Committee on Climate Change

Independent advice to government on building a low-carbon economy and preparing for climate change

Building a zero-carbon economy – Call for Evidence

Background

On 15 October 2018 the governments of the UK, Scotland and Wales asked the Committee on Climate Change (CCC) to provide advice on the UK and Devolved Administrations' long-term targets for greenhouse gas emissions and the UK's transition to a net zero-carbon economy. Specifically: when the UK should reach net zero emissions of carbon dioxide and/or greenhouse gases as a contribution to global ambition under the Paris Agreement; if that target should be set now; the implications for emissions in 2050; how such reductions can be achieved; and the costs and benefits involved in comparison to existing targets.

The advice has been requested by the end of March 2019.

The UK's long-term emissions target is currently for at least an 80% reduction in greenhouse gas emissions from 1990 to 2050. It covers all sectors, including international aviation and shipping and is measured on a 'territorial' basis (i.e. based on emissions arising in the UK). On a comparable basis, emissions in 2017 were estimated to be 38% below 1990 levels.

The current target was set in 2008 based on advice from the Committee. That advice considered that to avoid the worst impacts of climate change, the central expectation of global temperature rise should be limited "to, or close to, 2°C", while the probability of crossing "the extreme danger threshold of 4°C" should be reduced to an extremely low level. That meant global emissions would roughly have to halve by 2050. The 2008 advice made the assumption that the UK should not plan to have a higher level of per capita emissions in 2050 than the global average.

The long-term target guides the setting of carbon budgets (sequential five-year caps on emissions that currently extend to 2032 and require a reduction in emissions of 57% from 1990 to 2030). Both the 2050 target and the carbon budgets guide the setting of policies to cut emissions across the economy (for example as set out most recently in the 2017 Clean Growth Strategy).

Any change to the long-term targets would therefore be expected to have significant implications, not just in the long-term but on current policies to drive the transition.

The CCC will advise based on a thorough consideration of the relevant evidence. We expect that to cover:

- The latest climate science, including as contained in the IPCC Special Report on 1.5°C.
- The terms of the Paris Agreement.
- Global pathways (including those reported by the IPCC) consistent with limiting global average temperature rise in line with the goals of the Paris Agreement.

- International circumstances, including existing plans and commitments to cut emissions in other countries, actions to deliver on those plans and opportunities for going further.
- An updated assessment of the current and potential options for deep emissions reductions in the UK and emissions removals from the atmosphere, including options for going beyond the current 80% target towards net zero.
- An appraisal of the costs, risks and opportunities from setting a tighter long-term target.
- The actions needed in the near term that would be consistent with achieving the long-term targets.

This Call for Evidence will contribute to that advice.

Responding to the Call for Evidence
We encourage responses that are brief and to the point (i.e. a maximum of 400 words per question, plus links to supporting evidence, answering only those questions where you have particular expertise), and may follow up for more detail where appropriate.

You do not need to answer all the questions, please answer only those questions where you have specific expertise and evidence to share. It would be useful if you could use the question and response form below and then e-mail your response to: communications@theccc.gsi.gov.uk using the subject line: 'Zero carbon economy – Call for evidence'. Alternatively, you can complete the question and answer form on the CCC website, available here.

If you would prefer to post your response, please send it to:

The Committee on Climate Change – Call for Evidence
7 Holbein Place
London
SW1W 8NR

The deadline for responses is 12 noon on Friday 7 December 2018.

Confidentiality and data protection
Responses will be published on our website after the response deadline, along with a list of names or organisations that responded to the Call for Evidence.

If you want information that you provide to be treated as confidential (and not automatically published) please say so clearly in writing when you send your response to the consultation. It would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded by us as a confidentiality request.

All information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the access to information legislation (primarily the Freedom of Information Act 2000, the Data Protection Act 1998 and the Environmental Information Regulations 2004).

Question and response form

When responding, please provide answers that are as specific and evidence-based as possible, providing data and references to the extent possible. Please limit your response to a maximum of 400 words per question.

