



House of Commons
Environmental Audit
Committee

Carbon budgets

Third Report of Session 2009–10

Volume I

Report, together with formal minutes

*Ordered by the House of Commons
to be printed 5 January 2010*

The Environmental Audit Committee

The Environmental Audit Committee is appointed by the House of Commons to consider to what extent the policies and programmes of government departments and non-departmental public bodies contribute to environmental protection and sustainable development; to audit their performance against such targets as may be set for them by Her Majesty's Ministers; and to report thereon to the House.

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The Reports and evidence of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including substantive press notices) are on the Internet at: www.parliament.uk/eacom/

A list of Reports of the Committee from the current Parliament is at the back of this volume.

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Summary

The Government is broadly right to use the objective of limiting the rise in average global temperature to no more than 2°C as the backbone for its targets and budgets. Its approach to setting emission reduction targets based on equalising per capita emissions globally is sensible and equitable. But the Government must be ready, if needed, to establish credible emissions reduction pathways that go well beyond what is currently regarded as politically possible.

The Government's position in international climate change negotiations must be predicated on getting emissions to peak as soon as possible. This will be very challenging but a failure to reverse the rise in global emissions before 2020 could render much of the UK's domestic action meaningless.

The Committee on Climate Change is right to use the IPCC's findings as a basis for its work. But they must keep scientific developments under review, first as part of the review that will be undertaken in preparing its advice on the fourth budget period, and second following the publication of the IPCC's 5th Assessment Report. The Committee on Climate Change and the Government should take into account that the growing evidence base for climate change impacts is reducing levels of scientific uncertainty, emissions are still growing and impacts are occurring faster and in more damaging ways than was previously thought likely. Both the Committee on Climate Change and the Government must be open to the possibility that as our scientific knowledge and understanding grows the case for taking action beyond the commitments we have already made will grow. There is a case for taking a more precautionary approach and adopting targets at the upper end or in excess of what is currently recommended by the IPCC.

There are currently no credible ways to reduce emissions faster than the Committee on Climate Change has recommended. The Government should prioritise reducing the likelihood that temperatures will exceed 2°C down from a level that is 'as likely as not' to at least 'unlikely'. This is more important than aiming for a lower temperature rise target.

Ministers must ensure that policy makers in all parts of government have a good understanding of the importance of limiting cumulative emissions.

We recommend the Government should move to a target of a 42% cut by 2020 and should implement the intended budget irrespective of whether or not the EU moves to a 30% target for cutting its emissions. Setting a target of 42% now and moving to the intended budget should increase the long-term stability of the policy framework by removing any uncertainty about whether the higher target and budget might be imposed. But the Government should only move to increase the 2020 target once it is on track to meet its current targets and budgets.

The Government must deliver the carbon savings it has identified in the Low Carbon Transition Plan and then increase the rate at which emissions are falling to meet the 2-3% annual reduction recommended by the Committee on Climate Change. In doing so it must take account of the milestones that the Committee is using to monitor progress. In responding to the call by the Committee on Climate Change for a 'step change', the

Government must strengthen existing policies and bring forward new measures, which must be rigorously monitored. Strengthening the policy framework and bringing forward new measures to get the UK to meet its existing targets and budgets are higher priorities than setting more stretching targets, even if new targets would be justified on the basis of science. Unless we are on track to meet current targets, increasing targets will only widen the shortfall in delivery.

The Government cannot place too much reliance on the price of carbon to drive investment in low-carbon technologies as the current price is too low and too volatile. It must put the right regulatory framework in place to ensure that the right investment decisions are made. It is vital that we do not invest in the wrong high-carbon infrastructure. Through interventions in the market and complimentary policy measures, using the full range fiscal and policy instruments available, the Government should drive up the price of carbon steadily to a level where renewable and low-carbon investments become economically viable.

The management of the carbon budget is as vital as the management of the fiscal budget. It requires the same level of political attention and civil service commitment, and the same degree of parliamentary scrutiny. Our successors should lead the way in rigorously monitoring the robustness of the carbon budgets and the progress the UK makes in meeting them.

1 Introduction

1. Man-made emissions of greenhouse gases are a major threat to our economic, social and ecological well-being. Climate change is not simply an environmental issue and it requires a response founded on the principles of sustainable development that changes today's unsustainable patterns of production and consumption.¹ But a transformation of our economic and social systems on the scale that is required will be slowed by political, social and economic inertia. A thorough understanding of the political issues raised by climate science, debate around the difficult political choices and careful analysis of the costs of action and the probable higher cost of inaction or delayed action are essential if we are to judge how best to reduce emissions.

2. The Government's overarching climate change goal is to stabilise atmospheric concentrations of greenhouse gases at a level that avoids dangerous climate change.² It aims to do this by:

- demonstrating leadership to increase the chances of reaching a binding international agreement on emissions of greenhouse gases;
- establishing an economically credible emissions reduction pathway to 2050; and
- providing clarity and predictability for planning and investments in a low-carbon economy.³

Any plan must also be scientifically credible.

3. As with any plan to husband resources and live within our means, we need to know what our emissions of dangerous greenhouse gases should be by budgeting prudently for what we can 'spend' now and in the future. Under the Climate Change Act 2008 the Government has set targets for reducing emissions. It also provides for carbon budgets that place legally binding ceilings on UK emissions over five-year periods. In its first report, the Committee on Climate Change has advised on the level of the budgets for the first three budget periods: 2008–2012, 2013–2017, and 2018–2022. It will give its advice on the fourth budget period in 2010. The Government has announced carbon budgets for the first three budget periods⁴ and set out its strategy for moving to a low-carbon economy.⁵ In making this transition most sectors of the economy will adopt new low-carbon technologies and otherwise carry on as before. As now, some will grow more rapidly than others; a few, like those heavily dependent on fossil fuels may shrink. With careful planning it should be possible to make the transition without damaging prosperity, levels of employment or inhibiting growth. To do this will require a truly cross-departmental response from government because reducing emissions in one sector of the economy can depend on

1 University of Copenhagen, *Synthesis Report from Climate Change: Global Risks, Challenges & Decisions*, held in Copenhagen March 2009, <http://climatecongress.ku.dk/pdf/synthesisreport>

2 Defra, *UK Climate Change Programme, Annual Report to Parliament*, July 2007

3 DECC, *Climate Change Act 2008 Impact Assessment*, March 2009

4 HMT, *Budget 2009: Building Britain's future*, April 2009

5 DECC, *The Low Carbon Transition Plan: National strategy for climate and energy*, July 2009

action being taken in other sectors of the economy; the decarbonisation of transport using electric vehicles, or reducing emissions from domestic heating depend significantly on the successful decarbonisation of electricity generation.

4. We launched our inquiry into carbon budgets on 18 March 2009. We received evidence from a number of different stakeholders and held four oral evidence sessions; we would like to thank all contributors for providing such invaluable insights.⁶ We drew on the Committee on Climate Change's first report, *Building a low-carbon economy*, and the Budget in 2009 as both dealt with carbon budgets. We were also able to draw on two documents published during the course of our inquiry: the Government's *Low Carbon Transition Plan* and the Committee on Climate Change's first annual progress report to Parliament, *Meeting Carbon Budgets—the need for a step change*.

5. In this inquiry we examined the extent to which the targets for reducing emissions and the carbon budgets announced by the Government will help to create the stable long-term policy framework needed to ensure that the UK makes a fair contribution to the global objective of avoiding dangerous climate change and a successful transition to a low-carbon economy. We examined the role that carbon budgets have to play in addressing some of the several hard choices we face:

- How do we balance the action demanded by climate science with what is practicable, credible, feasible, affordable and politically acceptable?
- How do we balance the cost of acting to reduce emissions alongside the cost of adapting to climate change?
- How can we take account of the cost of inaction?
- How far should we be guided by a precautionary approach and over-engineer our response given that this will inevitably be done at some cost?
- How do we balance the needs of the distant future against the needs of the near future and the cost to present generations against the cost to future generations?
- How do we create the political will to act on emissions:
 - in international negotiations (through leadership, diplomacy, co-operation etc.)
 - in individuals and organisations (through changes to regulation, pricing, taxation, education etc.)

⁶ All those who gave evidence to the inquiry are listed at the end of our report.

2 The global objective

Limiting the rise in average global temperature

6. Average mean global temperature has already gone up by 0.8°C above pre-industrial levels and even if concentrations of greenhouse gases could be fixed at 2005 levels, the world could be committed to an eventual warming of between 1.4 to 4.3°C.⁷ In order to say what limit should be placed on emissions we must first decide what constitutes dangerous climate change. Establishing where the boundary between acceptable and dangerous climate change lies is a political question but one that must be informed by science. Defining ‘dangerous climate change’ is ultimately a value judgement.⁸ Lord Turner of Ecchinswell, Chairman of the Committee on Climate Change, explained that this was because of uncertainties in climate science and in our understanding of how human welfare is affected by climate change.⁹ Science can tell us what the likely response of the climate will be to a particular concentration of greenhouse gases and what the impacts of climate change will be. But it cannot do this with absolute certainty and what we know is described in terms of probabilities and likelihoods. Political judgement must be exercised to determine where boundaries lie. A report written following a scientific congress in Copenhagen in March 2009 said:

While there is not yet a global consensus on what levels of climate change might be defined to be ‘dangerous’, considerable support has developed for containing the rise in global temperature to a maximum of 2°C above pre-industrial levels.¹⁰

7. Recent observations have shown that societies and ecosystems are vulnerable to even modest levels of climate change, with poorer nations and communities, ecosystem services and biodiversity particularly at risk. A rise in temperature of more than 2°C is likely to cause major societal and environmental impacts through the next century and beyond.¹¹ In 2001 the consensus was that a rise of 2°C would avoid the most serious impacts. Professor Brian Hoskins, a member of the Committee on Climate Change, said it was quite possible that the world would become a more dangerous place even if the rise in temperature could be kept to 2°C.¹² The synthesis report produced following a recent scientific congress in Copenhagen acknowledged that adaptation strategies would help societies cope with rises of less than 2°C but argued that beyond 2°C the scope for adaptation of society and ecosystems was thought to decline rapidly.¹³ We should not be complacent about the kinds of impacts that might occur. It is likely that as temperature rises the cost of adaptation will

7 Committee on Climate Change, First Report of the Committee, *Building a low carbon economy— the UK’s contribution to tackling climate change*, December 2008, p20.

8 University of Copenhagen, *Synthesis Report from Climate Change: Global Risks, Challenges & Decisions*, held in Copenhagen March 2009, <http://climatecongress.ku.dk/pdf/synthesisreport>

9 Q 228

10 University of Copenhagen, *Synthesis Report from Climate Change: Global Risks, Challenges & Decisions*, held in Copenhagen March 2009, <http://climatecongress.ku.dk/pdf/synthesisreport>

11 University of Copenhagen, *Synthesis Report from Climate Change: Global Risks, Challenges & Decisions*, held in Copenhagen March 2009, <http://climatecongress.ku.dk/pdf/synthesisreport>

12 Q 2 [Hoskins]

13 University of Copenhagen, *Synthesis Report from Climate Change: Global Risks, Challenges & Decisions*, held in Copenhagen March 2009, <http://climatecongress.ku.dk/pdf/synthesisreport>

rise rapidly and those countries that cannot afford to adapt will be most disadvantaged. A key point in the Copenhagen Accord was a commitment to “reduce global emissions so as to hold the increase in global temperature below 2°C”.¹⁴

8. If greenhouse gas emissions continue to rise unchecked, it is likely that global warming will exceed 4°C by the end of the century.¹⁵ The Intergovernmental Panel on Climate Change (IPCC) has said that most developed countries need to reduce their emissions (relative to 1990 levels) by between 25% and 40% by 2020, and by between 80% and 95% by 2050, to have a 50:50 chance of stabilising temperature increases below 2°C. The Government said its targets for reducing emissions and carbon budgets were consistent with the conclusions of the IPCC and its objective was to limit global warming to 2°C.¹⁶ The Secretary of State for Energy and Climate Change, the Rt Hon Edward Miliband MP, told us remaining below 2°C would prove to be very challenging.¹⁷

9. The Committee on Climate Change decided the UK’s objective should be to keep the increase in average mean global temperature by 2100 as close to 2°C as possible and the probability of the increase in global mean temperature exceeding 2–4°C as low as possible.¹⁸ The Committee believed it was no longer possible with certainty, or even with high probability, to avoid the danger zone entirely.¹⁹ There is little chance of keeping temperature increases below 2°C; to do so would require action far in excess of what the Committee on Climate Change had proposed.²⁰ The goal must be to reduce the risk of exceeding 4°C to the lowest achievable levels. According to the Committee on Climate Change, to meet this objective global emissions must peak soon and then fall at 3–4% per annum thereafter.

