

## The Fifth Carbon Budget - Call for Evidence

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### 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.

## Questions for consideration:

### A. Climate Science and International Circumstances

Climate science and international circumstances are important criteria in setting carbon budgets.

- The science indicates the impacts associated with different levels of climate change and the limit on emissions globally if these risks are to be contained.
- International circumstances inform the prospects of future action to reduce emissions globally, potential requirements of the UK to contribute to those actions, and prospects for low-carbon technology development and carbon pricing.
- The EU places obligations on Member States to reduce emissions to contribute to reductions in the bloc as a whole. These imply a minimum level of effort for the UK's carbon budgets.

The Committee intends to draw primarily on the work of the IPCC, as published in the Fifth Assessment Report, in assessing the implications of climate science for the budget advice

The Committee's advice is based on a climate objective to limit central estimates of temperature rise to as close to 2°C as possible, with a very low chance of exceeding 4°C by 2100 (henceforth referred to as "the climate objective"). This is broadly similar to the UNFCCC climate objective, and that of the EU.

In order to achieve this objective, global emissions would have to peak around 2020, before decreasing to roughly half of recent levels by 2050 and falling further thereafter.

The UNFCCC is working toward a global deal consistent with such reductions. Individual parties are submitting pledges for effort beyond 2020, with the details of the agreement to be discussed in Paris late in 2015.

The EU has agreed a package that requires a reduction in emissions of at least 40% on 1990 levels by 2030, on the way to an 80-95% reduction by 2050. The UK Government supported this package, while arguing for an increase to 50% in the context of a global deal.

The US and China have jointly made pledges for the period beyond 2020. The US has pledged a reduction of 26-28% by 2025 versus 2005, requiring a doubling of the rate of carbon reduction compared to 2005-2020 and on a trajectory to economy-wide cuts of the order of 80% by 2050. China has pledged to peak CO<sub>2</sub> emissions around 2030, and to make best efforts to do so earlier.

**Question 1** *The IPCC's Fifth Assessment Report will form the basis 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:

No comment.

**Question 2** *To what extent are the UN talks in Paris likely to have implications for the Committee's advice beyond the pledges and positions announced in advance of the talks?*

ANSWER:

The Committee will need to take into account how the UN talks in Paris impact on EU targets for greenhouse gas reductions. In particular if the outcome of the talks resulted in a more challenging target for reductions in the traded sector this would need to be reflected in the advice provided to Government.

**Question 3** *Based on the available evidence, does the EU 2030 package reflect the best path to its stated 2050 ambition? How might this package change, specifically its targeted emissions reduction, either before the end of Paris or after Paris?*

ANSWER:

The European Commission's analysis has indicated that the 2030 targets are on the least-cost path to the EU's 2050 ambitions. Although there are clearly many uncertainties in the modelling, Energy UK believes this conclusion to be broadly plausible.

The 2030 package was agreed by unanimity but after considerable discussion of some elements, notably the nature of the renewables and energy efficiency targets. Energy UK notes that recently-proposed changes to the EU Emissions Trading

System have been difficult to negotiate and some Member States have resisted relatively limited changes designed to strengthen EU ETS. In this light we think it unlikely that the 2030 framework will be changed in advance of the Paris COP. The EU's stance after Paris is likely to depend on the commitments made by other large GHG emitters and, although there are some positive signs from China and the US, we believe that Europe's 40% target is likely to be at the more ambitious end of the scale. Given the current balance of views among the Member States, we are doubtful that there will be much appetite to go beyond a 40% GHG target, unless other trading blocs increase their level of ambition.

**Question 4** *How does the UK's legislated 2050 target affect its ability to support international efforts to reduce emissions, including its position in negotiations? Does the level of UK carbon budgets have any additional impact (over-and-above the 2050 target) for the UK in international discussions?*

ANSWER:

That the UK has a legislated target is important in underlining the UK's commitment to emissions reductions effort. It is difficult to judge whether this also extends to the individual carbon budgets. The Committee should also consider what potential impact there could be if the UK were to not achieve the level of ambition set out in the carbon budgets.

