



House of Commons  
Treasury Committee

---

# Climate change and the Stern Review: the implications for Treasury policy

---

Fourth Report of Session 2007–08

**STRICTLY EMBARGOED  
UNTIL 00.01am on  
TUESDAY 5 FEBRUARY  
2008**





House of Commons  
Treasury Committee

---

# Climate change and the Stern Review: the implications for Treasury policy

---

**Fourth Report of Session 2007–08**

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

*Ordered by The House of Commons  
to be printed 15 January 2008*

**HC 231**  
**[Incorporating HC 248 i-iv, Session 2006-07]**  
Published on Tuesday 5 February 2008  
by authority of the House of Commons  
London: The Stationery Office Limited  
£0.00

## The Treasury Committee

The Treasury Committee is appointed by the House of Commons to examine the expenditure, administration, and policy of HM Treasury, HM Revenue & Customs and associated public bodies.

### Current membership

Rt Hon John McFall MP (*Labour, West Dunbartonshire*) (Chairman)  
Nick Ainger MP (*Labour, Carmarthen West & South Pembrokeshire*)  
Mr Graham Brady MP (*Conservative, Altrincham and Sale West*)  
Mr Colin Breed MP (*Liberal Democrat, South East Cornwall*)  
Jim Cousins MP (*Labour, Newcastle upon Tyne Central*)  
Mr Philip Dunne MP (*Conservative, Ludlow*)  
Mr Michael Fallon MP (*Conservative, Sevenoaks*) (Chairman, Sub-Committee)  
Ms Sally Keeble MP (*Labour, Northampton North*)  
Mr Andrew Love MP (*Labour, Edmonton*)  
Mr George Mudie MP (*Labour, Leeds East*)  
Mr Siôn Simon MP, (*Labour, Birmingham, Erdington*)  
John Thurso MP (*Liberal Democrat, Caithness, Sutherland and Easter Ross*)  
Mr Mark Todd MP (*Labour, South Derbyshire*)  
Peter Viggers MP (*Conservative, Gosport*).

### Powers

The Committee is one of the departmental select committees, the powers of which are set out in House of Commons Standing Orders, principally in SO No. 152. These are available on the Internet via [www.parliament.uk](http://www.parliament.uk).

### Publications

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

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

### Committee staff

The current staff of the Committee are Colin Lee (Clerk), Sïan Jones (Second Clerk and Clerk of the Sub-Committee), Adam Wales, Jon Young and Jay Sheth (Committee Specialists), Lis McCracken (Committee Assistant), Caroline McElwee (Secretary), Tes Stranger (Senior Office Clerk) and Laura Humble (Media Officer).

### Contacts

All correspondence should be addressed to the Clerks of the Treasury Committee, House of Commons, 7 Millbank, London SW1P 3JA. The telephone number for general enquiries is 020 7219 5769; the Committee's email address is [treascom@parliament.uk](mailto:treascom@parliament.uk).

# Contents

---

<b>Report</b>	<i>Page</i>
<b>Summary</b>	<b>3</b>
<b>1 Introduction</b>	<b>5</b>
Our inquiry	5
Previous work by the Treasury Committee	6
Relevant work by other select committees	6
<b>2 The economics of the Stern Review</b>	<b>8</b>
The Stern Review	8
Background	8
Overall analysis of the Stern Review	8
Key findings of the Stern Review	8
The international nature of the climate change problem	10
Criticisms of the Stern Review	12
The independence of the Stern Review	12
Discount rates	13
Relying on adaptation	16
<b>3 The Government's approach to reducing emissions</b>	<b>19</b>
Coordinating climate change policy	19
Seven tests for better regulation	20
HM Treasury's role and the regulatory mix	21
<b>4 Emissions Trading Schemes</b>	<b>23</b>
Theoretical considerations	23
European Union Emission Trading Scheme	25
Background	25
Challenges for the EU ETS	26
Successes of the EU ETS	27
Moving to a global emissions trading scheme	28
Inclusion of airlines in the EU ETS	29
Introduction	29
Problems with including aviation	30
Eco-labelling	30
<b>5 Environmental taxes</b>	<b>33</b>
The rationale for environmental taxation	33
Problems with environmental taxes	33
The Government's Statement of Intent on Environmental Taxation	34
The Statement	34
Defining environmental taxes	35
Progress against the Statement	37
Conclusions	39
Hypothecation of tax revenues	40

The social impact of environmental taxation	41
Aviation taxation	42
Introduction	42
Air Passenger Duty	43
Is APD an environmental tax?	44
Changes to the APD regime prior to aviation's inclusion in the EU ETS	45
Conclusions	46
<b>6 Adaptation</b>	<b>47</b>
Adaptation in the United Kingdom	47
Coordination of adaptation efforts across government	47
Government expenditure on flood defence	49
Adaptation in developing countries	52
<b>Conclusions and recommendations</b>	<b>54</b>
<b>Formal Minutes</b>	<b>59</b>
<b>Witnesses</b>	<b>61</b>
<b>List of written evidence</b>	<b>62</b>

## Summary

---

Climate change is one of the biggest challenges facing the world today and requires an urgent response from Government, industry and the individual. Our inquiry was triggered by the publication of the *Stern Review on the Economics of Climate Change* in late 2006, which stressed the need to stabilise carbon emissions sooner rather than later, and warned of potentially catastrophic impacts if that was not achieved. The *Review*, which this Report welcomes, framed the climate change debate in terms of economic choices, and considered the use of economic tools such as environmental taxation and permit trading schemes as economically-efficient mechanisms for cutting emissions. This Report recommends that the Government give primary consideration to the use of economic tools in combating climate change: The Treasury's policies and action in this regard were the main focus of our inquiry.

This Report expresses regret that Phase I of the European Union Emissions Trading Scheme over-allocated permits, and stresses the need for the Government to strive for a much tighter allocation in Phase II.

This Report also considers the issue of environmental taxation. At the moment, confusion reigns over the definition of environmental tax, with the Office of National Statistics (ONS) and the Treasury using different measures, and we urge the Treasury to come into line with the ONS. In our view, the Government's commitment to the 1997 *Statement of Intent on Environmental Taxation* has not been maintained and we express our disappointment at this.

Prior to the proposed inclusion of aviation in the EU ETS, the Government must ensure that airlines are at least covering the environmental cost of their actions. We express concern that airlines are dragging their feet in cooperating on environmental schemes, and recommend that airlines adopt a system of eco-labelling, so that consumers can compare the environmental footprint of each airline when purchasing their tickets.

We welcome the Government's proposal that Air Passenger Duty (APD) be replaced by 'Per Plane Duty', but regret that the Government has taken so long to do so. APD does not currently differentiate between full and half-empty planes, between flights to Morocco and flights to Australia, or between clean planes and relatively dirty planes. We urge the Government to ensure that cargo flights and private planes are included in the new regime and that tax differentials be introduced to encourage investment in cleaner technologies.

We do not agree with the suggestion that the UK's response to the climate change threat can rely solely on adaptation measures, but instead recommend the Government pursue a twin-track approach, including both adaptation and mitigation. Nevertheless, adaptation is crucial, because climate change is affecting the UK now. We recommend that the Treasury track and publish public spending on adaptation, and, in the specific area of flood risk management, give early notice of spending plans beyond 2011 prior to the next Spending Review. We also recognise that many of the world's least-developed countries face more urgent and profound threats than the UK from climate change, and call on the Treasury to

specify and ring-fence part of the Department for International Development's budget for overseas climate change adaptation.

Many Government departments are involved in Climate Change programmes and we welcome the establishment of the Office for Climate Change (OCC), which seeks to promote cross-departmental cooperation. We recommend that a Minister should take responsibility for the OCC, in order to create an effective Champion of Climate Change across Government.



# 1 Introduction

---

## Our inquiry

1. In July 2005, the then Chancellor of the Exchequer, Rt Hon Gordon Brown MP, commissioned Sir Nicholas Stern to report to the Prime Minister and the Chancellor by Autumn 2006 on an evidence-based assessment of the economics of moving to a low-carbon global economy and the implications of that assessment for the UK.<sup>1</sup> Sir Nicholas was then Head of the Government Economic Service and former chief economist at the World Bank. On 30 October 2006, Sir Nicholas' review of *The Economics of Climate Change* was published. On publication of the *Review*, HM Treasury described it as “the most comprehensive review ever carried out on the economics of climate change”.<sup>2</sup>

2. On 14 December 2006, we announced an inquiry into climate change and the Stern review: the implications for HM Treasury policy on tax and the environment. We intended to examine the effectiveness of steps taken by HM Treasury to tackle climate change. In particular, we stated that we would consider:

- progress made by the Government on the undertakings set out in its *Statement of intent on environmental taxation*, published in 1997, and subsequently endorsed in its 2002 paper, *Tax and the environment: using economic instruments*;
- the Government's use of environmental or 'green' taxes that are specifically targeted at tackling climate change;
- the extent to which the Government uses environmental taxation to encourage behavioural change, rather than solely to raise revenue, and the social impact of such taxation; and
- looking forward, the appropriate role of environmental taxation, in the context of the range of means by which the Government can seek to achieve its environmental policy aims—for example, by means of regulation, a voluntary agreement or a spending measure.

In relation to the *Stern Review*, we announced that we would give particular consideration to:

- the innovative and novel aspects of the economic analysis carried out in the Stern Review, in order to examine what new perspectives the Stern Review has brought to the climate change debate; and
- the design and the parameters of the economic modelling used in the Stern Review.

We made clear that we would not seek to examine the environmental science of climate change, except where it related to the economic modelling undertaken in the *Review*.

---

1 The full terms of reference are available at [www.hm-treasury.gov.uk/independent\\_reviews](http://www.hm-treasury.gov.uk/independent_reviews)

2 “Publication of the Stern Review on the Economics of Climate change”, HM Treasury press notice, 30 October 2006

3. We received 32 written memoranda and took oral evidence from: Professor Paul Ekins of the Policy Studies Institute; the British Air Transport Association (BATA); British Airways; easyJet; Virgin Atlantic Airways; Climate Change Capital; the Centre for Sustainable Energy; Sir Nicholas Stern himself; Rt Hon Lord Lawson of Blaby, a former Chancellor of the Exchequer; the Better Regulation Commission; Friends of the Earth; the Environment Agency; Ms Farhana Yamin of the University of Sussex; the International Maritime Organisation; the Chamber of Shipping; the International Air Transport Association (IATA); and the then Financial Secretary to the Treasury, John Healey MP, and Treasury officials. We are grateful to all those who gave evidence or otherwise assisted with our inquiry.

### Previous work by the Treasury Committee

4. We have previously considered issues relevant to this inquiry in our examinations of the 2006 Budget and Pre-Budget Report.<sup>3</sup> In our Report on the 2006 Budget, we examined the drop in the proportion of revenue yielded to the Exchequer from environmental taxes, from a peak of 9.8% in 1999 to 8.3% in 2004, and expressed concern about the apparently limited assessment the Treasury had made of the reasons for this decline.<sup>4</sup> We described the Government's justification of its decision to freeze air passenger duty (APD) for the fifth year running as "incoherent and unconvincing" and recommended that the Government gave serious consideration to increasing rates of APD.<sup>5</sup> Finally, we accepted that it was important to bring aviation within the EU Emissions Trading Scheme (ETS) but, given the time lapse before aviation was likely to be included in the EU ETS, we recommended that the Government also act at a domestic level by giving urgent consideration to how it could best use the tax system to increase incentives to reduce the harmful environmental effects of aviation.<sup>6</sup>

### Relevant work by other select committees

5. Several other select committees have recently reported to both Houses on climate changes issues:

#### *Pre-Stern Review*

The House of Lords Economic Affairs Committee explored issues relating to the Economics of Climate Change in 2005–06.<sup>7</sup>

---

3 Treasury Committee, Fourth Report of Session 2005–06, *The 2006 Budget*, HC 994-I, paras 93–102 (hereafter HC (2005–06) 994-I); Treasury Committee, Second Report of Session 2006–07, *The 2006 Pre-Budget Report*, HC 115, paras 80–83 (hereafter HC (2006–07) 115)

4 HC (2005–06) 994-I, para 99

5 HC (2005–06) 994-I, paras 100–101

6 HC (2005–06) 994-I, para 102

7 Economic Affairs Committee, Second Report of Session 2005-06, *The Economics of Climate Change*, HL 12-I

### *Post-Stern Review*

In September 2007, the Environment, Food and Rural Affairs Committee reported to the House on *Climate change: the "citizen's agenda"*, a Report which examined how the ordinary citizen could change his or her lifestyle to minimise the impact of climate change and to mitigate its effects.<sup>8</sup>

In March 2007, the Environmental Audit Committee reported on the 2006 Pre-Budget Review and the Stern Review,<sup>9</sup> in June 2007 reported on the Climate Change Programme Review and the Draft Climate Change Bill,<sup>10</sup> and in October 2007 reported on the Structure of Government and the challenge of climate change.<sup>11</sup>

### *Climate Change Bill*

The Environment, Food and Rural Affairs Committee also considered the Draft Climate Change Bill and reported in 2007.<sup>12</sup>

The Joint Committee on the Draft Climate Change Bill reported on the Climate Change Bill in August 2007.<sup>13</sup>

- 
- 8 Environment, Food and Rural Affairs Committee, Eighth Report of Session 2006-07, *Climate change: the "citizen's agenda"*, HC 88-I
- 9 Environmental Audit Committee, Fourth Report of Session 2006-07, *Pre-Budget 2006 and the Stern Review*, HC 227
- 10 Environmental Audit Committee, Seventh Report of Session 2006-07, *Beyond Stern: From the Climate Change Programme Review to the Draft Climate Change Bill*, HC 460
- 11 Environmental Audit Committee, Ninth Report of Session 2006-07, *The structure of Government and the challenge of climate change*, HC 740
- 12 Environment, Food and Rural Affairs Committee, Fifth Report of Session 2006-07, *Draft Climate Change Bill*, HC 534-I
- 13 Joint Committee on the Draft Climate Change Bill, First Report of Session 2006-07, *Draft Climate Change Bill*, HL 170-I/HC 542-I

## 2 The economics of the Stern Review

---

### The Stern Review

#### *Background*

6. With a length of 579 pages, the Stern Review is a comprehensive and ambitious document. Sir Nicholas Stern explained to us that his Review, whilst not necessarily covering new ground in terms of understanding climate change science or the economic tools available to reduce carbon emissions, differed from previous economic analyses in three primary ways: It considered the economics of climate change risk; it considered the issue of achieving international consensus on climate change action; and it considered the equity implications of climate change.<sup>14</sup>

#### *Overall analysis of the Stern Review*

7. Professor Ekins noted that most of the arguments rehearsed in the Stern Review have been available for some time, but the “novelty” of the Stern Review was in Sir Nicholas’ choice of emphasis. First, Professor Ekins noted, Sir Nicholas addressed the science of climate change, which was unusual for an economist. He then focused on the equity and social justice issues, which in Professor Ekins’ view was the correct way to start, because these “are very important public social as well as economic issues”.<sup>15</sup> Many organisations welcomed the Stern Review: Natural England, for example, argued that the central finding of the Stern Review, that inaction will be more costly to the global economy than immediate action, had sent a strong signal to the international community and further demonstrated the UK’s global leadership on this issue.<sup>16</sup>

8. The Government has accepted the Stern Review’s analysis, the thrust of its conclusions and the policy direction that it suggests.<sup>17</sup> The Minister commented that:

the importance of the Stern Review overall is [that] the analysis leads to the conclusive message that there are significant costs in dealing with the challenge of climate change but those costs will be far greater if we do not take the action that is necessary and those costs will be far greater if we do not take that action internationally rather than unilaterally within the UK or elsewhere.<sup>18</sup>

#### *Key findings of the Stern Review*

9. The Stern Review argued that there is now overwhelming scientific evidence that climate change is a serious global threat and that this threat demands an urgent global response.

