energy, average per capita consumption of plastics in the OECD is 170kg per year, while the number in the non-OECD is around 75% less. By 2050, it is expected that average consumption in the non-OECD is around 50% less than the OECD, which in aggregate points to a doubling of consumption.

Putting the key moving parts for oil demand together, when will oil demand peak? Our assumptions for EV adoption see around 5m b/day of oil demand displaced globally by 2030, growing to 13-15m b/day of oil demand displaced by 2040. But other key oil uses continue to grow. Taken together, *the most likely scenario for peak oil demand would be sometime around 2030, reaching a peak of somewhere between 106-108m b/day.*



And despite rapid EV adoption around the world in the 2030s, oil will continue to be consumed at significant volume well beyond the 2030 peak. We expect oil demand in 2040 at 95-100m b/day, consistent with demand in the late 2010s. The signs still point, therefore, to significant new oil resources being required to balance natural production declines and match the volume of oil that will be consumed.

## Important Information

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