

# Why UK Auto needs a Battery Giga-Factory, and soon

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This year, 2020, is essentially 'Year Zero' for EVs in Europe and many expect to see a rapid increase in EV production from here on in. As battery costs fall and EV range improves, a tipping point in the early to mid 2020s will see Battery EVs outcompete ICE cars and that is when mass EV take up will kick off in particular.

So the UK needs to get ready for this. Here in the UK we only have small-scale battery assembly for example in Sunderland (for Nissan) and JLR in the Midlands.

This won't be enough. While current demand doesn't justify a big plant, it soon will; output of a much bigger scale will be needed for demand in 3-5 years and we need to start planning for that now. And by the 2030s major investment and scale will be needed.

The UK is also in danger of missing out for a number of reasons. Brexit uncertainty (over the form of the UK's future trade relationship with the EU) remains a serious issue and the UK is lagging in terms of the latest fast charging infrastructure. In such circumstances, why would a company want to invest in a massive battery plant here?

It was noteworthy that Tesla CEO Elon Musk said recently that [Brexit uncertainty](#) was a factor in the firm's decision to build its [first major European factory](#) (including battery production) near Berlin in Germany rather than the UK.

The biggest plant in the UK, a 2GWh plant facility in Sunderland, can make enough battery cells for roughly 50,000 40kWh Leaf models a year. That's increasingly seen as small scale.

Much bigger plants are being built by the likes of Samsung SDI (Hungary), LG Chem (Poland) and Northvolt (Sweden – and via a JV with VW in Germany).

As the Faraday Institution notes, based on current plans alone, battery manufacturing capacity in the major centres in continental Europe [will reach 130 GWh](#) per year in six years' time.

Other European countries are [Germany,] doing more in policy terms to attract such investment. Germany has a €1 billion federal support programme for EV battery production, while in Poland and Hungary, special economic zones have been set up offering tax relief for EV production.

A much more holistic industrial policy approach is needed to help the industry make the transition to EVs, according to Steve Turner, Assistant General Secretary at Unite the Union: “We need a much more ambitious policy approach to drive electrification and EV take up, covering technology, skills, the supply chain as well as infrastructure and incentives to drive low carbon vehicles,” he says. “There needs to be a much clearer destination of travel and a long-term commitment to make the switch. Messing around with tax rates and cutting subsidies for EVs really hasn't helped either. That needs to change”.

While the UK government announced £1bn of extra funding to develop electric vehicle supply chains, it is not clear how much – if any – of this will be used to actually underpin investment in a gigafactory.

Meanwhile, batteries for hybrid Land Rovers (like the Evoque), the hybrid Toyota Corolla assembled at Burnaston and new electric Mini all come from outside the UK, with the Jaguar i-pace EV is itself assembled in Austria.

JLR has made the case here: [“If batteries go out of the UK, then automotive production will go out of the UK”](#) said JLR's Chief Exec Ralf Speth last year.

While JLR is investing at Hams Hall near Birmingham to assemble battery packs for the new Jaguar XJ EV it is again small scale and battery cells will – it seems – be imported.

Having battery cells made in the UK will be important to anchor auto assembly here (shipping heavy components around adds to cost) and to avoid currency fluctuations, and making sure there is enough local content to benefit from post-Brexit trade deals with the EU and other countries.

The Faraday Institution argued last year that without battery manufacturing in the UK, the automotive industry will slowly decline over time.

Increasingly car companies will have to buy in the batteries or produce them in JVs like VW is doing with Northvolt. The battery expertise required is outside of the core skills of an auto firm. [Nissan recently sold off](#) its battery facilities including that at Sunderland to Chinese battery firm Envision Energy Group.

So what is critical is to attract a major international battery maker to assemble cells here. That might mean a JV between the UK government, a battery maker and possibly an auto-maker, as well as targeted financial support to help investment. That in turn would need a more active industrial policy.

The demand is forecast to be there. Alternatively fuelled vehicles are very much on the rise, taking over 10% of the UK new car market in recent months. Plug-in battery electric and hybrid car sales continue to grow rapidly, albeit from a low level; hybrids are increasingly seen as mainstream, as seen in the latest Range Rover Evoque, for example.

Demand for electric vehicle battery production in the UK is expected to reach some 130GWh per year by 2040; that would be equivalent to the output from eight gigafactories with a capacity of 15 GWh each. McKinsey suggests heavy investment (of the order of [£5bn to £18bn](#)) is needed by 2040 into battery manufacturing in the UK.

The big increase in EV numbers means a big future market for batteries. McKinsey forecasts that by 2040, battery demand for EVs

produced in Europe will reach 1,200 gigawatt-hours per year, [or enough for 80 gigafactories](#) with an average capacity of 15 gigawatt-hours per year

The danger here is that the UK misses out on investment in a big growth industry. Assemblers with operations in the UK are already agreeing deals with battery suppliers outside the UK and that makes future EV assembly less likely to take place here as firms look to shorten supply chains (something we've found in our [research](#) on manufacturing and 'reshoring') and co-locate battery and vehicle assembly.

The basic point is that if we want to see EV production in the UK in the future we'll need batteries made here too, and on a large scale. And a more activist industrial policy will be needed to help make that happen.