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.

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

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_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:

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:

UK Energy Intensive industries already face a significant and growing comparative disadvantage in energy prices, especially electricity prices, which are being driven up by UK/EU climate policies, as the CCC have recognised.

Glass products, such as bottles, flat glass and fibre glass, are both imported into and exported out of the UK. Imports are higher than exports. As the cost of electricity and the cost of complying with climate change legislation such as EU ETS are increasing in the UK, the cost of making glass products in the UK will also increase. This makes it increasingly difficult for UK companies to compete with foreign competitors, and makes it more likely that UK made products will be replaced by imported ones (carbon leakage). As well as a loss of jobs and skills from the UK, this would result in an increase in global emissions due to increased transportation, and more products we use every day being manufactured in factories with potentially lower environmental and social standards than in the UK.

It is hoped that the CCC will recognise that decarbonisation must be economically sustainable for UK industries. The EII compensation package does not currently adequately protect the UK glass industry from the impact of climate change policies and the package must be expanded. Other sources of sustainable funding could also be investigated e.g. border tariffs to help create a level playing field, in terms of climate change costs, for manufactured goods.

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 proposal for 40% emissions cut relative to 1990 levels (more than this for EU ETS sectors such as glass) is already very challenging, especially in the absence of similar commitments internationally.

There should be no EU technology specific targets for 2030; British Glass strongly supports the UK government's position that member states should be free to determine the mix of technologies to ensure their emissions commitments are met, at least cost, and in a way that makes sense for the UK. Imposing technology specific targets will reduce flexibility and will almost certainly make it even harder to achieve carbon reduction targets, especially as the key technologies are not yet known.

The UK decarbonisation roadmaps have made a good start at identifying technologies which have the technical potential to reduce CO2. However, a lot more analysis is needed to identify the most practical and cost effective technologies.

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's legislated target has demonstrably failed to have any measurable impact in achieving a binding commitment by any of the major global emitters (China, USA, India etc) not one of which has been prepared to propose, let alone implement such a constraint on their economies.

Other countries are far more likely to follow UK leadership on controlling emissions from factories if they see that it is possible to both reduce environmental impact, and also have a thriving manufacturing industry. For decarbonisation to be sustainable, it must be environmentally, economically and socially viable. In the UK, the glass sector are still working on finding these win-win solutions e.g. increasing the amount of glass recycled back to glass would benefit the environment by reducing carbon emissions and benefit businesses because it reduces the energy bill for making glass. There is a golden opportunity here for the new UK government to work with industry and others to find win-win solutions. This would be true 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 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 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:

Glass manufacturing factories have continually improved energy efficiency and reduced emissions over the last decades. As an energy intensive industry, reducing energy bills is a high priority, which is why so much has been done already.

However, a certain amount of energy will always be needed to melt sand into glass, and the glass sector is reaching the theoretical limits of energy efficiency. [This is like dieting, you can optimise your food intake, but you will always need a certain amount of food to function].

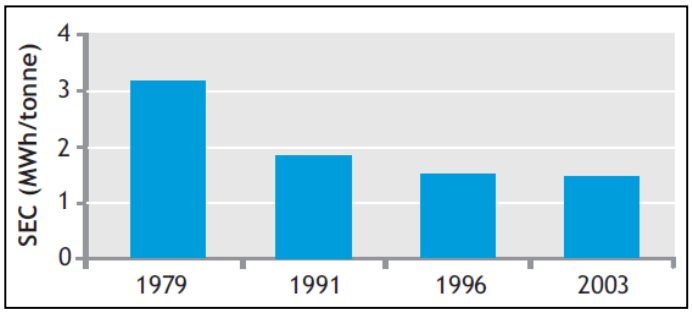

Figure 1: Evidence of improvement in Specific Energy Consumption (energy required to make one tonne of glass) in UK furnaces [Report ECG027 Energy use in the Glass Container Industry, Carbon Trust, 2005]

<u>The opportunities to further reduce emissions to 2032, and 2050:</u>
The 'UK glass decarbonisation and energy efficiency roadmap' was commissioned by government and published in 2015 https://www.gov.uk/government/publications/industrial-decarbonisation-and-energy-efficiency-roadmaps-to-2050.

