The UK should invest more in low-carbon innovation, in order to both achieve the 2050 climate change target and secure long-term economic benefits

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The Committee on Climate Change (CCC) today advised that the UK should protect funding for a suite of low-carbon technologies, which if developed here, will help to reduce emissions by 80% by 2050, whilst also providing the basis for green economic growth in the longer term.

Without government support, a range of essential low-carbon technologies are likely to get stuck in a so-called 'valley of death', where development is curtailed, and will fail to make it to market.

New low-carbon technologies will be vital in generating cleaner forms of electricity, which can then be used for electric vehicles and heating, and in delivering energy efficient buildings, areas which will make a very significant contribution to meeting the 2050 target to reduce emissions by 80% relative to 1990 levels.

The Committee conclude that any reduction in current funding levels (£550m per year) would increase the risk of missing carbon budgets and would see the UK losing out on critical opportunities to build a green economy. Once financial pressures have eased, increased funding will be required in specific cases (such as marine technologies and electric vehicles), and for low-carbon innovation more generally, over the next decade.

The UK's spend on energy Research, Development and Demonstration (RD&D) as a % of GDP lags behind other developed countries. This situation is even more worrying in the context of global investment in technology development that is low relative to benchmarks proposed by the Stern Review, the International Energy Agency, and the EU.

There is much more for the UK to do in terms of supporting technology development.

The Committee recommends that the UK should focus on the **development and deployment** of at least 6 technologies:

1. **Offshore wind** – likely to be the least cost path for decarbonising the power sector and meeting the UK's 2020 15% renewable energy target. The UK requires 13GW of offshore wind capacity to be developed, requiring up to £50 million per annum in funding for Research, Development & Demonstration (RD&D).
2. **Marine (wave and tidal)** – the UK has the potential to be a world leader in this area and has significant natural resources, estimated at 65GW per year. UK-based companies have world-leading expertise in marine engineering and design.
3. **Carbon Capture and Storage (CCS)** – technology to remove carbon from coal and gas power generation will be crucial to meeting the target. The UK is strong on subsurface evaluation and geotechnical engineering because of the North Sea oil and gas developments.
4. **Smart grids and meters** – the UK has research expertise and industrial capabilities in key smart grid technologies including electrical machinery, power electronics and communications.
5. **Electric vehicles** – the UK has the expertise to design and build electric cars. Funding needs to be protected for the purchase of electric cars (£230m) and to support the development of a national battery charging network (£30m). Investment of up to £800 million will be required to meet the CCC's target to have 1.7 million electric cars on the road by 2020.
6. **Aviation** – UK-based companies are globally competitive in design and manufacture of advanced wings and aeroengines. Public support for radical technologies (e.g. blended wing) will be necessary to achieve UK targets.

The UK should also **deploy** nuclear power, advanced insulation technologies, CCS for industry, and heat pumps. The UK should invest in **research and development** of hydrogen fuel cell vehicles, technologies in agriculture and industry, 3rd generation solar PV technologies, electricity storage and advanced bio-fuels technologies.

Lastly, the Committee find that there is a lack of clarity in the institutional landscape that supports low-carbon innovation. The funding environment is complex and can be difficult for business to navigate. A strengthened institutional framework – with clear objectives, desired outcomes and responsibilities, and improved monitoring and information flows – is required to ensure that public money is well spent and to increase investor confidence.

The challenge for the new Government is to set a clear strategy out to 2050 to focus resources on the right suite of low-carbon technologies and guide the various delivery bodies to ensure that public funding delivers long-term environmental and economic benefits.

The findings are published in a report to the Governments Chief Scientific Advisor, Professor Sir John Beddington, who requested the review in October 2009.

Professor Julia King, member of the Committee on Climate Change said:

"The case for action is strong. With adequate funding, new policies and strengthened delivery arrangements, we would expect UK firms to take leading roles in the development of key technologies, driving down emissions to meet carbon budgets and targets, and fulfilling the new Government's clear objective to build a low-carbon economy. We urge the Government to put the appropriate low-carbon technology support arrangements in place to unlock environmental and wider economic benefits".

Government Chief Scientific Adviser Professor Sir John Beddington said:

"Innovation will be enormously important if the UK is to meet its climate change goals, and to do so affordably. We need to develop and deploy the most promising low carbon technologies quickly across all sectors. In times of austerity we must also make sure we invest public money to maximum effect. I welcome the Climate Change Committee's advice in this critical area."

ENDS

Notes to Editors

Committee on Climate Change (CCC)
The Committee on Climate Change (CCC) is an independent statutory body established under the Climate Change Act to advise the UK Government on setting carbon budgets, and to report to Parliament on the progress made in reducing greenhouse gas emissions: www.theccc.org.uk/reports

- *Building a low-carbon economy – the UK's innovation challenge*, published 19 July 2010, sets out the Committee's advice to the Government's Chief Scientist on which low-carbon technologies the UK should research, develop, demonstrate and deploy up to 2050, and how this should be supported through funding and the institutional structure.

- Public spending on low-carbon RD&D was £550m in 2009/10. This is an estimate based on a review of Government programmes as this data is not currently held centrally by Government. Within this total UK spend on energy RD&D, as classified by the International Energy Agency (IEA), is estimated to be £260m.

- In terms of energy RD&D % of GDP in 2007: the UK spent less than Finland, Denmark, Norway, Japan, Korea, Sweden, U.S and France (currently the UK spends 0.01%, whereas Japan spends 0.09%, France 0.05% and the US, 0.03%).

- The IEA has estimated that global investment needs to increase by between 2 and 5 times current levels to meet 2050 climate targets. All the major economies need to increase their expenditure further, which means that (since the UK currently spends a lot less than others), we have considerably more to do.
- Professor Julia King's biography is available on our website.

- The Committee's analysis draws on a range of technology studies (e.g. our own Markal modeling, together with analysis by the International Energy Agency (IEA), UK Energy Research Centre (UKERC) and Energy Research Partnership (ERP), patent analysis by the London School of Economics (LSE), and interviews with a wide range of stakeholders.

- By RD&D we mean research, development and demonstration.

- We treat a new product, service or process as **low-carbon** if it leads to an absolute reduction in GHG emissions or improves the carbon intensity of an activity.

- The Committee recently wrote to the Government advising that the CCS competition should be extended to include gas as well as coal CCS technology demonstration, read the letter.

- The Committee's 2nd Progress Report sets out where the UK currently is in terms of meeting its emissions targets. The report concluded that a step change in both pace and approach to meeting carbon budgets is still required.

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