

A West Midlands 'Gigafactory' – How Feasible is it?

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In this blog I want to report on our project on a “just transition” to electric vehicles in the automotive sector (with Sally Weller, Ian Henry, Al Rainnie, Gill Bentley and Beverley Nielsen) that was funded by the British Academy, and the implications in the West Midlands. As current talk on establishing a “Gigafactory” in the Region (namely, that proposed for the former Coventry Airport site) attests, securing as much value-added (and hence jobs) locally is vital if the West Midlands is to retain its pre-eminence in automotive manufacture in the UK.

We will be presenting the full findings of our project, with particular policy recommendations at a regional and national level to secure a successful transition, at our launch event to be held on the 29th April at BCU's City Centre Campus. If you would like to attend, please register a place at: [Enabling a Shift to EV and its Impact on the Supply Chain and Workers Tickets, Fri 29 Apr 2022 at 09:00 | Eventbrite](#)

Our research included interviews with stakeholders (business, policymaker etc.) pertaining to the automotive supply chain, which focussed on the capacity of supplier firms to transition to EV. Key themes explored were participants' views on the current state of the EV industry in the Region, the dependency on Vehicle Manufacturers (VMs) as being key to whether they could transition, battery production, what skills mix would be required and where skills gaps were, what the role of government should be to facilitate transition, and any issues pertaining to infrastructure.

We found that whilst there are opportunities for the Region in terms of battery production, for example, there remain a number of significant challenges to overcome. All too often, the establishment of a Gigafactory is almost seen as a fait accompli, with less attention focussed on the practicalities of securing value-added in the Region, for example, this statement in the West Midlands Combined Authority (WMCA) (2020) Five Year Plan 2021-26 (p. 77): “Most jobs created in the WMCA will be in manufacturing low emission vehicles, battery packs and modules in giga factories situated near existing production sites.”^[1]

*However, as reports of discussions by JLR with Envision to possibly source batteries from the North East attest, **it is not automatically the case that opening a giga-factory in the West Midlands will mean that it will automatically be chosen as the supplier for UK made vehicles, nor lead to an EV plant opening nor an existing ICE-powered vehicle plant being converted to making EVs.** Electric versions of the Mini, for example, are made in Oxford and there is no battery factory in the UK for this – the batteries come from Germany (with key parts, the cells, coming from Poland and Asia).*

As such, supplying battery cells over long distances already takes place and will continue to do so in the future; for example, the distance from Northvolt in Sweden to BMW in Leipzig, the most northerly BMW Germany factory, is at least 1,200kms by road and boat. This suggests that it is not axiomatic that cells especially have to be located close the car plants where they will be used.

Even so, it must be recognised that a future giga-factory – such as the proposed one at Coventry airport – will need an anchor tenant or operator and it is difficult to conceive of a giga-factory being kitted out, without such an operator winning a UK supply contract from a VM.

Moreover, exactly what future battery factories will actually do could vary significantly. Also, there is no standard definition of what a giga-factory is or means. Rather, a Gigafactory could encompass several possibilities, i.e.,

1. They could be **fully vertically-integrated operations** – as will be the case at Envision for Nissan in the UK – making cells and assembling these into complete batteries.
2. Or they could involve **manufacturing and supplying cells** and/or modules (which are sub-assemblies of a number of cells) to other locations for assembly into finished batteries.
3. Or they could involve **importing cells** for assembly into modules and/or battery packs.
4. Or they could be **a combination of the above**, doing different things for different customers.

As such, our findings suggest that the automotive value chain in the West Midlands has marked gaps in terms of being able to supply key parts and components for EV production; particularly in EV powertrain systems and all battery components, which will hinder attempts to capture value-added in securing domestic EV production. In this context, the current mania for giga-factories in the Region obscures the fact that it is the VMs who will determine which aspects of EV production they will conduct in the UK, and where they will source the supplies of components from. In particular, we find that firms in the automotive supply chain in the West Midlands:

- **are particularly exposed to the operations of Jaguar Land Rover (JLR), given its dominance in the region (accounting for approx. 50% of automotive employment in the West Midlands), and the continued uncertainty (at the time of writing) as to JLR's EV strategy;**
- **lack the capacity or the specialist equipment needed to undertake production of batteries, high value battery components (especially anodes and cathodes) and key components for electric motors (e.g., severe lack of domestic capacity to produce laminations for electric motors);**
- **are hindered by a lack of non-grain-oriented (NGO) electrical steel produced in the UK to support production of EV components, for batteries and motors, following the decision by Tata Steel to consolidate production of NGO steel in Sweden;**
- **suffers from uncompetitive energy prices relative to other European countries, which will hinder production in the UK of energy-intensive parts and components such as battery cells;**

Hence, our analysis strongly suggests that policy needs to focus on two areas: **general support and improvements to the area's infrastructure and general business environment (transport links, potential help with energy costs etc.) and more significantly assisting with the transition to an electric vehicle manufacturing focus for West Midlands automotive.**

Specifically, helping to secure a battery plant, either an assembly plant or a fully vertically integrated factory which encompasses cell production plant as well as battery assembly, should be top of local and regional policy makers' objectives – and this has to start with a clear understanding of the needs and intents of VMs in the region, based on dialogue with them.

If production of battery cells is to take place at a UK giga-factory, then this will in all likelihood need to be presaged by a UK Government 'deal' on a reduced tariff for electricity. This is because as much as 2/3 of the embedded energy consumed in the production of a battery is in the cell production phase; most of the rest is incurred in the raw material mining phase. There is a strong case to be made for cell production to receive UK Government support as an energy-intensive industry.

Hence, current talk of a establishing a Gigafactory obscures the problems we have identified in securing as much value-added as possible in the West Midlands. Without concrete actions at a national and regional level (and timing is urgent), such talk is little more than hot air.

Helping the region's existing supply chain firms to assess what they need to do re-orientate themselves towards the new EV or zero carbon economy is essential.

[1] West Midlands Combined Authority (WMCA) (2020), 'WM2041: Five Year Plan 2021-26'. Accessed on January 12th 2022 at [wm-net-zero-fyp-summary-tech-report.pdf \(wmca.org.uk\)](https://www.wmca.org.uk/wp-content/uploads/2020/12/wm-net-zero-fyp-summary-tech-report.pdf)