4th February 2020

Energy Systems Catapult Response: CCC Sixth Carbon Budget Call for Evidence

Dear Committee on Climate Change,

About Energy Systems Catapult

Energy Systems Catapult (ESC) was set up to accelerate the transformation of the UK's energy system and ensure UK businesses and consumers capture the opportunities of clean growth. The Catapult is an independent, not-for-profit centre of excellence that bridges the gap between industry, government, academia and research. We take a whole systems view of the energy sector, helping us to identify and address innovation priorities and market barriers, in order to decarbonise the energy system at the lowest cost.

The Sixth Carbon Budget

ESC welcomes the Committee on Climate Change's call for evidence with regards to the UK's Sixth Carbon Budget. On 12th March, in a report titled 'Innovating for Net Zero', ESC will be publishing an update to our ESME Patchwork & Clockwork Scenarios to reflect the net zero target. This flagship work will also be supported by supplementary detailed analysis of specific technologies and associated policies, including floating offshore wind, storage & flexibility, gaseous systems in buildings, and nuclear. We would welcome a bilateral discussion with regards to this work in February.

In addition, to date ESC has published a suite of work ranging from individual sectors and technologies to economy-wide carbon policy that the Committee can draw on:

- **Economy-wide carbon policy** – Our 'Rethinking Decarbonisation Incentives' project has shown that the UK can achieve a balanced economy-wide carbon policy framework to boost innovation and deliver clean growth, consistent with a net zero target in 2050.[1]
- **Local Area Energy Planning** – ESC has designed a planning framework to help local government, energy networks, and other key local stakeholders prepare for a low carbon future in a cost-efficient and strategic way.[2]
- **Consumers and Households** – 'Living Carbon Free' analysed what a net zero future could look like in 2050 for the average UK household.[3]
- **Heat** – In 2019, through our 'Smart Systems and Heat' programme, ESC delivered the UK's largest smart, consumer-focused project aimed at overcoming the barriers to the decarbonisation of residential heat.[4]
- **Electricity Markets** – Our 'Rethinking Electricity Markets' project seeks to develop proposals to reform electricity markets so that they best enable innovative, efficient, whole energy system decarbonisation.[5]
- **Data** – The Energy Data Taskforce, commissioned by Government, Ofgem, and Innovate UK, set out five key recommendations that will modernise the UK energy system and drive it towards a net zero carbon future through an integrated data and digital strategy throughout the sector.[6]
- **Technology Specific**:

- **Carbon Capture and Storage (CCS)** – Understanding the role of Carbon Capture, Usage and Storage takes into account recent cost reductions in renewables and the latest modelling on CCS costs.[7]
- **Nuclear** – Update to the role of nuclear in UK's transition to a low carbon economy, which includes a summary of learnings from the ETI's Nuclear Cost Drivers project.[8]
- **Bioenergy** – The role for bioenergy in decarbonising the UK energy system reviews the value of bioenergy when combined with CCS to deliver negative emissions alongside the production of power or hydrogen.[9]
- **Surface Transport** – The Consumers, Vehicles and Energy Integration (CVEI) project, which was launched in 2016 and delivered 20 reports in total, provides unique and detailed insights on consumer behaviour relating to use and charging of battery and hybrid electric vehicles. These insights deepen understanding of the changes that will be required of existing infrastructure with the growth in low carbon transport.[10] In addition, last month, the Electric Vehicle Energy Taskforce (EVET) made 21 key proposals to Government and industry to enable acceleration of EV uptake and cost effective integration with power systems.[11]

In addition, we expect to shortly publish a set of proposals for discussion on moving towards an enduring policy framework for zero carbon buildings. We hope that these proposals and the supporting analysis will prove to be useful in addressing some of the policy gaps highlighted in recent Committee advice.

We believe our analysis can be used to inform the Committee's advice and analysis of the Sixth Carbon Budget. We would welcome further discussion on how we may assist the Committee in the above areas.

Yours faithfully,

Energy Systems Catapult

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[1] ESC (2019). Rethinking Decarbonisation Incentives: Future Carbon Policy for Clean Growth. Available from: https://es.catapult.org.uk/news/rethinking-decarbonisation-incentives-future-carbon-policy-for-clean-growth/

[2] ESC (2018). Local Area Energy Planning: Supporting Clean Growth and Low Carbon Transition. Available from: https://es.catapult.org.uk/news/ssh1-local-area-energy-planning/

[3] ESC (2019). Living Carbon Free. Available from: https://es.catapult.org.uk/news/net-zero-living-carbon-free/

[4] ESC (2019). Smart Systems and Heat: Phase 2 – Summary of Key Insights. Available from: https://es.catapult.org.uk/news/smart-energy-services-for-low-carbon-heat/

[5] ESC (2019). Towards a New Framework for Electricity Markets. Available from: https://es.catapult.org.uk/news/towards-a-new-framework-for-electricity-markets/

[6] ESC (2019). Energy Data Taskforce: A Strategy for a Modern Digitalised Energy System. Available from: https://es.catapult.org.uk/news/energy-data-taskforce-report/

[7] ESC (2018). Still in the mix? Understanding the role of Carbon Capture, Usage, and Storage. Available from: https://es.catapult.org.uk/news/still-in-the-mix-understanding-the-role-of-carbon-capture-usage-and-storage/

[8] ESC (2019). Update to the Role of Nuclear in UK's Transition to a Low Carbon Economy. Available from: https://es.catapult.org.uk/news/update-to-the-role-of-nuclear-in-uks-transition-to-a-low-carbon-economy/
[9] ESC (2018). The Role for Bioenergy in Decarbonising the UK Energy System. Available from: https://es.catapult.org.uk/news/the-role-for-bioenergy-in-decarbonising-the-uk-energy-system/
[10] ESC (2019). Consumers, Vehicles and Energy Integration Reports. Available from: https://es.catapult.org.uk/news/consumers-vehicles-and-energy-integration/
[11] EVET (2019). Energising Out Electric Vehicle Transition. Available from: https://es.catapult.org.uk/news/energising-our-electric-vehicle-transition/