



House of Commons
Environment, Food and Rural
Affairs Committee

Climate Change: looking forward

Ninth Report of Session 2004–2005

Volume I



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Affairs Committee

**Climate Change:
looking forward**

Ninth Report of Session 2004–2005

*Report, together with formal minutes and lists
of oral and written evidence*

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Environment, Food and Rural Affairs Committee

The Environment, Food and Rural Affairs Committee is appointed by the House of Commons to examine the expenditure, administration, and policy of the Department for Environment, Food and Rural Affairs and its associated bodies.

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Summary

In January 2004, Professor Sir David King, Chief Scientific Adviser to the Government described climate change as “the most severe problem that we are facing today—more serious even than the threat of terrorism”. The Prime Minister has since declared climate change to be one of the two priority issues for the UK’s Chair of the G8 and forthcoming Presidency of the EU during 2005.

This report examines some of the key areas in the review of the UK Climate Change Programme in the light of the UK’s domestic targets to reduce CO₂ emissions by 20% below 1990 baseline levels by 2010, and the legally binding target set by the Kyoto Protocol to reduce emissions of greenhouse gases by 12.5% below 1990 levels by 2008–2012. It also addresses some of the key priorities for the UK’s Presidencies of the EU and G8 during 2005.

The Government should not use the review of the UK Climate Change Programme to water down its challenging domestic targets, but use it as an opportunity to incorporate tougher measures across all sectors to reduce the UK’s greenhouse gas—and particularly CO₂—emissions to meet those targets. We recommend that a Minister for climate change or Cabinet Committee be appointed to address this issue across all Government departments. It is imperative that all departments acknowledge both the global importance and the urgency of this issue.

We recognise that important work is being done on the industrial side and efforts are being made to encourage energy production from alternative sources. However, the Government is failing to get to grips with encouraging energy efficiency at the household level and has no serious strategy to reduce emissions from transport. We acknowledge that the Government’s objectives and level of commitment to mitigating climate change is clear, but the policy measures thus far implemented to achieve them are currently ‘out of kilter’. The challenge is to achieve a balance between meeting the targets through energy saving measures and by adopting alternative forms of energy supply—including electricity, heating and transport fuel—which have lower greenhouse gas emissions than at present.

We underline the importance of increasing the uptake of easily implemented measures at the household level, such as installing insulation and energy-saving light-bulbs. These represent ‘low-hanging fruit’ which we recommend to the Government as an excellent means of both reducing greenhouse gas emissions and raising public awareness.

To achieve international engagement on the issue of climate change during the UK’s Presidencies of the EU and G8 in 2005, the UK Government must lead by example and demonstrate that tough emissions reductions can be achieved in a thriving business environment.

Glossary

CCA—Climate Change Agreement

Climate Change Agreements are coupled with the Climate Change Levy (see below). Businesses are entitled to an 80% discount on the Levy providing they sign-up to 10-year negotiated agreements to reduce their emissions or improve their energy efficiency.

CCP—Climate Change Programme

The UK Climate Change Programme was set up by the then Department of the Environment, Transport and the Regions (DETR) in 2000 with the reduction of UK CO₂ emissions by 20% below 1990 levels by 2010 as its main target. This is a domestic target and goes beyond the UK's Kyoto obligations. A review of the UK CCP is currently underway; terms of reference were announced by the Department for Environment, Food and Rural Affairs (Defra) in December 2004.

CDM—Clean Development Mechanism

Established by the Kyoto Protocol, CDM ties in with Emissions Trading (see ETS below) and allows developed countries or companies to invest in emissions reduction projects in developing countries. As there are no allowances to be transferred from the latter to the former (see ETS and JI), an equivalent amount is “generated” and credited to the investor after independent certification. The emissions reductions achieved by the project can then be used by the investor to meet their targets.

CCL—Climate Change Levy

This is a tax on the use of energy by businesses. The revenue generated by the levy is recycled back to business through reduced National Insurance Contributions. It also goes to funding The Carbon Trust, who advises business on energy saving issues. Renewable energy and combined heat and power are exempt from the Levy.

EEC—Energy Efficiency Commitment

The EEC, along with the Building Regulations, is one of the principal policy mechanisms for improving the energy efficiency of existing homes. The aim is to help electricity and gas consumers in the household sector to use energy more efficiently and in turn reduce their fuel costs. Under the current EEC, electricity and gas suppliers in Great Britain are required to meet targets for the promotion of improvements in energy efficiency in households. These targets are non-prescriptive and can be achieved by carrying out a combination of approved measures, such as installing insulation or providing low-energy light bulbs.

ETS—Emissions Trading Scheme

Emissions trading is a system whereby countries or companies are set a target for emissions of greenhouse gases. Should that country or company emit more than their target, they have to purchase the difference from another participant which has emitted less than their

target. Participants are allocated “allowances” of emissions proportionate to their target. These allowances can then be traded.

The UK emissions trading scheme began in March 2002, and was the first economy-wide greenhouse gas emissions trading scheme in the world. Over thirty organisations adopted voluntary reduction targets for the duration of the scheme (2002–06). Those companies with CCAs may also use the scheme to buy—or sell—allowances in order to meet their targets. An EU-wide ETS was established by Directive in October 2003 and formally began on 1 January 2005. Effectively a “cap and trade” scheme, the EU ETS currently only applies to industrial sectors and only CO₂, although other greenhouse gases may be introduced in the second phase (2008–2012). Member States allocate “allowances” of CO₂ to particular company plants—see NAP.

IPCC—Intergovernmental Panel on Climate Change

The IPCC is a UN body which assesses available advice on climate change and advises other UN bodies which address the problems posed by climate change. Thus far the IPCC has produced three major assessments of climate change (in 1990, 1995 and 2001), covering the science, impacts and response measures. The IPCC’s reports are agreed by scientists from around the world and are regarded as the authoritative text on climate change.

JI—Joint Implementation

This also ties in with Emissions Trading (ETS) and allows for investment in emission-reducing projects (e.g. the establishment of a renewable energy plant) in a developed country by a government or company in another developed country. The emission reductions achieved by the project can then be used by the investor to meet their targets.

NAP—National Allocation Plan

The NAP plays an integral part in the EU ETS, each Member State issuing a NAP stating how many allowances are issued, and to which installations. The UK was the first Member State to publish a draft NAP in January 2004, however failed to meet the 31 March deadline for submission of the final Plan to the Commission. The UK’s Plan was finally approved in July 2004, covering installations responsible for approximately 46% of all UK CO₂ emissions.

RO—Renewables Obligation

This was introduced in 2000 and defines the amount of electricity energy suppliers must provide from renewable sources of energy. Originally set a target of 10.4% by 2010/11, the Government announced in December 2003 that the RO would be extended, with a target of 15% of electricity coming from renewables by 2015.

ROCs—Renewables Obligation Certificates

These tie in with the RO (see above). Compliance with the RO is demonstrated by presenting ROCs to Ofgem (the Gas and Electricity Markets Authority). ROCs were issued to accredited generators for eligible renewable electricity generated within the UK (including its territorial waters and Continental Shelf), and supplied to customers in Great

Britain. They can be traded to allow electricity suppliers to meet their targets at the lowest cost.

UKCIP—UK Climate Impacts Programme

This was set up by Government in 1997 to co-ordinate a stakeholder-led assessment of the impacts of climate change at a regional and national level and to help organisations prepare for the impacts. In 2002 the Programme's contract was renewed for three years.

1 Introduction

Aims of the inquiry

1. In January 2004, Professor Sir David King, Chief Scientific Adviser to the Government, described climate change as “the most severe problem that we are facing today—more serious even than the threat of terrorism”.¹

- The atmospheric concentration of carbon dioxide (CO₂) has increased by over 30% since the industrial revolution as a result of human activity, and is continuing to rise at an unprecedented rate.
- There was a global average increase in surface temperature of 0.6°C during the 20th century.
- There is an increasing body of evidence that, over the last half century, most of the warming seen can be attributed to human activity.²

2. The Prime Minister has since declared climate change to be one of the two priority issues for the UK’s Chair of the G8 and forthcoming Presidency of the EU during 2005.³ We felt it was timely in these circumstances to undertake a further inquiry into the subject. During this year the review of the UK Climate Change Programme, first compiled in 2000 by the then Department of the Environment, Transport and the Regions, is due to be published.

3. The Government is currently committed to several challenging domestic climate change targets, as summarised below:

¹ “Climate Change Science: Adapt, Mitigate, or Ignore?”, *Science*, 9 January 2004

² Intergovernmental Panel on Climate Change, Third assessment Report, *Climate Change 2001: The Scientific Basis*, 2001 Summary for policymakers pp 2, 7, 10

³ Prime Minister’s Speech on climate change, 14 September 2004, at www.number10.gov.uk/output/page6333.asp

Table 1: Domestic climate change targets

Key targets	Progress to date
In 1997 the Government set a target to reduce CO ₂ emissions by 20% below 1990 levels by 2010. ⁴ One of the goals defined by the 2003 Energy White Paper is to further reduce the UK's CO ₂ emissions by 60% below 1990 baseline levels by 2050. ⁵	Forecasts from the Department of Trade and Industry suggest that, by 2010, emissions of CO ₂ will only be 14% below 1990 levels, based on current policies. ⁶
The Renewables Obligation, introduced in 2000, committed the Government to a target of 10.4% of all electricity generated being provided by renewable energy sources by 2010. This was extended in December 2003 to a target of 15% of electricity to come from renewables by 2015.	In the second year of the Renewables Obligation (2003-04) 2.4% of Great Britain's electricity came from eligible renewable sources, falling far short of the 4.3% Obligation level for this period. ⁷
The Kyoto Protocol, signed by 171 Parties including the UK, came into force on 16 February 2005. Under the terms of the Protocol, the UK is legally bound to reduce its emissions of greenhouse gases to 12.5% below 1990 levels by 2008-2012.	In 2003, total UK greenhouse gas emissions were 14% below 1990 base year levels. ⁸ The Protocol has not been ratified by either the United States—by far the biggest emitter in the world, accounting for 20.6% of global emissions—or Australia, with higher per capita emissions than the US.

4. Our terms of reference were:

- The forthcoming review of the UK Climate Change Programme during 2004-05, looking particularly at what new policies might be needed to keep the United Kingdom on track in reducing all greenhouse gas emissions.
- The role that the Government will play in 2005 as Chair of the G8 and as President of the European Council in driving forward the Kyoto and post-Kyoto agendas.

5. We received 45 written submissions and took oral evidence in December 2004 and both January and February 2005 from: the Government's Chief Scientific Adviser Professor Sir David King; the Tyndall Centre for Climate Research; the Biosciences Federation; BAA plc; the Association of Electricity Producers; the Business Council for Sustainable Energy; the Renewable Power Association; Our World Foundation; Friends of the Earth; WWF-UK; the Energy Saving Trust; the Local Government Association; Rt Hon Stephen Byers MP, co-chair of the International Climate Change Taskforce; the Secretary of State for Environment, Food and Rural Affairs. We are grateful to all those who gave evidence to this inquiry.

6. Our inquiry has run in parallel with that being conducted by the Environmental Audit Committee on Climate Change, though the primary focus of each is somewhat different. We trust that both reports will therefore complement each other.

⁴ Defra, Global Atmosphere Research Programme, *Annual Report 2002–2003*, November 2003, p 5

⁵ Department of Trade and Industry, *Our energy future – creating a low carbon economy*, Cm 5761, February 2003, p 8

⁶ "Government 'looks to do more' in climate change programme review", *ENDS Report* vol 359, December 2004 p 48

⁷ National Audit Office, *Renewable Energy*, February 2005

⁸ Defra, Review of the UK Climate Change Programme, December 2004, Executive summary

Background

What is climate change?

7. Energy coming from the sun as visible radiation (or sunlight) is re-emitted back from earth to space. The greenhouse effect is a natural phenomenon whereby some of this energy remains trapped, absorbed by naturally occurring gases in the atmosphere, thus maintaining the temperature of the earth's surface at a temperature some 33°C warmer than it would otherwise be and enabling life as we know it to exist.⁹

8. As a result of human activities, the atmospheric concentrations of some of these 'greenhouse gases' (GHGs)—including carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O)—have increased, predominantly since the start of the Industrial Revolution in the 1750s. Since that time, changes in the global climate have also occurred, and a statistical link has now been established between human activity and observed climate change phenomena.¹⁰

Why should we be concerned?

9. As part of the UK's commitment to address the issue of climate change during its Presidency of the G8, an international symposium was held in Exeter during February 2005 to advance scientific understanding of the long-term implications of climate change. Some of the key challenges are detailed in Table 2 below.

⁹ Defra, *The environment in your pocket 2004*, October 2004, p 7

¹⁰ Defra, *Review of the UK Climate Change Programme*, Consultation Paper, December 2004 p 11; IPCC 2001

Table 2: Key climate challenges

Avoiding Dangerous Climate Change - Exeter 2005¹¹
Key Challenges
<ul style="list-style-type: none"> • The ten hottest years globally since records began in 1860 have occurred since 1991. • By 2050 between 15%–37% of a sample of 1,103 land plants and animals will eventually become extinct as a result of climate change.¹² • The physical effects of climate change (e.g. the impact on agriculture, increased mortality, extreme weather and health effects) could cost society some £70 per tonne of carbon emitted, based on 2000 prices.¹³ • Although agricultural yields in the EU and the US are predicted to benefit from marginal increases in average global temperature, yields will fall once the increased temperature reaches 2°C and above. • With a 0.8°C average rise in global temperatures, an additional 400 million people could be at risk from water stress, with the risk of malaria in North America increased by a factor of 1.27. • An increase of 1°C could more than double the number of people at risk from water stress to an additional 829 million, and decrease the rice yield in S Asia by 6–10%. • A rise of between 1–3°C could cause the thermohaline circulation—the global ocean ‘conveyor’, of which the Gulf Stream is part—to collapse, impacting upon fisheries, ecosystems and agriculture throughout Northern and Western Europe. This would constitute an ‘extreme event’, the full consequences of which are yet to be fully understood. • Increases of between 2–3°C could cause the Amazon rainforest to collapse and be replaced by savannah. There will be an increased desertification as forests and grasslands are lost. • With an increase of 2.3°C above pre-industrial levels, there could be some 7 million additional people at risk of hunger in the developing world. • A temperature increase of 2.5–3°C could reduce China’s rice yields by 10–20%. Crop failure in Southern Africa could increase from 50% to 75% with an increase of 2.5–4°C.

10. Climate change is a global phenomenon which has an impact upon all aspects of society and the environment. Even taking into consideration the degree of uncertainty noted by some commentators, the Intergovernmental Panel on Climate Change (IPCC) states that the global temperature will increase by *at least* 1.4°C this century.¹⁴ Whilst this may not sound significant, the world is already experiencing the adverse effects of a 0.6°C increase in global temperature.

11. The IPCC states that:

There is new and stronger evidence that most of the warming observed over the last fifty years is attributable to human activities.