10. In setting targets for reducing emissions and carbon budgets the Committee on Climate Change has had to make judgements and compromises.²¹ Limiting the rise in temperature to less than 2°C could possibly be justified scientifically²² (although we are already destined to experience over 1°C of warming based on the current atmospheric concentration of greenhouse gases) and reducing the probability of exceeding 2°C (currently 50%) can be justified against the political and social costs of achieving that goal. However, neither is currently politically feasible, as the outcome of the Copenhagen Summit demonstrated only too depressingly.

11. Professor Paul Ekins, Professor of Energy and Environment Policy at King’s College London, accepted that it could be argued that the carbon budgets recommended by the Committee on Climate Change were the maximum consistent with policy possibility and

14 UNFCCC, *The Copenhagen Accord*, December 2009, http://unfccc.int/files/meetings/cop_15/application/pdf/cop15_cph_auv.pdf

15 Met Office, *Four degrees and beyond*, September 2009

16 Ev 101

17 Q 257

18 Qq 228-229

19 Committee on Climate Change, *First Report of the Committee, Building a low carbon economy— the UK’s contribution to tackling climate change*, December 2008, p20

20 Oral evidence taken before the Environmental Audit Committee on 4 February 2009, HC (2008–09) 234, Qq 3-4

21 Q 155 [Allen]

22 Ev 75

credibility.²³ Lord Turner told us that the Committee had sought to describe a path that was technically feasible, affordable and consistent with limiting the rise in global temperatures to a level that was not catastrophic and that was manageable in terms of the adaptation cost.²⁴ Professor Hoskins said the Committee had been unable to identify a realistic scenario or credible emissions reduction pathway that went beyond what it had proposed, characterising its recommendations as a compromise between “what is possible, just possible if we really work at it, and what we would like in a perfect world”.²⁵

12. We accept that the Government is broadly right to use the objective of limiting the rise in average global temperature to no more than 2°C as the backbone for its targets and budgets. But it also needs to be thinking about and planning the options available for reducing emissions further and faster if the scale of the crisis demands bigger sacrifices now to redeem the future. This planning should include strategies for securing political acceptance as well as researching and developing new technical solutions. **The Government must be ready, if needed, to establish credible emissions reduction pathways that go well beyond what is currently regarded as politically possible.** At the very least this will be needed as an insurance option if doing everything that is currently planned turns out not to be enough. Some policy options, like personal carbon trading, are currently discounted because they are politically unachievable or too costly. **The Government must shape and inform public opinion so that the UK will be able, if needed, to reduce its emissions at rates in excess of what is possible currently.** A failure to make this investment now could lead to an outcome that is more economically, socially and/or politically challenging than the options that are currently discounted.

Peaks and tipping points

13. The rate at which we emit greenhouse gases must fall, and fall soon. The Copenhagen Accord recognised the need to achieve “the peaking of global and national emissions as soon as possible”.²⁶ The Committee on Climate Change based its analysis on an assumption that global emissions of greenhouse gases will peak before 2020. While it focused on 2016, David Kennedy, Chief Executive of the Committee on Climate Change, told us that its conclusions do not change much if the global peak in emissions occurs in 2015, 2016 or 2020.²⁷ But he said the goal of limiting the rise in temperature to 2°C could not be met if global emissions peaked later than 2020.²⁸

14. But at present, global emissions continue to rise;²⁹ a recent report suggested that emissions rose 29% between 2000 and 2008 with all of the growth in emissions in developing countries (although at least a quarter of the growth in these countries was due

23 Ev 75

24 Oral evidence taken before the Environmental Audit Committee on 4 February 2009, HC (2008–09) 234, Q 6

25 Q 5 [Hoskins]

26 UNFCCC, *The Copenhagen Accord*, December 2009, http://unfccc.int/files/meetings/cop_15/application/pdf/cop15_cph_aav.pdf

27 Oral evidence taken before the Environmental Audit Committee on 4 February 2009, HC (2008–09) 234, Q 2 [Mr Kennedy]

28 Oral evidence taken before the Environmental Audit Committee on 4 February 2009, HC (2008–09) 234, Q 2 [Mr Kennedy]

29 Q 76

to the production of goods for consumption in developed countries).³⁰ The Tyndall Centre has argued that, whilst theoretically a peak in 2016 does permit much lower and more politically acceptable annual emission reduction rates, it is “at best highly optimistic and at worst dangerously misleading”.³¹ The difficulty and inertia associated with decarbonising energy supply and the growth of emissions from countries like India and China make it unlikely that global emissions will peak in 2015 or 2016.³²

15. Not all of the carbon dioxide released into the atmosphere remains there. Over half of it is removed by land and ocean carbon dioxide ‘sinks’. The fraction of carbon dioxide removed by these sinks has decreased over the last 50 years and there is some evidence that the fraction will decrease further over coming decades under high-emissions scenarios. As this weakening of natural sinks progresses it will become harder and harder to keep the concentration of greenhouse gases in the atmosphere at a level likely to avoid dangerous climate change.³³

16. Carbon-cycle feedbacks, where a climate induced change accelerates climate change, are not fully understood. The loss of sea ice due to warming seas is an example of such a feedback. It could result in more of the Sun’s energy being absorbed by the sea rather than reflected by white ice sheets accelerating the loss of ice sheets.³⁴ Another feedback mechanism is linked to the melting tundra. Due to global warming permafrost is melting releasing methane that could lead to further warming.³⁵ The models used in the IPCC process only include fast feedback processes such as changes in sea ice, water vapour and aerosols. Slow feedbacks, such as ice sheet shrinkage, changes in vegetation or changes in emissions from land and sea in response to global warming, could mean that climate change could happen much faster than models predict.³⁶ The IPCC has acknowledged that its targets for reducing emissions may be underestimated due to missing carbon-cycle feedbacks.³⁷ They may be missing because they are insufficiently understood for the risks to be effectively quantified.

17. Tipping points occur when a particular parameter in a system changes, causing the system to ‘flip’ into alternative stable state, for instance, from sea ice to open ocean. Dr James Hansen has argued that they arise where, without any additional change in climate, rapid changes in environmental or ecosystems proceed practically out of control.³⁸ A study by the Goddard Institute for Space Studies found that global warming of 0.6°C in the past 30 years means only moderate climate change could result in the disintegration of the West Antarctic ice sheet and Arctic sea ice. Dr Hansen has argued that the loss of Arctic Sea Ice or

30 BBC News website, *Earth heading for 6°C of warming*, 4 November 2009, news.bbc.co.uk/1/hi/sci/tech/8364926.stm

31 Tyndall Centre, *Making a climate commitment: analysis of the first report (2008) of the UK Committee on Climate Change*, March 2009

32 Tyndall Centre, *Making a climate commitment: analysis of the first report (2008) of the UK Committee on Climate Change*, March 2009

33 Ev 22–23

34 Parliamentary Office of Science and Technology, POSTnote, *Arctic changes*, Number 334, June 2009

35 Parliamentary Office of Science and Technology, POSTnote, *Arctic changes*, Number 334, June 2009

36 New Scientist, ‘*Climate Catastrophe*’, 28 July 2007

37 Public Interest Research Centre, *Climate Safety*, November 2008

38 Hansen et al, *Target Atmospheric CO₂: where should humanity aim?*, *Open Atmospheric Science Journal*. (2008), vol. 2, pp. 217-231

the West Antarctic Ice Sheet are potential tipping points.³⁹ A recent study has reported that the East Antarctic ice sheet, which was thought to be stable, has been losing mass for the last three years.⁴⁰ Tim Lenton et al have argued that society may be lulled into a false sense of security by smooth projections of global change as variety of elements within the Earth system could reach tipping points within this century due to man-made climate change.⁴¹ It is difficult to predict when and how a system will flip. It can be a linear response to increasing pressure or occur in a single catastrophic event or a series of catastrophes or as an accelerating and self-feeding disaster. Debate about the resilience of natural systems to such changes is ongoing.

18. Aubrey Meyer, co-founder of the Global Commons Institute, expressed concern about how carbon-cycle feedbacks in climate models and failure of carbon sinks were treated by the Committee on Climate Change in the work that underpinned its recommendations.⁴²

19. Irrespective of how quickly the Copenhagen Accord can be translated into a legally binding treaty (if this can happen at all), it is vital that global emissions peak as soon as possible if domestic action on emissions is to be meaningful. Taking action later will cost much more than action taken now.⁴³ Delay could mean that the rate of emissions reductions needed in the post-peak period would be much more challenging, going beyond what the Committee on Climate Change believes is feasible. It also increases the chance that we will pass some tipping point in the climate system. **The Government's position in international climate change negotiations must be predicated on getting emissions to peak as soon as possible. This will be very challenging but a failure to reverse the rise in global emissions before 2020 could render much of the UK's domestic action meaningless. But we have to prepare for the worst, and in doing so drive home the message that a stitch in time is worth nine. The Committee on Climate Change should be charged with and resourced to advise on the changes to the UK's targets for reducing emissions and carbon budgets which may be required if global emissions do not peak by 2020. The impact of global emissions failing to peak before 2020 should be also considered in Defra's Climate Change Risk Assessment so that the implications of failing to set and achieve the necessary budgets can be fully understood. The Committee on Climate Change's Sub-Committee on Adaptation should be asked to consider the implications for adaptive action of global emissions peaking after 2020.**

Equity and burden sharing

20. Rich countries were responsible for emitting around 70% of the current stock of greenhouse gases which dwell in the world's atmosphere. The Kyoto Protocol recognised that there were 'common but differentiated' responsibilities for addressing climate change because of the historic contribution made by developed countries. G8 nations signed up to

39 Hansen et al, *Target Atmospheric CO₂: where should humanity aim?*, Open Atmospheric Science Journal. (2008), vol. 2, pp. 217-231

40 BBC News, *East Antarctic ice sheet may be losing mass*, 22 November 2009

41 Lenton, T. M., H. Held, E. Kriegler, J. W. Hall, W. Lucht, S. Rahmstorf and H. J. Schellnhuber (2008) *Tipping elements in the Earth's climate system*, Proceedings of the National Academy of Sciences USA 105(6), 1786–1793.

42 Qq 62–63 and Ev 16-18

43 HMT, *The Stern Review: The Economics of Climate Change*, October 2006

a global target of 50% reductions by 2050 but recognised that they would need to make much deeper cuts in their own emissions because of the greater responsibility borne by developed countries for the damage already done. Many developing countries argue, with some justification, that their energy consumption must grow and their emissions may have to rise as they grow their economies and lift more of their citizens out of poverty; in India some 450 million people are not connected to the electricity grid.⁴⁴

21. The issues of equity and burden sharing mean different countries face different ethical choices in setting their own targets.⁴⁵ Lord Stern, IG Patel Professor of Economics and Government and Chair of the Grantham Institute for Climate Change and the Environment at the London School of Economics, believed that climate stabilisation would need all countries to achieve broadly the same per capita emissions—pointing out the obvious truth that if any large group of people was significantly above average a correspondingly large group would have to be well below average. But the average was sufficiently demanding for it to be unlikely that the latter group could emerge and still retain a feasible lifestyle.⁴⁶ The Committee on Climate Change found it difficult to imagine a global deal that allowed developed countries to have emissions per capita in 2050 that were significantly above a sustainable global average.⁴⁷

22. Given a world population predicted to be 9 billion by 2050, per capita emissions will have to be running at about 2 tonnes CO₂e⁴⁸ per annum if the concentration of greenhouse gases is not to exceed levels likely to induce dangerous climate change.⁴⁹ Each year the United States, Canada, and Australia emit around 20 tonnes CO₂e per capita, Europe and Japan around 10 tonnes, China around 5 tonnes, and India around 2 tonnes, while most of sub-Saharan Africa emits much less than 1 tonne.⁵⁰ An 80% reduction would therefore bring Europe down to about 2 tonnes per capita. USA, Australia and Canada need cuts nearer 90%. But even if OECD emissions can be reduced to almost zero, non-OECD countries will have to emit no more than 2–2.5 tonnes per capita as 8 billion people will live there.⁵¹

23. The Global Commons Institute said that the origins of the advice from the Committee on Climate Change could be traced back to the Royal Commission on Environmental Pollution's advocacy of contraction and convergence in their report 'Energy—the Changing Climate' published in 2000.⁵² The Global Commons Institute promotes contraction and convergence as a means of resolving the impasse in international negotiations. Contraction and convergence is a framework for reducing global emissions of greenhouse gases that envisages global emissions peaking and then gradually falling

44 Q 264

45 Ev 102

46 Stern, *Key elements in a global deal on climate change*, LSE, 2008

47 Committee on Climate Change, First Report of the Committee, *Building a low carbon economy—the UK's contribution to tackling climate change*, December 2008

48 Greenhouse gas emissions are often given in terms of an equivalent amount of carbon dioxide—CO₂e.

49 Stern, *Key elements in a global deal on climate change*, LSE, 2008

50 Hepburn and Stern, *A new global deal on climate change*, Oxford Review of Economic Policy, Vol 24, Nov 2008, p266

51 Hepburn and Stern, *A new global deal on climate change*, Oxford Review of Economic Policy, Vol 24, Nov 2008, p266

52 Ev 14

(contraction). It achieves the reduction in emissions by limiting per capita emissions in such a way that they converge (convergence). It entails large cuts in per capita emissions for developed countries while allowing developing countries to continue growing their economies before they have to make cuts to reach equal per capita emissions. Lord Turner said that the advice of the Committee on Climate Change was “reasonably pragmatically close to Contraction and Convergence”.⁵³

24. The Secretary of State for Energy and Climate Change said it seemed unlikely that contraction and convergence would be the basis of a deal in climate negotiations.⁵⁴ He believed it would be opposed in international negotiations; there was no opposition to the basic idea that per capita emissions must converge but probably some disagreement with what that implied about the development paths of particular countries. But he thought it was a useful idea to have in the background of the negotiations.⁵⁵ The long-term future must bear some relation to the contraction and convergence model—the only equitable solution in the long-term is equal per capita emissions although the path to such a future will have to take account of the greater burden rich countries must bear.

