



UK electric vehicle and battery production potential to 2040

SMMT
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Opportunity for EV and battery cell production in the UK...

” What is the maximum opportunity for EV and battery cell production to be based in the UK by 2030 and 2040, and what actions need to be taken now, and by whom, to ensure that this opportunity is captured?”



1
Demand for EVs and batteries manufactured in the UK



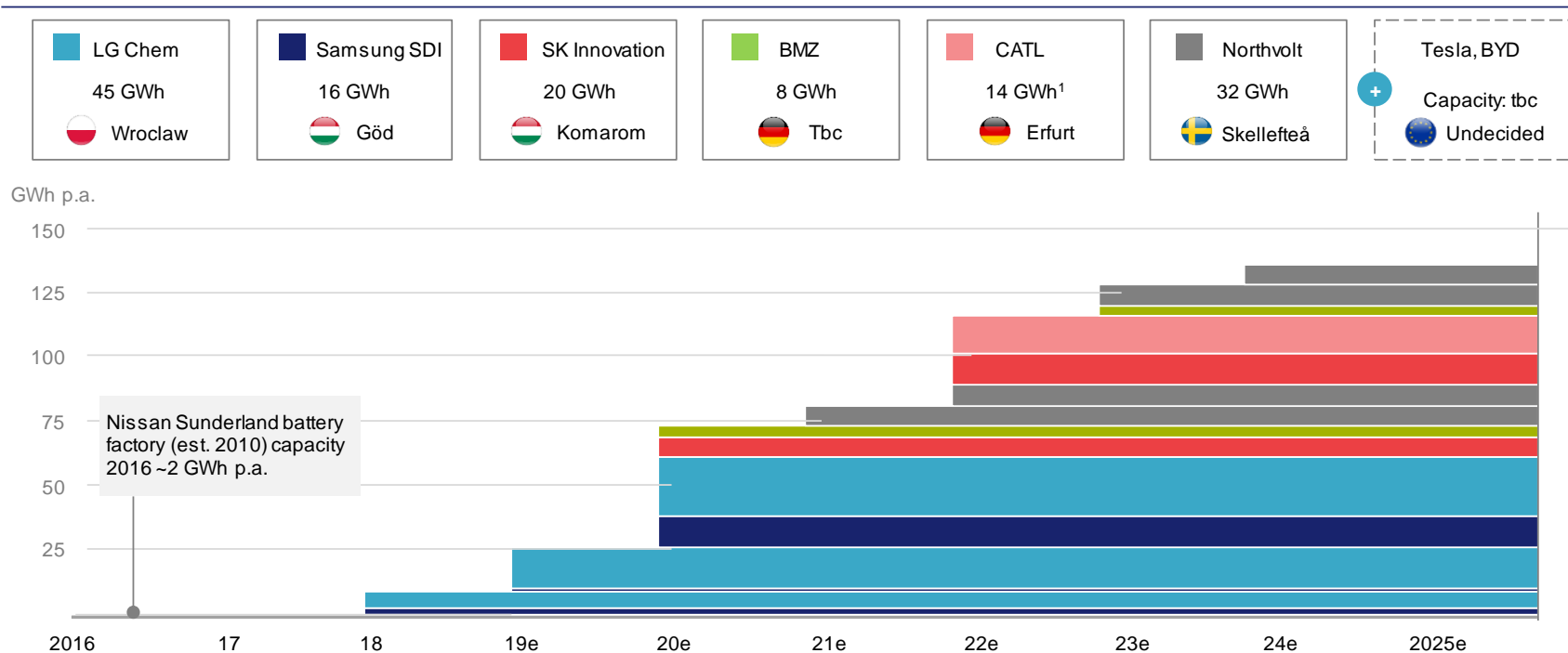
2
Supply side: what battery manufacturing will be required and when



3
Investments and other actions to local UK automotive businesses
Incentives to attract battery and EV manufacturers to the UK?