¹¹ All facts cited were sourced from the Exeter climate change symposium (see www.stabilisation2005.com/index.html) unless otherwise stated

¹² Sir David King, *The Guardian*, 24 November 2004

¹³ HM Treasury, Government Economic Service Working Paper 140 *Estimating the Social Cost of Carbon*, January 2002, p 6

¹⁴ IPCC, *Climate Change 2001: The scientific basis*, 2001 p 527

12. The IPCC predicted in 2001 that average global temperatures upwards of 0.6°C above pre-industrial levels would result in increased frequency of heatwaves, with associated elevated mortality, and decreasing water resources.¹⁵

13. In August 2003, approximately 15,000 people in Northern France and some 2,000 people in England and Wales died as a result of the unusually hot weather.¹⁶ Across Europe this figure reached 30,000. According to statistical analyses, approximately half of the severity of the hot summer can be attributed to global warming with 90% certainty.¹⁷

14. In the Arctic, average temperatures in the last few decades have risen at a rate almost twice that of the rest of the world. Arctic sea ice has already reduced by 15–20%. A study by NASA found that the Greenland ice sheet was retreating at a rate of one metre per year in 2001. The most recent study indicates that it is now retreating at approximately 10 metres per year. Increased temperatures of just 1.5°C above pre-industrial levels will precipitate the complete melting of the Greenland ice sheet, the consequences of which would be severe, particularly for coastal regions, resulting in an eventual rise in sea level of some 7 metres (23 feet).¹⁸

15. Increased global temperatures and the resulting higher sea levels commonly cited as a consequence are not the only effects the world will experience as a result of climate change. Extreme weather phenomena will also become increasingly common, with heightened frequency and severity of storms, resulting in increased flooding and coastal erosion. In the early 1980s the Thames Barrier was used less than once a year. It is now used on average six times a year.¹⁹

16. In the UK insurance claims for storm and flood damage (not all of which are attributable to climate change) have doubled between 1998 and 2003, when compared to the previous five years. In 2003, this amounted to £6 billion. Predictions by the Association of British Insurers suggest this figure could double or even triple by 2050 unless measures are taken to both adapt for and mitigate future climate change.²⁰ These costs will ultimately be passed on to the consumer, with some properties such as those in high risks areas for flooding, becoming uninsurable.²¹ Estimates by Swiss Re, the world's second largest insurer, suggest that the worldwide financial costs of climate change could double in the next 10 years to US\$150 billion each year.²²

17. Climate change will also impact upon the marine environment. A recently published Defra report notes the impact of climate change on both our coasts and the ocean's temperature, salinity and acidity.²³ Researchers from the US Scripps Institution of Oceanography in San Diego have found clear evidence of an unequivocal link between

¹⁵ IPCC, *Climate Change 2001: The scientific basis*, 2001

¹⁶ *UK health impacts of climate change*, POSTnote 232, Parliamentary Office of Science and Technology, November 2004

¹⁷ Sir David King, *The Guardian*, 24 November 2004

¹⁸ ACIA, *Impacts of a Warming Arctic: Arctic Climate Impact Assessment*, Cambridge University Press, 2004; Gregory, 2004 from Scientific symposium 'Avoiding Dangerous Climate Change', Exeter, February 2005

¹⁹ House of Lords, Thirtieth Report of the European Union Committee, Session 2003–04, *The EU and Climate Change* HL Paper 179—I, para 11

²⁰ Ev 215

²¹ Office of Science and Technology, Foresight Report *Future Flooding*, 2004

²² Prime Minister's Speech on climate change, 14 September 2004, at www.number10.gov.uk/output/page6333.asp

²³ Defra, *Charting Progress: An integrated assessment of the state of UK seas*, PB 9911, March 2005

greenhouse gas emissions from human activity and oceanic warming.²⁴ The concentration of atmospheric carbon dioxide, a potent greenhouse gas, has increased by approximately 35% since the start of the industrial revolution. Research by the Plymouth Marine Laboratory has found that the oceans, a massive sink for atmospheric carbon which have already taken up just under 50% of all man-made emissions of CO₂, have been gradually increasing in acidity as a result. This could have several far-reaching consequences; any changes in oceanic biochemistry will impact upon plankton and shellfish at the bottom of the food chain, and thus alter the entire marine ecosystem. It may also signal the demise of coral reefs.²⁵

'Global dimming'

18. Recent research provides evidence for 'global dimming'. This refers to the reduction of energy from the sun reaching the surface of the planet due to air pollution. Industrial waste emissions include small particles as well as the invisible global warming gases. These particles can be seen in dense urban areas as smog, and can move into the upper atmosphere where they both act as a physical barrier to incoming sunlight, and also increase the reflectivity of the clouds. Consequently, the intensity of sunlight is reduced, resulting in a global cooling effect, recently implicated in the failure of the summer monsoon in the Sahel which caused the great famines in the 1980s. This global cooling may also have masked the warming effects of greenhouse gases, causing scientists to underestimate the impact of greenhouse gas emissions on global warming. Due to efforts to reduce air pollution, we have recently seen a decrease in 'global dimming', with improved air quality—important for respiratory disorders—and the return of the monsoon. However it is suggested that this might have the additional consequence of accelerating global warming yet further.²⁶

Adaptation and mitigation

19. There are two main strategies by which the impacts of climate change can be addressed. Mitigation strategies are long-term methods by which emissions of greenhouse gases are reduced to minimise the extent of climate change in the future. Adaptation strategies acknowledge that a degree of climate change as a result of past human activity is already inevitable, and employ methodologies to reduce the predicted impact of climate change. While they are often discussed independently of one another, both strategies are complementary. The Tyndall Centre for Climate Research told us:

Adaptation and mitigation strategies are intimately linked—the less emphasis is placed on mitigation, the more difficult adaptation will be.²⁷

20. The Association of British Insurers also argued that adaptation to climate change needs to take place in parallel with efforts to mitigate the causes:

We are already locked into a significant degree of climate change, no matter what we do to reduce emissions of greenhouse gases. National and international efforts to reduce

²⁴ Scripps Institution of Oceanography press release, 'Scripps researchers find clear evidence of human-produced warming in the world's oceans', 17 February 2005. The study was presented at the American Association for the Advancement of Science annual meeting, February 2005.

²⁵ Turley *et al.*, 'Reviewing the Impact of Increased Atmospheric CO₂ on Oceanic pH and the Marine Ecosystem', *Proceedings of the International Symposium on Stabilisation of Greenhouse Gases*, Exeter, February 2005

²⁶ BBC2, *Horizon Global dimming*, January 2005; Stanhill, G. and Cohen, S. 'Global Dimming: A Review of the Evidence', *Agricultural and Forest Meteorology*, 107: 255-278 (2001); Roderick, M. and Farquhar, G. 'The Cause of Decreased Pan Evaporation Over the Past 50 Years', *Science*, 298: 1410-1411 (2002); U39, para1

²⁷ Ev 18

greenhouse gases may lessen the degree of climate change in the coming century, but they will not prevent it completely.²⁸

21. The Biosciences Federation argued for further adaptation measures to predict, cope with and prepare for the consequences of climate change:

The UK Climate Change Programme should consider more deeply UK policies for coping and adapting to impending changes in climate, particularly with regards to impacts on biodiversity and ecosystems.

The Federation argues that there is likely to be a substantial impact on biodiversity with large changes in the structure of natural biological communities.²⁹

2 The UK Climate Change Programme

22. The UK Climate Change Programme, launched in 2000, outlines the Government's policies and measures for achieving its domestic target of reducing CO₂ emissions to 20% below 1990 baseline levels by 2010. In September 2004 a review of the Programme was announced. Terms of reference for the review are:

- to evaluate key elements of the UK Climate Change Programme, to measure their impacts and effects
- to update greenhouse gas emissions projections
- to assess whether the UK is on course to achieve its target under the Kyoto Protocol
- to assess whether the UK is on course to achieve its domestic goal to reduce carbon dioxide emissions by 20% below 1990 levels by 2010
- to assess whether the UK is on course to make the “real progress by 2020” towards the longer-term goal of reducing carbon dioxide emissions by some 60% by about 2050, anticipated in the Energy White Paper
- to identify and evaluate the options for putting the UK on a path to a 60% reduction in carbon dioxide emissions by 2050 by delivering further reductions in greenhouse gas emissions through to 2010, 2015 and 2020
- to set out how the Government intends to ensure the UK achieves its Kyoto target and continues to move towards its domestic carbon dioxide goals
- to assess the costs and benefits to the UK and to UK business of the proposed revised programme of action to reduce emissions
- to prepare for the 4th National Communication to the UNFCCC Secretariat, and to ensure that the UK can report with confidence in 2005 to its European partners and the

²⁸ Ev 215

²⁹ Ev 24

international community that the UK has made “demonstrable progress” towards its Kyoto target

- to assess the UK’s response at national, regional and local level to adapting to the impacts of climate change.

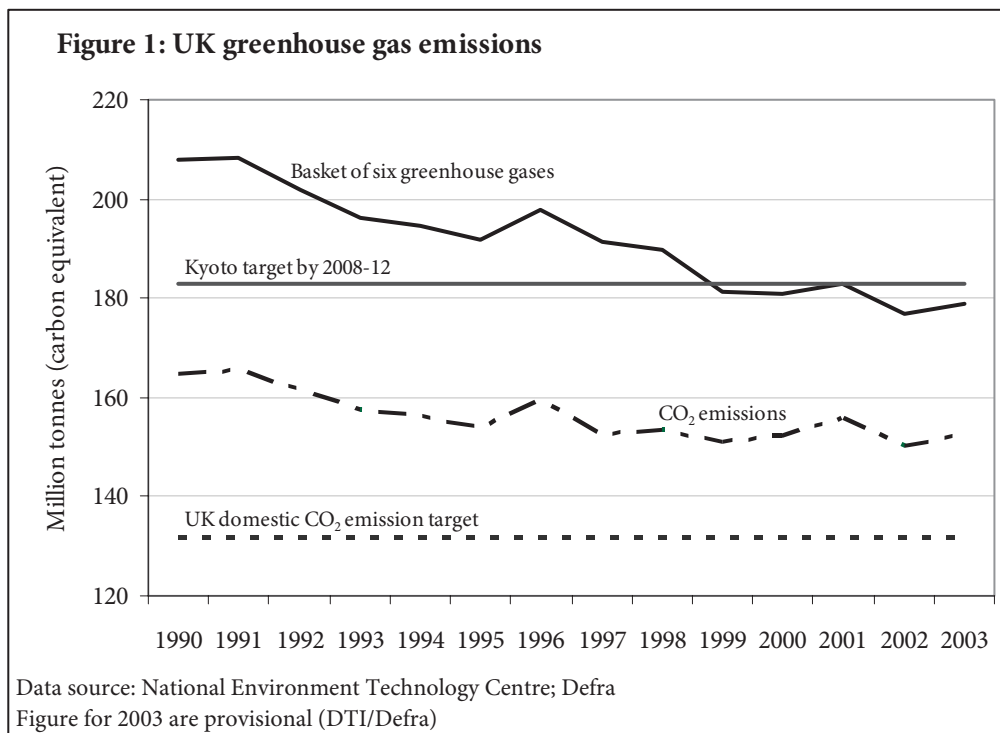
The updated programme is due to be published in the first half of 2005.

Domestic targets

23. In the UK climate change programme it was estimated that implementation of the measures it proposed could, by 2010, lead to a reduction of approximately 23% in the UK’s greenhouse gas emissions below 1990 baseline levels.³⁰ Current UK climate change targets can be summarised accordingly:

- 20% reduction in CO₂ emissions below 1990 baseline levels by 2010
- 60% reduction in CO₂ emissions below 1990 levels by 2050. This goal has been reiterated in the 2003 Energy White Paper³¹

24. Provisional data for 2003 show that UK emissions of greenhouse gases fell by 13.9% between 1990 and 2003, and carbon dioxide emissions fell by 7.2% during the same period (see Figure 1). Emissions in 2003 were 1.5% higher than those in 2002, due in part to the high price of gas and subsequent increase in the use of coal in electricity generation.³²



³⁰ Department of the Environment, Transport and the Regions, *Climate Change: The UK Programme*, Cm 4913, November 2000, p 7

³¹ Department of Trade and Industry, *Our energy future – creating a low carbon economy*, Cm 5761, February 2003, p 8

³² HM Treasury, *Pre-Budget Report*, Cm 6408, December 2004, p 140; *Financial Times*, 'UK breathes easier as pollution falls', 14 January 2005

25. The Government has now conceded that they are unlikely to achieve their domestic target of a 20% reduction in emissions by 2020. Forecasts from the Department of Trade and Industry (DTI) suggest that, by 2010, emissions of CO₂ will only be 14% below 1990 levels, based on current policies.³³ According to Elliot Morley MP, Minister of State for Environment and Agri-Environment, the reason the UK is lagging behind on its targets is due, in main, to a decrease in nuclear power generation combined with a greater than predicted increase in electricity demand and an increasing use of coal.³⁴

26. In order to address this shortfall, Friends of the Earth (FoE) proposed that:

We should probably start to look at incremental targets which are expressed annually. There are studies which show that from 2010 if OECD countries are to make substantial reductions you could set targets of maybe just a two to three per cent reduction per annum. That is much more manageable as a figure than setting a very long distant target ... Climate change is dictated by emissions over time, not simply by how low our emissions are at a certain point in the future³⁵

27. There is also an EU-wide target. Political consensus has been achieved within the European Council that an average global temperature increase of 2°C above pre-industrial levels is the maximum 'safe' level that can currently be foreseen.³⁶ This was widely discussed during the scientific symposium on the stabilisation of greenhouse gases held in Exeter earlier this year. However, according to Margaret Beckett, the Secretary of State for Environment, Food and Rural Affairs, "It is not a firm target because people have different views about the adequacy of such a target", but more of a guiding principle.³⁷ By comparison, the Prime Minister, in evidence to the Liaison Committee in February 2005, stated that he was 'absolutely' signed up to the EU position of the 2°C limit and that "We want to limit it to the two degrees because anything over that triggers a whole series of changes to climate which are immensely worrying and damaging".³⁸

Lack of 'joined-up' Government

28. Some witnesses noted a lack of 'joined-up' Government on climate change policy. Friends of the Earth said that there was "no consistency of approach" in the measures contained in the CCP.³⁹

29. The Energy Saving Trust (EST) suggested that, while climate change is obviously a key issue for Defra, it is perceived as a lower priority area for other Government departments, such as the Department for Transport. EST witnesses argued that, because climate change and energy use cut across the whole economy

³³ "Government 'looks to do more' in climate change programme review", *ENDS Report* vol 359, December 2004 p 48

³⁴ Parliamentary Question 20, PQ 0816 04/05, 25 January 2005

³⁵ Q241

³⁶ 1939th Council meeting, Luxembourg, 25 June 1996: "... the Council believes that global average temperatures should not exceed 2 degrees above pre-industrial level and that therefore concentration levels lower than 550 ppm CO₂ should guide global limitation and reduction efforts..." from Commission of the European Communities Working Paper 'Winning the battle against global climate change', 9 February 2005

³⁷ Q22

³⁸ House of Commons, Minutes of Evidence taken before the Liaison Committee, HC 318-i, 8 February 2005, Q125

³⁹ Ev 96

it needs to be a central objective for every government department and that should include the Treasury on taxation, it should include the DfT on transport, and it should include ODPM [Office of the Deputy Prime Minister] on housing.⁴⁰

30. The Business Council for Sustainable Energy (BCSE) who, speaking specifically about energy efficiency, stated that whilst formal responsibility for this area lies with Defra:

most of the levers to deliver lie to a certain extent with the DTI, but, certainly when it comes to housing stock, also with ODPM, when it comes to tax measures with Treasury and when it comes to executive arms to deliver, you have the Carbon Trust, you have the Energy Saving Trust, you have other bodies which hang off those. It is not that there are not enough people doing it, it is that they need to be more focused and more driven so things really do happen.⁴¹

31. Friends of the Earth believes that perverse effects (such as “handing a significant rebate to coal fired power stations while increasing the rates payable by clean renewable alternatives”) undermine the Government’s climate objectives and “highlights the need for far greater integration between Departments to deliver unequivocal policy signals”.⁴² They added that:

we have witnessed probably one of the most unhelpful interactions between two departments ... with the DTI representing what they believed to be the competitiveness of industry and Defra representing our need to meet our targets and it has been, I think, quite acrimonious at times ... we would probably all like to see much stronger co-ordination and leadership on energy efficiency, both within Defra and between Defra and other departments⁴³

32. The Secretary of State for Environment, Food and Rural Affairs said herself that whilst Defra holds ultimate responsibility for climate change within the UK:

we have the targets and they have the levers because obviously how we do on climate change is relevant to what happens in transport, it is relevant to what happens in terms of sustainable construction and things of that kind, but these are clearly relevant policy responsibilities of other departments⁴⁴

33. The Public Service Agreement on greenhouse gas emissions reductions will, as of April 2005, be shared between the Department for Transport (DfT), the Department for Trade and Industry (DTI) and Defra.⁴⁵

34. We acknowledge that the Government has undertaken a number of important initiatives at both a domestic and international level to respond to climate change, but we are frustrated by the absence of a clear central direction to the Government’s work on climate change. Given the strength of scientific evidence which suggests that the situation

⁴⁰ Q335

⁴¹ Qq150, 152

⁴² Ev 100

⁴³ Q259

⁴⁴ Q10

⁴⁵ Defra PSA II “To reduce greenhouse gas emissions to 12.5% below 1990 levels in line with our Kyoto commitment and move towards a 20% reduction in carbon dioxide emissions below 1990 levels by 2010, through measures including energy efficiency and renewables. Joint with DTI and DfT.” See <http://www.defra.gov.uk/corporate/busplan/psa2004.htm>

is even more urgent than anticipated, we recommend that a Minister for Climate Change or a Cabinet Committee on Climate Change chaired by the Secretary of State for Environment, Food and Rural Affairs be appointed, with sole responsibility for focusing and coordinating the actions of Government Departments to ensure that the UK's domestic and international targets are met. It is imperative that tackling climate change be put at the very heart of Government.

