



House of Commons  
Environmental Audit  
Committee

---

**The 2007 Pre–Budget  
Report and  
Comprehensive  
Spending Review: An  
environmental analysis**

---

**Third Report of Session 2007–08**

***Volume II***

*Oral and written evidence*

*Ordered by The House of Commons  
to be printed 26 February 2008*

**HC 149-II**  
Published 5 March 2008  
by authority of the House of Commons  
London: The Stationery Office Limited  
£0.00

## The Environmental Audit Committee

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

### Current membership

Mr Tim Yeo, MP (*Conservative, South Suffolk*) (Chairman)  
Gregory Barker, MP (*Conservative, Bexhill and Battle*)  
Mr Martin Caton, MP (*Labour, Gower*)  
Mr Colin Challen, MP (*Labour, Morley and Rothwell*)  
Mr David Chaytor, MP (*Labour, Bury North*)  
Martin Horwood, MP (*Liberal Democrat, Cheltenham*)  
Mr Nick Hurd, MP (*Conservative, Ruislip Northwood*)  
Mark Lazarowicz, MP (*Labour/Co-operative, Edinburgh North and Leith*)  
Mr Ian Liddell-Grainger, MP (*Conservative, Bridgewater*)  
Mr Shahid Malik, MP (*Labour, Dewsbury*)  
Mrs Linda Riordan, MP (*Labour, Halifax*)  
Mr Graham Stuart, MP (*Conservative, Beverley & Holderness*)  
Jo Swinson, MP (*Liberal Democrat, East Dunbartonshire*)  
Dr Desmond Turner, MP (*Labour, Brighton, Kempton*)  
Joan Walley, MP (*Labour, Stoke-on-Trent North*)  
Mr Phil Woolas, MP (*Labour, Oldham and Saddleworth [ex-officio]*)

### Powers

The constitution and powers are set out in House of Commons Standing Orders, principally Standing Order No. 152A. These are available on the Internet via [www.parliament.uk](http://www.parliament.uk).

### Publication

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/parliamentary\\_committees/environmental\\_audit\\_committee.cfm](http://www.parliament.uk/parliamentary_committees/environmental_audit_committee.cfm).

A list of Reports of the Committee from the present and prior Parliaments is at the back of this volume.

### Committee staff

The current staff of the Committee are: Gordon Clarke (Clerk); Sara Howe (Second Clerk); Richard Douglas (Committee Specialist); Oliver Bennett (Committee Specialist); Susan Monaghan (Committee Assistant); Stella Kin (Secretary); and Elizabeth Gardner (Sandwich Student)

### Contacts

All correspondence should be addressed to The Clerk, Environmental Audit Committee, Committee Office, 7 Millbank, London SW1P 3JA. The telephone number for general inquiries is: 020 7219 6150; the Committee's e-mail address is: [eacom@parliament.uk](mailto:eacom@parliament.uk)

# Witnesses

---

## 4 December 2007

Page

**Mr Stephen Hale**, Director and **Mr Russell Marsh**, Head of Policy, Green Alliance Ev1

**Mr Simon Bullock**, Economy Campaigner, Friends of the Earth, **Mr Pete Lockley**, Head of Transport Policy and **Ms Lies Craeynest**, International Development Policy Advisor, WWF UK Ev20

## 11 December 2007

**Dr Jeff Chapman**, Chief Executive, The Carbon Capture & Storage Association, **Mr Sarwjit Sambhi**, Director of Power and Renewables, Centrica Energy, **Mr Rupert Steele OBE**, Director of Regulation, ScottishPower Ltd Ev36

**Mr Jeff Gazzard**, and **Ms Cait Weston**, Policy and Communications Officer, Aviation Environment Federation Ev52

## 12 December 2007

**Angela Eagle MP**, Exchequer Secretary to the Treasury, **Ms Rebecca Lawrence**, Head of Energy, Environment and Agriculture Team, **Ms Lindsey Whyte**, Head of Environment and Transport Tax Team, H M Treasury Ev59

## List of written evidence

---

1	Association of British Insurers	Ev75
2	Aviation Environment Federation	Ev44
3	Aviation Environmental Federation supplementary memorandum	Ev57
4	Centrica Energy	Ev30
5	E. ON UK	Ev79
6	Friends of the Earth (England & Wales)	Ev8
7	Friends of the Earth (England & Wales) supplementary memoranda	Ev80
8	Scottish and Southern Energy plc	Ev75
9	ScottishPower Ltd	Ev34
10	Sea and Water	Ev77
11	The Carbon Capture and Storage Association	Ev28
12	The Woodland Trust	Ev71
13	WWF UK	Ev13
14	WWF UK supplementary memoranda	Ev27
15	Letter from the Chairman of the Committee to Angela Eagle MP	Ev67
16	Letter from Angela Eagle MP to the Chairman of the Committee	Ev68

## List of unprinted evidence

---

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

DEG final statement (note from WWF UK)

Orchard Partners London Ltd

# List of Reports from the Committee during the current Parliament

---

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

## Session 2007–08

First Are biofuels sustainable? HC 76

## Session 2006–07

First The UN Millennium Ecosystem Assessment, HC 77, *(HC 848)*  
Second The EU Emissions Trading Scheme: Lessons for the Future, HC 70 *(1072)*  
Third Regulatory Impact Assessments and Policy Appraisal, HC 353 *(HC 849)*  
Fourth Pre-Budget 2006 and the Stern Review, HC 227 *(HC 739)*  
Fifth Trade, Development and Environment: The Role of FCO, HC 289 *(HC 1046)*  
Sixth Voluntary Carbon Offset Market HC 331  
Seventh Beyond Stern: From the Climate Change Programme Review to the Draft Climate Change Bill, HC 460 *(HC 1110)*  
Eighth Emissions Trading: Government Response to the Committee's Second Report of Session 2006–7 on the EU ETS, HC 1072  
Ninth The Structure of Government and the challenge of climate change, HC 740

## Session 2005–06

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

# Oral evidence

---

## Taken before the Environmental Audit Committee on Tuesday 4 December 2007

Members present

Mr Tim Yeo, in the Chair

Mr Martin Caton  
Mr David Chaytor  
Martin Horwood  
Mark Pritchard

Mr Graham Stuart  
Jo Swinson  
Dr Desmond Turner

*Witnesses:* **Mr Stephen Hale**, Director and **Mr Russell Marsh**, Head of Policy, Green Alliance, gave evidence.

**Q1 Chairman:** Good morning, welcome. I do not think we need any introductions on either side. When we were taking evidence on last year's Pre-Budget Report you described it by saying that there were some encouraging shifts in the Pre-Budget Report but in overall terms you found it rather disappointing as a follow-up to Stern. How would you describe this year's Pre-Budget Report?

**Mr Hale:** I think that is fair, but there are aspects of it which still make it worth having a discussion this morning. Obviously the Treasury and indeed the Government have had twelve further months to digest the Stern Review and nobody expected them to develop a comprehensive package across sectors overnight but I think the picture, not just in the PBR but across government, is at the moment very disjointed. I think the PBR on climate change in particular was very disappointing. We are more positive actually about some of the initiatives and some of the policy decisions in the waste area in recent months where there has been a significant and welcome shift. We are much less positive about climate change and I think that the Government's response to the Stern Review, the latest one published alongside the PBR, contrasts actually quite painfully with the CBI Climate Change Task Force which takes a very "can do" approach, a very domestic approach, whereas the Government's response emphasises almost overwhelmingly the need for further international action as the primary message of Stern. This is a false choice, of course, but I think the emphasis put on global action in the Government's response to Stern is very telling. Do you want me to cover the Spending Review?

**Q2 Chairman:** We will come to that in a moment, if we may. I also saw the ad in the *FT* last week by the CLG who seem to have entirely accepted the Stern thesis that early action is cheaper than late action, and I think the pro-growth strategy to tackle climate change is to get on with it now rather than say action will somehow impede growth. Why do you think if business has got the message that the Government is still dragging its feet?

**Mr Hale:** I think everybody has got the message in generality. If you read the Prime Minister's speech of two weeks ago that for me was the high point of what we have seen so far. There is a series of some commitments and in many cases hints—hints of regulation on carbon capture and storage across the board, which is a dramatic shift from the current policy effort which is focused entirely on the development of competition for a single plant, clear signals to Government that it has to meet the EU's new millennium targets, but the overall picture within Government is still one of disjuncture. So that kind of aspiration and ambition as outlined by the Prime Minister does not fit well with what is going on in the Treasury and in the Department of Business, Enterprise and Regulatory Reform. Clearly over the past 18 months there have been several attempts to generate the climate change policy package consistent with the ambition even in the current Climate Change Bill, through the Climate Change Review and the Energy Review and the Energy White Paper, but it is very clear even on the Government's own published projections that we still need a further policy package in order to meet even the Government's existing carbon budget for 2020.

**Q3 Chairman:** You praised with some enthusiasm what the Prime Minister has said, it is however true in his last full year as Chancellor green taxes were down at 7.3% compared with almost 10% in 1999. What does that show in way of commitment in the Treasury at least to shifting the taxation on to pollution?

**Mr Hale:** We believe, as you will know, the burden of taxation needs to rise on environmental taxes and there are many more ambitious ideas out there which the Treasury should grasp. I do think sometimes in the political process we focus very much on taxation, because it clearly has public saliency but there are other levers which are just as important, and the decision to use or not to use regulation is in many respects just as important. In one area of Government policy, housing, the commitment to regulate for zero carbon homes by 2016 is an example of the kind of leadership and

---

4 December 2007 Mr Stephen Hale and Mr Russell Marsh

---

ambition we need and is stretching all of the stakeholders involved and driving innovation, and if the policy is designed and implemented right it creates opportunities for UK plc. In other parts of the policy framework, that would be called a disgraceful act of gold-plating, which is what it is—a new regulation, not required by the EU, imposed upon the private sector—but in that area recognition has come of the need to regulate; bold standards in order to deliver both environmental and potential economic benefits, and we need similar approaches elsewhere.

**Chairman:** Let us hope that is going to be enforced, vigorously too.

**Q4 Martin Horwood:** Continuing this theme of the attitude of business and its relationship with the Treasury, in the Committee's last Pre-Budget Report inquiry you said that the Treasury would "often block proposals on the environment from other parts of Whitehall" and you said that one reason was the Treasury's "perception that the business community would not support a more ambitious approach". In the light of the CBI Report and this much time on from Stern, do you think the attitude of business has changed and this is beginning to have an impact on the Treasury?

**Mr Hale:** I think that the attitude of business has changed. It is an on-going process but the CBI's Climate Change Task Force is probably the most important and visible sign of that so far. It is not yet of course a statement of CBI policy, so we will have to await the policy within the CBI and not everyone within the CBI I am sure will welcome with open arms the leadership which has been shown by the chief executive on the Task Force, but I think it will make an important contribution to the political debate and I hope it will shift attitudes within Government. A cautionary note: some of what we regard as totemic issues, where we want to see leadership issues from Government, are not supported by the CBI Report, and the emphasis in the CBI Report is very much on 2030 because they do not believe the Government's 2020 targets can be met, and we disagree with that. The CBI also does not support the EU renewable energy target which again we see as important and we know now that the Prime Minister does too. So I do not think the CBI Climate Change Task Force can be referred to as a panacea and a model for government in all areas, but it does dramatically move on the CBI's position from the previous director-general.

**Q5 Martin Horwood:** You seem to be suggesting there might be a bit of green-washing about it if some of the key short-term targets are not being accepted. Do you think the CBI Report really is pushing things much further forward?

**Mr Hale:** I think the CBI Climate Change Task Force does push things quite a long way forward, because of its emphasis on the need for UK action rather than awaiting further global agreement, because of its recognition there are economic opportunities from leadership. There is recognition of the urgency of the need on both Government and

business to move within three years, as they put it; they say we have to get the size of action very clearly and we need much clearer and more decisive commitment by Government. So all of that is welcome, I am simply pointing out in the areas of concern to Green Alliance, and perhaps the Committee, that the CBI and certainly ourselves do not see eye-to-eye on all issues.

**Q6 Martin Horwood:** Do you see the Treasury blocking fewer proposals now, to use your phrase from last year?

**Mr Hale:** We are only five to six months into a new Chancellor and we do not know much yet about what this Chancellor thinks about the environment. There have been very few public statements, a number of the commitments which came through the PBR, such as the King Report on transport taxation, are processes initiated by Gordon Brown while he was Chancellor, so we do not see many reasons on the climate change front to be cheerful. We also think that five or six months is a short time in which to make firm decisions about how Alistair Darling is going to perform as a Chancellor.

**Q7 Dr Turner:** Last week saw the publication of the latest UN Human Development Report which echoes many, or pretty well all, the serious criticisms which have been out there of the UK's performance on the climate change front in the past year, particularly the lack of ambition in our Climate Change Bill's targets, the lack of progress towards our own 2020 targets in our climate change programme. What is your opinion of this Report and, more importantly, what impact do you think it is going to have particularly on the Government and internationally? I have not seen or read the Report yet, sadly—I must find time to read it—but I would doubt very much if the UK were the only country to come in for some fairly pungent criticism.

**Mr Marsh:** I have not read the whole Report and we have picked up on the focus on the UK, and as I think Stephen has begun to outline, we pretty much agree with what is in it in terms of the lack of ambition of the UK's long-term targets and the fact that we are off-target in terms of progress domestically. Clearly UN reports do have weight and impact globally and I think what you will hopefully see is that will increase the pressure on the UK Government to do more domestically. Obviously we are now just entering the Bali negotiations and the UK is going there to try and push the debate on a little bit and reports like this cannot help, because they will say, "You are out there telling everyone else they need to do something when actually you are not doing as well yourself as you should be doing in the UK." So it will certainly increase the pressure on the UK to start moving much faster domestically to get its emissions on track and meet the targets which are laid out.

**Q8 Dr Turner:** Do you see it having pressure on other countries which are not at the moment performing in terms of climate change?

---

4 December 2007 Mr Stephen Hale and Mr Russell Marsh

---

**Mr Marsh:** You would hope so. I have not looked at the detail of what it says about every country in the Report but, as it would put pressure on the UK to do more, you would hope it would put similar pressure on other countries as well. The timing of it is key in terms of the international negotiations just beginning and hopefully the fact this Report has come out and is saying we are not going as far as we need to go, will help put pressure on the negotiations as a whole to move forward faster.

**Q9 Dr Turner:** One of the other specific things which the Report said was that without some pretty significant step changes in policy there was no way we could achieve even the 26 to 32% reduction by 2020 targets of CO<sub>2</sub> which many people would say were in themselves not adequate. We are talking about the Treasury so let us look at the fiscal elements. One of the options floated by the UN Report, which is not new to the UN, it has been suggested by many people in the past, is an out-and-out carbon tax, and another one which is specific to the UK is reducing the emissions cap in Phase III of the ETS far enough to deliver these reductions across our economy. What is your feeling about the way to approach this in terms of fiscal measures and carbon trading?

**Mr Marsh:** On those two I think we would need to see a mix of both. How you use the trading scheme covers 50% of UK emissions, so that clearly has to be a central plank of our emissions reduction effort going forward. What we need to be seeing is that it needs to be tighter; as we head towards Phase III we need to be seeing a tighter cap, more auctioning, to start driving the price up and emissions down. I do not think anyone would disagree that at the moment the price of carbon through the emissions trading scheme is enough to really drive the change we need. One of the things the UN Report said about the UK is that one of the reasons we are off-target for emissions is that we are seeing more and more coal being used in the UK, and that is clearly a sign that the carbon price is not strong enough. The whole idea of the emissions trading scheme is to stop things like coal being used, so that is a clear indication that the carbon price is not high enough. So we need to see a tightening of the cap. In terms of carbon tax, clearly emissions trading has to be a part of what we do but it is not going to be the answer for every sector everywhere, and we have to try and get that balance right. One of the things that has been talked about is whether we can use a carbon tax to effectively set a carbon price across the economy in all sectors, whether they be in the EU emissions trading scheme or not, and so effectively set a floor for the carbon price. That certainly has some merit because one of the things that is often talked about is the uncertainty of the carbon price in the future. As we look forward to hopefully Phase III and Phase IV of the emissions trading scheme and getting a tougher carbon price, until we get there having a carbon tax which can be a price floor would be very helpful.

**Q10 Dr Turner:** This is supplementary to that. A previous report from another Select Committee I served on recommended not only a carbon tax on the specific relevance of electricity generation but, because everybody sees taxes as sticks, there should be an element of carrot and proposed a carbon tax credit to reward carbon-free production. Does that attract you in any way? Do you think this could be built into the package to incentivise very low or non-carbon means of production?

**Mr Marsh:** On the face of it, looking at what has happened to the climate change levy where a lot of people have a number of criticisms of the climate change levy as it stands, one of the things it has done, is you do not pay it if your renewables generator is also your CHP generator, and that has given a lot of support to that sector. Actually I know that one of the things the CHP sector is calling for is effectively for the CCL benefit to be extended beyond the current time-frame. That example, of using both increasing taxation on carbon polluting activities and reducing it for ones which do not emit carbon, is a very useful thing to look at. So that is a climate change levy example where those two things working together can give some support to lower carbon technologies.

**Q11 Dr Turner:** And credits to encourage development of those two technologies to bring them on quicker?

**Mr Marsh:** Yes. I am not completely up to speed with the particular mechanism you are talking about but certainly getting the mix of taxation and rebates and credits right to encourage the right kind of activity and discourage the wrong type of activity is the way you want to be going. So bear in mind each chunk to keep things as simple as possible.

**Q12 Mr Caton:** Following on this stick and carrot issue, we recently conducted an inquiry into the climate change levy and agreements, and clearly from that it became obvious that stick and carrot does work. Have you looked at all at any other areas of the economy where environmental taxes could be enhanced by the carrot?

**Mr Marsh:** The one area where we have looked at that is waste. Certainly a lot of the activity, as Stephen indicated, on the waste agenda recently is moving in the right direction. The landfill tax escalator went up last year, so again the price went up for something we did not want to happen, which was very helpful. At the moment we have this debate around variable charging for waste, whether or not to allow local authorities to charge consumers to dispose of waste more if they dispose of more, or less if they dispose of less, and that is an area where, by getting the balance right between charging more for people who are producing more than they ought to and giving an incentive to produce less waste, you can see you can use the carrot and stick approach and you can be quite successful.

**Mr Hale:** A cautionary note in terms of this idea is that you need a specific mechanism to create a carrot incentive alongside a stick, because a tax is only a stick if you pay more, and those people who as a

result of tax reform pay less by definition are receiving the carrot-type incentive from it. So to take the example of the landfill tax, those companies which are continuing to build their business around the assumption of significant waste to landfill obviously face a stick effect that they will pay more in the landfill tax, but if you are Asda and you have a public commitment to send no waste to landfill at any time by 2010 then the additional landfill tax is a carrot because your competitor is going to pay more but by definition you are going to avoid the tax that other people in the sector are paying. So you do not necessarily need another mechanism. In other areas, like the renewables obligation, that is creating a carrot by definition. It is obviously a complicated concept which needs consideration as to whether there are new mechanisms required but *per se* I would not want to argue that the creation of a tax is not simply a stick but it is a stick for those people who want to continue to commit pollution or conduct the activity which is a burden on tax. If they move away from it, it is an incentive.

**Q13 Mark Pritchard:** I would like to go back to coal and your comments on coal. Former Prime Minister Tony Blair's last public comment on coal was that coal has a future, however given the high sulphur content of UK coal in particular, coupled with the fact that clean coal technology is not really evident here in the United Kingdom, whether it be power stations in Staffordshire or Shropshire or other parts of the country, do you think mining coal, re-visiting previously mined areas and extracting coal, whether open cast or deep cast mining, is premature and will in fact have its own adverse impact on the immediate and global environment?

**Mr Marsh:** I think the answer about the specific question is would open cast mining and starting to open up mines which have closed down have an immediate impact on the local market, the answer is yes because clearly it would. The broader question is, should we be looking to use coal as a fuel in our energy system anyway and should we be setting up a system which allows us to burn coal which allows us to make some of those coalmines economically attractive? Our answer to that is that coal has a role in the energy system, it is about how it is used and clearly there are technologies coming through which can burn coal, so we are talking about very highly efficient carbon capture storage plants, and we have no problem with those kind of technologies being brought forward because we will need them to reach the targets that the Government has set itself, but you have to consider what would be the impacts of re-opening coalmines, et cetera, et cetera, and it is not an area which we in the Green Alliance tend to get involved in very much.