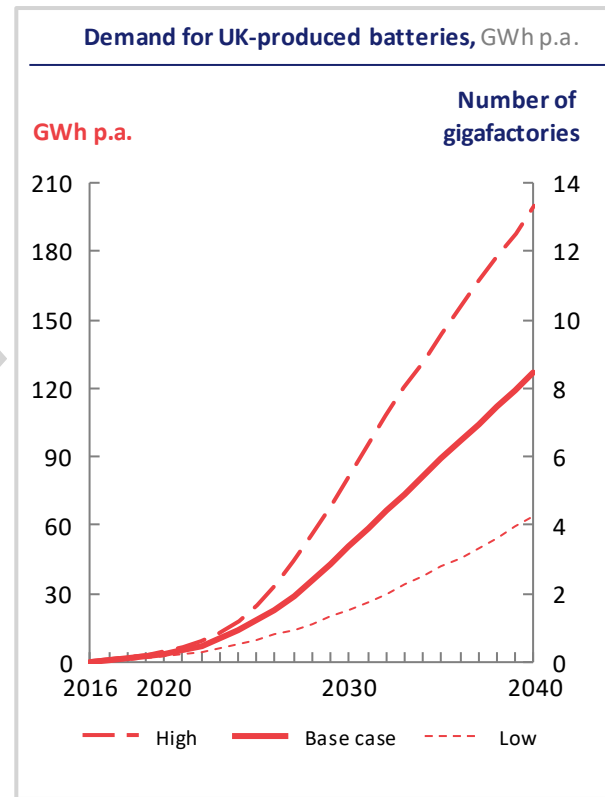
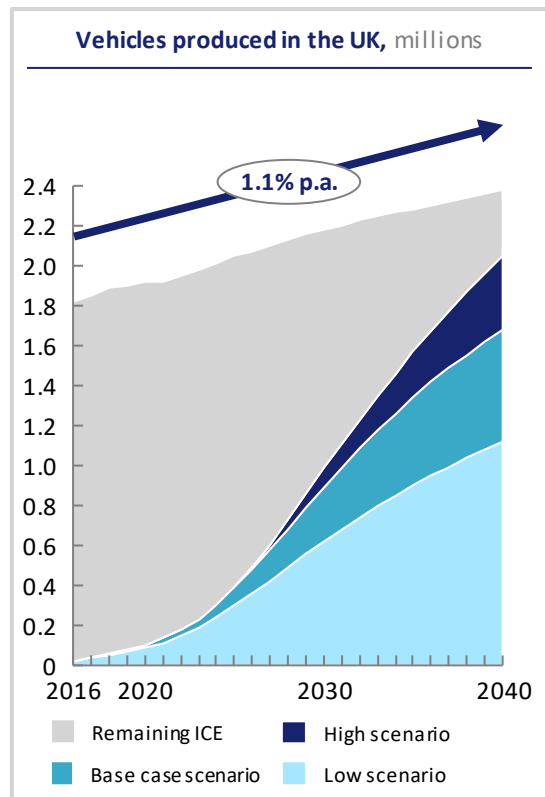
European battery production of 130 GWh by 2025

European lithium-ion battery capacity ramp-up until 2025 (per annum)



