# The Faraday Institution – Supplementary written evidence (BAT0046)

*Supplementary evidence from Professor Pam Thomas, CEO at the Faraday Institution following an evidence session on Tuesday 9 March.*

### *Q 9. Is the right strategy, funding and support in place to enable the research, innovation and commercialisation of battery technologies in the UK?*

The Faraday Battery Challenge was created to enable a UK battery ecosystem to flourish across research, commercialisation and manufacturing domains. From April 2018 to March 2022, it will have invested £318 million in research (the Faraday Institution ~£100m), innovation projects (Innovate UK) and facilities (UKBIC). For the economic benefits from energy storage technologies to be realised, batteries will need to be researched, developed, commercialised and manufactured here in the UK to drive green growth and create jobs.

**If the UK is to play a significant role in battery manufacture and to decarbonise a range of industrial sectors, a larger and longer-term commitment in R&D of next generation energy storage technologies will be required.** The research portfolio of the Faraday Institution (FI) launched in 2018 as a national-scale, application-inspired programme to solve the research challenges holding back the commercialisation of energy storage technologies. Today, the FI is regarded as a globally competitive scientific capability at scale involving 450+ researchers across 20+ universities, from St Andrews to Southampton, including world-leading universities Oxford, Cambridge, Imperial and UCL and national facilities. Notably from the outset, the FI was intended to be a 10-year initial venture, a sensible estimate of the time needed to make research breakthroughs and to commercialise them for the benefit of the UK economy.

**Funding for the FI's core research portfolio is currently maintained at £30m per annum** -- a reasonable if not modest investment when compared with funded research into lithium-ion and beyond lithium-ion battery programmes run by competitor nations in North America, Asia and Europe. The FI is presently funded to March 2022. The core FI research programme targets technical performance — to reduce weight and cost, increase energy and power, and ensure reliability and recyclability – through 10 major projects in current and next generation technologies. As lithium-ion batteries near theoretical performance limits, FI research and development into new battery chemistries with great market value[1] – such as solid-state batteries, sodium ion and sulphur – is charging forward and will enable the UK to advance to next-generation technologies so the UK can gain ground in battery manufacture, developing batteries fit for purpose, by application and sector.

**An additional £20m per annum (bringing the core funding to £50m pa) is deemed necessary to focus on new research problems that look beyond electrochemical aspects of battery research, for example,**

[1] The substantial size of the UK market opportunity in these battery technologies across multiple sectors is detailed in our full submission to the House of Lords.

**materials and systems engineering**. Funds at this level would enable the UK to catalyse further areas of battery science and technology in order to boost their growth: for example, design engineering of modules, packs and cells to go alongside MSM's modelling work, or the materials science of other battery components such as the separators. FI will make sure that we have the range of diverse scientific voices from both academia and industry to design the next phase of research programmes whilst keeping the correct balance of continuing research in the existing projects as they mature.

This sustainable funding model allows the UK's battery research portfolio to diversify in a smart way, both supporting the best of the UK's global capability in battery research and bringing in additional expertise to enable the electrochemical findings to translate into technological innovation and economic impact for the UK.

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