**Q14 Mark Pritchard:** But coming through, to use your own words, and being brought forward, to use your term, would you agree those clean coal technologies, whilst perhaps in some parts of the United States, are not yet in the United Kingdom and some of the energy companies which currently burn coal and would seek to burn more coal and

more British coal within their stations do not have that technology and indeed may not be prepared to pay the cost for that technology at this point? If that is the case, is it not the case, despite the fact there is a role for coal in our diverse energy mix, that mining coal today in the current technological context in this country is premature?

**Mr Marsh:** In terms of the technology, it is clear that what we call post-combustion carbon capture storage which is retrofitting technology to existing power stations is ten years away, maybe a bit less. The Government's policy is looking to have a plant up and running in the UK in about 2014. The implication of that is that between now and 2014 we will have a lot of unabated coal burning in the UK. Looking at the other technology, which is pre-combustion, which means you do not have a coal-fired power station running unabated at all and carbon capture is built in from the start, it is possible that we could have some of those technologies brought forward within five or six years' time if they start now. Actually using those types of technology means we can avoid emissions in the first place, so we have no problem with retrofitting. The issue you are talking about is, yes, if we build an unabated coal-fired power station today, at what point will it be retrofitted with the technology or will it ever be retrofitted with the technology? If you force the market to go for the pre-combustion technology, they either build pre-combustion or they do not, which means you do not have the problems of having unabated coal being burnt at all.

**Q15 Chairman:** Going on to the Comprehensive Spending Review, you said in advance that it was an extremely important moment to set out a new direction on the environment. Now we have seen it, what do you make of it?

**Mr Hale:** It is very disappointing. To get the positive point out of the way first, I think there are increases in spend in some important areas beyond DEFRA but through the Energies Technology Institute and through the Environmental Transformation Fund we have quite significant sums going to BERR and DFID which are clearly designated to tackling climate change, and that is a new and broader role across Government, but the overall picture is extremely disappointing. The analogy which I think is useful here is to look at DfID's spending. The basic premise of the Stern Review is that we must invest now in a significant way to avoid devastating costs later. DfID's spending has gone up 140% in real terms since 1997, from 1997 to 2007, and from 2007 to 2011 DfID's spending will go up by 11% per year in real terms, and yet DEFRA has a 1.4% real terms settlement and within that they have commitments and pressures on the agricultural side and on the flood side which it seems to me will inevitably lead to a reduction in spending on some of the strategic environmental policies, not just climate change but also waste and potentially other areas like Natural England. So in overall terms as a response to Stern that is extremely inadequate.

---

4 December 2007 Mr Stephen Hale and Mr Russell Marsh

---

**Q16 Chairman:** Which are the areas which you think have the most priority for more spending now?

**Mr Hale:** I do not think we should look at this just in UK terms, I think we should be investing significantly more in the international arena, in adaptation for instance, in partnerships with other countries, in R&D research, at EU level. So there is an important international strand to what we are doing, because if we want to come to the table as the UK or as the EU with some of the key players we have to have built partnerships and have credibility with all those countries, so we must invest in a significant way in that. I think the same is true domestically. In some areas spending is not the critical issue, I think our research and development is the key area, highlighted by Stern, where the overall pattern is of rapidly declining UK investment, and clearly we have to have significant planning by the Energies Technology Institute which will bring new money to the table. I do not know quite what that will do to the overall trend but it is obviously a welcome shift.

**Q17 Mark Pritchard:** I am going to touch on the Pre-Budget Report in a moment but I would like to come back if I may on the waste point. From my own experience as pretty much a rural Member of Parliament, in a beautiful part of England, Shropshire, over the last few years I have seen an epidemic of fly-tipping, some of it commercial, some of it domestic or household rubbish, and I just wondered what your thoughts were on that and whether you have evidence of that as well? Secondly, whether you think the Government's variable charging regime might increase fly-tipping with its own environmental impact on wildlife and health and safety risks to children, walkers, riders and many others?

**Mr Marsh:** We do not have any evidence to support your point that there is more widespread fly-tipping, although I have read the stories that is the case. In terms of whether things like the Government's current plan for waste would end up in more fly-tipping, the evidence from other countries in which this was introduced is that you might get a slight increase at the start but if you are aware that is going to happen you can crack down on it, so overall you do not see fly-tipping increase; so as long as you are aware that might be the case to start with.

**Q18 Mark Pritchard:** Given that you are an important voice within the environmental lobby, if I can say that, can I encourage you to consult with other people as to whether there is peripheral evidence which you can accept objectively, in order that there is intellectual consistency in your position as an organisation and indeed other organisations with regard to environmental taxation? Because irrespective of whether the public believes they are being taxed for environmental reasons or not, the fact is you and other organisations need to have intellectual consistency on a whole range of environmental issues, so potentially—and I am not suggesting you are—potentially once you have seen that evidence if you are turning a blind eye to

another environmental hazard and epidemic such as fly-tipping in order to fulfil other policy objectives of an organisation, I think that in the medium to long-term will damage you as an organisation and I am sure you will not do that. Thank you, Chairman.

**Mr Hale:** Can I respond to that? "Epidemic" is quite a strong word and there has been quite a lot of emotive language used in the debate around what the Government should do about variable charging. I think an extraordinarily large amount of that has been deliberately misleading, I think there has been a media scare campaign, I think the Opposition spokesman has raised the idea there is going to be a plague of fly-tipping on the doors of charity shops up and down Britain as people seek to evade variable charging. I think a lot of it is highly inaccurate and misleading. Having intellectual consistency in our policies is obviously important and we should go away and look at the facts and look at essential connections, but if you look at the facts of what the Government is now proposing to do, they are proposing to have pilots in five local authorities and they have set some quite clear, if frequently shifting, parameters of what those trials can do. So the idea there is bound to be an epidemic of fly-tipping across the United Kingdom as a result of pilots in five local authorities strikes me itself as intellectually inconsistent.

**Mark Pritchard:** I am on about the present, not the future.

**Q19 Chairman:** Can we go back to the Budget settlement. DEFRA has had a whole series of fire-fighting exercises this summer—various animal diseases and of course the floods—are you concerned that has caused some budgetary problems for some of the other longer-term areas?

**Mr Hale:** In the short-term clearly it has. The precise impact of the Secretary of State for the Environment's statement—when it appears if it has not already done so—he will have to explain, but in the short-term there have been pressures which will have to be accommodated within the year and which require shifts. It is not necessarily the case that one-off incidents in 2007-08 should profoundly affect the long-term trends across departments within the settlement because they are clearly one-off incidents. But some of the one-off incidents, such as problems in the Rural Payments Agency, clearly have on-going implications because they need more investment to remedy them. So it is undoubtedly the case that the joining within Government of the set of issues which DEFRA covers means that if some areas are driven up, either as a result of decisions to spend more on things like flooding or as a result of one-off incidents in farming areas, that will squeeze out other parts of the department.

**Q20 Chairman:** Do you think we need a more sympathetic attitude from the Treasury to respond to these kinds of crises which have affected DEFRA this summer?

**Mr Hale:** It is not just about sympathy. I think the Stern Review set out an absolutely clear and pretty compelling case for more spending in the short-term.

---

4 December 2007 Mr Stephen Hale and Mr Russell Marsh

---

That does not just mean DEFRA but it means much more investment through BERR, through research and development, and much more spending through DFID on adaptation. There is a whole series of implications of this but the overall trend, the overall pattern, is one where you must see increased spending. In those parts of DEFRA which are responsible for tackling climate change domestically, there is a consensus in many places, including government, that we need to see much more effort on energy efficiency and clearly we require spending to support that. There was a series of announcements in the Prime Minister's speech about the creation of a green homes service, which would cover not just climate change but also other issues like waste and recycling, and that will require spending to make it real and to enable it to deliver.

**Q21 Jo Swinson:** I take it from the exchanges that you are pleased to see the pilot scheme included as a provision in the Climate Change Bill but there is a real issue about people's acceptance of such schemes. We saw at the time of the May elections that alternate weekly collections are a politically sensitive issue. How do you think a move can be made to something like that without alienating people and, instead, bringing people and local councils to go down that route?

**Mr Hale:** I do not think that fortnightly collection is the same as variable charging. There clearly has been a reaction. To take up the last point, I would not claim to understand it well enough to comment on the scale of it. It is in part a media phenomenon—there was some good cheap copy in this issue—but it is also, clearly, an issue of real public concern: there have been real cases of instances of more vermin and so on. I think fortnightly collection is a public issue. I do not think variable charging *per se* needs to relate to that issue.

**Q22 Jo Swinson:** Obviously I accept there are issues but it does become emotive. For example, the issue this week, is: when people feel they are already paying their council tax, why should they have to pay more? The political lesson is that if you mess with people's bins, they tend not to like it. How can councils get over that to introduce this, if this is going to be used as one of the levers for driving down waste and landfill?

**Mr Hale:** I think we have messed with people's bins. In some places they now have five bins. I am sure people would once have sat around this table here and said that it would be inconceivable to imagine the public doing such a thing. We have now reached a point in public understanding, of public acceptance, that in many parts of the country, in many streets, it is socially unacceptable not to have your recycling out, not to have it well separated, not to be part of what is now a very general, widely understood trend. I do not believe that we cannot achieve a similar shift in relation to variable charging. It is important, obviously, that the Government gets our message about what it is and is not doing here. There was a lot of scaremongering around this. The idea was that this was going to

happen everywhere—which is not true. There was the idea that it was going to raise far more money than it does at present—when the Government guidelines are quite clear that each local authority cannot raise more money through variable charging than it has in the past. Those householders who recycle more and put less waste to landfill could financially gain from this and there is obviously a big job to be done to communicate that to householders and to voters. It is not helped by newspapers and parties who misrepresent a lot of that and say that no-one is going to get their bins collected and there is going to be fly-tipping absolutely everywhere, we are all going to pay more. None of those things are true and if people believe they are true then clearly they are not going to be very supportive of variable charging.

**Q23 Jo Swinson:** Do you think the key to this is good communication from the Government, local government and the public?

**Mr Hale:** I think the key is getting it across to the public what the facts are. That is quite a challenge at the moment, given the heat that has been generated by this issue. Just to take one example, I remember a little while ago that the minutes of a cabinet sub-committee discussing this issue were leaked and one of the founding principles of the conversation as reported in the minutes was that this should not be designed in a way that would lead it to be described as a "stealth tax". The *Sunday Times* ran a story once they got the document with the headline "Government to Introduce New Stealth Tax". If you are faced with that kind of reporting it is quite difficult to get the facts across.

**Q24 Mr Graham Stuart:** There is probably a legitimate area of concern about this. I was sitting on the Select Committee on Communities and Local Government when it conducted an inquiry into this and, it is true, it attracted a lot of quite alarmist copy but, nevertheless, we raised legitimate concerns about moving away from the weekly collection of food and about the issue Jo mentioned of double taxation. In effect, waste collection is one of the main things that people think they are already paying council tax for and if there is charging on top of that means people are paying more, so it is not an entirely alarmist idea, even if there are some rebates or some compensations for them. Is there not a risk here that if you push an area like this, where there is clear public concern and clear concern amongst other bodies, you risk undermining the support for green taxation and for things like recycling?

**Mr Hale:** The Government has proposed five pilots in five areas and it will be a matter for local authorities to decide if they want to come forward. If nobody comes forward, then clearly we will not have much evidence on which to base these kinds of exchanges. I hope that five local authorities will come forward. They will clearly have to design schemes that are consistent with the Government's rules so that people in those areas will understand that they as a community will not pay more in total as a result of this scheme. In the real world, in those

---

**4 December 2007 Mr Stephen Hale and Mr Russell Marsh**

---

areas some people will financially benefit from their commitment to recycling. That will, I hope, introduce some kind of evidence base and some fact into what is obviously a very lively debate.

**Mr Marsh:** In these initial proposals we were concerned that the perception of this would of something that was running parallel to and separate from council tax, which would effectively be seen as double taxation or double payment. But the Climate Change Bill does allow a council to link it to council tax, so they are now saying that you could get a rebate of your council tax if you were to recycle. There has been some movement on that and, hopefully, that will enable a better message to be communicated. It is not talking about charging you twice for the same thing; it is saying that if you do reduce the amount of waste you put to landfill through increasing your recycling you will pay less council tax. There is evidence in other areas that that kind of message, that by doing something you can pay less council tax, does drive quite a lot of activity.

**Q25 Mr Caton:** The Green Alliance has argued for some time for a product tax on environmentally damaging or hard to recycle products where there is a clear cleaner/greener alternative. Are there any signs that the Government, particularly the Treasury, are coming on board with your way of thinking?

**Mr Marsh:** No, is the short answer. We have not seen any evidence, despite, as you say, calling for it and looking at evidence from around other countries, that there is at the moment any appetite within Treasury to look at product taxes seriously.

**Q26 Mr Caton:** Do you have any idea why that is? It seems eminently sensible to most people, I would have thought.

**Mr Marsh:** I think it is because the taxation issue is very sensitive. The Treasury do not want to be seen as saying, all of a sudden, "We'll start putting more taxes on things that people want to buy." For a tax on disposable cameras, taxes on batteries, the sorts of things you could look at introducing product taxes on, there is no desire in the Treasury to start looking at increasing those taxes. Also, I am not necessarily sure they have the evidence base to demonstrate the tax would work, but we are trying to look across at other countries where they have introduced product taxes on certain products and have really shifted behaviour.

**Q27 Mr Caton:** Do you think not biting this bullet is one of the reasons so many people are not taking climate change as seriously as they perhaps should? If the Government is saying, on the one hand, that climate change is the biggest challenge facing us and, on the other, that putting a tax on disposable cameras is something that cannot be used to help us move that forward, that does not seem to be a very consistent message.

**Mr Marsh:** It does go back to Stephen's opening point in terms of the general view of the Treasury. At the moment it is not clear that the Treasury really is moving in the direction you want it to go. In lots of

areas and, as I say, particularly product taxes, you would have thought that, given in the waste agenda and from the climate change agenda we need to start getting people to change and buy different products, that using carrots and sticks in terms of taxation on the one hand and reducing tax on the other as a way of driving that behaviour would be where they are going. But it is not clear that they are yet thinking in that frame of mind.

**Q28 Jo Swinson:** Last year this Committee recommended a tax being imposed on plastic bags. The Treasury is not keen on that and cites the Irish experience, where there is conflicting evidence but certainly some which points to the use of heavier plastic bags instead. What are your views on this issue?

**Mr Hale:** More or less as you have indicated. Where we are starting to see some of the supermarkets taking action on plastic bags by charging for them and so on, you do see people changing their behaviour. It indicates that some kind of across-the-board tax would be useful in terms of reducing the use of plastic, but we do need to think it through a little more carefully as to what are some of the consequences of that. You have highlighted a couple. That could mean a switch to paper bags but it may not be better in terms of the carbon impact, because of where they come from and the transport that may be involved, to produce them rather than the plastic alternative and there is an indication that people are prepared to pay more for a thicker plastic bag that they will then re-use. It may be that a plastic bag tax is the answer. It may be part of the answer. Going back to the waste point, where you have local authorities who are starting to collect food waste, if supermarkets provided plastic bags that were biodegradable, you could take your shopping home in them and then use those plastic bags in your food bins to collect your food waste which could then be collected. It is not just about saying that we need to impact on and stop people using plastic bags; it is thinking about some of the other alternatives and what role a plastic bag tax has within that.

**Q29 Jo Swinson:** The Prime Minister recently spoke about eliminating single-use disposable bags. Are you aware of any follow-up to this?

**Mr Marsh:** Not at the moment. He is clearly trying to do it through a voluntary agreement rather than anything else. The discussions have just started. Clearly at the moment there is this thing called the Courtauld Agreement which is taking retailers in a particular way and it is not quite clear how this commitment that the Prime Minister has made fits with that. The discussions are just at the early stages of how these things will be delivered.

**Q30 Jo Swinson:** This is one of the things, like weekly waste collections, that gets screeds and screeds of press coverage. Do you think there is a danger that by focusing on this as some great environmental issue, when the environmental impact of plastic bags is not necessarily the biggest challenge that we have

---

4 December 2007 Mr Stephen Hale and Mr Russell Marsh

---

and we could channel that same energy into reducing packaging or whatever else, that we distract from some of the more important issues?

**Mr Hale:** I think that is one of the reasons why we do not have a plastic bag tax: the argument that this is not a sufficiently significant part of the waste stream to merit any intervention, and, if we are really concerned, why do we not have a tax on disposable nappies—which I can imagine is politically less attractive but empirically is a much greater proportion of the waste stream. The case for a plastic bag tax, which needs to be designed and thought about, as Russell said, in broad and strategic terms, does not rest simply on the proportion of the waste

stream represented by plastic bags; it has become, rightly or wrongly, quite a totemic issue and a symbol, if you like, of where they were willing to shift our behaviour and whether consumers and government between them can figure out a way to do that. I think it is very important for that reason that we see this through and we get a success. In the end, the real issue, in volume terms, is what is in the plastic bags and what happens to it rather than the bag itself. For me it is still an important issue and I do not think we should use that argument extensively in whatever way.

**Chairman:** Thank you very much. That is very helpful.

---

### Memorandum submitted by Friends of the Earth (England and Wales)

#### INTRODUCTION

We are deeply concerned that despite the Stern Review's clear conclusion that action on climate change is the "*pro-growth strategy*", and that "*there is still time to avoid the worst impacts of climate change if we take strong action now*", the Treasury is still taking a remarkably complacent and piecemeal approach to tackling climate change. In summary, there are five areas of concern to us.

First, the Comprehensive Spending Review was particularly disappointing in that so few changes were made to reflect the Stern Review's analysis. The Stern Review was very clear that urgent action is needed on climate change, not least to correct many market failures, particularly on energy and energy efficiency policy. In this context it was very surprising to see so little help given to individuals and so few strong signals sent to business and industry wanting to go green, introduce energy efficiency measures or use new technologies.

In a letter to The Chancellor in the run up to the PBR, Friends of the Earth pointed out the importance of such signals for the business community. We cited a recent report by PricewaterhouseCoopers which concluded that just over half of the companies surveyed (51%) are not confident in making long-term investment decisions in the context of the current environmental tax and regulatory framework, and that current environmental incentives in the tax system are seen as unclear, too complex and fail to motivate behavioural change.

Second, on taxation more generally there was again very little progress, after the encouraging signs at Budget 2007. Friends of the Earth welcomed the decision at the Budget to announce in advance three years of above inflation increases in fuel duty. The Chancellor missed an opportunity to send a very strong signal to households and industry by not stating that these rises will continue after 2009.

There were in addition no tax breaks or spending announcements for households wanting to invest in energy efficiency, despite Stern's firm conclusion that major policies are needed to overcome market failure in this sector. The latest official figures on tax shifts show that the environmental tax take is just 7.7% of total taxes (2005), down from 9.4% in 1997, despite the Government's commitment to increase this percentage share.

Third, the "implementing the Stern Review" document is largely a rehash of existing measures, with nothing to suggest that the urgent message in the Stern Review is going to translate into strong policies. It does not set out new policies to address the concerns of Stern regarding market failure in the energy sectors and energy efficiency. In addition the report presents a purely one-sided view—it trumpets the good measures the Government is doing, but fails to address the policies which negatively affect the UK's carbon emissions.

This relates to our fourth major concern, which is that climate change still appears to be seen within Government as predominantly an environmental issue; which misses the strong connections with other Departments' policies. This failure to connect the environment with broader policy is a main reason for the UK's failure to cut carbon emissions in the last 10 years. Chapter 4 of the PBR, on future economic prosperity, makes only cursory passing mentions to climate change—despite the Stern Review making it absolutely clear that tackling climate change is a central economic issue, and a critical determinant of the UK's future growth (eg "*tackling climate change is the pro-growth strategy*"). There is little to suggest that Govt is looking to pick policies which integrate progress on multiple PSAs—instead we are most likely to see the continuation of existing practice, where failure on one PSA is treated as the price worth paying for progress on another. This would be unacceptable policy-making in normal circumstances, but even more so in the face of a threat as urgent as climate change.