25. An approach to setting emission reduction targets based on equalising per capita emissions globally is sensible and equitable.

The scientific basis for setting budgets

26. The IPCC’s assessment reports represent the best consensus on the science of climate change. But new knowledge is emerging all the time that furthers our understanding of the influence human activity has on climate and the options we have to address it.⁵⁶ Lord Turner told us some scientists argued that since the IPCC 4th Assessment Report new information had emerged that made them more concerned.⁵⁷ Lord Stern has given four reasons why the position today is more risky than in 2006 when he published his review of the economics of climate change:

- emissions are growing faster than the IPCC trajectory used in the Stern Review;
- the absorptive capacity of the planet, including of the oceans, appears to be lower than many earlier models had assumed;
- new evidence suggests there might be a greater effect on eventual temperature for a given increase in the stocks of greenhouse gases; and
- the physical effects of climate change appear to be happening faster than had been anticipated.⁵⁸

53 Oral evidence taken before the Environmental Audit Committee on 4 February 2009, HC (2008–09) 234, Q 10

54 Q 261

55 Q 261

56 University of Copenhagen, *Synthesis Report from Climate Change: Global Risks, Challenges & Decisions*, held in Copenhagen March 2009, <http://climatecongress.ku.dk/pdf/synthesisreport>

57 Oral evidence taken before the Environmental Audit Committee on 4 February 2009, HC (2008–09) 234, Q 13

58 Stern, *Key elements of a global deal on climate change*, LSE, 2008

We recognise that it is impractical to re-consider policy each time there is a scientific development. Any policy framework needs some stability if it is to bring about change. Thus questions arise about how often new scientific developments should be reviewed and how they should influence established policy. The challenge is to distil what is robust from what is not.

27. The Association for the Conservation of Energy was concerned that the carbon budgets needed to take account of the latest science⁵⁹ and the Met Office recognised that there might be a need to update targets and budgets in light of new scientific evidence.⁶⁰ Professor Kevin Anderson, Professor of Energy and Climate Change at the University of Manchester and Director of the Tyndall Energy Programme, saw this as a job for the Committee on Climate Change, which he felt should be “driven by the science with some awareness of the broader political issues”.⁶¹ Lord Turner, however, told us that the Committee was not a scientific commission and was not geared up to carry out its own research.⁶² While it is vital to take new science and new mitigation options arising from technical and engineering advances into account, none of the recent developments have warranted a change in the Committee on Climate Change’s recommendations.⁶³ The Government “considers that the Committee [...] has given full weight to the science in advising on carbon budgets and targets”.⁶⁴

28. Lord Turner told us that the Committee on Climate Change accepted the IPCC 4th Assessment Report as the clearest statement of the scientific consensus.⁶⁵ It is true that IPCC reports are developed over an extended timescale so that they can be subject to extensive peer review and to allow significant differences to be taken into account; the cut-off date for submissions to the 2007 IPCC 4th Assessment Report was December 2006⁶⁶ and scientific papers cited in the IPCC’s 4th Assessment Report had to be published or in press by December 2005.⁶⁷ Professor John Mitchell OBE, Director of Climate Science at the Met Office, acknowledged that there were concerns about the length of the IPCC process and the currency of the consensus it represented,⁶⁸ and argued that while it could validly base its recommendations on the IPCC assessments it should also look carefully at any new developments that stood up to scientific scrutiny.⁶⁹ Lord Turner said the Committee would look at the scientific evidence every four or five years and did not see any value in reviewing it every year.⁷⁰ The Committee on Climate Change will review scientific

59 Ev 127

60 Ev 53

61 Q 91

62 Q 228

63 Qq 39–45

64 Ev 105

65 Oral evidence taken before the Environmental Audit Committee on 4 February 2009, HC (2008–09) 234, Q 13

66 Public Interest Research Centre, *Climate Safety*, November 2008

67 IPCC Working Group I, Schedule for Fourth Assessment Report, http://ipcc-wg1.ucar.edu/wg1/docs/wg1_timetable_2006-08-14.pdf

68 Q 127

69 Q 128

70 Oral evidence taken before the Environmental Audit Committee on 4 February 2009, HC (2008–09) 234, Q 13

developments as part of the work that it will do to prepare its advice for the fourth budget period (2023–2027) to be published in 2010.⁷¹

29. Science will always run ahead of policy and it is a key part of the process that the scientific evidence base will be used to inform political judgements and decisions. Uncertainties are fundamental to all science and are not just a feature of climate science; other policy areas, like public health, face similar challenges. **The Committee on Climate Change is right to use the IPCC’s findings as a basis for its work. But they must keep scientific developments under review, first as part of the review that will be undertaken in preparing its advice on the fourth budget period, and second following the publication of the IPCC’s 5th Assessment Report. The Government should provide the resources to allow the Committee on Climate Change to strengthen its scientific capability so that it can monitor developments in between these formal review points.**

30. The need to review budgets in the light of new scientific developments must be weighed against the need for stability and predictability in the policy framework. Science has several times revised upwards the estimates of the extent of the temperature rise for a given increase in the concentration of greenhouse gases and the extent of the impacts of a given temperature rise. The constant message, and one that is entirely consistent with the Stern Review, is that the emphasis should be on reducing emissions as much as possible and as early as possible.⁷² Notwithstanding that the IPCC reports currently represent the best consensus in the science **the Committee on Climate Change and the Government should take into account that the growing evidence base for climate change impacts is reducing levels of scientific uncertainty, emissions are still growing and impacts are occurring faster and in more damaging ways than was previously thought likely. Both the Committee on Climate Change and the Government must be open to the possibility that as our scientific knowledge and understanding grows the case for taking action beyond the commitments we have already made will grow. There is a case for taking a more precautionary approach and adopting targets at the upper end or in excess of what is currently recommended by the IPCC.**

An appropriate level of risk?

31. The targets and budgets recommended by the Committee on Climate Change are designed to give about a 50:50 chance that temperatures will exceed 2°C by 2100, on the basis of the current state of scientific knowledge. The key question that needs to be addressed is whether it is possible to increase the chance of keeping any rise in temperature to below 2°C by cutting emissions faster.

32. Several witnesses suggested that it was possible to reduce the risk of exceeding 2°C.⁷³ The Institute of Actuaries’ Resource and Environment Group argued that the level of risk associated with the Committee on Climate Change’s recommendations was at least an order of magnitude higher than society would accept.⁷⁴ Friends of the Earth contended that

71 Q 45 [Kennedy]

72 Ev 75

73 Ev 39, Ev 131 and Q 66 and Q 71

74 Ev 122

the carbon budgets embodied too high a level of risk. They noted that the IPCC had defined levels of risk⁷⁵ and ‘unlikely’ was equated to a risk of 33% or lower⁷⁶ and a probability between 33% and 66% was regarded as ‘as likely as not’ on the IPCC’s scale. The German Advisory Council on Global Change, using a global budget that had a 66% chance that warming could be kept below 2°C, came up with a much smaller available carbon budget.⁷⁷ The Global Commons Institute proposed a scenario for reducing emissions that it argued had better odds of keeping within 2°C than that proposed by the Committee on Climate Change.⁷⁸

33. In the modelling done for the Committee on Climate Change, the Met Office examined several distributions of uncertainty for climate sensitivity and selected ones that tended to give a lower probability of staying under a 2°C global warming target.⁷⁹ Dr Jason Lowe, from the Met Office, argued that the choice of climate sensitivity meant the Committee on Climate Change’s recommendations were based on an inherently precautionary approach.⁸⁰ Lord Turner said it was possible to devise a pathway that would limit the chances of going above 2°C to less than 20% but this would have produced targets which were not be politically achievable. Nor might such targets be a rational economic and political choice (that is to say that the world might be better off accepting a slightly greater degree of warming and then adapting to it).⁸¹ He pointed out that “If you were to set the target as being [...] a 99% certainty of not going above 2°C we would have to start dramatically de-industrialising today.”⁸² He was more concerned about keeping the risk of exceeding 3 or 4°C to very low levels than reducing the risk associated with exceeding 2°C.⁸³

34. There are currently no credible ways to reduce emissions faster than the Committee on Climate Change has recommended. The Government should prioritise reducing the likelihood that temperatures will exceed 2°C down from a level that is ‘as likely as not’ to at least ‘unlikely’. This is more important than aiming for a lower temperature rise target. In the meantime the Committee on Climate Change should continue to ensure that its advice is framed in terms of keeping the risks of exceeding 3 or 4°C to very low levels.

75 IPCC, *Guidance Notes for Lead Authors of the IPCC Fourth Assessment Report on Addressing Uncertainties*, July 2005, www.ipcc.ch/pdf/supporting-material/uncertainty-guidance-note.pdf

76 Ev 131

77 German Advisory Council on Global Change, *The WBGU Budget Approach*, factsheet No. 3, November 2009

78 Ev 39 ff.

79 Ev 54

80 Q 115 [Lowe]

81 Oral evidence taken before the Environmental Audit Committee on 4 February 2009, HC (2008–09) 234, Q 6

82 Q 228

83 Q 229

3 The UK's domestic targets and budgets

Setting targets and budgets

35. International action and domestic action on climate change are linked.⁸⁴ Success depends on developed countries acting to reduce their emissions and developing countries committing to halt the growth in their emissions at some point in the future (and in some cases to reducing their emissions). The IPCC has recommended that global emissions need to be cut by 50% by 2050 relative to 1990 levels. As the burden for tackling climate change falls mainly on developed nations, the 50% cut in global emissions equates to cuts of 80-95% by 2050 relative to 1990 levels for developed nations. The Committee on Climate Change has estimated that the UK's fair share of the global burden to be an 80% cut in its emissions by 2050 relative to 1990 levels.⁸⁵ Lord Turner made clear that the Committee on Climate Change believed that emissions should continue to fall after 2050, to 2100 and beyond.⁸⁶

The 2050 target

36. Carbon dioxide poses a particular problem because on the length of time it remains in the atmosphere. It is not vital to meet any specific budget in any specific year as long as cumulative emissions are limited on the way to meeting longer-term targets. But there is a risk that the UK could meet the near-term targets and budgets and still fail to deliver on the longer-term targets or to bear down on cumulative emissions. For example, a switch to gas would allow the UK to meet near-term targets and budgets but would prevent us from meeting the 2050 target by locking us into a particular emissions pathway.⁸⁷ By combining the long-term targets with carbon budgets to describe how the targets will be reached, the Committee on Climate Change has rightly focused on cumulative emissions.⁸⁸ **Ministers must ensure that policy makers in all parts of government have a good understanding of the importance of limiting cumulative emissions. It is important that the Government focuses action not only on meeting the carbon budget in any one year but also on taking action now to ensure that targets and carbon budgets can be met in the medium- to long-term. The Government must pay close attention to the milestones and indicators that the Committee on Climate Change has set out, and will use to monitor the Government's progress.**

Carbon budgets

37. Collectively the EU has committed to reduce its emissions by 20% on 1990 levels by 2020 and it is willing to increase this to 30% by 2020 should other countries commit to a

84 Q 155 [King]

85 Ev 102

86 Qq 228-229

87 Q 213

88 Q 6, Q 11, Q 73, Q 76, Q 119 and Q 161

similar degree of action as part of international climate change negotiations.⁸⁹ The Committee on Climate Change concluded that the straight line trajectories to the 2020 target as proposed in the EU framework were an appropriate basis for setting the UK's carbon budgets.⁹⁰ It followed the EU framework and produced two sets of budgets: an intended budget, which should apply following a global deal on climate change, and an interim budget, to apply before a global deal is reached. The Government will tighten its carbon budgets if proposals for sharing out any new EU target are agreed.

