Electric Vehicle Sales in 2024 + Outlook

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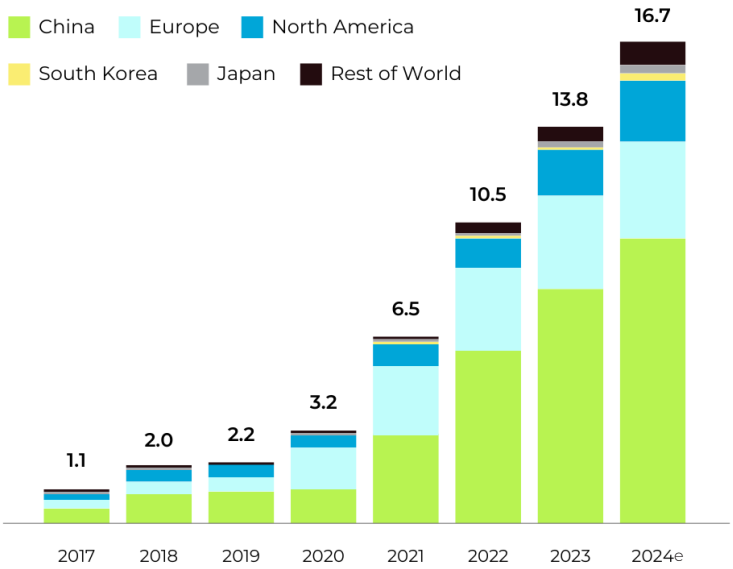
The path to mass adoption of electric vehicles remains a bumpy one, with low operating margins, volatile battery prices, affordability concerns, and the phase-out of purchase incentives in some countries sparking concerns around growth prospects in the industry. Nevertheless, global EV sales figures remain robust. In the first quarter of 2024, EV car sales were around 25% higher than the first quarter of 2023, a similar rate of year-on-year growth to early 2023 versus early 2022.

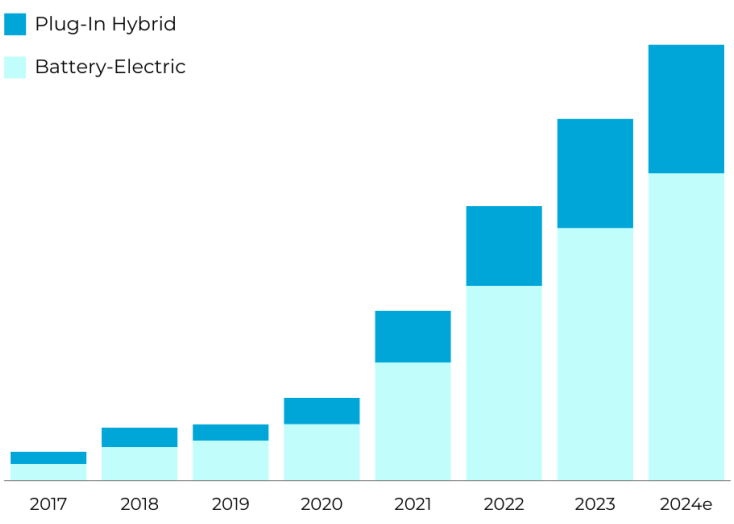
The growth expectations for EVs in 2024 are founded on a record year in 2023, when around 14m units were sold, representing 18% of global light auto sales (up from 14% in 2022). Putting this into perspective, over 250,000 EVs were sold every week last year, more than the number sold in a year just a decade ago. In 2024, EV sales are expected to reach around 17m units, up over 20% versus 2023, and taking EV sales penetration to over 20%.

The vast majority of electric car sales in 2023 were in China (60%), Europe (25%) and the United States (10%). By comparison, these regions accounted for around 65% of total car sales worldwide, demonstrating that sales of EVs remain more geographically concentrated than those of conventional vehicles. And while EV sales in emerging economies have been lagging those in the three big markets, we did see an acceleration in growth in certain key emerging markets in 2023 such as Vietnam (around 15% of all cars sold) and Thailand (10%).

Passenger EV Sales by Region
(million units)



Passenger EV Sales by Drivetrain
(million units)



Source: Bloomberg New Energy Finance. Data as of May 2024.

In 2024, the market share of electric cars could reach up to 45% in China, 25% in Europe and over 11% in the United States, underpinned by competition among manufacturers, falling battery and car prices, and ongoing policy support.