Finally, we are disappointed that the Government still continues to hide behind its conjuring trick of not including emissions from international aviation and shipping in its assessment of progress. These are real emissions—their non-inclusion gives an extremely misleading and rose-tinted picture of what policies are required in future for the UK to do its part in preventing dangerous climate change. Hiding behind the UNFCCC’s failure to come up with a methodology for assigning emissions to countries is a simply unacceptable response for a Government wishing to proclaim itself a world leader on tackling climate change.

## AREAS IN DETAIL

### 1. *HM Treasury’s report on implementing the Stern Review*

We are concerned that Treasury is misapplying the Stern Review’s conclusions on the use of price. Stern is quite clear that the purpose of the price mechanism, and other policies, is to deliver on an overall goal: *“A long-term stabilisation target should be used to establish a quantity ceiling to limit the total stock of carbon over time. Short-term policies (based on tax, trading or in some circumstances regulation) will then need to be consistent with this long-term stabilisation goal”* (p315). In other words, the carbon cap determines the price and other policies. However, the Treasury’s October 2007 *Implementing Stern* document says the opposite. It argues that the basis of the carbon price is *“to reflect the damage caused by emissions and to require Governments businesses and individuals to meet the costs they impose on the environment”* (p10), in other words, the price determines the cap. The implications of this fundamental difference between Treasury and Stern are highly significant.

You only need to look at the surface transport sector—where for example the effective price of carbon is far higher than the stated damage costs, and where emissions continue to rise—to see that such an approach does not in any way guarantee that the Stern Review’s “long-term stabilisation target” will be met. One reason for this is that the economics on which “damage costs” is based in highly flawed—the Social Cost of Carbon (which is also at the heart of the Government’s proposed new “shadow” price of carbon) is based on monetising climate impacts—a process which is inherently bankrupt. It is not possible to monetise many of the impacts of climate change. For example, many impacts are too uncertain (will the Greenland ice shelf melt? How fast?), unmonetised (what are the financial impacts of millions of environmental refugees?) or unmonetisable (what is the value of a coral reef, or the Amazon rainforest?). DEFRA’s reviews on this subject are explicit that there are large categories of impact which are simply not monetised—damage cost figures are gross underestimates and an extremely poor guide for effective policy making. One peer reviewer for DEFRA described the social cost of carbon as having *“neither a robust central estimate or a plausible upper bound . . . the policy usefulness of such a concept with such characteristics is effectively zero”*. It is time that Treasury stopped seeing “internalising the externalities” as the policy goal for use of carbon price. The policy goal for using carbon price should be instead “ensuring the country’s carbon budgets and long-term climate goals are met”. The failure of the internalising externality approach is most blatantly apparent when looking at the DfT’s recent emissions costs assessment, where it is stated that the purpose of measuring carbon emissions is simply to compare the monetised value of these emissions with the tax take from aviation, not to deliver any environmental objective.

In effect, carbon price is determined by the cap for EUETS, but in other sectors it is crucial to ensure that price is used to help deliver on an overall economy-wide cap, not simply to internalise a poorly calculated externality.

We are also concerned that the paper does not provide a coherent overall picture of action on climate change. Section 4.66 for example mentions savings of “up to 1.1 MtCO<sub>2</sub> per year” from APD measures. However, these are savings against a baseline which assumes major increases in aviation emissions, increases which are in large part due to Treasury taxation policy which has meant that in the last ten years aviation has got cheaper in real terms. In order to meet the targets in the proposed Climate Bill, the Government needs a strategy which considers all of its policies, not just the positive ones.

### 2. *Comprehensive Spending Review*

The November 2006 Treasury document *Long term opportunities and challenges for the UK* set out that, for example, the annual costs of flooding to UK homes and businesses and infrastructure could increase . . . *“ . . . a range of costs from 2 to 27 times current spending levels by the 2080s, depending on emissions trajectories . . . ”*. This report also outlined that impacts would be worse in developing countries. The Stern Review also advocated major policy measures to tackle market failures, including global quintupling of spending support for deployment of new technologies, and doubling of R&D spending, as well as setting out that the costs of inaction would be around 5–20% of annual GDP, with costs of action at 1% of GDP.

In this context it was deeply disappointing that so little priority was given to climate change at the CSR. The majority of DEFRA’s extra spending is to flood defences (ie dealing with the impacts of climate change, not preventing it). The details of the Environmental Transformation Fund are still very vague, but even if this is new money, or going to sustainable technologies, it would be an order of magnitude too low. There

is also no sign, despite some extra money for greener transport modes, that the DfT's overall spending will be any less carbon-intensive than it was before. Neither was there any spending help for householders or business wanting to implement energy efficiency improvements or install cleaner technologies.

We note that according to Treasury figures 2006–07 spending on non-fossil fuels and sustainable energy was £73 million (compared with £517 million spent on nuclear<sup>1</sup>), and that DEFRA spending on fuel efficiency grants was just £332 million. Overall, annual Government spending is £587,000 million. The Prime Minister said this week: *“The climate change crisis is the product of many generations, but overcoming it must be the great project of this generation”*. In this context, Government spending on climate change is pitifully low, given its acknowledgement of the scale of the problem. This CSR was a massive opportunity missed.

On energy efficiency, the Government's failure here is absolute—years and years of reviews and consultation, and at this autumn's pre-budget and spending review almost no incentives to help people and businesses be more energy efficient, despite this being the most cost-effective strategy for the UK to pursue. The Government is well aware of the massive market failure in this area, frequently refuses to take action in other areas using the excuse that it is not “cost-effective”, yet repeatedly fails to act in this the most cost-effective and least politically controversial area of all. DEFRA has recently announced the launch of a green homes service and one stop shop for energy advice. On the face of it this seems a very positive step and sits well with the need for it to be cheaper and easier to cut carbon emissions for homes. The scheme outlined by DEFRA in its press release looks ambitious but the funding to make it happen is not. A figure of £100 million is mentioned but it is unclear whether this is new money or over what period it will apply.

It is one thing to have a service which directs householders to grants and financial assistance but this assistance needs to be available in more than token amounts. The farcical state of the Low Carbon Buildings Programme is a case in point. This sort of activity cannot be done on the cheap.

On renewable energy policy, we remain concerned that the Government is not behind this major economic opportunity. The Prime Minister may have recommitted the UK to meeting its share of the EU renewables target, which we welcome, but we are concerned that the UK will still be lobbying for this share to be as low as possible. We feel the leaked BERR memo on renewables over the summer is indicative of an old-fashioned anti-renewables mind-set—the document asserts high costs of renewables, ignoring the economic and job benefits of a rapidly expanding new sector of the economy, the economic benefits of reduced climate impacts, and the potential for stronger policies on energy efficiency to massively reduce those costs (the targets is for a % of demand; energy efficiency policies reduce demand and therefore the amount of renewables needed). They also neglect to mention that the reasons costs for renewable energy technology can appear to be higher than more established technologies is because of existing market failures, which the Stern Review devotes whole chapters to outlining. If BERR think there are high costs, it should amend its policies to correct the market failures that cause these high costs, not use them as an excuse to water down its commitments. This is the amend-policies approach favoured in the Treasury's Implementing Stern report, which argued *“One of the important roles for complementary policies on technology and behavioural change is to make it less expensive to reduce emissions overall, although such policies can also have other important co-benefits. Where caps are not yet at the optimal level for the desired environmental outcome, such cost reductions can help to set them at a more ambitious level in future”*.

The leaked memo also states that meeting a 20% renewables target would be bad because it would mean the EU would be delivering more than its total 20% carbon reduction target. This view is indicative of the can't-do attitude apparently rife within BERR on climate change—the possibility of over-achieving a target is an argument for not implementing a policy, but the converse—under achieving a target - is an argument for dropping the target.

The recent speech by Gordon Brown seemed to draw a line under the leaks. This was welcome but the extent to which it follows through into policy changes has yet to be seen. The forth-coming Energy Bill and the Budget will be key indicators. Willingness by the Government to look seriously at a feed-in tariff would also indicate that the rhetoric is translating into action.

### 3. Public Service Agreements (PSAs)

We are extremely concerned that the new PSAs will not help ensure all sectors play their part in tackling climate change. In particular we do not see how the delivery strategies for the PSAs are compatible with the targets to be set in the Climate Change Bill. For example, PSA 27 on Climate change states that the DfT's role is to ensure only that *“transport policies balance the increasing demand for travel against protecting the environment”* (our underlining). Yet we have seen from experience that “balancing” these demands in, for example, the Aviation White Paper sees a strategy which allows for a greater than doubling increase in carbon emissions. PSA 5 on delivering reliable and efficient transport networks has a tiny section on climate impacts, which merely restates the need to “balance” these objectives. Given that the key indicator of success of PSA 5 is benefit-cost ratios which have an inherent bias against environmental concerns, it is in our view extremely unlikely that climate change concerns will be given adequate weight in transport policy making and in PSA 5.

<sup>1</sup> Primarily on decommissioning nuclear power stations and support for British Energy.

It is a continuing major omission that the Government's strategy on productivity, set out in PSA 1, focuses so narrowly on labour productivity. There are other aspects of productivity which can help the UK's competitiveness, and also environmental goals—resource and energy productivity. While it may have been the case in decades past that resource inputs were a minor element of productivity, this situation has now changed. It is becoming increasingly important for all economies to make rapid improvements in the efficiency with which they use resources and energy. This point was acknowledged by the then DTI in its old sustainable development strategy (*“improving resource productivity is an overriding priority”*, DTI SD Strategy; *“Resource Productivity is the key priority in the DTI Sustainable Development Strategy, and will be an increasingly significant area of opportunity for business for the future”*. Patricia Hewitt, DTI, 2001), however the current productivity strategy focuses entirely on labour productivity. This is a major opportunity missed, for UK businesses and the environment.

We are also concerned about the use of the “shadow price of carbon” in PSA 27 on climate change as a measure of whether a policy is effective or not. The shadow price of carbon is based on the social cost of carbon, the flaws of which are highlighted earlier in this evidence. It is right to look at cost-effectiveness, and Government should pick the most cost-effective measures unless other core Government targets are compromised. But the “cut-off” point must not be defined by the shadow price of carbon, because of its inherent flaws, but instead by being the point at which the UK's overall carbon budget is delivered. We agree that cost-effectiveness should be monitored—however there are many measures which have a very low or even negative cost, and yet these are not implemented. A policy focus should be to overcome the barriers to implementing these very cost effective measures, again, as identified by Stern.

We are also concerned about the impact of the new rules on Impact Assessment set out by Cabinet Office (and now implemented by BERR). The new guidance does state that climate change impacts must be included in policy appraisal, but insists on monetising these impacts in a way which ensures they can always be traded-off. Treasury and DfT's recent reviews of the Social Cost of Carbon and of transport appraisal also do not appear so far to have taken into account the need for emissions not to be exceeded. This is a fundamental clash of an old-fashioned approach that different objectives can be traded-off, and a post-Stern approach where objectives have to be integrated. We see policy structures which lead to continued trade-off of objectives rather than integration as being one of the major problems of delivery of the new set of PSAs.

#### 4. Budget measures—General

Budget 2007 included increases in all the main environmental taxes, and it was hoped that this signalled a post-Stern realisation of the need to strengthen environmental tax policy. However this PBR was a major set-back. This was especially disappointing given positive speeches at Labour Party Conference by the Prime Minister, Chancellor and Secretary of State for Business, Enterprise and Regulatory reform (see appendix).

In addition to the failure to send strong signals to the business community about the future direction of policy the Government's continuing refusal to use environmental taxation to make it easier for people to go green in their homes is disappointing—for example measures such as Stamp Duty Rebates. Lack of basic insulation measures affects over 8 million households. There were no financial incentives for people wanting to install green energy or electricity in their homes—such as announcements on feed-in-tariffs, or increases to the grants available to people. There was almost nothing to help people go green.

Overall, although the Government has some good environmental tax initiatives, they are more than balanced by tax policies acting in the opposite direction—such as aviation taxation. There is not a coherent strategy here to use taxation in conjunction with other policies to deliver on a carbon budget. We feel that such a strategy will be an essential and urgent requirement for delivering the Climate Bill's targets.

We also feel that the Government continues to miss the opportunity to sell green taxes better. Environmental taxes are repeatedly portrayed as being stealth taxes, which makes it harder to justify them politically. We advocate that the Government recommit itself to its 1997 statement of intent on environmental taxation, and sets out a strategy for increasing taxes on pollution, explicitly linked to cuts in other taxes—the Environmental Tax Reform agenda. Polls repeatedly show that green taxation is far more publically acceptable when linked to cuts in other taxes. A recent BMRN poll for the new Green Fiscal Commission found 77% support for green taxes if other taxes are reduced at the same time. Opposition was at 9%.

Finally, we note the Government's determination to implement “cost-effective” policies on climate change. We believe this offers an additional justification for stronger environmental tax policies—in a 2006 DEFRA study of cost-effectiveness in the transport sector, the road fuel duty escalator was by far the most cost-effective policy—at minus £250 tC saved—compared with major costs for policies such as the industry's voluntary agreement on new car fuel efficiency.

### 5. *Budget measures—Aviation*

The decision to reform APD was welcome, if it ensures that aviation taxation as a whole increases—aviation is currently massively under-taxed through its exemptions from VAT on duty on kerosene. But the decision to freeze APD in the interim rather than raise it does not send a strong message that the Government intends to curb aviation’s spiralling emissions.

We welcome the Government’s work in pressing for the inclusion of aviation in EUETS. Assuming the current problems with EUETS can be rectified, it will still be necessary for an increased use of aviation taxation—aviation will not be included in EUETS for some years, and the current proposals are for aviation to receive permits based on the average of 2004–06 emissions—representing a 100% increase over the 1990 cap imposed on other sectors in the ETS. As the October 2007 Treasury paper on Stern also points out, other measures beyond trading are in any case needed to help reduce costs in future years: “*One of the important roles for complementary policies on technology and behavioural change is to make it less expensive to reduce emissions overall, although such policies can also have other important co-benefits. Where caps are not yet at the optimal level for the desired environmental outcome, such cost reductions can help to set them at a more ambitious level in future*”. (section 1.17).

In this context, a reformed APD taxed per plane rather than per passenger could improve passenger loading levels and also drive improved plane efficiency, helping to reduce future costs. This reformed APD should raise higher revenues than the present APD—to help ensure that there is an overall effect to combat overall demand increases.

### 6. *King Review on cars*

We welcomed the commissioning of the King Review of Low Carbon Cars and believe that the interim report, published alongside the Pre-Budget Report, is a good starting point. We believe that low carbon cars must make a significant contribution to cutting carbon emissions from transport. We look forward to Part 2 of the report and to action in next year’s Budget to help the move towards low carbon cars.

However, in helping to create the longer-term pathway, the Government must not take its eye off the short-term priority of ensuring that the EU sets tough, mandatory targets for cutting carbon dioxide emission from new cars over the next decade. The Government’s support for a target beyond 2012 is welcome as this is needed to give the car industry a clear target that fits in with its R&D timelines. However we are dismayed that the Government is calling for a target that new cars emit on average no more than 100 grammes of carbon dioxide per kilometre (g/km CO<sub>2</sub>) by a date somewhere between 2020 and 2025. We believe that the target date should be set for 2020 and that average emissions by this date should be no more than 80g/km CO<sub>2</sub>. This is technologically feasible, gives the industry plenty of time for R&D, and given the scale of cuts required, essential to ensure the car industry makes a real contribution to cutting carbon emissions from transport.

### 7. *Silo treatment of the environment*

Our final point is to raise concern at the continued “silo” treatment of the environment, particularly climate change, within HM Treasury’s reports. Stern is clear that climate change is a major economic threat, and that action on climate change is the “pro-growth strategy”, yet climate change is still confined almost entirely to Chapter 7 of the PBR. Chapter 4 of the PBR on “sustainable growth and prosperity” is in some ways far more important for tackling climate change. Chapter 4 of the PBR mentions in passing that tackling climate change “presents opportunities for business”, but set out no details of how businesses can be helped to take those opportunities, as Stern advocated. The productivity PSA does not even mention resource or energy productivity.

Here was a great opportunity to set out how the Government will lead the UK’s transition to being a world-leading low-carbon economy, creating hundreds of thousands of jobs in new technologies, delivering massive productivity gains from energy efficiency, and making the UK economy far more resilient to global shocks in oil prices, having a better balance of payments and greater security of energy supply from reducing our dependence on imported fuel. This major economic opportunity has not yet been grasped by Government. Setting out this positive economic vision and policies to deliver it would have two major additional benefits. First, it would signal that climate change is no longer an issue to be treated just as an economic threat, but as an economic opportunity. This would transform the current political climate where every action on climate change is seen through a false frame of being “bad til proven otherwise”. Second, it would signal to the public at large that although climate change is a big issue, it is one that the Government is genuinely committed to lead upon. Many people feel fatalistic about the likelihood of stopping climate change, or that their own efforts would have much effect. Overcoming this fatalism is to a large degree about showing that it can be done, that individual efforts are part of a genuinely bigger whole. Ultimately it is the Government which must lead the way, and with action, not rhetoric.

---

## APPENDIX

### QUOTES FROM SENIOR LABOUR POLITICIANS, SEPTEMBER 2007

#### **Gordon Brown speech to Labour Party Conference:**

*“As we set out on the next stage of our journey this is our vision: . . . a world leader in energy and the environment from nuclear to renewables . . .*

*“Perhaps the biggest challenge for the new politics is to show how we as a community can join together to safeguard the environment, to turn the silent, rising tide of global warming . . .*

*“And by investing in energy efficiency, renewables, carbon capture, clean fuels and new environmental technologies, I want Britain to lead in carbon-free vehicles, carbon-free homes and carbon-free industry. And I want the new green technologies of the future to be the source of British jobs in British businesses”.*

#### **Alistair Darling to Labour Party Conference:**

*“We are committed to a low carbon future, here and abroad. That’s why we must encourage more low carbon industries. That’s why we want all new houses to be zero carbon by 2016. And, that’s why we will be the first country in the world to introduce legally enforceable carbon budgets.*

*“On energy, the three big imperatives are to maintain security of supply, ensure affordability and drive down carbon emissions. To deliver all three at the same time, is one of the great challenges of the 21st century.*

*“Our spending plans will help us to do more to meet our environmental obligations. That must now be one of our guiding priorities. The Stern Report has shown us how economic growth can be environmentally sustainable.*

*“Let me give you a practical example of how that can be achieved. In transport. Britain’s railways are already carrying record numbers of passengers because of the investment we are making. Good for passengers. Good for the economy. Good for the environment. That’s the kind of virtuous circle we have to pursue in every sector of the economy”.*

#### **John Hutton to Labour Party Conference:**

*“A country of change must be capable of confronting the most fundamental challenge of all—not simply sustaining economic growth in Britain in the years ahead, but tackling the immense challenge of climate change. Nothing is more fundamental to our economy or our society than how we source our energy.*

*“We must now make the transition to a low carbon economy. Government will play its part.*

*“The Government Gordon Brown leads will not be among those who say they want to tackle global warming by moving to low carbon energy sources but then oppose every opportunity to do so.*

*“And the Government Gordon Brown leads will drive forward with delivering a step change in our use of renewable energy.*

*We must lead at home as well as abroad. A country of change must be prepared to embrace tomorrow’s energy sources . . .*

*. . . I want British companies to lead the way in developing those new technologies and seizing those opportunities. I want to consider how best we can equip British companies to maximise the potential of new markets in green business.*

*“A thriving manufacturing sector—supplementing the blue and white collar jobs of today with a new wave of ‘green collar jobs’ tomorrow”.*

*20 November 2007*

---

### **Memorandum submitted by WWF**

WWF’s submission addresses our views on:

1. Aviation.
2. Carbon capture and storage (CCS).
3. The Environmental Transformation Fund.
4. The Congo Fund.

## 1. AVIATION AND THE PBR

Aviation is a new area of engagement for WWF-UK and we welcome this opportunity to set out our views on the approach the Government has taken in the Pre-Budget Report 2007. Below we briefly outline our vision for the aviation sector, followed by detailed comments on the changes announced in the PBR.

### *A vision for a sustainable aviation sector*

Aviation is the fastest-growing contributor to the climate change in the UK and as such presents a huge threat to the Prime Minister's vision for a low-carbon UK.

In order for the UK to play its fair part in limiting global temperature rise to 2°C, the latest climate science tells us the UK will have to make carbon dioxide reductions of at least 80% on 1990 levels by 2050. Together with the RSPB and the ippr, WWF-UK recently published an analysis of how the UK could achieve such a reduction target (which included the emissions from aviation), using the macro-economic models behind the Stern Review and the 2007 Energy White Paper.