It predicts that in a business as usual scenario, emissions from the glass sector could theoretically decrease by up to 30% by 2032 and 37% by 2050 from 2012 levels. See 'Business as usual' pathway in **Figure 2**. This is a reduction of 0.6 million tonnes CO_2 and just less than 0.8 million tonnes CO_2. See **Figure 3**. These numbers have been estimated from the graphs below. **The majority of these savings are due to predicted decarbonisation of the electric grid as can be seen in Figure 3.**

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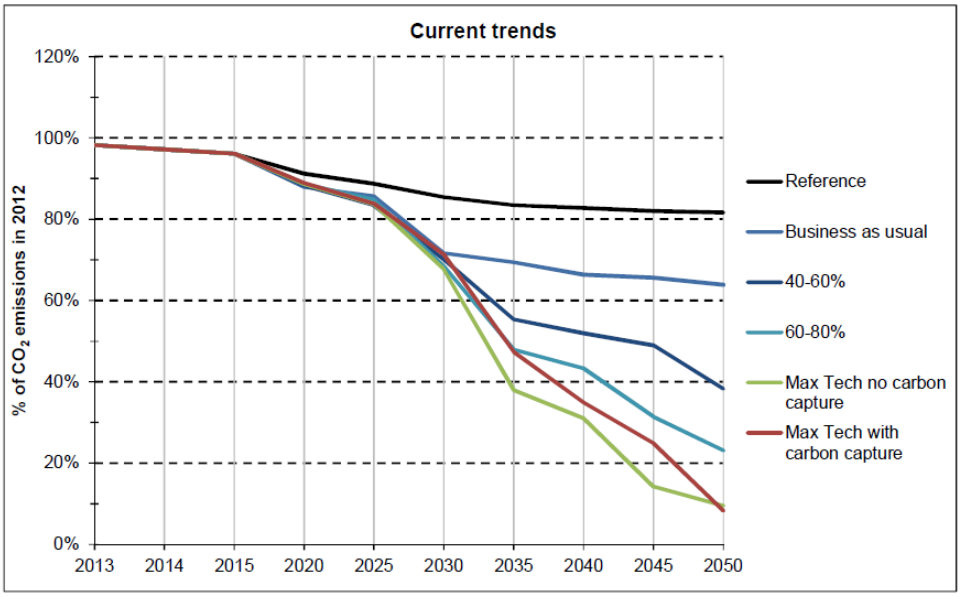

Figure 2: % of CO2 which could theoretically be reduced from UK glass manufacturing if all barriers to implementation (technical, financial etc.) could be overcome Source: Figure 9, P-56, Glass roadmap