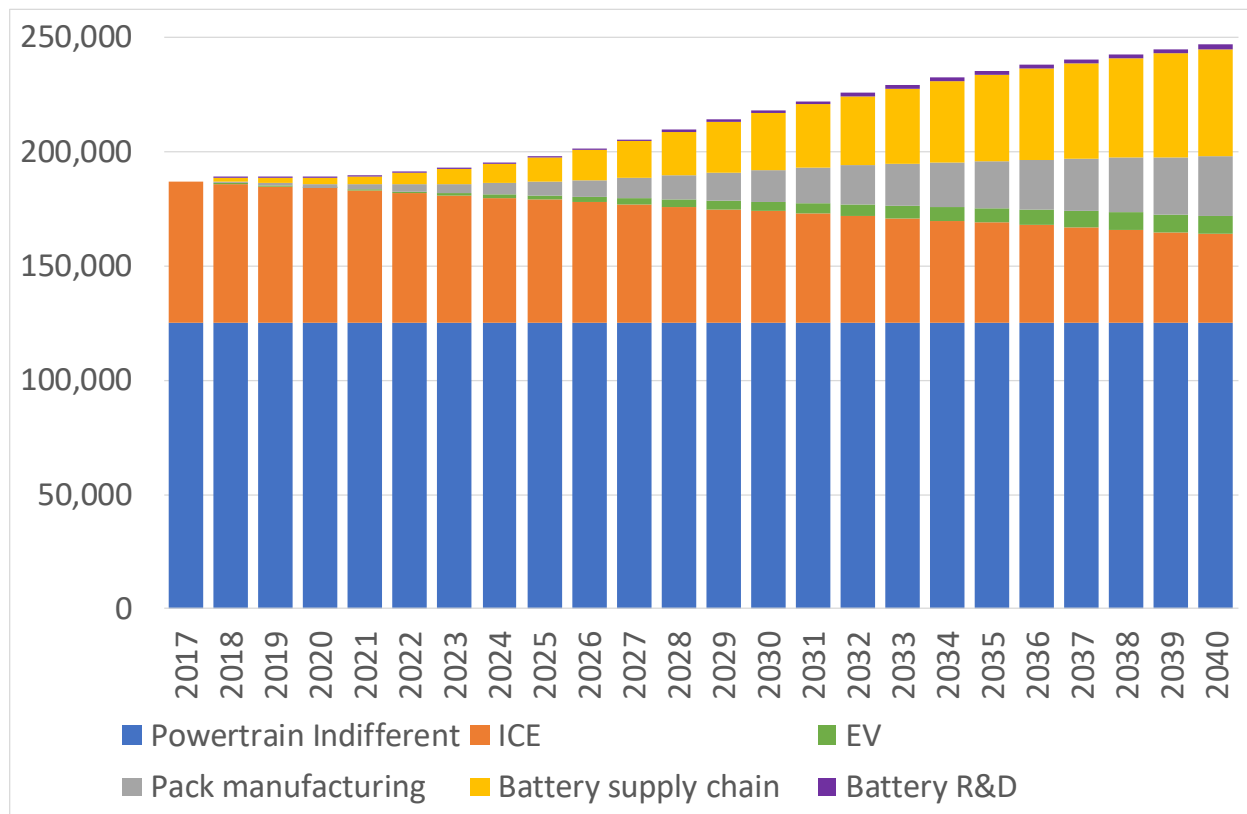
UK demand for 8 Gigafactories by 2040

- UK-based battery manufacturing of 60-200 GWh per annum
- UK-based equivalent of between 4-13 Gigafactories
- Central estimate of 8 Gigafactories



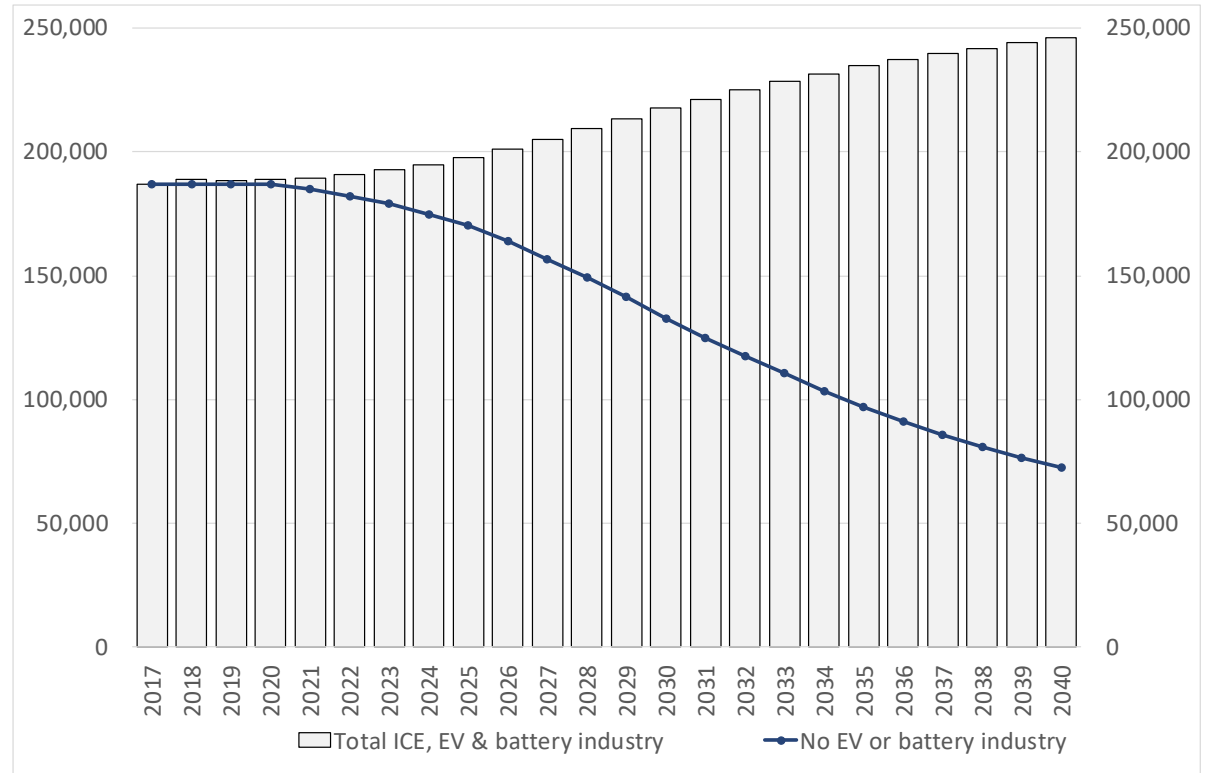
UK industry of 246,000 employees by 2040