35. In our report on Defra's 2004 Departmental Annual Report, we recorded our concern that Defra does not yet have sufficient 'clout' to be taken seriously by other Government Departments in framing their key policy decisions.⁴⁶ The findings of this report do not persuade us otherwise.

36. The seriousness of the Government's commitment to combating climate change, and of Defra's influence within Government, will be demonstrated by the outcome of the UK Climate Change Programme review. The Rt Hon Stephen Byers MP, speaking as co-chair of the International Climate Change Taskforce made clear his concerns about the review:

the worry I have is that the present review of the climate change programme will be used as an excuse to move away from the 20 per cent target reduction of CO₂ emissions. ... if the Government adopts that approach then almost everything we say as a Government on climate change will be devalued as a result.⁴⁷

37. We are encouraged that the Public Service Agreement target on greenhouse gas emission reductions is now shared by the Department for Transport as well as Defra and the Department of Trade and Industry. However, we strongly recommend that the review of the UK Climate Change Programme does not lead to a reduction in the target for greenhouse gas emission reduction in Defra's existing PSA target.

Transport

Road transport

38. Transport currently accounts for over 20% of the UK's total CO₂ emissions, 95% of which is attributable to road transportation.⁴⁸ For this reason, it was regarded by many who gave evidence as crucial to climate change policy.

⁴⁶ House of Commons Environment, Food and Rural Affairs Committee, 15th Report of Session 2003–2004, *The Departmental Annual Report 2004*, HC 707, para 18

⁴⁷ Q393

⁴⁸ Ev 172

Table 3: UK greenhouse gas emissions by source (million tonnes carbon equivalent)

Source	1990	1995	2000	2005	2010	2015	2020
Energy supply	75.2	63.2	59.7	61.9	51.9	48.7	46.4
Business	26.9	25.6	25.2	24.3	24.2	25.2	26.1
Industrial processes	18.3	16.7	10.8	10.6	10.4	10.4	10.4
Transport	34.1	34.3	35.8	36.4	38.7	41.0	42.9
Residential	21.5	21.8	23.9	22.3	20.7	21.0	21.9
Agriculture	15.4	14.9	14.1	13.4	12.2	12.1	12.0

Data source: Defra, Review of the UK Climate Change Programme, Consultation Paper, December 2004, Table 3

39. One way in which to reduce the impact of road transport on climate change is to increase fuel efficiency. Under a voluntary EU agreement the fuel efficiency of new cars is currently required to increase such that average emissions fall to 140 g/km in 2008/09. In 2003, average CO₂ emissions from new cars in the UK were 172.1 g/km. According to the Energy Saving Trust (EST), current trends suggest that vehicle efficiency is being improved, but “not sufficiently quickly”. The EST felt that consequently, this target was unlikely to be achieved in the UK.⁴⁹ This is reiterated in the recent Transport Committee report, which highlights that it has taken six years to reduce vehicle carbon emissions by 17.7 g/km.⁵⁰

40. Friends of the Earth argued that fiscal measures such as road fuel duty needed to be increased to curb transport emissions.⁵¹ The EST—concurring with recommendations made by the Transport Committee⁵²—argued that the current differentiation in Vehicle Excise Duty (VED) was insufficient to encourage purchasing of lower-carbon cars:

The top two bands for the lowest emission cars only cover three per cent of new vehicles. ... as well as increasing the differential between bands we would certainly welcome at least one further band to penalise the more inefficient vehicles.⁵³

41. Road transport has a significant impact on climate change. Emissions from road transport must be made a priority in the UK’s climate change mitigation strategy. We recommend that the Government re-examine the effect of its current fiscal measures, such as differentials in Vehicle Excise Duty, with a view to making them more effective in promoting the purchasing of low-carbon cars. We regard the recent announcement in the Budget of a £5 increase in Vehicle Excise Duty for the two most polluting bands as no more than a token gesture. At a European level we also recommend that discussions are held to examine what economic measures might be developed to require vehicle manufacturers to speed up the development of low carbon vehicles.

42. In December 2004 the Department for Transport and the Energy Saving Trust announced that the Powershift, Clean-up and New Vehicle Technology programmes are being ‘revised’.⁵⁴

⁴⁹ Ev 126

⁵⁰ House of Commons Transport Committee, Seventeenth Report of Session 2003–04, *Cars of the Future* HC 319-I, para 25

⁵¹ Ev 99

⁵² House of Commons Transport Committee, Seventeenth Report of Session 2003–04, *Cars of the Future* HC 319-I, para 74

⁵³ Ev 124; Q340

⁵⁴ ‘DfT reviews TransportEnergy grant programmes’ Department for Transport press release 2004/0164, 21 December 2004

Grants for vehicle conversions to natural gas use are also being cut.⁵⁵ It has been argued that this will have a major negative impact on the emerging zero and low emission vehicle manufacturing industry and appears to contradict the Government's 'Powering Future Vehicles Strategy', one of the main objectives of which is "to promote the development, introduction and take-up of new vehicle technologies and fuels".⁵⁶ We questioned the Secretary of State about this. She told us that "it is intended to replace the Powershift programme ... with a programme more focussed on climate change rather than on air quality".⁵⁷ The EST claimed that the Department for Transport was concerned that the schemes might not comply with European state aid regulations and as such decided to close them as of the end of this financial year. Replacement schemes which do comply with state aid regulations are planned, however there is likely to be a hiatus of some months between the cessation of current schemes and the implementation of their replacements.⁵⁸

43. We welcome the Government's decision to focus its new vehicle technology programmes more on climate change. We do not believe, however, that it was helpful to cancel existing programmes rather than add to them, and urge that the Government publish details of any successor schemes urgently. We also recommend that the Government ensure that any hiatus between abolition of the Powershift programme and other low-carbon vehicle programmes and the implementation of their replacements is avoided.

Biofuels

44. Given that transport is one of the largest areas of growth of CO₂ emissions, finding alternative transport fuel could help mitigate the effects of climate change. The EU biofuels directive (Directive 2003/30/EC) requires Member States to set targets on the use of biofuels for 2005 and 2010. The Department for Transport has recently consulted on targets and on options for promoting the supply of biofuels.⁵⁹ The Government has set UK goals for biofuels, with a target of 0.3% use in 2005. According to the Secretary of State:

at the moment use is about two million litres a month, and 0.3 per cent would mean 12 million litres a month, so that is a six-fold increase over current levels.⁶⁰

Figures by the European Biodiesel Board show that the combined biofuel output of Germany and France was greater than 1,000,000 tonnes in 2003, while the UK produced less than 10,000 tonnes.⁶¹

45. Despite the Government's goals, transport fuels are not included in the original UK Climate Change Programme, although energy crops are. The Biosciences Federation described this as a "glaring omission", given "the potential for biological sources to help meet the demand for transport fuels".⁶² According to the review of the CCP, biofuels are to be included in the revised programme.

⁵⁵ 'Government is pulling the plug on green fuel lorries', Freight Transport Association press release, 24 January 2005

⁵⁶ Defra, *Review of the UK Climate Change Programme*, December 2004, para.8.12

⁵⁷ House of Commons Environment, Food and Rural Affairs Committee, Session 2004–05, (HC 330-i), Q17

⁵⁸ Qq328–330

⁵⁹ 'Towards a biofuels strategy for the UK', Department for Transport news release 2004/0046, 26 April 2004

⁶⁰ House of Commons Environment, Food and Rural Affairs Committee, Session 2004–05, (HC 330-i), Q39

⁶¹ European Biodiesel Board, 2003 statistics, www.ebb-eu.org/stats.php

⁶² Ev 25

46. Some witnesses disagreed with this emphasis on biofuels. The Soil Association argued that energy crops would require a very large area of land to make even a small contribution to the UK's energy use. Consequently, the Association suggests it would be preferable to focus on alternative energy from non-crop sources (for example wind, solar, tidal, hydrogen, nuclear etc) and encourage any change in land use to be in the domestic production of animal feed, which is currently imported thus generating greenhouse gas emissions from transportation.

47. We believe that biofuels can be a useful a tool in the mitigation of increasing greenhouse gas emissions from transport. Accordingly, we welcome Defra's decision to rectify the omission of biofuels from the Climate Change Programme as part of the climate change review, and recommend that the Government take this opportunity to adopt policy measures to increase biofuel production and use within the UK. However, we regret that so far, in spite of a 20 pence per litre duty derogation first announced in the 2002 Budget, there has been very little UK biodiesel produced and no home-based bioethanol plant established. We note the apparent difference between Defra's enthusiasm for biofuel crops and the Treasury's reluctance to fully engage in this issue, and call upon the Government to re-examine its approach to its use of fiscal incentives in this area in order properly to kick-start the development of a UK biofuels industry.

Aviation

48. Emissions from domestic aviation and airports are included under the Kyoto Protocol, but emissions from international aviation and international shipping are not.⁶³ Aviation currently represents 11% of the UK's total climate impact and 5.5% of the UK's CO₂ emissions. In addition to the direct emission of greenhouse gases (GHGs), aviation may also influence climate change through 'radiative forcing'—whereby the balance between incoming and outgoing solar radiation is perturbed by external factors such as manmade greenhouse gases or aerosols—and the effect of contrails. Whilst this is smaller than other sectors, such as power generation which represented 29% of the UK's total climate impact in 2000⁶⁴, the impact of aviation is predicted to rise and according to the DfT could contribute about 33% by 2050.⁶⁵

49. According to the IPCC assessment, accepted by the British Airports Authority (BAA plc), the total climate impact of aviation is 2.7 times that of its CO₂ emissions due to atmospheric effects at high altitude. The recently published House of Lords report *The EU and Climate Change* spells this out in more detail:

The impacts of aviation on climate change are two-fold: first, there are the direct emissions of greenhouse gases from burning kerosene in the jet engine. Secondly, there are a range of other emissions from the engine which give rise to global warming—these include water vapour, NO_x (nitric oxide and nitrogen oxide) and particulates. At high altitude, some of these emissions contribute powerfully to global warming through the formation of contrails and high-altitude clouds which contribute to "radiative

⁶³ Defra, Five Year Strategy *Delivering the Essentials of Life*, December 2004; Ev 33

⁶⁴ Ev 33

⁶⁵ Department for Transport, *The Future of Transport: a network for 2030*, Cm 6234, July 2004 p 107

forcing". The effects of these impacts are not clearly quantified, but are known to be significant.⁶⁶

50. According to Department for Transport forecasts, CO₂ emissions from UK aviation will be in the region of 16 to 18 million tonnes of carbon (MtC) by 2030, of which international flights would comprise 97%. By that date, the Department for Transport believes aviation could represent around a quarter of the UK's total climate impact.⁶⁷

51. Air travel is predicted to increase, further increasing its likely impact of climate change. In December 2003 *The Future of Air Transport* White Paper sanctioned an increase in the UK's airport capacity.⁶⁸ This will allow passenger numbers to more than double from 180 million per annum in 2000 to 470 million per annum by 2030. Evidence from the Tyndall Centre states that "Projected air traffic expansion will more than double carbon dioxide emission from UK flights by 2030, to 65–77 million tonnes".⁶⁹

52. According to the recent Environmental Audit Committee report:

If aviation emissions increase on the scale predicted by the DfT, the UK's 60% carbon emissions reductions targets ... will become meaningless and unachievable. The most we could hope to attain would be about 35%.⁷⁰

53. BAA plc, one of the UK's top 20 consumers of industrial energy, announced in July 2003 that it aims to reduce absolute CO₂ emissions from energy consumption by 15% by 2010, compared to 1990 levels. BAA also suggested in evidence that measures adopted to reduce CO₂ might lead to increases in other greenhouse gases, such as oxides of nitrogen (NO_x) for example, which are not currently included in the EU Emissions Trading Scheme (See Chapter 3 for further details of the trading scheme).⁷¹ However within the EU Emissions Trading Directive (Directive 2003/87/EC) there is scope for the scheme to be expanded in the future to include other gases.

54. The chief executive of British Airways recently wrote that "aviation should not be forced to comply with standards that differ from those in other industries. The suggestion that its targets should be higher because of other, less well understood, effects in the upper atmosphere should be resisted".⁷² It is argued by BAA that the long-term future of aviation and the potential to reduce the climate change impact of aviation will be best served by a programme of international research, funded by the aviation industry, to find climate solutions within the sector... They support practical mechanisms which "do not encourage anti-competitive behaviour by airlines", and reject approaches to tackling the environmental impacts of aviation, including greenhouse gas emissions, which are aimed simply at reducing demand by raising the cost of flying through taxes and charges. They do however, recognise

⁶⁶ House of Lords Thirtieth Report of the European Union Committee, Session 2003–04 *The EU and Climate Change*, HL Paper 179-I, para 116

⁶⁷ Department for Transport, *The Future of Air Transport*, Cm 6046, December 2003, para 3.35–3.36; in this context emissions from UK aviation are defined as all domestic services plus all international departures from the UK. For comparative purposes, 16–18 MtC is equivalent to 59–66 MtCO₂.

⁶⁸ Department for Transport *The Future of Air Transport*, Cm 6046, December 2003, para 1.1

⁶⁹ Ev 13

⁷⁰ House of Commons Third Report of the Environmental Audit Committee, Session 2003–04, *Pre-Budget Report 2003: Aviation Follow-up*, HC 233-I, p 8

⁷¹ Ev 33–34, 37

⁷² 'How airlines can fight climate change', *Financial Times*, 4 January 2005

that the consequence of a regime of smart, well-targeted instruments may be higher costs and reduced demand.⁷³

55. ACI Europe, the trade association representing 450 airports across 45 European countries, has recently called for CO₂ emissions from aviation to be included in the second phase of the EU Emissions Trading Scheme, starting in 2008.⁷⁴ European ministers have recently announced that they favour a tax on aviation fuel with revenue financing development aid.⁷⁵ This suggestion has been rejected by the aviation industry as a tax which will “provide no incentive to improve environmental performance”.⁷⁶

56. In contrast, the Secretary of State for Environment, Food and Rural Affairs said that “we believe the policy that has much the best chance of success over a short timescale as well as being the most cost-effective is to try to get aviation into the second phase of the EU Emissions Trading Scheme” and that addressing the issue of aviation in the context of climate change would be a priority for the UK during its Presidency of the EU.⁷⁷ Despite evidence from the Prime Minister to the Liaison Committee highlighting the political difficulty of reducing the impact of aviation on climate change, particularly with regard to imposing crude fiscal measures to reduce demand⁷⁸, aviation has been singled out as a key priority in the recent Government sustainable development strategy *Securing the Future* as a growing problem in need of “better regulation” to control its climate change impact. It reiterates the Government’s commitment to prioritise the inclusion of aviation within the EU ETS by 2008 during the UK’s Presidency of the EU this year.⁷⁹

57. Aviation has a significant impact on climate change, which is likely to increase with the projected growth in the industry unless alleviation measures are implemented. It is therefore vital that aviation be included in climate change mitigation strategies at both a national and international level. Depressing demand for air travel is possible in the short-term, but may prove difficult to maintain over time. We applaud the proposal to include aviation within the EU Emissions Trading Scheme (ETS), but we are concerned by the length of time seemingly required to achieve implementation. We recommend the Government use whatever means necessary to ensure inclusion within the scheme by the start of the second phase of the ETS in 2008. We welcome the commitment in the new Sustainable Development White Paper *Securing the Future* on this.

58. We also recognise, however, that there is a limit to what can be achieved in the short to medium term by the inclusion of aviation within the emissions trading scheme, due to the long asset lifetime of aircraft. We therefore additionally recommend that the Government work with the EU and other partners to encourage the uptake of new technologies and ‘fast-tracking’ their development, in addition to adopting fiscal measures to reduce demand. We also recommend that discussions are held at an EU level with the aircraft and aero-engine manufacturers and the airlines to examine ways in which the development and introduction of more fuel efficient aircraft can be accelerated.