## **B. The cost-effective path to the 2050 target**

The carbon budgets need to set a path that is achievable from today without being over-optimistic about what is achievable in later periods to prepare for the 2050 target.

The Committee has previously set out scenarios for 2030 that balance effort before 2030 with potential opportunities from 2030 to 2050. The scenarios aim to include ways of reducing emissions that are likely to be relatively low cost and actions that will develop options that may need to be deployed at scale by 2050.

These scenarios, reviewed in detail in the Committee's report *The Fourth Carbon Budget Review – the cost-effective path to the 2050 target*, include substantial investment in low-carbon power generation, roll-out of low-carbon heat (heat pumps and district heating), development of the markets for ultra-low emissions vehicles and a combination of energy efficiency measures and fuel switching in industrial sectors.

The scenarios also reflect detailed assessments of what is practically deliverable, and the Committee monitors progress towards them as part of its statutory duties. The *2014 Progress Report to Parliament* indicated that current policy would not be enough to meet the fourth carbon budget, but that the 'policy gap' could be closed at affordable cost.

The set of policy options required to close the gap include:

- Strengthening the EU Emissions Trading System.
- Setting a clear objective for Electricity Market Reform (EMR) beyond 2020.
- Focusing on low-cost residential energy efficiency.
- Simplifying policies targeting commercial energy efficiency.
- Tackling financial and non-financial barriers to low-carbon heat.
- Pushing for strong EU targets for new vehicle efficiency in 2030.

The Government has subsequently published various documents, including its formal response, as required under the Climate Change Act, and the National Infrastructure Plan. The Plan includes investments of around £100 billion in low-carbon power generation in the 2020s, in line with the scenarios from the EMR Delivery Plan that reach 100 gCO<sub>2</sub>/kWh by 2030. It also has significant investments in offshore oil and gas and in the road network. This includes £15 billion of new spending on roads and around £50 billion on offshore oil and gas.

**Question 5** *In the area(s) of your expertise, what are the opportunities and challenges in reducing emissions to 2032, and at what cost? What may be required by 2032 to prepare for the 2050 target, recognising that this may require that emissions in some areas are reduced close to zero?*

ANSWER:

The Committee has advised that an appropriate target for the power sector for 2030 would be a range of 50-100gCO<sub>2</sub>/kWh.

There needs to be a swift announcement of the next Levy Control Framework budget and post 2019 CfD strike prices, to provide certainty to stimulate the supply chain and project development required to deliver this in the power sector.

It is important that emissions are reduced across the whole economy in the most

cost-effective manner. There is a danger that the carbon budgets are seen primarily as a target for the power sector whereas the greatest challenge is likely to be in delivering emissions reductions in the non-ETS sectors which will require significant emissions reductions from heating and transport sectors.

Increased electrification of transport and heating will be a key challenge in delivering future carbon targets. Clarification on future funding and policy support for electrification of transport and heating is urgently required, for example the future budget for RHI. There needs to be an equalisation of policy costs (particularly for domestic energy) to ensure that the carbon associated with fossil fuel heating systems (particularly gas and oil) is accounted for through the ETS – to support the longer term transition required. Further detail is provided in the Eurelectric report on the benefits of electrification.<sup>1</sup>

The UK should continue to deploy cost-effective renewable power technologies beyond 2020. This will reduce the overall cost of renewable energy for the benefit of UK consumers. Continuing to support the cheapest technologies now will stimulate continued technology cost reductions and deployment, ensuring that we reduce emissions and are able to meet 2050 targets in the most cost-effective way. There needs to be sustained engagement with the general public on the funding of these technologies and the impacts of decisions made by governments on their behalf.