---

14 Q 129

15 Q 1

16 Ev 132

17 Q 251

18 Q 325

The Review concluded that the benefits of strong and early action to reduce carbon emissions would outweigh the economic costs of not acting and warned that the consequences will be wide-ranging and severe if the world fails to act:

Climate change will affect the basic elements of life for people around the world—access to water, food production, health, and the environment. Hundreds of millions of people could suffer hunger, water shortages and coastal flooding as the world warms.<sup>19</sup>

10. The Stern Review estimated that the overall costs of climate change if no preventative action were taken would be equivalent to losing at least 5% of global gross domestic product (GDP) each year, now and forever. When considering a wider range of risks and impacts, these costs could rise to 20% of GDP or more. According to the Review, the costs of preventative action, such as reducing greenhouse gas emissions to avoid the worst impacts of climate change, could be limited to around 1% of global GDP each year. The Review stressed that decisions made in the next couple of decades would have a “profound effect on the climate in the second half of this century and in the next”.<sup>20</sup> If no action were taken to reduce emissions, the Review estimated that the concentration of greenhouse gases in the atmosphere could double its pre-industrial level by 2035, which would lead to a global average temperature rise of over 2°C. In the longer term, “there would be more than a 50% chance that the temperature would increase by more than 5°C”.<sup>21</sup> This would result in major changes to the world’s physical geography, which would lead to changes in where, and how, people could live their lives. Despite these grave warnings, the Review was optimistic that the costs of stabilising the climate were manageable:

The risks of the worst impacts of climate change can be substantially reduced if greenhouse gas levels in the atmosphere can be stabilised between 450 and 550 parts per million (ppm) CO<sub>2</sub> equivalent (CO<sub>2</sub>e). The current level is 430ppm CO<sub>2</sub>e today, and it is rising at more than 2ppm each year. Stabilisation in this range would require emissions to be at least 25% below current levels by 2050, and perhaps much more.<sup>22</sup>

11. Sir Nicholas explained that, if mankind were to take no action to reduce carbon emissions for 30 years, it would be very difficult to achieve stabilisation of 550ppm. To achieve such stabilisation, he said, total emissions would have to peak 20 to 25 years from now and decisions and action had to be taken in the next few years.<sup>23</sup>

**12. We welcome the Stern Review as an impressive document that contributes much to public discussion of climate change. Sir Nicholas Stern deserves credit for bringing into stark relief the problem of risk and uncertainty concerning potentially ruinous environmental catastrophes. We also support Sir Nicholas’ attempts to frame the**

19 Stern Review, p vi–vii

20 *Ibid.*, p vi

21 *Ibid.*, p vi

22 Stern Review, p vii

23 Q 194

**climate change debate in terms of economic choices, which should serve to assist policymakers in taking the difficult decisions necessary to combat climate change.**

### The international nature of the climate change problem

13. Climate change is, both in its causes and consequences, an international problem: The direct effects of global warming such as rising sea levels and more unpredictable weather affect countries without regard to the source of emissions. The Stern Review argued that “because climate change is a global problem, the response to it must be international ... based on a shared vision of long-term goals and agreement on frameworks that will accelerate action over the next decade”.<sup>24</sup>

14. The then Financial Secretary to the Treasury, John Healey MP,<sup>25</sup> stressed that the UK’s ability to exert influence on the international stage was dependent on the UK demonstrating that it was possible to enjoy economic growth whilst simultaneously dealing with the emissions challenge.<sup>26</sup> Friends of the Earth commented that the adoption by the UK Government of a clear climate change strategy would have a galvanising effect amongst the international community.<sup>27</sup> The Centre for Sustainable Energy noted the “desperate need” for the Government to establish a clear and consistent ‘framing’ of the climate change issue in all its communications, because “it is only ever through leadership and example that international treaties are established that lead to effective global solutions”.<sup>28</sup> The Minister highlighted the Government’s efforts to encourage the European Union to adopt ambitious emissions reductions targets, and its ongoing work on climate change at the G8, International Monetary Fund and World Bank.<sup>29</sup>

15. The Stern Review described how countries will be affected in different ways:

All countries will be affected. The most vulnerable—the poorest countries and populations—will suffer earliest and most, even though they have contributed least to the causes of climate change.<sup>30</sup>

The Review argued that, in both developed and developing economies, it would be possible to make the reductions in emissions on the scale necessary for stabilisation in the required range without endangering economic growth.<sup>31</sup> It noted that the developing world had an important role to play; “even if the rich world takes on responsibility for absolute cuts in emissions of 60-80% by 2050, developing countries must take significant action too. But developing countries should not be required to bear the full costs of this action alone.”<sup>32</sup>

---

24 Stern Review, p vi

25 hereafter referred to as “the Minister”

26 Q 275

27 Q 359

28 Ev 143

29 Qq 275–276

30 Stern Review, p vii

31 *Ibid.*, p viii

32 *Ibid.*, p vii

16. Economic growth in non-OECD [Organisation for Economic Co-operation and Development] countries, most notably China and India, is expected to lead to significant increases in global energy demand, with the non-OECD share of total energy demand projected to exceed half of the global total by 2015.<sup>33</sup> Such increases in demand for natural resources create environmental pressures, not least those relating to climate change. Professor Amartya Sen from Harvard University argued that international agreements on the environment had to address the problem of “historical fairness”—namely, that many developed nations attained their level of development without unduly considering the impact of their economic growth on the environment, so that it would be unfair of them subsequently to seek to restrict the growth of developing nations on the basis of environmental concerns.<sup>34</sup>

17. The Minister believed that the developed countries, which were “largely responsible for the emissions that are currently creating the climate change problems”, had to accept a greater responsibility and a greater share of the cost of resolving the climate change problem.<sup>35</sup> Lord Lawson though was sceptical of the prospects for carbon emission abatement in the developing world. He did not see any prospect of China, for example, cutting back on its carbon emissions “unless somebody else pays for carbon capture and storage”, which he said no country was likely to agree to.<sup>36</sup> However, the Minister stated that the Government was actively working with China on developing and deploying carbon capture and storage (CCS).<sup>37</sup> The 2007 Comprehensive Spending Review announced details of a competition to design and build a full-scale demonstration of CCS technology, which, the Government hopes, will contribute to the UK’s ambition of assisting the transition of China and India to low-carbon economies.<sup>38</sup>

---

33 *Long-term opportunities and challenges for the UK: analysis for the 2007 CSR*, HM Treasury, November 2006, para 4.37, p 59

34 Treasury Committee, Fourteenth Report of Session 2006—07, *Globalisation: prospects and policy responses*, HC 90, Q 315

35 Q 277

36 Q 214

37 Q 276

38 *2007 Pre-Budget Report and Comprehensive Spending Review*, HM Treasury, p 118, paras 7.27–8

## Criticisms of the Stern Review

### *The independence of the Stern Review*

18. The Stern Review was commissioned by the then Chancellor of the Exchequer, and reported to the then Prime Minister and Chancellor. The author, Sir Nicholas Stern, was at the time the serving Head of the Government Economic Service and a former Second Permanent Secretary in HM Treasury. There was some criticism that the Stern Review was not independent and was subject to political pressures. Professor William D Nordhaus of Yale University had written that the Stern Review should be viewed as a political document, rather than an academic study. Like most Government reports, he argued, it was published without an appraisal of methods and assumptions by independent outside experts.<sup>39</sup>

19. Lord Lawson argued that the Stern Review was “basically a work of advocacy”, and that a “more objective, analytical approach would have been helpful”. He suggested that the Review was biased, exaggerating the costs of warming and downplaying both the benefits of warming and the costs of mitigation:

He ramps up the alleged costs of warming to an inordinate degree and the benefits of warming are scarcely mentioned. The costs of mitigation are grossly understated in my view and the whole thing is very biased. One way in which the bias comes out very clearly is the treatment of technological advance. One of the reasons he comes to his relatively low cost [of reducing emissions to a sustainable level] of 1% of Gross Domestic Product is that he assumes there will be a huge technological advance in renewable and non-carbon-based energy and also things like carbon capture and storage. None of these things is remotely economic at the present time but he believes that there will be a huge technological advance. He assumes it and allows for it. When one comes to the mitigation of consequences—adaptation—he assumes that there is virtually no technological advance at all. Technology advances where he wants it to but not where he does not want it to. I think that is implausible.<sup>40</sup>

In a lecture to the Centre for Policy Studies, Lord Lawson claimed that “as a good civil servant [Sir Nicholas] was simply doing his master’s bidding”.<sup>41</sup> In evidence to us, he explained that statement:

I think that the Government had taken a policy stance on this issue. As a highly intelligent man, [Sir Nicholas] knew Mr Blair had said that this was the greatest danger facing the planet and all that. Obviously, he knew he had to come up with

---

39 William D. Nordhaus, *A Review of the Stern Review on the Economics of Climate Change*, *Journal of Economic Literature*, 45(3): 686-702, September 2007, pp 691–2

40 Q 204

41 “The Economics and Politics of Climate Change: An Appeal to Reason”, speech by Rt Hon Lord Lawson to the Centre for Policy Studies, 1 November 2006, p 1



something which conformed to the position that ministers had already taken. He did not need to have a diktat to know that.<sup>42</sup>

20. The Minister was adamant that the Stern Review was a “serious piece of work, carried out independently, with all the resources that [Sir Nicholas] needed from inside the Treasury and from outside as well in order for him to do that”. He added that the Report’s authority, credibility and integrity depended on the fact that Sir Nicholas conducted his Review independently and that, apart from Lord Lawson’s criticism, he did not see any serious evidence or argument to the contrary.<sup>43</sup>

**21. The Stern Review is a serious contribution to the climate change literature. Although Lord Lawson was concerned that Sir Nicholas was insufficiently independent of Government, we believe that the Review has to be judged by the quality of its evidence and the arguments it puts forward, rather than the issue of its authorship.**

### **Discount rates**

22. Much of the discussion on the economics of the Stern Review has centred on the use of a particular “discount rate”. In this context, the discount rate allows one to measure the value of future costs and benefits in today’s terms. A high discount rate, for example, indicates a preference for consumption now rather than in the future. Choosing an appropriate discount rate, whilst a highly technical subject, is crucial to assessing the extent of sacrifices the world should be taking now to prevent or slow down climate change damage affecting future generations. The issue of discounting across long time horizons raises awkward questions of intergenerational equity, such as ‘Should society be attempting to *maximise* welfare across all generations, or, alternatively, should it be seeking to *equalise or smooth* welfare across all generations?’ Choosing a *lower* discount rate has the effect of *promoting* a reduction in current consumption, so that the world inherited by future generations is less damaged.

23. The Stern Review employed discounting assumptions that have caused some controversy amongst academic economists. Professor Ekins perhaps understated the debate when he said that “there has been a fair bit of controversy about how he arrived at his overall damage costs, in particular with the use of a discount rate that some perceived to be too small”.<sup>44</sup> Lord Lawson referred to the critique made by Professor Sir Partha Dasgupta of Cambridge University:

[The discounting] part of Stern is not only highly contestable but highly contested. Professor Dasgupta says it is ridiculous and he has pointed out that if you accept Stern’s [assumption about intergenerational equity] it means that the people of this generation should be saving 75% of their income for future generations. As he says, that is absurd. That part of Stern is, I believe, widely believed to be absurd.<sup>45</sup>

---

42 Q 205

43 Q 254

44 Q 1

45 Q 200

Lord Lawson argued that the sacrifices expected of the current generation should be set against the fact that future generations are likely to be much richer and enjoy a better quality of life:

The proposition is that we should ask the people of this generation all round the world ... to make considerable sacrifices now in order that their great-grandchildren or great-great-grandchildren, or whatever, who will be seven times as well off as they are today rather than six times as well off. It is as if at the time of the industrial revolution just under 200 hundred years ago people were told that they should not embark on that process and burn coal but use wind and water, which were well known technologies at that time, so that we in this generation would not be as well off than we are today. I do not think they would support that.<sup>46</sup>

24. Sir Nicholas defended his discounting techniques when we questioned him. He explained how there were two reasons for discounting. The first reason was discounting for growth, the idea that “in future, people may be better off than we are currently. An extra unit of stuff in future therefore has lower ethical value.”<sup>47</sup> Rejecting Lord Lawson’s allegation, Sir Nicholas stated that his Review performed such discounting for growth in exactly the same way as the Treasury would normally do.<sup>48</sup>

25. The second reason for discounting, the pure time discount rate, is the discounting of future events for no other reason than that they are in the future, or, as Sir Nicholas described it, “the issue of how far we should discriminate between people by date of birth”.<sup>49</sup> The Association of British Insurers pointed out that the pure time discount rate chosen by Sir Nicholas, 0.1%,<sup>50</sup> contrasted markedly with the rate of 1.5% used in the Treasury Green Book, the rate which is normally used by economists when discounting future cashflows in public policy evaluations.<sup>51</sup> The Stern Review argued that standard treatments of discounting were valuable for analysing marginal projects, but inappropriate for the non-marginal impacts important for many aspects of climate change.<sup>52</sup> In a working note for the Stern Review, Dr Cameron Hepburn of the University of Oxford argued that the relevant discount rate for climate change decisions should reflect the risk of “societal collapse” (for example, an entire region or country succumbing to rising sea levels) and, on this basis, should indeed be smaller than the current Treasury rate of 1.5% and possibly 0% to a first approximation.<sup>53</sup>

---

46 Q 199

47 Q 133

48 Q 135

49 Q 133

50 The Stern Review uses the value of 0.1%, rather than 0%, to allow for the possibility that humankind might suffer extinction from some catastrophe other than climate change, before climate change has its full effect. That, in Stern’s view, is the only valid reason to value future generations less than our own.

51 Ev 121

52 Stern Review, p 23

53 *Discounting climate change damages: Working note for the Stern Review*, Cameron Hepburn, pp 21–22

26. Sir Nicholas told us that the idea of discriminating on the grounds of date of birth was an ethical position that was “extremely hard to defend”.<sup>54</sup> In his opinion there was little justification for such discounting when conducting cost benefit analysis at the planetary level (as with climate change), and argued that this approach was not unusual:

We are in pretty good company here in that [the distinguished economists] Solow, Sen, Keynes, Ramsey and all kinds of people have adopted the approach to pure time discounting that we have adopted. It is not particularly unusual.<sup>55</sup>

We note that some economists would disagree with Sir Nicholas’ view that choosing a higher pure time discount rate was indefensible. Professor Nordhaus of Yale University, writing in the *Journal of Economic Literature*, listed four possible justifications for a different rate.<sup>56</sup>

27. Professor Ekins thought that, despite the controversy over the discounting assumptions used, Sir Nicholas’ broad conclusion that the damages from unabated climate change would greatly exceed the costs of doing something about it and reducing the level of emissions, was “absolutely right.”<sup>57</sup> Simon Roberts from the Centre for Sustainable Energy argued that the discount rate chosen was irrelevant to the central finding of the Stern Review that the costs of inaction far outweighed the costs of action:

It is very clear that whatever discount rate is used—no matter how low—the costs of inaction far outweigh the costs of action. On that basis, even if one almost entirely ignores future generations or treats them as if they are already alive, you would still conclude that it justifies significant immediate action in relation to climate change, rather than worry too much whether it should be  $x\%$  or  $y\%$ . That would be a level of focus on a specific that ignored the broad conclusion that action is needed now rather than later.<sup>58</sup>

28. Sir Nicholas was clearly aware of the significance of the ethical assumptions he made in his Review:

We put the ethical questions at centre stage. If one is talking about making decisions now which have an impact over 50, 100, 150 or 200 years the ethics of how one makes judgments as between changes in investments in the next few years and their implications 150 years down the track raise some quite difficult questions. We felt that the economics of policy could not really be taken on without confronting those things.<sup>59</sup>

29. At the time of publication, the Stern Review offered only one discount rate possibility. Following some criticism from academics, Sir Nicholas later published a *Postscript*

---

54 Q 133

55 Q 139

56 *Journal of Economic Literature*, vol 45, issue 3, September 2007, p 686-702

57 Q 1

58 Q 110

59 Q 129

containing tables that showed the sensitivity of the Stern Review's findings to different choices of discount rate. However, no arguments were put forward explaining why other discount rates might be preferred by other economists, which, had they been provided, would have been helpful in facilitating debate about the relative merits of different discount rates.<sup>60</sup>

30. The Minister supported the assumptions underpinning the Stern Review.<sup>61</sup> He told us that the current generation had a particular responsibility in dealing with climate change and it was right that “we should not regard the value of the world [in future] any less than we do at the moment”.<sup>62</sup>

**31. The choice of discount rate used in the Stern Review is critical to its strong policy conclusions, because that choice is an important factor in the calculation of the costs (as valued today) arising from future climate change. We regret that there was not greater discussion of discount rates in the original Stern Review, including explanation and potential justification of alternative rates. We welcome the eventual publication of discount rate sensitivity tables in the Stern Review's Postscript, but note that the attention that these alternative rates received was substantially lower than might have been the case if acknowledgement of, and arguments for, other discount rates had been provided in the original Review.**

### Relying on adaptation

32. The most prominent strand of our inquiry was the role of the Treasury in limiting UK carbon emissions. Yet, however successfully this aim is pursued in the future, the UK and the wider world have to begin to adapt to climate change now. Regardless of future action, it is already certain that threats such as rising sea levels and more unpredictable weather patterns will make increasing demands on the Treasury's purse strings. Some adaptation will be inevitable, but we considered it important to examine where the balance lay between encouraging expenditure on adaptation methods rather than cutting emissions.