Emissions from aviation (uprated using a multiplier of 2.5 to account for non-CO<sub>2</sub> effects) presented a huge challenge to meeting these targets, due to the rapid growth and high abatement costs of the sector. The models suggested that it would only be possible to achieve the necessary overall reductions at reasonable cost if aviation emissions were capped at 2010 levels. This represents a measure of special treatment of the aviation industry, as it requires very deep decarbonisation of virtually every other sector. Aviation is still able to grow after 2010 under this approach, but growth must be matched by efficiency improvements to ensure that emissions do not increase.

The requirement to stabilise aviation emissions at 2010 levels frames WWF's approach to the sector. We support the inclusion of aviation emissions within the EU's Emissions Trading Scheme (ETS), but are concerned that the ETS will not provide a robust enough carbon price to manage demand, or accelerate technological improvements, in the short-to-medium term. The result is likely to be lock-in to long-lived, high carbon infrastructure, with the proposed expansion of Heathrow being a perfect example: a key part of the Government's justification is that ETS "caps" aviation emissions, and the aviation industry have even claimed that the runway is therefore effectively "carbon neutral".

It may take a decade or two before carbon markets are mature enough to ration demand effectively. In the meantime, WWF believes that we need urgent action to constrain the growth in aviation emissions. In addition to demand management through taxation (explored in more depth below) WWF is calling on the Government to:

- set a moratorium on airport expansion;
- invest more in alternatives to air travel (in particular high-speed rail and video-conferencing); and
- promote measures to reduce demand through behavioural change. The Government, for example, should promote awareness of the environmental impact of flying, for instance by requiring advertisements for flights to display the associated carbon emissions, as happens with cars.

### *Aviation and the 2007 PBR*

*Aircraft also contribute to climate change through high-altitude emissions of nitrogen oxides, contrails and the formation of cirrus clouds. The Government's policy, as set out in the 2003 Air Transport White Paper, is that aviation should pay the costs it imposes on society at large. The Government's priority has been to work to include aviation in the EU Emissions Trading Scheme . . . (7.54)*

It will not be possible to assess the true scale of these costs without assessing the true scale of aviation's non-CO<sub>2</sub> effects. There is inconsistency across Government in that the Treasury uses a multiplier of 2.5 (PBR 2006 7.82), whereas the Department for Transport (in its recent consultation on the proposed Emissions Cost Assessment<sup>2</sup>) used a "central case" multiplier of 1.9. No multiplier is used in Defra's advice to businesses on calculating carbon footprints (and presumably the same methodology is used for calculating the Departments' own emissions).<sup>3</sup> Crucially, the UK Government has never backed the use of a multiplier on aviation emissions in the EU Emissions Trading Scheme. Without a multiplier, the climate impact of aviation growth will be only partially offset by the purchase of credits from ground-based sources. WWF recognises that the science of aviation's non-CO<sub>2</sub> impacts is a complex topic. However, the precautionary principle states that scientific uncertainty should not be used to justify inaction where the impacts are potentially large. An effect that potentially quadruples the impact of one of the fastest-growing contributors to climate change clearly falls into this category.<sup>4</sup> **WWF recommends that the Government commissions urgent research to derive a policy-robust multiplier, and to apply this multiplier consistently across its aviation policy.**

<sup>2</sup> <http://www.dft.gov.uk/consultations/closed/emissioncostassessment/consultationpaper>

<sup>3</sup> <http://www.defra.gov.uk/environment/business/envrp/pdf/passenger-transport.pdf>, note to Table 6, page 9.

<sup>4</sup> The 1999 IPCC Special Report Aviation and the Global Atmosphere found that aviation's total climatic impact was between 2 and 4 times that of its CO<sub>2</sub> alone—and that excluded the effects of cirrus clouds. See <http://www.grida.no/climate/ipcc/aviation/index.htm>

Climate change is not the only cost aviation imposes on society. Aircraft noise blights the lives of many thousands of people in the UK. The Government recently published a comprehensive, peer-reviewed study into annoyance caused by aircraft noise,<sup>5</sup> including monetisation of these effects. However, the Government appears to be distancing itself from the conclusions of this report—perhaps because it identified a lower threshold for annoyance than that used in current policy. Current policy is based on non-peer reviewed studies that are over 20 years old, so it can hardly be said that the present study is insufficiently robust for policy purposes. WWF is keen to know the Government's reasons for not accept the findings of this report, which has implications both for aircraft noise policy and for fiscal policy.

*The Government believes that domestic air passenger duty (APD) is playing a valuable role in encouraging behavioural change, reducing emissions from aviation and ensuring that air travel makes a fair contribution towards the Government's spending priorities, including public transport and the environment. (7.55)*

WWF welcomes the Government's recognition that aviation should make a contribution to public revenue above and beyond covering its environmental costs, and that demand management through behaviour change should be an objective of taxation, not merely increased efficiency (ie that taxation should have both supply and demand-side effects).

If taxation is to have a significant effect on behaviour, it will have to be raised considerably overall. The proposed move to per-flight taxation is likely to reduce public opposition to such an increase, as the focus is on the polluter, not the passenger. But it will also be important to demonstrate to the public that the revenue is being put to good use—polls have repeatedly shown public acceptance of “green” taxes if the money raised is spent on the environment. While WWF understands the Treasury's resistance to the hypothecation of tax revenues, significant tax rises in one area will have to be part of a package including significant investment in carbon-saving measures elsewhere. WWF believes that encouraging alternative transport options will be a key part of reducing the unsustainable growth in aviation. The Government, therefore, should provide adequate financial support for domestic rail. Such a shift in resources would be progressive, as aviation users tend to be wealthier than bus or train users. Alternatively, aviation revenues could be used to fund tax cuts in unrelated areas, such as income tax. The numerous possibilities are beyond our remit, but WWF would stress that any such tax balancing must be done in a totally transparent manner, to dispel widespread public and media suspicion of green taxes as “stealth taxes”.

*Following an earlier consultation, with effect from 1 November 2008, the Government will correct an anomaly to ensure passengers on “business class only” flights are liable for the standard rate of APD. (7.55)*

WWF welcomes this change.

*Therefore from 1 November 2009, the Government proposes to replace APD with a duty payable per plane rather than per passenger, and will begin a consultation shortly. The consultation will consider ways to make aviation duty better correlated to distance travelled and encourage more planes to fly at full capacity. In introducing this duty, the Government will also take into account the impact on freight and transit and transfer passengers, consistent with its wider economic and social objectives. (7.56)*

WWF welcomes this sensible change, which has cross-party support. The tax should include freight aircraft (although it may need to be phased in to avoid a shock to business models), as well as private jets used commercially. WWF does not anticipate any serious impact on transit or transfer passengers (currently exempt from APD) as these do not make up a significant proportion of passengers on any one flight, and so WWF would oppose any special dispensation for them.

WWF believes that it is important that the new per plane tax is set at the right level and designed to encourage the most optimum environmental outcome.

WWF has noted above that the tax would need to be raised overall to affect behaviour, and WWF believes per-flight taxation is better suited than per-passenger taxation, as it is less open to negative emotional interpretations. **WWF recommends that increases are stepped annually (an “escalator”), to give airlines time to plan and to reduce the newsworthiness of each increase.**

The ideal tax for aviation (to encourage the greatest environmental outcome) would be a CO<sub>2</sub> tax. Carbon dioxide emissions, however, are directly proportional to the amount of fuel burnt and a fuel tax is currently prohibited on international flights by bilateral air service agreements.<sup>6</sup> WWF is in favour of a fuel tax for domestic flights and would encourage the Government to explore the possibilities of bi- or multi-lateral fuel taxation with progressive European partners. The Government's proposed per plane tax should be fashioned to mimic the benefits of a CO<sub>2</sub> tax by addressing three factors: distance flown, size of aircraft, and engine efficiency. Multiplying these factors, as described below, together would give a number related (but not directly proportional) to fuel burn and should form the basis of the tax.

Distance: **WWF recommends that the bands in the per plane tax are more differentiated than the current short/long haul system.** The emissions from a trip to Australia are around three times those of a trip to New York, but both are currently classed simply as long-haul. WWF does not, however, believe the tax should be proportional to distance, as this could result in a very low tax on short-haul flights, which are more carbon-intensive per passenger km, more easily substituted for other modes of travel, and have

<sup>5</sup> <http://www.dft.gov.uk/pgr/aviation/environmentalissues/Anase/>

<sup>6</sup> This does not apply domestically or within Europe, where bilateral treaties no longer exist.

(approximately) the same noise impact as long-haul flights. A very high tax on the longest flights would also risk encouraging passengers to switch flights at a near European destination. A balance needs to be struck—perhaps three bands would be most appropriate.

**Size of aircraft:** A key advantage of per-flight taxation is that it will discourage half-empty flights. To maximise this benefit (by encouraging denser seating configurations), **the tax should be varied according to the available capacity of an aircraft**—the standard measurement of “payload” (in tonnes) is suitable.

**Efficiency:** **Ideally the tax should encourage the purchase of newer and cleaner planes.** Although it would complicate the tax slightly, WWF feels that it is important for this incentive to be built in. Figures are available for all commercial aircraft for the fuel burnt at maximum payload, which, divided by the payload, would give a suitable efficiency factor.

## 2. WWF-UK'S POSITION ON CCS TECHNOLOGY

*Environmental Audit Committee enquiry:*

In this year's inquiry, the Environmental Audit Committee (EAC) would welcome views, from organisations or individuals, on the following:

- *The Government's announcement on the competition to design and build a pilot Carbon Capture and Storage project, and policy towards funding and developing CCS more generally.*

### **DBERR CCS Competition:**

The Government has announced that it will provide up to 100% of the additional capital and operating costs for the CCS part of a project incurred by the developer in successfully demonstrating the technology on a long-term commercial scale. The pre-qualifying period for the competition will be led by DBERR and will end in March 2008. Companies that successfully pre-qualify will be invited to take part in the next stages of the competition in April 2008, with the aim of announcing the competition winner by May/June 2009.

### **WWF-UK's views on CCS and the current competition:**

WWF-UK supports the development of carbon capture and storage as long as it is developed as a mitigation measure and truly contributes to net carbon emissions reductions (rather than being used to legitimise high emissions elsewhere, or to prolong reliance on fossil fuels through enhanced oil recovery). However, CCS needs to occur in the context of a robust regulatory regime, with full provision for liabilities. The permanence and safety of the CO<sub>2</sub> stored in a geological reservoir needs to be independently monitored and verified by a competent third party in order to check for leakage. In addition, CCS, as a waste disposal measure, should be licensed in the UK by the proposed Marine Management Organisation (to be established by the Marine Bill).

To meet the clear and urgent threat of climate change, as recently set out by the Intergovernmental Panel on Climate Change, WWF is clear that the UK needs to reduce its emissions of CO<sub>2</sub> by at least 80% by 2050 from a 1990 baseline. In his November speech on climate change, Prime Minister Gordon Brown acknowledged that the targets under the Climate Change Bill will probably need to be tightened to 80% from the proposed 60%.<sup>7</sup>

In this context, WWF-UK believes that it is not justifiable for the Government to allow the building of any new coal-fired power stations in the UK which do not have CCS installed from the outset and which also make maximum use of waste heat. **WWF-UK is calling on the Government to enforce an immediate moratorium on all new build of unabated coal-fired power stations in the UK.** Without such action, it is hard to see how we can meet our emission reduction targets under the Bill. There is a precedent for such action—in the late 1990s, the Government imposed a moratorium on new gas-fired power stations without full use of waste heat.

We broadly welcome the Government's intention to provide some funding for a CCS demonstration project in DBERR's competition, as it is important to demonstrate whether, and under what conditions, CCS has a viable role in delivering a low-carbon economy. However, we are disappointed that it has opted to only allow post-combustion CCS technology in this competition. This restriction means that many companies' plans for more advanced, and cleaner, pre-combustion CCS projects—such as those put forward by Centrica and SSE—have been suddenly made ineligible.

WWF-UK is concerned that by supporting only post-combustion capture, the Government is legitimising a “CCS retrofit” mindset which is being used to justify the construction of a whole generation of highly polluting coal-fired power stations in the UK. We are concerned that the claim that stations are “carbon

<sup>7</sup> A joint report by WWF, the RSPB and the ippr entitled “The 80% Challenge”, shows that the 80% reduction target is technically feasible, economically affordable and environmentally sustainable. [http://www.wwf.org.uk/filelibrary/pdf/80percent\\_report.pdf](http://www.wwf.org.uk/filelibrary/pdf/80percent_report.pdf)

capture ready” may be being used as a figleaf—there are no guarantees over when, if at all, CCS would be fitted. Moreover, very significant emissions would arise in advance of any such retrofit—at precisely the time when UK emissions need to be placed onto a steep downward trajectory.

The Government argues that it wishes to develop experience in post-combustion CCS technology as this is most easily retrofitted to existing power stations, particularly in developing countries such as China, and that Norway and the US are already working on pre-combustion technologies. If the Government wishes to pursue a post-combustion demonstration project, it should only do so in the context of parallel demonstrations of large-scale pre-combustion technology and also of large-scale transportation of CO<sub>2</sub> by pipeline.

Finally, WWF-UK is very concerned by the Government’s view that CCS will be encouraged by the EU emissions trading scheme alone. WWF does not believe that the EU ETS by itself will provide sufficient price certainty at the appropriate levels to facilitate the introduction of CCS. The Government’s position reflects a widespread over-reliance on the ETS to deliver policy objectives—which carries a severe risk that we lock ourselves in to high-carbon infrastructure because of the low cost of carbon credits in the near-term. In our view a range of complementary policies are needed to overcome technological, infrastructure and other barriers. We note that the Stern Review of the economics of climate change, published in October 2006, made clear that carbon pricing (through tax and regulation as well as trading), technology policy and behaviour change were all needed to overcome market barriers—particularly in the case of emerging technologies.

**In our view, the EU ETS needs to be complemented by other measures to discourage the lock-in to new high carbon investments. On top of an immediate moratorium on new coal stations in the UK without installed CCS, the UK Government should legislate to mandate CCS on all new coal plants.** This could either take the form of a carbon dioxide efficiency standard—a CO<sub>2</sub> limit per unit of useful energy similar to that now employed in California—or a direct mandate that all new coal-fired power stations in the UK must be fitted with CCS (with a firm deadline for retrofit to existing fossil-fuel stations). Similar legislation should then be championed by the UK Government at the EU level. The UK Government might argue that this would undermine the ETS but WWF disagrees. In our view there is no reason why complimentary policies should not be deployed. For example, action on energy efficiency appliances involves incentives to encourage the take up of the most efficient appliances supplemented by standards which remove the least efficient appliances from the market.

### 3. THE ENVIRONMENTAL TRANSFORMATION FUND—INTERNATIONAL WINDOW

WWF-UK welcomes the settlement for the £800 million Environmental Transformation Fund—International Window (ETF-IW), with £400 million each allocated to DFID and DEFRA. The fund was announced in the Treasury budget report as follows: “a £800 million international window for the Environmental Transformation Fund to finance overseas development projects that deliver both poverty reduction and environmental benefits in developing countries”.<sup>8</sup>

The settlement shows the commitment of this Government to fund the major environmental challenges faced internationally and by developing countries, and shows recognition of the fact that the environment underlies human wellbeing and is essential for international development.

However, WWF also have a number of concerns with regards to the fund, as well as with the process that has taken place so far.

The fund, while welcome, appears to have been declared in advance of a clear strategy or objective being in place and this has had a negative impact on communication and process. Information on strategy for delivery, rationale and management was patchy and often contradictory especially in the early stages. The fiscal restrictions to be imposed on the Fund mean that the funds will have to be capital funds and, as a consequence, that the large majority of the funds will have to be loans. This will severely restrict the possibility of what can be done with those funds, as most environmental issues do not lend themselves to be funded through loans, as they are public goods and not profit making assets. This means that the parameters for what can be funded through the ETF-IW are potentially very restrictive.

WWF notes that Ministers have used the creation of the ETF as proof that the Government is acting on various issues, from biodiversity to energy, to forests and adaptation, while realistically only a set of issues can be addressed with a loan structure. The fund has been mainly set up in response to climate change, and focuses on mitigation and adaptation. Using a broad term such as “environmental transformation” is, therefore, potentially misleading as expectations have been raised which cannot be addressed, and, even more problematically, fudges the fact that there are still very large funding gaps elsewhere that are not being addressed.

Furthermore, the pre-Budget report and Comprehensive Spending Review in October further specified that the Government will establish a fund at the World Bank, which will be the mechanism for using the ETF-IW. WWF is concerned that in response to the challenge of climate change, a plethora of funds is being

<sup>8</sup> [http://www.hm-treasury.gov.uk/media/F/D/bud07\\_chapter7\\_273.pdf](http://www.hm-treasury.gov.uk/media/F/D/bud07_chapter7_273.pdf)

set up by a variety of actors, and we are concerned that setting up yet another new fund will muddle the already trampled field of separate funds even more, and will not help to promote coordination and coherence in approaches.

WWF are also concerned with the choice of the World Bank as the manager of this Fund. The World Bank has not proven itself to have taken the climate change challenge seriously. The Bank, for example, continues to disproportionately fund the fossil fuel sector as opposed to the new renewable energy sector despite calls from the World Bank's own Extractive Industries Review<sup>9</sup> (2003) to phase out lending by 2008. Furthermore, developing country governments, who will be impacted most by climate change, still are barely represented in the governance structures of the World Bank. These issues highlight that currently much of the international institutional framework is inadequate to deal with the global challenges of achieving a true "environmental transformation" that works for developing countries, and, therefore, needs to be reformed. In the context of ensuring the governance of this fund is adequate and efficient, WWF believes there should be substantive consultation by the UK Government with the intended beneficiaries of the fund to ensure that the funding mechanism and institution responds to the needs of the recipient governments.

Lastly, WWF, like other NGOs, is concerned about the implications of the ETF-IW money on the UK's development agenda. The ETF-IW has been set up in response to the challenge of climate change and focuses on mitigation and adaptation, but is still counted as Official Development Assistance (ODA). While tackling climate change is essential for poverty reduction, funds for climate change should be additional to the 0.7% commitment, which was based on costings for the Millennium Development Goals, not taking into account climate change. WWF is also keen to ensure that the aid effectiveness standards to which DFID signed up to are being respected and held up as an example in this new Fund. If this were to happen this could be a precedent for ensuring that future funds for climate change mitigation and adaptation avoid many of the existing problems with effectiveness in the current aid system, as well as support the effectiveness of other aid. Furthermore, WWF calls on DFID to ensure that the capital nature of this Fund does not contribute to further debt burdens for poor countries, which are already causing serious constraints for countries to invest in public goods like health, education and the environment.

WWF recommendations:

- The Government should specify more clearly what exactly the objectives of the ETF are, what the linkages will be between the ETF, existing funds as well as new climate change related funds, and how the coordination between funds will take place.
- To ensure the Fund is truly transformational, it also needs to be accompanied by the reform of the very institutions that will manage and dispense it, otherwise those institutions may perform a contradictory role.
- The Government should undertake full consultation with the intended recipient countries on the fund management and governance mechanisms, to ensure that the agenda of the Fund is developed and shaped by country governments themselves rather than imposed from the outside.
- The Government should specify which portion of ODA is climate change related funding, and ensure that climate change related funding is not reported as counting towards the 0.7% commitment. It should also put in place assurances that new loans will not further add to the debt burden of developing countries.

#### 4. RESPONSE TO "THE ANNOUNCEMENT OF FUNDING FOR THE CONGO FOREST CONSERVATION INITIATIVE"

WWF welcomes the UK Government's announcement to support Congo Forest countries to help them protect the Congo Basin's forests and people. WWF believes that this funding will be a great contribution to the Congo Basin Forest Partnership and to the Council of Ministers in Charge of the Forests of Central Africa (COMIFAC) Regional Action Plan (Plan de Convergence).

WWF has a couple of specific concerns with regards to the administration of this funding:

##### 1. *Proposed governance structure*

During the Congo Basin Forest Partnership (CBFP) meeting in Paris in October 2006, an outline of the initial Congo Basin Governance Fund (CBF) to be established to manage the UK funding was presented by Professor Wangari Maathai (Co-Chair of the Congo Basin Fund). The following constituents of the governance structure of the CBF was proposed:

- Executive Board.
- Management Committee.
- Secretariat of the Fund.
- Technical review Committee.