⁷³ Ev 34-35

⁷⁴ Ev 44

⁷⁵ ‘EU backs air fuel tax to fund aid’, *Reuters*, 5 February 2005

⁷⁶ ‘Airlines warn of fuel tax meltdown’, *The Guardian*, 7 February 2005

⁷⁷ House of Commons Environment, Food and Rural Affairs Committee, Session 2004–05, (HC 330-i), Qq12–13

⁷⁸ House of Commons, Minutes of Evidence taken before the Liaison Committee, HC 318-i, 8 February 2005, Q156–157

⁷⁹ Defra, *Securing the future: delivering UK sustainable development strategy*, Cm 6467, March 2005, p 86

59. In addition to the EU Emissions Trading Scheme and the fast-tracking of technological development, referred to in paragraphs 57 and 58, we also recommend that the Government evaluate the effects of an aviation fuel tax and a system of capping the overall carbon emissions associated with aviation and airport-related activity as part of determining what would be the most effective package of fiscal measures to contribute to an overall reduction in emissions from aviation.

Power generation and climate change

60. The power generation sector contributes a significant proportion to the UK's total greenhouse gas emissions. In 2002 the energy supply sector in the UK emitted 61 million tonnes of carbon (MtC), around 90% of which comes from CO₂. This represents some 30% of total UK CO₂ emissions.⁸⁰ Defra states that:

Despite slight increases in 1998 and 2001, emissions of carbon dioxide from power stations have steadily decreased, reducing by around 20% between 1990 and 2002. This largely reflects a continuing shift in the way in which electricity is generated: in particular a shift from coal and oil to gas-fired power stations, which are relatively more efficient and produce less carbon dioxide for a given amount of energy produced.⁸¹

61. Gas, coal and nuclear power contribute 38%, 35% and 22% respectively to electricity generation in the UK, with hydroelectric power contributing 1% and 'other' sources 3%, according to the Association of Electricity Producers. The average thermal efficiency of coal power stations was 36% in 2003, 46.4% for combined cycle gas stations and 38.1% for nuclear power stations.⁸²

62. According to DTI projections, carbon emissions from the fossil-fuelled power generation sector will decline from a current 158.2 million tonnes of carbon dioxide (MtCO₂) to 139 MtCO₂ by 2010.⁸³ The Association of Electricity Producers (AEP), however, described these assumptions as 'fairly heroic', particularly given that demand for electricity is "rising year on year by about 1.5% per annum".⁸⁴ Friends of the Earth also noted the "rising demand for energy in the commercial and domestic sectors".⁸⁵ In order to achieve the 139 MtCO₂, the AEP argued that there would need to be a reduction in energy demand of around -0.2%.⁸⁶

63. According to Defra:

The development of the energy supply sector over the coming decades will be critical to the UK's ability to meet its short, medium and long-term carbon dioxide emission reduction goals.⁸⁷

But the AEP argues that, based on work done for the Energy White Paper, "even if the electricity sector become carbon neutral, it would be impossible for the UK to achieve its 60

⁸⁰ Ev 179

⁸¹ Defra, *Review of the UK Climate Change Programme*, Consultation Paper, December 2004 paras 6.4-6.5

⁸² Association of Electricity Producers, www.aepuk.com/need-info.php

⁸³ Ev 45

⁸⁴ Qq121-122

⁸⁵ Ev 95

⁸⁶ Q122

⁸⁷ Defra, *Review of the UK Climate Change Programme*, Consultation Paper, December 2004 para 6.1

per cent target”.⁸⁸ The AEP argues that in the short term the only means by which to achieve reductions in carbon emissions is to switch from coal to gas:

Effectively, at the moment we have somewhere around 120 terawatt hours of coal-fired generation in the UK which is responsible for just over 100 million tonnes of CO₂ emissions a year. Gas-fired generation gas emissions are pro rata about 40 per cent of those of coal.⁸⁹

64. This, however, has implications for security of supply, which may be compromised if a disproportionate amount of the UK’s energy supply comes from any one source. This is supported by the DTI, which estimates that the proportion of electricity predicted to come from nuclear sources will decrease from 24% in 2004 to 7% over the next 15 years. This would increase dependence on imported gas.⁹⁰

Renewables and the Renewables Obligation

65. Production of energy from renewable sources does not generate any carbon dioxide. Biofuels and biomass are the exception, but in these cases any carbon dioxide released is offset by carbon dioxide used by the crops while growing, thus rendering them ‘carbon neutral’.

66. Renewable sources of energy include:

- Biofuels (such as biodiesel) and biomass (such as energy from willow)
- Biogas (e.g. the burning of landfill gas such as methane)
- Energy from waste
- Solar power
- Hydroelectric, tidal and wave power
- Wind power, both on- and offshore.

67. The 2003 Energy White Paper signalled the Government’s aspiration to further double the proportion of electricity supplied by renewables by 2020. Defra estimate that achieving the 2010 target would save “around 2.5 MtC in 2010”. The recent National Audit Office report, *Renewable Energy*, suggests that doubling the proportion of renewable energy to 20% by 2020 would reduce CO₂ emissions by between 20 million to 27 million tonnes.⁹¹

68. The Renewables Obligation (RO) was introduced by the Government in 2000 and defines the amount of electricity energy suppliers must provide from renewable sources of energy. The original target was 10.4% by 2010/11. In December 2003, the Government announced that the RO would be increased to 15% of electricity coming from renewables by 2015.⁹² Compliance with the RO is demonstrated by suppliers presenting Renewables Obligation Certificates (ROCs) to Ofgem (the Gas and Electricity Markets Authority). ROCs were issued

⁸⁸ Q125

⁸⁹ Q137

⁹⁰ DTI Working Paper, *Updated UK Energy Projections*, May 2004

⁹¹ National Audit Office, *Renewable Energy*, Session 2004–2005, HC 210, February 2005

⁹² Defra, *Review of the UK Climate Change Programme*, Consultation Paper, December 2004 para 6.10

to accredited generators for eligible renewable electricity generated within the UK (including its territorial waters and Continental Shelf), and supplied to customers in Great Britain. They can be traded to allow electricity suppliers to meet their targets at the lowest cost.

69. In the second year of the RO (2003-04) 2.4% of Great Britain's electricity came from eligible renewable sources, falling far short of the 4.3% Obligation level for this period. Despite this, predictions by the National Audit Office estimate that the UK should be producing 9.9% of its electricity from renewables by 2010.⁹³ This is a higher estimate than the 7.5% predicted by the House of Lords Science and Technology Select Committee in their 2004 report.⁹⁴ France has a target of 21% electricity generation from renewables by 2010 and Italy 25% by 2010, which they are both currently on track to achieve.⁹⁵

70. We heard from witnesses that although the RO is technology neutral, in that it is independent of the specific source of renewable energy, it is a market-based mechanism, and therefore businesses are currently being driven to onshore wind developments as the lowest-cost technology currently available.⁹⁶ According to the National Audit Office report, while onshore wind energy generation is already close to market competitiveness, offshore wind—although already with the potential to supply customers—requires further financial support to achieve commercial viability. Other technologies such as wave, tidal and solar are believed to be commercially non-viable for many years.⁹⁷

71. The Renewables Obligation was perceived by witnesses as a real incentive to invest in the development of renewables. According to the UK Business Council for Sustainable Energy:

This level of investment must be maintained if the government's targets for renewables are going to be achieved. This requires long-term confidence in the renewables market. The recent announcement to raise the target to 15.4% by 2015 has helped to bolster confidence in the market and the need to maintain this confidence must be considered throughout both the Climate Change Programme review and the forthcoming review of the Renewables Obligation.⁹⁸

72. The House of Lords EU Committee has argued that, in order to achieve its targets, the Government “needs to provide more reassurance about long-term returns. The current support arrangements favour only those developments that will give a quick return—in effect onshore wind farms”.⁹⁹

73. The issue of long-term investment confidence was also raised by Our World Foundation:

the main trouble with renewables is that the cost is up front. The energy is free but all of the cost is up front and finding that money when you are competing with fuels which are unrealistically cheap (that is the fossil fuels) is almost impossible from a financial point of view.¹⁰⁰

⁹³ National Audit Office, *Renewable Energy*, Session 2004–2005, HC 210, February 2005

⁹⁴ House of Lords Science and Technology Committee 4th Report of Session 2003-04, *Renewable Energy: Practicalities*, HL Paper 126-I

⁹⁵ Q401

⁹⁶ Q161

⁹⁷ National Audit Office, *Renewable Energy*, Session 2004–2005, HC 210, February 2005

⁹⁸ Ev 48

⁹⁹ House of Lords Science and Technology Committee 4th Report of Session 2003-04, *Renewable Energy: Practicalities*, HL Paper 126-I

¹⁰⁰ Q225

74. According to the Business Council for Sustainable Energy (BCSE):

There is undoubtedly more potential to use solar photovoltaics across the UK, be it in industrial buildings or in commercial buildings. It is a pity, for example, that the government is not using its own power of procurement to do these things because the new Home Office building that you will all shortly be seeing rising 100 yards away is not going to be a shining paragon of solar. It will have energy efficiency measures built in, but it is those sorts of things that can be used to do much more to drive forward that market.¹⁰¹

75. We are concerned that alternative renewable technologies such as wave, tidal and solar power are currently believed to be commercially non-viable for many years. In order to achieve its targets on renewable power generation, it is imperative that the Government urges the development of a suite of technologies rather than relying solely on onshore windfarms, although these have a valuable role to play as part of a suite of renewable energy sources. Accordingly, we recommend that the Government comes forward with programmes to promote the rapid mainstream development and use of new renewable energy technologies, particularly biofuels, biomass and solar, wave and tidal power.

76. We are concerned that any gains made in the proportion of the energy supply generated by renewable technologies may be cancelled out by the declining proportion of energy production from nuclear sources. Renewables are predicted to supply some 9.9% of the UK's energy by 2010, but the proportion of electricity from nuclear sources is predicted to fall from 24% in 2004 to 7% over the next fifteen years. We are concerned that the current rate of increase in renewable energy may not be sufficient to compensate for decline in electricity from nuclear sources, resulting in an increased dependence on fossil fuels. Therefore it is essential to accelerate the increase in sustainable energy and energy efficiency measures.

77. The Government has recently introduced new business rates, whereby the ROCs become part of the "receipts and expenditures" system of payment. This could increase the taxes paid by some renewable power generation threefold. Conversely, many fossil fuel generators may see their business rates fall in the next fiscal year.¹⁰² When questioned, Defra said they had recently become aware of this anomalous situation and were in the process of trying to resolve the issue with both industry and the Office of the Deputy Prime Minister.¹⁰³

78. The contradiction between the new business rates introduced by HM Treasury and the Renewables Obligation, the aim of which is to mitigate climate change, is a clear example of the lack of 'joined-up' Government. Given the urgency for action underlined by the climate change conference in Exeter, it is essential that *all* relevant departments reaffirm the Governments commitment to the Renewables Obligation and renewables targets to inspire investor confidence.

¹⁰¹ Q145

¹⁰² 'Government stokes green power into rate ferment', *Daily Telegraph*, 28 January 2005

¹⁰³ House of Commons Environment, Food and Rural Affairs Committee, Session 2004-05, (HC 330-i), Q24

Combined Heat and Power (CHP)

79. CHP, although not a renewable technology, is an efficient system whereby energy (usually electricity) and usable heat are generated together in a single process. In 2003 there were 1,506 CHP facilities in the UK, compared to 32 gas and 13 nuclear power stations.¹⁰⁴

80. According to the Combined Heat and Power Association:

The current mix of CHP installations achieves a reduction of over 30% in CO₂ emissions in comparison with generation from coal-fired power stations, and over 10% in comparison with gas fired combined cycle gas turbines. The newest installations achieve a reduction of over 50% compared with generation from coal-fired power stations.¹⁰⁵

81. Currently around 90% of CHP systems are gas-fired. The BCSE told us that, according to statistics, the UK's CO₂ emissions are reduced by between 700–900 tonnes of carbon per annum for every one megawatt of CHP that is produced.¹⁰⁶

82. The Government has set a target of 10GW of CHP capacity by 2010 which WWF state it is “grossly falling short of”.¹⁰⁷ According to the BCSE:

... the UK has yet to achieve its interim target of 5GWe by 2001. Indeed at present CHP capacity is actually falling, despite the potential the Government itself has highlighted to make much wider use of this highly efficient technology.¹⁰⁸

83. Micro-CHP units aim to generate CHP at the household level. Such units would typically replace the household boiler and provide both all of the heat and a proportion of the electricity to the building, using the same amount of gas as a conventional domestic boiler. While micro-CHP systems for individual houses are still in development, such systems are already in operation in some blocks of flats. Our World Foundation argued that:

at the moment 1.3 million people buy boilers every year and therefore if they could be encouraged to buy micro CHP within less than ten years that would generate sufficient capacity to take over from the existing nuclear power stations.¹⁰⁹

84. The Secretary of State acknowledged that there were “great concerns in the CHP sector” and that Government was not making as much progress as it had hoped”.¹¹⁰

85. We are concerned that the Government is not doing enough to enable Combined Heat and Power (CHP) to achieve its national uptake targets, particularly given the gains in carbon reductions that can be achieved through this—already commercially available—technology. We commend the announcement in the Budget of a reduced rate for the installation of micro-CHP. We recommend that the Government, in its response to our report, detail the actions which it will now be pursuing to address the current deficit in CHP generation.

¹⁰⁴ Association of Electricity Producers; www.aepuk.com (Digest of UK Energy Statistics 2004, Ofgem)

¹⁰⁵ Combined Heat and Power Association, www.chpa.co.uk

¹⁰⁶ Qq163–164

¹⁰⁷ Ev 116

¹⁰⁸ Ev 48

¹⁰⁹ Q208

¹¹⁰ House of Commons Environment, Food and Rural Affairs Committee, Session 2004–05, (HC 330-i), Q26

Nuclear power

86. Nuclear power produces minimal CO₂ emissions. For this reason some commentators have suggested an increase in its use. Sir David King recently said that “It would be foolhardy to say we will never have the need for nuclear new build. Chernobyl has created ... a very negative view of nuclear technology. I don’t think it’s the right view”.¹¹¹

87. BNFL highlighted the lack of greenhouse gas emissions from nuclear power arguing that generating more of the UK’s energy from nuclear sources can help reduce greenhouse gas emissions.¹¹² This is supported by a recent report from the House of Lords Science and Technology Committee which notes that:

The role that nuclear power can play [in the respect of reducing CO₂ emissions] is widely recognised, and is becoming a matter of increasingly urgent public debate...¹¹³

88. Conversely WWF, citing the DTI, argue that there is no economic case for nuclear power.¹¹⁴ Friends of the Earth argue that:

... with the huge subsidies provided to the nuclear industry over the past 30 years there can be no confidence that another round of Government support for nuclear will deliver the required results. ... The last nuclear power station to be built in this country took 15 years to go from proposal to electricity production and cost more than twice the original budget.¹¹⁵

89. E.ON UK (formerly Powergen) states that

The UK needs to maintain the nuclear option but will need to address how the investment risks can be managed so that private capital can be attracted to nuclear within a competitive energy market.

The Government has made it clear that it will not consider new nuclear construction without a further White Paper on the issue. Nuclear power has the potential to generate power with relatively little impact on climate change although the high capital cost of the technology and the unresolved issue of disposal of irradiated waste are barriers.¹¹⁶

The House of Lords Science and Technology Committee report suggested that the lead time for constructing new nuclear power stations could be more than a decade.¹¹⁷

90. In addition to the length of time required to commission new nuclear power stations, witnesses noted that the issue of nuclear waste disposal also remains to be satisfactorily addressed.¹¹⁸ In 2003 the Government appointed the Committee on Radioactive Waste Management (CoRWM) to propose a technical—and publicly acceptable—solution to the problem. According to CoRWM there are currently 764 m³ of ‘high level’ waste and 74,500

¹¹¹ ‘Chernobyl created a negative view of nuclear technology. I don’t think it’s the right view’, *The Independent*, 17 January 2005

¹¹² British Nuclear Fuels, www.bnfl.com ‘How nuclear energy can help reduce climate change’

¹¹³ House of Lords Science and Technology Committee, 5th Report of Session 2003–04 *Radioactive Waste Management*, HL Paper 200, December 2004

¹¹⁴ Q284

¹¹⁵ Friends of the Earth, *Tackling climate change without nuclear power*, September 2002

¹¹⁶ Ev 179, 181

¹¹⁷ House of Lords Science and Technology Committee, 5th Report of Session 2003–04 *Radioactive Waste Management*, HL Paper 200, December 2004

¹¹⁸ Q284

m³ of ‘intermediate level’ waste, with greater quantities projected as a result of the current nuclear programme. They are due to present their recommendations to the Government by July 2006. The House of Lords Science and Technology Committee report *Radioactive Waste Management*, concluded that “The small uncertainties associated with radioactive waste disposal that still exist must be balanced against the spectre of global warming; the consequences of not doing enough to limit greenhouse gas emissions may be catastrophic”.¹¹⁹

91. The Government’s sustainable development report *Securing the Future* reiterates points made in the Energy White Paper that, although nuclear power is a source of carbon-free electricity, in addition to the problem of radioactive waste disposal it is also economically unattractive. The report does, however, go on to state that the Government does not rule out the possibility that “new nuclear build might be necessary” in order to achieve targets on carbon emissions reduction, but that this would be preceded by full public consultation and publication of a further white paper.¹²⁰

92. It is clear that there are concerns regarding the economic viability and environmental impact of nuclear energy generation. The Government must make clear the role it believes nuclear power could or should play in achieving the carbon reduction targets set out in the UK Climate Change Programme. The Government should at the same time publish a candid assessment of the prospects for nuclear fusion technology contributing to the generation of domestic electricity within the next twenty years. Details of the level of investment thus far made in the development of this technology should also be made available.

