Baku battery electric vehicles bevs

Baku battery electric vehicles bevs

Surface transport (road and rail) accounts for 37% of global CO2 emissions, and 22% of UK emissions. Evidence from the IEA shows that "owing to efficiency improvements, electrification and greater use of biofuels", emissions increases are slowing with a roughly 0.5% increase in 2019 being lower than the average of 1.9% increase in the years since 2000.

Battery electric vehicles (BEVs) are powered entirely by electric batteries, with no petrol or diesel engine. BEVs are being pursued by most governments and automotive companies as the main low-carbon option for light road transport (cars and vans).

Climate and other benefits of BEVs

In the UK, the Climate Change Committee (CCC - Government advisors on how to meet climate goals), has estimated that around half of the emissions reductions needed from surface transport to meet net zero will come from zero-emission cars - almost entirely BEVs.

The life-cycle emissions of a BEV are over two-thirds lower than a fossil fuel car, with manufacturing emissions being cancelled out by lower in-use emissions within a year. And the value for BEVs are expected to fall further from 15 to around 8 tonnes of CO2by 2030 as manufacture improves and the cars run on lower-carbon electricity.

BEVs have lower fuel costs than alternatives, at around half the price per km of petrol or diesel.[1] These lower energy costs are partly due to BEV"s much higher efficiency. Petrol engines are around 20% efficient, and diesel up to 40%, with further inefficiencies in the production and transportation of those fuels. Electric motors are around 90% efficient, and the production of the electricity they use is becoming increasingly efficient with the greater use of renewables.

Manufacturing, jobs and supply chains

Countries around the world are racing to build "gigafactories" to manufacture lithium-ion batteries for BEVs in order to retain (or attract) large motor manufacturing companies. China which leads the world in this sector has 149 gigafactories planned by 2030. EU States have 19 planned, and the USA 11. Overseas examples of planned gigafactories include construction of the 60GWh Northvolt plant in Sweden (which has a $14billion contract with Volkswagen), and Germany alone has seven plants under construction.

The UK has one existing gigafactory to manufacture lithium-ion batteries for BEVs, the Envision AESC plant in Sunderland, which has recently announced it is expanding to create 6,200 jobs. Britishvolt is constructing another in Blyth, expected to begin production in 2023. This new plant is likely to provide for 300,000 BEVs

per year and create 3,000 jobs (at the plant and in supply chains), presenting an opportunity for jobs in industrial areas key to the "levelling up" agenda.

The Faraday Institution predicts that the UK will need at least one new gigafactory from 2022, another from 2025, and eight by 2040. The Society of Motor Manufacturers and Traders (SMMT) also estimates that, by 2030, the UK will need enough gigafactories to provide for 1 million electric vehicles per year. Co-locating vehicle and battery factories can have multiple practical benefits, including: easier collaboration with researchers and supply chains; limiting transport costs; and satisfying the "Rules of Origin" in the EU-UK trade deal stating that the battery (and 55% of the vehicle overall) must be manufactured in the UK or EU.

BEV and battery manufacturing relies on securing supplies of key materials (particularly critical raw materials such as lithium and cobalt), which are found almost entirely outside of Europe. China has spent decades building up control of global production of key minerals to support its manufacturing industries and the UK has no critical raw materials strategy, although this has been recommended in a 2020 Defra-commissioned report.

There are efforts to move away from lithium-ion batteries, partly to reduce exposure to these international issues, and partly to avoid negative environmental impacts of lithium-ion battery supply chains and disposal. It has been suggested that the UK could seek to obtain strategic and economic advantages: developing industrial-scale recycling of batteries to provide a source of materials for its gigafactories; and researching solid-state batteries for BEVs to leapfrog manufacturing competitors.