Table 1: Carbon budget levels recommended by Committee on Climate Change and adopted by the Government

	Budget 1 (2008–2012)	Budget 2 (2013–2017)	Budget 3 (2018–2022)
Interim budget recommended by the Committee on Climate Change (MtCO₂e)	3018	2819	2570
Intended budget recommended by the Committee on Climate Change (MtCO₂e)	3018	2679	2245
Budget proposed by Govt	3018	2782	2544
Annual equivalent percentage reduction below 1990 levels (%)	22	28	34
Traded sector (MtCO₂e)	1233	1078	985
Non-traded (MtCO₂e)	1785	1704	1559

38. The Government set carbon budgets based on the UK's share of the EU's target to reduce greenhouse gas emissions to 20% below 1990 levels by 2020 and followed the Committee on Climate Change's interim budgets. The Government's budgets were slightly tighter than those recommended by the Committee on Climate Change because the EU climate package agreed in December 2009 differed in a number of respects from the European Commission's original proposals.⁹¹ The Met Office said the carbon budgets were consistent with the 2050 target and the IPCC's 4th assessment report.⁹² The EEF, the manufacturers' organisation, made a similar point but expressed concerns about delivery against the budgets (see section 4).⁹³ Professor Ekins told us:

The Committee on Climate Change's budgets are the minimum that would be consistent with an 80% UK (50% global) emissions reduction target by 2050, and this is the minimum that is consistent with any chance of achieving a 2°C temperature increase target.⁹⁴

89 Committee on Climate Change, First Report of the Committee, *Building a low carbon economy— the UK's contribution to tackling climate change*, December 2008, p94

90 Committee on Climate Change, First Report of the Committee, *Building a low-carbon economy—The UK's contribution to tackling climate change*, December 2008, p94

91 DECC, Explanatory memorandum to The Carbon Budgets Order 2009, April 2009

92 Q 127, Q 146 [Lowe] and Ev 53

93 Ev 129

94 Ev 75

39. Carbon budgets have not been set beyond 2022. Currently they describe an emissions pathway to 2022 and will go further once the Committee on Climate Change presents its advice on the fourth budget period (2023–2027) later this year. The Met Office felt there was a case for setting budgets further in advance to ensure that the pathway remains consistent with the longer-term aims.⁹⁵ **Given the importance of limiting cumulative emissions and stability in the policy framework the Government should examine carefully the case for setting carbon budgets further in advance than currently provided for by the Climate Change Act 2008.**

The 2020 target

40. The Climate Change Act 2008 gave the Government a 2020 target of reducing UK emissions by at least 26% on 1990 levels. The interim and intended carbon budgets recommended by the Committee on Climate Change imply different 2020 targets:

- The interim budgets require an emissions reduction of 34% in 2020 relative to 1990 (21% relative to 2005).
- The intended budgets require an emissions reduction of 42% in 2020 relative to 1990 (31% relative to 2005).

41. In setting a 2020 target Committee on Climate Change took into account three factors:

- the level of emissions reduction in 2020 commensurate with the UK being on the path to an 80% reduction in 2050;
- the contribution by the UK to required global emission reductions in 2020; and
- the UK's obligation under the recent EU climate framework.⁹⁶

It said:

Equal percentage reductions from 2006 to 2050 would require CO₂ emissions in 2020 to be 39% below the 2007 level and 43% below the 1990 level. This could be seen as an ideal benchmark: anything less in 2020 means that the challenge in subsequent years is increased.⁹⁷

42. When the carbon budgets were announced with the Budget in 2009 the 2020 target was increased to a 34% reduction in greenhouse gas emissions with respect to 1990 levels by 2020. This was broadly in line with the Committee on Climate Change's recommendation for the interim budget.⁹⁸ The 2020 target could rise to 42% under the intended budget if the EU 2020 target was increased to 30% following a global deal.⁹⁹ David Kennedy expected

95 Ev 53 and Q 119

96 Committee on Climate Change, First Report of the Committee, *Building a low carbon economy— the UK's contribution to tackling climate change*, December 2008

97 Committee on Climate Change, First Report of the Committee, *Building a low-carbon economy—The UK's contribution to tackling climate change*, December 2008, p106

98 HMT, Budget 2009: *Building Britain's future*, April 2009, para 7.10

99 Ev 101

that the interim budget would be in place for two years.¹⁰⁰ Over this timescale Professor Anderson thought there would little difference in cumulative emissions between the interim and intended budgets.¹⁰¹

43. Weaker 2020 targets increase the risk of crossing tipping points.¹⁰² They also make the task of meeting the 2050 target more difficult and costly.¹⁰³ More emissions in the near-term will result in the world being locked-in to higher temperature rises and greater costs (because mitigation becomes more challenging and greater investment is needed in adaptation). A higher target in 2020 does more to bear down on cumulative emissions and is consistent with the key messages from the IPCC and Stern that as much action as possible should be taken as early as possible. Lord Stern has said that the need to cut per capita emissions by at least 80% by 2050 in developed economies implies reductions of 20-40% are needed by 2020.¹⁰⁴ Many NGOs believe that even a 30% cut would be insufficient and that developed countries need to adopt an aggregate reduction target of more than 40% to play a fair part in protecting the global climate.¹⁰⁵ Dr Cameron Hepburn, from the Smith School of Enterprise and the Environment at the University of Oxford, thought a 2020 target as high as 42% would be costly but not economically irrational.¹⁰⁶ The Association for the Conservation of Energy believed that the intended budget should be adopted irrespective of whether there was a global deal.¹⁰⁷ Professor Ekins considered that the UK's 2020 target was at the bottom end of what we need to do if we are to make a scientifically appropriate contribution.¹⁰⁸

44. The carbon budgets and the 2020 target were based on the EU's targets but the EU's targets were based more on political feasibility than up-to-date science.¹⁰⁹ The EU's target to reduce emissions by 20% by 2020 falls outside the range of reductions recommended by the IPCC. Professor Anderson said that a higher EU target was needed.¹¹⁰ Professor Ekins told us:

Rather than tightening the targets (which could certainly be justified scientifically) the emphasis should now be on getting the UK on a trajectory to meet those that have been set.¹¹¹

45. A target to reduce emissions in 2020 by 42% on 1990 levels is the basis for Committee on Climate Change's intended budget. The case for moving to the higher budget and target

100 Q 11 [Kennedy]

101 Q 79

102 University of Copenhagen, *Key messages from Climate Change: Global Risks, Challenges & Decisions*, held in Copenhagen March 2009, http://climatecongress.ku.dk/newsroom/congress_key_messages/

103 University of Copenhagen, *Synthesis Report from Climate Change: Global Risks, Challenges & Decisions*, held in Copenhagen March 2009, <http://climatecongress.ku.dk/pdf/synthesisreport>

104 Stern, *Key elements of a global deal on climate change*, LSE, 2008

105 Climate Action Network International, *Position on an Annex I aggregate target*, April 2009

106 Q 159

107 Ev 127

108 Q 187

109 Q 12, Q 13 and Ev 126

110 Q 80

111 Ev 75

now is compelling. We believe Professor Ekins was right to emphasise the importance of meeting the targets we have rather than strengthening them, but we also accept the points made by Dr Cameron Hepburn, from the Smith School of Enterprise and the Environment, University of Oxford, and Professor Kevin Anderson about leadership and credibility.¹¹² We believe that a move to 42% now would send a clear signal about the Government's commitment. It would appear to be scientifically justified on the basis of emerging evidence and would help to give greater policy stability. **We recommend the Government should move to a target of a 42% cut by 2020 and should implement the intended budget irrespective of whether or not the EU moves to a 30% target for cutting its emissions. This should increase the long-term stability of the policy framework by removing any uncertainty about whether the higher target and budget might be imposed. But the Government should only move to increase the 2020 target once it is on track to meet its current targets and budgets.**

Aviation and shipping

46. Emissions from aviation and shipping are set to continue growing making their future inclusion in carbon budgets increasingly difficult.¹¹³ The Aviation Environment Federation told us that the carbon budgets to 2022 do not include aviation and as such were inconsistent with the 2050 target for reducing emissions, which does include aviation and shipping.¹¹⁴ They pointed to evidence that not all departments had understood that the emissions from shipping and aviation are included in the long-term targets but not the medium-term budgets.¹¹⁵ The Tyndall Centre has also been critical of the Committee on Climate Change's treatment of aviation and shipping emissions.¹¹⁶ The Association for the Conservation of Energy believed that aviation and shipping should be included in the carbon budgets.¹¹⁷

47. In January 2009 the Government said UK aviation emissions of carbon dioxide in 2050 not to exceed 2005 levels.¹¹⁸ The Committee on Climate Change was asked to advise on options for meeting this objective and on the implications it had for aviation expansion. It concluded recently that aviation growth of around 60% would be compatible with keeping carbon dioxide emissions in 2050 no higher than in 2005, taking into account developments in fuel efficiency and other measures to reduce emissions.¹¹⁹

48. Under the Climate Change Act 2008 the Committee on Climate Change was required to consider whether international aviation should be included in the first three carbon budgets. Its position in 2008 was that international aviation would ideally be included in

112 Q 78, Q 158 [Hepburn]

113 Ev 125

114 Ev 124

115 DfT *Reforming the framework for economic regulation of UK airports*, March 2009, Annex 5, section 1.8

116 Tyndall Centre, *Making a climate commitment: analysis of the first report (2008) of the UK Committee on Climate Change*, March 2009

117 Ev 127

118 HC Deb, 15 January 2009, col 360

119 Committee on Climate Change, *Meeting the UK Aviation target—options for reducing emissions to 2050*, December 2009

carbon budgets but complexities arising from allocation methodologies in the EU ETS allowances led it to conclude that for the time being aviation emissions should not be included.¹²⁰ The final methodologies in the EU ETS Directive (published in January 2009) reduce these complexities and the Committee on Climate Change has announced they will reconsider the case for inclusion of international aviation emissions in carbon budgets.¹²¹

49. The Government must make clear the impact of emissions from aviation and shipping on progress towards meeting the UK's targets for reducing emissions and its carbon budgets. The Government should ensure that any growth in aviation is within the bounds set by the Committee on Climate Change and does not impact adversely on the UK's targets for reducing emissions or its carbon budgets.

120 Committee on Climate Change, First Report of the Committee, *Building a low carbon economy— the UK's contribution to tackling climate change*, December 2008

121 Committee on Climate Change, *Meeting the UK Aviation target—options for reducing emissions to 2050*, December 2009

4 Delivering the carbon budgets

The Government's track record in reducing emissions

50. The Government has a domestic target to reduce emissions of carbon dioxide by 20% on 1990 levels by 2010. The Secretary of State believed that the domestic 2010 target was very stretching but that the UK had made good progress against it.¹²² In 2009 the Government predicted UK emissions of greenhouse gases were on track to fall by around one-third from 1990 levels by 2020 and would be lower than required for the first and second carbon budget periods and well within the range of uncertainty for the third budget period.¹²³

51. Professor Ekins told us emissions would have been higher if the Government had not had policies in place to meet the 2010 target but that the Government “will miss its 20% domestic carbon dioxide reduction target for 2010, despite having been aided [...] by the global recession. Policy-related emissions reductions since 1997 have clearly been difficult to achieve”.¹²⁴

52. Between 2003 and 2007 emissions fell at below 1% per year.¹²⁵ Lord Turner told us that the UK would meet the carbon budgets for the first budget period but only because of the economic recession.¹²⁶ Declining economic activity was likely to have reduced emissions by about 2% during 2008. He warned that recession induced reductions must not be confused with underlying progress, but the Government maintains underlying progress has been made and disputed the Committee on Climate Change's assessment of the impact of the recession.¹²⁷ In a report published in July 2007, we said that the Government's was consistently over-optimistic when projecting how successful its policies would be.¹²⁸ Professor Anderson believed that the Committee on Climate Change and the Government had been far too optimistic.¹²⁹

53. This contested record in reducing emissions, and the consistent optimism bias in the Government's projections of progress towards its 2010 target, raises concerns about the prospects of hitting the 2020 target. The Government will want to be optimistic about the policies it has devised and the progress it is making but it must be careful that this optimism does not cause it to downplay the impact of the recession or over-estimate the underlying progress that has been made in reducing emissions during the economic downturn. **The Government should investigate whether there is a way to report**

122 Q 262

123 HMT, Budget 2009: *Building Britain's future*, April 2009, para 7.11

124 Ev 75

125 Committee on Climate Change, *Meeting Carbon Budgets—the need for a step change, progress report to Parliament*, October 2009, Executive summary, p10.