<sup>9</sup> <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTOGMC/0,,contentMDK:20306686~menuPK:336936~pagePK:148956~piPK:216618~theSitePK:336930,00.html>

---

Host Institutions (World Bank and the African Development Bank).  
Implementing Agencies.  
Monitoring Committee.  
Donor/Investment Committee.

WWF is concerned that this proposed governance structure, will use an excessively large amount of the fund up for administration. This concern has also been voiced by regional constituents.

WWF recommends that there is further consultation with people from the region before moving forward with this proposed governance structure.

## *2. Involvement of multilateral institutions*

As can be seen from the governance structure, it is also proposed to involve two “Host Institutions” (the World Bank and the African Development Bank) to manage the UK funding. There has already been some speculation with regards to the World Bank, that the money could be administered through their Global Forest Partnership (GFP). The governance structures for the GFP have not yet been drafted. However, elements that have been discussed suggest the following constituents:

- A multi-stakeholder governing council.
- A consultative group.
- A technical advisory group.
- A unified forest trust fund.
- A GFP secretariat.
- Supplementary provisions.
- Significant inclusion of developing countries in GFP governance.

WWF has yet to find out what the proposed governance structure for the African Development Bank would be.

As per our first concern, WWF fears that the proposed involvement of these two institutions will result in excessively high overhead costs which would appear to be additional to those proposed for the governance structure of the CBF. This would still further reduce the amount of money going to the field.

In addition, WWF feels that such a heavy governance structure to administrate the UK funding is neither justified either conceptually or operationally. While we whole heartedly endorse the UK Government’s support for forest conservation in the Congo Basin, we believe that it is vital that this heavy governance structure is addressed so that the benefits which this funding will provide in delivering forest conservation in the region are maximised.

WWF recommends building on existing models which are already in place which could be used to manage the UK funding. There are a number of potential alternative structures that should be considered and WWF would be happy to discuss some of these further.

27 November 2008

---

*Witnesses: Mr Simon Bullock, Economy Campaigner, Friends of the Earth, Mr Pete Lockley, Head of Transport Policy, and Ms Lies Craeynest, International Development Policy Advisor, WWF, gave evidence.*

**Q31 Chairman:** Good morning. Welcome. As I think you have heard some of the previous exchanges and you are familiar with the Committee and we are familiar with your organisations, we can dispense with the formalities. Perhaps I could kick off by asking you for a general view of the Pre-Budget Report this year.

**Mr Bullock:** We saw it as a big opportunity missed. It feels to us almost as if the Government is refusing to push at an open door. It has had its environmental markets report last month saying there are big economic opportunities/business opportunities; the UN report last week and the Stern Review saying that tackling climate change is the “pro-growth strategy”; most of the main opposition parties are calling for more action, even the CBI is calling for more action, and yet there was very, very little in this PBR and in the CSR to indicate that the Government is really taking a grasp on climate change. We found it very disappointing.

**Q32 Chairman:** Why do you think that is? We had seen quite a shift in the attitude of business over the last couple of years. It seemed to have really brought in the need for action, accepting the Stern case for early action rather than later. What do you think is holding the Government back?

**Mr Bullock:** In some ways it is about mindset. There is still a “can’t do” attitude, that the costs of this would be too much or jobs would be threatened. In some ways the Government is behind industry on this. The CBI Report was quite clear that there are big opportunities. The CBI’s change in position is remarkable: five years ago Digby Jones was saying things like, “We must not sacrifice jobs on the altar of green credentials” and this time round they are saying, “Regulation is really important. We have to have regulation for strong standards.” Hopefully, in the year to come the Government will see that almost everybody now is clamouring to take much more action than they have been doing. Business is maybe the final piece of the jigsaw that gets the Government on it, we hope.

**Q33 Chairman:** I do not want to embarrass my colleagues on the Committee by saying that Digby Jones was one of the main obstacles to common sense at the CBI but it certainly looks, in retrospect, as though that might have been the case. What do you make of the fact that in the Pre-Budget Report this year we did not have a dedicated environment chapter and we have it mixed in with some other things?

**Mr Bullock:** In some ways I think it is a positive step. I like the fact that they are linking environment and development issues explicitly. Climate change is predominantly a development issue: it will hit the poorest countries hardest and earliest. I like the fact that they are making that explicit link but it is disappointing that that chapter, even including international development, is seven or eight pages less. It feels like a very cursory treatment of both issues and there is very little in it that is new. Stern, was not saying “Steady as you go, chaps. You’re

doing basically okay—just a little bit of tinkering.” He was saying: “Fundamental changes.” Last time we were here there was a sense that the Government should be given a bit of slack because the report had only been out a couple of weeks, but we are a year on now and there is so little in there on both spending and taxation that it is very, very disappointing.

**Q34 Chairman:** Is it not the case that transport spending on taxation and energy spending on taxation and a whole range of other departmental policy areas impact very directly on the climate change agenda. Should it not really be crossing into almost every chapter?

**Mr Bullock:** Yes, I think that is right. The disappointment for us is that chapter 4 on economic growth and prosperity had very little mention of the environment. Particularly given that Stern says that it needs a “pro-growth strategy” to tackle climate change, you would think that that chapter should be saying we have to tackle innovation, we have to tackle skills in a way that addresses this problem so that we genuinely do tackle climate change in a way that is good for the economy. The fact that that is not there and the Government are not selling it as something we can lead on and deliver, is a surprise. It certainly feels that climate change, despite the information on the economy through Stern, is still seen by sections of Government as a silo environmental issue and that is to be regretted.

**Q35 Mr Graham Stuart:** Alongside the Pre-Budget Report, the Treasury also published the response to Stern, the paper on implementing the Stern Review. Friends of the Earth have been very damning in their language about this. Could you just explain your criticisms of this document?

**Mr Bullock:** First, to reiterate, it is that it is mainly a rehash of their existing policies. There is very little in there. Stern is saying there are massive market failures in energy policy, there are massive market failures in energy efficiency policy and you would think, following from that analysis, that the Government would amend its policies not simply rehash them as they have done in that report. That was very disappointing. The way they are treating carbon price in the report as well is unfortunate. The Stern Review and everybody says that it is very important to have a much higher price for carbon, but the Treasury report is sending a confusing signal to other departments. It is basically saying that the purpose of price to a large degree is simply to internalise externalities. For climate change that is very difficult to do because most of the impacts of climate change you cannot monetise adequately. You can say what they are to a degree but, even there, they are pretty uncertain: we do not know whether the Greenland ice sheet will melt, we do not know the cost of millions of environmental refugees, we do not know the cost of damage to a coral reef, and those figures are not included in the official cost of carbon. Attempts to internalise externalities in this way will automatically create a bias against

---

4 December 2007 Mr Simon Bullock, Mr Peter Lockley and Ms Lies Craeynest

---

climate change. We are concerned that they are not really acting on what Stern said. Stern was not saying, predominantly, that you internalise these costs; he was saying that you have an overall goal of carbon emissions and you use price to deliver it. The Government are almost flipping on its head the approach to carbon price. We find that surprising. It is a hang-up from decades past, I guess, but in the new world we are in, where Stern and everybody else is saying you have to have a limit on carbon emissions, you have to use that as the driver for carbon price, not some attempts to calculate some poorly worked out externality.

**Q36 Mr Graham Stuart:** That is a confusing signal. It is a fundamental reversal of what Stern was asking, which is that the cap determines the price, and you are saying, in effect, that the Government is saying the price determines the cap.

**Mr Bullock:** Yes. I could give you what I find a shocking example, from the Heathrow consultation that came out recently on this. The Government have replaced “social cost of carbon” with “shadow cost of carbon” and they have put interim guidance out on that. They take the Stern view on what a tonne of carbon damage costs but they come out with a figure in the end that is three times lower than what Stern advocated. The reason for this is that carbon lasts a long time in the atmosphere and the cost of damage from one tonne of carbon depends on what sort of future you have. If we do not stop climate change, then the cost of a tonne of carbon is very expensive. If we do something about it, it becomes cheaper. Stern assumes that we have a “business as usual future” and the Government say, “We assume that our policies and those of other governments across the world will be successful, that we will solve climate change and the cost of a tonne of damage of climate change will be much lower than Stern said.” That would be fine, except that they are now using that figure to determine policy. In Heathrow they tot up that sum, the shadow cost of carbon, against all the other costs and benefits, and that sum is a net economic benefit to the economy so Heathrow gets green-lighted using this lower cost of carbon. Effectively, Heathrow is getting the go-ahead—which will massively increase carbon emissions: 180 million tonnes of carbon dioxide in total—because they have used a lower price per tonne of carbon. If you use Stern’s tonne of carbon, then it does not go ahead. They are using this lower figure, which has the effect of making carbon emissions go up, which means that they do not meet the targets that they are assuming are being met through the use of the shadow price. You can see it is a complicated business. It is almost Orwellian in the way it uses carbon price to come up with a policy result. It is just shocking.

**Q37 Dr Turner:** Since this is an issue which is central to government environmental impact assessments it is worth pursuing. You are suggesting that, in fact, the change from social cost of carbon to shadow cost of carbon has been done in such a way that it has the reverse effect of driving up carbon emissions by

permitting government policies to go ahead which, if it had been correctly calculated, would not have. Do you think, to put it crudely, this is the effect of genuine conspiracy or is it a cock up? That seems to me to explain most of the occasions when officialdom gets things wrong. On the face of it, given the Government’s initial explanation, the shadow cost of carbon ought to be a mechanism whereby you can use the cost mechanism, if you like, to determine carbon allowances, which we are going to need to to fulfil the terms of the Climate Change Bill. Do you think there is perhaps a basic validity in the intention which has gone wrong in practice?

**Mr Bullock:** You would have to ask the chief economists and ministers directly about that. Personally, I am being a little cynical but I think it is not a nice coincidence that the old cost of carbon that they were using is almost exactly the same as the new cost of carbon that they are going to use, irrespective of what Stern says. These are very complicated issues but the cost of carbon is so difficult and ultimately bankrupt as a way of trying to tackle climate change, because so many things cannot be monetised properly, that it is the wrong approach to use.

**Q38 Dr Turner:** That is a perfectly valid point of view, especially as, one always suspects, civil servants are reluctant to change anything. If they can work a formula so that they come up with the same answer as they are used to, they will do it. Can you suggest an alternative way of carrying out this procedure? If you look at a development, be it the third runway or policy on insulated schools or energy efficiency of government buildings or whatever, which will contribute to climate change and reducing emissions, we have to factor in the carbon element somewhere, somehow in the government policy.

**Mr Bullock:** The best way of doing this will be through the Climate Change Bill. The Climate Change Bill will say that the Government needs to set a strategy across the entire economy and across all sectors for delivering the carbon budgets within the Bill. It is a simpler business, although still complicated, rather than to use carbon social cost price—basically the damage cost—to say: “What is the most cost-effective way of meeting this budget?” so for all sectors of the economy we are going to meet it in this way. This sector will meet this much, this sector will meet this amount, and in each sector we do the most cost-effective policies and you look across sectors to determine which sectors do most. That is a better way of doing it. I think it is one that can be done with far less confusion than exists at the moment. We can send you more detail on this. We are commissioning work on exactly the practicalities of how this will do and I have a draft but no more at the moment.

**Q39 Dr Turner:** That is very interesting. It seems to me that the Climate Change Bill will mean nothing unless you have nuts and bolts mechanisms of delivering this and delivering it down to sectoral levels. Do you have a view on sectorisation?

---

4 December 2007 Mr Simon Bullock, Mr Peter Lockley and Ms Lies Craeynest

---

**Mr Bullock:** Yes, I do. I think it is important that we do have sectoral targets and that it is done at the Cabinet level, to say, “This is what is expected of each sector.” We are already seeing most sectors legitimately arguing that it is other sectors’ responsibility: “It is cheaper/easier/more cost-effective for sector *x* to do it rather than us” and it will be very important for the clear signals that business needs and householders need about climate change that the Government is clear about what it expects from each sector.

**Mr Lockley:** I would like to second everything Simon has said about the difficulties of finding a price today for a tonne of carbon but there is another key uncertainty which is the discount rate you should be using to find a present value for costs in the future. One of the key issues with the Stern Review is that he used a very low discount rate, specifically taking an ethical judgment that we value future generations at pretty much the same level as we do today. That is not the approach taken by the Government, for instance, in doing its cost-benefit analysis for the Heathrow runway. They are following Treasury guidance, which is to use a discounted rate of 3.5 for the first 30 years and then 3.0 thereafter. The shadow price of carbon that DEFRA uses goes up year on year to account for the rising stock in greenhouse gases in the atmosphere by two per cent. When you play off those two bits of guidance against each other, the Treasury’s discounting value outweighs the DEFRA shadow price of carbon increases, so effectively you get a falling price of carbon. If that is meant to represent what is going to happen through the carbon markets that are supposed to be developing and tightening up and rationing the use of carbon, it seems to me a very poor model.

**Q40 Jo Swinson:** Many campaigners were pleased at the Government’s move to levy the air passenger duty from the passenger to the flight. Could you sum up the benefits of this change?

**Mr Lockley:** Yes. Firstly, it is an opportunity to broaden the tax base so that you can bring in freight aircraft for the first time, although we accept there may be some need to phase in that tax. You can also bring in private jets used commercially, which has so far escaped taxation. Secondly, there is a clear structural benefit to having a per-flight tax. I believe there is cross-party support for this move because it discourages airlines from flying half empty planes. For instance, if an airline is thinking about putting in a new route, it needs to know that it is going to be able to fill that plane because it will be paying the same amount of tax, whereas before it would pay only per passenger. Thirdly—and this is the message that we are keen to get across to the Government—there is an opportunity to build in extra efficiency measures when you come to the nitty-gritty of how you design that tax.

**Q41 Jo Swinson:** What do you think the Treasury particularly needs to get right to make sure it gets maximum benefit from this?

**Mr Lockley:** They have said in the Pre-Budget Report they would like to make the tax better correlated to distance flown and we would agree with that. It might face difficulties if you make the tax directly proportionate to the distance flown, because you would then get a very low tax for short-haul flights for which you have alternative possibilities which have a broadly similar noise footprint, and you may also encourage people hubbing out of Paris and other nearby airports for the long-haul flights which would then have a very high tax, so we do recommend a banding approach. There may be an opportunity to increase the number of bands to better correlate to distance flown. We would also encourage the Government to make a distinction between new efficient aircraft and old dirty aircraft. For a given class of aircraft there are those which will emit more CO<sub>2</sub> on a certain route and we think they should be taxed higher. The data is available to rate the tax accordingly.

**Q42 Jo Swinson:** In practical terms, can you give us an idea of the types of differentials you would like to see. What type of tax would you like to see on a short-haul flight internal to the UK vis-à-vis a long-haul flight to Australia?

**Mr Lockley:** We have not done the sums on exactly at which level the tax should be set. In practice, because there is a lot of uncertainty about how consumers respond to price increases, we would recommend an iterative approach, possibly an escalator on tax, but it should be used explicitly to manage demand to levels that keep us within our carbon budget.

**Q43 Chairman:** On this point about passenger duty and taxation and what you were saying about short-haul and long-haul, do you see one of the functions of taxing flights as encouraging modal shift where there are short-haul alternatives?

**Mr Lockley:** Yes, absolutely.

**Q44 Chairman:** On the EU ETS and the inclusion of aviation—a rather important development that is underway—how do you feel the Government is approaching these critical negotiations?

**Mr Lockley:** The Government is being fairly reserved in its position ahead of an Environmental Council Meeting on December 20 which will be a critical meeting. We understand there is a move to get political agreement with the European Parliament. The European Parliament’s vote was significantly stronger than what has come out of the European Commission to date. For instance, they have proposed auctioning 25 per cent allowances, they have proposed reducing the overall cap, and have closed a gateway on access to non-aviation credits which would force the aviation sector to make reductions of its own as well as purely trading emissions by its rate of growth. We would encourage the Government, particularly if they are seeking an early agreement on this, to try to push the ministers more towards the development of the European Parliament’s position, which is significantly more robust than the Commission’s, particularly on the

---

4 December 2007 Mr Simon Bullock, Mr Peter Lockley and Ms Lies Craeynest

---

issue of auctioning. The Government published a report last week which suggested that airlines are likely to pass through something close to 100 per cent of costs on any free permits they receive and will therefore generate windfall profits and, on the Commission's proposal, that could generate windfall profits of up to £4 billion for the airline simply for entering the scheme. That is hardly the reason they should be engaging in the Emissions Trading Scheme.

**Q45 Mr Graham Stuart:** My question has pretty much been answered: the only reason, in effect, the third runway is going ahead is because you think the assumptions underlying the analysis, shifting from the Stern Report to the shadow cost of carbon, have been changed. That is broadly what you are saying, is it not?

**Mr Lockley:** Stern cautions against relying purely on carbon prices in the short term because carbon markets will take decades to develop and in the short term the price would not be a sufficient enough signal to regulate capacity. In my field, aviation, we have an absolutely crystal clear example of that, in that the Government is proposing a third runway at Heathrow, and a key plank of that argument is that the increase in emissions will be offset through trading and the aviation industry has gone so far as to describe it as a "carbon-neutral runway".

**Mr Bullock:** I think all the assumptions in that Heathrow consultation document need a thorough going over. Even at first read some of the assumptions are still pretty heroic. As an example, they assume that the price of a barrel of oil will fall from \$65 in 2006 to \$57 in 2010. Already, in late 2007, it is \$95 a barrel, so they are going in completely the opposite direction at quite some speed.

**Q46 Mr Caton:** I would like to move on to the public service agreements that were published alongside the Comprehensive Spending Review. Two of these focus on the environment. What are your views on the way in which these are framed and the delivery plans and indicators that go along with them?

**Mr Bullock:** Our main concern about the public service agreements—and it is similar to the previous system—is the potential for them to be traded off against each other. It is great that there is a climate change public service agreement, wonderful, but we are concerned, for example, how that will interplay with the transport public service agreement. If you read the transport PSA 5, there is very little mention of climate change impacts other than to say we will balance those. We have seen in the past what happens when environmental issues are balanced in the transport sector: you get an aviation White Paper with double carbon emissions. We are concerned about that, particularly as an indicator of progress on transport is benefit cost ratios for the road schemes, making sure they are all high benefit cost ratios, but if those benefit cost ratios have big biases against the environment, as they do, then that makes it less likely even than currently exists that the transport sector will not be undermining the climate

change public service agreement. That is our main concern. In these difficult times of climate change we should be finding ways of integrating objectives but the PSA system seems to be set up in a way such that it is very difficult not to play them off against each other.

**Q47 Mr Caton:** As well as introducing new PSAs, the Treasury has retired old ones. One PSA that was retired was a joint target for DEFRA, DTI and the Department for Transport to deliver the UK's Kyoto targets and the 2010 domestic target on CO<sub>2</sub>. How would you judge they have delivered against that PSA and, in particular—which ties in with what you were just saying, Mr Bullock—how the Department for Transport has responded?

**Mr Bullock:** I guess the reason they have done that is because they believe that the new PSA covers those points under the Kyoto target. Certainly it was not being delivered, partly for accounting reasons as well. We still find it surprising just how little attention is paid to policy context on international aviation. It is a conjuring trick not to include it and disappointing that that continues.

**Q48 Mr Caton:** A cynic might say that everybody believes we will no longer meet our 2010 domestic target. Would that be one of the reasons why that particular PSA has been retired?

**Mr Bullock:** It could be. If that is the case, then everybody should fight that as robustly as possible. The critical issue with climate change is not so much whether you meet the 2050 target or the 2030 target; it is the cumulative area of the amount of emissions in total over the period. Absolutely essential for meeting that target is what happens in the next ten years, because we already have the highest proportion of emissions there. As an example of that, if the Government had started to cut carbon emissions in 1997, the average cuts it would have needed per year to 2050 would be about two per cent. Already, because emissions have not come down at all in ten years, or they are up if you include aviation, we are looking at five per cent per year cuts from now. If nothing happens for the next two or three years, then we will be looking at seven to eight per cent cuts. For every single year that the Government delays taking action for whatever reason, it makes it far harder for the next government to tackle the issue because the cuts needed will be significantly higher every year. We have to stress that it is not acceptable to meet short-term carbon targets and simply push into the next period.