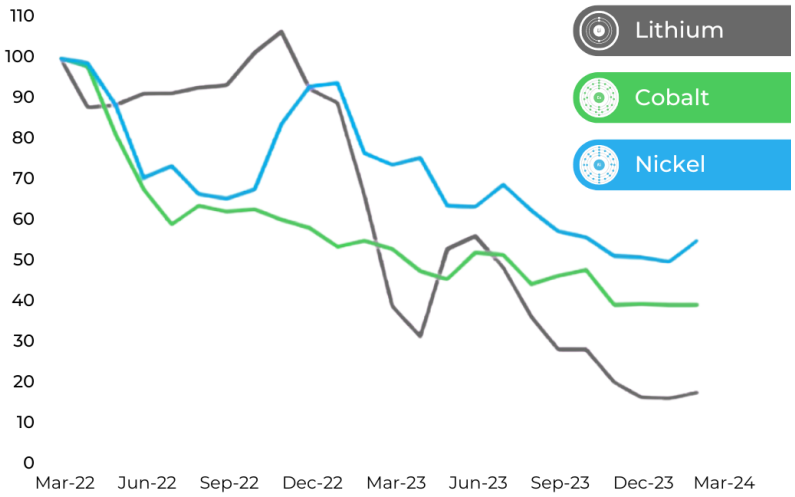
Affordability Remains Key

The price of EVs is falling as competition intensifies, particularly in China, but they remain more expensive than ICE vehicles in other markets. This has been less of a problem in recent years where much of EV penetration, especially in Europe and North America, has been in the less-price-sensitive premium end of the auto market. However, for rapid penetration of EVs in the mass market for autos, there is a need for more affordable models.

In China, the IEA estimates that more than 60% of electric cars sold in 2023 were already cheaper than their average ICE equivalent. However, electric cars remain 10% to 50% more expensive than combustion engine equivalents in Europe and the United States, depending on the country and car segment.

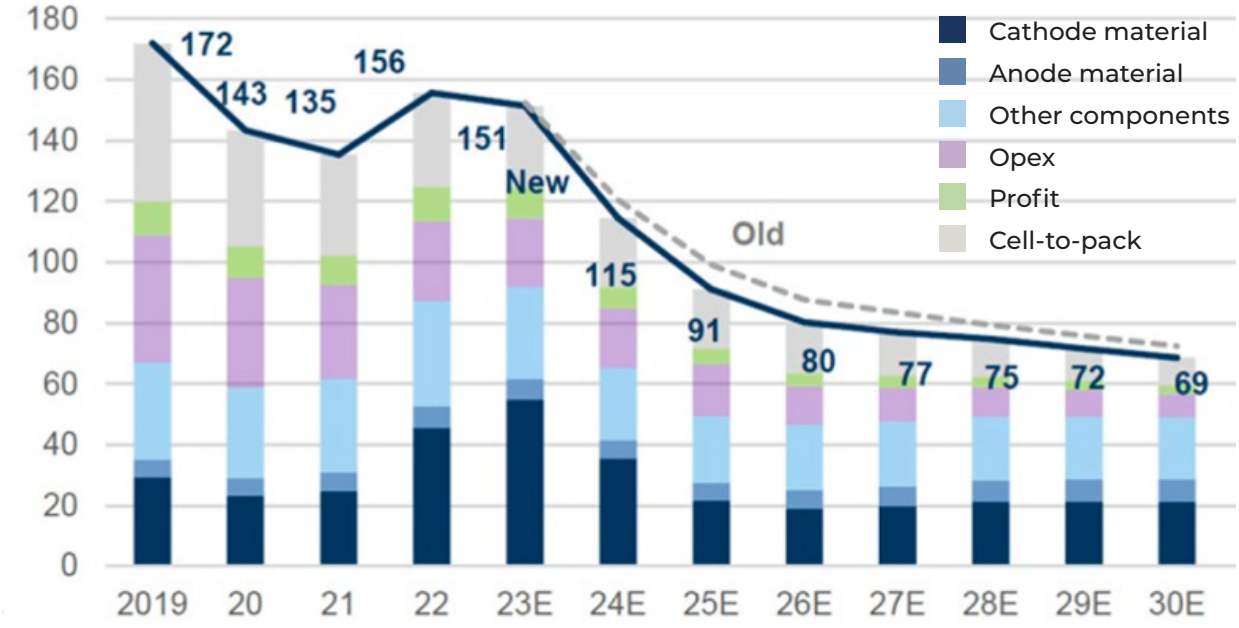
The pricing strategies of car manufacturers will be crucial for improving affordability, as will the pace of EV battery price decline. In regards to batteries, the positive news is that deflation in global average lithium-ion battery pack prices, which stalled in 2022 and 2023, is now picking up again. A key driver is lithium and nickel prices, which have dropped by around 85% and 45% respectively since March 2022. Falling metal prices and surging economies of scale are helping to deflate the cost of this key enabling technology. Historically, there has been an expectation of average battery prices falling below $100/kWh (kilowatt hours) in 2027. Some commentators, such as Goldman Sachs, now expect this key tipping point in price to occur as early as 2025.