33. Lord Lawson told us that, although he had not calculated the monetary sum needed to adapt to climate change, it was “quite clear that it would be substantially less than the cost of going down the route of cutting back [on emissions] drastically”.<sup>63</sup> He argued that an effective response to climate change would involve close monitoring of the consequences of warming, adaptation to those consequences where they were harmful and pocketing of benefits when the consequences were beneficial.<sup>64</sup> He took the view that although the impact of climate change could be severe, all kinds of other eventualities were possible, including the chance that the world might enter a new ice age over the next 100 years. He also argued that there were much more urgent problems to face such as terrorism, nuclear proliferation, and natural disasters, and that the UK could not guard against every possible

---

60 Stern Review, Technical annex to postscript, p 11

61 Q 327

62 Q 328

63 Q 207

64 Q 197

contingency because it would be too expensive. He commented that, in the near future at least, the UK should be focused on the dangers arising from nuclear proliferation and international terrorism, saying “we should be careful about future threats and be careful not to spend resources unnecessarily”.<sup>65</sup> For these reasons, he advocated limiting expenditure on cutting back emissions, instead focusing on monitoring and adaptation to the threat of climate change.

34. A response to the threat of climate change based on adaptation would have the advantage of enabling each nation to deal with the consequences piecemeal as and when they arose, in contrast to the emissions reduction approach, which Lord Lawson described as requiring an “extremely ambitious and implausible international agreement before you can do anything worthwhile”.<sup>66</sup> In Lord Lawson’s strategy, poorer countries unable to adapt to changes such as rising sea levels could receive financial assistance from richer countries, which, in his view, was a “far more practical approach [than mitigation of emissions] as well as being far more cost-effective.”<sup>67</sup> He thought that the financial aid required would be manageable because of the economic growth in the developing countries that the Stern Review predicts:

Although we should help these countries it must be remembered that on the growth assumptions on which the Stern projections of warming are based the living standards of the developing world as a whole ... will be higher in 100 years’ time than they are in the developed world today, which is great news if those predictions can be believed. Most of the countries will be able to afford most things themselves.<sup>68</sup>

35. Kate Hampton from Climate Change Capital believed that intelligent debate on adaptation had been slowed down because, historically, “adaptation has tended to be used as a card played by countries like the US and Saudi Arabia as a way to divert attention away from mitigation”.<sup>69</sup> Sir Nicholas argued that the balance between adaptation and mitigation should not be viewed as a horse race and that both adaptation and mitigation would be important. However, he disputed Lord Lawson’s argument that it made sense to see what happened before acting, because of the significant risk that by then it would be too late:

We have to do both. I think that to see adaptation as an answer to a risk of a 5°C or 6°C increase is not realistic given the magnitude of the implications for the political and human geography of the world.<sup>70</sup>

The Stern Review paid attention to the risk of catastrophic climate change, a scenario for which monitoring would simply be inadequate and too late. Professor Ekins agreed that catastrophic climate change risk was a growing theme in the scientific literature:

---

65 Q 226

66 Q 201

67 *Ibid.*

68 Q 207

69 Q 126

70 Q 143

The single biggest change in the science over the past 10 years since I have been looking at the issue is the way in which scientists now perceive catastrophic costs to be much more possible in the reasonably short term.<sup>71</sup>

**36. Lord Lawson's argument that adaptation was cheaper, easier and more flexible than attempting to mitigate emissions has its attractions. However, as Sir Nicholas Stern pointed out in his Review and in evidence to us, relying on monitoring and adaptation alone could prove to be too little, too late. The fact that adaptation will be required in the short to medium term, regardless of mitigation efforts, does not absolve the UK from its responsibility to reduce its carbon emissions. We support Sir Nicholas' recommendation that the Government pursue a twin-track approach: working to reduce emissions to a sustainable level, while at the same time committing sufficient resources to the monitoring of climate trends and adaptation, both in the UK and abroad.**

## 3 The Government's approach to reducing emissions

---

### Coordinating climate change policy

37. Climate change is an issue that touches upon many policy areas, spanning several government departments. To name just a few, HM Treasury has responsibility for setting taxation policy, the Department for Transport has responsibility for encouraging the use of green transport, the Department for Business Enterprise and Regulatory Reform (BERR) has responsibility for the energy sector, and the Department for Environment, Food and Rural Affairs (DEFRA) leads on both environmental policy in general and adaptation efforts such as flood defence. The Office of Climate Change (OCC) was established in September 2006 and works across Government supporting analytical work on climate change and the development of climate change policy and strategy.<sup>72</sup> The Minister of State for the Environment, Phil Woolas MP, said that the OCC “is a shared resource for Defra, BERR, DFID, FCO, DfT and CLG. It is jointly funded and governed by these Departments.”<sup>73</sup>

38. DEFRA is the lead department for Public Service Agreement 27, to “lead the global effort to avoid dangerous climate change”<sup>74</sup> and the Minister was very clear that the policy responsibility for the environment rested with the Secretary of State for the Environment. However, he added that he did “not think anybody could argue that the Prime Minister and other leading figures in the Government have not also played a very active part”. He stated that over the last couple of years, the UK had seen an “unprecedented cross-departmental, cross-government effort behind the climate change challenge”.<sup>75</sup> The Minister said it was only right and proper that the Prime Minister, DEFRA, the Department for Trade and Industry (now DBERR), the Department for Transport and the Treasury should all be involved.<sup>76</sup>

39. PricewaterhouseCoopers considered that it was becoming more difficult to establish which Government department was in the lead on climate change issues, in the context of a growing number of initiatives, programmes and associations which have been set up in recent years: “there is now perhaps a perception that the setting of government policy needs to be more focussed”.<sup>77</sup> Nor did the Better Regulation Commission (BRC) see sufficient cohesion, telling us that there needed to be a clear lead department.<sup>78</sup> The BRC was encouraged by the concept of the Office of Climate Change, but insisted that it needed to develop a clear role and hoped that its priority would be establishing:

---

72 Office of Climate Change website [www.occ.gov.uk](http://www.occ.gov.uk)

73 HC Deb, 26 July 2007, col 463

74 *2007 Pre-Budget Report and Comprehensive Spending Review*, HM Treasury, p 195

75 Q 265

76 Q 266

77 Ev 110

78 Q 334

the fundamental building blocks of the policy, which is understanding the pros and cons of different methods of carbon pricing, establishing a clear stabilisation goal so that everyone understands it and a carbon-price pathway—a clear methodology for evaluating policies across government—and to make sure that the [BRC’s] seven tests are woven deeply into the policy-making agenda.<sup>79</sup>

Kate Hampton of Climate Change Capital agreed that there had been a problem with coordination, but she saw some improvement:

Certainly since the EU and G8 presidencies last year government departments have started to work together a lot more effectively on these issues. Therefore, I think there is an improving trend, but I do not think it is right to say at this stage that policy is predictable and provides the kind of long-term visibility that investors need. I think that policymakers are beginning to realise that it is a problem.<sup>80</sup>

**40. Climate change requires a wide range of responses from departments across Government. The effective coordination of these efforts, and the presentation of a consistent, clear strategy by all departments will be vital if the UK is to show the way in combating climate change, setting a good example for other countries, as well as to individuals. To this end, we welcome the establishment of the Office of Climate Change (OCC). However, we think it is important that there should be a Government minister directly accountable for the cross-governmental work of the OCC, most likely within the Cabinet Office, in order to create an effective champion for climate change issues across Government.**

## Seven tests for better regulation

41. The Better Regulation Commission (BRC) published a report<sup>81</sup> in response to the Stern Review in order to address two concerns: first, to ensure cohesion across different departments’ policies and, secondly, to ensure that a framework of tests existed against which policymakers should be judged.<sup>82</sup> The BRC suggested seven tests for better climate change regulation, setting “basic but essential standards to policy makers as they meet the complex challenges of climate change”:

- “Ensure climate policy is consistent with a healthy UK economy;
- Government must develop and act consistently with a climate change strategy; avoiding piecemeal announcements;
- Test policy against a carbon price benchmark;
- Carbon policy choices must be efficient; don’t do things twice;

---

79 *Ibid.*

80 Q 109

81 *Regulating to mitigate climate change—a response to the Stern Review*, Better Regulation Commission

82 Q 331



- Keep administrative costs to a minimum;
- Do not use climate change as a justification for other policy goals; and
- If it isn't working, change it.”<sup>83</sup>

42. The Government accepted the BRC's seven tests in May 2007, commenting that it saw “the better regulation recommendations and tests as essential to combating climate change in a proportionate consistent way”. Furthermore, the Government pledged to “keep the overall regulatory burden on climate change under review, looking for ways of streamlining existing regulatory burdens and reducing overlaps”.<sup>84</sup>

**43. We welcome the suggestions made by the Better Regulation Commission towards ensuring cohesion in climate change regulations, including the proposed ‘seven tests’. We are pleased to note that the Government has accepted the recommendations of the Better Regulation Commission and has pledged to monitor the overall regulatory burden imposed under the climate change banner.**

### HM Treasury's role and the regulatory mix

44. The Stern Review highlighted three key areas for action by the Government:

Climate change is the greatest market failure the world has ever seen, and it interacts with other market imperfections. Three elements of policy are required for an effective global response. The first is the pricing of carbon, implemented through tax, trading or regulation. The second is policy to support innovation and the deployment of low-carbon technologies. And the third is action to remove barriers to energy efficiency, and to inform, educate and persuade individuals about what they can do to respond to climate change.<sup>85</sup>

45. Of the three elements suggested by the Stern Review for action by Government, we believe that the pricing of carbon and the application of economic tools is clearly the area where the Treasury is best placed to take the lead, and the use of such tools by the Treasury was therefore the focus of our inquiry. Our inquiry did not consider Government policy in support of technological innovation, or its action to remove barriers to energy efficiency and influence individuals' responses to climate change (except via economic tools).

46. One of the key findings of the Stern Review was that establishing a carbon price, through tax, trading or regulation, was an essential foundation for climate-change policy.<sup>86</sup> Environmental taxation is a tax on ‘bads’—that is, some undesirable behaviour, such as emission of carbon dioxide—and works by forcing emitters to pay the environmental costs of their actions. Environmental trading schemes also involve the pricing of economic

---

83 *Regulating to mitigate climate change—a response to the Stern Review*, Better Regulation Commission, p 5

84 The Government's response to the Better Regulation Commission's report: *Regulating to mitigate climate change—a response to the Stern Review*, DEFRA, May 2007, p 4, para 9

85 “Publication of the Stern Review on the Economics of Climate change”, HM Treasury press release, 30 October 2006

86 Stern Review, p xviii

'bads'—this time by setting the maximum level of, in this case, emissions that is tolerable and creating a market through which emitters can buy and sell permits. Regulation covers a broad class of measures that prohibit, limit or enforce a particular behaviour, and carry the threat of punishment for non-compliance. There are disadvantages and advantages to all three approaches. Professor Ekins argued that use of the price mechanism was appropriate in many, but not all, cases:

I think that a complex society such as ours needs both [taxation and regulation]. Regulation sets standards, and there are some areas of life where standards are important. For example, I am very glad that drinking water is subject to regulation and not taxed on the amount of pollution that can be put into it. On the other hand, there are many environmental issues that respond well to price signals where those physical effects are not absolutely critical and perhaps the cost of abatement is relatively high ... Once a tax is levied one pays the tax on the full environmental effect, not only on the bit that is above the regulated amount. There has now been a very interesting swing of perceptions against environmental taxes, and certainly governments have found them very difficult to introduce. That means that on the whole we do not have enough of them and in general I would favour the introduction of environmental taxes much more commonly, and in particular for their introduction on an escalating basis. In this country we have had some experiences of tax escalators. The fuel duty escalator and landfill tax escalator are currently in place. In my view they have shown themselves to be remarkably effective.<sup>87</sup>

**47. A variety of policies and tools will be necessary to counter climate change emissions and public policy cannot afford to rely solely on emissions trading schemes, or environmental tax, or regulation. In general, however, we are persuaded that use of a price mechanism, rather than regulation, is an extremely effective way to change people's behaviour and, as much as is possible, the Government should give primary consideration to the use of economic tools in combating climate change.**

## 4 Emissions Trading Schemes

---

### Theoretical considerations

#### *Introduction*

48. Emissions trading is a mechanism designed to produce a market for greenhouse gas (GHG) emissions so that those emissions can be reduced in an economically efficient way. A cap is set for the total amount of emissions permitted and each polluting business is then allocated a proportion of this total. Participants can then either:

- maintain operations so that they remain within their allocated emissions cap;
- reduce their emissions below their allocation and sell or bank the excess emission allowances; or
- let their emissions move above their allocation, and buy emissions allowances from other participants to cover their excess emissions.<sup>88</sup>

As participants have to pay to emit more GHG than their allocation allows, and can profit from emitting less, emissions trading should create a financial incentive to reduce emissions. An emissions trading scheme therefore provides a framework for achieving a socially-desired level of emissions in an economically efficient manner.

49. The first stage of setting up an emissions trading scheme involves allocating emission permits to participants, either via an auction or, alternatively, by reference to existing levels of emissions. Then, when trading commences, innovative firms should identify ways to reduce their emissions, and thus be able to sell unused permits, via the market, to other firms with a greater need for them. Firms therefore have an incentive to invest in cleaner technology, and the dirtiest firms should struggle to retain a competitive advantage. One applied example of an emissions trading scheme is that established by the European Union. This chapter considers the theoretical case for emission trading schemes, the successes and challenges of the existing European Union Emission Trading Scheme (EU ETS) and how the EU ETS might be extended to other countries and industries, in particular to aviation.

#### *Theory of Trading Schemes*

50. The primary benefit of an emissions trading scheme is that, if successful, it limits the quantity of emissions to the level chosen by society, achieving an environmental aim via the use of an economic mechanism. Kate Hampton of Climate Change Capital explained how emissions trading can deliver very large volumes of emissions reductions, “as we are starting to see with the EU Emission Trading Scheme and its impact on investments in the developing world through Kyoto’s Clean Development Mechanism”. She considered that,

---

88 “Emissions trading: the theory”, the Carbon Trust, 22 February 2005

in creating a market, emissions trading was “unleashing the private sector’s ability to go out and discover the lowest cost reductions”.<sup>89</sup>

51. Initially, permit trading would be expected to encourage those forms of mitigation that are relatively easy and cheap to deploy. Emissions trading should therefore allow emissions reductions to be made efficiently, in contrast to a system of regulation whereby emitters are simply told that, if they exceed a specific target, they will be punished by a fine. An emissions trading scheme can ensure a particular level of emissions is achieved, but at an uncertain price. An alternative to emissions trading is environmental taxation, which can give certainty over the price of emissions, but no certainty over the level of emissions. Environmental taxation is discussed in Chapter 5.