**Q49 Chairman:** Moving on to the Environmental Transformation Fund, do you have any hints from DEFRA or BERR about what this is going to be spent on?

**Ms Craeynest:** We do have some information. I do have to clarify that that information has been very sporadic and at times even contradictory since it was first announced in March this year. We do know it is an £800 million fund—and, to clarify, I am speaking on the international window, not the domestic

---

4 December 2007 Mr Simon Bullock, Mr Peter Lockley and Ms Lies Craeynest

---

window of the ETF. It will be jointly managed by DFID and DEFRA. It also has an intergovernmental board, including DFID, DEFRA and the Treasury, to manage this fund and to co-ordinate how this fund will be implemented. We also know that the Government wants to spend this fund mainly on forestry adaptation and clean energy. Now, the very strong caveat of this fund is that it will be capital money, meaning that it is not resource money but needs to be invested in a way that government can have returns out of it, which means that the fund will be implemented as loans. A further issue is that it will also count towards the 0.7 per cent Official Development Assistance.

**Q50 Chairman:** I am not quite clear: does that mean it is new money or is it moving money around?

**Ms Craeynest:** It is obviously quite hard to see but we think it is new money. It was announced as new money. It comes from the overall Government budget. It is a new budget line. It has not displaced the domestic window but it has come on top of the existing window. At the same time, however, we know that it is counted towards the 0.7 per cent commitment, which means that this money was already committed for poverty reduction, and to some extent it takes money from that commitment and puts it towards climate change related funding, even if it is in the international development context, so we are quite concerned around double counting. As NGOs we feel very strongly that climate change related funding should not be counted towards the 0.7 per cent commitment.

**Q51 Chairman:** What are the ways in which you think it should be used rather than how it may be used? What would your priorities be?

**Ms Craeynest:** Broadly, our priorities agree with what the Government is setting out in terms of what the big challenges are in the international development context. We agree that clean energy and a move towards low carbon energy is extremely important. Sustainable forestry management for many countries is the key issue in how to take part in the future in fighting climate change, and adaptation, of course, because the impact will be the strongest in the least developed countries. The problem, though, is the constraints with which this fund comes: it is capital money, so it will be loans. We feel very strongly that loans are only appropriate in the context of clean energy. It is not appropriate for forestry and adaptation, because these are entirely different sectors and they are not money-generating sectors, so it is very hard for governments to be able to repay loans out of these sectors. Our further concerns are that, even if we agree that clean energy is the right sector to use loans, there is at the moment very little definition about what that clean energy might mean. We also know that the Government wants to set up a new fund in the World Bank to manage the ETF and the World Bank is including in its definition of clean energy large hydropower dams which do not abide to the World Commission on dams, or biofuels without any sustainability criteria. We are concerned that the

ETF might contribute to such technologies which have negative social environmental impacts. Further, there is also the very setting up of this new fund with those three key sectors. We are concerned that this is setting up a new funding mechanism which could potentially either duplicate or conflict with some of the mechanisms and institutions that have been set up through international environmental treaties and conventions, and, because the Government wants to attract new donors and other donors into this fund, could be a unilateral setting up of a new fund to manage some of these very critical issues. Lastly, to reiterate the point around ODA, climate change funding is mainly compensation funding for actions that we have carried out here in industrialised countries, so we do not feel that money should be taken out of the poverty reduction budget to address those issues. We think that more money is needed basically; not taking away money out of existing commitments.

**Q52 Chairman:** We have just been taking evidence on biofuels. You are saying that it is possible that ETF money might find its way into biofuel schemes which do not meet sustainability criteria.

**Ms Craeynest:** We do not know at this stage whether that would be the case. We are calling to ensure that there are very strong social and environmental safeguards so that this would not happen, that criteria are in place. The UK Government is very keen to ensure that any programmes funded are country led, country-proposed programmes. This is where some of the tension occurs. For example, some governments might be very keen to focus mainly on the economic growth that could be achieved through biofuels and that is where the tension arises in terms of what these will achieve. This is what we would be very keen on stressing, to ensure safeguards are in place.

**Q53 Mr Caton:** Continuing on the international element of the ETF, WWF have had some critical things to say about the way in which the Congo Forest Conservation Initiative is being set up. Could you expand on what your reservations are on that?

**Ms Craeynest:** We think that there is quite a lot more information available on the Congo Basin fund as compared to the rest of the ETF. There have been more meetings and more briefings, locally as well as here, in which WWF has been involved. We very much support the Congo Basin fund, firstly because it is a grant and it is not a loan—that has already been guaranteed. It sits within the ETF but it takes from the grant element of the ETF not from the loan side, so we support that very strongly. We also support the broader measures to reduce poverty by preventing deforestation and ensuring regeneration of the Congo Basin fund. Some of the reservations we do have in this regard are that, while we welcome that Government is trying to include as many stakeholders as possible in this fund, at the same time this has led to what we can see now as a very heavy governance structure and we are concerned about some of the administrative costs and the implications of this. We would like to call on

---

4 December 2007 Mr Simon Bullock, Mr Peter Lockley and Ms Lies Craeynest

---

government to ensure that there is an appropriate balance between involving stakeholders within the governance and making sure that the fund can deliver in an effective way.

**Q54 Mr Caton:** How have our Government, the governments in the Congo area and community groups and NGOs working in that area reacted to your constructive criticisms?

**Ms Craeynest:** This is a criticism that we know has come from knowledge generated in WWF locally, working in the Congo. There is concern. The World Bank is proposed to be involved, the African Development Bank is proposed to be involved, and a range of other organisations as well, and this is a concern that is shared. It has been discussed in meetings. Our call to the government is to be very aware of this and to try to maintain a healthy balance. We agree that stakeholders need to be involved and, at the same time, we want to ensure that there is a streamlined governance system for this. I am not an expert on the forestry sector but I could provide some more information on that after this meeting if needed.

**Chairman:** That would be very useful.

**Q55 Mr Graham Stuart:** The large majority of this fund is going to be in loan form and yet the expenditure is going to be counted towards the 0.7 per cent GNI target. Over time, presumably, the repayments are going to come back in. Are those then going to detract from the 0.7 per cent GNI target? Might we end up going in the wrong direction?

My colleagues from the development community probably would answer that better. The aim is for the repayments to happen in the fund itself, so the fund would continue to exist. It would not come back to the British Government, it would continue to exist within the revolving fund that is meant to be set up in the World Bank. There is an issue with the grant element and the repayment element of the loans which then need to be subtracted from your commitment, but it would not count negatively against the 0.7 per cent. My colleague Sarah Mulley from the UK Aid Network can explain this in much more detail. It is eligible to count as ODA.

**Q56 Mr Graham Stuart:** In that case it will be a one-off expenditure, will it not, so it will not help long term unless it is increased?

**Ms Craeynest:** It is meant to set up over three years. It is £800 million over three years, with £100 in the first year, £200 in the second year and £500 in the third year, so it would count towards payments on a yearly basis, yes.

**Q57 Jo Swinson:** But when the money gets paid back to the fund and the other projects are supported with loans, that could not be counted again towards the flexible target because that is the same initial bit of money, so is there a danger that could then be counted twice towards the 0.7 per cent?

**Ms Craeynest:** I cannot answer that question. I can come back to you on that.

**Q58 Chairman:** Perhaps your colleague might send us a note in response to that. It is an interesting area which is worth covering.

**Ms Craeynest:** My sense is that it would be possible.

**Q59 Dr Turner:** Six years ago, the then Secretary of State for the DTI identified the need to look at the productivity not just in the narrow terms that the Treasury still looks at it, which is labour productivity, but to incorporate resource productivity. This is an approach which has not been adopted by the Treasury. Why do you think this is? What benefits do you think it might have towards government policy on climate change if the Government were to incorporate resource productivity into their measures of productivity?

**Mr Bullock:** I agree with you entirely that it is an important omission and it is surprising that it is not part of the Government's set of policies. Perhaps the reason was that resource productivity stuff in DTI was part of its sustainable development strategy, which I suspect was never treated as seriously as its other sets of policies. Historically, perhaps, as well, energy and resources being comparatively cheap and easy to exploit, then the focus was on labour productivity and probably quite rightly. Things are now obviously changing. Climate change, in particular, but lots of other issues like waste and resources have put environmental resource use and energy use right back on the political agenda, so it is very surprising that the public service agreement on productivity does not include anything beyond the continued narrow focus on labour productivity. I would think the larger reason for that is that climate change and other environmental issues are still seen predominantly as an environmental issue, not one that is a proper economic issue for discussion. It should change. Stern is very clear on it. Hopefully that will, in time, trickle through, but, you are right, it would make a big difference—and to businesses/business opportunities as well. If there were a lot of government policies and indicators and support and a high level commitment to saying, "We have to tackle energy productivity and resource productivity," it would make it more likely to happen.

**Q60 Dr Turner:** It is time for a wake-up call to the Treasury, then.

**Mr Bullock:** Yes.

**Q61 Chairman:** Is there any aspect of the Pre-Budget Report that we ought to be addressing when we come to report other than those we have covered this morning?

**Mr Bullock:** The first one is on the environmental tax reform agenda. The Government over the last ten years has done some good environmental tax initiatives but the main problem has been a selling job because it has not made the link between tax rises on the environmental pollutants and tax cuts elsewhere. This, as you know, is the "shifting the burden of tax commitment" that they said in 1997 and repeated every single year since, and still environmental tax is falling as a proportion of total

tax. Certain elements of the press are always stigmatising environmental taxes as stealth taxes and it will be politically difficult to get them unless they are explicitly linked to tax cuts elsewhere. The Green Tax Commission set itself up a month ago and made an opinion poll which asked: “If you increased green taxes and used those taxes to cut other taxes, would you support it?” and 77 per cent of people said yes and nine per cent said no. If the Government were to commit to their statement of intent and deliver its strategy to increase the taxes on aviation, road fuel duty, waste, and the rest of it, explicitly linking it with cuts in things like VAT, national insurance contributions, income tax—taxing pollution not people—it would make it far more politically saleable. That is what we would like to see. The second big element is that people these days are very “up” for doing things on climate change. It is often very difficult and expensive to do anything about it. They do not have the money to buy double glazing and it is difficult to find the right contractors or whatever. The Government needs to put incentives in place, financial incentives, to make it cheaper for people to go green. I think that could be helped by the idea that it is always stick and no carrot. If you gave council tax rebates to people for energy efficiency measures and if you gave stamp duty measure rebates when they bought their homes and did energy efficiency measures, rather than being the pittance that the Government has for these funds at the moment, if they put some serious money into that it would pay itself off in no time and show the Government is leading on climate change. It would deliver jobs, economic benefits. It is a quadruple win. It is amazing that they do not grasp that opportunity.

**Q62 Dr Turner:** How do we compare with our EU neighbours, not only in terms of resource productivity but to the extent that other EU governments take it into account?

**Mr Bullock:** I would have to send you a note on that. I think the EU is leading on it more than national governments through its resource use strategy. I would imagine that, as usual, it is the Scandinavian countries and Holland and countries like which are doing better, but that is just a guess.

**Q63 Dr Turner:** You would expect that.

**Mr Bullock:** Yes.

**Q64 Mr Chaytor:** Of all the measures in this year’s PBR, could I ask each of you to say which has the greatest potential to make a serious impact on greenhouse gas emissions reductions.

**Mr Lockley:** My specialist field is aviation and I am not *au fait* with the PBR, so I might leave that to Simon.

**Q65 Mr Chaytor:** I am trying to get you to say that you welcome what the Government has done and what the effects will be, rather than just criticising the limited measures there have been.

**Mr Bullock:** It is thin pickings but I think the Environmental Transformation Fund has the potential to be good. I think it needs a greater level of funding and to be clear on what it is going to be spent on. We do not have the detail of how it is going to be spent but, if it is done properly, that is the sort of thing the Stern Review said was important, providing more funds for deployment of R&D and new technologies. With the caveat that it is done in the right way, that could have a good effect.

**Q66 Mr Chaytor:** Given the fund can be used for projects overseas, avoiding deforestation, for example, as against investment in R&D within the UK, which is more likely to have a global impact: kick-starting a programme of grant aid for avoiding deforestation in the Congo Basin or investing more in new forms of renewable energy within the UK? How would you see the balance of the distribution of the funds within the overall package?

**Ms Craeynest:** It is difficult to comment on the balance. We know of the balance now that £340 million is domestic and £800 million is international and there is quite a clear split between those. From what I understand, both issues are extremely important. We have the issue of consumption and demand here in the industrialised countries and at the same time on a global scale there is a very strong need to help move developing countries very quickly to low carbon economies, helping sustainable forestry projects and programmes being put in place and helping adaptation. In terms of where the biggest impact can be made, as I said before, because of the loan content of the ETF, we feel it should focus on clean energy and it should focus on helping economies to move to low carbon paths, and that, potentially, could have the biggest impacts within the current constraints. This is not saying that emissions from forestation degradation are not important. On the contrary, we feel they are very much up there with focusing on low carbon economies but they do not fit within the current constraints of the ETF. If the Government comes forward with more money which does not have these constraints, we think these are very legitimate areas. Emissions from forestry come to 20 per cent of global emissions, so they are very, very important. This issue is around the scale of funding and also around the fact that £800 million is a very substantial amount. This is the first time that a government has put forward so much money. It is definitely not the first fund—and this is one of the things I also wanted to explain. We did a quick trawl of the funds that had been launched over the past year and we came across nine funds. Europeans have launched a Global Climate Change Alliance, the Australians have funded a Climate Change Forest Initiative, so funds are popping up across the world in response to climate change. We feel that £800 million is a substantial amount, it could make a massive impact, but it needs to be targeted, it needs to be realistic to what it can achieve with its loan content. With all the caveats which I mentioned before around ODA, we do welcome the fund. One of the issues is that it goes towards the World Bank

---

4 December 2007 Mr Simon Bullock, Mr Peter Lockley and Ms Lies Craeynest

---

to be administered and we want to make sure that the governance of that fund will deliver benefits, that the mechanisms put in place do not obstruct or duplicate or conflict with internationally existing mechanisms. If we get those things right, I think this fund is really to be welcomed and could make a potential impact on global carbon emissions.

**Q67 Mr Chaytor:** In terms of the domestic element of the fund, would you support further research and development on biofuels or do you think that is a dead-end?

**Ms Craeynest:** That is not a question I can answer. I work with international development and the environment.

**Mr Bullock:** At the moment our view is that the sustainability criteria have to be sorted out first before more support is given to an industry which could have very negative effects as well as positive ones. I will send you a note on that.<sup>1</sup>

**Chairman:** Thank you very much indeed for coming in.

---

<sup>1</sup> See Ev 84

---

### Supplementary memorandum submitted by WWF

#### ENVIRONMENTAL TRANSFORMATION FUND—ODA, LOAN STRUCTURE, AND ACCOUNTING

A question was raised by Martin Horwood MP and Jo Swinson MP regarding whether repayments of the loans from the ETF would come back to the UK, or remain in the World Bank trust fund (currently called TFSD—Transformation Fund for Sustainable Development), and whether money lent using those repayments would count again as UK Official Development Assistance (ODA) expenditure. After consultation with our colleagues in the UK Aid Network, we believe that repayments of loans given through the trust fund will be repaid into the trust fund, and not to the UK itself. This will replenish the fund and provide finance for future loans. It is less clear how the repayments and future re-lending would be accounted for in ODA terms. Normally, when loans are given out, they are counted as ODA. As repayments of the loans are made, these amounts are subtracted from ODA.

However, as it is unusual for the UK to provide ODA for loans, it is not clear to us how ODA accounting will work in this instance, considering that the loans will be provided by the trust fund, and will be repaid into the trust fund rather than to the UK. The fact that the loans will be re-disbursed is likely to mean that repayments are not subtracted from ODA figures. WWF recommends that the Committee asks the government to clarify how ODA accounting will work as more details about the financial structure of the fund become known.

*December 2007*

---

**Tuesday 11 December 2007**

Members present

Mr Tim Yeo, in the Chair

Colin Challen  
Mr David Chaytor  
Martin Horwood  
Mark Lazarowicz

Mr Graham Stuart  
Jo Swinson  
Dr Desmond Turner  
Joan Walley

---

**Memorandum submitted by the Carbon Capture and Storage Association**

**INTRODUCTION**

The Carbon Capture and Storage Association welcomes this opportunity to respond to the Committee's inquiry into the 2007 Pre-Budget Report and Comprehensive Spending Review. We welcome the release of the 2007 Pre-Budget Report and its associated documents, in particular the simultaneous BERR announcement on further details of the UK CCS Competition to build a demonstration CCS project, and we would like to express our views on this aspect of the Committee's Inquiry.

The CCSA brings together a wide range of specialist companies across the spectrum of CCS technology, as well as a variety of support services to the energy sector. The Association exists to represent the interests of its members in promoting the business of CCS and to assist policy developments in the UK and the EU towards a long term regulatory framework for CCS, as a means of abating carbon dioxide emissions.

The Association benefits from a good relationship with UK Government in developing regulation for CCS and we are pleased with the current rate of progress in this area. That the Government has advanced the Competition to build a UK demonstration project should be applauded. However, in the view of the CCSA progress needs to quicken if we are to meet the emissions reductions targets specified by the UK Government. The UK has taken bold steps in terms of CCS policy development and this presents an opportunity for the UK to lead in a CCS world market, similar to the current UK lead on emissions trading.

**2007 PRE-BUDGET REPORT: GOVERNMENT ANNOUNCEMENT ON THE COMPETITION TO DESIGN AND BUILD A PILOT CARBON CAPTURE AND STORAGE PROJECT**

CCS is a process which enables CO<sub>2</sub> emissions to be unambiguously reduced through capture from large scale energy conversion and industrial processes, transported and injected into geological structures for secure storage. CCS can remove approximately 90% of the carbon dioxide associated with burning fossil fuels and is suited to all fossil energy conversion including coal, gas and petroleum coke, as well as a range of industrial sectors.

CCS is urgently needed as the world will continue to be dependent on reliable fossil energy for the foreseeable future and demand for energy is forecast to increase significantly through a combination of economic development and escalating energy consumption in some of the populous nations of the developing world, as well as a need for new and replacement generation capacity throughout the world. Both the European Commission in the 2007 Spring Council<sup>1</sup> and the UK Government<sup>2</sup> have committed to, at least, a target of 60% reduction of targeted GHG emissions from the 1990 base by 2050 with commensurate interim targets. The UK target refers to a reduction of between 26 and 32% by 2020. This means that UK emissions in 2020 must be between 84 and 131mtpa less than 2005 emissions and in 2050 must be 346mtpa less than 2005 emissions. This translates to an annual successive reduction of 8mtpa. The CCSA believes that this cannot be achieved without decarbonisation of the entire UK power generation fleet partially achieved through CCS. While there is a vision that over the next decades, the use of carbon intensive fossil fuels will be phased out as new clean and sustainable energy technologies are developed, it is clear that in the meantime, CCS remains the only viable option for meeting the energy needs of UK and Europe whilst ensuring the associated CO<sub>2</sub> emissions are not released to the atmosphere. This was emphasised in the UK Governments *Stern Review; The Economics of Climate Change*, published in October 2006.

In contrast with many other low-carbon technology options, CCS technologies are well developed and ready to be demonstrated and deployed. The different types of capture technology; pre- and post-combustion as well as oxyfuel have each been proven to differing degrees. As with all new technologies, early CCS projects will suffer from "first mover" disadvantages, such as disproportionately high costs and risks, as well as the necessity to build new infrastructure to enable deployment at scale. Developers are unlikely

---

<sup>1</sup> *Presidency Conclusions from the Brussels European Council 8-9 March 2007*, Council of the European Union, Brussels, May 2007.

<sup>2</sup> *UK Government Climate Change [HL] Bill—2007-08*.

to invest in these early projects without some significant incentive. The CCSA recognises that early incentives will differ from the appropriate incentives once CCS costs are reduced through the learning from the early stage projects. However the incentive required for each project to move forward must be of a long term and stable nature to enable and ensure roll-out of CCS on a much wider scale. The CCSA would like to caution against the introduction of support mechanisms that fall short of minimum investment thresholds with consequent delays in tackling emissions reduction.

