Breakout 1b: Powering the future: energy storage minerals

The decarbonisation of the transport industry is resulting in a revolution in energy storage technologies. Electric vehicle demand is driving increased demand for lithium-ion batteries. What is the forecast demand for the key materials of lithium and cobalt? What is the impact on supply chain risk for end-users and can these risks be mitigated? What is the prospect for emerging battery technologies such as vanadium flow? What are the technological challenges in secondary supply?

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Hans Eric Melin, Founder, Creation Inn
Simon Moores, Managing Director, Benchmark Mineral Intelligence

Moderator: Henry Sanderson, Commodities Correspondent, Financial Times

- Forecast global demand for lithium-ion batteries is 500-800 GWh by 2025 due to a growing range and volume of applications from electric cars to renewable energy storage. That compares to a global li-ion cell output of 39 GWh in 2014.
- Battery production capacity is growing, too: 372 GWh of capacity is in the pipeline. Most (59%) of the world's lithium-ion batteries are made in China.
- Is that enough to meet demand? Perhaps not. Lithium prices keep rising – demand is outpacing supply. For lithium, cobalt and nickel, the supply bottleneck lies in processing. Two years ago, lithium made up 2% of a battery's cost base, and now it is 6%.
- There was implicit agreement amongst speakers that greater recycling and circularity in energy storage materials would increase supply and price security. However, the supply of end-of-life batteries will not be sufficient for some years. Many are shipped back to China for a second life at 60-80% function, after a first life in the West, so they are also mostly recycled there, and Chinese battery recyclers carry out product-to-product recycling (eg. take a cathode, turn it into a cathode) as this is the most economically viable route.
- Meanwhile, UK public policy is “rapidly waking up to the need to focus more on the resource efficient use of the materials that go into the batteries” (Nick Cliffe). Its publicly-funded GBP 250M Faraday Challenge aims to improve battery technology and recycling.
at an industrial scale: currently, 10-50% of the battery pack is recyclable, and the target for the Faraday Challenge is to bring it up to 90%. 