126 Q 226 [Turner]

127 Q 256 [Hughes]

128 Environmental Audit Committee, *Seventh Report of Session 2006–07, Beyond Stern: From the Climate Change Programme Review to the Draft Climate Change Bill*, HC (2006–07) 406, para 26

129 Q 106

emissions figures corrected for the economic cycle as is done for the public service agreements on productivity (PSA1) and employment (PSA8).

The rate of emissions reduction

54. The Low Carbon Transition Plan said that emissions had fallen about 1% per year since 1990 and now needed to fall at a rate of 1.4% a year.¹³⁰ The analysis underpinning the Committee on Climate Change's recommendations on targets and budgets assumed global emissions would fall at 3–4% per annum after peaking sometime between 2015 and 2020 and then continue to fall until 2100. From this it derived a requirement for emissions in the UK to fall at 2–3% per annum (across all Kyoto greenhouse gases) in order to meet the 2050 target. This is slightly below the global 3–4% because the UK's reported emissions have actually fallen a little since 1990, whereas global emissions are still rising and will need to come down from a higher level before reaching 2050 targets.

55. In a paper in 2008 Kevin Anderson and Alice Bows argued that meeting the objective of avoiding dangerous climate change would require greenhouse gas emissions to be reduced by 4% per annum, with energy and process emissions falling at 6.5% per annum as part of that.¹³¹ Their analysis indicated that if emissions were allowed to peak as late as 2020, emission from all sources of greenhouse gases would have to fall at about 10% per annum. But they noted that historically emissions reductions of greater than 1% had only ever been associated with 'economic recession or upheaval' and rates in excess of 3% were rarely considered viable.¹³² For example, "the collapse of the former Soviet Union's economy brought about annual emission reductions of over 5% for a decade. By contrast, France's 40-fold increase in nuclear capacity in just 25 years and the UK's 'dash for gas' in the 1990s both corresponded, respectively, with annual CO₂ and greenhouse gas emission reductions of only 1%".¹³³ But the Met Office suggested that the high rate of annual reductions in emissions recommended by Anderson and Bows was an artefact of their methodology and pointed to several other studies that were consistent with the findings of the Committee on Climate Change.¹³⁴

56. The Committee on Climate Change's first annual report to Parliament concluded that a step change was required in the pace of UK emissions reduction to meet carbon budgets and that more action must be taken to deliver the Government's Low Carbon Transition Plan.¹³⁵ Lord Turner told us that the Committee on Climate Change did not believe that the carbon budgets needed to be changed as a result of anything it had said in its first progress report and said the Government should aim to outperform the first budget.¹³⁶ But he stressed that if the gap in delivery was allowed to grow too big at some point the carbon

130 DECC, *The Low Carbon Transition Plan: National strategy for climate and energy*, July 2009

131 Kevin Anderson and Alice Bows, *Reframing the climate change challenge in light of the post-2000 emission trends*, Philosophical Transactions of the Royal Society A, 2008

132 Tyndall Centre, *Making a climate commitment: analysis of the first report (2008) of the UK Committee on Climate Change*, March 2009

133 Kevin Anderson and Alice Bows, *Reframing the climate change challenge in light of the post-2000 emission trends*, Philosophical Transactions of the Royal Society A, 2008

134 Q 152 and Ev 53

135 Q 223 [Turner]

136 Q 224 [Turner]

budgets would have to be adjusted.¹³⁷ The Government agreed that new scientific evidence strengthened the case for strong and early action on climate change,¹³⁸ and accepted the need for a step change.¹³⁹ **The Government must deliver the carbon savings it has identified in the Low Carbon Transition Plan and then increase the rate at which emissions are falling to meet the 2–3% annual reduction recommended by the Committee on Climate Change. In doing so it must take account of the milestones that the Committee is using to monitor progress. The Committee on Climate Change must watch closely to see how the Government acts to close the gap in delivery it has identified. In its response to the Committee on Climate Change’s progress report the Government should make clear how the Low Carbon Transition plan will be strengthened. Strengthening the policy framework and bringing forward new measures to get the UK to meet its existing targets and budgets are higher priorities than setting more stretching targets, even if new targets would be justified on the basis of science. Unless we are on track to meet current targets, increasing targets will only widen the shortfall in delivery.**

57. We now turn to an examination of the levers of change over which the Government has direct influence.

The policy framework

58. The Low Carbon Transition Plan set out the steps to a permanent shift to a low-carbon economy including:

- 40% of electricity to come from low-carbon sources;
- energy efficiency improvements in 7 million homes and 1.5 million households supported to produce their own clean energy;
- 20-30% less gas imported;
- 40% lower emissions from new cars; and
- 1.2 million people employed in green jobs.

59. In the evidence we took there was a great deal of concern that the policy framework would be unable to deliver the required reduction in emissions. Professor Allen, from the Department of Physics at the University of Oxford, for example, argued that the Government needed to have a flexible and adaptive policy framework given all the uncertainties in climate science.¹⁴⁰ Paul Ekins saw little evidence that:

137 Q 226 [Turner]

138 Ev 103

139 Q 252

140 Q 154 [Allen]

[...] current policies will bring forward the mix of demand reduction, efficiency increase and low-carbon supply that will be necessary to meet the targets in the 2020 budget.¹⁴¹

His view was that the Government was not using carbon pricing in a systematic way and that improvements in energy efficiency were occurring too slowly and renewables were not being deployed quickly enough. He described continuing uncertainties about whether and when new nuclear and Carbon Capture and Storage (CCS) plant would come on stream, what they would cost, and whether CCS would even work. He believed that although many of the Government's policies were innovative they had not been implemented strongly enough.¹⁴² Professor Anderson believed that social frameworks, political structures and policy framework to deliver the required reduction in emissions were missing,¹⁴³ saying that it was difficult to reconcile economic growth with decarbonisation on the scale that was needed.¹⁴⁴ The Institution of Mechanical Engineers believed that the tax system and public procurement systems could be used more effectively to reduce emissions.¹⁴⁵ For EEF current policies and incentives did not go far enough to ensure the economy would be decarbonised,¹⁴⁶ and they did not detect a policy framework to translate the Government's vision into reality and ensure the "UK is the number one destination for low-carbon business".¹⁴⁷ We made a similar point in our recent report on green jobs and skills.

60. David Kennedy explained that the Committee on Climate Change felt the policy framework needed to be tightened on energy efficiency, transport, renewable electricity and renewable heat¹⁴⁸ and that there were actions that must be taken in the first and second budget periods if the UK was to be on track in later budget periods.¹⁴⁹ The Committee felt that the Government should aim to over-achieve against its carbon budgets so that the UK made underlying progress on decarbonisation over the next few years. Any over-achievement of the budget in the first period should not be banked into the second budget period. The Secretary of State for Energy and Climate Change confirmed that the Low Carbon Transition Plan aimed to over-achieve in each budget period.¹⁵⁰ There is, however, a higher cost associated with over-engineering the targets and budgets and it is essentially a political decision as to whether this can be justified.¹⁵¹

61. The Government is right to try and over-achieve against its carbon budgets but it should not be banking any over-achievement from the first budget period into the second budget period. In responding to the call by the Committee on Climate Change for a 'step change' the Government must strengthen existing policies and bring forward

141 Ev 75

142 Q 185

143 Q 73–74

144 Q 77

145 Ev 138

146 Ev 130

147 Ev 130

148 Q 225

149 Q 224 [Kennedy]

150 Q 255

151 Q 122

new measures, which must be rigorously monitored. We understand the Government's desire to use market mechanisms to ensure that emissions reductions are delivered at least cost and in the most economically efficient way but it cannot rely solely on market forces and may need to support these by a regulatory approach and reforms to the fiscal framework.

62. The Government has recently changed its approach to carbon valuation within policy impact assessment from one based on costing the damage associated with climate change to one based on the cost of mitigating emissions. The new approach has been welcomed by economists and environmental groups. It is not clear whether any policy decisions will be reviewed in light of this new methodology although the Government has indicated that preliminary work on the decision to add capacity at Heathrow indicates that “the economic case for Heathrow’s third runway is robust to the new carbon values”.¹⁵² The new approach sets out projected carbon values from 2009 to 2050 as follows:

- A short term traded price of carbon of £25 in 2020, with a range of £14–£31.
- A short term non-traded price of carbon of £60 per tonne CO₂e in 2020, with a range of +/- 50% (i.e. central value of £60, with a range of £30–£90).
- A long term traded price of carbon with a value of:
 - £70 per tonne of CO₂e in 2030, with a range of +/- 50% (i.e. £70 central estimate, £105 high estimate and £35 low estimate).
 - £200 per tonne of CO₂e in 2050, with a range of +/- 50% (i.e. £200 central estimate, £300 high estimate and £100 low estimate).¹⁵³

It is not clear whether this change in the approach to carbon valuation will do enough to bring about the step-change needed for the transition to a low-carbon economy or whether it addresses the short-term risk of carbon lock-in as a result of fuel switching if investment decisions are taken in the near-term when the carbon price is relatively low. **How the Government's new approach to carbon valuation within policy impact assessment is applied is as important as the values used and we believe that there is a case for the National Audit Office examining, in due course, what impact it is having on decision making within government.**

63. Action on emissions costs money.¹⁵⁴ The Stern Review argued that reducing emissions could cost about 1% of global GDP every single year. Lord Stern pointed out that the costs of meeting a given temperature or stabilisation target will tend to rise for every month that policy action is delayed.¹⁵⁵ The Committee on Climate Change believes that the cost of meeting the 2020 targets would be less than 1% of GDP in 2020.¹⁵⁶ Its view was that this was acceptable given the consequences and costs of not acting. It estimated the costs of

¹⁵² HC Deb, 9 September 2009, col 1901W

¹⁵³ DECC, *Carbon valuation in UK policy appraisal: a revised approach*, July 2009

¹⁵⁴ Q 158 [King]

¹⁵⁵ Stern, *Key elements of a global deal on climate change*, LSE, 2008

¹⁵⁶ Committee on Climate Change, *Meeting Carbon Budgets—the need for a step change, progress report to Parliament*, October 2009

meeting the 2050 target as between 1 and 2% of GDP. Professor Ekins thought costs in this range were unlikely to be noticed by the general public.¹⁵⁷ Some of the increased costs to the consumer could be defrayed by energy efficiency savings.¹⁵⁸ In April 2009 Professor Sir David King, Director of the Smith School of Enterprise and the Environment at the University of Oxford, argued that the cost of reducing the UK's emissions would be much higher than the Government had indicated but also that the financial implications of not dealing with the climate change threat were far higher than Lord Stern had suggested.¹⁵⁹ Professor Anderson contrasted the money found to save the banks with his perception that “we cannot find a few measly millions or billions to deal with supposedly one of the greatest threats we face”.¹⁶⁰ The issue for the nation is that only by investing now can we hope to avoid the enormous and ultimately unquantifiable costs of failing to avert dangerous climate change. **The Government needs to present the cost of action on climate change more clearly and to make clear that this is not an additional cost but an alternative to the economic, social and environmental cost of inaction.**

Energy policy

64. Historically, growing energy use correlates with economic growth, and emissions will grow unless energy is decarbonised.¹⁶¹ Global consumption of energy derived from fossil fuels is rising and an unprecedented effort is needed to reduce energy consumption and decarbonise global energy if emissions are to peak in the coming decade.¹⁶² The Low Carbon Transition Plan set out the Government's plans to get 40% of the UK's electricity from low-carbon sources by 2020.¹⁶³ The Committee on Climate Change identified decarbonising the power sector as the key to achieving emissions reductions targets.¹⁶⁴ It called for a review of the current set of market arrangements for power generation and a move beyond the current Supplier Obligation, new rules to strengthen the investment climate for low-carbon power generation, and more action on energy efficiency.¹⁶⁵ Professor David MacKay, Professor of Natural Philosophy in the Department of Physics at the University of Cambridge, believed that the UK needed to build low-carbon generating capacity at a much higher rate than it currently was if it was to decarbonise,¹⁶⁶ saying the UK needed to build new low-carbon and renewable generating capacity at the fastest rate

157 Q 241 [Turner]

158 Q 241 [Kennedy]

159 BBC News, *Clash over ecological economics*, 27 April 2009, news.bbc.co.uk

160 Q 105

161 Q 186

162 Anderson, Bows and Mander, *From long-term targets to cumulative emission pathways: Reframing UK climate policy*, *Energy Policy*, Vol 36, 2008, pp3714–3722