The CCS community has been encouraged by the leadership taken by the UK Government in the matter of CCS and in particular recognising the need to support early commercial scale demonstrations of the technology. While the CCS community was heartened by plans to provide policy support, the rate of progress of defining the policy in the UK has been slower than envisaged and seems disproportionately slow compared to the urgent need to reduce GHG emissions and the ability and willingness of industry to act. Nevertheless, industry has responded very positively over the past 18 months by proposing 11 power projects that could incorporate CCS. Five of these projects would use pre-combustion capture technology, the other six are new proposals for conventional coal fired power plant likely to be needed to maintain UK electricity supply. These six plants could potentially fit post-combustion capture.

In the Government's announcement, it was specified that the project should "demonstrate post-combustion CCS on a coal-fired power station, with CO<sub>2</sub> stored offshore" and that this project should capture 90% of "the CO<sub>2</sub> emitted by the equivalent of 300 MW generating capacity".<sup>3</sup> This technology has been chosen because of its relevance to the coal fired power stations being built around the world, particularly in China and India. The Government has hereby pre-selected a specific technology, precluding the alternatives from taking part in the Competition, and severely jeopardising the ability of these projects to move forward. This eliminates the ability of the market to identify the most cost-effective and relevant technology closest to deployment. It will also limit the potential of UK industry in a potentially valuable near term world market for new plant that the industry is well placed to deliver.

The Government also specified that "the full CCS chain" should be demonstrated by 2014 or as soon as possible thereafter.<sup>4</sup> This pace is too slow and represents an unnecessary further delay in the deployment of CCS.

The announcement has also given no indication that the Government is committed to more than one demonstration project and by selecting a project size of 300 MW, the project will commit a relatively small amount of CO<sub>2</sub> for storage in relation to a full scale power plant, and will be faced with a comparatively high cost burden in terms of new transport and storage infrastructure.

A commitment towards one modestly sized project is not proportionate to the UK's domestic climate change goal to reduce CO<sub>2</sub> by 60% by 2050. In addition portfolio generators will need to build new and replacement coal capacity for the benefit of their business as well as for the benefit of the UK's security of supply (the UK will need to build replacement capacity of around 20 GW by 2020).<sup>5</sup> Without further support, these coal plants will be built capture ready, but none the less unabated and will represent a serious risk of further increases to UK CO<sub>2</sub> emissions. The alternative is increasing dependence on gas with associated security of supply issues. It is therefore imperative that the Government sets a clear path towards incentivising a deployment programme of commercial-scale CCS projects.

A UK demonstration of a CCS project must also be seen in the context of international progress on this technology. The EU Flagship Programme aims to build 10–12 CCS projects by 2015,<sup>6</sup> and at present, few countries aside from the UK have come forward with proposals for projects or policy development in line with the EU ambition. Indeed, other EU Member States may not be in as fortunate a position as the UK in terms of storage capacity, and building early CCS projects in these countries will therefore not be practical. It would seem logical that the UK should be in a position to fulfil a proportion of the EU aspiration; however with the announcement of only one demonstration project to be built by 2014, it is unlikely that additional projects will be able to meet the 2015 EU target. The UK, due to the large storage capacity under the North Sea, has an opportunity and a responsibility to take a strong leadership role, as this potential CO<sub>2</sub> storage capacity is of great importance to Europe in helping to meet its emissions reduction target. The UK Government should work closely with the EU to drive the EU Flagship Programme and encourage other member states to support and build CCS power projects as part of the Flagship Programme. The Northern and Southern North Sea has the potential to store much of the emissions from Europe.

When also considering that the aim of this Competition is to be complementary to other demonstration programmes around the world and to show leadership to developing countries, it must be seriously questioned whether this Competition is ambitious enough in terms of scope, size and timescale. However, out of all the EU Member States the UK is the only one to currently offer support for CCS and this must be commended.

<sup>3</sup> *CCS demonstrator will put UK ahead in global race for clean coal*, BERR News Release, 9 October 2007.

<sup>4</sup> *CCS demonstrator will put UK ahead in global race for clean coal*, BERR News Release, 9 October 2007.

<sup>5</sup> *Meeting the Energy Challenge—A White Paper on Energy*, DTI May 2007.

<sup>6</sup> *Presidency Conclusions from the Brussels European Council 8–9 March 2007*, Council of the European Union, Brussels, May 2007 and *The EU Flagship Programme—The key to making CO<sub>2</sub> Capture and Storage (CCS) commercially viable by 2020*, European Technology Platform for Zero Emission Fossil Fuel Power Plants (ZEP), October 2007.

## CONCLUSION

As the developed and developing countries show little sign of reducing their dependence on fossil fuels and continue to emit greenhouse gases into the atmosphere, CCS offers an available, reliable and relatively simple solution to the UK, with the potential to be exported elsewhere to make deep reductions in CO<sub>2</sub> emissions over the next few decades allied to international business opportunities. Although the UK has shown tremendous leadership in developing CCS policy, progress on incentives to encourage investment in early CCS projects has so far not followed at the same pace. To retain a leadership role, the UK urgently needs to develop such incentives, allied to a CCS deployment programme that engages European support and enables economies of scale for UK CO<sub>2</sub> reduction.

*The view expressed in this paper cannot be taken to represent the views of all members of the CCSA. However, they do reflect a general consensus within the Association.*

23 November 2007

---

## Memorandum submitted by Centrica Energy

### INTRODUCTION

1. Centrica welcomes the opportunity to respond to the Environmental Audit Committee's inquiry on the 2007 Pre-Budget Report and Comprehensive Spending review. Our response focuses on the Government's current environmental fiscal strategy as it relates to both lower-carbon generation and energy efficiency.

2. Centrica believes that environmental fiscal strategy can play a significant role in promoting a more sustainable society by sending appropriate market signals to influence investment decisions and behavioural change. It is important, however, that the practical limitations of fiscal drivers to change are understood, and that environmental fiscal measures work together in support of specific policy aims, and do not promote contradictory policy outcomes.

3. Whilst we recognise the significant steps that have been taken in recent years to utilise fiscal strategy in support of environmental goals, we believe that there is room for further improvement. It is also vital that such measures are themselves stable and sufficiently long-term in nature in order to provide the necessary long-term investment signals that are needed in many cases.

### TACKLING CLIMATE CHANGE, CHALLENGING TARGETS

4. We recognise that climate change is the biggest single environmental issue the world has to face both today and in the future. We note the assessment highlighted in the Stern Review that 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 ppm CO<sub>2</sub> equivalent. The implication of that is that stabilisation in this range requires global emissions to be at least 25% below current levels by 2050. We accept the validity of this argument. Further stabilising at or below 550ppm CO<sub>2</sub> would require global emissions to peak in the next 10–20 years and then fall at a rate of at least 1–3% per year.

5. Our view is that climate change is happening, and that human activity is contributing to it, so we therefore need to develop policies and action plans aimed at first slowing and, eventually, stabilising the processes which are causing the change. Whilst it may be difficult to achieve, we consider that a gradual slowing and then reduction of global greenhouse gas emissions is possible. We are committed to playing our part in that process, and to actively supporting Government policy and action plans aimed to achieve this.

6. As a leading energy company we are taking steps to help reduce our overall impact on climate change both directly through our own business activities, most notably by decarbonising our generation, and also indirectly through supply chain management and by helping our customers to use energy more efficiently.

7. We believe that the shift to a low-carbon economy will create significant business opportunities and that the market for low-carbon technologies is potentially vast.

8. In order to incentivise the necessary step-change in investment in low-carbon goods and services, a clear policy framework that establishes a long-term carbon price and therefore a long-term value in reducing emissions is required, together with specific support mechanisms were necessary.

9. Clear and binding emission reduction targets in the EU, and the UK, will underpin this framework by giving industry the confidence to invest in more expensive lower-carbon technologies and services. We therefore welcome the binding and unilateral EU target to cut greenhouse gases by 20% by 2020, and fully support the EU objective of a 30% reduction by the same year if international agreement can be found. We also support the introduction of legally binding targets in the forthcoming Climate Change Bill.

10. We also support the EU's objective of achieving significantly higher levels of renewable energy in the EU overall energy mix. We are concerned, however, that the 20% target is extremely challenging in the timescale identified. Consideration needs to be given to the capacity of both industry and the planning system to deliver, and the integrity of grid networks.

11. If a policy of high levels of renewables across Europe is pursued, it will be important to understand the interaction of policy mechanisms designed to achieve this with the EU ETS. In particular, we would be keen to ensure that carbon savings achieved through higher levels of renewable energy do not undermine carbon savings that can be made through investments in non-renewable but low-carbon technologies including clean coal and microCHP boilers.

12. Challenging targets are necessary, although not sufficient, to give industry confidence to invest in low and zero carbon technologies. What underpins that confidence going forward will be a policy and incentive environment that allows the investment to take place to meet targets, coupled with the removal of regulatory barriers including a simplification of planning legislation.

13. In order to reach significantly higher renewable energy targets in the UK, as well as greenhouse gas reductions, government will need to achieve a step-change in its climate change policy framework. We believe that given the right framework, UK industry will make the necessary investment that will enable this country to play a leading role in deploying to a global low-carbon future.

#### IMPLEMENTING THE STERN FRAMEWORK: CARBON PRICING

14. We believe that the free allocation of allowances to sectors which are able to recover the cost of allowances through their received price is the EU Emission Trading Scheme's fundamental flaw, and have strongly argued to mitigate the negative competitive distortions caused by this. There is clear evidence that the full opportunity cost of carbon established by the EU ETS is passed through to the price power generators receive via the wholesale market, and we would therefore support full auctioning of allowances to this sector at least.

15. Centrica recognises that some free allocation may be necessary in the short-term to those sectors facing international competition that is not similarly carbon-constrained, in order to prevent competitive distortions. If and when we progress to a future in which all industry globally is similarly carbon-constrained, the rationale for free allocation will be removed.

16. In the first two phases of the EU ETS, non-free allocation of allowances by Member States is restricted to a maximum of just 5% and 10% respectively. No auctioning was undertaken by the UK government in Phase I and an auction level of 7% has been announced for Phase II, which will be taken from the free allocation that would otherwise go to the electricity generation sector.

17. As this sector faces no international competition and carbon costs can be, and are, recouped through the received price, we agree that this 7% should be taken from the generation sector. We would like to see the maximum 10% auctioned, and, ideally, a significant increase in the proportion of auctioning in Phase II allowed, although we recognise that this would have required EU agreement.

18. From 1 January 2013, we strongly support the elimination of any free allocation across the EU to the power generation sector. In the absence of full auctioning across the Scheme, we would like to see the EU move to instructing a minimum level of auctioning in all Member States in Phase III, and the UK government targeting auctioned allowances on the power generation sector.

19. Centrica understands and accepts that a balance needs to be struck between cutting carbon emissions at home and abroad, and that the UK needs to show some leadership in finding real carbon cuts at home. Project credits, however, have an important role to play in delivering global emission cuts which should be recognised.

20. Ideally, directly linking the EU ETS with other emission schemes outside the EU will help to deliver emission reductions at the lowest cost to the global economy, and will aid development of a more liquid market. This should only happen, however, when other schemes are established, and when the principles behind those schemes as well as their operation allow a direct linking.

21. In the absence of such direct linkages, project credits from the CDM and JI markets can act as important linking mechanisms and help to ensure that the EU ETS is not operating in a vacuum from the global economy.

22. We believe that projects developed under the Clean Development Mechanism deliver real and enduring carbon emission reductions in developing countries which currently do not have any emission reduction targets and, in the absence of legally-binding targets, open a pathway to Kyoto for many developing countries.

23. There is also substantial potential for technology transfer from these projects to other countries whether directly covered by the EU ETS or not. Allowing the use of credits for compliance under the EU ETS supports these project streams, supports innovation in UK business, and allows reductions to be made at lowest cost.

24. The UK is emerging as a market leader in the financing of these kinds of projects. Imposing low limits on the use of credits within the UK damages the ability of UK companies to invest in emission-reducing projects in the developing world, and might check the development of this important new market.

25. To protect the credibility of the EUETS and other international emissions trading, it is imperative that projects are subject to rigorous accreditation to ensure minimum quality standards are met. Within the CDM this role is carried out by the UNFCCC's CDM Executive Board and we are confident that this system is providing the necessary robust and rigorous assessments of proposed projects.

26. Where practical and material we are supportive of broadening the scheme to include other sectors and gases. It is vital, however, that the increased level of allowances as a result of broadening the scheme is robustly determined to ensure that the over-allocation seen in the first Phase is not repeated. Consideration should be given to running parallel schemes for new sectors for an initial period.

27. Significant harmonisation across the EU would help to remove the potential for any sector within an individual country to become uncompetitive with respect to its EU counterparts. Potential areas include accurate allocation, use of project credits, sector coverage and key definitions including that of installations covered by the scheme.

## IMPLEMENTING THE STERN FRAMEWORK: TECHNOLOGY POLICY

### *Carbon Capture and Storage*

28. The EU has adopted an objective to stabilise global temperatures at 2° above the pre-industrial average. If this can be achieved, significant impacts to both biodiversity and human society can still be expected. Above this rate, there is a recognised serious risk of runaway climate change. There is therefore an imperative to bring forward lower-emitting generation as quickly as possible.

29. In parallel, the UK is facing a significant power generation gap in the next 15 years. Whilst industry will respond with new generation, the government policy and regulatory framework will shape the type of investments made. In the absence of clear direction, and as new nuclear can not be operational in time to meet this generation gap due to its long build-cycle, new generation will be heavily biased towards gas and unabated coal.

30. The alternative is to allow unabated coal plan to be built in the UK, with the associated significant carbon emissions until such time as the technology is ready, and it becomes economic. Current estimates are that this would imply a sustained carbon price of around £50 a tonne, more than double current EUETS prices. Giving the go-ahead to build new coal generation without any associated carbon reductions through carbon capture and storage will increase national carbon emissions.

31. We believe new coal generation should be built with pre-combustion technology, committing to carbon capture from the outset. This will give the best opportunity to make an immediate impact on UK emissions through encouraging the early deployment of cleaner generation to fill the expected generation gap over the next decade. In short, it is difficult to see how carbon reduction targets can be met without the early deployment of carbon capture and storage.

32. As a result of government rhetoric around ensuring the UK is a global leader on climate change, as well as a stated desire for UK industry to develop carbon capture and storage technologies, industry responded extremely positively with a number of proposed projects. We believe around 3GW of IGCC with CCS was targeted for operation by 2014.

33. Whilst pre-combustion capture technology is available for deployment now in bulk, post-combustion capture development is in its infancy and is several years away from commercial development. The largest post-combustion plant worldwide is under 1/10th commercial size.

34. In that context, we were concerned at the decision announced on the 9 October this year to exclude pre-combustion technology projects from the Government's forthcoming UK CCS competition in favour of post-combustion projects only.

35. Excluding pre-combustion capture technology in favour of post-combustion capture technology means bypassing a cheaper method for capturing carbon in favour of a technology largely used to retrofit existing coal plant. Many existing UK coal stations will be closed before the technology can be developed to retrofit. Whilst we can understand the decision in an international context we consider that there is a limited role for post-combustion technology in the UK.

36. Global deployment of coal-fired power plant in the next decade meanwhile will be substantial. Establishing pre-combustion IGCC as a commercial reality in the UK, therefore, which can then be exported, can make an enormous and rapid impact on carbon abatement worldwide.

37. Given the not insignificant number of unabated coal power stations that will continue to operate worldwide over the coming decades, we accept an important role for post-combustion technology and support its development. If the UK government is serious about maintaining the UK's strong leadership role in climate change, we consider that there is a strong case for supporting both technologies to full deployment. That would give the UK the best opportunity to become a world leader in CCS technology whilst meeting domestic and international climate change targets.

38. Centrica does not believe that either pre or post-combustion technologies will be commercially viable in the short to medium term without government support.

39. In the longer-term, we believe that the primary support mechanism for generation with carbon capture and storage should be a carbon price established through the EUETS. Given the political uncertainty surrounding the scheme going forward, and the current Phase II price for carbon, a bridging mechanism may well be required in order to bring projects forward sooner rather than later. In addition, although the individual components of CCS are not new, further support is likely to be needed to reflect first-of-kind integration risks.

40. These mechanisms could include bringing CCS into a properly functioning EUETS, which we are expecting for Phase III of the scheme, enhanced capital allowances, perhaps similar to those provided to good quality CHP, or direct funding support, possibly from the auctioning of emission allowances or the Environmental Transformation Fund, or allowing electricity generated to be eligible for LECs.

41. It is important to note that the ongoing higher-than-unabated-coal plant costs may be best supported by a relatively modest ongoing mechanism rather than large up-front capital grants. In this instance the project developer will continue to take technology risk whilst the support mechanism provides a bottom-stop to carbon market price risk.

42. Centrica is working with Progressive Energy to develop an 850MW (nominal) Integrated Gasification Combined Cycle (IGCC) coal fired power station with pre-combustion CO<sub>2</sub> capture on a brownfield site on Teesside. We selected to develop IGCC technology due to its superior economic and technical performance when integrated with CCS. We have named the proposed project Eston Grange.

43. If built, the combined plant will be the UK's lowest emitting fossil fuelled power station, capturing around 85% of the CO<sub>2</sub> emissions from the power station, with a full long term storage solution in the North Sea. It would be nearly three times as clean as existing gas fired power stations, and around six times cleaner than conventional coal fired plants.

44. This innovative project would be the first large scale IGCC power station with CCS in the world. We are intending to create a new CO<sub>2</sub> disposal network as part of the project which will eventually enable the disposal of CO<sub>2</sub> from other process and power plants in Teesside and the North East, thus creating a unique infrastructure having wider benefits to the area. The plant could also produce de-carbonised hydrogen in bulk, providing a potential source for fuel cell and other hydrogen initiatives planned for the area.

45. The Eston Grange power project is being developed within a special purpose company; Coastal Energy Ltd. Coastal Energy is a joint venture between Centrica plc (85%) and Progressive Energy Ltd (15%). Centrica is a major UK energy supply company better known through our British Gas brand, and Progressive are a specialist power station developer. Ultimately the power station will be fully owned and operated by Centrica, and will provide electricity to our British Gas residential and commercial customers. The CO<sub>2</sub> disposal network is being developed by COOTS Ltd, which is a 55-45 Centrica/Progressive Energy joint venture.

46. We are committed to undertaking all the necessary steps to enable a full investment decision to be made around the end of 2008, which, if positive, would allow completion and first electricity some time between 2012-14. Full economic feasibility work and engineering design work is scheduled to take place over the coming months, and we are detailing the purchase contract for the land involved. We are working with our environmental consultants on an Environmental Impact Assessment, and a planning application to develop the project site on the South Bank of the River Tees could come early in 2008. Provided the project proves to be commercially and technically viable, we believe these measures will allow us to make an investment decision with limited delay.

47. We are currently considering the full implications of the government's decision to restrict the UK CCS competition to post-combustion technologies. We are also considering in parallel the potential for alternative transition support mechanisms to recognise first-of-kind risks and the ongoing higher-than-unabated-coal costs of generating, capturing, transferring and storing the carbon.

48. In order to progress our project further we are looking for a clear statement of intent from Government that the necessary support mechanisms will be forthcoming, although the mechanisms themselves would not need to be in place until a construction decision was made some time later.

## IMPLEMENTING THE STERN FRAMEWORK: TECHNOLOGY POLICY

### *Microgeneration*

49. Centrica is pioneering the development of micro combined heat and power technologies and sources of renewable and cleaner energy such as fuel cell powered boilers, heat pumps and solar heating. We believe that these technologies can have an important role in reducing domestic carbon emissions and cutting customer bills.

50. These emerging technologies, however, will need some support to become commercially viable. Any effective support mechanism for microgeneration will need to recognise the specific deployment issues involved, and the differing needs of different microgeneration technologies.

51. We are aware of the current debate about the potential for a feed-in-tariff for microgeneration to deliver a significant increase in installed capacity. We are currently considering which support mechanisms should be introduced for microgeneration and are considering the potential for feed-in tariffs for this sector as part of a wider policy review. Our main concerns about a fit mechanism are the cost (significant in Germany), the mechanism's ability to deliver the most effective technology in the most efficient way, and the failure of the mechanism to adequately drive down costs. We are also unclear about how a fit would be introduced into the UK's competitive market structure.

52. In this context, we remain of the view that the most appropriate and effective support mechanism for domestic-scale microgeneration is some form of capital grant accessible by households.