Battery Metal Prices Rebased
(Mar 22 = 100)



Source: Bloomberg, Goldman Sachs, SmartETFs. Data as of May 2024.

Global Average Lithium Ion Battery Pack Prices Forecast to 2030
(US$/kWh)



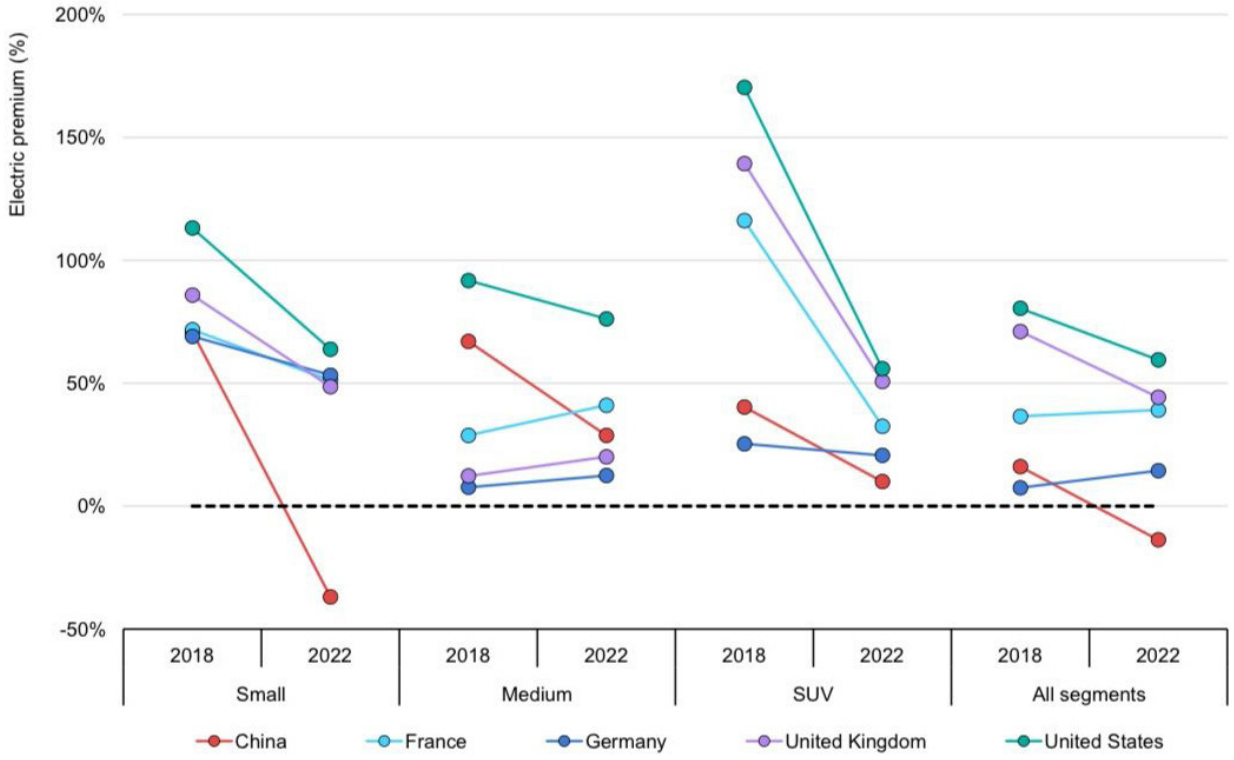
Source: Bloomberg, Goldman Sachs, SmartETFs. Data as of May 2024.

A shift in chemistry, especially for smaller EVs, towards lithium iron phosphate (LFP) batteries, is also having a positive effect. LFP batteries, which are significantly cheaper than those based on lithium, nickel, manganese and cobalt oxide, accounted for more than 40% of global EV sales by capacity in 2023, more than double their share in 2020.