163 DECC, *The Low Carbon Transition Plan: National strategy for climate and energy*, July 2009, Summary, p4

164 Committee on Climate Change, *Meeting Carbon Budgets—the need for a step change, progress report to Parliament*, October 2009, Summary, p9–10

165 Q 223 [Turner]

166 Q 209

possible.¹⁶⁷ Dr Cameron Hepburn said that the Government needed to invest in more low-carbon research and development.¹⁶⁸

65. Targets for reducing emissions and carbon budgets cannot be met without investment in renewables and low-carbon generation. In the Trade and Industry Committee's report on new nuclear build all the energy companies who gave evidence made the point that a long-term stable carbon price was absolutely fundamental for new build.¹⁶⁹ There has been little progress on this issue since then. The UK cannot meet the 2020 target without a carbon price high enough to bring forward low-carbon investments.¹⁷⁰ The Committee on Climate Change identified a risk that investment might continue to flow predominantly to conventional fossil fuel power generation in the third budget period and beyond. It said that investors would be biased towards investment in conventional fossil fuels rather than low-carbon generation, with investors choosing to invest directly in gas-fired power stations despite their increasing cost.¹⁷¹

66. The Government is relying in part on the EU-ETS to drive a price for carbon that encourages investment in renewables and low-carbon generation. Our forthcoming report on carbon markets will examine this hypothesis in detail and the impact that carbon prices will have on low-carbon investment. It will be clear from that analysis that **the Government cannot place too much reliance on the price of carbon to drive investment in low-carbon technologies as the current price is too low and too volatile. It must put the right regulatory framework in place to ensure that the right investment decisions are made. It is vital that we do not invest in the wrong high-carbon infrastructure. Through interventions in the market and complementary policy measures, using the full range fiscal and policy instruments available, the Government should drive up the price of carbon steadily to a level where renewable and low-carbon investments become economically viable.**

Energy efficiency improvements

67. 14% of all carbon dioxide emissions currently come from commercial or public buildings¹⁷² and the UK's 25 million homes account for around a quarter of carbon dioxide emissions.¹⁷³ The Low Carbon Transition Plan proposes that by 2030 all cost-effective energy-saving measures will have been fitted to all homes. It sets out a community-based approach to delivering energy efficient measures to low-income households and an extension of the supplier obligation. The Government plans to spend £3.2 billion to help households become more energy efficient by increasing and then extending the current programme. It intends to roll-out smart meters to every home by the end of 2020 and to

167 Q 210

168 Q 166 [Hepburn]

169 Trade and Industry Committee, Fourth Report of Session 2005–06, *New Nuclear? Examining the issues*, HC (2005–06 1122

170 Q 188

171 Committee on Climate Change, *Meeting Carbon Budgets—the need for a step change, progress report to Parliament*, October 2009, p134–136

172 The Committee on Climate change, www.theccc.org.uk/sectors/buildings-a-industry/non-residential-buildings

173 The Committee on Climate Change, www.theccc.org.uk/sectors/buildings-a-industry/homes

pilot ways to help people make their whole house greener. It plans to encourage the use of low-carbon sources to generate heat or electricity through ‘clean energy cash-back schemes’.¹⁷⁴

68. The Progress Report from the Committee on Climate Change favoured a whole-house and street-by-street approach to energy efficiency improvements. It envisaged a 35% reduction in emissions from residential buildings in 2022 compared to 2007 figures, and a 27% reduction in non-residential buildings and industry. It suggested that policy should be strengthened in at least three areas to achieve the required emissions reductions:

- energy efficiency improvement in homes;
- energy efficiency improvement in the commercial sector (including SMEs); and
- support for renewable heat.¹⁷⁵

69. It will take time for emissions from power generation to be reduced given the lead time in building new infrastructure and in the next few years the UK will rely on energy efficiency measures to meet its carbon budgets. But current policy on energy efficiency is too weak and too reliant on energy suppliers. In our recent report on green jobs and skills we called for an increase in the scale and speed of the programme to improve energy efficiency in homes across the UK. If we are to have any chance of staying within our carbon budgets, **the Government must strengthen the policy framework around energy efficiency as a matter of priority. It must set out how it intends to drive forward investment in energy efficiency to ensure that sufficient progress is made in the remainder of the first budget period.**

National Policy Statements

70. The Committee on Climate Change has identified a risk that some investments, which could help the UK to meet its short-term targets, could lock it into an emissions pathway that meant it failed to meet the longer-term targets (see paragraph 36). Under the Planning Act 2008 the Infrastructure Planning Commission will have to decide whether to give consent to applications to develop infrastructure of national importance. These decisions have the potential to determine the UK’s emissions pathway far into the future, and NPSs could have a major impact on the UK’s carbon budgets.¹⁷⁶ It is the sum of all IPC decisions that will influence whether budgets are met. **Each of the IPC’s planning decisions will have to be made with the imperative in mind that we must keep within our carbon budgets and it is the sum of all its decisions that will shape our emissions pathway.**¹⁷⁷ Friends of the Earth argued that the IPC should be required to base its decisions on the intended not interim carbon budget as decisions taken now would see infrastructure built that would remain in place for many years.¹⁷⁸ The Committee on Climate Change in

174 DECC, *The Low Carbon Transition Plan: National strategy for climate and energy*, July 2009, Summary, p4

175 Committee on Climate Change, *Meeting Carbon Budgets—the need for a step change, progress report to Parliament*, October 2009

176 Ev 133

177 Ev 135

178 Ev 135

contrast thought that it did not matter which budget was followed as what needed to be built under the two budgets was broadly similar.¹⁷⁹

71. The guidance that has been issued with the energy NPSs said:

Given that the Government policies that underlie NPSs have been set in accordance with the [Low Carbon] Transition Plan and carbon budgets, the IPC does not need to assess individual applications in terms of carbon emissions against the budgets.¹⁸⁰

The NPSs on energy rely on the EU ETS to cap emissions from the power sector and the carbon price to make high-carbon power stations ‘less and less attractive’ and thus providing an incentive to invest in cleaner electricity generation.¹⁸¹ It is crucial that all NPSs are properly assessed for their impact on the Low Carbon Transition Plan and carbon budgets. Any new fossil-fuel based generating capacity that is consented to will make it harder to meet carbon budgets in future years and will require higher rates of reduction from other sectors of the economy. The Government’s approach does not address the danger identified by the Committee on Climate Change that investments made now, on the basis of a low current carbon price and projections that suggest it will not rise much, could lock us into a high level of emissions for years to come if investors favour coal and gas over low-carbon and renewable generation in the short- to medium-term. **The Government must put in place a mechanism to ensure that the sum of the decisions taken by the IPC are consistent with the carbon budgets and the milestones that the Committee on Climate Change has set out to ensure the infrastructure needed to meet future budget periods is put in place in the next few years. The Energy and Climate Change Select Committee may wish to examine this issue more closely as part of its scrutiny of the National Policy Statements on energy.**

Managing the budgets

Measuring emissions

72. Greenhouse gas emissions are not directly measured but are estimated from use of fossil fuels and other industrial and agricultural processes. It takes up to 15 months to produce final emissions estimates although provisional estimates are available at 3 months and near final estimates at 13 months. In their response to a consultation by the Department for Energy and Climate Change on carbon accounting the Environment Agency said:

[the EU ETS and Carbon Reduction Commitment] [...] currently include only carbon emissions, and do not include the full basket of six Greenhouse gases that are required for the carbon budget. The additional sources of data that the Government will be using to calculate the full carbon account need to be clearly identified.¹⁸²

179 Ev 100

180 DECC, *Draft Overarching National Policy Statement for Energy (EN-1)*, November 2009, section 2.1.5

181 DECC, *Draft Overarching National Policy Statement for Energy (EN-1)*, November 2009, section 2.1.10

182 Environment Agency, *Response to DECC consultation, Carbon Units, the Net UK Carbon Account and Carbon Accounting*, January 2009, www.environment-agency.gov.uk/static/documents/Research/1993Carbon.pdf

In March 2008, the NAO reviewed the measurement and reporting of UK greenhouse gas emissions. They found uncertainty in emissions of carbon dioxide was relatively low but was relatively high for other greenhouse gases. The National Physical Laboratory stressed the importance of being able to measure emissions accurately. They said:

[...] multiple and inconsistent measurements, calculations and estimation protocols for [greenhouse gas] emission and avoidance are a fragile basis for the present and are likely to be an inadequate basis for the future carbon market—and a burden for business.¹⁸³

They called for the UK to become a world leader in carbon metrology.¹⁸⁴

73. Accurate measurement of emissions is fundamental to understanding the impact of policy. **The Government needs to address the issues with measuring and reporting on greenhouse gases, particularly the uncertainty around measures of gases other than carbon dioxide. The Government should look carefully at the case the National Physical Laboratory makes for the creation of a centre of excellence in carbon metrology in the UK.**

The role of offsets

74. In international emissions trading it is common to treat the purchase of each foreign credit as being equal to reducing domestic emissions by an equivalent amount. We have previously expressed reservations about this principle. In our 2007 report on the Draft Climate Change Bill, we observed: “Trading only guarantees global emissions reductions if each country has its own national emissions limits, set in harmony with others, at a level designed to achieve a global reduction target.”¹⁸⁵ We will consider the role of offsets in carbon markets in detail in a forthcoming report. The key issue in the present context is the extent to which offsets should be counted against the achievement of our carbon budgets.

75. The Committee on Climate Change has said that the UK should aim to limit the use of offsets and meet the carbon budgets through domestic reductions. The Government also aims to meet the first three interim carbon budgets without purchase of overseas credits outside the EU ETS, but it does reserve possible credit purchase as a fallback option.¹⁸⁶ If the UK moved to a tougher budget as a result of a global deal on climate change the Government would expect to use offset credits to meet part of the additional effort required.

76. While the Secretary of State was clear that domestic action must be the backbone of what we do,¹⁸⁷ the Government has argued that there is a place for offsets because they encourage least-cost mitigation in helping developing countries to move to a low-carbon

183 Ev 138

184 Ev 138

185 Environmental Audit Committee, Seventh Report of Session 2006–07, *Beyond Stern: From the Climate Change Programme Review to the Draft Climate Change Bill*, HC (2006–07) 460, para 108.

186 HMT, *Building a low-carbon economy: implementing the Climate Change Act 2008*, April 2009, Para 3.3

187 Q 263 [Miliband]

economy. But there are other ways of meeting this objective without the downsides associated with offsets.

77. Professor Kevin Anderson argued that buying an offset from a country with lower long-term ambitions than the UK was not the equivalent of reducing domestic emissions by the equivalent of a tonne of carbon, and suggested that there may be a need for an exchange rate or discount rate for offset credits.¹⁸⁸ In the USA there are proposals for a discount rate to be applied to international offset credits used within any federal cap and trade scheme, meaning that an American firm would need to buy and surrender five offset credits for every four tonnes carbon dioxide it emitted. The Government told us that current EU legislation would allow the EU ETS to apply such a discount rate to offset credits; simply the threat of applying it could help to improve the robustness of offset projects.¹⁸⁹ **We recommend the Government explore the use of a discount rate on offset credits and that the Government work on proposals for discounting the carbon value of offset credits within the EU ETS.**

78. A potential weakness of treating the purchase of EU ETS credits as being necessarily equivalent to reducing UK emissions comes from Phase I of the scheme. Throughout this period, the UK sectors included in the scheme as a whole emitted an excess of carbon dioxide above their allocations; in 2005 the UK was a net purchaser (i.e. from elsewhere in the EU) of 25.2 million credits; in 2006, 31.4 million; and in 2007, 25.7 million.¹⁹⁰ In its official publications, the Government has treated these purchases as though UK emissions were lower by the same amounts than they actually were in each of those years.¹⁹¹ The Government's official emissions figures for 2005–2007, which incorporate the net purchase of EU ETS credits, are therefore somewhat misleading in suggesting that UK emissions were reduced. Simply making a purchase of EU ETS credits does not necessarily mean that the UK is funding real and equivalent emissions reductions elsewhere; it depends on how tight or loose the overall cap is. **The Government should not score any EU ETS credits purchased from Phase I as having reduced emissions in the UK by an equivalent amount. We recommend that efforts should be made to determine what actual savings were in order to provide a sound basis for future budgets to deliver the necessary real savings in emissions.**

79. In the carbon budgets the Government intends to count allocations rather than actual emissions for sectors covered by the EU ETS. The Government felt it would be misleading to count actual emissions without taking account of EU ETS trading.¹⁹² Doing so could mean, for example, that the Government reported reduced emissions in the UK, when these might actually have been displaced by increased emissions elsewhere in the EU (or vice versa). The Department for Energy and Climate Change argued that the practice of counting allocated rather than actual emissions in the traded sector reflected the agreed

188 Q 101

189 Oral Evidence taken before the Environmental Audit Committee on 2 June 2009, HC (2008–09) 393-v, Qq 317-8

190 DECC, *2007 UK Greenhouse Gas emissions*, final figures, 3 February 2009 Annex C: UK Greenhouse Gas Emissions 1990–2007: progress towards the Kyoto and Domestic Targets, www.defra.gov.uk/evidence/statistics/environment/globalatmos/download/xls/ghg_annex_c_20090203.xls

191 DECC, *UK Climate Change Sustainable Development Indicator: 2007 Greenhouse Gas Emissions, Final Figures*, Feb 2009, www.defra.gov.uk/evidence/statistics/environment/globalatmos/download/ghg_ns_20090203.pdf

192 Ev 120

international approach to measurement of emissions.¹⁹³ The Government pointed out that the approach had been agreed by most of those who had responded to the consultation on carbon accounting and was approved by both Houses of Parliament.¹⁹⁴ The Government's approach has been criticised by environmental groups. Friends of the Earth said:

[The] EU ETS is just one policy which affects UK traded sector emissions—in that case, given that the Climate Change Act is about UK emissions, it surely is more appropriate to count actual emissions (i.e. judging the progress of ALL policies in the traded sector) rather than allocated emissions (i.e. solely counting the UK's initial allocation in the EUETS, just one policy) [...] if this method of accounting continues, then for the purposes of assessing compliance with the legal requirements of the Act, it does not matter WHAT actually happens in 40% of the entire carbon budget.¹⁹⁵

We recommend the UK should only accept emissions credits (whether from the EU ETS or any other scheme) for use within UK carbon budgets, if they have come from countries that have implemented equivalent national emissions targets and managed to cut emissions below them.

