The Fifth Carbon Budget - Call for Evidence

www.theccc.org.uk/call-for-evidence

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.

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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

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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_2 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:

The IPCC's 5th Assessment report represents the latest and most comprehensive overview of the state of the science, and should be the primary resource for assessing climate risks and the appropriate budgets for managing these risks; however, more detailed guidance on how to translate the science in the IPCC 5AR into global emissions pathways is provided by authoritative sources such as UNEP's Emissions Gap reports.

The global climate objective and the UK share of effort under that climate objective need to be informed by the UK's existing international commitments. The UK has made clear commitments in the European Council and the Copenhagen Accord to "hold the increase in global temperature below 2 degrees Celsius, and take action to meet this objective consistent with science and on the basis of equity".[1] Unfortunately the current climate objective implies an unacceptably high risk of exceeding 2 degrees of warming this century. The central estimate for the probability of staying beneath 2 degrees in the three best-case global emissions pathways used to inform the climate objective are 49%, 44% and 37%.[2]

Our first key recommendation, then, is to adopt a global climate objective consistent with a likely chance (>66%) of avoiding 2 degrees. The UNEP Emissions Gap reports provide global budgets and pathways consistent

[1] http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf

[2] 2014_3%low+, 2016_4%low and 2016_3%low scenarios. Originally accessed from http://archive.theccc.org.uk/aws3/Ch1%20spreadsheet%20-%20model%20emissions%20and%20climate%20data%20-%20final.xls

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with the cost-effective delivery of this goal. These imply net zero CO2 emissions by 2065 and net zero GHG emissions by 2085 (central estimates). [3]

The UNEP budgets also have the advantage of being updated annually on the basis of new historical emissions data and new policy developments. It is worth noting that the long report cycle of the IPCC report means it is slow to take account of such developments or important new advances in the science. The Committee should therefore also consider any significant developments in the science with wide acceptance in the community affecting the level of risk associated with cumulative GHG emissions.

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 UK's Climate Change Act introduced a national legal framework to manage down its greenhouse gas emissions. Progress in international climate negotiations is one of the factors identified that should be taken into account in the setting of the carbon budgets, however, it is clear that the UK's climate policy as embodied in its carbon budgets is a unilateral policy instrument designed to give investor confidence through depoliticising the process of decarbonisation.

So far, however, the setting of UK carbon budgets has been directly linked to EU climate policy through the decision to treat emissions covered by the EU Emissions Trading Scheme as equivalent to the UK allocation of emissions allowances determined under that policy. In our view, this accounting methodology is no longer sustainable and we propose that the 5th UK carbon budgets should be set on the basis of actual territorial emissions.

If the UK's carbon budgets remain linked to the EU carbon budget as determined by the EU's 2030 INDCs then events in Paris could have an impact on the UK's budget. Significant advances in the global negotiations could take place even in

[3] These are central estimates from ranges of 2055-2070 and 2080-100 respectively. See Table 2.1 and Table 2.2 of UNEP's 2014 Emissions Gap report published here: http://www.unep.org/publications/ebooks/emissionsgapreport2014/portals/50268/pdf/EGR2014_LOWRES.pdf

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the closing hours of the COP/MOP and imply a step up in European ambition that operationalises the "at least" part of Europe's current international offer. This in turn could affect the level of ambition in UK's commitments under the EU Emissions Trading Scheme and the EU Effort Sharing Decision, which, as outlined in the preamble to this section, "imply a minimum level of effort for the UK's carbon budgets."

Even without such last minute developments, anticipating the UK's commitments under the Effort Sharing Decision and the Emissions Trading Scheme already poses significant challenges for the Committee. These challenges will become extraordinarily difficult when a market stability reserve is agreed for the EU ETS. The solution is to account for all UK emissions on a territorial basis rather than "netting off" emissions from the traded sector against an estimated carbon budget for the UK.

We explore this in more detail in Q.15.

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?***

Based on the available evidence, does the EU 2030 package reflect the best path to its stated 2050 ambition?

ANSWER:

No, the EU 2030 package does not reflect the best path to its stated 2050 ambition. To get back on track, Europe will need to revise its 2020 target and/or cancel a significant volume of allowances from the EU Emissions Trading Scheme.

In 2009, the European Council agreed a long-term "climate objective" to cut its emissions 80-95% below 1990 levels by 2050. On the basis of that objective, the Commission prepared a Low Carbon Roadmap to cost-effectively achieve that goal.