52. Sir Nicholas told us that the most important advantage of trading schemes was that they promoted carbon financial flows from developed to developing countries, and did so via a market mechanism, rather than through overseas aid. He explained that countries such as India and China were looking to rich countries for help with moving to low-carbon economies, and that the UK should therefore be “scaling up” activities such as the Clean Development Mechanism, in order to facilitate these financial flows to developing countries.<sup>90</sup>

### *Problems with emissions trading*

53. Most witnesses agreed that the theoretical elegance of emissions trading was hard to recreate in a real-world setting. Professor Ekins, for example, told us that due to political pressures the schemes which actually come into existence bore little relation to the textbook expositions of emissions trading.<sup>91</sup> The Centre for Sustainable Energy agreed that “there is a political process ... which sometimes is missed in the theoretical understanding of how efficient a taxation or trading system is”.<sup>92</sup> Indeed, Lord Lawson characterised the permit allocation process of trading schemes in general as “highly arbitrary” and subject to a “tremendous amount of horse trading and corruption”.<sup>93</sup> He argued that the administrative infrastructure required to operate an emission trading scheme was “hugely more expensive” than that required for tax-gathering.<sup>94</sup> He ranked emissions trading as “better than regulation and direction”, but less efficient than taxation. The biggest failings he cited were the problem of identifying the appropriate cap on emissions and that of selecting the industries which would participate:

---

89 Q 117

90 The Clean Development Mechanism, established under the Kyoto Protocol, allows industrialised countries with a greenhouse gas reduction commitment to invest in projects that reduce emissions in developing countries as an alternative to more expensive emission reductions in their own countries.

91 Q 7

92 Q 117

93 Q 224

94 Q 225

Will this system apply to the personal sector as well as the power sector and one or two others? Unless you do it across the board the more economic distortions there will be, whereas taxation would apply all over the place.<sup>95</sup>

54. An emissions trading scheme requires a rigorous measuring system in order to ensure that all emissions are accounted for by permits. This is, generally speaking, easier to achieve with larger industries such as power generation, as opposed to small factories, shops or individuals. Sir Nicholas told us that in cases where emission measurement was difficult, it could be easier to operate a tax on goods rather than a trading scheme.<sup>96</sup>

55. Professor Ekins acknowledged that there was an opportunity for fraud by participants in trading schemes, but was confident that “a very great deal of effort has been invested in ... monitoring and verification mechanisms both in this country and in Europe and to some extent elsewhere in order to try to ensure that [such fraud] does not happen”. He explained that:

In principle, it is quite easy to calculate how much carbon is released when one burns a certain quantity of fossil fuel because it is known how much carbon is in it and all of it will go into the atmosphere. The difficulty arises when one starts to allocate allowances on the basis of estimated base lines. What would have happened if one had not done certain things? The “what would have happened”—the counterfactual—is always an uncertainty and people have vested interests in arguing that base lines are different from what they would have been. That debate that has dogged the whole issue of how one might take into account reductions in deforestation. Mechanisms to deal with these issues have been evolved and I believe that in the European context they are reasonably robust.<sup>97</sup>

56. Professor Ekins noted that the Stern Review saw emissions trading as a long-term way to cap emissions. In the short term, he argued, there would probably be a need to make use of a price mechanism such as an environmental tax. Therefore, there would have to be a carbon tax subject to adjustment in order to deliver a long-term quantity of emissions trading.<sup>98</sup>

## European Union Emission Trading Scheme

### *Background*

57. In 2003 the European Council adopted the Emissions Trading Directive, which laid out the framework for the European Union Emissions Trading Scheme (EU ETS).<sup>99</sup> The aim of the EU ETS, which officially came into operation on 1 January 2005, is to help EU Member States achieve compliance with their commitments under the Kyoto Protocol. It does not

---

95 Q 224

96 Q 145

97 Q 12

98 Q 7

99 EU Directive 2003/87/EC

attempt to set new environmental targets, but rather allows for cheaper compliance with existing targets, by letting participants trade emission allowances so that the targets can be achieved at least cost.<sup>100</sup> The 11,500 energy-intensive installations that are currently covered by the scheme account for close to half of all EU emissions. These installations include combustion plants, oil refineries, coke ovens, iron and steel plants, and factories making cement, glass, lime, brick, ceramics, pulp and paper.<sup>101</sup>

58. The Minister confirmed that the EU ETS was the UK's principal carbon pricing instrument, covering half of the UK's emissions.<sup>102</sup> In October 2006, the Government published its vision for the long-term future of international emissions trading, stating that it intended to develop the EU ETS as the basis of a global carbon market. The UK's key proposals are:

- set a new Europe-wide emissions reduction target of 30 per cent by 2020 and then at least 60 per cent by 2050, providing greater long-term certainty for business;
- foster a deeper, more liquid market by considering expansion of the EU ETS to cover more sectors and gases;
- move towards more auctioning of allowances in future phases to ensure a more efficient allocation; and extend the scheme beyond Europe - first, by guaranteeing that credits from Clean Development Mechanism projects in developing countries will be valid for compliance in the EU ETS beyond 2012, which will enable not only financial flows but technology transfer to the world's poorest countries; and second, by enabling similar schemes in other countries, such as those being developed in Japan, Australia, the North Eastern American states and California, to trade with the European scheme.<sup>103</sup>

### **Challenges for the EU ETS**

59. The Better Regulation Commission (BRC) commended the Stern Review's analysis of the issues that needed to be dealt with by the EU ETS: namely, creating adequate scarcity of allowances to ensure a meaningful carbon price, ensuring that there was appropriate transparency and liquidity, and working towards the inclusion of all sectors. The BRC stated that the UK Government had considerable influence in Europe on these issues.<sup>104</sup>

60. Simon Bullock from Friends of the Earth told us that the cap on emissions in Phase I was not sufficiently demanding to result in a carbon price that would offer economic incentives or induce any real behaviour change by emitters.<sup>105</sup> Professor Ekins said that

---

100 EU website  
<http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/05/84&format=HTML&aged=1&language=EN&guiLanguage=en>

101 The Carbon Trust website [http://www.thecarbontrust.co.uk/carbontrust/climate\\_change/iocc4\\_2\\_2\\_1.html](http://www.thecarbontrust.co.uk/carbontrust/climate_change/iocc4_2_2_1.html)

102 Q 262

103 "Analysis paper on EU Emissions Trading Scheme Review options", DEFRA, September 2007, p 3

104 Q 347

105 Q 348

“easily the biggest problem with the European scheme is that governments are allocating too many emissions allowances”.<sup>106</sup> He thought that the European Commission was “absolutely right to take a tough stand” on national allocation plans under Phase II.<sup>107</sup> He also pointed out that, in relation to Phase II, of the 10 to 15 allocation plans that had been submitted by national governments, only the UK’s had been approved so far and nine had been rejected.

61. Sir Nicholas said that the EU was only in the first couple of years of the EU ETS and the lesson of giving away too many permits in the early stages had been learnt. Sir Nicholas added that the EU Commissioner for the Environment with responsibility for the EU ETS, Commissioner Stavros Dimas, had made a strong case in the second round of the national allocation plans for much more stringent allocations, and had taken “very much on board” the criticisms of the overgenerous Phase I permit allocation.<sup>108</sup>

### ***Successes of the EU ETS***

62. The Environment Agency pointed out that the mechanism of the EU ETS itself works, and it had been demonstrated to work by the fact that the emissions permit price had been driven down to low levels, indicating that the market was finding the most cost-effective ways of delivering emissions reductions under the (albeit over-generous) cap.<sup>109</sup> Kate Hampton argued that Phase I of the EU ETS (covering the period 2005–07) was a learning phase, and was entered into “before the EU had adequate data”, and she considered that it was therefore inevitable that there would be a price adjustment when the real data came out. She was optimistic that recent European Commission decisions over Phase II allocations (covering the period 2008–12) would provide a higher price for carbon, noting that emitters are already investing in technology on the basis of a higher carbon price than before.<sup>110</sup> Sir Nicholas agreed that we should see the early experiences of emission trading as a learning process:

these are early days. I think we are learning quite quickly. I have been impressed by how rapidly that learning process has gone ahead given that [the EU ETS] has been going for only a couple of years<sup>111</sup>

**63. Phase I of the European Union Emission Trading Scheme was hamstrung by its initial over-allocation of emissions permits, resulting in a carbon price that was too low to have sufficient influence in changing its participants’ behaviour. The scheme has been successful in showing that the architecture of the trading system works, and provides a foundation from which to develop an effective scheme with a meaningful overall cap, but it is absolutely essential that Phase II features a more rigorous allocation of permits. We recommend that the UK Government work with the**

---

106 Q 12

107 Q 10

108 Q 148

109 Q 392

110 Q 119

111 Q 146

**Commission and other Member States to ensure that Phase II involves tough, but achievable, caps across Europe.**

### Moving to a global emissions trading scheme

64. One of the Government's three key proposals relating to the EU ETS is that it should be developed in a way that enables "similar schemes in other countries to trade with the EU ETS and to guarantee that credits from Clean Development Mechanism projects in developing countries will be valid for compliance in EU ETS beyond 2012".<sup>112</sup> The Minister assured us that it was realistic for the Government to aim for worldwide carbon trading systems, although he admitted that achieving such systems would be tough. He saw the EU ETS as the cornerstone of international climate change architecture for the future:

- providing the capacity to set emissions' limits;
- establishing a carbon price;
- encouraging the transfers in investments and technologies that needed to take place into countries like India and China; and
- linking trading schemes that are beginning to be established in other countries.<sup>113</sup>

65. Professor Ekins agreed that the EU ETS offered the "best hope of some kind of global accommodation with the carbon constraint". He explained that there were already "straws in the wind", suggesting how it might develop:

The EU scheme is already linked to the mechanisms of the Kyoto Protocol ... and, if other countries and perhaps even individual American states such as California evolved their own robust emissions trading schemes ... in principle there would be no reason why those permits should not become tradeable across borders as well.<sup>114</sup>

66. Simon Roberts was less optimistic that a truly global arrangement could be established soon, but emphasized that this did not mean that the UK should not act prior to such an arrangement being established:

What is important is that one starts to map out what the rules would be for an international system so one build that into it and joins together any more regional systems. One certainly does not need a global system to kick off, as the EU ETS shows.<sup>115</sup>

**67. Whilst the EU moves ahead with Phase II of its Emissions Trading Scheme, we note that other countries and states are developing their own, different schemes. The existence of different schemes offers policymakers the chance to see what works and what does not, but there is a real danger that the international community will be**

<sup>112</sup> Pre-Budget Report 2007, p 117, para 7.17

<sup>113</sup> Q 279

<sup>114</sup> Q 11

<sup>115</sup> Q 122



unable to join up this patchwork of schemes, if so desired, at a point in the future. Without establishing common principles between schemes, we are not confident that the Government's ambition of connecting up the European Union Emission Trading Scheme with other schemes can be achieved. We recommend that the Government strengthen relationships with policymakers in other countries and other organisations beyond the EU to discuss the development of trading schemes.

## Inclusion of airlines in the EU ETS

### *Introduction*

68. Emissions from aviation are forecast to be the UK's fastest growing source of greenhouse gas emissions, rising from 5% of UK emissions now, to potentially 25% by 2030.<sup>116</sup> The European Commission plans to broaden the scope of the EU ETS to include civilian aviation emissions. The Minister explained that the Government's aim was to see aviation included in the EU ETS as soon as possible.<sup>117</sup> Sir Nicholas also regarded aviation's inclusion as very important.<sup>118</sup>

69. The general view amongst airline industry representatives was that, of all the economic tools available to curb emissions, the first choice would be a global emissions trading scheme, the second choice would be a regional trading system (although they pointed out that several problems would arise about whether to include non-European carriers flying to European airports), and the third choice would be a tax on emissions (which would be very costly to the industry). EasyJet said that aviation's inclusion in the EU ETS would "incentivise airlines to operate much more efficiently; otherwise, they will be penalised". It explained that this would not solely mean cleaner planes, but would also influence how those planes were used and how full each plane would be.<sup>119</sup> The British Air Transport Association (BATA), the UK Aviation trade body, believed that the EU ETS was the right way forward, and stated that the UK industry was taking the lead in persuading airlines around the world to that effect.<sup>120</sup>

70. Anthony Concil, the Communications Director of the International Air Transport Association (IATA) was quoted in November 2006 as saying "for Europe to act before a global agreement is putting the cart before the horse".<sup>121</sup> However, in evidence to us, IATA's Director of Aviation Environment, Philippe Rochat, gave a cautious welcome to aviation's inclusion in the EU ETS,<sup>122</sup> whilst admitting that IATA continued to lobby in Brussels for changes to be made to "fit with aviation's requirements".<sup>123</sup> IATA noted that a

---

116 "The Future of Airport Transport", Department for Transport, 16 December 2003, Chapter 3, p 10, para 3.35

117 Q 294

118 Q 165

119 Q 59

120 Q 31

121 "Airlines attack Europe's plans to tackle flight emissions", Financial Times, 16 November 2006

122 Q 480

123 Q 478

truly global aviation emissions trading scheme would take a long time to coordinate, bearing in mind how long it has taken for the EU States to forge an agreement,<sup>124</sup> but its Chief Economist, Brian Pearce, was optimistic that, in tandem with the EU ETS, a patchwork of similar schemes was gradually gaining ground, and these could ultimately be linked up to a worldwide scheme.<sup>125</sup>

### ***Problems with including aviation***

71. One of the difficulties faced by the EU ETS in seeking to include aviation will be creating a level playing field between European and non-European airlines. BATA told us that a European Commission working group had been grappling with issues such as deciding which flights should be included in the scope of the scheme, concluding that a two-stage process would be appropriate, whereby intra-Europe flights are included in 2011 and flights arriving in or departing from Europe in 2012.<sup>126</sup> Virgin Atlantic accepted that there was opposition from non-European governments to the introduction of such a scheme, but added that the UK industry had done its best to persuade airlines around the world of the merits of this approach.<sup>127</sup>

72. Philippe Rochat from IATA was convinced that emissions trading was “a far better tool than taxes and charges”. However, he stressed that for a scheme to work in the global aviation industry, it must be of a global nature, and not regional or national:

We have always supported a global scheme through ICAO [International Civil Aviation Organization] according to what the Kyoto Protocol suggests for aviation and we regret to say that at the last ICAO assembly IATA insisted on the development of a global scheme for aviation and no one state supported that idea ... We consider that aviation emissions are global; they take place all over the world. More than half of aviation emissions take place over the high seas where no state is entitled to impose emissions trading, so we think that only a global solution through ICAO will work. ICAO has the mandate to regulate air transport over the high seas in the international air space.<sup>128</sup>

### ***Eco-labelling***

73. The aviation industry is not scheduled to enter the EU ETS until 2011 at the earliest. Friends of the Earth argued that, in the meantime, interim measures were urgently needed.<sup>129</sup> Besides changes to the aviation taxation regime (see Chapter 5), we also considered the possibility of eco-labelling as a way of encouraging airlines and passengers to make environmentally-conscious decisions.

---

124 Q 471

125 Ibid

126 Q 52

127 Q 56

128 Q 471

129 Ev 139

74. Flybe introduced an eco-labelling scheme for its aircraft in June 2007. The labels are modelled on those used in the sale of white goods and show a range of environmental indicators (such as fuel burn, carbon emissions, noise footprints and total environmental cost) for each aircraft. These labels are presented as part of the on-line ticket booking process, in onboard literature and in advertising.<sup>130</sup> The aim of the Flybe scheme is to inform consumers about the environmental impact of their flights. British Airways (BA) acknowledged that it was important that airlines communicated more effectively with their customers about the environmental impact of flying.<sup>131</sup> When pushed on why ideas such as the Flybe initiative has not led to a coordinated response from the airlines, Easyjet suggested that the industry had been inhibited in the past by its “competitiveness nature”, saying that their appearance before the Treasury Committee was “the first time we have appeared like this together”.<sup>132</sup> Virgin Atlantic indicated that they were “coming up with proposals” on an eco-labelling scheme, although at present no such scheme was in place.<sup>133</sup> IATA argued that it was promoting eco-labelling among its members, “but only a limited number of them are today receptive”.<sup>134</sup>

75. Other airlines have environmental codes and programmes, and several publish data on emissions, efficiency and fuel consumption. However, typically this information is not readily accessible at the point of sale and is not easily comparable with other airlines’ environmental records. We suggested to IATA that they might get involved in promoting the kind of “eco-competition” made possible by the Flybe scheme. IATA assured us that they were in favour of competition, but thought that it was “up to the individual airlines to promote their environmental performance”.<sup>135</sup> At an oral evidence session on 23 January 2007, Virgin Atlantic committed to writing to the Committee with plans of how the aviation industry would cooperate on new environmental initiatives.<sup>136</sup> At the time of agreeing this Report, the Committee had not received any such letter.

