Review of the Fourth 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

The Committee's advice assumes 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 in the next few years, 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, to be agreed by 2015. Earlier attempts (e.g. at Copenhagen in 2009, before the fourth budget was recommended or legislated) have failed to achieve a comprehensive global deal to limit emissions.

It is difficult to imagine a global deal which allows developed countries to have emissions per capita in 2050 which are significantly above a sustainable global average, implying the need for emissions reductions in the UK of at least 80% from 1990 levels by 2050.

The EU has not yet agreed a package beyond 2020, but the European Commission is consulting on a range of issues relating to development of climate and energy targets for 2030. In its 2011 Roadmap for moving to a competitive low-carbon economy, the Commission suggested a reduction in emissions of 40% on 1990 levels by 2030, as being on the cost-effective path to an 80-95% reduction by 2050. The UK Government has signalled its support for a 40% reduction by 2030, and for an increase to 50% in the context of a global deal.

China has made ambitious commitments to 2020 which would, if delivered, cut carbon-intensity relative to GDP by around 45%.

The Committee on Climate Change
1st Floor,
7 Holbein Place,
London SW1W 8NR
Tel: 0207 591 6262 Fax: 0207 591 6180 www.theccc.org.uk

The United States could achieve its Copenhagen Accord commitment to reduce emissions by 17% on 2005 levels without the need for further federal legislation.

Question 1: Does the scientific evidence justifying the climate objective remain the same as in 2010? In particular, is there new evidence on climate change impacts?

ANSWER: It is increasingly clear that climate change is now happening at a pace and scale exceeding the worse-case scenarios previously predicted by climate scientists.

A number of key milestones have taken place since 2010, including, in May 2013, confirmation that global CO2 concentrations have exceeded 400ppm and are now at their highest level for over 3 million years[1]. In addition, Arctic sea ice in September 2012 was at the lowest level ever recorded.

The link between extreme weather events and climate change has also been further developed. New research published in August 2013[2] highlights that climate change is likely to cause more frequent extreme weather events, as well as creating a 'vicious cycle', as ecosystems damaged by such events become less able to absorb CO2. The Met Office also held a meeting of weather and climate experts in June 2013 to discuss the recent run of usual seasons in Europe[3].

In September 2013, the IPCC will publish its Fifth Assessment Report, setting out the latest scientific findings in relation to climate change.

Since 2010, a large number of important publications have highlighted the worsening picture, and the increased understanding of climate change impacts. We list some of these below to illustrate the worsening situation, though this is not an exhaustive list:

UNDP, *2013 Human Development Report:* inaction on climate change, deforestation, and air and water pollution could end gains in the world's poorest countries.
World Bank, *Turn Down the Heat: Why a 4°C world must be avoided,* 2012: the poorest will suffer most from climate change impacts and it is not possible to tackle global poverty without tackling global warming.
UNEP, *The Emissions Gap Report 2012:* the gap has widened between world governments' emissions reductions commitments and cuts scientists say are necessary.
EEA, *Climate change, impacts and vulnerability in Europe 2012*: the last decade was the warmest on record for Europe, range of impacts and implications across the continent.
WMO, *The Global Climate 2001-2010, A Decade of Climate Extremes:* the years between 2001 and 2012 were among the top 13 warmest on record. Arctic sea ice is

[1] http://news.nationalgeographic.com/news/energy/2013/05/130510-earth-co2-milestone-400-ppm
[2] http://www.bgc-jena.mpg.de/pmwiki.php/PublicRelations/Single?userlang=en&id=1376485517
[3] http://www.metoffice.gov.uk/news/releases/archive/2013/meeting-unusual-seasons

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diminishing rapidly, reaching a record low in summer 2012.
American Meteorological Society, *2012 State of the Climate report*
The peer-reviewed report, compiled by 384 scientists from 52 countries, confirms that carbon levels are climbing, sea levels rising, Arctic sea ice melting, and the planet is warming.

Question 2 ***Have the emissions pathways consistent with achieving this objective changed? In particular, is there new evidence on climate sensitivity to emissions?***

ANSWER: In late 2010, the Grantham Institute and the Met Office concluded that temperatures will now almost inevitably rise above 1.5 degrees. Their findings suggest that annual global emissions must begin to fall before 2015 to offer at least 50 per cent probability of global average temperature being no more than 1.5°C above its preindustrial level in the long term. Given the worsening position outlined above and the lack of significant progress in mitigation efforts, this is now an impossible scenario within a 16 month time-scale.

