Climate Change Committee

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Toby Perkins MP
Chair of the Environmental Audit Committee
House of Commons
London

02 February 2026

Dear Toby,

I write following my appearance, alongside my CEO Emma Pinchbeck, at the Environmental Audit Committee's inquiry into the Climate Change Committee's advice on the Seventh Carbon Budget (CB7) on 7 January 2026.

Thank you for your Committee's interest in our advice and for inviting us to answer your questions on it. We are grateful for your feedback on engaging parliamentarians in our work. I wanted to follow up with you to provide further clarity in response to some of the points raised during the inquiry.

The role of the Climate Change Committee and the Balanced Pathway

Our recommended level for the Seventh Carbon Budget, a limit on the UK's greenhouse gas emissions over the five-year period 2038 to 2042, is 535 $MtCO_2e$, including emissions from international aviation and shipping. This is 87% below 1990 levels.

The choice to base our advice on a single modelled pathway partly reflects our assessment that the best way forward in several areas is now clearer than it was at the time of our last advice (on the Sixth Carbon Budget).

In many areas, the solutions required have been, or are beginning to be, deployed at scale globally and costs have been falling quickly.

- In almost all parts of the key end-use sectors of surface transport, buildings, and industry, electrification – enabled by rapid decarbonisation and expansion of the electricity system – is now the clear preferred technology for decarbonisation. There is value in narrowing the option space to focus on delivering the key actions required.

- Optionality remains in some sectors. In these, we consider a mix of solutions in our pathway – reflecting the importance of leaving several options open at this stage.

In place of producing multiple pathways, we undertook detailed uncertainty and contingency analysis. This is set out in chapter six of our CB7 advice.

- We assessed the impact that uncertainties in a range of key underlying factors (e.g. population and GDP, emissions accounting, and technology and fuel costs) could have on our pathway.

- We identified contingency measures that could be used to make up potential shortfalls in the pathway if emissions reductions fall off track (for example due to technology markets not scaling as anticipated), or as options to go faster than our modelled approach.

The Balanced Pathway is illustrative, not prescriptive. It shows that the recommended level of the carbon budget is feasible. It meets the requirements in the Climate Change Act to consider economic, fiscal and social circumstances, alongside climate science, relevant technology and energy policy.

The role of a baseline in our analysis

We compare our modelled pathway to Net Zero with a hypothetical baseline pathway that does not include any additional decarbonisation action from the data available on the day of modelling. This enables us to calculate the required abatement, investment needs, costs, and savings associated with the future actions to reduce UK GHG emissions.

The Seventh Carbon Budget investments and savings

Given the balance of investment costs and operating savings, the overall cost of meeting the Balanced Pathway is estimated to be around £4 billion per year on average between 2025 and 2050 (relative to the baseline). This translates to around 0.2% of GDP.

Between 2025 and 2050, an average investment of £26 billion per year will be needed on the Balanced Pathway, peaking in the first half of the transition. The specific mechanisms used to support the transition are a choice for government. We have estimated a range of possible outcomes for public expenditure. We estimate the private sector funds on average 65-90% of the financing requirement, from 2025 to 2050. Public spend per year in our estimates never exceeds 2% of total managed public expenditure.

This investment will be offset by savings of around £22 billion per year on average in operating costs (improved efficiency and higher levels of low-cost renewable energy, reducing gas imports). Savings from more efficient low-carbon technologies will begin to outweigh investment costs during the Seventh Carbon Budget period (2038-2042) and continue to grow towards 2050, leading to a net saving of around £35 billion in 2050.

Renewable energy and electric technologies are more energy efficient than their fossil fuel alternatives, meaning less wasted energy throughout the system. Energy losses are reduced from around 1,000 TWh today to around 500 TWh in 2050.

For households, the most significant actions are considering a heat pump or an EV at the end of life of a current heating system or car. Analysis undertaken for our Seventh Carbon Budget suggested that:

- A typical household's energy bill is projected to be around £700 less in 2050 than in 2025.

- A typical household's driving bill is projected to be around £700 less in 2050 than in 2025.

Policy support will be needed to help with the upfront costs of changing how households heat their homes, but provided this happens, the transition will lead to savings overall for the typical household when considering upfront costs and bills together.

Analysis undertaken for our 2025 progress report to Parliament found that removing electricity policy costs would reduce annual electricity bills by £190 for the typical household with a gas boiler, and £490 for a typical household with a heat pump. The Committee has included recommendations to make electricity cheaper since our 2021 Progress in reducing emissions report.

Energy security

Decarbonising and switching to homegrown low-cost renewables will reduce our reliance on foreign fossil fuels. In the Balanced Pathway, average household energy bills in 2040 would be 15 times less sensitive to a spike in gas prices like the one we had in 2022 than the no further action baseline.

Oil and gas fields in the North Sea are already mature and declining in output, with a 75% reduction in output since 1999 and a further 85% reduction projected by 2050. A transition for the sector will need to be addressed regardless of Net Zero. A reduction in fossil fuel demand in the Balanced Pathway will primarily reduce oil and gas imports rather than North Sea oil and gas production.

Oil and gas demand is much lower in the Balanced Pathway, resulting in avoided imports of 1,589 TWh in 2050. Based on central projections of oil and gas wholesale prices, these avoided imports would be worth £45 billion in 2050. In our pathway, the UK is a net exporter of electricity in 2050.

Approach to early-stage technologies in the Balanced Pathway

During the session, it was put to us that some believe the Balanced Pathway is optimistic and over-reliant on nascent technology, particularly for aviation. Examples given were direct air capture, sustainable aviation fuel (SAF), and bioenergy with carbon capture and storage (BECCS).

- In the Balanced Pathway we only include technologies that are expected to become sufficiently established to reach large-scale operation or adoption in the UK before 2050.

- We use the internationally recognised system of technology readiness levels (TRLs) to determine the level of technology establishment. We apply a guiding threshold of TRL 6 – generally only including technologies that we assess as being already at or above this level. This represents those that have reached the stage of being demonstrated in a relevant environment.

- For emerging technologies in our pathway (those at TRL 6–7, including synthetic SAF and DACCS), we generally seek to minimise reliance on them as a sole solution and leave scope for optionality.

- Our advice on aviation recommends a balanced approach to decarbonising and offsetting aviation emissions through demand management, efficiency improvements, Sustainable Aviation Fuel (SAF), and engineered removals. The exact balance between these measures is uncertain, but all must be pursued to ensure that the overall emissions contribution of the aviation sector is Net Zero by 2050. If low-carbon aviation technology deployment is slower than expected, more demand management may be needed. Conversely, if technologies deploy more rapidly, aviation demand could be higher (provided the rest of the pathway doesn't require that flexibility).

- 60% of the emissions reductions from today to 2040 come from electrification of demand in key sectors including buildings, industry, and transport. Most of the key technologies required in these areas are already at TRL 9 or above, meaning they are proven technologies that are ready to be deployed at scale.

Biomass

During the session, it was put to us that the Balanced Pathway assumptions that imported biomass can be phased out in favour of domestic production would be a significant constraint. In the session we clarified that the Committee had considered land use and agriculture in setting our evidence out with around 71% of UK land area currently used for agricultural production. Our pathway includes energy crop planting on almost 3% of UK land area by 2050.

Demand measures and behaviour change

We were asked whether behaviour change should "be treated as a formal delivery pillar for the Seventh Carbon Budget on a par with technology deployment".

- Behaviour change is included in our modelling. Demand measures make up 22% of emissions reduction by 2040. Around half of these emissions reductions are from measures to increase resource and/or energy efficiency, such as home insulation, more efficient use of resources in industry, and improved efficiencies of high-carbon technologies. The other half is from behaviour change (called 'sustained low-carbon choices' in our methodology).

- Our assumptions on behaviour change were based on the best peer-reviewed evidence from other countries and on real data on behaviour in the UK. Examples include:

  - Our advice on diet in the Seventh Carbon Budget is based on the historical trends from UK consumer behaviour together with peer-reviewed evidence on the effectiveness of different interventions (as outlined in our methodology report).

  - Our advice on modal shift is based on peer reviewed studies and evidence from leading countries, such as Germany and the Netherlands as well as towns and cities across the UK. It suggests a 7% change in behaviour away from cars to public transport or active travel is achievable.

  - Our advice on aviation is that the sector needs to take responsibility for its emissions reaching Net Zero by 2050. The cost of this should be reflected in the cost to fly. This will help manage growth in aviation demand in line with Net Zero.

- We also recognise the role that household choices have to play in enabling the uptake of key technologies - for example through the decision to buy an electric vehicle or a heat pump. We constrain the pace of these changes based on evidence of credible demand from the UK and comparable markets.

- We tested the most impactful household low-carbon choices (including both the uptake of low-carbon technologies and behaviour change measures) with our citizens' panel. People were generally on board with the household low-carbon choices, provided there was adequate government support. People wanted government to provide accurate information and stressed the importance of highlighting co-benefits (especially around improved health). They were clear that Government will need to provide support with the upfront costs of technologies where necessary and ensure that affordable and attractive alternatives (such as public transport and plant-based alternatives) are easily available.

I would like to again thank Parliament for engaging and scrutinising our advice to government, and I have also taken away the request to make sure that we are doing all we can to reach parliamentarians with our evidence as part of our statutory duties. If you require further clarity on any of these issues, please do let me know.

Yours sincerely,

Nigel Topping CMG
Chair, Climate Change Committee