In addition there needs to be continued focus on energy efficiency. For the past two decades obligations on energy suppliers have been the Government's primary tool for improving household energy efficiency. However, we need to acknowledge that obligations placed on suppliers result in costs which impact consumer bills, including the bills of the fuel poor. Given the increasing public scrutiny and concern regarding the policy costs that sit on the customer bill, an open, honest and sensible debate on how future energy efficiency policies are funded and delivered is required. The scale of the challenge ahead is such that the cost cannot be borne by customer bills only. More progressive sources of funding, such as taxation, which takes account of ability to pay, must be leveraged.

The ongoing lack of consumer interest in and demand for energy efficiency measures also needs to be addressed. A top-down approach through obligations on suppliers has, in our view, led to an expectation that energy efficiency should be provided free of charge, undermining the value of energy efficiency to the public.

A long-term strategy around transitioning towards a competitive energy services market that is self-sufficient, demand-led and not wholly dependent on subsidy raised through energy bills is necessary. This requires a policy framework that supports competition to its fullest potential to drive cost-efficiencies and offers a range of products and services that suit the needs of different consumer audiences.

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<sup>1</sup> Report to be published shortly

We believe this requires targeted incentives and regulations to encourage demand. This should be supported by a national narrative with consistent messaging on the importance and value of home energy efficiency to educate consumers, built around a holistic, long-term, cross-government policy that drives and sustains demand for energy efficiency measures in the able-to-pay market.

Action is required to support the development of 'enabling technologies' such as energy storage and Demand Side Management to support decarbonisation of the grid and ensure consumers can benefit from the associated cost reductions with least possible delay. This will require modification of the electricity market regulatory framework to remove barriers and increase opportunities. See answer to Question 15 for further detail.

**Question 6 *What, if any, is the role of consumer, individual or household behaviour in delivering emissions reductions between now and 2032? And, separately, after 2032?***

**ANSWER:**

To deliver the necessary reductions, households and individuals must use their energy more effectively. This will require an understanding of the benefits and behaviour change.

Understanding the benefits

Individuals and households must recognise the benefits of improving the energy efficiency levels of their properties through either lower bills or reduced carbon emissions and take action to change behaviour.

Consumers will need to both want and value energy efficiency improvements before innovative financing schemes (such as Green Deal) will see the levels of customer demand initially anticipated by the previous government in the able to pay market for energy efficiency improvements. One such way could be to deliver policies that make a more direct link between energy efficiency measures and the value of a property.

Behaviour change

Behaviour change must accompany any efforts to implement energy efficiency measures. Behavioural change post smart meter roll out will also potentially encourage and facilitate more demand side response amongst householders; both reducing peak demand and also supporting use of lower carbon technologies (such as wind) through greater flexibility.

As per question 5 above, Policy support (achieved through a mix of nudges, financial incentives and regulation) is required to encourage behavioural change and also

create the necessary level of consumer demand in the “able to pay” sector to invest in improving the energy efficiency of their homes.

**Question 7 *Is there evidence to suggest that actions to further reduce emissions after 2032 are likely to be more or less challenging to achieve than actions in the period up to 2032?***

ANSWER:

The costs for emerging technologies are falling, for example the cost of energy from offshore wind farms has fallen by almost 11% over the past three years based on the report<sup>[1]</sup> published by the Offshore Renewable Energy (ORE) Catapult in February 2015. However new technologies and further innovation will be required to deliver the more ambitious levels of carbon reduction required post 2032. This will require long term investor confidence across the renewables sector; providing support for those companies already investing in advanced renewables and developing a framework that fosters innovation in new and emerging technologies.

Deployment of new and emerging technologies at volume and at least cost to the consumer, will require investment and support in the short term to cultivate the necessary innovation and industrial commercialisation. While competitive allocation of subsidies for established technologies is essential, separate support may need to be maintained for emerging technologies (for example maintaining a separate CfD pot for less established technologies), although the longer term aspiration should be to move away from separate pots. Without this interim support the cost of delivering post 2032 emissions targets could rise steeply.