**76. The UK Government has signalled its desire to see aviation included in the European Union Emission Trading Scheme in 2011. If that aim is achieved, the Scheme should be able to ensure that the aviation industry will be offered real incentives to improve the efficiency of its fleet of aircraft, develop cleaner technology and continue to grow in an environmentally-sustainable way.**

**77. We are concerned that, in the interval before aviation’s inclusion in the European Union Emission Trading Scheme, the aviation industry appears to be dragging its feet in cooperating on environmental schemes. We see the airlines’ failure to write to the Committee, as promised, with details of how the industry would cooperate in future, as symptomatic of this approach. Instead of cooperation, a hotchpotch of company-**

---

130 Flybe website: [http://www.flybe.com/pdf/eco\\_labels\\_make\\_own.pdf](http://www.flybe.com/pdf/eco_labels_make_own.pdf)

131 Q 83

132 Q 85

133 Q 88

134 Q 457

135 Q 453

136 Q 90

**specific initiatives are developing, with a huge variety of responses from different airlines, preventing consumers from comparing the environmental performance of one airline with another. One information improvement to the market for passenger flights would be an industry-wide system of eco-labelling, where each flight's environmental impact would be independently rated and then publicised to customers at the point of purchase. We urge the Government, the airlines and aviation's representative bodies to work together to devise and introduce such a scheme at the earliest opportunity.**

## 5 Environmental taxes

---

### The rationale for environmental taxation

78. Where individual polluters fail to take full account of the impact of their actions on the environment, the result may be a level of pollution that society as a whole considers inappropriate. Taxes offer one potential solution: by using taxation to augment the private costs of pollution, polluters can be forced to confront the full social costs of their actions. A report by the Institute of Fiscal Studies highlighted some of the advantages and disadvantages of taxation compared with regulatory approaches:

Taxes and economic instruments may have particular benefits over using regulatory approaches to environmental problems, in particular to do with static efficiency (minimising the costs of achieving a particular level of pollution reduction), dynamic efficiency (providing incentives for ongoing abatement) and revenue-raising. However, there are also possible drawbacks to environmental taxes—in particular, the uncertainty they can create in terms of the final level of emissions. There is a trade-off between meeting a guaranteed target at uncertain total cost using a regulatory approach and meeting an uncertain target at least cost using environmental taxation.<sup>137</sup>

### Problems with environmental taxes

79. One of the biggest problems with environmental taxes is identifying the rate at which to charge the tax. This difficulty is especially relevant with climate change, because the environmental costs of carbon emissions are complex and uncertain, and in some situations, there may even be benefits from climate change. The Institute of Directors told us that:

It is not obvious what level of taxation to impose. Global warming would have costs, but it would also bring benefits, for example because fewer resources would need to be spent on heating or because some areas would become more suitable for habitation. The ideal tax to deal with an externality is one that equals the cost of that externality. If the cost is unknown, the tax level cannot be set reliably.<sup>138</sup>

This means that any tax set by government would run the risk of significantly under- or over-estimating the cost of carbon, which could undermine the credibility of the tax by sending out an inaccurate price signal. The manufacturers' association EEF pointed out another problem—that the cost of carbon will vary over time as technology evolves, the concentration of greenhouse gases in the atmosphere changes and understanding of climate change improves. EEF stated therefore that “a carbon price established through taxation would lack the necessary flexibility to respond quickly enough to changing

---

<sup>137</sup> *The UK Tax System and the Environment* Institute for Fiscal Studies, November 2006

<sup>138</sup> Ev 76

circumstances”, because it would only be likely to be reviewed annually as part of the Budget process.<sup>139</sup>

**80. There are several problems with the application of environmental taxes to real-world scenarios, not least determining the level at which the tax should be set in the first place, and designing a system that is flexible enough to cope with changing circumstances. In the case of climate change, these problems are magnified because the costs (and benefits, if any) of current emissions are uncertain, and will be felt over extremely long time horizons. The Government must take great care in designing environmental taxes, but nevertheless we are firmly of the view that environmental taxes are a useful and valuable tool to combat carbon emissions.**

## The Government’s Statement of Intent on Environmental Taxation

### *The Statement*

81. The Government has formally stated its broad objectives for environmental taxation twice in the last ten years: first in 1997, then in 2002. In July 1997, the Government issued its *Statement of Intent on Environmental Taxation*. This set out the Government’s broad policy objectives in relation to environmental taxation:

How and what governments tax sends clear signals about the economic activities they believe should be encouraged or discouraged, and the values they wish to entrench in society. Just as work should be encouraged through the tax system, environmental pollution should be discouraged ... But environmental taxation must meet the tests of good taxation. It must be well designed to meet objectives without undesirable side-effects; it must keep deadweight compliance costs to a minimum; distributional impact must be acceptable; and care must be had to implications for international competitiveness.<sup>140</sup>

In 2002, the then Chancellor of the Exchequer reaffirmed the Government’s commitment to this approach and outlined some examples of Government action taken towards achieving this objective:

Well-designed environmental taxes and other economic instruments can play an important role in ensuring that prices reflect environmental cost—in line with the “polluter pays” principle—and discouraging behaviour that damages the environment. The climate change and aggregates levies, for example, have sent strong environmental signals. Environmental taxes can also be an efficient mechanism for improving the productivity of natural resources, in line with the wider productivity improvements the Government is seeking to make across the economy.<sup>141</sup>

---

139 Ev 117

140 “Statement of Intent on environmental taxation”, HM Treasury, 2 July 1997

141 “Tax and the environment: using economic instruments”, H M Treasury, November 2002

82. The Centre for Sustainable Energy (CSE) expressed some reservations about the Government's *Statement of Intent*. The CSE saw "a number of inherent dangers" in shifting from taxing 'goods' (such as employment) to taxing 'bads' (such as carbon emissions). The CSE feared that Government might become so reliant on the revenue raised from taxing 'bads' that it would lose impetus for reducing their occurrence because every reduction in emissions would mean a reduction in revenue. The second danger was that the Government might set the tax level on the basis of the amount of revenue it wished to raise "rather than on any reasoned consideration of the external cost it is trying to internalise or any careful assessment of the tax level required to achieve the intended environmental improvement." In such circumstances, they argued, the purpose of the tax becomes "muddled" and the level difficult to justify on the very environmental grounds upon which it was introduced. CSE also told us that carbon taxes were highly regressive.<sup>142</sup> They argued that "the role best played by fiscal instruments is to demonstrate government approval (and disapproval) for low (and high) carbon goods and services".<sup>143</sup> However, Professor Ekins described the 1997 *Statement of Intent* as a "very innovative document and one which, had it been followed through, would have been something of an international first".<sup>144</sup>

### **Defining environmental taxes**

83. In assessing the Government's progress against its *Statement of Intent on Environmental Taxation*, it is important to establish a clear definition of precisely which taxes are environmental, and which taxes are not. Unfortunately, evidence received by us suggests that there is no such clear distinction. Sir Nicholas explained that classifying a tax as "environmental" was not straightforward, because of the existence of several arguments associated with any tax.<sup>145</sup> Indeed, the Treasury and Office of National Statistics use different definitions.

84. The Treasury employs a relatively narrow definition of "environmental taxes", using the term to refer to only the climate change levy, the aggregates levy and landfill tax.<sup>146</sup> By contrast, the ONS uses a much broader definition, which includes energy taxes and taxes on transport, such as Air Passenger Duty and Vehicle Excise Duty. The Treasury definition is based on the aims behind the introduction of a particular tax, whereas the ONS definition looks more to the effects of a particular tax. The Minister confirmed to us that the Treasury definition was "much more focused" than the ONS one:

Where we are devising taxes for specific environmental policy ends or gains, and, in terms of policy development, if we are concerned with environmental gain then clearly it makes sense to make your policy instrument (in this case, tax) as sharply focused as possible. That is why I would argue that the climate change levy or the

---

142 See later section on social impact of environmental taxation

143 Ev 144

144 Q 1

145 Q 177

146 Environmental Audit Committee, Fourth Report of Session 2005–06, *Pre-Budget 2005: Tax, economic analysis, and climate change*, HC 882, Ev 82

aggregates levy are environmental taxes with specifically an environmental policy purpose in mind and not simply [taxes with] potential environmental impacts which may be associated with their operation—which would be true of fuel duty or air passenger duty.<sup>147</sup>

85. Professor Ekins agreed that there was an important distinction between taxes designed purely in order to change behaviour and taxes designed to raise revenue:

In environmental taxes it is important to distinguish those which are purely designed to change behaviour, and indeed at the limit might change it to such an extent that they generated no revenues at all. One might think of the plastic bags tax in Ireland in that context. The use of plastic bags has, I understand, fallen by over 90%. Therefore, that tax is not raising a very great deal of revenue. One distinguishes those taxes from other taxes such as those on fuel where there is certainly a demand effect. People use less fuel than they would otherwise use, but certainly demand does not drop like a stone and it remains an enduring revenue base. Energy is certainly the clearest example of that, but there are others. One can imagine, for example, that however high the aggregates tax one would still want to use some aggregates and the revenues that one gets from such a tax are the price times quantity. If one raised the price, unless the quantity fell by an equivalent amount—in other words, the elasticity is one, but most elasticities are less than one—one would increase the revenue, even if demand fell somewhat.<sup>148</sup>

86. Sir Nicholas told us that “an important part of taxes, for example on petrol, should be seen as environmental taxes. If one looks at the reasons for taxing petrol, they are: the environment, a partial substitute for congestion and a means of raising revenue as any other tax is. I think that there is an important environmental tax associated with petrol.”<sup>149</sup> Professor Ekins considered that the Treasury definition was too narrow:

The evolved international consensus as expressed by bodies such as the Organisation for Economic Co-operation and Development, which has done an enormous amount of work on environmental taxes and has in a sense standardised what we mean by those taxes and how they should be thought of ... is very much in line with the definition of the Office for National Statistics. That seems to me to be the definition that makes most sense.<sup>150</sup>

**87. The different definitions of environmental taxes used by the Treasury and the Office of National Statistics are a source of confusion. We prefer the Office of National Statistics definition, which, in line with that of the Organisation for Economic Co-operation and Development, is based on examining the effects of a particular tax, to the Treasury’s definition, which examines the intent of a particular tax. The most important measure of the success of an environmental tax is the change in behaviour it**

---

147 Q 290

148 Q 18

149 Q 160

150 Q 13



achieves, so it would seem appropriate that the Treasury definition should capture all taxes that have a significant impact on behaviour. We therefore recommend that the Treasury bring its definition of environmental taxation in line with that of the Office of National Statistics.

### *Progress against the Statement*

88. According to the Office of National Statistics (ONS), the proportion of total tax revenue collected from environmental taxes has fallen over the period since the *Statement of Intent on Environmental Taxation*. Based on the ONS definition, environmental taxation revenue as a percentage of Gross Domestic Product (GDP) showed a trend of small increases between 1993 and 1999. Since 1999, however, this trend has reversed. In 2006, the receipts from environmental taxation fell to 2.7% of GDP compared with 3.6% in 1999. Environmental taxation accounted for 9.7% of total tax revenue in 1997, but this proportion has since fallen to 7.3% in 2006.<sup>151</sup> These findings are based on the definition used by the ONS (which is broader than the Treasury's definition).

89. As the ONS notes, the interpretation and use of measures of environmental taxes need care. A fall in environmental tax revenues as a proportion of total tax revenues could result either from falling rates of environmental tax or from the tax successfully changing behaviour, so diminishing environmental problems (e.g. carbon emissions), leading to a shrinking tax base.<sup>152</sup>

90. The Minister said that the falling share of environmental tax revenues in total tax revenues did not indicate that the Government was drifting away from its environmental objectives. He told us that the proportion of total tax earned from environmental taxes was a "misleading and imperfect measure"<sup>153</sup> because the most important output of environmental tools was the extent to which behaviour changed:

The ultimate test of effectiveness of tax in the green territory is not the overall tax revenue take from what are classified as green taxes but surely it is the behaviour changes and the environmental gains that come as a result of the tax policies that are introduced for those ends. For instance, surely the test of the climate change levy is less the £760 million a year that it raises and more the 28 million tonnes of carbon it has saved since it has been introduced, which is more than a quarter of our Kyoto effort. Surely the test of the aggregates levy, another environmental tax that we introduced, is less the £300 million a year that it raises and more the fact that the volume of recycled aggregate stone now is 8 million tonnes a year higher and the amount that is being drawn out of the ground for the first time is 8% less despite the fact that construction during that period has been very buoyant.<sup>154</sup>

---

151 Office for National Statistics website <http://www.statistics.gov.uk/statbase/Expodata/Spreadsheets/D5688.xls>

152 'Environmental Accounts: Environmental Taxes 2.9% of GDP in 2005', Office for National Statistics, 23 November 2006

153 Q 321

154 Q 257

91. Professor Ekins was aware of the Treasury's argument that the proportion of total tax earned from environmental taxation was a bad indicator because of the difficulty in identifying the extent to which behaviour had changed. He accepted that this might be true for some environmental taxes but not in the UK's case, because the entire fall in the proportion of tax was caused by the abandonment of the fuel duty escalator in 1999 and the failure to uprate fuel duty in line with inflation:

What has driven that indicator over the past five or six years is not the fact that people's behaviour is changing to such an extent that revenue is falling but the fact that the tax rate has been lowered in real terms and that is why one gets less revenue. [The Minister's] argument in that particular instance is not the case. One cannot put that forward as a reason why the tax shift does not appear to have taken place.<sup>155</sup>

Similarly, the Institute of Fiscal Studies concluded that the trend of environmental tax revenue falling as a proportion of total tax revenue was "almost entirely driven by the decision to abandon the annual fuel duty escalator". According to the ONS, fuel duty accounts for two thirds of total environmental tax revenue, so it is perhaps not surprising that changes to the fuel duty regime would have the most significant impact on environmental tax receipts as a whole:

Duty on hydrocarbon oils such as petrol and diesel accounted for 66.3 per cent of total environmental taxation in 2006. This is a share that has remained broadly unchanged since 2000. Between 2005 and 2006 hydrocarbon revenues increased from 82.8 per cent to 83.0 per cent of total energy taxes. This share was up from 76.8 per cent in 1993.<sup>156</sup>

92. Several witnesses were of the view that the Government's commitment to environmental taxation had faltered since the publication of its *Statement of Intent*. Professor Ekins told us that the Government's commitment had been vigorous at first, but had since lost impetus:

For the first few years the Government seemed to pursue that agenda quite vigorously, but a combination of events, of which probably the most important was the fuel duty protests in 2000, caused them to lose political heart. Obviously, it was not helped in that what seemed to have been cross-party consensus on that particular tax, namely the fuel duty escalator, broke down at that time ... Since then the real tax on fuel has fallen. If one looks at the share of environmental tax in taxation generally one sees that it peaked in about 1999 and since then has declined quite substantially.<sup>157</sup>

93. Friends of the Earth argued that the Government was "extremely timid, even when—as now—there is increasing public acceptance that climate change must be tackled".<sup>158</sup>

---

155 Q 19

156 Office for National Statistics website <http://www.statistics.gov.uk/cci/nugget.asp?id=152>

157 Q 1

158 Ev 136

Natural England and the Energy Saving Trust (EST) also believed that the Government had made only limited progress against its *Statement of Intent*.<sup>159</sup> Natural England commented that:

There appears to be a growing sense of timidity on environmental tax matters despite their well documented efficiency advantages over alternative approaches. As a result, progress has been limited in recent years over potential new environmental tax instruments to deliver improved environmental outcomes. Equally, there is a sense that existing environmental taxes are not being used to their full potential. For example, rates of fuel duty have been frozen over recent years to compensate for increasing petrol prices, which has contributed to the underlying trend of declining real cost of motoring. In addition, the 2006 Pre-Budget Report announced a revalorisation of the Climate Change Levy for the first time since its introduction almost 5 years ago. In real terms, the tax rates have fallen.<sup>160</sup>

### Conclusions

94. The Government set worthy objectives in its 1997 *Statement of Intent on Environmental Taxation*, and reiterated its commitment to them in 2002. Since then, the Government has introduced specific environmental taxes in certain areas, notably the Climate Change Levy and Aggregates Levy. Whilst we welcome the advent of these taxes with clearly-stated environmental purposes, they are relatively insignificant in financial terms, and in terms of changing behaviour, when compared with the major fuel and energy taxes.

95. We acknowledge the Minister's argument that behaviour change achieved is a valid measure of an environmental tax's effectiveness, but do not believe that it is the only relevant measure. The ratio of environmental tax to total tax can be a useful measure, particularly when it can be determined that the reason for changes in the ratio are predicated on falling real tax rates rather than a shrinking tax base.