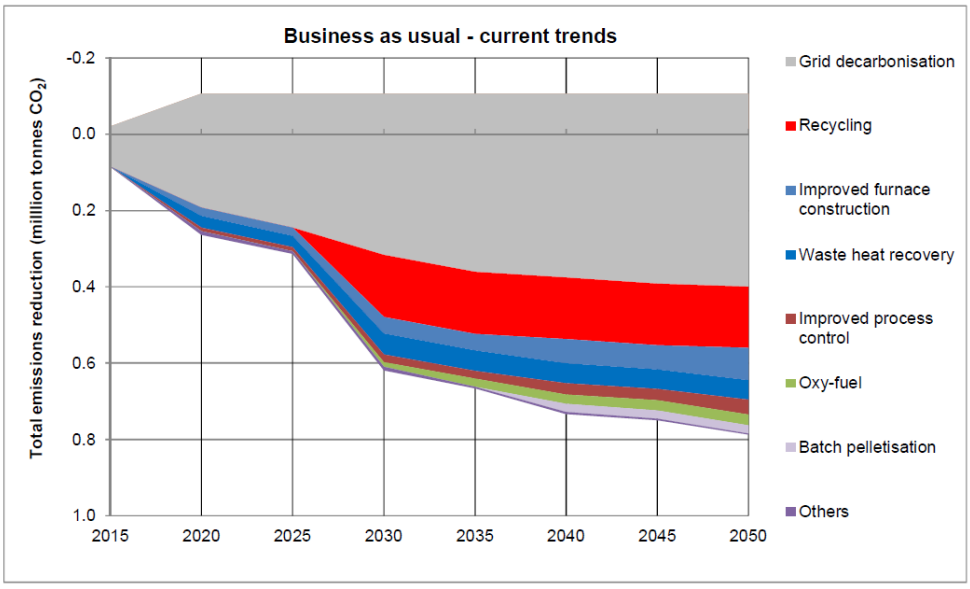

Figure 3- Tonnes CO2 which could theoretically be reduced from UK glass manufacturing if all barriers to implementation (technical, financial etc.) could be overcome Source: P-63, Glass roadmap

<u>Challenges to reduce emissions to 2032, and 2050:</u>

The emissions reductions estimated by the Business as Usual pathway can be achieved only if:

1) The electricity grid is decarbonised in line with DECC estimates

2) UK glass companies do not face any unsustainable increase in operational costs e.g.

from energy or legislation, and are still able to compete strongly in the UK

3) UK glass companies invest millions to continually improve the energy efficiency of the furnace and process

4) Glass recycling in the UK increases moderately, enabling glass factories to use more recycled glass to make new glass

5) Technologies such as waste heat recovery, oxy fuel and batch pelletization become technically and financially viable

6) Every measure can be implemented at every site (this assumption was made to simplify the modelling and won't be true in reality).

Figure 2 also shows pathways which could theoretically result in greater carbon savings than the 'business as usual' pathway. These pathways consist of a mixture of technologies, and are built on the assumptions that each technology can be implemented in every factory, and that all barriers to implementation, including technical and financial issues, can always be overcome.

Higher carbon savings can be achieved if:

1) The electricity grid is decarbonised in line with DECC estimates

2) UK glass companies do not face any unsustainable increase in operational costs e.g. from energy or legislation, and are still able to compete strongly in the UK

3) Glass recycling in the UK increases significantly, enabling glass factories to use more recycled glass to make new glass

4) Research, development and demonstration of technologies including electric melting is carried out. Please note that carbon capture is not a preferred option for glass; electric furnaces are considered to be more suitable and have the same emission reducing potential.

5) All CO2 reduction technologies and options become technically and financially viable to enable implementation.

6) Every measure can be implemented at every site (this assumption was made to simplify the modelling and won't be true in reality).

<u>Costs</u>

The cost modelling in the glass roadmap is incomplete and hasn't been checked with equipment manufacturers. A suitable study would need to be conducted to obtain reliable cost data.

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:

Consumers have a vital role to play in the creation of a low carbon economy by 1) reducing their own energy consumption, and 2) by choosing lower carbon products and services.

There is still much potential to reduce the amount of energy used in homes and buildings. A 2015 study by the National Energy Foundation found that if UK householders with poorly insulated windows upgrade to energy efficient glazing, this would reduce the need for heating and air conditioning, and save up to 48,625 GWh/year (8.7 Mt CO2/year) source: http://www.glazingsupplychaingroup.org.uk/publications/ and attached to this email.

The CCC must think about the full lifecycle of manufactured products because sometimes, products can help to create a greener lifestyle. In this example, the amount emissions that could be saved by energy efficient windows each year is more than 14 times the amount of CO_2 emitted by all the window glass manufacturing factories in the UK.