It is of importance to demonstrate at scale the feasibility and economic viability of Carbon Capture and Storage if it is to play a key role in the UK energy mix.

**Question 8 *Are there alternatives for closing the ‘policy gap’ to the fourth carbon budget that could be more effective? What evidence supports that?***

ANSWER:

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<sup>[1]</sup><https://ore.catapult.org.uk/documents/10619/110659/ORE+Catapult+report+to+the+OWPB/a8c73f4e-ba84-493c-8562-acc87b0c2d76>

**Question 9** *Are the investments envisaged in the National Infrastructure Plan consistent with meeting legislated carbon budgets and following the cost-effective path to the 2050 target? Would they have wider implications for global emissions and the UK's position in international climate negotiations?*

**ANSWER:**

Investments in energy infrastructure will be important in achieving decarbonisation of the power sector but will not help to deliver the legislated carbon budgets which are driven by the need for emissions reductions in the non-ETS sectors.

Energy efficiency is key to delivering these reductions and improving the energy efficiency of the UK's housing stock will be a long term commitment. Mechanisms are needed equivalent to the National Infrastructure Plan that will continue to oversee improvements in the energy efficiency of UK buildings (both domestic and non-domestic). There also needs to be a means to ensure that energy efficiency is included in any future deliberations regarding future housing needs, decarbonisation of heat and broader impacts on improving energy efficiency for transport.

### **C. Budgets and action**

The UK's statutory 2050 target requires actions across the economy to reduce emissions. Many of these actions will be driven by (UK and devolved) Government policy and implemented by businesses and consumers. There will be an important role for Local Authorities in successful delivery.

Although the carbon budgets do not require specific actions, they provide an important indication of the overall direction that policy will take in future. Once set, carbon budgets can only be changed if there has been a significant change in the relevant circumstances set out in the Climate Change Act.

Feedback from businesses as part of the Committee's 2013 Call for Evidence for the review of the fourth carbon budget was that stability is an important and valuable characteristic of carbon budgets.

**Question 10** *As a business, as a Local Authority, or as a consumer, how do*

***carbon budgets affect your planning and decision-making?***

**ANSWER:**

Energy UK represents over 80 generators and suppliers of electricity and gas. Our members consistently cite long term policy stability and visibility as a crucial factor in their business decision making and carbon budgets plays a fundamental role in providing that.

***Question 11 What challenges and opportunities do carbon budgets bring, including in relation to your ability to compete internationally? What evidence do you have for this from your experience of carbon budgets to date?***

**ANSWER:**

To date the focus of carbon budgets (in terms of how they are perceived by the media and other commentators) has been predominantly around decarbonisation of the power sector. This debate and discussion has ensured that stakeholders understand the role of the power sector in decarbonising the economy, for example the need for low carbon power to decarbonise heat and transport sectors. However, the power sector is covered by the ETS in carbon accounting terms, and therefore, there needs to be a move to a greater focus on how to achieve reductions in the non-traded sector and in particular a greater focus on energy efficiency and transport.

***Question 12 What would you consider to be important characteristics of an effective carbon budget? What is the evidence for their importance?***

**ANSWER:**

Long term visibility of carbon budgets are required to provide certainty for investment in projects with long lead times. In particular where investment is needed to stimulate the supply chain and deliver technology cost reductions. For example the development of renewables projects can take 5-10 years from design to operation.

Clarity is also needed on what is expected from each sector to be able to deliver

the necessary carbon reductions.