- 83,000 new jobs created in the new UK battery gigafactories and in their battery material supply chains
- 38,000 jobs remaining in ICE vehicle production
- 125,000 jobs remaining in manufacturing serving both ICE and EV production (indifferent to the powertrain)



Significant impact on the industry without EV and battery manufacturing

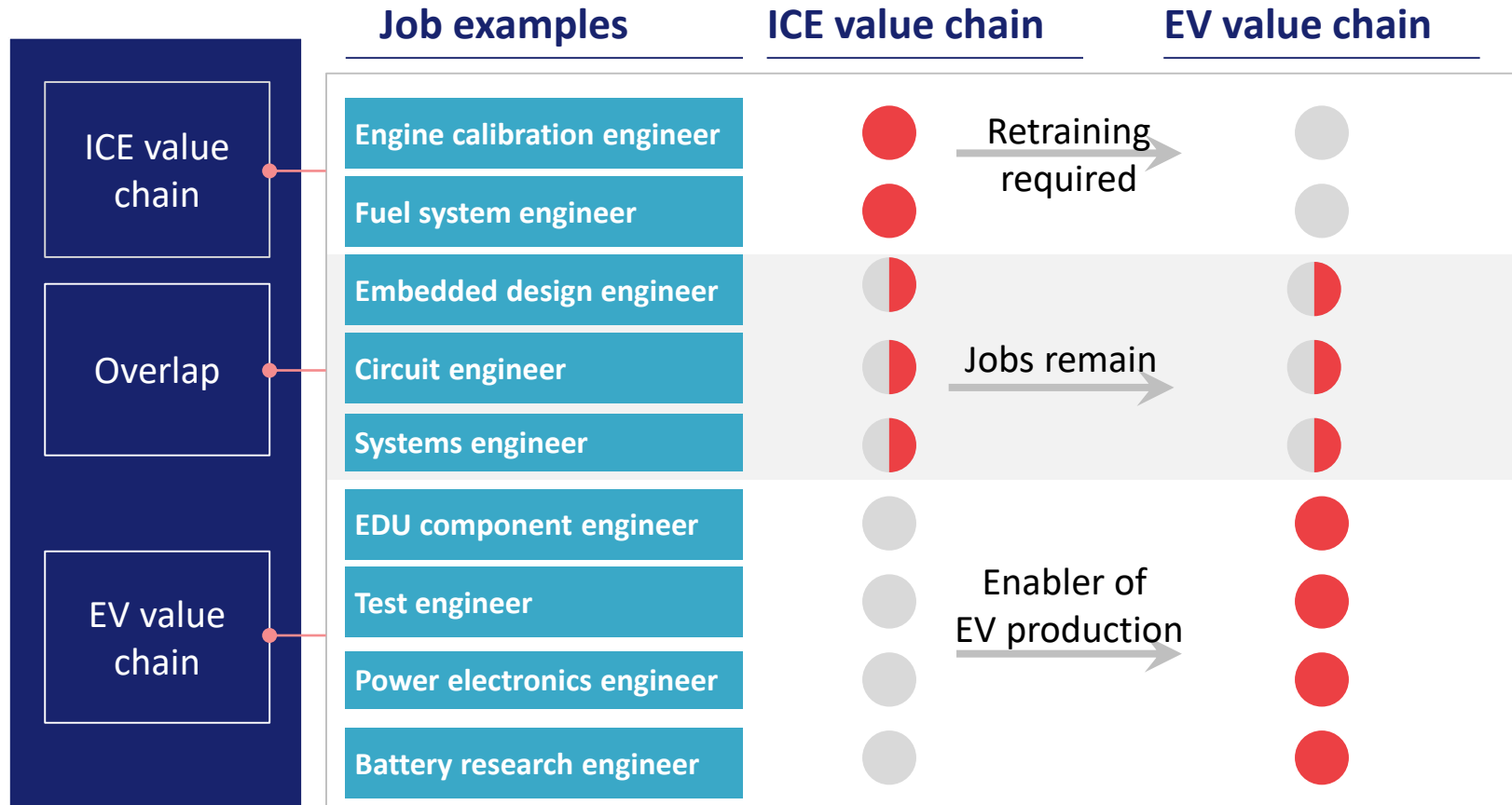
- By 2040, around 114,000 direct automotive jobs would be lost without battery and EV manufacturing