**96. Using the ONS definition of environmental taxation, it is clear that the ratio of environmental tax to total tax has been falling in recent years. In our view, the principal reason for this ratio diminishing is falling real tax rates (particularly on fuel), rather than the tax base shrinking as a result of changing behaviour. The fall in the ratio of environmental tax to total tax, using the Office of National Statistics measure, is disappointing, and shows that the Government has failed to maintain its commitment to the 1997 *Statement of Intent*. We recommend that the Government reverse this reduction in commitment and, in response to this Report, indicate the measures it will deploy to reflect that renewed commitment.**

---

159 Ev 130 and Ev 81

160 Ev 130

## Hypothecation of tax revenues

97. Hypothecation is the earmarking of certain tax revenues for specific areas of public expenditure. Advocates of tax hypothecation argue that by linking revenue from a specific tax to a related area of expenditure that tax might become more palatable to the population being taxed. The Government has experimented with a certain degree of tax hypothecation in the environmental field. Some revenue from the Climate Change Levy is used to support the Carbon Trust, and some revenue from the Aggregates Levy is put towards the Aggregates Sustainability Fund. The Minister told us that

There is clearly a more general case for devoting revenues that may be raised from environmental taxes, if one likes, taxes generally on 'bads', on pollution and damaging activity, to offset some other revenue sources that may be 'goods', so, for instance, when the Climate Change Levy was introduced, rather than taking that entire revenue into the Consolidated Fund we cut the national insurance contributions for employers by 0.3 percentage point. We did cut it by 0.1 percentage point when we introduced the Aggregates Levy, but it is well established that some taxes that are clearly classed as environmental taxes also help to raise revenue for essential government spending and services, including on the environment and transport. That has been the case, for instance, with the fuel duty virtually since it was introduced in 1928.<sup>161</sup>

98. Professor Ekins did not believe that hypothecation was desirable:

Governments need revenue and in general it makes sense to raise that revenue from taxing bads rather than goods. In some cases it may be that where there is a case for public expenditure it can make the tax more palatable and politically acceptable to link a particular tax with a particular form of spending, but if that principle became widely established in government all sorts of desirable public expenditure would not find suitable sources of money to finance it. I think that a much better approach is to say that government has a certain revenue requirement and to get it from activities that cause social harm is in general better ... than getting it from other sources. Indeed, that was broadly what the Statement of Intent on Environmental Taxation in 1997 said.<sup>162</sup>

**99. We have considered the desirability of an extension of hypothecation in relation to environmental taxes, but do not think that such an approach would be appropriate. Setting taxes is one decision facing a government; spending this revenue is another, separate decision. Any widespread linking of environmental tax receipts to environmental expenditure would become complex, and create a risk of certain worthwhile expenditure failing to find a source of funding, if that expenditure were to lack an obviously related revenue source.**

---

161 Q 310

162 Q 6

## The social impact of environmental taxation

100. An important aspect of our consideration of environmental taxation involved the social impact of such taxes. Some environmental taxes are regressive, being charged against commodities that consume a more significant share of income for the poor than the rich, for example vehicle fuel and heating fuel. The Centre for sustainable Energy argued that a carbon tax was “a highly regressive means to raise funds from the citizenry”.<sup>163</sup> Environmental tax policies need to be carefully designed to avoid unintended distributional consequences.

101. Professor Ekins’ research had modelled the distributional impacts of introducing carbon taxes compared with an individual carbon trading scheme.<sup>164</sup> That research found that carbon taxes were highly regressive, and remained more regressive than individual carbon trading, even if a tax system managed to optimise the recycling of revenues through the welfare system to compensate those on lower incomes.<sup>165</sup> In contrast, Professor Ekins found that a hypothetical individual carbon trading scheme based on an equal per capita allocation of allowances would be fiscally progressive without any compensatory schemes because, in general, the poor emit less carbon dioxide than the rich. The rich would therefore need to buy allowances from the poor if they wished to sustain their more carbon-intensive lifestyles.

102. Sir Nicholas explained that there would inevitably be some “distributional consequences” from environmental taxes, but the same consideration would apply to “any use of a price mechanism wherever one looked, whether it be bananas, externalities, climate change or congestion”. He argued that it was wrong to look at taxes idiosyncratically:

That is why one looks at transfer schemes, pensions and the progressivity or otherwise of every tax. One has to see taxes in their entirety to make judgments about progressivity or not. I do not believe that it is right as an analytical and policy point to pick them off one by one.<sup>166</sup>

103. The Minister indicated that the abandonment of the fuel duty escalator in 1999 was at least partly influenced by the need to balance environmental goals with the potential for undesirable economic impacts. In this specific case, the Treasury had to consider the economic and social consequences for poorer households of increasing duty on top of already rising fuel prices:

I think it would have been a mistake to have an automatic escalator that jacked [fuel duty] up still further. It would have caused problems for the motorist and indeed economic consequences for British business. I use that simply as an illustration of how judgments on tax have to be able to weigh some of the environmental ambitions

---

163 Ev 141

164 *The distributional impacts of economic instruments to limit greenhouse gas emissions from transport, and Economic Instruments for a socially neutral national home energy efficiency programme*, Policy Studies Institute, 2004.

165 Cited in Ev 143 CSE

166 Q 180

that are there with the economic consequences, and indeed the social consequences too, because in some cases some taxes will hit poorer people and poorer households harder.<sup>167</sup>

104. One potential solution to the danger of an environmental tax having unwelcome social impacts could be to compensate those poor households which are adversely affected by the tax through a redistribution scheme. Professor Ekins argued that designing such an effective scheme that compensated every poor household was unrealistic, because of the very high range of energy use within income groups, but he thought that a scheme could be designed that would compensate 80% of very low income households, “some of whom would be considerably better off than under the status quo”.<sup>168</sup> This redistribution could occur, he argued, via the existing social welfare mechanisms. A political decision would then have to be made as to whether the deleterious impact of the proposed environmental tax on the 20% of highly energy-intensive low-income households should be allowed to “thwart” the policy as a whole both on environmental and social grounds. Professor Ekins added that any social impacts could be lessened as a result of various energy efficiency policies that the Government was developing. Low income households did not need to use as much energy as before in order to keep warm, “because the energy efficient commitment and Warm Front policies are very substantially improving the thermal quality of households, especially low income households, on whom these schemes tend to be targeted”.<sup>169</sup>

## Aviation taxation

### Introduction

105. The European Commission has stated that the aviation sector’s contribution to global climate change is increasing. While the European Union’s total greenhouse gas emissions fell by 3% from 1990 to 2002, emissions from international aviation increased by almost 70%. According to the Commission, a significant improvement in aircraft technology and operational efficiency “has not been enough to neutralise the effect of increased traffic, and the growth in emissions is likely to continue in the decades to come”.<sup>170</sup> Friends of the Earth agreed:

Aviation emissions have risen heavily in recent decades, continue to rise, and are predicted to rise way into the future ... This is because demand growth for flights heavily outstrips technological improvements to plane efficiency. Demand growth is in turn heavily influenced by flying falling in price.<sup>171</sup>

106. Virgin Atlantic admitted that “no objective observer would dispute that the projected growth of the airline industry will have a significant impact on the environment”, but they

---

167 Q 322

168 Q 20

169 Q 21

170 European Commission website [http://ec.europa.eu/environment/climat/aviation\\_en.htm](http://ec.europa.eu/environment/climat/aviation_en.htm)

171 Ev 136

argued that no-one should “ignore the critical importance of aviation in sustaining UK and global economic growth ... and enabling people to extend their horizons by undertaking airline travel.”<sup>172</sup> Flybe argued that it was:

far more effective to reduce the emissions of aircraft [through technological investment, for example] than to seek to put an end to low cost air travel, which ... has transformed the industry and brought new opportunities for the UK’s regions ... It has brought jobs and investment, and transformed an elitist pursuit into an activity accessible for all social classes. Now is not the time to restrict growth and impose new taxation, but to make sure that future growth is sustainable.<sup>173</sup>

107. IATA believed that the benefits to the wider economy made possible by air travel could justify the industry receiving favourable treatment from the tax system, for the following reason:

I think there is also the impression that air transport is all about cheap holidays. Actually, 35% of people travelling from the UK are on business. It is less than 30% who are travelling on holiday according to the CAA surveys. Air transport plays a critical role in linking British businesses with global markets. It provides a lot of benefits to the economy that go beyond the price that passengers pay. That in my mind is the principal reason.<sup>174</sup>

The Minister told us that it was “surely right that aviation at least covers the environmental cost that its activities impose”.<sup>175</sup>

### ***Air Passenger Duty***

108. A theoretically attractive aviation tax might tax aviation fuel, much the same way as road fuel is taxed. However, as the Minister pointed out, as a result of international law,<sup>176</sup> the Government was unable to consider duties of any type on the use of fuel in international aviation.<sup>177</sup> The airlines also pointed out that if one country were to act alone in imposing a tax on aviation fuel, airlines would be given an incentive to indulge in “tankering” (planes carrying heavier fuel loads from lower-tax States to avoid paying tax in higher-tax States), and this could therefore result in higher emissions. Instead of a tax on aviation fuel, the Government collects Air Passenger Duty (APD) on each journey made by individual passengers. APD was introduced in 1994 at £5 per passenger per flight, and is now £10 for flights within Europe and £40 for flights elsewhere (£20 and £80 respectively for business or first class).

---

172 Ev 107

173 Ev 123

174 Q 467

175 Q295

176 Article 24 of the Chicago Convention exempts fuel for international services from fuel duty

177 Q 294

### *Is APD an environmental tax?*

109. The Minister told us that, when APD was first introduced in 1994, its policy purpose was:

in part, to raise revenue and that remains part of the case for the air passenger duty and its operation. It is a blunt instrument as far as the environment goes. It is not the best policy instrument to try to deal with the environmental impacts of aviation, which is why our priority is to get aviation within the European Union trading scheme. It is not even the best tax instrument to deal with the effects of aviation. But ... the air passenger duty is available. It does have an environmental impact—although in narrow terms it is not specifically a tax that is designed for environmental ends—and clearly the decisions we take on levels of air passenger duty include a consideration about whether or not there is an environmental gain in altering the rate.<sup>178</sup>

110. The Minister said that APD would have some environmental impact, in that the doubling of APD in the 2006 Pre-Budget Report was forecast to reduce demand by “perhaps five million passengers out of 140 million a year ... by 2010”. He equated this reduction to an environmental gain from that of between 0.2 and 0.5 million tons of carbon a year by 2010.<sup>179</sup> Sir Nicholas agreed that some element of APD was an environmental tax, because it would have some impact on behaviours through increasing the price of flights.<sup>180</sup> The Minister’s statement that APD does have an environmental impact appears to be at odds with the Government’s response to the Environmental Audit Committee’s Report on *Pre-Budget 2005: Tax, Economic Analysis and Climate Change*, which stated that “APD does not incentivise improved environmental performance”.<sup>181</sup> EasyJet explained how a passenger travelling in economy class from London to Auckland generated more than 15 times the emissions of a passenger travelling from London to Marrakech, yet would be charged the same rate of APD.<sup>182</sup> Virgin Atlantic argued that because APD bears “almost no relation to the actual emissions generated by a given flight, and is based on a fixed rate per passenger carried, it does not offer any incentive to operate more efficiently or invest in new technologies”.<sup>183</sup> Flybe regarded APD as “an anomaly that serves no purpose other than a revenue raising mechanism for HM Treasury”.<sup>184</sup>

111. EasyJet argued that any form of environmental taxation had “the potential to reduce the capital available to the airline industry for investment in more environmentally efficient technology and is therefore poor policy”.<sup>185</sup> As we have already noted, some in the

---

178 Q 291

179 Q 292

180 Qq 162–163

181 Environmental Audit Committee, First Special Report of Session 2006-07: *Pre-Budget 2005: Tax, economic analysis and climate change*, HC 195, p3

182 Ev 86

183 Ev 106

184 Ev 123

185 Ev 85



aviation industry argued that taxation would be more expensive than emissions trading, for the same environmental impact.

### ***Changes to the APD regime prior to aviation's inclusion in the EU ETS***

112. In the 2007 Pre-Budget Report, the Chancellor announced that the Treasury would be consulting on a successor to the APD regime. The Government's proposals are that APD would be replaced by a 'per plane duty' (PPD),<sup>186</sup> an idea that we considered during our inquiry. Such a tax would offer an increased incentive to airlines to fill their planes to capacity and could also encompass freight flights, which do not incur APD charges. BATA said that such a tax would be a

small step towards something much more sophisticated like emissions trading. Although it perhaps would capture a different range of aircraft [to include freight planes, for example] it still does not create an incentive for airlines to invest in better technology. It is really moving around the deckchairs.<sup>187</sup>

113. Freight planes are currently exempt from APD. Virgin Atlantic told us that "with freighters, as a generalisation, operating older, less fuel-efficient aircraft and more polluting aircraft, this would appear to be underline the unsuitability of APD as a green tax seeking to address the environmental impact of aviation".<sup>188</sup> The Government's consultation seeks responses to the question of whether freight planes ought to be included in the new Per Plane Duty scheme, although the Chancellor of the Exchequer has already announced that they will be.<sup>189</sup> BATA suggested that a further step towards an emissions trading scheme would be an aircraft departure tax with differential charges according to the carbon emissions of the particular aircraft.<sup>190</sup>

114. Several airlines expressed concern that once aviation become included within the EU ETS scheme, they would still be liable to pay an aviation tax of some kind. In Flybe's view, this would mean aviation paying twice for its emissions:

It is unacceptable to increase the level of APD on the basis that it will cover the external cost of aviation, and then introduce emissions trading with the same objective. Britain's airlines face being forced to pay twice for the external cost of emissions if APD continues when ETS is introduced. ETS is a more efficient option to achieve this objective and it must replace APD, not be added as a further cost.<sup>191</sup>

British Airways expected that once aviation was included within the EU ETS, APD as an environmental tax would be eliminated.<sup>192</sup>

---

186 2007 Pre-Budget Report and Comprehensive Spending Review, HM Treasury, p 113

187 Q74

188 Ev 106

189 Treasury Committee, Second Report of Session 2007-08, The 2007 Pre-Budget Report, HC 54-II, Q 348

190 Q 75

191 Ev 123

192 Ev 157

## **Conclusions**

115. When the European Union Emission Trading System (EU ETS) is extended to include aviation, that scheme could be a suitable framework for ensuring that airlines pay the environmental costs of their emissions, at least in Europe. Until that point, however, the Government must ensure that an effective tax structure is in place to ensure that aviation at least covers the cost of its environmental damage. As the Minister told us, Aviation Passenger Duty (APD) is far from ideal, and it offers neither sufficient incentive for airlines to invest in cleaner technologies, nor empowers passengers to take action themselves. APD does not distinguish full flights from half-empty ones, nor does it distinguish between a flight to Morocco and a flight to Australia. We are pleased that the Government is now considering a Per Plane Duty, but strongly regret that it has taken till now to introduce a replacement for APD. We urge the Government to ensure that Per Plane Duty includes cargo flights and private planes, and that it will offer clear incentives for the industry to invest in cleaner fleets, through providing tax differentials for cleaner technologies.

116. The necessity of ensuring aviation pays the full cost of its environmental impact will not cease upon its inclusion in the EU ETS in 2011. We recommend that the Government, in its response to this Report, clarify whether aviation will continue to pay Per Plane Duty (or another form of aviation tax) once aviation is included in the EU ETS.