Carbon capture and storage

93. Carbon capture and storage (CCS) is a new technology touted by some as a potential panacea to the problem of climate change. In brief, CO₂ is captured, for example from flue gases, and placed in long-term storage, such as in depleted North Sea oil and gas fields. An assessment by the British Geological Survey in the 1990s estimated that the CO₂ storage capacity within the EU and Norway was 800 Gt CO₂. Approximately 60% of the storage capacity is on the UK and Norwegian continental shelf in the North Sea. In 1990, emissions from power plants were in the region of 950 Mt per annum, so 800 Gt storage capacity represents some 800 years of storage potential.¹²¹ As an added advantage, injecting CO₂ into oilfields can increase oil recovery by effectively ‘flushing’ the oil out.

94. According to the Energy White Paper, this process would need to commence by 2006–08 in order to utilise the largest fields before the infrastructure is dismantled.¹²² The Government is currently developing a Carbon Abatement Technology Strategy, as part of which it aims to market new CCS technologies by 2020.¹²³ The Environment Agency, however, states in its written evidence that, while CCS could “play a useful role”, the environmental and health and safety impacts are not yet sufficiently understood.¹²⁴

¹¹⁹ House of Lords Science and Technology Committee, 5th Report of Session 2003–04 *Radioactive Waste Management*, HL Paper 200, December 2004

¹²⁰ Defra, *Securing the future: delivering UK sustainable development strategy*, Cm 6467, March 2005

¹²¹ Gale, J. ‘Overview of CO₂ emission sources, potential, transport and geographical distribution of storage possibilities’ In: IPCC Working Group III: Mitigation of Climate Change; *Proceedings of the Workshop on Carbon Dioxide Capture and Storage*, Canada, November 2002.

¹²² Department of Trade and Industry, *Our energy future – creating a low carbon economy*, Cm 5761, February 2003, p 90

¹²³ Defra, *Review of the UK Climate Change Programme*, Consultation Paper, December 2004 para.6.27

¹²⁴ Ev 207

95. During our visit to Brussels in February 2005 we learned that the Commission support the use of available technologies in order to achieve adequate reductions on carbon emissions. But, although CCS could smooth the path to more widespread use of renewable technologies, is it not the definitive solution and only a limited quantity of geographical strata are suitable.

96. **We acknowledge that carbon capture and storage could be an extremely valuable technology. But we are aware of the concerns regarding its economic viability and the potential long-term environmental and potential safety impacts. We also note the disparity in timescales between the 2006–08 date suggested by the Energy White Paper needed to maximise the technology and the 2020 target set by Defra. We look forward to the findings of the Carbon Abatement Technology Strategy due to be made public later this year. Irrespective of these findings, we recommend that the Government should not spend too much time and resources on what is ultimately a useful tool for ‘buying time’. Pursuing this route should not detract from more ‘mainstream’ adaptation and mitigation strategies.**

Household emissions

97. In 2002, domestic users accounted for around 24% of the UK’s total greenhouse gas emissions and 27% of CO₂ emissions.¹²⁵ Despite this, domestic users are the largest single group of energy users in the UK, using 116 GWh in 2003.¹²⁶ Therefore reducing the level of emissions from households will have a major impact on the UK’s chances of meeting its climate change targets. We examined two main ways in which change could be effected, in existing and new housing stock.

Existing housing stock

Energy efficiency

98. The main policy instrument for delivering energy efficiency improvement in the UK domestic sector is the Energy Efficiency Commitment (EEC). Under the terms of the EEC, electricity and gas suppliers are required to achieve targets for the promotion of improvements in domestic energy efficiency, in order to help electricity and gas consumers in the household sector to use energy more efficiently and in turn reduce their fuel costs, thus alleviating fuel poverty. These targets are non-prescriptive and can be achieved by carrying out a combination of approved measures, such as installing insulation or providing low-energy light bulbs.

99. The current scheme is due to expire this year and will be replaced with EEC2, running from 2005–2008. The EEC is to be doubled in scale during EEC2 as of April 2005.¹²⁷ As a result, in February 2005 the Energy Saving Trust launched a £3 million campaign, funded by Defra, to promote energy efficiency in the home, and provide unbiased information to tie in with measures already being taken by energy suppliers as part of the EEC.¹²⁸

100. There was a consistent message from witnesses that Government policy and incentives should be targeted primarily at ‘low-hanging fruit’, such as encouraging use of low energy

¹²⁵ Defra, *Review of the UK Climate Change Programme*, Consultation Paper, December 2004 Figures 2 and 3, p 20–21

¹²⁶ Association of Electricity Producers; www.aepuk.com

¹²⁷ Q306

¹²⁸ Energy Saving Trust press release, ‘Launch of £3 million advertising campaign to tackle climate change’, 14 February 2005

light bulbs and installation of cavity wall insulation. The BCSE told us that meeting the energy efficiency targets would “need the introduction of additional policies to really drive the incentive to invest” and that “the lack of consumer demand for energy efficiency is a particular barrier”. Delivering the necessary energy efficiency improvements through the current EEC structure would become more difficult and more expensive. Therefore it should be re-designed:

... by re-thinking the design of the current EEC a greater investment incentive could be introduced. This could involve designing the EEC to look more like the renewables obligation or introducing some form of white certificates market.¹²⁹

101. According to the Energy White Paper, insulating some 4.5 million cavity walls between 2005 and 2010 would save approximately 1.2 MtC. In addition, the installation of 100 million energy saving light-bulbs in addition to the 60 million already anticipated by 2005 would result in carbon savings of 0.5MtC.¹³⁰ So far, only six million homes of a potential 17.5 million have installed cavity wall insulation, with a current market size of 300,000 homes per annum.¹³¹ Despite there being in the region of 500 million lights in use in UK homes, only an estimated 30 million of these are fitted with low energy light bulbs.¹³² **Increasing uptake of easily implemented measures with small financial outlay and comparatively rapid payback periods, such as encouraging use of energy saving light-bulbs, is a prime example of ‘low-hanging fruit’ which we recommend to the Government as a simple yet effective means of reducing greenhouse gas emissions whilst increasing consumer awareness of the issue and how minor changes in lifestyle can have a significant beneficial impact. The Government needs to work with energy providers to overcome the apparent inertia in adoption of these straight-forward energy efficiency measures.**

102. Domestic use of renewable power, for example solar panels, is often perceived by the public as being prohibitively expensive. The problem is exacerbated by people moving house, and thus not benefiting directly from the long-term gains of renewable power. The Energy Saving Trust argue that the lengthy pay-back period is a common public misconception, and that the initial outlay on cavity wall installation can be recouped in two years when purchased via an EEC deal.¹³³ The payback period for solar water systems is around 20 years; the payback for solar electricity systems may be considerably longer although Government grants could reduce this.¹³⁴ This has been addressed innovatively by some local authorities which have introduced the rental of solar panels, thus negating the issue of initial outlay completely.¹³⁵

103. We welcome the inclusion of energy efficiency measures in the Building Regulations. This will help lessen the climate change impact of new housing. But we are concerned that the Energy Efficiency Commitment is not having sufficient impact on existing housing stock. The large initial cost combined with the length of the payback period for domestic installation of renewable energy sources urgently needs to be addressed. We recommend an urgent expansion of programmes leading to domestic energy efficiency in existing

¹²⁹ Ev 49

¹³⁰ Department of Trade and Industry, *Our energy future – creating a low carbon economy*, Cm 5761, February 2003, p 33

¹³¹ Qq 313-314

¹³² Q317

¹³³ Q308

¹³⁴ BBC; from: www.bbc.co.uk/nature/animals/features/324feature1.shtml

¹³⁵ Qq 376-377

housing stock, including energy generating measures. We also urge a review of energy market rules in order to promote this. We note the value of simple measures such as installation of cavity wall insulation and the rental of solar panels, and recommend the Government lead the rollout of such schemes at a national level.

Stamp duty

104. Several witnesses argued for the adoption of reduced stamp duty as a financial incentive to undertake energy efficiency improvements within the home. Although only around 1.2 million homes are sold every year—marginally less than 5% of the UK housing stock based on 2003 figures¹³⁶—the Energy Saving Trust argued that such a reduction in stamp duty was “the single most important fiscal change needed”.¹³⁷ They noted that other financial incentives such as reductions in council tax could be implemented to encourage non-movers to make similar energy efficiency improvements.¹³⁸

105. **A reduction in stamp duty as a ‘reward’ for installing energy efficient systems within the home fails to address the majority of the housing stock. However, even with the recent announcement in the Budget to raise the stamp duty threshold to £120,000, such a move would still affect some 900,000 homes sold every year. Incentives to improve energy efficiency of such houses could contribute significantly to the Government’s domestic carbon reduction targets. Despite the fact that such a move will not affect all existing housing stock, the Government should seriously consider making such a change. The Government should also examine what fiscal measures it has at its disposal, such as a council tax discount, that could accelerate the adoption of more energy efficient systems by owners of existing building stock.**

New housing stock

Planning and building regulations

106. The Committee heard arguments from several witnesses that the building regulations could be used more effectively to encourage developers to integrate sustainable energy measures, thus reducing the energy profile of buildings both during their construction and life-time use. Witnesses have raised the issue of improving domestic energy efficiency—and thus reducing emissions—through better planning and design of housing. For instance, WWF-UK suggested that incorporating energy efficiency technology in new-build housing added only 2% to the total build price, with this figure projected to be even lower when building in volume.¹³⁹ A table summarising the CO₂ savings that can be made through incorporation of energy efficiency measures in European buildings is shown below.

¹³⁶ According to figures from the Office of the Deputy Prime Minister Housing Statistics, in 2003 there were 25, 770, 000 dwellings in the UK; 1.2 million homes represents 4.7% of the total dwelling stock at 2003 figures. www.odpm.gov.uk

¹³⁷ Ev 123

¹³⁸ Q320

¹³⁹ Q293

Table 4: Potential CO₂ savings from incorporating energy efficiency measures in European buildings

Measure	Sector	Annual saving by 2010 (MtCO ₂)
Improve thermal insulation	Domestic	98–120
	Commercial/Public	20
	Industrial	56
Improve glazing standards	Domestic	94
	Commercial/Public/Industrial	25
Improve lighting efficiency	All	50

Data source: *The European Alliance of Companies for Energy Efficiency in Buildings (EuroACE), Assessment of potential for the saving of carbon dioxide emissions in European building stock, May 1998; www.euroace.org*

107. The Tyndall Centre told us that “the UK continues to build houses and offices that are of a low standard in terms of energy use and energy efficiency”. The Office of the Deputy Prime Minister launched their Five Year Plan *Homes for All* in January 2005, which proposes the introduction of a code to create more sustainable buildings. A competition was also announced to build a home for £60,000 as part of their plans to develop more affordable housing.¹⁴⁰

108. Planning and design is not a Defra lead, but it is highly relevant to climate change, as poor energy efficiency in housing can lead to unnecessary consumption of energy and thus contribute to global warming. A recent report from the Environmental Audit Committee concluded: “The environmental impacts of the proposed increase in house building deserve much greater consideration than they have yet received from Government”.¹⁴¹

109. The LGA noted that different local authorities had different approaches to planning applications.¹⁴² The LGA wanted to see “an embedment of energy efficiency renewable energy into building regulations, and we would certainly also like to see the embedding of sustainable construction principles and approaches within the building regulations as well”.¹⁴³ The LGA told us of a recent development where 4,000 new “energy neutral” homes are being built by a private developer. This had been possible because the land is owned by the LGA, and they were able to stipulate that the new homes should take their energy from renewable sources and be of a high standard of energy efficiency.¹⁴⁴

110. We welcome the inclusion of energy efficiency measures in the Building Regulations. This will help lessen the climate impact of new housing. However, we are concerned that the inclusion of energy efficiency measures may be undermined by the target set out in the ODPM Five Year Plan to build homes for £60,000 each. While we support the Government’s desire to increase the volume of affordable new housing, such a policy should not be pursued without incorporating best practice with regard to energy

¹⁴⁰ ODPM News release 2005/0007 ‘Five year action plan helps more onto home ownership ladder’, 24 January 2005

¹⁴¹ House of Commons Environmental Audit Committee Session 2004–05, HC 135-I, *Housing: Building a Sustainable Future*, January 2005, Foreword

¹⁴² Ev 134

¹⁴³ Q369

¹⁴⁴ Q372

efficiency. In its response to our report Defra should set out how houses built at this price can still be as energy neutral as possible, and the steps Defra has taken with ODPM to ensure this is the case.

The commercial sector

111. Concerns were also raised about emissions from the commercial sector. The business sector in 2002 contributed some 29% and 32% to the UK's total greenhouse gas and CO₂ emissions respectively.¹⁴⁵ The BCSE specifically raised this issue, noting that:

Action also needs to be taken outside the domestic sector, particularly the commercial and service sector. There are no specific measures aimed at improving energy efficiency in this sector, yet it is one of the fastest growing, in terms of energy use, and must be addressed.

112. The Government has introduced the Climate Change Levy (CCL), a tax on the use of energy by business, other than from CHP or renewable sources. FoE states that the CCL “has the potential to deliver significant emissions reductions” however “its impact has been limited” and the ‘Climate Change Agreements’¹⁴⁶ so far negotiated have “failed to deliver any significant savings”.¹⁴⁷

113. The Carbon Trust is an independent company which receives Government funding, some of which is generated by the CCL. Launched in 2001, it was set up to help business and the public sector adopt energy efficient practices and reduce carbon emissions. It has recently launched a communications campaign to increase awareness of the impacts climate change could have on business and measures that can be taken to address this. According to Defra, the Trust will receive a minimum of £192 million over the next three years to develop and extend its programmes.¹⁴⁸

114. Case studies cited by The Climate Group—a UK based coalition of organisations, including companies, NGOs and government bodies—demonstrate that incorporating energy efficiency measures within businesses makes good financial sense, as well as contributing towards climate change mitigation. The Group's examples include BP which, with an initial outlay in the region of US\$20 million to implement an 18% absolute reduction in emissions, had within three years realised some US\$650 million in financial savings; and DuPont, who since 1990 have achieved a 67% reduction in greenhouse gas emissions, and have reduced their energy consumption by more than 9% below 1990 baseline levels—some 3% of which now comes from renewables—despite an increase in production. These energy efficiency measures have saved DuPont over US\$2 billion, with an annual saving of more than US\$10–15 million through using renewables.¹⁴⁹

115. Metering was advocated by several witnesses. BAA has installed sub-metering into many locations on their Heathrow estate in order to monitor energy usage and inform energy

¹⁴⁵ Defra, *Review of the UK Climate Change Programme*, Consultation Paper, December 2004, Figures 2 and 3, p 20–21

¹⁴⁶ Climate Change Agreements are coupled with the Climate Change Levy. Businesses are entitled to an 80% discount on the Levy providing they sign up to 10-year negotiated agreements to reduce their emissions or improve their energy efficiency.

¹⁴⁷ Ev 97–98

¹⁴⁸ Defra, *Review of the UK Climate Change Programme*, Consultation Paper, December 2004 paras 7.21–7.23

¹⁴⁹ The Climate Group, www.theclimategroup.org

conservation activity.¹⁵⁰ The LGA recommends that, under the auspices of Ofgem, sub-metering or ‘intelligent metering’ should be installed in all public buildings,¹⁵¹ and ultimately in the commercial and household sector, to provide a quantitative measure by which individuals can monitor their energy usage and encourage the ‘well-being factor’ when tangible energy and financial savings are made.¹⁵² They point out that “energy efficiency pays for itself and pays for itself fast”.¹⁵³

116. We commend the work of the Carbon Trust in helping business and the public sector adopt energy efficient practices and reduce carbon emissions, and we support their awareness raising campaign. It is evident from case studies that considerable financial savings can be made through implementation of energy efficiency measures. We recommend that the Building Regulations for new commercial buildings are made more stringent so as to demand improved energy efficiency from this sector and include design requirements for such buildings to generate a proportion of their own energy consumption.