Departmental budgets and carbon reduction delivery plans

80. There needs to be a process to ensure that the totality of the machinery of Government delivers the UK's carbon budgets.¹⁹⁶ The Government told us a system of departmental carbon budgets would be introduced ahead of the second budget period with the intention of ensuring that every part of government can be held accountable for delivery of the UK's carbon budgets. Each department's budget is made up of two parts: one to reflect its share in each of the major sectors of the economy (based on its relative degree of influence over emissions in that sector) and the other reflecting emissions from the public sector it has responsibility for.¹⁹⁷ Initially schools, further and higher education establishments and the NHS fall on the Department for Energy and Climate Change's budget but will be transferred to the relevant departmental budgets by April next year.

81. The Low Carbon Transition Plan notes that the Treasury "will play a key role in the departmental carbon budget system".¹⁹⁸ The Department for Energy and Climate Change and the Treasury will manage the departmental budgets together. Mr James Hughes, the head of carbon budgets policy in the Department for Energy and Climate Change, described how senior staff in each department were being 'account managed' to oversee the work on their departmental budget and departmental carbon reduction delivery plans, and that the Department for Energy and Climate Change was working to build capacity in all departments to manage carbon budgets.¹⁹⁹ Departmental reduction delivery plans would

193 Ev 120

194 Ev 119

195 Ev 136

196 Oral evidence taken before the Environmental Audit Committee on 4 February 2009, HC (2008–09) 234, Q 19 [Turner]

197 Q 293 [Hughes]

198 DECC, *The Low Carbon Transition Plan: National strategy for climate and energy*, July 2009, p47.

199 Q 293 [Hughes]

ideally include indicators and milestones similar to those used by the Committee on Climate Change.²⁰⁰ James Hughes also stressed the importance of having a rigorous process for monitoring progress.²⁰¹

82. However, the process of setting budgets for departments has been essentially one of trial and error.²⁰² For example, the Treasury's departmental carbon budget is based solely on the carbon savings it expects to make on its own estate, but Friends of the Earth argue that it should have a sectoral share of the carbon budgets to reflect the control it has over spending and tax.²⁰³ More widely, the Secretary of State assured us that the Treasury "institutionally understands the importance of meeting carbon budgets",²⁰⁴ and that it would play an important role in the system, particular in the context of the spending reviews.²⁰⁵ In our view the Low Carbon Transition Plan has probably under-estimated the importance of taxation as a lever to affect emissions. **The Treasury has significant influence over the shape of the Government's climate change programme and the Low Carbon Transition Plan. Changes in taxation and spending could have a major impact on carbon emissions and on levels of investment in low-carbon industries. We believe that this influence should be acknowledged in departmental carbon budgets.**

83. Ensuring that each department's carbon reduction plan is adequate and closely monitoring progress against departmental budgets will be key to ensuring that the whole of government is working towards meeting the UK's carbon budgets and its longer-term targets to reduce emissions. Clearly the Committee on Climate Change has a role to play in monitoring the overall delivery. It is not currently resourced to monitor and examine departmental budgets but is willing to do so if asked.²⁰⁶ Our successors should consider how scrutiny of departmental budgets and departmental carbon reduction plans should be taken forward. The NAO could assist parliamentary scrutiny of departmental carbon reduction plans.

84. The Association for the Conservation of Energy said there was a risk that each sector could try to pass on responsibility for reducing emissions to other sectors and as a result little progress would be made.²⁰⁷ But the Low Carbon Transition Plan made clear the expectation for each sector of the economy and each government department; the challenge now is to turn this into meaningful action that reduces emissions by at least 2–3% per annum. The Committee on Climate Change will next report on the progress towards meeting targets for reducing emissions and carbon budgets in June 2010. We recommend that our successors in the next Parliament should follow up progress on carbon budgets because of the cross-departmental nature of the Low Carbon Transition Plan.

200 Q 293 [Hughes]

201 Q 293 [Hughes]

202 Q 293 [Miliband]

203 Ev 133

204 Q 292

205 Q 291

206 Ev 100

207 Ev 128

85. The management of the carbon budget is as vital as the management of the fiscal budget. It requires the same level of political attention and civil service commitment, and the same degree of parliamentary scrutiny. Our successors should lead the way in rigorously monitoring the robustness of the carbon budgets and the progress the UK makes in meeting them.

5 Conclusions

86. The carbon targets and budgets will only be successful in keeping the rise in global average temperature below 2°C if there is both international and domestic action. The UK's targets and budgets must be scientifically credible, based on an equitable share of the global burden and lead to a transformation of the economy.

87. International commitments are meaningless unless they are backed by credible commitments on action to be taken domestically. Domestic action will achieve nothing in terms of the overall climate objective unless other countries are making efforts commensurate with their share of the global burden. It is right that the UK should provide a clear signal about its commitment to domestic action in support of international efforts. It is crucial that the UK shows leadership and the UK's negotiating position in any future talks on climate change that follow the Copenhagen Accord will only be credible if developing countries see that our position is backed by real commitments to action.

88. The transition to a low-carbon economy presents an opportunity for the UK to position itself to take advantage of emerging low-carbon markets and to develop expertise in low-carbon technology and climate change adaptation. The UK seems reluctant to move unilaterally but unless it does it is unlikely to secure true competitive advantage in a low-carbon economy. Despite the gains from being an early adopter in terms of skills and knowledge there are risks, especially if global standards adopt an approach at odds with that pursued by the UK. The risks can be minimised if the UK is active in shaping the international standards that will govern a low-carbon global economy. The short-term cost and loss of competitiveness is better than paying a much higher cost to mitigate emissions and adapt to climate change in the long-term. We make similar points in our recent report on green jobs and skills.

89. The UK has policies that have been successful in reducing emissions but not sufficiently quickly to meet its targets and budgets in the longer-term. There needs to be a step change in the rate at which emissions are falling and the policy framework must be strengthened and new policies introduced. The UK needs a flexible and adaptive policy response but also one that gives some certainty about the shape of policy going forward. It is important that we get the right investment framework with necessary policy and fiscal incentives to encourage long-term investments and changes in behaviour. The EU ETS remains a centrepiece of the Government's approach to reducing emissions and we will make some recommendations on it in a report we will publish shortly.

90. Climate change is probably the most significant challenge to sustainable development. The move from business as usual to stable atmospheric concentrations of greenhouse gases is not a small perturbation around an existing development path but involves moving our economy from its existing development path to a new one.²⁰⁸ Going forward growth must be based on the principles of sustainable development and must avoid negative impacts on social and ecological systems. Tackling climate change should be integral to the broader

208 Hepburn and Stern, *A new global deal on climate change*, Oxford Review of Economic Policy, Vol 24, Nov 2008, p260

goals of entrenching socioeconomic development and equity throughout the world.²⁰⁹ There is inertia in social and economic systems but overcoming this will be helped by linking climate change with the broader issues of sustainable consumption, human rights and the promotion of democratic values, as societies across the globe towards more sustainable development pathways.²¹⁰

91. We must live within environmental constraints. There should be some means of accounting for emissions on a consumption rather than production basis in order to account for the fact that developed countries like the UK are responsible for many of the emissions in other parts of the world.²¹¹ A means for measuring green growth or some other alternative measure of wealth may also need to be developed.²¹²

209 University of Copenhagen, *Synthesis Report from Climate Change: Global Risks, Challenges & Decisions*, held in Copenhagen March 2009 see—<http://climatecongress.ku.dk/pdf/synthesisreport>

210 University of Copenhagen, *Synthesis Report from Climate Change: Global Risks, Challenges & Decisions*, held in Copenhagen March 2009 see—<http://climatecongress.ku.dk/pdf/synthesisreport>

211 Q 80 and Q 207

212 Q 178

Conclusions and recommendations

The global objective

1. We accept that the Government is broadly right to use the objective of limiting the rise in average global temperature to no more than 2°C as the backbone for its targets and budgets. (Paragraph 12)
2. The Government must be ready, if needed, to establish credible emissions reduction pathways that go well beyond what is currently regarded as politically possible. (Paragraph 12)
3. The Government must shape and inform public opinion so that the UK will be able, if needed, to reduce its emissions at rates in excess of what is possible currently. (Paragraph 12)
4. The Government's position in international climate change negotiations must be predicated on getting emissions to peak as soon as possible. This will be very challenging but a failure to reverse the rise in global emissions before 2020 could render much of the UK's domestic action meaningless. But we have to prepare for the worst, and in doing so drive home the message that a stitch in time is worth nine. The Committee on Climate Change should be charged with and resourced to advise on the changes to the UK's targets for reducing emissions and carbon budgets which may be required if global emissions do not peak by 2020. The impact of global emissions failing to peak before 2020 should be also considered in Defra's Climate Change Risk Assessment so that the implications of failing to set and achieve the necessary budgets can be fully understood. The Committee on Climate Change's Sub-Committee on Adaptation should be asked to consider the implications for adaptive action of global emissions peaking after 2020. (Paragraph 19)
5. An approach to setting emission reduction targets based on equalising per capita emissions globally is sensible and equitable. (Paragraph 25)
6. The Committee on Climate Change is right to use the IPCC's findings as a basis for its work. But they must keep scientific developments under review, first as part of the review that will be undertaken in preparing its advice on the fourth budget period, and second following the publication of the IPCC's 5th Assessment Report. The Government should provide the resources to allow the Committee on Climate Change to strengthen its scientific capability so that it can monitor developments in between these formal review points. (Paragraph 29)
7. The Committee on Climate Change and the Government should take into account that the growing evidence base for climate change impacts is reducing levels of scientific uncertainty, emissions are still growing and impacts are occurring faster and in more damaging ways than was previously thought likely. Both the Committee on Climate Change and the Government must be open to the possibility that as our scientific knowledge and understanding grows the case for taking action beyond the commitments we have already made will grow. There is a case for taking a more

precautionary approach and adopting targets at the upper end or in excess of what is currently recommended by the IPCC. (Paragraph 30)

8. There are currently no credible ways to reduce emissions faster than the Committee on Climate Change has recommended. The Government should prioritise reducing the likelihood that temperatures will exceed 2°C down from a level that is ‘as likely as not’ to at least ‘unlikely’. This is more important than aiming for a lower temperature rise target. In the meantime the Committee on Climate Change should continue to ensure that its advice is framed in terms of keeping the risks of exceeding 3 or 4°C to very low levels. (Paragraph 34)