Part 1: Climate Science

Question 1 (Climate Science): The IPCC's Fifth Assessment Report and the Special Report on 1.5°C will form an important part of the Committee's assessment of climate risks and global emissions pathways consistent with climate objectives. What further evidence should the Committee consider in this area?
ANSWER:

Question 2 (CO_2 and GHGs): Carbon dioxide and other greenhouse gas gases have different effects and lifetimes in the atmosphere, which may become more important as emissions approach net-zero. In setting a net-zero target, how should the different gases be treated?
ANSWER:

Part 2: International Action

Question 3 (Effort share): What evidence should be considered in assessing the UK's appropriate contribution to global temperature goals? Within this, how should this contribution reflect the UK's broader carbon footprint (i.e. 'consumption' emissions accounting, including emissions embodied in imports to the UK) alongside 'territorial' emissions arising in the UK?
ANSWER:

Question 4 (International collaboration): Beyond setting and meeting its own targets, how can the UK best support efforts to cut emissions elsewhere in the world through international collaboration (e.g. emissions trading schemes and other initiatives with partner countries, technology transfer, capacity building, climate finance)? What efforts are effective currently?
ANSWER:

Question 5 (Carbon credits): Is an effective global market in carbon credits likely to develop that can support action in developing countries? Subject to these developments, should credit purchase be required/expected/allowed in the UK's long-term targets?
ANSWER:

Part 3: Reducing emissions

Question 6 (Hard-to-reduce sectors): Previous CCC analysis has identified aviation, agriculture and industry as sectors where it will be particularly hard to reduce emissions to close to zero, potentially alongside some hard-to-treat buildings. Through both low-carbon technologies and behaviour change, how can emissions be reduced to close to zero in these sectors? What risks are there that broader technological developments or social trends act to increase emissions that are hard to eliminate?

ANSWER:

Question 7 (Greenhouse gas removals): Not all sources of emissions can be reduced to zero. How far can greenhouse gas removal from the atmosphere, in the UK or internationally, be used to offset any remaining emissions, both prior to 2050 and beyond?

ANSWER:

Question 8 (Technology and Innovation): How will global deployment of low-carbon technologies drive innovation and cost reduction? Could a tighter long-term emissions target for the UK, supported by targeted innovation policies, drive significantly increased innovation in technologies to reduce or remove emissions?

ANSWER: A strong and convincing long term target, plus targeted innovation policies would be very effective in driving innovation to reduce emissions.

The key tension in innovation is always between the powerful incumbents, with lots of money to invest in lobbying to maintain their position, and upstart innovators who hold the seeds to future prosperity, but are invariably currently weaker. This is detailed in the classic innovation text on disruptive innovation by Clayton Christensen If Policy makers can resist this pressure and maintain a level playing field, innovators will thrive.

For example, UK Housebuilders often claim that tightening building regulations will reduce housing starts, and Westminster politicians seem to have believed this. However when Scottish building regs were tightened in 2015 the data shows that housebuilding rates were unaffected. Scottish new homes now have 25% lower carbon emissions than English ones.

Local authorities have been deterred from requiring higher energy efficiency standards in new housing, by the belief that they were not permitted to do so. It should be made very clear that the NPPF permits this. Similarly, the restrictions on local authorities allowing onshore wind should be removed.

Care should be taken that policy measures don't subsidise declining industries while blocking innovators. Eg the UK Capacity mechanism effectively subsidises coal and diesel while deterring investment and innovation in the areas of Demand side Reduction (DSR), interconnectivity and storage.

DSR and storage are important aspects of a decentralised low carbon power

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network, neither of which was required in the traditional centralised grid, so public support is appropriate. Innovation should be stimulated by means such as; a fair export tariff for generators of low carbon electricity (including domestic PV); promoting variable (half hourly) rate tariffs; and short term subsidy for battery and other storage technologies to help the market develop.

Environmental regulations can be very helpful in stimulating innovation. For example the OECD points out (p23) that in addition to steadily updating standards, bans are very effective at incentivising innovation. Examples include the bans on CFC's, asbestos, and incandescent light bulbs. Investment in enforcement is vital, otherwise it just encourages cheating (as seen in the vehicle emission scandal)

Providing key enabling infrastructure is important. The lack of grid capacity is restricting investment in renewables, while lack of rural broadband increases restricts remote working, thus increasing carbon emissions from transport and harming the rural economy.