In June 2011, UN Climate Chief, Christiana Figueres stated that: "Two degrees is not enough - we should be thinking of 1.5C. If we are not headed to 1.5C we are in big, big trouble."

As highlighted in our response to the previous question, the UNEP *Emissions Gap Report 2012* highlights an increased gap between world governments' emissions reductions commitments and cuts scientists say are necessary. The report highlights that to stay within the 2°C limit, global emissions will have to peak before 2020.

The objective to achieve no more than a 2 degree increase is therefore still correct.

A new study published as a letter in Nature Geoscience in May 2013, produced a best estimate for climate sensitivity of 1.9 degree, with a large uncertainty range of 0.9 to five degrees. This is just below the IPCC's likely range from 2007. Again, the IPCC's Fifth Assessment Report will provide the latest findings with regard to climate sensitivity later this autumn.

Question 3 ***Does the climate objective remain in play given international developments? Has the likelihood of getting global agreement changed significantly since the budget was set, and if so why?***

ANSWER: The objective remains correct, given the worsening situation and lack of sufficient progress thus far.

Since 2010, there has been some progress in terms of moving towards a global deal including agreement to the second commitment period of the Kyoto Protocol and to renegotiate a follow-on agreement in 2015 for the post-2020 period.

In addition and to enable this process, UN Climate Chief Christiana Figueres has underlined the need for strong national legislation on climate change: "Domestic legislation on climate is the absolutely critical, essential, linchpin between action at the national level and international agreements. It is absolutely at the centre[4]."

There has been a great deal of progress in that regard since 2010, including climate change and related laws passed in countries across the world[5], and encouraging progress from China and the USA to tackle climate change.

Question 4 ***How have the prospects for a new EU package for 2030 changed since the Committee's advice and the setting of the budget? What implications do the latest expectations have for the fourth carbon budget?***

ANSWER: No comment

Question 5 ***What flexibilities are appropriate to reflect possible future changes in EU and international circumstances?***

ANSWER: No comment

[4] http://www.globeinternational.info/index.php/news/item/christiana-figueres-globe-summit-2015
[5] ibid

B. Technology and economics

In recommending the level of the fourth carbon budget, the Committee developed scenarios which embodied cost-effective emissions reductions to meet the 2050 target.

These scenarios, set out in detail in the Committee's report *The Fourth Carbon Budget – Reducing emissions through the 2020s*, 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.

They were based on official emissions projections together with an assessment of the cost and feasibility of abatement options. Since 2010, official emissions projections have been significantly reduced in the industry and waste sectors, meaning that meeting the legislated 4th carbon budget would require less effort than originally envisaged.

Question 6 ***Is there any new evidence to suggest that the type of scenarios upon which the budget was based are no longer feasible or cost effective?***

ANSWER: No comment

Question 7 ***In particular, does the possibility of shale gas in the UK change the economics of the fourth carbon budget?***

ANSWER: No comment

Question 8 ***Should the budget be tightened to reflect headroom due to significantly lower emissions projections (e.g. due to slower than expected economic growth) since 2010?***

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ANSWER: No comment

C. Other issues

As required by the Climate Change Act, in designing the fourth carbon budget we considered impacts on competitiveness, fiscal circumstances, fuel poverty and security of energy supply, as well as differences in circumstances between UK nations. Previous high-level conclusions on these 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 9 ***Is there any new evidence to suggest that (incremental) impacts of the fourth carbon budget on competitiveness, the fiscal balance, fuel poverty***

and security of supply have become unmanageable?

ANSWER: No comment

Question 10 ***Is there any new evidence on differences in circumstances between England, Wales, Scotland and Northern Ireland that suggest the need to change the budget?***

ANSWER: The Climate Change (Scotland) Act 2009 sets more ambitious targets for emissions reductions than the UK Act, of 42% by 2020 and at least 3% annual emissions reductions through to 2050. The 2050 target is the same as that of the UK: 80% reductions on 1990 levels by that year.

In June 2013, the Scottish Government published its Report on Proposals and Policies, which sets out how Scotland's emissions targets between now and 2027 will be met. UK policies form an important part of this plan and any reduction in ambition to reduce emissions at UK level would require Scotland to increase the emissions reductions achieved from devolved powers to meet its own legally-binding targets.

Question 11 ***Is there anything else not covered in your answers to previous questions that you would like to add?***

ANSWER:

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