

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 (CO₂ 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: In a world bound by very tight emissions targets which will involve potentially radical changes to land use it is hard to justify continued use of carbon budgets based on emissions located only within UK geographic boundaries. Emissions from e.g. food, steel etc can effectively be 'offshored' to other countries in ways which are neither environmentally nor ethically appropriate

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?

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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: Material production, notably for construction, is a sector with substantial emissions that UK has 'offshored' to a significant degree in last 30 years. These include sectors like steel and cement which are hard to decarbonise because of process emissions irrespective of fuel used. UK could create markets for low-embodied energy in construction materials by mandating a standard for materials used in building construction. It could also fund innovation in those bits of the manufacturing sectors that remain UK based, thus fostering technology innovation, creating a market pull, making the UK a centre for low carbon building materials and providing employment in sectors that otherwise struggle in global commodity markets. .

We do not see a plausible and affordable route for low carbon aviation and believe demand constraint is the appropriate policy route until a scalable solution is available

In agriculture there are agricultural practices that can be adopted that will reduce emissions. However, even allowing for dietary change to minimise meat and dairy production, there is likely to remain some residual emissions of N₂O and CH₄ which cannot be mitigated. These should be priorities for offsetting via negative emissions approaches

It is worth re-iterating at this point that given global trade patterns it would be very easy for UK to offshore some greenhouse gas production by having meat, dairy and animal feed produced overseas. This would not be a responsible approach

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: We do not have a numerical answer to this but would observe that approaches based on BECCS or other carbon removal technologies should be approached with considerable scepticism. First because no BECCS plant has been shown to work (we are aware of the Drax experiment), CCS has barely been demonstrated commercially, and direct air capture is barely beyond prototype.

It would seem odd to be technologically optimistic about their development whilst maintaining scepticism about other tech development in power storage and heat.

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We support approaches to GGR based on working with nature and communities such as sensitive re-forestation and increases in soil carbon, although both need to be approached with care in terms of carbon budgets and delivery. Huge plantations of pine need to be avoided. The scope for well-implemented GGR of this kind is likely to be limited – emissions of greenhouse gases from hard-to-treat sectors will need to be minimised

Experience also suggests that large scale bioenergy production for BECCS is unlikely to be handled sensitively or well. To be effective, bioenergy production needs to respect the conditions that allow the land to remain productive including soil retention, biodiversity preservation, continued ability to sequester carbon. This requires strong sustainability management as part of the bioenergy production process. Yet in practice, both the issues of Indirect Land Use Change around biofuels and the carbon debt around woody biomass have been handled very badly by political institutions in EU and UK. There is no reason to believe that they will be better at it in future. One should be very wary of creating policy requiring a commodified approach to bioenergy production but detailed and granular attention to detail, down to field level, on sustainability. History suggests it will be counterproductive, however good it looks on a spreadsheet.

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: Clearly shared technological agendas have the potential to drive down costs as deployment ramps up across countries. UK has been instrumental in doing so in North Sea, with Germany, Netherlands and Denmark collectively driving sharp cost reductions in offshore wind, with UK clearly the lead nation.

Similar shared agendas could be found in zero carbon vehicles (cars and vans, then HGVs).

UK could also create markets in construction materials in concert with other countries (see first para of Q6)

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:

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: Looking at the technical changes that have occurred in power (and increasingly

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transport) over short periods of time, it would be absurd to imagine that a net-zero target will be delivered only with technology available today. The approach must be to assess that an outcome is technically deliverable (no contravening physical laws etc.), but that those changes or technologies that look politically or economically expensive create a potential 'innovation gap' where new innovations would be a boon to the decarbonisation effort.

Policy in these areas should be to have innovation funding, be explicit about potential support for the market opportunity, and policy to accelerate scale up if necessary

Examples would be: zero carbon HGVs (innovation funding plus purchase mandate, as has been done for cars and vans) and low carbon steel and cement (create market opportunity through buildings mandate - see Q6 above). In both these instances it is POSSIBLE to create zero carbon sectors now, but it is very expensive or unsatisfactory. The policy should create the space for innovation to take off.

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:

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:

