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the Environment

Submission to the inquiry by the House of Commons Energy and Climate Change Committee on 'Setting the fifth carbon budget'.

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February 2016

**ESRC Centre for Climate Change Economics and
Policy**

**Grantham Research Institute on Climate Change and
the Environment**

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The Grantham Research Institute on Climate Change and the Environment was established in 2008 at the London School of Economics and Political Science. The Institute brings together international expertise on economics, as well as finance, geography, the environment, international development and political economy to establish a world-leading centre for policy-relevant research, teaching and training in climate change and the environment. It is funded by the Grantham Foundation for the Protection of the Environment, which also funds the Grantham Institute for Climate Change at Imperial College London. More information about the Grantham Research Institute can be found at: <http://www.lse.ac.uk/grantham/>

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Energy and Climate Change Committee inquiry on ‘Setting the fifth carbon budget’

Executive summary

1. This is a submission by the ESRC Centre for Climate Change Economics and Policy and Grantham Research Institute on Climate Change and the Environment at the London School of Economics and Political Science. It offers feedback on the recent advice by the Committee on Climate Change (CCC) on the fifth carbon budget, published in December 2015.
2. The main recommendations are as follow:
 - The proposed carbon budget for 2028-32 is sound and consistent with the Climate Change Act;
 - In light of the Paris Agreement the Government should consider, in due course, recommendations from the Committee on Climate Change about amendments to the Act to account for the global objectives of “holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels”, and to “achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century”. Such amendments may in turn require a subsequent review of existing carbon budgets;
 - Emissions from international shipping should be included in the budget, as recommended by the CCC;
 - For emissions covered by the EU ETS (traded sector), the Government should consider the merit of using ‘gross’ accounting, based on a least-cost emission reduction pathway for the UK, rather than the current system of ‘net’ accounting, based on an estimate of the EU ETS cap;
 - A clear long-term commitment, transparent rules and independent scrutiny are needed not just at the level of carbon targets, but also for key carbon policies. This would help to re-establish investor confidence and ensure the budgets are cost effectively met;
 - There is scope for simplifying the UK climate change policy landscape, which is currently relatively complex. This would reduce the administrative burden on businesses and strengthen policy delivery.

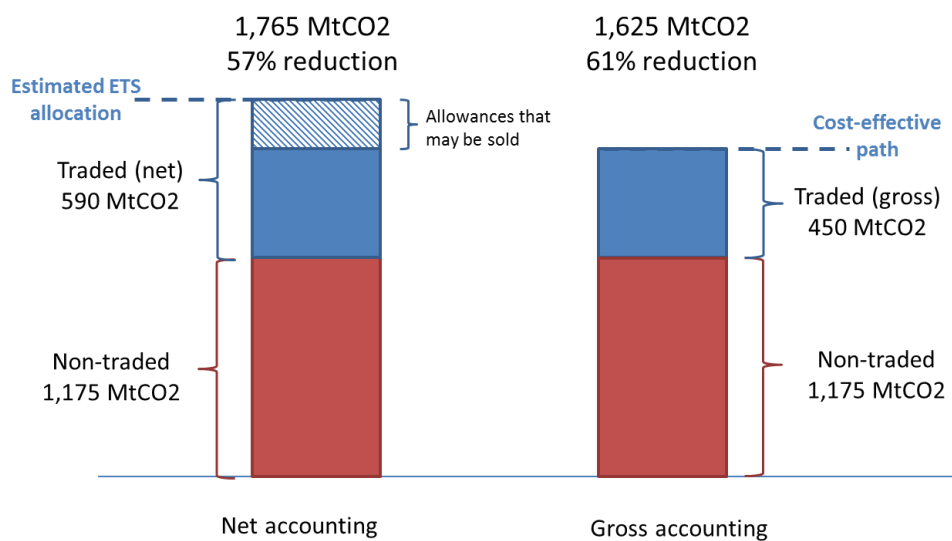
**Question 1 and 2: What is your view on the Committee on Climate Change’s advice on the fifth carbon budget?
Should the Government set the fifth carbon budget in line with the Committee on Climate Change’s advice?**

3. **The fifth carbon budget** prepared by the Committee on Climate Change (CCC) is **sound and consistent with the provisions of the Climate Change Act**. That is, the budget sets the least-cost emissions reduction pathway for meeting the Act's long-term target: "the net UK carbon account for the year 2050 is at least 80% lower than the 1990 baseline". This target was based on the interim advice from the Committee on Climate Change in October 2008 (Turner, 2008) that the 2050 emissions target for the UK should be consistent with global policy "to limit the central expectation of global temperature rise to, or close to, 2°C and that it should ensure that the probability of crossing the extreme danger threshold of 4°C is reduced to an extremely low level (e.g. less than 1%)".
4. However, the Paris Agreement (UNFCCC, 2015) sets a more stringent long-term climate change objective than the 2°C objective on which the Climate Change Act was predicated. Notably, the Agreement states a global objective of holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels" (Art 2). The Agreement also sets a greenhouse gas neutrality target for the second half of the century: "achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century" (Art. 4.1). In comparison, the Climate Change Act requires that UK emissions of greenhouse gases are reduced to at least 80 per cent below 1990 levels by 2050, consistent with a goal of limiting the central expectation of global temperature rise to, or close to, 2°C. The Act does not include any emissions objective beyond 2050.
5. **The UK Government should consider, in due course, amendments to the Act to account for this increased ambition.** The Paris Agreement does not set a specific goal for limiting the rise in global mean surface temperature. Greater precision may arise from future negotiations between Parties to the UNFCCC and the Paris Agreement. However, at this stage, it is clear that the specific target will be more ambitious than that assumed by the Committee on Climate Change when it offered its interim advice in 2008 about the 2050 emissions goal. Given that the Act already mandates a reduction in 2050 emissions of more than 80 per cent compared with 1990, the 2050 goal may not need to be amended, as long as the precise implicit target is widely understood and accepted. However, it would be desirable for the Act to be amended to explicitly include a zero emissions target for the UK for a fixed date in the second half of the century. Again the precise date will depend on the specific goal for limiting temperature. The CCC should continue to monitor discussions between Parties to the UNFCCC and the Paris Agreement, as well as outputs from bodies such as the Intergovernmental panel on Climate Change, and, when appropriate, make recommendations about amendments to the targets in the Climate Change Act.
6. Any amendments to the explicit, or implicit, targets in the Act may require the **fourth and fifth carbon budgets to be reviewed to ensure that they are in line with the least cost path emissions reduction pathway.**
7. Furthermore, the UK Government should broaden the fifth carbon budget to **include emissions from international shipping**, as recommended by the CCC. The Committee makes a convincing case that measurement and monitoring for

international shipping have been resolved, and it is important to bring this emission source into the accounting framework.

8. When setting the budget, **the Government should consider the merit of using 'gross' rather than 'net' accounting** for emissions in the traded sector. Currently, under the Climate Change Act, performance against carbon budgets is measured by the 'net' UK carbon account. This means that the emissions from those sectors covered by the European Union Emission Trading System (EU ETS) - the so called traded sectors – are based on the UK's share of the ETS cap, rather than on the optimal emissions reduction that could be achieved at the least cost. The share of emissions allowances allocated to the UK in the EU ETS post-2020 is currently uncertain, and the traded sector's share of the budget is therefore based on the best estimate by the CCC. This is 590 MtCO₂ over the fifth carbon budget period.
9. This is different from the way the budget is calculated for those sectors outside the EU ETS – the 'non-traded sectors'. This is based on their actual emissions and an estimate of the most cost-effective emission reduction path consistent with the 2050 target in the Climate Change Act. This is 1,175 MtCO₂ in the fifth carbon budget.
10. An alternative approach would be to rely on a 'gross' accounting system. This would imply estimating the most cost-effective emission reduction path for the traded sector, similar to the way the non-traded sector emissions are calculated. This would remove the uncertainty around the estimated EU ETS allowances for the UK and the basis of the budget would be UK's actual emissions performance in the traded sector. Whatever the allocation of EU ETS allowances would be for the UK, the traded sectors would be able to sell the difference between their optimal path and the EU ETS allocation to the market (see Figure 1 below).
11. The CCC already identifies the cost-effective emission path across the UK economy, disregarding what the allocation of emissions allowances in the EU ETS would be. In this case the recommended budget estimates an average 61 per cent reduction from 1990 to 2030 across all sectors, rather than 57 per cent under 'net' accounting.
12. There are advantages and disadvantages in the net and gross accounting systems. The net system provides more flexibility in the traded sector. If actual emissions unexpectedly deviate from the ETS allocation, businesses can choose to trade the difference in the market. However, it also tethers the carbon reductions in the traded sector to a level that is based on the estimated number of future EU ETS allowances, rather than on a cost effective path. It also leads to a discrepancy between the way the traded and non-traded sectors are expected to contribute to the budget. Moving to a gross system would ensure the UK's actual emissions performance in the traded sector is recognised in the carbon budgets. This would provide stronger incentive to implement policies additional to the EU ETS price (such as renewable subsidies and the carbon price floor) to ensure that the optimal emission reduction path is achieved both in the traded and non-traded sector.

Figure 1. Carbon budget under net and gross accounting



Source: Author's calculation

Question 3: What challenges will the Government face in meeting the fifth carbon budget?

13. The 2015 Progress Report to Parliament by the CCC (2015) stressed that **the existing framework of climate change policies leaves a policy gap to the achievement of the fourth carbon budget and the cost-effective path to the 2050 target. This holds true also for the fifth carbon budget.**
14. Some recent events have increased the risk that the UK will fail to meet the budgets, while others have decreased it. Notably, **the Paris Agreement negotiated in December 2015 should help the UK to meet the carbon budgets at least-cost.** The Agreement provides a strong international commitment to tackle climate change and so reduces the risk that ambitious domestic policy will harm the competitiveness of the small number of sectors at genuine risk (e.g. aluminum producers, steel and cement). The Paris Agreement could also give a boost to clean tech innovation through initiatives like Mission Innovation, of which the UK is a part.
15. However, the recent cuts to public support for low-carbon technologies (such as for onshore wind, solar PV and carbon capture and storage) could **hamper the UK's ability to stimulate the deployment of existing technologies and the development of innovative sectors that can become 'winners' in the move to a low-carbon economy.** By continuing to invest in deployment and increasing support to low-carbon research and development the UK could generate significant long-term economic benefits (see for example Dechezleprêtre et al., 2016)
16. **The broad changes to UK climate change and energy policies that followed the general election also reduced investor confidence, especially on carbon capture**

and storage and renewable energy sources. This will likely make both the fourth and fifth carbon budget harder to achieve.

17. A clear long term commitment, transparent rules and independent scrutiny are needed to re-establish investor confidence and ensure the budgets are met.

The UK already has such arrangements at the level of carbon budgets, but may need equivalent solutions to ensure the credibility of climate change policies more broadly. Important lessons can be learned from monetary policy, which considers predictability as one of the yardsticks against which a good policy regime is measured. Central bankers have learned that predictability is associated with a transparent strategy, procedural clarity and clearly explained decision-making. A similar approach could be adopted in energy policy, for example when deciding the subsidy level for renewables. Delegating some aspects of energy regulation to independent bodies may also help to de-politicise the energy sector and increase investor trust (Fankhauser, 2015).

18. There is also scope for simplifying the UK climate change policy landscape, which is currently relatively complex (Bassi et al., 2013).

There are significant policy overlaps, for instance between carbon pricing policies, which reduce the overall efficiency of the policy framework and create large disparities in the (implicit or explicit) carbon price affecting businesses and fuels. A reform of current policies should aim to achieve a stronger and more uniform carbon price across the UK economy, while reducing the administrative burden on the Government and businesses (Bassi et al., 2013). This would enable to meet its carbon budgets more cost effectively.

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