## 6 Adaptation

---

### Adaptation in the United Kingdom

117. The Stern Review concluded that even if mankind were able to reverse the growth in global emissions of greenhouse gases, adaptation would still be required to counter the negative impacts caused by time lags in global and local ecosystems. The Environment Agency echoed this conclusion, arguing that “no one disputes that we need to get to grips both domestically and internationally with emissions, but adaptation is also important because, irrespective of what we do, because of the inertia in the system, we are going to see the impacts of climate change over the next 25 years”.<sup>193</sup> Professor Ekins pointed out that even if the UK succeeded in achieving a cut in emissions of 60% from current levels, there “will be considerable climate change and we will need to adapt”. By way of example, he pointed to the direct physical effects for the UK:

such as increased flooding and increased cost of home insurance against that risk, if we decide to do it through the private market. I do not think that the public will have a great deal of choice about that. We are already increasing the cost of flood defences against these kinds of events. That is money to be spent by taxpayers which obviously cannot be spent on something else.<sup>194</sup>

Sir Nicholas explained that, in future, it was likely that the south of England would have much wetter winters and dryer summers. He mentioned a couple of likely pressure points where adaptation would be required: Storm surges up the Thames were likely to be much more severe, which would put a great deal of pressure on the London sewerage system; heat stress in summer was likely to increase, with implications for the London Tube.<sup>195</sup>

118. The Association of British Insurers (ABI) acknowledged that the Government had shown “considerable international leadership on mitigation issues” and had set out significant plans to address energy use and emissions in the 2006 Pre-Budget Report and its planned legislative programme”.<sup>196</sup> However, the ABI believed that Government had so far failed to tackle adequately the social and economic impacts of escalating climate risks: “policy statements consistently fail to address these issues despite the clear warnings set out in the Stern Review”.<sup>197</sup>

### *Coordination of adaptation efforts across government*

119. The Government has made a commitment to a coordinated approach on adaptation in Public Service Agreement 27:

---

193 Q 377

194 Q 4

195 Q 142

196 Ev 120

197 Ev 120

As a complement to our mitigation efforts, the UK will develop a robust approach to domestic adaptation to climate change, shared across government, and encourage adaptation to climate change internationally.<sup>198</sup>

120. DEFRA is “leading on the development of a cross-Government Adaptation Policy Framework to be published in the spring [2008]. The Framework aims to provide a consistent approach to building adaptation into policies, and a coherent way to identify cross-cutting risks and opportunities and to assist in prioritisation of action across Government.”<sup>199</sup> The Minister also pointed out that Government spending was only part of the picture:

What the Government decides it needs to spend is only a part of the picture. Part of what DEFRA does that is important is to support the UK Climate Impacts Programme.<sup>200</sup> This is an independent body which publishes analysis about the potential impact of climate change, the likely requirements for adaptation. It is there doing an important job in trying to help us understand the implications more clearly—and when I say us, not just government: it is there for the public and, importantly, it is there for business as well.<sup>201</sup>

121. The Environment Agency argued that the Government was indeed already collecting information about adaptation efforts across Government. In 2005 the Government published an adaptation strategy, and since then had been gathering information on adaptation measures at a local and national level, with the intention of making that information available through the web.<sup>202</sup> However, making the public aware of adaptation spending, though it may be important, will not necessarily lead to changing behaviour: the Environment Agency mentioned the example of flood risk, where awareness is high amongst floodplain-dwellers, without this awareness necessarily translating into action that enables people to be prepared for a flood.<sup>203</sup>

**122. The Stern Review outlines a need for climate-proofing measures that will cost 0.05-0.5% of GDP each year. At present, it is very difficult to make an estimate of the amount currently spent by the Government on such adaptation, let alone by UK businesses and individuals. We recommend that the Treasury track and publish spending on adaptation in order to raise public awareness of the impact of climate change and enable enhanced scrutiny of Government’s progress under PSA 27.**

---

198 “PSA Delivery Agreement 27, H M Treasury, October 2007, p 3, para 1.2

199 Hansard, 468, 6 December 2007

200 UK Climate Impacts Programme is funded by DEFRA and based at the University of Oxford. It coordinates research into how climate change will have an impact at regional and national levels. [www.ukcip.org.uk](http://www.ukcip.org.uk)

201 Q 273

202 Q 396

203 Ibid

### **Government expenditure on flood defence**

123. The Environment Agency described flood risk management as “probably the most important element of a UK climate change adaptation strategy”. The Stern Review stated that flood damage costs the country 0.1% of GDP and that this could rise to 0.2 to 0.4% if global temperatures rise by 3 to 4°C and no adaptation measures are taken.<sup>204</sup> The Environment Agency believed that 2.3 million of the 25 million homes in England and Wales were in flood risk areas, which equated to land and assets worth £237 billion. The Environment Agency cited research by the University of Dundee, which calculated that the median cost of rectifying flood damage for an average household would be around £28,000. Of the 2.3 million homes currently at risk, 517,000 are at high risk (that is, a greater than 1 in 75 chance of flooding in a given year) and this number has been rising.<sup>205</sup>

124. The UK has unusual flood risk management arrangements, which the Environment Agency described to us:

The UK is pretty unique in that the insurance industry underwrites the cost of flood damage; and the voluntary agreement that they have with government is enshrined in a statement of principle, and the key component part of that is that the insurance industry is prepared to continue with insurance provided that the Government put in adequate investment.<sup>206</sup>

The implication of this arrangement is that, if the insurance industry considers that the Government is providing inadequate funding, the industry might cease to underwrite flood damage. As the Environment Agency put it:

If you have inadequate investment and you get more frequent storm events, more damage, then obviously the insurance industry will make business decisions on the cost of insurance. In the insurance industry at the moment there is a fair degree of cohesion through the Association of British Insurers, but as [flood] risk increases there is more risk of individual companies ploughing their own furrow.<sup>207</sup>

The ABI stressed that flood insurance would be offered in the private market only if there was adequate public risk management:

We also need to look well ahead in planning flood defences. Britain is one of the few countries where flood insurance is widely available from the private market. Insurers want this to continue, but it is dependent on adequate risk management. Some 570,000 homes are now at high flood risk, compared with the estimate of 220,000 when current flood defence spending levels were set in 2002.<sup>208</sup>

---

204 Stern Review p viii

205 Ev160-162 EA

206 Ev 161

207 Q 375

208 Ev 121

125. Expenditure by the Environment Agency on flood risk management increased from £303 million in 2001–02 to £483 million in 2006–07 (including the local levy), an increase in real terms of 40%.<sup>209</sup> The Minister added that “specifically on planning and coastal defences, in 2002 DEFRA was spending £394 million; in 2005 it was £564 million.”<sup>210</sup> The ABI argued that Government expenditure on flood defence peaked in 2004 and was now falling in real terms, stating that the Government cut the Environment Agency’s flood management budget by £15 million in 2006–07.<sup>211</sup> Commenting on the flood management budget, the Minister said that “clearly, as we would expect and as I think Parliament would expect, DEFRA are managing within the department the financial pressures they have and that is their job to do that”.<sup>212</sup> Dr David King from The Environment Agency argued that the UK had the right policy frameworks in place, but nevertheless questioned the level of investment from the Government:

I think we have got the right policy frameworks in place and the areas of principal vulnerability are around flood risk and, indeed, on water resources. If I take flood risk firstly, the policy frameworks set up by Government in Making Space For Water is a good one and the basket of activities that the Agency deploy to reduce risk are about raising awareness, about warning, about building and retaining defences and are the right activities, but there is a question about the level of investment.<sup>213</sup>

126. In 2004, the Office of Science and Technology’s Foresight programme published a report which identified that the UK could be facing flood losses of up to £27 billion per year by the 2080s if necessary adaptation measures were not taken.<sup>214</sup> The Environment Agency argued that, in the context of the then-forthcoming 2007 Comprehensive Spending Review, the case for increasing resources to reduce flood risk was compelling.<sup>215</sup> They predicted that their flood defence budget for 2007–08 would be “in the order of £440 million,” and that “any reduction or erosion of that would lead to increased flood risk and we would expect to see an upward trajectory in funding in line with the Foresight Study and the next Spending Review”.<sup>216</sup> The ABI echoed this view.<sup>217</sup> The Environment Agency argued that there was “certainly a need to continue with the level of [existing] investment and, indeed, to grow that level of investment”.<sup>218</sup> Dr David King from the Environment Agency said:

The Foresight Study had two principal points: one that risk will increase and, secondly, there is a need for increasing investment up to the level of about £1 billion

---

209 Building and maintaining river and coastal flood defences in England, NAO Report, June 2007, page 12, para 1.8

210 Q 271

211 Ev 121

212 Q 270

213 Q 362

214 *Foresight: Future Flooding*, Office of Science & Technology, Executive Summary p 13

215 Ev 159

216 Q 363

217 Ev 121

218 Q 363

per year if you are to keep annual damage at the order of two billion pounds. So, I think it is really a question about increasing levels of investment for flood risk management, and certainly we would like to see that in the next Spending Review. If you look at capital rationing, if you look at construction price inflation and if you look at need, we estimate that an additional £150-£200 million extra in the next Spending Review period is required.<sup>219</sup>

127. The Environment Agency pointed out that current investment in flood defence was extremely cost-effective to the economy as a whole:

At the moment the cut off is a benefit of six to one for the economy. That means that a lot of projects which only have a benefit of four to one or five to one do not get built at the moment because we are capital constrained. Also the internal rate of return on that investment is 27%, compared to smaller numbers for road and rail investment, so it is very cost-effective for the economy. If that investment was not made, then the economy would pick up those costs through higher insurance costs in the long run; so it is not money that is wasted, it is money that will be cost-effective in any case, and the risks will increase over the next 20 to 30 years.<sup>220</sup>

128. In the 2007 Comprehensive Spending Review, the Government announced an increase on expenditure on flood and coastal erosion risk management from £600 million in 2007–08 to £800 million in 2010–11. Alongside this, the Government also pledged to introduce an adaptation toolkit of £10 million per year, to “assist communities in adapting to change where constructing defences is not the most appropriate means of managing flood and coastal erosion risk”.<sup>221</sup> In response to the Comprehensive Spending Review, the ABI argued that the increased level of funding was inadequate and that “millions of homeowners and businesses around the country have been let down by the Government’s failure to commit sufficient money to new and improved flood defences”.<sup>222</sup> The ABI argued that Government spending plans for the next three years were less than they were requesting, even before the floods of Summer 2007. However, the Chief Secretary to the Treasury, the Rt Hon Andy Burnham MP, rejected the ABI’s claims:

In all of the preparation leading up to the CSR and the submissions that the ABI made ... there was a repeated reference to the need for £750 million per annum for flood defences by the year 2011. The CSR delivers £800 million per annum in the final year of the CSR. I do not believe it is right to say after the CSR that the commitment that we have given is not enough because we have more than met the ABI’s request.<sup>223</sup>

**129. Investment in flood defences is extremely cost-effective, if targeted carefully. The announcement of additional funding in the 2007 Comprehensive Spending Review is**

---

219 Q 367

220 Ibid

221 2007 Pre-Budget & Comprehensive Spending Review, p 123, para 7.58

222 “Government has failed on flood defence spending”, ABI press release, 9 October 2007.

223 Treasury Committee, First Report of Session 2007–08, The 2007 Comprehensive Spending Review, HC 55, Q 124

**therefore welcome. We also believe that effective flood risk planning involves long-term investment, so requires long-term financing and advance warning of the funding that will be provided. We therefore recommend that the Government make a public commitment to the level of flood defence spending beyond 2010–11 in advance of the next spending review.**

## Adaptation in developing countries

130. Sir Nicholas stressed the particular importance of adaptation for developing countries, because they would be hit “hardest and earliest”.<sup>224</sup> The Stern Review commented that:

Adaptation to climate change—that is, taking steps to build resilience and minimise costs—is essential. It is no longer possible to prevent the climate change that will take place over the next two to three decades, but it is still possible to protect our societies and economies from its impacts to some extent—for example, by providing better information, improved planning and more climate-resilient crops and infrastructure. Adaptation will cost tens of billions of dollars a year in developing countries alone, and will put still further pressure on already scarce resources.<sup>225</sup>

131. Referring to his meetings with African leaders, Sir Nicholas said that “for them adaptation is a very big issue. They have already seen desertification and conflicts in Darfur, floods in Mozambique in 2000 and the droughts in Kenya in the late 1990s. For them adaptation is a reality; they have to face it and we should do all we can to support them”.<sup>226</sup> Sir Nicholas told us that an increase of around 5°C in average global temperatures would transform how and where people lived. That kind of temperature increase “would very likely involve substantial movements of population and potential conflicts”. He commented that one of the drivers behind the Darfur crisis was the movement of pastoralists (because of changing climate) and the difficulties they encountered when encroaching on the land of agriculturists.<sup>227</sup>

132. Farhana Yamin of the University of Sussex agreed that the threat posed to the UK by climate change “paled into insignificance” when considered against the threat to the developing world:

We [in the UK] have a huge amount of infrastructure, human resources, financial resources and knowledge ... to be able to deal with these eventualities and, in general, developing countries, especially the poorest countries, are far more vulnerable to the actual threats of climate change itself and have the least ability to respond. For example, the budget that has just been mentioned in terms of £440 million [for UK flood defence spending] is large compared with Africa where there is a very vast need to improve the weather forecasting systems on the ground.<sup>228</sup>

---

224 Q 143

225 Stern Review, page vii

226 Q 144

227 Q 130

228 Q 364



133. Ms Yamin saw encouraging signs that, over the last two years, the development agencies and international financial institutions had begun to take climate change considerations into account and were providing assistance to developing countries where adaptation to climate change was needed. Nevertheless, she was of the opinion that the adaptation funding shortfall was conspicuous even by the standards of other development areas:

In terms of the amount of resources, there is always never enough, but on adaptation it is very significantly disproportionate to the amount that is actually needed. The World Bank calculated last year in the Gleneagles Process something like \$9 billion to \$41 billion was needed on an annual basis. It is very difficult to track the amount of funding going to adaptation due to the diversity of funds, but in terms of the dedicated climate change funds that we have at the moment, we have about \$230 million pledged to date to devote to adaptation activities. Amongst roughly 140 countries this is not very much even to take them forward on the process of the planning side.<sup>229</sup>

134. According to Ms Yamin, the most pressing concerns facing the developing world included improving their understanding of what would happen to climate risk sectors such as agriculture, fisheries and tourism, because, although they were improving, the current climate change models were too coarse to be of use when designing adaptation policies.<sup>230</sup> This view was echoed by Kate Hampton from Climate Change Capital, who highlighted the lack of adequate climate modelling information in the developing world.<sup>231</sup> The Government confirmed in October 2007 that it was “actively exploring how to support more effective adaptation [in developing countries], including through better risk management tools, technology and finance.”<sup>232</sup> In December 2007, the Government announced a new research study, working alongside the Netherlands and the World Bank, that would help developing countries understand and prepare for the impacts of climate change.<sup>233</sup>

**135. In Chapter 2 we noted the Government’s work in assisting rapidly developing countries, such as China and India, move to low-carbon economies, but the impact of climate change will hit some of the least-developed countries hardest. We recommend that, in response to this Report, the Treasury outlines its policy towards assisting the least-developed countries with their climate change adaptation needs, and the extent and nature of work that has been carried out so far in respect of this policy. We further recommend that, in order to highlight the importance of such assistance, the Treasury specify and ring-fence that part of the Department for International Development’s budget which is given to funding overseas climate change adaptation.**

---

229 Q 386

230 Ibid

231 Q 126

232 *Moving to a global low carbon economy: implementing the Stern Review, H M Treasury, October 2007, page 3,*

233 “UK announces new study on climate change adaptation at Bali

## Conclusions and recommendations

---

1. We welcome the Stern Review as an impressive document that contributes much to public discussion of climate change. Sir Nicholas Stern deserves credit for bringing into stark relief the problem of risk and uncertainty concerning potentially ruinous environmental catastrophes. We also support Sir Nicholas' attempts to frame the climate change debate in terms of economic choices, which should serve to assist policymakers in taking the difficult decisions necessary to combat climate change. (Paragraph 12)
2. The Stern Review is a serious contribution to the climate change literature. Although Lord Lawson was concerned that Sir Nicholas was insufficiently independent of Government, we believe that the Review has to be judged by the quality of its evidence and the arguments it puts forward, rather than the issue of its authorship. (Paragraph 21)
3. The choice of discount rate used in the Stern Review is critical to its strong policy conclusions, because that choice is an important factor in the calculation of the costs (as valued today) arising from future climate change. We regret that there was not greater discussion of discount rates in the original Stern Review, including explanation and potential justification of alternative rates. We welcome the eventual publication of discount rate sensitivity tables in the Stern Review's Postscript, but note that the attention that these alternative rates received was substantially lower than might have been the case if acknowledgement of, and arguments for, other discount rates had been provided in the original Review. (Paragraph 31)
4. Lord Lawson's argument that adaptation was cheaper, easier and more flexible than attempting to mitigate emissions has its attractions. However, as Sir Nicholas Stern pointed out in his Review and in evidence to us, relying on monitoring and adaptation alone could prove to be too little, too late. The fact that adaptation will be required in the short to medium term, regardless of mitigation efforts, does not absolve the UK from its responsibility to reduce its carbon emissions. We support Sir Nicholas' recommendation that the Government pursue a twin-track approach: working to reduce emissions to a sustainable level, while at the same time committing sufficient resources to the monitoring of climate trends and adaptation, both in the UK and abroad. (Paragraph 36)
5. Climate change requires a wide range of responses from departments across Government. The effective coordination of these efforts, and the presentation of a consistent, clear strategy by all departments will be vital if the UK is to show the way in combating climate change, setting a good example for other countries, as well as to individuals. To this end, we welcome the establishment of the Office of Climate Change (OCC). However, we think it is important that there should be a Government minister directly accountable for the cross-governmental work of the OCC, most likely within the Cabinet Office, in order to create an effective champion for climate change issues across Government. (Paragraph 40)
6. We welcome the suggestions made by the Better Regulation Commission towards ensuring cohesion in climate change regulations, including the proposed 'seven

tests'. We are pleased to note that the Government has accepted the recommendations of the Better Regulation Commission and has pledged to monitor the overall regulatory burden imposed under the climate change banner. (Paragraph 43)