Cathode active materials and cell production offer potential value creation and employment

Raw materials	4 core materials				Cell production	
	Cathode active material	+ Anode active material	+ Separator	+ Electrolyte	= Automotive/ Consumer electronics	Battery pack production
% battery pack cost (2025)	22-28%	4-6%	4-6%	6-7%	17%	16%
Industry profit margin (2017)	10%	20%	35%	20%	10%	10%
Market size in USD bn (2025)	30	6	4	7	74	91
Labour/skill needs (2040)	Extensive & continuous R&D	Commoditised process	Mostly standardised components	Large-scale chemical synthesis; limited labour	high automation but high labour require's (tech challenges)	Automation easier / Less technically challenging steps









Battery manufacturing requires new skills





Factors influencing investment & location decisions

Factor	Importance	Ability to influence
Proximity to customers and suppliers	High	<ul style="list-style-type: none">• Grant land close to UK export or EV manufacturing facilities• Attraction of supply chain
Incentives	High	<ul style="list-style-type: none">• Subsidies & Cash incentives• Indirectly through legislation
Access to skilled labour	Medium	<ul style="list-style-type: none">• Indirectly through initiative to encourage skill development and labour mobility
Cheap, clean energy	Medium	<ul style="list-style-type: none">• Directly through incentives to lower costs and indirectly through clean energy policies
Permits and licensing	Medium	<ul style="list-style-type: none">• Streamlining of permits /licensing process

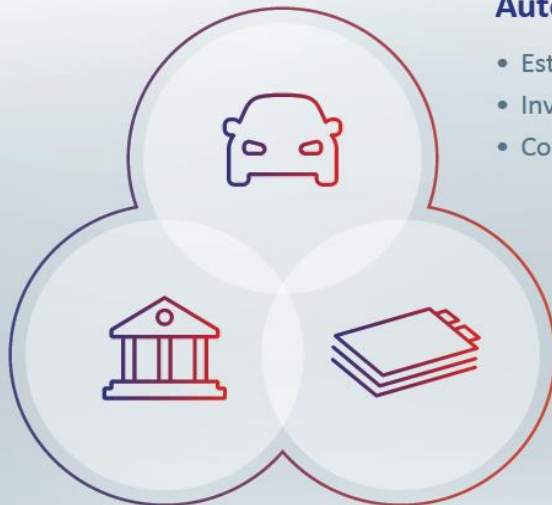
4 options for battery production in the UK

Strategic options	Scalability	Relative speed
Expand existing operations		
Establish new gigafactory (Tier 1)		
Establish new gigafactory (Tier 2)		
Grow domestic start-up		

 High  Low

National and regional Government

- Appoint leader and align departments
- Identify/prepare potential locations
- De-risk business case
- Communicate UK attractiveness



Automotive manufacturers

- Establish battery sourcing agreement
- Invite cell manufacturers to establish local production
- Connect cell manufacturers to UK government

Cell manufacturers

- Establish battery supply agreement
- Engage with government and suppliers
- Evaluate business case

Other stakeholders (including academia and suppliers)

- Draft UK investment memorandum and facilitate dialogue
- Consider Special Purpose Vehicle construction to allow accelerated site identification



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