Communication and education

117. The inadequacy of communication with the public and the urgent need for widespread information and education campaigns were a constant thread throughout the inquiry. Evidence noted that consumers tended to have some understanding of climate change and the measures that could be taken to mitigate it, but were unsure how to go about implementing such measures and who to trust. According to the Energy Saving Trust:

There is a breakdown of trust between the consumer and the people who are best-placed to deliver some energy efficiency programmes and we have to work hard to overcome that.¹⁵⁴

118. Research presented at the Exeter conference found that “although the dangerous impacts of climate change are recognised, they are perceived to be removed in space and time”.¹⁵⁵ The Secretary of State told us:

... most people’s perception is that this will be a problem for our children or perhaps our grandchildren, depending on our age, and I think very few people have yet taken on board the fact that if this is not to become an even worse problem for our children and grandchildren than is presently envisaged and possibly a problem on a scale to which adaptation will become increasingly difficult if not impossible that action has to be taken on a much shorter time scale than is implied by something that is a problem for your children and generation.¹⁵⁶

¹⁵⁰ Q89

¹⁵¹ Ev 135

¹⁵² Q355

¹⁵³ Q359

¹⁵⁴ Q304

¹⁵⁵ Lorenzoni, I. and Pidgeon, N. (2005) ‘Closing the gap: Defining dangers of climate change and individual behaviour’, Centre for Environmental Risk, Tyndall Centre for Climate Change Research; Presented at the Scientific Symposium on Stabilization of Greenhouse Gases, Exeter 2005

¹⁵⁶ House of Commons Environment, Food and Rural Affairs Committee, Session 2004–05, (HC 330-i), Q32

A survey conducted by UEA and MORI in 2003 reported that whilst 28% of respondents stated that climate change was a 'very important' issue, 53% ranked radioactive waste, and 58% having a comfortable life, as equally important.¹⁵⁷

119. In evidence, the BCSE stated that

Delivering the Government's climate change targets will need the engagement of individuals, be it supporting the development of a local renewable energy development, purchasing various energy efficient measures for their homes, or being prepared to change their behaviour in other ways.¹⁵⁸

120. Our World Foundation states that "Since a global change to renewable energy will require the support of the mass public, their awareness of the severity of the crisis, its causes and solutions is critical."¹⁵⁹ They propose a UK Climate Change Communications Programme, utilising:

"... Key media to raise awareness amongst the general public, as well as the private and public sectors, about the cause, impacts and solutions to climate change. ... to stimulate support for renewable energy ... as well as encouraging energy efficiency measures and lifestyle changes to mitigate global warming".¹⁶⁰

121. The Energy Saving Trust is piloting the concept of a Sustainable Energy Network (SEN) in some parts of the UK in order to inform, advise and engage consumers on domestic actions they can take to address climate change.¹⁶¹ This will build upon the existing network of Energy Efficiency Advice Centres (EEACs). The Trust received £10 million funding in December 2004 to develop the SEN.¹⁶² According to the Trust, the EEACs have been enjoying reasonable success, with around 750,000 telephone enquiries and an additional 250,000 hits on the website per annum. Since their conception some 3.7 million customer enquiries have been handled between the 52 EEACs.¹⁶³

122. Defra recognises the importance of the issue. It has undertaken two internal reviews on the issue of climate change communications and has commissioned Futerra to act on the information gathered during these reviews and provide an evidence-based proposal regarding an 'attitude-change' campaign on climate change. On the basis of this review, Defra announced in February 2005 that at least £12 million over three years would be allocated to support a new climate change communications initiative. This will include "a new fund to support climate change communications at a regional and local level".¹⁶⁴

123. Raising awareness amongst consumers of the impact of climate change, and ways in which they can help combat it, is of great importance. We welcome the recent commitment by Defra to provide £12 million over three years to support a climate change communications initiative. However, we are concerned that the current 'head of steam' resulting from the recent flurry of media coverage of the G8 climate conference in Exeter

¹⁵⁷ *Ibid.* citing UEA/MORI risk survey 2002

¹⁵⁸ Ev 47

¹⁵⁹ Ev 77

¹⁶⁰ Our World Foundation, An Article 6 UK Climate Change Programme; www.ourworldfoundation.org.uk

¹⁶¹ Ev 126

¹⁶² Energy Saving Trust press release, 'Communicating climate change' 16 February 2005

¹⁶³ Q296

¹⁶⁴ Defra news release 71/05 'Changing public attitudes to climate change' 16 February 2005

may be dissipated. We recommend that some of the resource set aside for climate change communications should be used to identify what the barriers to the public changing their attitudes and consequently behaviour are, thus ensuring that future policy is aimed at removing these barriers. It is also imperative that any communication initiatives—such as television advertising—are fully supported by provision of websites, telephone hotline facilities and literature to assist consumers. In this context, we welcome the work of the Energy Saving Trust in developing the Sustainable Energy Network based on the network of Energy Efficiency Advice Centres. We recommend that Defra consider increasing funding to the Energy Saving Trust to support this work.

3 The role of the Government as Chair of the G8 and President of the European Council

The EU and climate change

124. During 2005 the UK holds both the Presidency of the G8 and, during the second part of the year, the Presidency of the EU. Climate change is one of two key areas the Prime Minister has pledged to address during the UK Presidency of the G8. The Prime Minister's climate change strategy for the G8 Presidency is focussed on three main points:

- An agreement as to the basic science on climate change and the threat it poses. Such an agreement would be new and provide the foundation for further action.
- Agreement on a process to speed up the science, technology, and other measures necessary to meet the threat.
- Engagement with other countries with growing energy needs such as China and India, both on how they can meet those needs sustainably and adapt to the adverse impacts we are already locked into.¹⁶⁵

125. Steps have already been taken to address the first of these aims, in the form of the climate change symposium held in Exeter in February, the main outcomes of which have been laid out earlier in the report. In this section we look at the EU and Kyoto. The main international agreements pertaining to climate change are summarised in the table below.

¹⁶⁵ Prime Minister's speech on climate change, 14 September 2004, at www.number10.gov.uk/output/page6333.asp

Table 5: Key International Climate Change Agreements**United Nations Framework Convention on Climate Change (UNFCCC)**

This was agreed at the Rio Earth Summit in 1992 and was ratified by over 170 countries. Article 2 of the Convention says the objective is “to achieve ... stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”. In 1994 the UNFCCC came into force. One of the basic principles of the Treaty is that “remaining scientific uncertainties should not be used as a reason for inaction”.¹⁶⁶ The Tenth session of the Conference of Parties to the UN Framework Convention on Climate Change (COP10) marked the tenth anniversary of this event, and accordingly the focus of the December 2004 meeting in Buenos Aires included discussion of climate change impacts and adaptation measures, mitigation policies and the impacts thereof, as well as the entry into force of the Kyoto protocol.¹⁶⁷

Kyoto Protocol

The Kyoto Protocol was adopted in 1997 and sets out legally binding targets for the reduction of a ‘basket’ of six greenhouse gases by 2008–12 below 1990 base levels by developed countries.¹⁶⁸ The Protocol officially came into force on 16 February 2005, subsequent to Russia’s ratification of the Protocol in October 2004, requiring the developed world to reduce greenhouse gas emissions by 5.2% below 1990 levels by 2008–2012. As part of this the UK and the EU are legally obliged to reduce their emissions of greenhouse gases to 12.5% and 8% respectively below 1990 baseline levels during the same period. Four countries amongst the ‘developed’ nations have not yet signed the Kyoto Protocol: the US, Australia, Liechtenstein and Monaco.¹⁶⁹

EU Emissions Trading Scheme and the UK’s National Allocation Plan (NAP)

126. The EU Emissions Trading Scheme (EU ETS) is the main EU-wide mechanism for ensuring the EU meets its targets under Kyoto. It officially started on 1 January 2005. The first phase runs from 2005–2007 and the second phase will run from 2008–2012 to coincide with the first Kyoto Commitment Period.

127. The scheme operates on a “cap and trade” basis. EU Member State governments are required to set an emission cap for all installations covered by the scheme, such as fossil-fuel power generators. Each installation is then allocated emission allowances, representing the amount of CO₂ which that installation is allowed to emit. If the installation emits less CO₂ than its allowance, it may sell the remaining allowances to other installations who expect to exceed their emissions allowance, thereby encouraging installations to adopt practices which reduce their CO₂ emissions.

128. The number of tradable allowances allocated to each installation for any given period is set down in the National Allocation Plan (NAP) submitted by each Member State. The UK was the first Member State to publish a draft NAP in January 2004. However the UK failed to meet the 31 March deadline for submission of the final Plan to the Commission, as did many

¹⁶⁶ The Carbon Trust; www.thecarbontrust.co.uk

¹⁶⁷ UNFCCC website; http://unfccc.int/meetings/cop_10/items/2944.php

¹⁶⁸ The term ‘greenhouse gases’ as defined by the Kyoto Protocol includes carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆)

¹⁶⁹ European Parliament, National Parliaments Joint Meeting of Environment Committees; 29 November 2004

other Member States. The UK's Plan was finally submitted on 30 April, and accepted in July 2004, covering installations responsible for approximately 46% of all UK CO₂ emissions.¹⁷⁰

129. In October 2004 the Secretary of State announced that the Government wanted to increase the UK's NAP by 19.8 MtCO₂—some 3%—bringing the total to 756.1 MtCO₂. The European Commission announced on 13 January 2005 that it would not consider the request for an increased allocation due to its late submission (the UK had been given two months from 7 July 2004 to submit any proposed revisions).¹⁷¹ During our visit to Brussels in February 2005 it was made clear that any changes made to the total number of allocations in any NAP would upset the balance of the scheme as a whole and thus render the trading of emissions impossible. At the time of writing, it remains unclear where either the UK Government or the European Commission intends to go from here, although on 11 March 2005 the Government announced the imminent allocation of allowances at installation level, based on the original lower figure of 736 MtCO₂, as approved by the Commission. The Government also announced it will be launching legal proceedings against the European Commission.¹⁷² The Secretary of State defended the revision, stating that the initial methodology was:

'business as usual' minus 1.5. The new methodology on the new assessment of what 'business as usual' actually meant takes us five per cent below, not 1.5 per cent below. So there is actually an argument that our new proposals, based on a more realistic set of evidence, are more rigorous than our original proposals.¹⁷³

130. This is supported by the Department of Trade and Industry, which argues that despite the recent upwards revision in NAP emission projections, the UK is 'no further off course' to meet its domestic 20% CO₂ reduction target for 2010.¹⁷⁴

131. According to FoE there are considerations for the UK's credibility:

if we, as a stable, well-developed country cannot show that we can get our emissions onto a downward trajectory how on earth can we persuade anyone else to do the same?¹⁷⁵

132. The EU ETS is of global significance, according to the International Climate Change Taskforce. Stephen Byers told us:

Globally everybody is looking at the European Union Scheme, which it really is a political imperative to make sure that that Scheme works. ... whether it is the United States or Australia or the major developing countries like China and India, they are all looking with great interest to the EU scheme, and if it founders in this first few months we will pay a heavy price.¹⁷⁶

¹⁷⁰ 'Smoke and mirrors as UK revises allocation plan', *ENDS Report 358*, November 2004

¹⁷¹ 'Europe refuses British emissions plea', *The Independent*, 14 January 2005

¹⁷² Defra news release 119/05, 'UK announces next steps on EU emissions trading scheme', 11 March 2005

¹⁷³ House of Commons Environment, Food and Rural Affairs Committee, Session 2004–05, (HC 330-i), Q15

¹⁷⁴ 'Smoke and mirrors as UK revises allocation plan', *ENDS Report 358*, November 2004

¹⁷⁵ Q254

¹⁷⁶ Qq 399–400

133. We note that the current situation of uncertainty surrounding the UK's National Allocation Plan (NAP) can only have a negative impact on the UK's credibility and leadership position with respect to climate change. We urge the Government to consider reviewing its current position on the NAP. We are concerned that, once again on a key development of EU environmental policy, the UK finds itself at odds with the Commission on the detail of how the new rules on emissions trading will work. Given that 22 Member States have now got approved NAPs in place, we call upon the Government to rapidly resolve its difference of opinion with the Commission on this matter without resorting to time-wasting and lengthy proceedings via the European Court.

134. We are concerned that, while the EU Emissions Trading Scheme (ETS) focuses attention on relative positions, it has the potential to 'lock-in' current energy use, with heavier emitters merely purchasing carbon allocations from the new accession States which themselves, in absolute terms, may have energy inefficient systems compared to those used by allocation purchasers. We recommend that the ETS be monitored carefully to ensure that it increases the use of more CO₂ efficient technologies and that total emissions are capped at increasingly restrictive levels to achieve an EU-wide reduction in emissions.

The EU's Kyoto targets

135. The Kyoto Protocol officially came into force on 16 February 2005, subsequent to Russia's ratification of the Protocol in October 2004. The UK contributes around 2% of global anthropogenic (of human origin) CO₂ emissions (equivalent to between 6.2 and 6.9 billion tonnes of carbon per year).¹⁷⁷

136. Not only is the UK not likely to reach its own domestic emissions targets, neither is the EU on track to meet its targets. Under the terms of the Kyoto Protocol, the UK is legally bound to reduce its emissions of greenhouse gases to 12.5% below 1990 levels by 2008-2012.¹⁷⁸ The EU is obliged to reduce emissions of greenhouse gases by 8% below 1990 baseline levels during the same period. In 2002, a reduction of only 2.9% had been achieved. Friends of the Earth suggest that "initial discussions indicate that [Kyoto targets for the EU, post-2012] will need to be in the region of at least a 30% reduction by 2020".¹⁷⁹ Friends of the Earth felt that the EU as a whole was particularly failing to address emissions from transport.¹⁸⁰

137. It is important *in itself* for the EU to meet its Kyoto targets, but it also adds weight to attempts to persuade the rest of the world to change. It is imperative that the EU sets an example to developed and developing nations, by achieving its target and thus showing, through its own practice, that implementation of energy efficiency measures is not detrimental to economic growth, or indeed individual businesses.

¹⁷⁷ Defra, Global Atmosphere e-Digest Statistics; <http://www.defra.gov.uk/environment/statistics/globalatmos/gaemlimit.htm>

¹⁷⁸ The term 'greenhouse gases' as defined by the Kyoto Protocol includes carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆)

¹⁷⁹ Ev 100

¹⁸⁰ Q239

Agriculture and climate change

138. Agricultural practice also has an impact upon climate change. For example, fertilizer use can increase emissions of greenhouse gases. The Biosciences Federation told us that “most agriculture will be a net emitter at present”.¹⁸¹ A recent study of commercial forestry found that current practices may cause forests to be less significant as carbon sinks than previously thought, if not actual net emitters of CO₂.¹⁸²

139. According to the UK Climate Change Programme, the UK’s total CO₂ emissions in 1990 were 168 million tonnes of carbon equivalent. According to Defra

Fossil fuel and lime use on farms accounts for less than 1% of UK emission of CO₂ in 1990, though the sector also contributes to CO₂ emissions through soil cultivation and indirectly through demand for manufactured fertilizer.

140. Methane is a potent greenhouse gas with a global warming potential 21 times that of CO₂. According to figures from Defra cited by the Soil Association, agriculture accounted for 28% of the UK’s methane emission in 1990.¹⁸³

Agricultural policy

141. The UK Climate Change Programme states that:

The most effective way for the agriculture sector to contribute to reductions in greenhouse gas emissions is through the production of energy crops.