7. A variety of policies and tools will be necessary to counter climate change emissions and public policy cannot afford to rely solely on emissions trading schemes, or environmental tax, or regulation. In general, however, we are persuaded that use of a price mechanism, rather than regulation, is an extremely effective way to change people's behaviour and, as much as is possible, the Government should give primary consideration to the use of economic tools in combating climate change. (Paragraph 47)
8. Phase I of the European Union Emission Trading Scheme was hamstrung by its initial over-allocation of emissions permits, resulting in a carbon price that was too low to have sufficient influence in changing its participants' behaviour. The scheme has been successful in showing that the architecture of the trading system works, and provides a foundation from which to develop an effective scheme with a meaningful overall cap, but it is absolutely essential that Phase II features a more rigorous allocation of permits. We recommend that the UK Government work with the Commission and other Member States to ensure that Phase II involves tough, but achievable, caps across Europe. (Paragraph 63)
9. Whilst the EU moves ahead with Phase II of its Emissions Trading Scheme, we note that other countries and states are developing their own, different schemes. The existence of different schemes offers policymakers the chance to see what works and what does not, but there is a real danger that the international community will be unable to join up this patchwork of schemes, if so desired, at a point in the future. Without establishing common principles between schemes, we are not confident that the Government's ambition of connecting up the European Union Emission Trading Scheme with other schemes can be achieved. We recommend that the Government strengthen relationships with policymakers in other countries and other organisations beyond the EU to discuss the development of trading schemes. (Paragraph 67)
10. The UK Government has signalled its desire to see aviation included in the European Union Emission Trading Scheme in 2011. If that aim is achieved, the Scheme should be able to ensure that the aviation industry will be offered real incentives to improve the efficiency of its fleet of aircraft, develop cleaner technology and continue to grow in an environmentally-sustainable way. (Paragraph 76)
11. We are concerned that, in the interval before aviation's inclusion in the European Union Emission Trading Scheme, the aviation industry appears to be dragging its feet in cooperating on environmental schemes. We see the airlines' failure to write to the Committee, as promised, with details of how the industry would cooperate in future, as symptomatic of this approach. Instead of cooperation, a hotchpotch of company-specific initiatives are developing, with a huge variety of responses from different airlines, preventing consumers from comparing the environmental performance of one airline with another. One information improvement to the market for passenger flights would be an industry-wide system of eco-labelling,

where each flight's environmental impact would be independently rated and then publicised to customers at the point of purchase. We urge the Government, the airlines and aviation's representative bodies to work together to devise and introduce such a scheme at the earliest opportunity. (Paragraph 77)

12. There are several problems with the application of environmental taxes to real-world scenarios, not least determining the level at which the tax should be set in the first place, and designing a system that is flexible enough to cope with changing circumstances. In the case of climate change, these problems are magnified because the costs (and benefits, if any) of current emissions are uncertain, and will be felt over extremely long time horizons. The Government must take great care in designing environmental taxes, but nevertheless we are firmly of the view that environmental taxes are a useful and valuable tool to combat carbon emissions. (Paragraph 80)
13. The different definitions of environmental taxes used by the Treasury and the Office of National Statistics are a source of confusion. We prefer the Office of National Statistics definition, which, in line with that of the Organisation for Economic Co-operation and Development, is based on examining the effects of a particular tax, to the Treasury's definition, which examines the intent of a particular tax. The most important measure of the success of an environmental tax is the change in behaviour it achieves, so it would seem appropriate that the Treasury definition should capture all taxes that have a significant impact on behaviour. We therefore recommend that the Treasury bring its definition of environmental taxation in line with that of the Office of National Statistics. (Paragraph 87)
14. Using the ONS definition of environmental taxation, it is clear that the ratio of environmental tax to total tax has been falling in recent years. In our view, the principal reason for this ratio diminishing is falling real tax rates (particularly on fuel), rather than the tax base shrinking as a result of changing behaviour. The fall in the ratio of environmental tax to total tax, using the Office of National Statistics measure, is disappointing, and shows that the Government has failed to maintain its commitment to the 1997 Statement of Intent. We recommend that the Government reverse this reduction in commitment and, in response to this Report, indicate the measures it will deploy to reflect that renewed commitment. (Paragraph 96)
15. We have considered the desirability of an extension of hypothecation in relation to environmental taxes, but do not think that such an approach would be appropriate. Setting taxes is one decision facing a government; spending this revenue is another, separate decision. Any widespread linking of environmental tax receipts to environmental expenditure would become complex, and create a risk of certain worthwhile expenditure failing to find a source of funding, if that expenditure were to lack an obviously related revenue source. (Paragraph 99)
16. When the European Union Emission Trading System (EU ETS) is extended to include aviation, that scheme could be a suitable framework for ensuring that airlines pay the environmental costs of their emissions, at least in Europe. Until that point, however, the Government must ensure that an effective tax structure is in place to ensure that aviation at least covers the cost of its environmental damage. As the Minister told us, Aviation Passenger Duty (APD) is far from ideal, and it offers

neither sufficient incentive for airlines to invest in cleaner technologies, nor empowers passengers to take action themselves. APD does not distinguish full flights from half-empty ones, nor does it distinguish between a flight to Morocco and a flight to Australia. We are pleased that the Government is now considering a Per Plane Duty, but strongly regret that it has taken till now to introduce a replacement for APD. We urge the Government to ensure that Per Plane Duty includes cargo flights and private planes, and that it will offer clear incentives for the industry to invest in cleaner fleets, through providing tax differentials for cleaner technologies. (Paragraph 115)

17. The necessity of ensuring aviation pays the full cost of its environmental impact will not cease upon its inclusion in the EU ETS in 2011. We recommend that the Government, in its response to this Report, clarify whether aviation will continue to pay Per Plane Duty (or another form of aviation tax) once aviation is included in the EU ETS. (Paragraph 116)
18. The Stern Review outlines a need for climate-proofing measures that will cost 0.05-0.5% of GDP each year. At present, it is very difficult to make an estimate of the amount currently spent by the Government on such adaptation, let alone by UK businesses and individuals. We recommend that the Treasury track and publish spending on adaptation in order to raise public awareness of the impact of climate change and enable enhanced scrutiny of Government's progress under PSA 27. (Paragraph 122)
19. Investment in flood defences is extremely cost-effective, if targeted carefully. The announcement of additional funding in the 2007 Comprehensive Spending Review is therefore welcome. We also believe that effective flood risk planning involves long-term investment, so requires long-term financing and advance warning of the funding that will be provided. We therefore recommend that the Government make a public commitment to the level of flood defence spending beyond 2010-11 in advance of the next spending review. (Paragraph 129)
20. In Chapter 2 we noted the Government's work in assisting rapidly developing countries, such as China and India, move to low-carbon economies, but the impact of climate change will hit some of the least-developed countries hardest. We recommend that, in response to this Report, the Treasury outlines its policy towards assisting the least-developed countries with their climate change adaptation needs, and the extent and nature of work that has been carried out so far in respect of this policy. We further recommend that, in order to highlight the importance of such assistance, the Treasury specify and ring-fence that part of the Department for International Development's budget which is given to funding overseas climate change adaptation. (Paragraph 135)



# Formal Minutes

---

**Tuesday 15 January 2008**

Members present:

John McFall, in the Chair

Mr Graham Brady

Mr Colin Breed

Mr Philip Dunne

Mr Michael Fallon

Ms Sally Keeble

Mr Andrew Love

Mr George Mudie

Mr Siôn Simon

John Thurso

Peter Viggers

***Climate change and the Stern Review: the implications for Treasury policy***

Draft Report (Climate change and the Stern Review: the implications for Treasury policy), proposed by the Chairman, brought up and read.

*Ordered*, That the Chairman's draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 35 read and agreed to.

Paragraph 36 read, amended and agreed to.

Paragraphs 37 to 98 read and agreed to.

Paragraph 99 read, amended and agreed to.

Paragraphs 100 to 111 read and agreed to.

Paragraph 112 read, amended and agreed to.

Paragraphs 113 to 114 read and agreed to

Paragraph 115 read, amended and agreed to.

Paragraphs 116 to 121 read and agreed to.

Paragraph 122 read, amended and agreed to.

Paragraphs 123 to 128 read and agreed to.

Paragraph 129 read, amended and agreed to.

Paragraphs 130 to 134 read and agreed to.

Paragraph 135 read, amended and agreed to.

Summary agreed to.

*Resolved*, That the Report be the Fourth Report of the Committee to the House.

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

Written evidence was ordered to be reported to the House for printing with the Report.

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

[Adjourned till Tuesday 22 January at 9.30 am



# Witnesses

---

## Tuesday 23 January 2007

Page

**Professor Paul Ekins**, Head of Environment Group, Policy Studies Institute Ev 1

**Mr Roger Wiltshire**, Secretary General, British Air Transport Association, **Mr Andy Kershaw**, Senior Manager for Environmental Affairs, **Mr Andrew Barker**, Planning Director, easyJet, and **Mr Barry Humphreys**, Director of External Affairs & Route Development, Virgin Atlantic Airways Ev 7

**Ms Kate Hampton**, Policy Manager (Advisory), Climate Change Capital, and **Mr Simon Roberts**, Chief Executive, Centre for Sustainable Energy Ev 16

## Tuesday 6 February 2007

**Sir Nicholas Stern**, Head of the Government Economic Service, and **Ms Lorraine Hamid**, member of the Stern review team Ev 22

**Rt Hon Lord Lawson of Blaby**, a member of the House of Lords, and former Chancellor of the Exchequer Ev 32

## Wednesday 7 February 2007

**John Healey MP**, Financial Secretary to the Treasury, **Ms Beth Russell**, Head of Environment and Transport Tax team, and **Ms Rebecca Lawrence**, Head of Environment, Food and Rural Affairs Team, HM Treasury Ev 41

## Tuesday 27 February 2007

**Mr Rick Haythornthwaite**, Chairman, Better Regulation Commission, and **Mr Simon Bullock**, Economy Campaigner, Friends of the Earth Ev 54

**Mr David King**, Director of Water Management, **Mr Chris Hewett**, Policy Development Manager, Environment Agency, and **Ms Farhana Yamin**, Institute of Development Studies, University of Sussex Ev 59

**Captain Eivind S Vagslid**, Technical Officer, Sub-Division for Pollution Prevention, Marine Environment Division, International Maritime Organisation, **Mr Mark Brownrigg**, Director General, **Dr Mel Davies**, Director of Development, BMT Ltd, and **Mr Stuart Greenfield**, Head of Marine & Safety, Carnival UK, Chairman of the Chamber of Shipping Environment Committee, Chamber of Shipping Ev 65

**Mr Phillippe Rochat**, Director, Aviation Environment, International Air Transport Association, and **Mr Brian Pearce**, Chief Economist, International Air Transport Association Ev 70

## List of written evidence

---

1	Institute of Directors	Ev 76
2	Hambleside Danelae Ltd	Ev 77
3	Energy Saving Trust	Ev 81
4	easyJet Airline Company Ltd	Ev 84
5	Forum for Stable Currencies	Ev 87
6	Commission for Integrated Transport	Ev 98
7	Joint Nature Conservation Committee	Ev 99
8	D1 Oils plc	Ev 102
9	Virgin Atlantic Airways	Ev 105
10	Virgin Atlantic Airways, supplementary memorandum	Ev 107
11	PricewaterhouseCoopers LLP	Ev 108
12	Micropower Council	Ev 111
13	CPRE	Ev 114
14	EEF	Ev 115
15	Royal Society for the Protection of Birds	Ev 118
16	Association of British Insurers	Ev 120
17	Flybe	Ev 122
18	Feasta, Foundation for the Economics of Sustainability	Ev 125
19	Beacon dodsworth	Ev 126
20	Natural England	Ev 130
21	Friends of the Earth England, Wales and Northern Ireland	Ev 133
22	Centre for Sustainable Energy	Ev 140
23	British Air Transport Association	Ev 145
24	Dr Andrew Wrigley, Cambridge Zero Carbon Society	Ev 147
25	Freight Transport Association	Ev 149
26	EDF Energy	Ev 153
27	British Airways plc	Ev 156
28	City Remembrance Office	Ev 158
29	Environment Agency	Ev 158
30	Zoom Airlines	Ev 163
31	Chamber of Shipping	Ev 166
32	International Maritime Organisation	Ev 168
33	Heathrow association for the control of aircraft noise	Ev 174

## List of Reports from the Treasury Committee during the current Parliament

<b>Session 2007–08</b>		Report
First Report	The 2007 Comprehensive Spending Review	HC 55
Second Report	The 2007 Pre-Budget Report	HC 54
Third Report	The Work of the Committee in 2007	HC 230
Fourth Report	Climate change and the Stern Review: the implications for Treasury policy	HC 231
Fifth Report	The run on the Rock	HC 56
<b>Session 2006–07</b>		Report
First Report	Financial inclusion: the roles of the Government and the FSA, and financial capability	HC 53
Second Report	The 2006 Pre-Budget Report	HC 115
Third Report	Work of the Committee in 2005–06	HC 191
Fourth Report	Are you covered? Travel insurance and its regulation	HC 50
Fifth Report	The 2007 Budget	HC 389
Sixth Report	The 2007 Comprehensive Spending Review: prospects and processes	HC 279
Seventh Report	The Monetary Policy of the Bank of England: re-appointment hearing for Ms Kate Barker and Mr Charlie Bean	HC 569
Eighth Report	Progress on the efficiency programme in the Chancellor's department	HC 483
Ninth Report	Appointment of the Chair of the Statistics Board	HC 934
Tenth Report	Private equity	HC 567
Eleventh Report	Unclaimed assets within the financial system	HC 533
Twelfth Report	The Monetary Policy Committee of the Bank of England: ten years on	HC 299

Thirteenth Report	Financial inclusion follow-up: saving for all and shorter term saving products	HC 504
Fourteenth Report	Globalisation: prospects and policy responses	HC 90
<b>Session 2005–06</b>		Report
First Report	The Monetary Policy Committee of the Bank of England: appointment hearings	HC 525
Second Report	The 2005 Pre-Budget Report	HC 739
Third Report	The Monetary Policy Committee of the Bank of England: appointment hearing for Sir John Gieve	HC 861
Fourth Report	The 2006 Budget	HC 994
Fifth Report	The design of a National Pension Savings Scheme and the role of financial services regulation	HC 1074
Sixth Report	The administration of tax credits	HC 811
Seventh Report	European financial services regulation	HC 778
Eighth Report	Bank of England Monetary Policy Committee: appointment hearing for Professor David Blanchflower	HC 1121
Ninth Report	Globalisation: the role of the IMF	HC 875
Tenth Report	Independence for statistics	HC 1111
Eleventh Report	The Monetary Policy Committee of the Bank of England: appointment hearings for Professor Tim Besley and Dr Andrew Sentance	HC 1595
Twelfth Report	Financial inclusion: credit, savings, advice and insurance	HC 848
Thirteenth Report	“Banking the unbanked”: banking services, the Post Office Card Account, and financial inclusion	HC 1717