The UK’s domestic targets and budgets

9. Ministers must ensure that policy makers in all parts of government have a good understanding of the importance of limiting cumulative emissions. It is important that the Government focuses action not only on meeting the carbon budget in any one year but also on taking action now to ensure that targets and carbon budgets can be met in the medium- to long-term. The Government must pay close attention to the milestones and indicators that the Committee on Climate Change has set out, and will use to monitor the Government’s progress. (Paragraph 36)
10. Given the importance of limiting cumulative emissions and stability in the policy framework the Government should examine carefully the case for setting carbon budgets further in advance than currently provided for by the Climate Change Act 2008. (Paragraph 39)
11. We recommend the Government should move to a target of a 42% cut by 2020 and should implement the intended budget irrespective of whether or not the EU moves to a 30% target for cutting its emissions. This should increase the long-term stability of the policy framework by removing any uncertainty about whether the higher target and budget might be imposed. But the Government should only move to increase the 2020 target once it is on track to meet its current targets and budgets. (Paragraph 45)
12. The Government must make clear the impact of emissions from aviation and shipping on progress towards meeting the UK’s targets for reducing emissions and its carbon budgets. The Government should ensure that any growth in aviation is within the bounds set by the Committee on Climate Change and does not impact adversely on the UK’s targets for reducing emissions or its carbon budgets. (Paragraph 49)

Delivering the carbon budgets

13. The Government should investigate whether there is a way to report emissions figures corrected for the economic cycle as is done for the public service agreements on productivity (PSA1) and employment (PSA8). (Paragraph 53)
14. The Government must deliver the carbon savings it has identified in the Low Carbon Transition Plan and then increase the rate at which emissions are falling to meet the

2–3% annual reduction recommended by the Committee on Climate Change. In doing so it must take account of the milestones that the Committee is using to monitor progress. The Committee on Climate Change must watch closely to see how the Government acts to close the gap in delivery it has identified. In its response to the Committee on Climate Change’s progress report the Government should make clear how the Low Carbon Transition plan will be strengthened. Strengthening the policy framework and bringing forward new measures to get the UK to meet its existing targets and budgets are higher priorities than setting more stretching targets, even if new targets would be justified on the basis of science. Unless we are on track to meet current targets, increasing targets will only widen the shortfall in delivery. (Paragraph 56)

15. The Government is right to try and over-achieve against its carbon budgets but it should not be banking any over-achievement from the first budget period into the second budget period. In responding to the call by the Committee on Climate Change for a ‘step change’ the Government must strengthen existing policies and bring forward new measures, which must be rigorously monitored. We understand the Government’s desire to use market mechanisms to ensure that emissions reductions are delivered at least cost and in the most economically efficient way but it cannot rely solely on market forces and may need to support these by a regulatory approach and reforms to the fiscal framework. (Paragraph 61)
16. How the Government’s new approach to carbon valuation within policy impact assessment is applied is as important as the values used and we believe that there is a case for the National Audit Office examining, in due course, what impact it is having on decision making within government. (Paragraph 62)
17. The Government needs to present the cost of action on climate change more clearly and to make clear that this is not an additional cost but an alternative to the economic, social and environmental cost of inaction. (Paragraph 63)
18. The Government cannot place too much reliance on the price of carbon to drive investment in low-carbon technologies as the current price is too low and too volatile. It must put the right regulatory framework in place to ensure that the right investment decisions are made. It is vital that we do not invest in the wrong high-carbon infrastructure. Through interventions in the market and complementary policy measures, using the full range fiscal and policy instruments available, the Government should drive up the price of carbon steadily to a level where renewable and low-carbon investments become economically viable. (Paragraph 66)
19. The Government must strengthen the policy framework around energy efficiency as a matter of priority. It must set out how it intends to drive forward investment in energy efficiency to ensure that sufficient progress is made in the remainder of the first budget period. (Paragraph 69)
20. Each of the IPC’s planning decisions will have to be made with the imperative in mind that we must keep within our carbon budgets and it is the sum of all its decisions that will shape our emissions pathway. (Paragraph 70)

21. The Government must put in place a mechanism to ensure that the sum of the decisions taken by the IPC are consistent with the carbon budgets and the milestones that the Committee on Climate Change has set out to ensure the infrastructure needed to meet future budget periods is put in place in the next few years. The Energy and Climate Change Select Committee may wish to examine this issue more closely as part of its scrutiny of the National Policy Statements on energy. (Paragraph 71)
22. The Government needs to address the issues with measuring and reporting on greenhouse gases, particularly the uncertainty around measures of gases other than carbon dioxide. The Government should look carefully at the case the National Physical Laboratory makes for the creation of a centre of excellence in carbon metrology in the UK. (Paragraph 73)
23. We recommend the Government explore the use of a discount rate on offset credits and that the Government work on proposals for discounting the carbon value of offset credits within the EU ETS. (Paragraph 77)
24. The Government should not score any EU ETS credits purchased from Phase I as having reduced emissions in the UK by an equivalent amount. We recommend that efforts should be made to determine what actual savings were in order to provide a sound basis for future budgets to deliver the necessary real savings in emissions. (Paragraph 78)
25. We recommend the UK should only accept emissions credits (whether from the EU ETS or any other scheme) for use within UK carbon budgets, if they have come from countries that have implemented equivalent national emissions targets and managed to cut emissions below them. (Paragraph 79)
26. The Treasury has significant influence over the shape of the Government's climate change programme and the Low Carbon Transition Plan. Changes in taxation and spending could have a major impact on carbon emissions and on levels of investment in low-carbon industries. We believe that this influence should be acknowledged in departmental carbon budgets. (Paragraph 82)
27. The management of the carbon budget is as vital as the management of the fiscal budget. It requires the same level of political attention and civil service commitment, and the same degree of parliamentary scrutiny. Our successors should lead the way in rigorously monitoring the robustness of the carbon budgets and the progress the UK makes in meeting them. (Paragraph 85)

Formal Minutes

Tuesday 5 January 2010

Members present:

Mr Tim Yeo, in the Chair

Mr Nick Hurd
Mark Lazarowicz

Jo Swinson
Dr Desmond Turner

Draft Report (*Carbon budgets*), proposed by the Chairman, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 91 read and agreed to.

Summary agreed to.

Resolved, That the Report be the Third Report of the Committee to the House.

Ordered, That the Chairman make the Report to the House.

Written evidence, reported and ordered to be published on 2 and 30 June, 20 October and 3 November in last Session of Parliament and 24 November, was ordered to be reported to the House for printing with the Report.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

[Adjourned till Tuesday 19 January at 10.00 am

Witnesses (Volume II)

Tuesday 9 June 2009

Professor Sir Brian Hoskins, Member and **Mr David Kennedy**, Chief Executive, Committee on Climate Change Ev 1

Mr Aubrey Meyer, Co-founder and **Mr Terry O'Connell**, Director of Corporate Relations, Global Commons Institute Ev 34

Tuesday 23 June 2009

Professor Kevin Anderson, Director, Tyndall Centre for Climate Change Research Ev 42

Professor John Mitchell OBE and **Dr Jason Lowe**, Met Office Ev 55

Tuesday 14 July 2009

Professor Sir David King, Director and **Dr Cameron Hepburn**, Smith School of Enterprise and the Environment, and **Dr Myles Allen**, Department of Physics, Atmospheric, Oceanic and Planetary Physics, University of Oxford Ev 66

Professor Paul Ekins, Kings College London Ev 76

Professor David MacKay, University of Cambridge Ev 86

Tuesday 27 October 2009

Lord Turner of Ecchinswell, a Member of the House of Lords, Chairman, and **Mr David Kennedy**, Chief Executive, Committee on Climate Change Ev 90

Rt Hon Edward Miliband MP, Secretary of State, Department of Energy and Climate Change; and **Mr James Hughes**, Head of Carbon Budgets Team; Department of Energy and Climate Change Ev 107

List of written evidence (Volume II)

1	Actuarial Profession's Resource and Environment Group	Ev 122
2	Association of Conservation of Energy (ACE)	Ev 127
3	Aviation Environment Federation	Ev 124
4	Committee on Climate Change (CCC)	Ev 13: Ev 99
5	Department of Energy and Climate Change (DECC)	Ev 100: Ev 104: Ev 117
6	EEF	Ev 128
7	Friends of the Earth England, Wales and Northern Ireland	Ev 131: Ev 134: Ev 136
8	The Global Commons Institute	Ev 14: Ev 39
9	Institution of Mechanical Engineers	Ev 136
10	Met Office	Ev 53: Ev 62
11	National Physical Laboratory	Ev 138
12	Professor David J C MacKay FRS, University of Cambridge	Ev 81
13	Professor Paul Ekins, Kings College London	Ev 75

List of unprinted evidence

The following memorandum has been reported to the House, but to save printing costs it has not been printed and copies have been placed in the House of Commons Library, where they may be inspected by Members. Other copies are in the Parliamentary Archives, and are available to the public for inspection. Requests for inspection should be addressed to The Parliamentary Archives, Houses of Parliament, London SW1A 0PW (tel. 020 7219 3074). Opening hours are from 9.30 am to 5.00 pm on Mondays to Fridays.

Supplementary memorandum from Aubrey Meyer, The Global Commons Institute

List of Reports from the Committee during the current Parliament

The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

Session 2009–10

First Report	The work of the Committee in 2008–09	HC 58
Second Report	Green Jobs and Skills	HC 159-I and -II

Session 2008–09

First Report	Work of the Committee in 2007–08	HC 108
Second Report	Environmental Labelling	HC 243 (HC 861)
Third Report	Pre-Budget Report 2008: Green fiscal policy in a recession	HC 102 (HC 563)
Fourth Report	Reducing CO ₂ and other emissions from shipping	HC 528 (HC 1015)
Fifth Report	Reducing greenhouse gas emissions from deforestation: No hope without forests	HC 30 (HC 1063)
Sixth Report	Greening Government	HC 503 (HC 1014)

Session 2007–08

First Report	Are biofuels sustainable?	HC 76-I & -II (HC 528)
Second Report	Reducing Carbon Emissions from UK Business: The Role of the Climate Change Levy and Agreements	HC 354 (HC 590)
Third Report	The 2007 Pre-Budget Report and Comprehensive Spending Review: An environmental analysis	HC 149-I & -II (HC 591)
Fourth Report	Are Biofuels Sustainable? The Government Response	HC 528 (HC 644)
Fifth Report	Personal Carbon Trading	HC 565 (HC 1125)
Sixth Report	Reaching an international agreement on climate change	HC 355 (HC 1055)
Seventh Report	Making Government operations more sustainable: A progress report	HC 529 (HC 1126)
Eighth Report	Climate change and local, regional and devolved government	HC 225 (HC 1189)
Ninth Report	Carbon capture and storage	HC 654 (Cm 7605)
Tenth Report	Vehicle Excise Duty as an environmental tax	HC 907 (HC 72)
Eleventh Report	The Exports Credit Guarantee Department and Sustainable Development	HC 929 (HC 283)
Twelfth Report	Greener homes for the future? An environmental analysis of the Government's house-building plans	HC 566 (Cm 7615)
Thirteenth Report	Halting biodiversity loss	HC 743 (HC 239)

Session 2006–07

First Report	The UN Millennium Ecosystem Assessment	HC 77 (HC 848)
Second Report	The EU Emissions Trading Scheme: Lessons for the Future	HC 70 (HC 1072)
Third Report	Regulatory Impact Assessments and Policy Appraisal	HC 353 (HC 849)
Fourth Report	Pre-Budget 2006 and the Stern Review	HC 227 (HC 739)
Fifth Report	Trade, Development and Environment: The Role of FCO	HC 289 (HC 1046)
Sixth Report	The Voluntary Carbon Offset Market	HC 331 (HC 418)
Seventh Report	Beyond Stern: From the Climate Change Programme Review to the Draft Climate Change Bill	HC 460 (HC 1110)
Eighth Report	Emissions Trading: Government Response to the Committee's Second Report of Session 2006–07 on the EU ETS	HC 1072
Ninth Report	The Structure of Government and the challenge of climate change	HC 740 (HC 276)

Session 2005–06

First Report	Greening Government: the 2004 Sustainable Development in Government Report	HC 698
Second Report	Sustainable Timber	HC 607 (HC 1078)
Third Report	Sustainable Procurement: the Way Forward	HC 740
Fourth Report	Pre-Budget 2005: Tax, economic analysis, and climate change	HC 882 (HC 195)
Fifth Report	Sustainable Housing: A follow-up report	HC 779
Sixth Report	Keeping the lights on: Nuclear, Renewables, and Climate Change	HC 584 (HC 196)
Seventh Report	Sustainable Development Reporting by Government Departments	HC 1322 (HC 1681)
Eighth Report	Proposals for a draft Marine Bill	HC 1323 (HC 1682)
Ninth Report	Reducing Carbon Emissions from Transport	HC 981
Tenth Report	Trade, Development and Environment: The Role of DFID	HC 1014 (HC 197)
Eleventh Report	Outflanked: The World Trade Organisation, International Trade and Sustainable Development	HC 1455 (HC 354)
Twelfth Report	Transport Emissions: Government Response to the Committee's Ninth Report of Session 2005–06 on Reducing Carbon Emissions from Transport	HC 1718