

Feature: UK may need 60,000 mt/year of lithium for 2030s EV car strategy

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HIGHLIGHTS

UK lithium mining could help govt reach EV targets: developers UK lithium mining at least three years off

London — The UK will need 50,000-60,000 mt/year of lithium carbonate equivalent for battery production to satisfy government plans to produce only electric vehicles by 2035, assuming production continues at around 1.2 million vehicles a year, according to lithium mine project developer Jeremy Wrathall.

But despite the existence of two lithium mine projects in the UK, it is doubtful the country will achieve lithium self-sufficiency by that time, and even whether sufficient supplies will be available on global markets to feed the UK's emerging EV sector.

The UK has not mined lithium since around 1914, when it was produced as a fireworks ingredient in Cornwall. Only small quantities of lithium are currently produced in the UK from imported concentrate.

The two mine projects in Cornwall still require significant further development: British Lithium hopes to start construction in three years' time of a quarry and refinery to produce 20,000 mt/year lithium carbonate or hydroxide, in an estimated \$400 million investment, having recently completed a positive preliminary economic evaluation.

Wrathall's Cornish Lithium, the second project, last week raised £826,000 (\$1.04 million) from shareholders in an "extremely difficult" market, to continue resource modeling and early feasibility studies, targeting a production start within three to five years to make a "material contribution" to the UK's total expected requirement of the light metal.

But "the question is: where are we going to get all this material from, given that total lithium production is only 320,000 mt worldwide; this is a huge problem for the UK and an even bigger problem for the EU which may be producing around 18 million EVs a year," Wrathall asks. "We want to put Britain on the battery materials map."

Batteries could even be using more lithium by 2035 than at present, with the expected increase in the use of solid-state batteries, according to the mine developer.

"Our conservative opinion is that we and other potential producers in UK would be able to make a significant contribution to self sufficiency, but are unlikely to be able to meet all of UK's rapidly growing demand," said British Lithium chairman Roderick Smith.

Government support seen vital

Government support is essential for the emergence of a full EV raw materials and value chain in the UK, both developers said in interviews with S&P Global Platts. Otherwise the nation's automotive industry — currently its biggest import and export business — could disappear altogether, as the UK risks being left behind in terms of EV development to countries including Germany and France where there has already been massive funding for this sector, and losing out to China in terms of setting up a battery supply chain, they said.

The full value chain would require lithium mining and processing and the creation of battery megafactories to support UK government plans to phase out diesel and petrol vehicle sales by or before 2035, in line with Paris Agreement commitments.

"Government support is absolutely essential for battery megafactories to be set up for the growth EV chain and the full raw material and value chain. If you've got the geology here why ignore it, otherwise someone else will benefit from it. If the UK doesn't support its EV sector it will risk losing its automotive industry. No deal on Brexit yet makes this support more urgent, and tariffs would need to be paid on imported lithium," Wrathall said.

"We expect the UK will compete hard with other European countries to secure a lithium battery plant in the UK," said Smith. "This will inevitably require significant government subsidies and guarantees, and the stakes are high for the UK. Imagine what the UK economy would look like if we lost [our automotive industry]? That's why the UK government simply won't let it happen – their choice is to abandon the green economy and stay with petrol/diesel cars, or do everything it takes to secure a gigafactory."

The first EV designed in the UK — Jaguar's I-Pace — is not made in UK, but in Austria, with its Polish batteries accounting for 40% of its cost. Even the iconic electric Mini uses a drive train and batteries made in China, Smith noted.

Britishvolt - potential for collaboration

The UK is trying to attract several megafactories and each each megafactory is expected to consume 25,000 mt/year of lithium a year.

Both mine developers said they would be ready to work with Britishvolt, which recently announced plans to set up an over 30 GWh gigafactory in the UK, and is seeking collaboration with lithium miners. "Elon Musk is also scouting out a megafactory (in the UK), but where is the raw material going to come from, ethically sourced?" asked Wrathall. "The UK could provide a local source of ethically-produced supply, produced by low-carbon methods."

Recent coronavirus shutdowns have further highlighted the risks of long supply chains, particularly those originating in China, both Smith and Wrathall noted.

"Lithium-ion batteries are essential for the transition to electric mobility, yet no battery-grade lithium is produced in Europe," the British Lithium chairman said. "If battery-grade lithium is produced in UK as we intend, this would give a competitive advantage to UK in attracting the next gigafactory."

Germany recently beat 10 European countries competing for Tesla's new gigafactory and car plant by offering lucrative subsidies, according to Smith. "Six more gigafactories are underway in Europe – but none yet in UK despite ongoing efforts by government, including through the leading Faraday Battery Challenge. US states competing for the Tesla cybertruck gigafactory are rumoured to have offered Tesla over \$1 billion in subsidies, with Texas the likely winner. Nevada previously landed the first gigafactory commitment with a \$1.3 billion incentive package," he said.

According to Wrathall, Cornwall's St. Austell granite deposit is the largest body of lithium in Europe, but it is low-grade on average, with some high-grade spots.