The Roadmap proposed a series of "milestones" necessary to meet that long-

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term objective, including a 40% cut in domestic emissions from 1990 levels by 2030. This milestone has since been translated into the 2030 target proposed in the Commission's communique on the 2030 climate and energy framework, a target now endorsed by the European Council. This has widely been touted as putting Europe on the cost-effective track to the 2050 target. It does not.

What is overlooked here is that the Low Carbon Roadmap also specified an earlier 2020 milestone to cut domestic emissions by 25% relative to 1990 – a milestone that was never translated into law. At present Europe's 2020 package implies a 20% cut in emissions relative to 1990 levels with a significant reliance on UN backed carbon offset credits.

The 2030 package will not be consistent with the Low Carbon Roadmap until a -25% domestic target for 2020 is adopted, not least because excess allowances in the EU ETS will be banked forward from one package to the next.

A Commission Communique exploring Options for Moving Beyond 20% indicated that moving to a -30% target in 2020, with -25% delivered domestically, would involve cancelling 1.4 billion allowances from the EU Emissions Trading Scheme.[4]

How might this package change, specifically its targeted emissions reduction, either before the end of Paris or after Paris?

As indicated in the Committee's preamble to this section, Europe's offer is to cut domestic emissions by "at least" 40% by 2030, leaving opportunity for Europe to increase its offer, through further emissions reductions domestically or internationally to help secure an ambitious global deal. This could possible imply a step up in ambition to 50% if global conditions are right.

There is also some appetite internationally for more ambition from developed countries to close the emission gap in 2020. Europe is currently set to significantly overachieve its commitments under the 2020 climate and energy package. Any spare carbon allowances in the Effort Sharing Decision are due to expire in 2020, and a large volume of spare allowances in the EU Emissions Trading Scheme will be removed from circulation and placed into the Market Stability Reserve. This creates an opportunity for policymakers to cancel a significant volume of ETS allowances from within the Market Stability Reserve with minimal effects on the carbon price. As noted above, this would help re-align Europe's trajectory with the Low Carbon Roadmap, and also secure more

[4] See page 6 http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC0265&from=FR

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ambition and goodwill internationally.

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:

Some argue that by establishing UK climate ambition in advance, the Climate Change Act hamstrings the UK in international negotiations. This is inaccurate.

Many stakeholders and policymakers are inclined to misinterpret the targets and budgets in the Act as the final word on UK ambition, but as Lord Turner, the first chair of the committee made explicit, "It is not part of the Committee's remit to propose a specific methodology for the purposes on international negotiations."[5] The current long-term target, trajectory and carbon budgets under the Act, represent a starting, minimal interpretation of the UK's international obligations in combatting dangerous climate change, and should represent only an opening offer in the international negotiations.

There are already clear provisions in the Committee's 4th carbon budget report for UK policymakers to increase the ambition of the current carbon budgets as part of an ambitious global deal,[6] i.e. by strengthening the 4th carbon budget from the current "Domestic Action" budget to a "Global Offer" budget that is 150Mt lower.

In this respect, the UK negotiating position resembles the negotiating position of Europe in international negotiations: Europe is approaching Paris with an offer to emissions by "at least" 40% by 2030 (domestic), and also approached Copenhagen with a unilateral commitment to cut emissions by 20% by 2020, supported by a conditional offer to cut emissions by 30% if comparable pledges were made by major emitters.

By leading the way with a clear, minimum, long-term target backed by law, the UK

[5] http://www.theccc.org.uk/wp-content/uploads/2013/03/Interim-report-letter-to-DECC-SofS-071008.pdf

[6] http://archive.theccc.org.uk/aws2/4th%20Budget/CCC-4th-Budget-Book_with-hypers.pdf

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sets a strong precedent for other countries to follow. This commitment helps break through the "bystander effect" at the heart of a collective action problem like climate change.

The current UK target and budgets represent a minimal obligation in two key respects:

- First, as noted in Q1, the global climate objective from which the UK target is derived currently involves an unacceptably high chance of exceeding 2 degrees of global warming.

- Second, the effort sharing approach places an undue burden on developing countries, and grants large emitting countries disproportionate access to the remaining carbon space.[7]

This effort sharing model does not take account of the UK's disproportionate role in current and historical greenhouse gas emissions. The Committee's own report on the 4th carbon budget highlighted that "It is hard to envisage a situation where the UK is less ambitious than the global average, which would require that other countries are more ambitious."[8]

On this basis we argue that the UK carbon budgets do not damage the negotiating position of the UK but, on the contrary, constructively advance global negotiations. This opening minimal offer gives the UK flexibility to adopt a more challenging effort sharing model, as other major emitters come forward with comparable commitments.[9]

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.

[7] The CCC assumes all countries emissions will converge on an annual average rate towards an end goal of 2 tonnes CO2e emissions per capita in 2050. This currently implies annual reductions of 6.2%p.a. from the UK after 2020. p.30-31 http://archive.theccc.org.uk/aws2/4th%20Budget/CCC-4th-Budget-Book_with-hypers.pdf

[8] Page 26 http://archive.theccc.org.uk/aws2/4th%20Budget/CCC-4th-Budget-Book_plain_singles.pdf

[9] Sandbag has outlined its preferred Effort Sharing System in its Sovereign Emissions Rights Framework here: http://sandbag.org.uk/site_media/pdfs/reports/The_Sovereign_Emissions_Rights_Framework_1.pdf

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_2/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***

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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:

Meeting the Fifth Carbon Budget – which we maintain must be set on the basis of actual, domestic emissions – will require a redoubling of effort in power, heat and transport. Each sector is capable of delivering abatement through a range of options, however, it is likely that close to full decarbonisation of the power sector will, through electrification and syn-fuel production, enable deeper decarbonisation in heat and transport.

Sandbag does not take a view on which mix of technologies should be deployed to achieve our climate goals. We are interested the suite of policies that are needed to ensure we depart significantly from Business As Usual. To do this we must deliver cost effective investment in transformative new technologies and businesses, ideally with a large portion of the supply chain being located in the UK.

We believe carbon pricing policy must be applied across the whole economy, alongside a suite of policies that also work to:

remove non-price barriers, including emissions and performance standards where very highly polluting activities remain profitable or are at risk of being locked-in,
provide deployment support for technologies not yet made competitive by the carbon price (eg CCS for industry); and
deliver R&D investment into technologies with substantial potential to deliver abatement in the future.

A combination of policies will be needed and the interactions between different policies will need to be carefully monitored. Should emissions reductions domestically prove to be too expensive or too challenging, carbon budgets offer policy makers flexibility in terms of being able to balance the books through trading. This would still remain the case if power and industry emissions were accounted for on a measured basis rather than “netted off” against UK allocations in the ETS. This ability to purchase abatement overseas (by buying and retiring pollution credits) creates a theoretical financial liability for all emissions taking place between now and when our 2050 target is reached. One of the best things the UK Government could do in terms of assessing the cost effectiveness of its climate and energy policies is to start to factor in the liabilities

in its investment decisions both in terms of new, clean infrastructure but also in terms of the increased liability arising from investment in activities and infrastructure that cause emissions to rise.

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:

Behaviour change can be an important part of the cost-effective transition to a low carbon UK economy.

First, consumers are voters: proof that consumers value "green issues" will be important for ensuring political will remains strong.

Second, low carbon technologies will not receive wide uptake, however generous the Government support, unless there is real investor and consumer interest. For example, the Renewable Heat Incentive (RHI) is generous but has so far seen very low uptake. Likewise energy efficiency uptake remains disappointing, despite concern over high energy bills and the opportunities presented by the Green Deal.

In such scenarios, the onus should be on policymakers to create the right regulatory framework to encourage the desired behaviours, and discourage problematic ones.

In setting the right regulatory framework there is a delicate balance to be struck in driving desirable behaviours without unduly curtailing civil liberties. That being said, a range of regulatory approaches will be required from gentle "nudges" (e.g. default policy settings and social marketing) to "pushes" (e.g. financial incentives and disincentives) to "shoves" (e.g. choice editing through outright bans on products or services that do not meet minimal environmental standards where clear, affordable alternatives exist).

In almost all cases, Government will not have the consumer insight necessary to design or deliver a mass market consumer programme. We would support greater use of trials and testing before an initiative is launched and, where possible, an outcome based approach, focused on harnessing the efficiencies of the market to

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deliver carbon savings, rather than designing programmes which are outside of core civil service expertise.

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 power sector must be largely decarbonised by 2030, so subsequent emissions cuts will have to be made from other sectors - specifically read transport, heating, steel, upstream oil and gas, and cement.

However, this does not necessarily mean that emissions cuts will be harder - this depends on progress over the next decade in finding ways cheaply and easily decarbonise these other sectors.

Some of these technologies may need policy help over the coming decade, in order that they become cheap enough to be rolled out - for example, electric cars, industrial CCS and CCU, or new high temperature nuclear designs.

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:

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***

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emissions and the UK's position in international climate negotiations?

ANSWER:

The most significant question facing the UK as it proceeds with the decarbonisation of its economy is how to secure inward investment in new low carbon technologies and infrastructure. The framework the carbon budgets provide help to give confidence to investors, however, on their own they are unlikely to be sufficient to incentivise investment into the projects that are included in the National Infrastructure Plan. For these to go ahead policies need to be aligned to give investors the certainty they need to commit capital.

If, as we suggest, the UK carbon budgets change to apply to actual measured emissions rather than deemed emissions after trading, the biggest challenge will be reducing the carbon intensity of our electricity generation to close to zero. The current policy mix relies on a combination of EU ETS, UK carbon price support, contracts for difference for clean investment and the EPS and planning policy for restricting new unabated coal. A close eye will need to be kept on whether these policies are delivering sufficiently to reduce carbon intensity.

In the other sectors such as heat and transport a less comprehensive suite of policies exists and infrastructure investments in transport in particular could have a negative effect on our ability to achieve our targets if they lock in growth in demand for transport without a corresponding attempt to improve efficiency and decarbonise fuels.

The biggest impact infrastructure investment could have in the UK would arguably be to demonstrate effective decarbonisation pathways outside of the electricity sector where the options for delivering cost effective emissions reductions are less well understood. This would help to convince other industrialised nations that full decarbonisation of the economy is possible and that the UK is serious about achieving that aim. This could be through commercial deployment of CCS infrastructure, the stimulation of a circular economy where CO2 waste streams are redeployed as feedstocks, the decarbonisation of the gas grid through deployment of renewable and synthetic gas, exploration of high temperature nuclear reactors and modal shift and electrification in transport.

C. Budgets and action

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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:

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:

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

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The most important characteristics of an effective carbon budget are that they be:

- **Ambitious:** Set absolute ceiling on GHG emissions that is appropriately environmentally challenging and significantly lower than BAU emissions.

- **Responsive:** Able to be increased in light of advances in global efforts, heightened environmental risks, improvements in technology or reduced cost of abatement.

- **Contained:** Is not contaminated by weaknesses in international carbon budgets that are beyond the regulators control.

To date, carbon budgets have had limited success because of failings in these three key areas. The carbon budgets in the Kyoto Protocol, the EU Emissions Trading Scheme and the EU Effort Sharing Decision have all proved weakly ambitious, owing to inflated BAU emissions estimates and "hot air" allowances generated through unforeseen economic changes. This has been exacerbated by the inability to revise budgets down in response to these developments, or to protect carbon budgets from an influx of cheap emissions allowances or offset projects from linked carbon markets.

Despite these weaknesses, the carbon budget approach has resulted in significant emissions reductions in the UK, in Europe and globally. Carbon budgets can become considerably more effective if these three main issues are addressed.

The Climate Change Committee has already indicated that to cost-effectively achieve the 4th carbon budget and our 2050 target, the UK should strengthen the 1st, 2nd and 3rd carbon budgets. By:

- Electing not to bank forward spare carbon from the non-traded section of the 1st carbon budget
- Strengthening the non-traded section of the 2nd and 3rd carbon budget from current "interim" budgets to an "intended" budget

The government adopted the 4th carbon budget, and chose not to rollover the spare carbon from the first budget, but has so far failed to revise the 2nd and 3rd carbon budgets to align with a cost-effective trajectory. We urge the Committee to reiterate this call, and urge policymakers to heed them.

The Committee also advises revising down the traded sections of the 2nd and 3rd carbon budget, subject to structural reform of the EU Emissions Trading Scheme.

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Significant structural reforms are on the verge of being agreed, but do not yet translate into a permanent reduction in the volume of ETS allowances. These reforms, while welcome, pose significant challenges for accounting of traded sector emissions under the UK carbon budgets, an issue we revisit in Question 15.

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).

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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:

Carbon budgets should not be about reducing CO2 alone. Carbon budgets should be about reducing CO2 and reducing fuel poverty, and increasing competitiveness and improving the fiscal balance.

There is sufficient evidence available in the public domain already to show how this can work, but it is not consolidated and presented into a simple easy-to-understand format for politicians and the public to engage. Doing this is essential to maintaining the momentum from the Climate Change Act.

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:

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

ANSWER:

Issue 1: Setting unilateral carbon budgets for the UK that account for traded sector emissions on a fully domestic basis

Back in October 2013, Sandbag highlighted a potential disjunct between the

traded part of the 2nd UK carbon budget, and the actual UK allowances in the EU ETS. This was in a private email correspondence with then CEO of the Climate Change Committee, David Kennedy.

While data was lacking at the time, this disjunct between the "notional" ETS budget and actual UK ETS allowances is now quite pronounced. This issue has recently been taken up outgoing Secretary of State, Ed Davey who wrote to Committee Chair, Lord Deben, highlighting that some "loopholes" in the way that the EU ETS interacted with the traded section of the UK carbon budget could lead to an artificial weakening of UK commitments in existing carbon budgets by contributing "phantom emissions" cuts.[10]

The first traded portion of the first budget (1,233Mt) was closely aligned with the actual ETS allowances issued to UK installations or sold by the UK government over Phase 2 of the EU ETS (1,224Mt). **However, the traded portion of the second UK carbon budget (1,078Mt) has been set around 328Mt higher than the ETS allowances issued to UK installations or scheduled for auction over 2013-2017 (750Mt).**[11]

This reflects a significant reduction in UK auctions of ETS allowances over 2014-2016 under the EU "backloading decision", but it will also reflect some reductions in free allowances to UK installations as a result of partial cessations, closures or significant capacity reductions.[12]

Estimating the traded share of UK carbon budgets in advance of actual allocation in the EU ETS is already extremely challenging for the Committee. But new (and welcome) decisions to reform the EU ETS now make this process all but impossible. The timing of when ETS allowances reach the market will be profoundly affected by both the backloading decision and the introduction of a permanent market stability reserve, which, following a Trialogue agreement, is now expected to be operational from January 2019. ETS allowances originally intended for auction by the UK within one UK carbon budget might be withheld from the market until several carbon budgets later -- if returned to market at all.

In light of the growing complexities in the timing and distribution of ETS allowances, it is our core recommendation that the entire 5th carbon budget

[10] http://www.theccc.org.uk/publication/letter-preserving-the-integrity-of-the-uks-climate-change-regime/

[11] Free allowances taken from the EU Transaction Log and auction data taken from EEA data viewer (accessed on April 28 2015).

[12] We estimate the UK lost roughly 110Mt of free ETS allowances under these provisions over 2013-17. Any such rescinded free allowances will be eventually be redistributed to EU Member States at auction. The UK receives roughly 10% of any auctioned Phase 3 allowances.

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be set domestically, and accounted for using actual territorial emissions. This should replace the current practice of "netting off" traded emissions against an (estimated) ETS budget.

The ETS can and should remain an important means for reducing emissions to national carbon budgets and targets, just as it is in Germany. But it should not substitute for that budget. Neither should the ETS be the sole means by which the UK meets its domestic targets for the traded sector: supporting policy measures should be introduced if they prove to be more cost-efficient in achieving domestic emissions reductions.

To ensure cost-effective achievement of the UK's long term goal, the actual territorial emissions of the UK power and industrial sectors should be kept within the national carbon budgets without recourse to traded effort from Europe or further field. This principle was already invoked by the Committee when it proposed that the 4th carbon budget should be a 'Domestic Action Budget' "with the aim to achieve it through domestic emissions reductions only (i.e. without recourse to purchase of credits in international carbon markets, including through the EU ETS)."[13] But what was a general "aim" for that budget has now become an accounting necessity and should be formalised in the Act itself.

While the UK will continue to have international commitments negotiated under the EU Emissions Trading Scheme, the EU Effort Sharing Decision and the UNFCCC, the move to territorial accounting gives sovereignty to the UK in managing and meeting its domestic targets. The UK budgets are often set in advance of EU and international commitments, and this will prevent domestic ambition being held hostage by political developments in Europe or beyond.

2: Accounting for negative emissions

One final issue we believe needs addressing is the ability for carbon budgets to account for negative carbon emissions. We know that emissions over time have been high and are likely to remain high for some years to come committing us to growing levels of climate risk. This raises the potential for activities to move beyond preventing additional emissions from entering the atmosphere to acting in ways that help to reduce the already accumulated stock of emissions in the atmosphere. In the latest IPCC models, in order to maintain a reasonable chance of avoiding breaching the 2 degree threshold the world has set for itself it is now necessary to introduce considerable volumes of negative emissions in most if not all scenarios. This is commonly referred to as Biomass with CCS or BECCS. We believe in the run up to Paris the UK should once again lead the world in

[13] p.12 http://archive.theccc.org.uk/aws2/4th%20Budget/CCC-4th-Budget-Book_with-hypers.pdf

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developing an accounting methodology and associated certification system that will enable us to register negative emissions in our budgets.

This task is particularly resonant for the UK as not only do we have carbon budgets already in place in which to do the required accounting, we are also home to what could be the world's only existing BECCS project. A company called Carbon8 is already capturing CO2 from a biomass combustion plant and using it to carbonate waste products to manufacture aggregate. We call on the CCC and the UK Government to introduce the required policies and methodologies to recognise this technology properly and to create the right framework to stimulate further innovation in this field.

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