

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.

Response from the Soil Association

Contact: Trevor Mansfield, Head of Policy – Farming & Land Use

TMansfield@SoilAssociation.org. 07968 317172

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 CO₂ 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 Committee should consider evidence relating to adaptation, to ensure that mitigation options are consistent with adaptation.

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:

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:

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: The UK has a particular responsibility to take a lead on international efforts to reduce emissions: research has shown that the UK tops the list of historic GHG emissions per capita¹. The targets set out in the 2008 Climate change Act are a part of demonstrating that international leadership.

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 gCO₂/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:

Our response focuses on Food, Farming & Land Use in the UK.

We agree with the conclusions of the Committee's 2014 report, that there is potential to achieve greater emissions reduction than is envisaged in the current GHG Action Plan for Agriculture. We suggest the following areas for consideration:

Reducing food waste:

Food waste in the UK food chain is estimated at 15 million tonnes per annumⁱⁱ. The greenhouse gas emissions associated with avoidable food and drink waste from UK homes accounted for approximately 17 million tonnes of CO₂ equivalentⁱⁱⁱ. This is equivalent to approximately 30% of UK Agricultural emissions.

The actual emissions associated with the UK based production of food that is wasted will differ (due to pre-household waste, exports and imports), but is likely to be significant. This represents unnecessary pressure on our natural environment, which must be reduced as part of an Adaptation Plan.

Reducing crops fed to livestock

A large proportion of UK crop production only enters the food chain indirectly, being used as livestock feed in the meat and dairy sectors. For example, over the nearly 12M tonnes of wheat produced in the UK in 2013, more than 50% (6.6Mt) was used for animal feed.^{iv} This is an inefficient use of the emissions involved in growing the crop. It would be more efficient to increase the proportion of arable crops that directly enter the human food chain, whilst reducing meat and dairy consumption and the use of grain feed and concentrates in livestock farming. This would be consistent with adaptation by reducing pressure on the natural environment. A shift towards grass fed livestock would enable a reduction in the emissions associated with the production of livestock feed, and would help maintain permanent and semi-permanent grasslands and extensively grazed areas of semi-natural vegetation, and their associated soil carbon stocks.

Increasing Soil Organic Matter

Organic matter levels are declining in UK arable and horticultural soils^v. This will cause a reduction in soil carbon. Land management practices can be promoted to increase soil carbon (e.g. increasing use of organic fertilisers). Evidence indicates that soils managed under organic systems contain more carbon than soils under non-organic management (3.50 ± 1.08 Mg C per ha carbon stock)^{vi}.

Hence, increasing the area of land managed under organic systems – or adopting methods used in organic farming systems – would increase carbon storage in UK soils. Given that increased soil carbon is also a good indicator of soil health, this would be consistent with improving resilience in UK soils.

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: In the UK we need to reduce our consumption of meat, particularly meat derived from grain-fed livestock. This is consistent with published evidence on long term strategies for reducing agricultural emissions to meet emissions targets.^{vii}

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 farming industry in the UK will face massive changes over a relatively short time if, as currently envisaged, most of the changes needed to make anything approaching 80% cuts in GHG emissions are left until the 2030 – 2050 period. While some cropping decisions can be taken on an annual basis, less carbon-intensive systems require changes to 6 to 8 years rotations, and some farming systems (indoor intensive livestock, for example) require investment in infrastructure with around 20+ year payback periods. It is unrealistic to expect the industry to go through 'revolutionary' changes in such a short period^{viii}.

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:

Stepping up efforts to reduce agricultural emissions should not wait for the 5th budget period. 'Agriculture must not get "a free pass" in the climate change debate'.^{ix}

The following measures could be promoted more strongly now to increase mitigation efforts in the Agriculture and Land Use Sectors.

Reduce demand for inorganic fertilisers

Increasing soil organic matter, coupled with increasing use of legumes to capture atmospheric Nitrogen will reduce the need for manufactured Nitrogen fertilisers. Recent work for the EU^x recommended that Rural Development Programmes explicitly support the use of legumes as a mitigation measure as it will reduce emissions from fertiliser manufacture and use and reduce N leaching. However this has not been included in the new RDP in England to support mitigation.

This report identified a range of potential measures to promote mitigation, covering a range of farming systems and situations, and these should be reviewed to estimate the potential additionality that could be achieved over current mitigation efforts.

Peatland Restoration

Peatland erosion represents a significant loss of carbon. Natural England has estimated that Peatland erosion loses approximately 3Mt CO₂e per annum in England alone^{xi}. This is equivalent to the current scale of ambition for the GHGAP and should be given at least equal priority. There are undoubted adaptation benefits from achieving this protection.

Agroforestry

Agroforestry has been shown to increase the productive use of land: research suggests that Agroforestry can achieve a 20% improvement on productivity (compared to monoculture production)^{xii}. Crucially, this productivity gain comes with mitigation benefits through increased carbon storage (and potentially carbon substitution where harvested tree products are used). These benefits have been recognised in France, where research indicates minimal net costs to the farmer^{xiii}.

There will be adaptation benefits in increasing tree cover and diversification in farming systems.

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:

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:

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:

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: There is a risk of UK food production falling behind our competitors in the EU if it fails to reduce emissions at the same rate. Food plays a major part in an individual's personal C footprint. The food that businesses supply for their workforce, and that many public institutions like nurseries, schools, hospitals and care homes provide for those using their services, forms a significant part of their carbon footprint, which they will wish to reduce if carbon budgets are to be met. A food and farming industry that is not reducing its carbon footprint effectively risks losing competitiveness in future in a more carbon sensitive market. See for example the G20 low carbon competitiveness index 2013 update: http://www.climateinstitute.org.au/verve/resources/VividEconomics_LCCIRReport_February2013.pdf

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:

¹ <http://iopscience.iop.org/1748-9326/9/1/014010/article>

-
- ⁱⁱ *Food Statistics Pocketbook 2014*, Defra
- ⁱⁱⁱ *Household Food and Drink Waste in the United Kingdom 2012*, Wrap
- ^{iv} Source: *Agriculture in the UK*, 2014.
- ^v *Countryside Survey, 2007*
- ^{vi} *Gattinger et al 2012* www.pnas.org/cgi/doi/10.1073/pnas.1209429109
- ^{vii} *Climatic Change* (2014) 124:79–91
- ^{viii} Food Security: The Challenge of Feeding 9 Billion People; Godfray et al; 2010; 10.1126/science.1185383
- ^{ix} US economist Jeremy Rifkin, speaking at the EU, May 2015 <http://www.vieuws.eu/food-agriculture/agriculture-must-not-get-a-free-pass-in-climate-change-debate-argues-renowned-us-economist-jeremy-rifkin/>
- ^x Freluh-Larsen, A.a, MacLeod, M.b, Osterburg, B.c, Eory, A. V.b, Dooley, Ea., Kätsch, S.c, Naumann, S.a, Rees, B.b, Tarsitano, D.b, Topp, K.b, Wolff, A c, Metayer, N.d, Molnar, A.f, Povellato, A.e, Bochu, J.L.d, Lasorella, M.V.e, Longhitano,D.e (2014). “Mainstreaming climate change into rural development policy post 2013.” Final report. Ecologic Institute, Berlin.
- ^{xi} Natural England report Peatlands and Carbon. NE257
- ^{xii} http://orgprints.org/18172/1/Agroforestry_synopsis.pdf
- ^{xiii} <http://inra-dam-front-resources-cdn.brainsonic.com/ressources/afile/244915-574b3-resource-etude-ges-2013-resume-en-anglais.html>