While a consumer's decision to choose an EV over an ICE vehicle should logically be based on the total cost of over the lifetime of ownership (i.e. upfront costs plus running costs), it is clear that an important milestone in the curve for EV adoption will be EVs reaching upfront cost parity with ICE vehicles.

In China, the upfront retail cost of a small EV is already lower than the ICE equivalent, with SUVs not far from achieving price parity. Elsewhere in the world, the position varies significantly by region. In the US, for example, the price premium for an EV remains around 50% for most categories of light vehicle. The IEA estimates that average price parity in the US between electric and conventional SUVs could be reached by 2030 but may take longer for smaller cars.

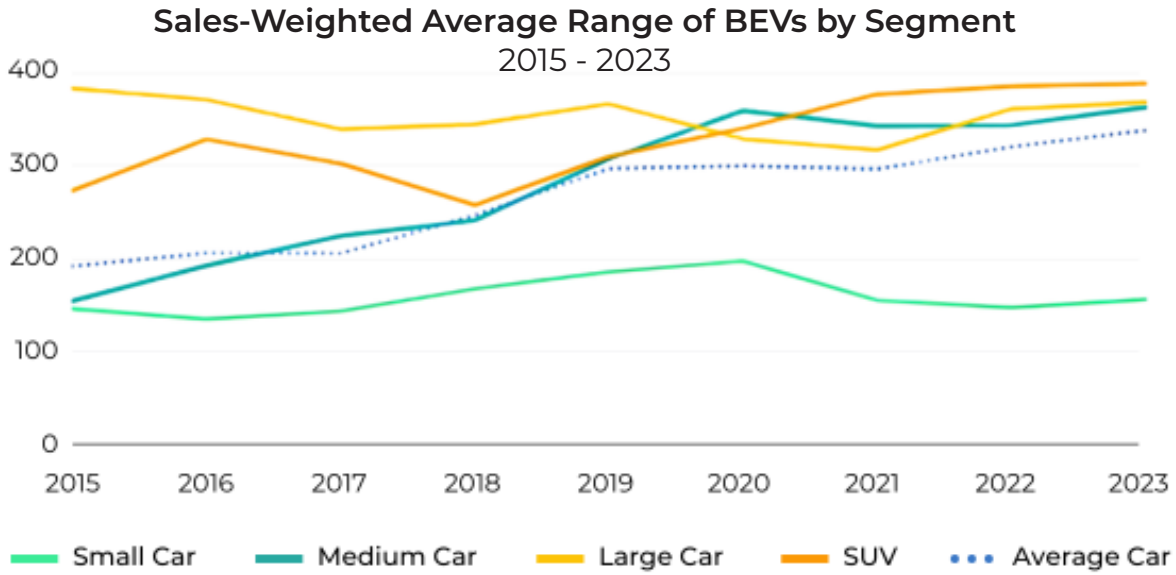
Price-Gap between Average Price (sales-weighted) of EVs versus ICE Vehicles
by size, 2018 - 2022



Source: International Energy Agency, 2023.

By contrast, Germany's electric premium ranks among the lowest in the West, with the average electric premium sitting at 15% in 2022 and falling since then. And looking at total sales in Germany, over 25% of the electric cars sold in 2022 were already cheaper than their average ICE equivalent.

Range Anxiety



Source: International Energy Agency, 2024.