It is also important to understand how the carbon budgets will be delivered, for example more certainty over the Levy Control Framework after 2020 gives investors' confidence that the necessary support

#### D. Other issues

The Climate Change Act requires that in designing the fifth carbon budget we consider impacts on competitiveness, fiscal circumstances, fuel poverty and security of energy supply, as well as differences in circumstances between UK nations. High-level conclusions on these from our advice on the fourth carbon budget were:

- **Competitiveness** risks for energy-intensive industries over the period to 2020 can be addressed under policies already announced by the Government. Incremental impacts of the fourth carbon budget are limited and manageable.
- **Fiscal impacts.** The order of magnitude of any fiscal impacts through the 2020s is likely to be small, and with adjusted VED banding and full auctioning of EU ETS allowances could be neutral or broadly positive.
- **Fuel poverty.** Energy policies are likely to have broadly neutral impacts on fuel poverty to 2020, with the impact of increases in electricity prices due to investment in low-carbon generation being offset by energy efficiency improvement delivered under the Energy Company Obligation. Incremental impacts through the 2020s are likely to be limited and manageable through a combination of further energy efficiency improvement, and possible income transfers or social tariffs.
- **Security of supply** risks due to increasing levels of intermittent power generation through the 2020s can be managed through a range of flexibility options including demand-side response, increased interconnection and flexible generation. Decarbonisation of the economy will reduce the reliance on fossil fuels through the 2020s and thus help mitigate any geopolitical risks of fuel supply interruption and price volatility.
- **Devolved administrations.** Significant abatement opportunities exist at the national level across all of the key options (i.e. renewable electricity, energy efficiency, low-carbon heat, more carbon-efficient vehicles, agriculture and land use).

**Question 13** *What evidence should the Committee draw on in assessing the (incremental) impacts of the fifth carbon budget on competitiveness, the fiscal balance, fuel poverty and security of supply?*

**ANSWER:**

In England, the new fuel poverty target (to ensure as many fuel poor homes as is reasonably practicable achieve a minimum energy efficiency rating of Band C by 2030) will present a significant challenge. The recently published fuel poverty strategy sets out the interim milestones (E rated by 2020 and D rated by 2025). The proposals (as set out in the fuel poverty strategy) to ensure regular reporting of the fuel poverty target KPIs will provide valuable evidence for the 5th carbon budget, as well as tracking the impacts of the likely additional gap closing actions required to meet the 4th carbon budget.

Given the interim targets, there will need to be a significant improvement in the targeting of support at those in the most severe fuel poverty, particularly for those households that are in the most inefficient properties.

Given the finite level of funding and the size of the problem, we believe future (supplier or tax based) levy based funding for energy efficiency should be targeted at those customers in or at risk of fuel poverty. Given the scale of the actions needed to achieve both closure of the gap with the 4th carbon budget and the fuel poverty target it may be appropriate for the Committee to review funding mechanisms. The scale of the challenge ahead is such that the cost cannot be borne by customer bills only. More progressive sources of funding, such as taxation, which takes account of ability to pay, must be leveraged.

In assessing the impact of low carbon policy, such as support for renewable energy, it is worth acknowledging the direct economic benefit provided to communities that host renewable energy infrastructure, particularly onshore wind farms, where the industry has been at the forefront of good practice [See for example RenewableUK: 'Onshore Wind: Our Community Commitment' October 2013] Many developers are coming up with innovative schemes, such as reducing the cost of energy bills in households located near their projects and this can help to address fuel poverty.

In terms of evidence on system security, the CCC should draw on the work of National Grid, particularly in terms of the system operability impacts of an electricity generation mix with a high penetration of renewables, particularly at an embedded level. The annual System Operability Framework and Future Energy Scenarios documents are recommended.

**Question 14** *What new evidence exists on differences in circumstances between England, Wales, Scotland and Northern Ireland that should be reflected in the Committee's advice on the fifth carbon budget?*

ANSWER:

The impact of any Government decision on onshore wind will impact the energy mix going forward.

The case should be made that the UK capitalises on the strong wind resources in Scotland as the means to a cost effective operation of the UK electricity system and achieves UK-wide climate change policy objectives at lowest cost for UK consumers.

**Question 15** *Is there anything else not covered in your answers to previous questions that you would like to add?*

ANSWER:

It is essential that the electricity grid can integrate new sources of flexible and innovative technologies, such as energy storage and Demand Side Management, to reduce costs to end consumers.