142. The Biosciences Federation argues that policies in the UK Climate Change programme relating to emissions and carbon sequestration in agriculture and other land uses should be updated in light of new research and evidence:

There is a small but significant potential for biological sequestration of carbon in UK soils as a contribution to greenhouse gas mitigation, although this should not be regarded as an alternative to cutting emissions.¹⁸⁴

143. The Tyndall Centre suggests that “current agricultural and trade policy in the EU conspires to *encourage* emissions from agriculture.”¹⁸⁵ This argument is supported by the Soil Association, whose evidence states that there have been “past and ongoing declines in soil carbon levels due to changes in agricultural practices.”¹⁸⁶

144. Witnesses argued strongly for an increase in the agricultural production of biomass (for energy production)¹⁸⁷ and biofuels (for transport).¹⁸⁸ WWF states that “the UK is in a good position to lead the debate for redirecting agricultural subsidies and introducing stronger incentives to support biomass production” ... “there is considerable scope under CAP reform

¹⁸¹ Q82

¹⁸² ‘Keystone Cope’, *The Independent*, 5 January 2005

¹⁸³ Ev 225

¹⁸⁴ Ev 26

¹⁸⁵ Ev 16

¹⁸⁶ Ev 223

¹⁸⁷ Q188

¹⁸⁸ Q76

to press for more support for a stable, environmentally sustainable biomass supply”.¹⁸⁹ Yet there is minimal production in the UK at present.

145. As part of ongoing CAP reform, a new system of farm subsidies has been introduced within the EU. In the UK, this is being implemented in the Single Farm Payment (SFP) scheme. There was support for the single farm payments scheme as a potential means—and valuable opportunity—for encouraging production of biomass crops to be used as an energy source.¹⁹⁰ Estimates by the Renewable Power Association suggest that it is entirely possible that some 30% of our energy demand could be provided for by renewable energy, some 10% of which could come from energy crops.¹⁹¹

146. We recommend that the Government investigate using CAP reform and the redirection of agricultural subsidies to encourage biofuel/biomass production, and to encourage agricultural best practice with regard to climate change during its Presidency of the EU.

International relations and the G8

147. In 2000 the USA accounted for 20.6% of global greenhouse gases and is by far the biggest emitter in the world.¹⁹² The G8 alone accounts for over 47% of global CO₂ emissions.¹⁹³

148. Figures suggest that in 2000 the US emitted 6.7 tonnes of carbon equivalents of greenhouse gases per capita, as opposed to 3.1 tonnes per capita in the UK. Per capita greenhouse gas emissions from Australia are actually greater than those from the US, at 6.9 tonnes C equivalent (see Figure 2).¹⁹⁴ This illustrates the importance of considering relative population size when comparing emissions data with regard to climate change impacts.

¹⁸⁹ Ev 114

¹⁹⁰ Q189

¹⁹¹ Q206

¹⁹² 'Climate data: Insights and observations', Pew Center on Global Climate Change, December 2004

¹⁹³ G8 Gleneagles 2005 website; www.g8.gov.uk

¹⁹⁴ 'Climate data: Insights and observations', Pew Center on Global Climate Change, December 2004; figures have been converted from US tons to metric tonnes for consistency.

own voluntary emissions trading scheme. The US insurance sector has estimated that the four hurricanes in the Gulf of Mexico last autumn will cost over US\$20 billion in claims. According to Stephen Byers the insurance sector hold political influence within the US “and I think they are beginning to bring that influence to bear on President Bush”. Mr Byers argues:

I think 12 months ago the climate change door was locked as far as America was concerned; I think it is unlocked but it is still closed ... the challenge for those of us who recognise climate change is the most pressing international issue facing our globe at the present time, is to find a way not just of criticising America for not signing up to Kyoto – which I think we can justifiably do – but to ... engage the United States bearing in mind that there are now these domestic pressures building on President Bush that may not have been there 12 months ago.¹⁹⁹

152. The Taskforce report argues that all G8 countries should adopt national targets to generate at least 25% of electricity from renewable energy sources by 2035. Higher targets will be needed for some countries.²⁰⁰ It suggests that, in the US, renewables targets and a cap-and-trade scheme could be introduced under the Climate Stewardship Act, proposed by Republican Senator John McCain and Democrat Senator Joseph Lieberman. In October 2003 the Senate voted not to pass this Act. However, this proposal has recently been re-tabled in the US Senate; and Mr Byers suggested that it would continue to be re-tabled.

153. WWF believes that the UK should use its Presidency of the G8 to encourage member countries to “adopt mandatory absolute caps for the post-2012 time period”,²⁰¹ and that “the UK must ensure that re-entry of the US into the international climate change regime is based on US commitments to tough emissions reductions domestically”.²⁰²

154. The Prime Minister told the Liaison Committee that he believed the US was ready to enter into a dialogue and achieve an agreement on climate change; however he conceded that it would be “very difficult”.²⁰³

155. We commend the Government for hosting the Exeter scientific symposium ‘Avoiding Dangerous Climate Change’ in February this year as one of the first major events of the UK’s Presidency of the G8, reinforcing the Prime Minister’s commitment to bringing the issue of climate change to the fore in the international arena. We hope the Government will take full advantage of the momentum generated by this event by taking forward climate change policies during its Presidency. We also applaud the work of the International Climate Change Taskforce, and recommend that the Government supports the Taskforce’s activities in working towards international engagement on climate change issues. All political leaders must show in their actions a consistent commitment to tackling climate change.

¹⁹⁹ Qq 389 and 391

²⁰⁰ *Meeting the Climate Challenge*, Recommendations of the International Climate Change Taskforce, January 2005

²⁰¹ Ev 111

²⁰² Ev 113

²⁰³ House of Commons, Minutes of Evidence taken before the Liaison Committee, HC 318-i, 8 February 2005, Q148

Developing countries

156. According to figures by the UN, the global population is projected to increase by 50% from 6.1 billion to around 9 billion people by 2050, with the majority of this growth occurring in the developing world. Consequently, by 2050, developing countries are forecast to become the main consumers of global energy.²⁰⁴ Our World Foundation is keen to see developing countries adopt renewable technologies to meet these demands, although acknowledge that foreign investment will be required.²⁰⁵

157. The World Energy Outlook 2002 report predicts that global CO₂ emissions will be 70% greater in 2030 than they were in 2002. Much of this can be attributed to the predicted rise in energy consumption, and consequently CO₂ emissions, from developing nations. Per capita emissions in China are predicted to increase from 2.4 tonnes in 2002 to 4.5 tonnes in 2030, and from 0.9 tonnes to 1.6 tonnes in India.²⁰⁶ Given the respective population sizes, this represents a considerable increase in global CO₂ emissions.

158. Africa, the other of the Prime Minister's two main issues for the UK's Presidency of the G8, is predicted to feel the impact of climate change more than most. As well as hampering Africa's economic growth, climate change will add to and exacerbate the burden of poverty, droughts and floods, conflicts and disease already experienced by the continent. The Millennium Development Goals, as set out by the Millennium Declaration in September 2000 by the UN General Assembly, aim to address the eradication of poverty and to encourage sustainable development. Recent studies suggest that the impact of climate change will prove a severe hindrance to the realisation of these goals.²⁰⁷

159. The International Climate Change Taskforce recommends that the G8 establish a 'G8+ Climate Group', to include "other large developed and developing country economies", namely China, India, Brazil and South Africa plus possibly a few others, in order to "pursue technology agreements and related initiatives that will lead to large emissions reductions".²⁰⁸ This would operate alongside, rather than instead of, the Kyoto Protocol, but would engage the US and developing countries not currently legally bound to the Kyoto agreement. Mr Byers told us:

In 2000 China was already the second largest carbon dioxide emitter – it was 15 per cent, 14 per cent for the whole of the European Union, and that was in 2000 – and China has expanded economically significantly since then, so it is a major emitter of carbon dioxide, and it is vital that we find a way of bringing them on board. What has been fascinating to me through the work of this Taskforce is that China and the Chinese Government have been very responsive, and they are concerned about this whole agenda and the effects of climate change ... fairly minor changes in temperature have a devastating effect on the Chinese rice crop.²⁰⁹

160. According to the Taskforce "the EU and other developed countries made a 'political declaration' at the seventh conference of the parties to the United Nations Framework

²⁰⁴ Our World Foundation, An Article 6 UK Climate Change Communications Programme; www.ourworldfoundation.org.uk

²⁰⁵ Ev 75

²⁰⁶ International Energy Agency, www.iea.org

²⁰⁷ Nyong, A. 'The Economic, Developmental and Livelihood Implications of Climate Induced Depletion of Ecosystems and Biodiversity in Africa'; Presented at the Scientific Symposium on Stabilization of Greenhouse Gases, Exeter 2005

²⁰⁸ *Meeting the Climate Challenge*, Recommendations of the International Climate Change Taskforce, January 2005

²⁰⁹ Q395

Convention on Climate Change (UNFCCC) in 2001, to provide US\$450 million a year, mostly for adaptation. To date only about US\$20 million has been provided”.²¹⁰ Adaptation strategies acknowledge that a degree of climate change as a result of past human activity is already inevitable, and invoke methodologies to reduce the impact climate change is predicted to have.

161. We understand that the use of existing coal stocks in developing countries is inevitable. However we recommend that the UK Government encourages international technological development of more efficient fossil-fuelled power generation to minimise emissions per tonne of coal during its Presidency of the G8. We recommend that the UK take full advantage of the current global prominence of the issue of climate change to take forward the proposed G8+ Climate Group and pursue international agreement on concrete carbon reduction measures to run alongside—and not instead of—the Kyoto Protocol.

²¹⁰ *Meeting the Climate Challenge*, Recommendations of the International Climate Change Taskforce, January 2005

Conclusions and recommendations

Lack of 'joined-up Government'

1. We acknowledge that the Government has undertaken a number of important initiatives at both a domestic and international level to respond to climate change, but we are frustrated by the absence of a clear central direction to the Government's work on climate change. Given the strength of scientific evidence which suggests that the situation is even more urgent than anticipated, we recommend that a Minister for Climate Change or a Cabinet Committee on Climate Change chaired by the Secretary of State for Environment, Food and Rural Affairs be appointed, with sole responsibility for focusing and coordinating the actions of Government Departments to ensure that the UK's domestic and international targets are met. It is imperative that tackling climate change be put at the very heart of Government. (Paragraph 34)
2. In our report on Defra's 2004 Departmental Annual Report, we recorded our concern that Defra does not yet have sufficient 'clout' to be taken seriously by other Government Departments in framing their key policy decisions. The findings of this report do not persuade us otherwise. (Paragraph 35)
3. We are encouraged that the Public Service Agreement target on greenhouse gas emission reductions is now shared by the Department for Transport as well as Defra and the Department of Trade and Industry. However, we strongly recommend that the review of the UK Climate Change Programme does not lead to a reduction in the target for greenhouse gas emission reduction in Defra's existing PSA target. (Paragraph 37)

Road transport

4. Road transport has a significant impact on climate change. Emissions from road transport must be made a priority in the UK's climate change mitigation strategy. We recommend that the Government re-examine the effect of its current fiscal measures, such as differentials in Vehicle Excise Duty, with a view to making them more effective in promoting the purchasing of low-carbon cars. We regard the recent announcement in the Budget of a £5 increase in Vehicle Excise Duty for the two most polluting bands as no more than a token gesture. At a European level we also recommend that discussions are held to examine what economic measures might be developed to require vehicle manufacturers to speed up the development of low carbon vehicles. (Paragraph 41)
5. We welcome the Government's decision to focus its new vehicle technology programmes more on climate change. We do not believe, however, that it was helpful to cancel existing programmes rather than add to them, and urge that the Government publish details of any successor schemes urgently. We also recommend that the Government ensure that any hiatus between abolition of the Powershift programme and other low-carbon vehicle programmes and the implementation of their replacements is avoided. (Paragraph 43)

Biofuels

6. We believe that biofuels can be a useful a tool in the mitigation of increasing greenhouse gas emissions from transport. Accordingly, we welcome Defra's decision to rectify the omission of biofuels from the Climate Change Programme as part of the climate change review, and recommend that the Government take this opportunity to adopt policy measures to increase biofuel production and use within the UK. However, we regret that so far, in spite of a 20 pence per litre duty derogation first announced in the 2002 Budget, there has been very little UK biodiesel produced and no home-based bioethanol plant established. We note the apparent difference between Defra's enthusiasm for biofuel crops and the Treasury's reluctance to fully engage in this issue, and call upon the Government to re-examine its approach to its use of fiscal incentives in this area in order properly to kick-start the development of a UK biofuels industry. (Paragraph 47)

Aviation

7. Aviation has a significant impact on climate change, which is likely to increase with the projected growth in the industry unless alleviation measures are implemented. It is therefore vital that aviation be included in climate change mitigation strategies at both a national and international level. Depressing demand for air travel is possible in the short-term, but may prove difficult to maintain over time. We applaud the proposal to include aviation within the EU Emissions Trading Scheme (ETS), but we are concerned by the length of time seemingly required to achieve implementation. We recommend the Government use whatever means necessary to ensure inclusion within the scheme by the start of the second phase of the ETS in 2008. We welcome the commitment in the new Sustainable Development White Paper *Securing the Future* on this. (Paragraph 57)
8. We also recognise, however, that there is a limit to what can be achieved in the short to medium term by the inclusion of aviation within the emissions trading scheme, due to the long asset lifetime of aircraft. We therefore additionally recommend that the Government work with the EU and other partners to encourage the uptake of new technologies and 'fast-tracking' their development, in addition to adopting fiscal measures to reduce demand. We also recommend that discussions are held at an EU level with the aircraft and aero-engine manufacturers and the airlines to examine ways in which the development and introduction of more fuel efficient aircraft can be accelerated. (Paragraph 58)
9. In addition to the EU Emissions Trading Scheme and the fast-tracking of technological development, referred to in paragraphs 57 and 58, we also recommend that the Government evaluate the effects of an aviation fuel tax and a system of capping the overall carbon emissions associated with aviation and airport-related activity as part of determining what would be the most effective package of fiscal measures to contribute to an overall reduction in emissions from aviation. (Paragraph 59)

Renewables and the Renewables Obligation

10. We are concerned that alternative renewable technologies such as wave, tidal and solar power are currently believed to be commercially non-viable for many years. In order to achieve its targets on renewable power generation, it is imperative that the Government urges the development of a suite of technologies rather than relying solely on onshore windfarms, although these have a valuable role to play as part of a suite of renewable energy sources. Accordingly, we recommend that the Government comes forward with programmes to promote the rapid mainstream development and use of new renewable energy technologies, particularly biofuels, biomass and solar, wave and tidal power. (Paragraph 75)
11. We are concerned that any gains made in the proportion of the energy supply generated by renewable technologies may be cancelled out by the declining proportion of energy production from nuclear sources. Renewables are predicted to supply some 9.9% of the UK's energy by 2010, but the proportion of electricity from nuclear sources is predicted to fall from 24% in 2004 to 7% over the next fifteen years. We are concerned that the current rate of increase in renewable energy may not be sufficient to compensate for decline in electricity from nuclear sources, resulting in an increased dependence on fossil fuels. Therefore it is essential to accelerate the increase in sustainable energy and energy efficiency measures. (Paragraph 76)
12. The contradiction between the new business rates introduced by HM Treasury and the Renewables Obligation, the aim of which is to mitigate climate change, is a clear example of the lack of 'joined-up' Government. Given the urgency for action underlined by the climate change conference in Exeter, it is essential that all relevant departments reaffirm the Government's commitment to the Renewables Obligation and renewables targets to inspire investor confidence. (Paragraph 78)

Combined Heat and Power (CHP)

13. We are concerned that the Government is not doing enough to enable Combined Heat and Power (CHP) to achieve its national uptake targets, particularly given the gains in carbon reductions that can be achieved through this—already commercially available—technology. We commend the announcement in the Budget of a reduced rate for the installation of micro-CHP. We recommend that the Government, in its response to our report, detail the actions which it will now be pursuing to address the current deficit in CHP generation. (Paragraph 85)

Nuclear power

14. It is clear that there are concerns regarding the economic viability and environmental impact of nuclear energy generation. The Government must make clear the role it believes nuclear power could or should play in achieving the carbon reduction targets set out in the UK Climate Change Programme. The Government should at the same time publish a candid assessment of the prospects for nuclear fusion technology contributing to the generation of domestic electricity within the next twenty years. Details of the level of investment thus far made in the development of this technology should also be made available. (Paragraph 92)

Carbon capture and storage

15. We acknowledge that carbon capture and storage could be an extremely valuable technology. But we are aware of the concerns regarding its economic viability and the potential long-term environmental and potential safety impacts. We also note the disparity in timescales between the 2006–08 date suggested by the Energy White Paper needed to maximise the technology and the 2020 target set by Defra. We look forward to the findings of the Carbon Abatement Technology Strategy due to be made public later this year. Irrespective of these findings, we recommend that the Government should not spend too much time and resources on what is ultimately a useful tool for ‘buying time’. Pursuing this route should not detract from more ‘mainstream’ adaptation and mitigation strategies. (Paragraph 96)