Customers can play a second vital role in the creation of a low carbon economy by preferentially choosing lower carbon products and services. Businesses are built to meet the requirements of their customers. For example, if consumers want lower carbon glass bottles, and are willing to pay for them, this could strongly encourage decarbonisation.

To help understand whether the UK is truly becoming more carbon efficient, or whether we are simply exporting our carbon responsibilities, it is really important to at least monitor consumption emissions (of goods imported into the UK). British Glass calls on the CCC to consider whether such methodologies could be developed in order to show the full picture of carbon consumption, not just emissions.

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?***

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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:

Yes. The way to truly reduce emissions from industries, and not just export them, is to find win-win solutions which both reduce emissions and benefit industry. Some ideas are below.

- Channel funding towards research, development and demonstration of breakthrough energy efficiency technologies e.g. waste heat recovery, batch pelletization/briquetting, electric furnaces (we can provide a full list of r&d requirements for the glass sector on request).
- Increase the amount of glass recycled in the UK. This allows glass manufactures to use more recycled glass rather than virgin raw materials. This in turn reduces CO_2 (environmental benefit) and energy bills (commercial benefit).
- Create a working group between government, industries and other stakeholders to explore and find more win-win solutions to enable energy efficiency and decarbonisation. The Green Economy Council subgroup could be used for this purpose.

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:

Other countries will only follow UK leadership on controlling emissions from factories if they see that it is possible to both reduce environmental impact, and also have a thriving manufacturing industry. The only way to do this is to find win-win solutions.

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:

High operating costs, high legislative requirements, and regulatory uncertainty are likely to be making investment in the UK less attractive than in other countries. The majority of the large glass manufacturing companies are multi-national and foreign owned; this has a big influence on investment decisions.

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:

Companies in the UK have additional costs compared to their overseas competitors, due to the direct and indirect effects of carbon legislations (e.g. rising cost of electricity bills). Companies are not fully compensated and the UK government has not implemented reliefs to the extent allowed by EU state aid rules. Hence, the operating costs of UK companies are higher than those of their overseas competitors, and are predicted to increase further. This is a big disadvantage when competing in global markets where price of product is often the most important factor.

There is no advantage to the UK economy or the environment if manufacturing simply moves abroad. This is why British Glass asks the CCC to recommend that government, industry and others work together to find win-win solutions to CO2 reduction which will work for both industry and government.

Question 12 ***What would you consider to be important characteristics of an***

effective carbon budget? What is the evidence for their importance?

ANSWER:

An effective carbon budget must reduce global emissions, not simply displace them from the UK and create a bigger problem elsewhere. It should also be achievable, collaborative and commercially viable.

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:

The CCC should take into account the findings of ICF's report for BIS on climate policy impacts on international energy prices, and the revision BIS has commissioned which we understand will be published later this year. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/31768/12-527-international-policies-impacting-energy-intensive-industries.pdf.

Also, the CCC's own most recent analysis shows a near 100% increase in industrial electricity prices by 2030 as a result of existing climate policies.

The CCC have a responsibility to put forward pragmatic proposals which reduce the carbon impact of the grid while also making sure that there is sufficient and affordable energy for people and industry. It may require creative thinking, or the creation of new business models to achieve all the necessary criteria.

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 long term objective for England, Wales, Scotland and Northern Ireland is common – it should be to find ways to decarbonise sustainably and in a way that works for all key stakeholders including industry.

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

ANSWER:

Our key message is this:
Decarbonisation requires big changes to how businesses, government and others work together.

Trying to force carbon reduction with punitive measures is not a good way to create change because it imposes unsustainable costs on industry and government, and will simply send the UK's industries and emissions abroad. This degrades the economy, people and the environment.

A more positive approach is for industries, NGOs and other key stakeholders to work collaboratively to find win-win solutions which reduce emissions in a commercially viable way e.g. by increasing recycling, or improving house insulation.

British Glass asks the CCC to recommend that the best way to create a flourishing, low carbon economy is for the government to work with key stakeholders to find win-win solutions.