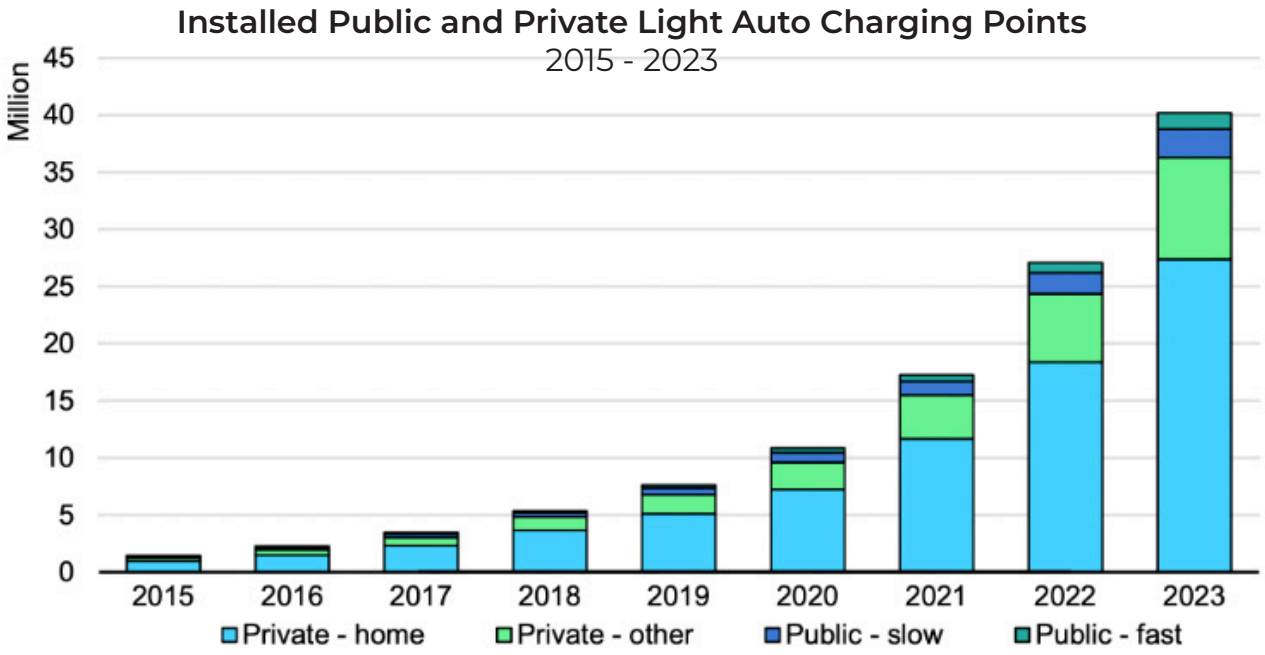
Since 2020, growth in the average range of vehicles has been slower than over the 2015-2020 period. This could result from several factors, including fluctuating battery prices, carmakers' attempts to limit additional costs as competition intensifies, and technical constraints (such as energy density or battery size). It could also reflect that beyond a certain range at which most driving needs are met, consumers' willingness to pay for a marginal increase in battery size and range is limited. Looking ahead, however, the average range may start increasing again as novel battery technologies mature and prices fall.

Improvements in battery technology, vehicle design and the deployment of larger batteries have contributed to a significant increase in average EV range. The sales-weighted average range of battery electric cars (or BEVs) grew by nearly 75% between 2015 and 2023, although trends vary by segment. The average range of small cars in 2023, at around 150 km (approx. 93 miles), is close to what it was in 2015, suggesting that this range is already "fit for purpose" in urban areas. Larger models already offered higher ranges than average in 2015, and their range is up to around 360-380 km (approx. 224 to 236 miles).

Charging Infrastructure

Broad, affordable access to public charging infrastructure is needed for a mass-market adoption of EVs and to enable longer journeys – even if most charging continues to take place privately in residential and workplace settings.

Despite the perception of a shortage of EV charging infrastructure, particularly in Europe, the deployment of charging points in major EV markets is continuing apace thanks to targeted policies. Globally, the number of installed public charging points was up 40% in 2023 relative to 2022, with growth for fast chargers outpacing that of slower ones. At the end of 2023, fast chargers represented over 35% of the public charging stock.



Source: International Energy Agency, 2024.

Unsurprisingly, China is leading the way, with around 85% of the world's fast chargers and around 60% of slow chargers. The Chinese government is targeting full coverage in cities and on motorways by 2030, in addition to better rural coverage.