Energy efficiency

16. Increasing uptake of easily implemented measures with small financial outlay and comparatively rapid payback periods, such as encouraging use of energy saving light-bulbs, is a prime example of ‘low-hanging fruit’ which we recommend to the Government as a simple yet effective means of reducing greenhouse gas emissions whilst increasing consumer awareness of the issue and how minor changes in lifestyle can have a significant beneficial impact. The Government needs to work with energy providers to overcome the apparent inertia in adoption of these straight-forward energy efficiency measures. (Paragraph 101)
17. We welcome the inclusion of energy efficiency measures in the Building Regulations. This will help lessen the climate change impact of new housing. But we are concerned that the Energy Efficiency Commitment is not having sufficient impact on existing housing stock. The large initial cost combined with the length of the payback period for domestic installation of renewable energy sources urgently needs to be addressed. We recommend an urgent expansion of programmes leading to domestic energy efficiency in existing housing stock, including energy generating measures. We also urge a review of energy market rules in order to promote this. We note the value of simple measures such as installation of cavity wall insulation and the rental of solar panels, and recommend the Government lead the rollout of such schemes at a national level. (Paragraph 103)

Stamp duty

18. A reduction in stamp duty as a ‘reward’ for installing energy efficient systems within the home fails to address the majority of the housing stock. However, even with the recent announcement in the Budget to raise the stamp duty threshold to £120,000, such a move would still affect some 900,000 homes sold every year. Incentives to improve energy efficiency of such houses could contribute significantly to the Government’s domestic carbon reduction targets. Despite the fact that such a move will not affect all existing housing stock, the Government should seriously consider making such a change. The Government should also examine what fiscal measures it has at its disposal, such as a council tax discount, that could accelerate the adoption of more energy efficient systems by owners of existing building stock. (Paragraph 105)

Planning and building regulations

19. We welcome the inclusion of energy efficiency measures in the Building Regulations. This will help lessen the climate impact of new housing. However, we are concerned that the inclusion of energy efficiency measures may be undermined by the target set out in the ODPM Five Year Plan to build homes for £60,000 each. While we support the Government's desire to increase the volume of affordable new housing, such a policy should not be pursued without incorporating best practice with regard to energy efficiency. In its response to our report Defra should set out how houses built at this price can still be as energy neutral as possible, and the steps Defra has taken with ODPM to ensure this is the case. (Paragraph 110)

The commercial sector

20. We commend the work of the Carbon Trust in helping business and the public sector adopt energy efficient practices and reduce carbon emissions, and we support their awareness raising campaign. It is evident from case studies that considerable financial savings can be made through implementation of energy efficiency measures. We recommend that the Building Regulations for new commercial buildings are made more stringent so as to demand improved energy efficiency from this sector and include design requirements for such buildings to generate a proportion of their own energy consumption. (Paragraph 116)

Communication and education

21. Raising awareness amongst consumers of the impact of climate change, and ways in which they can help combat it, is of great importance. We welcome the recent commitment by Defra to provide £12 million over three years to support a climate change communications initiative. However, we are concerned that the current 'head of steam' resulting from the recent flurry of media coverage of the G8 climate conference in Exeter may be dissipated. We recommend that some of the resource set aside for climate change communications should be used to identify what the barriers to the public changing their attitudes and consequently behaviour are, thus ensuring that future policy is aimed at removing these barriers. It is also imperative that any communication initiatives—such as television advertising—are fully supported by provision of websites, telephone hotline facilities and literature to assist consumers. In this context, we welcome the work of the Energy Saving Trust in developing the Sustainable Energy Network based on the network of Energy Efficiency Advice Centres. We recommend that Defra consider increasing funding to the Energy Saving Trust to support this work. (Paragraph 123)

The EU Emissions Trading Scheme

22. We note that the current situation of uncertainty surrounding the UK's National Allocation Plan (NAP) can only have a negative impact on the UK's credibility and leadership position with respect to climate change. We urge the Government to consider reviewing its current position on the NAP. We are concerned that, once again on a key development of EU environmental policy, the UK finds itself at odds with the Commission on the detail of how the new rules on emissions trading will work. Given that 22 Member States have now got approved NAPs in place, we call upon the

Government to rapidly resolve its difference of opinion with the Commission on this matter without resorting to time-wasting and lengthy proceedings via the European Court. (Paragraph 133)

23. We are concerned that, while the EU Emissions Trading Scheme (ETS) focuses attention on relative positions, it has the potential to 'lock-in' current energy use, with heavier emitters merely purchasing carbon allocations from the new accession States which themselves, in absolute terms, may have energy inefficient systems compared to those used by allocation purchasers. We recommend that the ETS be monitored carefully to ensure that it increases the use of more CO² efficient technologies and that total emissions are capped at increasingly restrictive levels to achieve an EU-wide reduction in emissions. (Paragraph 134)

The EU's Kyoto targets

24. It is important *in itself* for the EU to meet its Kyoto targets, but it also adds weight to attempts to persuade the rest of the world to change. It is imperative that the EU sets an example to developed and developing nations, by achieving its target and thus showing, through its own practice, that implementation of energy efficiency measures is not detrimental to economic growth, or indeed individual businesses. (Paragraph 137)

Agricultural policy

25. We recommend that the Government investigate using CAP reform and the redirection of agricultural subsidies to encourage biofuel/biomass production, and to encourage agricultural best practice with regard to climate change during its Presidency of the EU. (Paragraph 146)

International relations and the G8

26. We commend the Government for hosting the Exeter scientific symposium 'Avoiding Dangerous Climate Change' in February this year as one of the first major events of the UK's Presidency of the G8, reinforcing the Prime Minister's commitment to bringing the issue of climate change to the fore in the international arena. We hope the Government will take full advantage of the momentum generated by this event by taking forward climate change policies during its Presidency. We also applaud the work of the International Climate Change Taskforce, and recommend that the Government supports the Taskforce's activities in working towards international engagement on climate change issues. All political leaders must show in their actions a consistent commitment to tackling climate change. (Paragraph 155)
27. We understand that the use of existing coal stocks in developing countries is inevitable. However we recommend that the UK Government encourages international technological development of more efficient fossil-fuelled power generation to minimise emissions per tonne of coal during its Presidency of the G8. We recommend that the UK take full advantage of the current global prominence of the issue of climate change to take forward the proposed G8+ Climate Group and pursue international agreement on concrete carbon reduction measures to run alongside—and *not instead of*—the Kyoto Protocol. (Paragraph 161)

Formal minutes

Tuesday 22 March 2005

Members present:

Mr Michael Jack, in the Chair

Mr Colin Breed	Alan Simpson
Mark Lazarowicz	David Taylor
Joan Ruddock	Paddy Tipping

The Committee deliberated.

Draft Report [*Climate Change: looking forward*], proposed by the Chairman, brought up and read.

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

Paragraphs 1 to 161 read and agreed to.

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

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

Several papers were ordered to be appended to the Minutes of Evidence.

Ordered, That the Appendices to the Minutes of Evidence taken before the Committee be reported to the House.—(*The Chairman*).

Several memoranda were ordered to be reported to the House.

Ordered, That the provisions of Standing Order No. 134 (Select committees (reports)) be applied to the Report.

[Adjourned till a date and time to be fixed by the Chairman.]

Witnesses

Wednesday 8 December 2004

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Professor Sir David King, **Government's Chief Scientific Adviser**

Ev 2

Sarah Wynne, Dr Alice Bows and Dr Kevin Anderson, **Tyndall Centre for Climate Change Research**

Ev 18

Professor David Powlson, Professor Alastair Fitter and Dr Ausilio Bauen, **Biosciences Federation**

Ev 27

Wednesday 12 January 2005

Mike Clasper CBE, Stephen Hardwick and Matthew Gorman, **BAA plc**

Ev 38

David Porter, Dr John McElroy and Andy Limbrick, **Association of Electricity Producers**, and David Green and Kirsty Hamilton, **Business Council for Sustainable Energy**

Ev 50

Gaynor Hartnell, Phillip Cozens, John Strawson and Mark Candlish, **Renewable Power Association**

Ev 64

Wednesday 19 January 2005

Sir John Houghton, Dr Andrew Dlugolecki and Christina Hutchins, **Our World Foundation**

Ev 80

Bryony Worthington, **Friends of the Earth**

Ev 105

Andrew Lee and Caterina Cardoso, **World Wildlife Fund**

Ev 116

Witnesses (continued)

Wednesday 23 February 2005

Nick Eyre and Brian Samuel, Energy Saving Trust	Ev 127
Ian Bateman, Don Lack and Bill Edrich, Local Government Association	Ev 137
Rt Hon Stephen Byers MP, (Co-chair of the International Climate change Taskforce), and Simon Retallack, Institute for Public Policy Research	Ev 145

List of written evidence

Professor Sir David King	Ev 1, 12
Tyndall Centre for Climate Change Research	Ev 13
Biosciences Federation	Ev 23, 32
BAA plc	Ev 33, 44
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UK Business Council for Sustainable Energy	Ev 47, 59
Renewable Power Association	Ev 60
Our World Foundation	Ev 72, 77, 88
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Energy Saving Trust	Ev 123
Local Government Association	Ev 133
Professor Peter F Smith	Ev 153
RWE npower	Ev 157
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Department for Environment, Food and Rural Affairs	Ev 171
Richard Swann	Ev 178
E.ON UK	Ev 178
The Woodland Trust	Ev 182

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South East Climate Change Partnership	Ev 196
Joint Nature Conservation Committee	Ev 201
British Cement Association	Ev 202
Environment Agency	Ev 204
Northwest Climate Group	Ev 210
Environmental Services Association	Ev 213
Association of British Insurers	Ev 214
Institution of Civil Engineers	Ev 217
Soil Association	Ev 223
The Campaign for a Hydrogen Economy	Ev 228
Royal Society for the Protection of Birds	Ev 230
Climate Group	Ev 237
Environmental Industries Commission	Ev 238
Country Land & Business Association	Ev 240
Research Councils UK	Ev 246
Greenpeace	Ev 252
Confederation of British Industry	Ev 259
Scottish and Southern Energy	Ev 262
logen	Ev 265
The Prime Minister, Rt Hon Tony Blair MP	Ev 266

List of unprinted written evidence

Additional papers have been received from the following and have been reported to the House but to save printing costs they have 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 Record Office, House of Lords and are available to the public for inspection. Requests for inspection should be addressed to the Record Office, House of Lords, London SW1 (tel: 020 7219 3074). Hours of inspection are from 9:30am to 5:00pm on Mondays to Fridays.

Climate Change Solutions (memorandum)

Enerco Ltd (memorandum)

Reports from the Committee since 2001

Session 2004–05

Eighth Report	Progress on the use of pesticides: the Voluntary Initiative	HC 258
Seventh Report	Food information	HC 469
Sixth Report	The future of UK fishing	HC 122
Fifth Report	The Government's Rural Strategy and the draft Natural Environment and Rural Communities Bill	HC 408-I
Fourth Report	Waste policy and the Landfill Directive	HC 102
Third Report	The Work of the Committee in 2004	HC 281
Second Report	Dismantling Defunct Ships in the UK: Government Reply	HC 257
First Report	The draft Animal Welfare Bill (<i>Reply, HC 385</i>)	HC 52-I

Session 2003–04

Nineteenth Report	Water Pricing: follow-up (<i>Reply, HC 490, Session 2004–05</i>)	HC 1186
Eighteenth Report	Dismantling Defunct Ships in the UK (<i>Reply, HC 257 Session 2004–05</i>)	HC 834
Seventeenth Report	Agriculture and EU Enlargement (<i>Reply, HC 221 Session 2004–05</i>)	HC 421
Sixteenth Report	Climate Change, Water Security and Flooding (<i>Reply, HC 101 Session 2004–05</i>)	HC 558
Fifteenth Report	The Departmental Annual Report 2004 (<i>Reply, HC 100 Session 2004–05</i>)	HC 707
Fourteenth Report	Sites of Special Scientific Interest: conserving the Jewels of England's Natural Heritage (<i>Reply, HC 1255</i>)	HC 475
Thirteenth Report	Bovine TB (<i>Reply, HC 1130</i>)	HC 638
Twelfth Report	Reform of the Sugar Regime (<i>Reply, HC 1129</i>)	HC 550-I
Eleventh Report	GM Planting Regime (<i>Reply, HC 1128</i>)	HC 607
Tenth Report	Marine Environment: Government reply	HC 706
Ninth Report	Milk Pricing in the United Kingdom (<i>Reply, HC 1036</i>)	HC 335
Eighth Report	Gangmasters (follow up) (<i>Reply, HC 1035</i>)	HC 455
Seventh Report	Implementation of CAP Reform in the UK (<i>Reply, HC 916</i>)	HC 226-I
Sixth Report	Marine Environment (<i>Reply, HC 706</i>)	HC 76
Fifth Report	The Food Standards Agency and Shellfish (<i>Reply, HC 601</i>)	HC 248
Fourth Report	End of Life Vehicles Directive and Waste Electrical and Electronic Equipment Directive (<i>Reply, HC 557</i>)	HC 103
Third Report	Caught in the net: by-catch of dolphins and porpoises off the UK coast (<i>Reply, HC 540</i>)	HC 88
Second Report	Annual Report of the Committee 2003	HC 225
First Report	Water Pricing (<i>Reply, HC 420</i>)	HC 121

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Eighteenth Report	Conduct of the GM Public Debate (<i>Reply, HC 443 Session 2003-04</i>)	HC 220
Seventeenth Report	Biofuels (<i>Reply, HC 270 Session 2003-04</i>)	HC 929-I
Sixteenth Report	Vets and Veterinary Services (<i>Reply, HC 974 Session 2003–04</i>)	HC 703
Fifteenth Report	New Covent Garden Market: a follow-up (<i>Reply, HC 123 Session 2003-04</i>)	HC 901
Fourteenth Report	Gangmasters (<i>Reply, HC 122 Session 2003-04</i>)	HC 691
Thirteenth Report	Poultry Farming in the United Kingdom (<i>Reply, HC 1219</i>)	HC 79-I
Twelfth Report	The Departmental Annual Report 2003 (<i>Reply, HC 1175</i>)	HC 832
Eleventh Report	Rural Broadband (<i>Reply, HC 1174</i>)	HC 587
Tenth Report	Horticulture Research International (<i>Reply, HC 1086</i>)	HC 873
Ninth Report	The Delivery of Education in Rural Areas (<i>Reply, HC 1085</i>)	HC 467
Eighth Report	The Future of Waste Management (<i>Reply, HC 1084</i>)	HC 385
Seventh Report	Badgers and Bovine TB (<i>Reply, HC 831</i>)	HC 432
Sixth Report	Rural Payments Agency (<i>Reply, HC 830</i>)	HC 382
Fifth Report	The Countryside and Rights of Way Act 2000 (<i>Reply, HC 748</i>)	HC 394
Fourth Report	Water Framework Directive (<i>Reply, HC 749</i>)	HC 130
Third Report	The Mid-term Review of the Common Agricultural Policy (<i>Reply, HC 615</i>)	HC 151
Second Report	Annual Report of the Committee 2002	HC 269
First Report	Reform of the Common Fisheries Policy (<i>Reply, HC 478</i>)	HC 110

Session 2001–02

Tenth Report	The Role of Defra (<i>Reply, HC 340, Session 2002-03</i>)	HC 991
Ninth Report	The Future of UK Agriculture in a Changing World (<i>Reply, HC 384, Session 2002-03</i>)	HC 550
Eighth Report	Hazardous Waste (<i>Reply, HC 1225</i>)	HC 919
Seventh Report	Illegal Meat Imports (<i>Reply, HC 1224</i>)	HC 968
Sixth Report	Departmental Annual Report 2002 (<i>Reply, HC 1223</i>)	HC 969
Fifth Report	Genetically Modified Organisms (<i>Reply, HC 1222</i>)	HC 767
Fourth Report	Disposal of Refrigerators (<i>Reply, HC 1226</i>)	HC 673
Third Report	Radioactive Waste: The Government's Consultation Process (<i>Reply, HC 1221</i>)	HC 407
Second Report	The Countryside Agency (<i>Reply, HC 829</i>)	HC 386
First Report	The Impact of Food and Mouth Disease (<i>Reply, HC 856</i>)	HC 323