Question 9 (Behaviour change): How far can people's behaviours and decisions change over time in a way that will reduce emissions, within a supportive policy environment and sustained global effort to tackle climate change?

ANSWER: Behaviour change could reduce the UK's carbon emissions by one quarter to one half https://ec.europa.eu/clima/news/articles/news_2012102402_en Trends develop unnoticed, then once a tipping point is reached, socio-technical reinforcement results in rapid large scale changes in behaviour, as seen in the success of the smoking bans, the carrier bag levy or the sugary drinks levy.

Public information alone won't work, which is why so many government attempts to drive behaviour change get hostile reactions.

Significant behaviour change can be achieved rapidly using the eminent psychologist Ed Schein's technique of "unfreezing" To do this 3 things need to be provided simultaneously: 1) awareness that change is needed (eg smoking causes lung cancer) 2) a personal connection that makes individuals care (my smoking might be harming my children) and 3) the psychological safety to act (eg my friends support me)

Current helpful trends that should be accelerated include the following:

Trend towards "flexitarian" diets, vegetarianism and veganism. A recent survey showed 29% of UK evening meals contained no meat or fish. This trend offers very significant carbon reductions, as well as health benefits. This could be supported by

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measures such as promoting the idea of eating "less but better meat", shifting subsidies from the livestock sector to the UK horticultural sector, introducing a tax on unnecessary prophylactic antimicrobials used for livestock, and allowing non-ruminants to be fed properly treated food waste (AKA pig swill)

Trend away from private car ownership towards 'Mobility as a Service', public transport and micro-mobility Most urban young people are no longer interested in owning a car. This growth is despite the lack of investment, and despite out-of-date regulations that impede innovators. These trends could be supported by progressively switching public subsidies from private cars towards public transport, and by updating regulations and definitions (especially for buses and EAPCs)

Trend towards reducing average winter thermostat settings. The WHO recommends 18C for healthy adults, but most thermostats are set at about 20C. There is a slight trend towards reducing the average internal temperature, but many homes and offices are unhealthily hot, increasing cardiovascular risk, obesity and diabetes , carbon emissions and fuel bills. It would be useful to raise awareness of the benefits of lower temperatures through updated health messaging, and by encouraging employers, (especially public sector) to reduce temperatures and allow employees to wear warmer clothes in winter.

A 2C reduction in temperature reduces carbon emissions by 22%

Question 10 (Policy): Including the role for government policy, how can the required changes be delivered to meet a net-zero target (or tightened 2050 targets) in the UK?

ANSWER:

Part 4: Costs, risks and opportunities

Question 11 (Costs, risks and opportunities): How would the costs, risks and economic opportunities associated with cutting emissions change should tighter UK targets be set, especially where these are set at the limits of known technological achievability?

ANSWER: As an innovator, I strongly support the UK in setting an ambitious Net Zero Target.

The biggest risk is that the UK misses the opportunity to be one of the leaders in the low carbon world that's coming. We can't afford to let China dominate the technologies of the future

Ambitious targets, supported by consistent policy measures will give investors,

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entrepreneurs and innovators the confidence to invest and hence maintain the UK's position as a prosperous and respected nation during the transition to the low carbon economy.

Question 12 (Avoided climate costs): What evidence is there of differences in climate impacts in the UK from holding the increase in global average temperature to well below 2°C or to 1.5°C?
ANSWER:

Part 5: Devolved Administrations

Question 13 (Devolved Administrations): What differences in circumstances between England, Wales, Scotland and Northern Ireland should be reflected in the Committee's advice on long-term targets for the Devolved Administrations?
ANSWER:

Part 6: CCC Work Plan

Question 14 (Work plan): The areas of evidence the Committee intend to cover are included in the 'Background' section. Are there any other important aspects that should be covered in the Committee's work plan?
ANSWER: