

THE ELECTRIC VEHICLE REVOLUTION



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Market Views

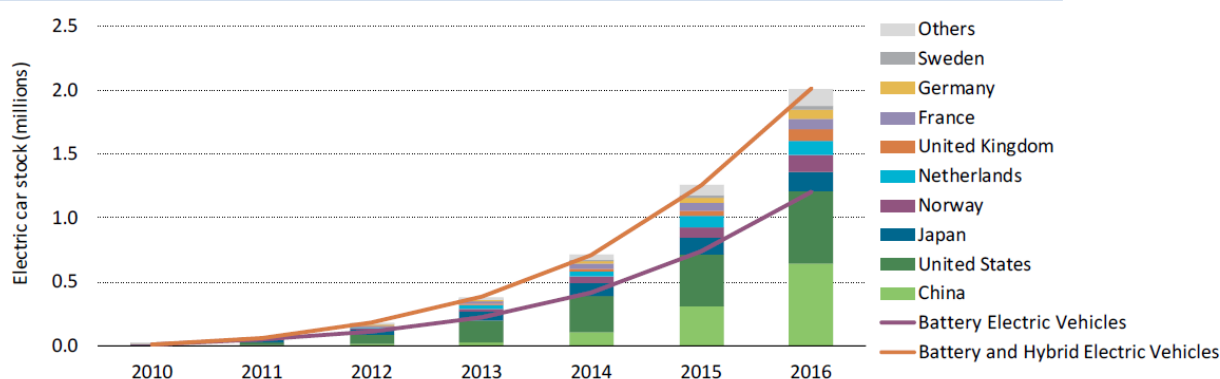
“The motor industry has committed to the mass production of electric cars. As sales volumes ramp up, and with the support of governments across the world, production costs will fall, making it a very profitable industry.”



Announced in December 2015 and enforced in November 2016, the Paris Agreement set an objective to limit the increase in the global average temperature to well below 2°C above pre-industrial levels. The electrification of transport plays a significant role in all International Energy Agency (IEA) scenarios, where increasing transport electrification goes hand-in hand with their aim of decarbonising the energy sector. According to the IEA, the transport sector currently accounts for 23% of global energy-related greenhouse gas emissions, and will need to deliver major emissions cuts to enable countries to achieve their goals. Around the world, governments are pressuring automakers to accelerate investment into electric vehicles.

According to the report from the IEA, new registrations of electric cars hit a record in 2016, with over 750 thousand sales worldwide. The global electric car stock surpassed two million vehicles in 2016 after crossing the one million threshold in 2015. Globally, electric cars account for just 0.2% of the total number of passenger light-duty vehicles in circulation. Electric vehicles still have a long way to go before reaching deployment scales capable of making a significant impact on the reduction of global oil demand and greenhouse gas emissions, with some governments trying harder than others.

Evolution of the global electric car stock, 2010-16

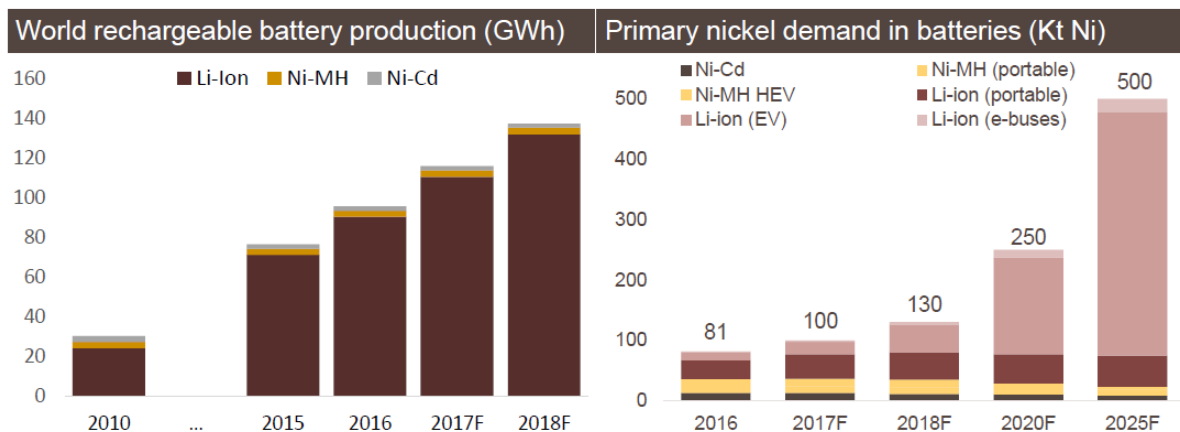


Source: IEA.org

With a 29% market share, Norway has irrefutably achieved the most successful deployment of electric cars in terms of market share. In Norway, electric cars are exempt from purchase tax, representing around NOK 100 000 (USD 11 600). This environment, coupled with incentives such as a waiver on fees for road tolls and ferries, continues to provide a highly favourable environment for electric car uptake. Norway is followed by the Netherlands, with a 6.4% electric car market share, and Sweden with 3.4%. China, France and the United Kingdom all have electric car market shares close to 1.5%. In 2016, China was by far the largest market for electric vehicles; accounting for more than 40% of worldwide sales of electric cars, more than double the number sold in the United States. Chinese policies continued to provide strong financial and non-financial incentives to electric vehicle adoption in 2016. Exemptions from purchase and excise taxes ranged between CNY 35 000 and CNY 60 000 (USD 5 000 to USD 8 500). Large Chinese cities also allow total or partial waivers from licence plate availability restrictions. The combination of imposing licence plate restrictions, encouraging consumers to buy electric cars, and offering financial incentives – making electric cars financially accessible – explains the strong sales volumes (336,000 cars) and growth rate (40%) in 2016 compared to 2015.

Whilst governments can certainly speed up the transition away from combustion engines, the key to unlocking the widespread adoption of electric cars is in lowering the cost of producing a battery pack. Signs of continuous improvement in technologies currently being researched confirm that this trend will continue, narrowing the cost between electric vehicles and internal combustion engines. There is no question in our minds that the early mass producers of electric cars will become profitable more quickly as the price of manufacturing a battery pack is the biggest stumbling block. The US Department of Energy states that over the last six years, battery pack prices fell by 80% to about \$227/kWh, however, they need to fall to about \$100/kWh to compete with cheaper internal combustion engine cars. When production volumes increase from 25,000 units to 100,000 units, a 100 kWh battery pack will experience a fall in production costs of 13%. Manufacturers making more than 200,000 battery packs per year are expected to be able to produce them for \$200/ kWh or less. This is part of the economy of scale that made Tesla so keen to build its Gigafactory in Nevada (the biggest building in the world) and start producing car batteries as well as stationary storage batteries.

According to UBS, by the middle of the next decade, global sales of electric vehicles should hit 16.5 million. Key components for car batteries are nickel, copper and lithium. Glencore conservatively estimate that if 10 million electric vehicles are sold in 2025, it will generate net additional primary nickel requirements of over 400kt, equivalent to 20% of current Nickel production.



Source: Glencore.com

Daimler have recently stated they aim to offer electric motors for all Mercedes-Benz luxury brand models by 2022. Volkswagen has, until recently, increased their initial investment in electric cars from Euro 10 billion to Euro 34 billion over the next five years. This increase in investment from Volkswagen underlines the high cost for legacy car manufactures to enter the market and certainly makes Tesla's market capitalisation of \$50 billion much more palatable.

The motor industry is now committed to the mass production of electric cars. With more help from governments across the world and as sales volumes ramp up, production costs will fall making it a profitable industry. There are some very clear ways to monetise the adoption of the electric car. In our view the early adopters and commodity producers appear clear winners.

INFORMATION

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