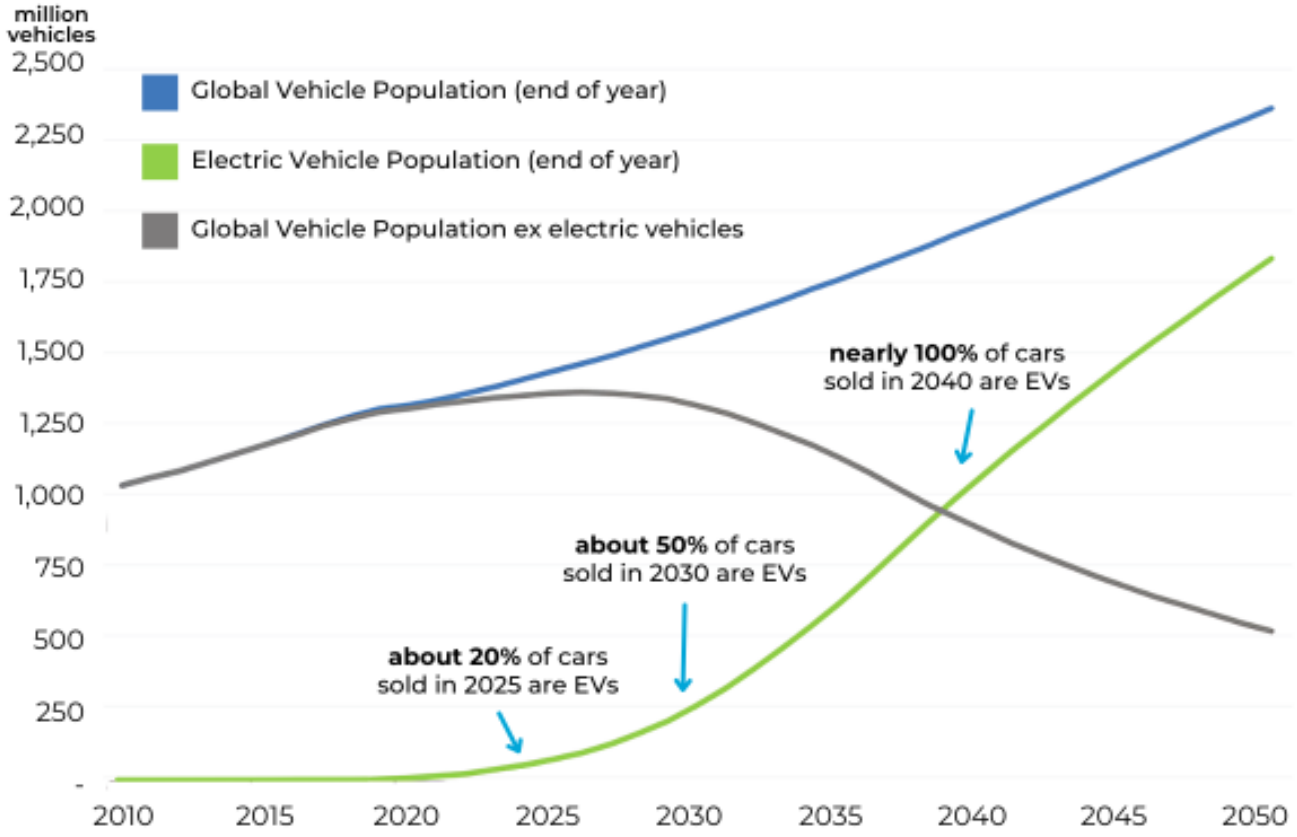
In late 2023, the EU agreed on new alternative fuel infrastructure regulation, which will require public fast chargers every 60km along the EU's main transport routes. The UK continues to incentivize private and public charging installations, with over 50,000 installed in 2023, and over

300,000 public chargers expected by 2030. And in the US, over 180,000 public chargers are already in place, with the goal of 500,000 public points in place by 2030.

Importantly, as the number of public chargers grows, attention is also turning to the interoperability of charging infrastructure. In the US, regulators announced last year that Tesla's charging connector (J3400) would be adopted as the standard under the North American Charging Standard. The aim is to ensure that any supplier or manufacturer is able to use and deploy the connector, providing EV drivers with more options for reliable, convenient charging across the continent.

Long-Term Growth Expectations

Global Auto Population by Type
2015 - 2050e



Source: US DoE (actual), SmartETFs (estimates). Data as of April 2024.

EV Sales in 2024 + Outlook

We believe that the hurdles to deeper EV penetration will be overcome and EVs will achieve a broader mass-market appeal. We maintain a view that close to 50% of light auto sales in 2030 will be EV, with predominantly all new auto sales by 2040 being electric of some form.

Today's global EV population remains small, only around 4% of the total light auto fleet, but this is likely to grow to around 15-20% in 2030 and around 50% by 2040.

At that point, it implies an overall EV population of nearly one billion vehicles, over 20 times greater than the global stock in 2024 of around 40m.

Disclosure

For the fund's current holdings, click here or go to SmartETFs.com/SOLR.

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Prices of energy, whether traditional or sustainable, may fluctuate or decline due to many factors, including international political or economic developments, real or perceived, demand for energy and sustainable energy, production and distribution policies of OPEC (Organization of Petroleum Exporting Countries) and other oil-producing countries, energy conservation projects, changes in governmental regulations affecting companies in the energy sector, including Sustainable Energy companies, changes in technology affecting Sustainable Energy, and changes in tax regulations relating to energy.

A decline in energy prices would likely have a negative effect on securities held by the ETF. The ETF's focus on the energy sector to the exclusion of other sectors exposes the ETF to greater market risk and potential monetary losses than if the ETF's assets were diversified among various sectors.

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