*November 2007*

#### **Memorandum submitted by ScottishPower Limited**

1. ScottishPower is one of the UK's six large integrated energy suppliers, and is owned by IBERDROLA, one of the world's leading utility groups and a particular leader in low carbon generation. Our sister company, ScottishPower Renewable Energy Limited, is the UK's largest wind power generator. We have electricity networks in South and Central Scotland, Merseyside and North Wales and some 5.2 million energy customer accounts. Our power generation assets include the Longannet and Cockerhills coal plants in Scotland and a number of gas fired stations in England.

2. This Memorandum relates to the Government's announcement on the competition to design and build a pilot Carbon Capture and Storage (CCS) project and policy towards funding and developing CCS more generally. ScottishPower is developing a potential entry in the competition, based on its coal fired power stations in Scotland and offshore carbon dioxide (CO<sub>2</sub>) storage locations.

#### THE CCS COMPETITION

3. In our view, the Government's announcement was well judged, both as to the process for the competition and as to substance.

#### *Process of the competition*

4. We believe that it has been very helpful for the Government to clarify what kind of project it is looking for at this stage. Prior to the announcement of 9 October, it was difficult to get partners to focus on specific propositions because there was doubt as to the approach most likely to be followed. We think that to have left the key technological issues open longer would have made the competition very difficult to manage, given the significant issues of timescale, regulation and risk allocation that will need to be addressed.

5. Going forward to the competition itself, we are encouraged by the Government's approach of being clear about what it is seeking. It would be helpful, at quite an early stage, for this to include guidance on the Government's requirements, critical success factors and selection criteria, so that project entrants can begin to develop the correct technical offer. We will be reading the Information Memorandum of 19 November 2007 with this in mind.

6. An important element of this will be the Government's attitude to risk allocation, as there is a clear interaction between the amount of risk outwith the bidder's control that the project is required to bear, and the level of the bid.

#### *Substance of the announcement of 9 October*

7. We agree with the Government's approach of concentrating support such that up to 100% of the costs of a project can be covered. This should ensure that a project does indeed go ahead; we had previously been concerned that support might be spread too thin, making it unviable for industry to proceed. While we would obviously have liked such a level of support to be offered to more than one project, we understand that there have to be constraints on spending.

8. We envisage that the funding would best be provided in two forms. The first would be an initial capital payment in respect of the investment needed to install the CCS facilities. The second element would be in respect of the CCS operating costs. As well as direct funding, this could possibly involve some sort of minimum CO<sub>2</sub> price and the ability to trade out the saved CO<sub>2</sub> permits on the EU ETS.

9. As to the actual choice of technology, we believe that the Government was right to focus on post-combustion coal. Given the abundance of coal, its high level of CO<sub>2</sub> emissions and its increasing use for power generation in many parts of the world, it is clearly right to focus the capture and storage demonstration on that fuel. We also think that post combustion makes the most sense:

- the technology of choice for new coal fired power generation in most parts of the world is undoubtedly advanced supercritical boilers using pulverised fuel. Demonstrating and deploying post-combustion capture (which is the method appropriate to this technology) is going to be crucial in controlling emissions worldwide;

- there are significant retrofit opportunities in Great Britain for post combustion capture, either on existing plant or on new coal build, likely to be capture ready advanced supercritical;
- our international experience, through our parent Iberdrola, suggests that as a cost effective, reliable and flexible generation plant, IGCC is not yet there. This is evidenced by the fact that IGCC is not being favoured at present for commercial generation projects in most parts of the world. A demonstration based on that technology might not therefore fit with actual plant deployment plans. Furthermore, we suspect that there would be so many issues concerning the actual IGCC plant, that it would be difficult to focus the demonstration project on the capture and storage element rather than the power station to which it was attached; and
- use of post-combustion technology gives the option of undertaking initial testing using flue gases from existing subcritical boilers, so providing for a more flexible implementation plan with fewer major dependencies on other activities.

10. We are also supportive of the Government's approach of seeking to demonstrate the entire storage chain and the use of an offshore CO<sub>2</sub> store.

#### POLICY TOWARDS FUNDING AND DEVELOPING MORE GENERALLY

11. Looking to the future, we think that the most obvious signal to support the long term deployment of CCS will be the price of carbon. Although it may well be sensible to have a significant element of free allocations in the third phase of EU ETS as a transitional measure, a move to auctions will be appropriate as 2020 approaches. If free allocations do continue beyond phase 3, it will be important that CCS plants gain allocations no lower than coal plants of the same output without CCS. This is a matter which should be taken forward at EU level in the third phase of ETS.

12. Some thought will need to be given to the price of carbon. There is still very limited visibility of this going forward. If this remains a problem, the Government will need to consider whether there are any domestic measures that could be taken to give some more assurance to industry that investments made off the back of the carbon price will not be stranded.

13. A key challenge in the use of post combustion carbon capture is the efficiency penalty from the amount of energy needed to operate the capture system. We believe that this will be an important area to seek improvement as it would significantly improve the economics of a CCS plant. Accordingly, the Government should continue to support technical innovation to address the issue of energy cost/efficiency penalty as well as wider questions such as CO<sub>2</sub> storage identification and verification. These can be addressed through ongoing activities such as the Technology Programme and the Hydrogen and Fuel Cell and Carbon Abatement Technologies (HFCCAT) Programme.

14. Consideration might also need to be given to an intermediate mechanism to maintain the momentum of CCS deployment and bridge the gap between the current competition and a world where the carbon price will drive forward CCS investments. This could be something modelled broadly on the Renewables Obligation, but separate from it. Whether such a mechanism will be required will depend on how soon, and how strongly, the carbon market matures.

15. We have also considered the option of regulatory models to encourage the use of carbon capture and storage. We think that the option of requiring new fossil plants to be "capture ready" is reasonable, providing there is an adequate definition of what capture ready means and that meeting that definition is not disproportionately expensive. It will be important that this requirement, if introduced, does not stand in the way of the construction of adequate capacity by around 2015 to meet Great Britain's power requirements.

16. We would advise against going further and making retro-fit of CCS a requirement, either on "capture ready" or other plants. In the long run, if the price of carbon does not justify fitting CCS, then regulating to force it would be a misallocation of resources. Moreover, the possibility of compulsory CCS could be detrimental to investment prospects for new coal plant, especially supercritical coal, despite the fact that this technology has significantly lower emissions than existing coal plants. This could have unintended effects and could impact negatively on supply security. Making CCS mandatory for new plant should only be considered if it can be shown to be technologically and commercially viable for the developer.

17. A financial framework that will make CCS viable is one key element of what is required to see the technology flourish. The other element is a satisfactory regulatory system to address the CO<sub>2</sub> storage process. It will be important that prospective CCS project developers (whether or not successful in the competition) have an opportunity to engage in dialogue with Government on the high level licensing principles. Such dialogue will help ensure that the regulatory regime is effective and that projects can be prepared for development against a known and realistic framework.

18. The framework for approval of CCS projects will need to be carefully designed, to ensure that all relevant issues (including environmental issues) are properly considered, whilst avoiding the delays that have so strongly hampered the development of wind power in Britain. It will be helpful if the number of separate approval bodies is minimised and that the UK and devolved authorities work together to formulate a uniform and supportive approach.

---

*Conclusion*

19. A significant role for fossil fuels remains essential in the UK electricity generating sector, not least to cover the variation in output from renewable generators. CCS is a technology which can play a vital role in minimising the emissions of CO<sub>2</sub> from the fossil component of the power sector. However, there is a great deal of work still to do on both the economic and regulatory frameworks needed for it to succeed. We will need to press on purposefully if significant deployment is to begin around 2020. That said, the Government's approach of seeking a demonstration starting in 2012–14 and moving on to a wider deployment seems right and best calculated to secure a positive result.

20 November 2007

---

*Witnesses:* **Dr Jeff Chapman**, Chief Executive, Carbon Capture & Storage Association (CCSA), **Mr Sarwjit Sambhi**, Director of Power and Renewables, Centrica Energy and **Mr Rupert Steele OBE**, Director of Regulation, ScottishPower, gave evidence.

**Q68 Chairman:** Good morning gentlemen, welcome. Do you just want to introduce yourselves so that my colleagues know exactly whom you represent?

**Dr Chapman:** I am Jeff Chapman. I am Chief Executive of the Carbon Capture and Storage Association. This is an industry association. We have 53 member organisations, all of whom are interested in the business of carbon capture and storage. They cover the oil and gas sector, the power sector, suppliers, contractors, consultants, law firms, academic institutions and anyone with a business interest in carbon capture and storage.

**Mr Sambhi:** Sarwjit Sambhi from Centrica. I head up the power business for Centrica, that is conventional power generation and renewables, mainly offshore wind.

**Mr Steele:** Rupert Steele, Director of Regulation at ScottishPower. We are one of the UK's big six integrated energy suppliers. Obviously we have significant interest in Scotland, but England as well.

**Q69 Chairman:** Thank you very much. How important is CCS to achieving the global emission stabilisation targets?

**Dr Chapman:** The first thing is that CCS can make a massive contribution to achieving global targets. The world is expected to increase its dependency on fossil fuels over the coming years. When you have places like China which is building at least, the UK's total capacity in coal-fired power plants every year, this is a major problem. Normally everyone thinks of coal as being the big issue. Well it is, but I would just like to draw attention also to non-conventional fossil fuels. For example, the tar sands in Athabasca, Canada and developments of natural gas that contains CO<sub>2</sub>. Athabasca tar sand costs about 30% more energy just to produce synthetic crude oil and as a result of that Canada are 300 million tonnes a year above their Kyoto commitment and that is the equivalent of, let us say, 15 Drax power stations; it is very big. So these countries have to consider carbon capture and storage. The IEA world energy outlook is suggesting that global emissions look set to rise by at least 30% by 2030 and the world simply cannot meet its climate objectives without a very large proportion of carbon capture and storage.

**Q70 Chairman:** How quickly do we have to get it out there, if we are actually going to make a proper impact?

**Dr Chapman:** We have to get on track now. These projects are very long timescale in development and, if you do a bar chart from the time you want it to now, you should have started a long time ago.

**Q71 Chairman:** Are we remotely near having a chance of actually getting on track?

**Dr Chapman:** We could be because, certainly in the UK and in certain other places, there are projects that are under development that look to begin to start delivering or could be beginning to start delivering at about 2012. If we can accelerate that programme in a similar manner to the "dash for gas" that took place in the 1990s, we could make a very big impact in the second half of the next decade, towards 2020. We could have a lot of capacity on the ground by 2020 and certainly an awful lot of capacity in the 2020-2030 decade. It all depends on policy.

**Q72 Mr Chaytor:** May I just pin you down on the figures? There seems to be a contradiction between what the Government said in the pre-budget report, which suggested the demonstration project could deliver savings of 0.7 million tonnes by 2020, and what was said in the White Paper, which was a figure of between 1.1 and 3.7 million tonnes. From our point of view this is hugely confusing. What do you expect the demonstration project to be able to deliver by 2020?

**Dr Chapman:** The demonstration project itself, if you assume that it is 300 megawatts, then that 300 to 400 megawatts is going to deliver about two million tonnes. Whether or not you say that is CO<sub>2</sub> abated, it is certainly the CO<sub>2</sub> emissions that will be collected and stored, but that does not necessarily relate to what is abated because it depends what is substituted on the generation system. If that were nuclear, that would be nothing. If that were gas, that would be half of that.

**Q73 Mr Chaytor:** Within your capacity, within the demonstration project, your figure is about two million tonnes.

*Dr Chapman:* Yes.

**Q74 Mr Chaytor:** In the longer term, the Stern Review talked about the capacity to reduce total emissions by 90% in fossil fuel power station through carbon capture and storage. There is a figure here from the Government when the demonstration project was launched last week suggesting that about a third of total UK electricity could be generated with the use of carbon capture by 2020. Do those figures sound right?

*Dr Chapman:* They could easily be. At the present time there is under-development and I have to say that because of the announcement some of these projects are rather on the shelf, but at the present time there are at least 10 projects under development in the UK that could have carbon capture and storage and those projects are all coal; they could save well over 50 million tonnes of CO<sub>2</sub> between them. When I say “save”, I am being very advised about that because of an argument I just made about what it displaces.

**Q75 Mr Chaytor:** How can you be so sure of these 10 projects that could benefit from carbon capture and storage when the demonstration project is not off the ground yet? Surely you have to get the demonstration project going before you can be sure as to how widely it could be disseminated?

*Dr Chapman:* That is right. Four of those projects would be pre-combustion capture and six of those projects are post-combustion capture. The demonstration project, as we know, is post-combustion capture. There are things that need to be proven in post-combustion capture and, in the end, it is a commercial decision on behalf of suppliers as to whether they will supply and guarantee projects of the size of 300 megawatts or 1,000 megawatts even. What I will say is that on the pre-combustion capture the developers of the projects have been going into this with their eyes open, they have been spending tens of millions of pounds on feasibility for these projects and we are talking about large companies; companies like ConocoPhillips, companies like BP, Shell of course. If they were not confident in their technology, they would not have been spending that amount of money. If you look at BP, for example, they have specifically created a company in association with Rio Tinto called Hydrogen Energy whose sole purpose is to produce hydrogen from coal from which to generate power and into the future to become part of the hydrogen economy. Those companies do not go into that if they are not confident of the technology that goes along with it.

**Q76 Joan Walley:** I am just looking at the UK really and the 2050 carbon budget. Can you just give us a bit more information about how important CCS is in respect of meeting those aspirations in respect of the carbon budget for 2050 and the timescale between now and then and what needs to be put in place?

*Dr Chapman:* Of course I do not have access to the kind of modelling that the Government do, but it is quite clear that we need everything that we can do, “every tool in the box” as Sir David King would say, to deliver these commitments.

**Q77 Joan Walley:** You say you do not have access to the modelling that has been done by Government. One of the things that we wanted to ask you to share with us was what modelling you were doing. How can you be doing the modelling, if you do not have access?

*Dr Chapman:* As an association we are not doing any modelling.

**Q78 Joan Walley:** So who is doing the modelling?

*Dr Chapman:* As far as I know, just the Government and possibly some other commercial organisation for the benefit of their, perhaps, consultancy.

*Mr Sambhi:* May I offer a perspective on that? In terms of the UK, there are two time dimensions to the role of CCS. One is against the longer-term aspirations, whether it is the specific emissions reduction target that the Government have set or the Stern Review requirement or the view that you have to get below say 550 parts per million of CO<sub>2</sub> by 2050. Our analysis, and this is an analysis that other consultancies have done as well, suggests that if you are to reach that, after you have exhausted the initiatives that are low cost such as demand-side energy efficiency initiatives, after you have exhausted the resources in offshore wind, you get pretty close to needing to invest in clean coal. Specifically, to meet the government aspirations clean coal has to be in the mix. The second dimension is perhaps more medium term. When we look at the need for new power generation in the UK, one can model a number of scenarios but there is a scenario which suggests that by the middle of the next decade, there is a need for more capacity beyond those projects that have already been committed such as Lanage and Marchwood which are gas projects. In terms of what can fill that gap, when you look down the list of options, nuclear new build does not really fit in that time horizon because the earliest you could get a nuclear project off the ground, even if you started now, would be 2018-2020, then you look at the other options, more gas-fired power generation or unabated coal or coal that requires carbon capture. Again, unabated coal does not sit well alongside the emissions reduction targets that have been set.

*Dr Chapman:* To put the challenge in perspective, if you draw a straight line trajectory from now to 2050 and you take 60% and not the 80% target that is being mooted, then basically you have to reduce emissions by eight million tonnes every year, year on year on year; from now to 2050 you have to reduce eight million tonnes of emissions. To put that in perspective, the entire UK wind industry at the moment is only abating just over five million tonnes a year. It is a huge programme and of course one CCS project could achieve five million tonnes anyway.

---

11 December 2007 Dr Jeff Chapman, Mr Sarwjit Sambhi and Mr Rupert Steele OBE

---

**Q79 Joan Walley:** Just to pursue that a little bit more. With what you were saying about the Government doing the modelling, they do not seem to be doing it in conjunction with your business projections and so on. Given what you just said about having to reach where we need to be for the carbon budget by 2050, what I need to have some idea of is what lobbying you are doing with Government to get them to take account of what your projections are, otherwise you are all going to be on separate tracks, are you not? It is not really going to come together in terms of how we go about achieving where we need to be.

**Mr Steele:** We are broadly content with the kind of projections that the Government have come out with, that look to us about right, that coal will be a significant part of the mix going forward, not least because it is so widely dispersed and in politically more stable areas of the world. So we are comfortable with the kinds of use that the Government have come out with and the thought that CCS could produce about a third of the emissions reduction stretch that we will need to achieve. We are clear that a good amount of work needs to be done to actually make this happen and so we are very supportive that the Government have now bitten the bullet and got the process going with this competition. We need to do a lot of work to get ourselves actually operational as a country with carbon capture and storage, but there is huge potential to make a real difference.

**Q80 Joan Walley:** If CCS is not developed in the way that you would like it to be, then how long do you think the UK will be able to maintain the existing fossil fuel generation?

**Mr Steele:** Obviously the way we work with carbon in the major sectors is through trading. The issue will then arise as to whether the best economic decision is to generate the electricity from coal in the UK and abate somewhere else or generate from something else in the UK and take the abatement in the UK. If the price of carbon is high and we do not have carbon capture and storage working, then it is going to be increasingly difficult for coal-fired power stations to generate cost effectively and that will squeeze down the amount that they generate. It is obviously very difficult to project how that will work.

**Dr Chapman:** If I can go back, you asked what lobbying we were doing with Government and certainly a couple of weeks ago I had a meeting with both Malcolm Wicks, the Energy Minister and Phil Woolas, the Environment Minister, at the same time and this is really what I said to them. The UK Government have taken a tremendous initiative to sort out the regulatory side of CCS. The only thing which stops business investing in carbon capture and storage is policy and the policy breaks down into two areas: one is the regulatory side of policy and the other one is more the financial side of policy, the incentive to go ahead with it. The Government have made tremendous efforts and are leading the world in the development of policy, so all compliments to the Government for doing that. The demonstrator

project is really a tremendous initiative and does show leadership in the world because it is at least a measure comparable with what the best of other governments are doing elsewhere. Yet, if we are going to meet our climate objectives, we need to do a lot more than that. There is an accelerating pace of development elsewhere in the world and we will inevitably be upping our game in this area even just to keep pace with the rest of the world, as well as to save our own emissions.

**Q81 Joan Walley:** The point you are saying needs more work on it, is the regulatory aspect of it, is it? The area that you say more work is needed on is the regulatory aspect.

**Dr Chapman:** No, more is needed on the financial side, on the incentive side. The regulatory aspect will be sorted out very soon. The UK is leading the way. In European policy there will be a directive on CCS that will come into operation very soon which owes an awful lot to the groundbreaking thinking that has been done in the UK.

**Q82 Martin Horwood:** I share Joan Walley's surprise that you have not been doing very much modelling. If you are going to try to justify, certainly if you are going to ask for more investment in this from Government, you need to present a very strong business case and surely the modelling has to be crucial for that. Even the political parties are attempting simple modelling.

**Dr Chapman:** I have to say that our member companies do a lot of modelling. You have to bear in mind that we, as an association, are very young. We have only been in existence a year and a half and we have very limited resources so far.

**Q83 Martin Horwood:** But you have the resources of your member companies in a sense.

**Dr Chapman:** Yes, we have.

**Q84 Martin Horwood:** May I pick up something Mr Sambhi said as well? I share your analysis that this is a crucial part of the overall carbon budget and we really do not have a chance of meeting it without that, but you suggested that, as a transition technology, while we are waiting for renewables to come up to speed, it was actually a better option than nuclear in terms of timing and potential. Did I hear you right?

**Mr Sambhi:** I will answer that, but may I just pick up on the modelling. We should not get too hung up on the question as to whether enough modelling is being done. There is and I will explain what some of the uncertainties are in a moment. To answer your question, I was not saying that clean coal is a better option than nuclear. I was referring to the next decade when there is a need for new generation, say around 2015. New nuclear cannot be considered in the mix because, even if we started now, we could not get a new nuclear plant up and running until towards the back end of the next decade.

**Q85 Martin Horwood:** But you think carbon capture storage could be viable well within that timescale presumably?

**Mr Sambhi:** Yes. Going back to the point that Jeff made, if we had the financial support mechanisms in place and we were able to commit to investing in a new clean coal project, the one that we are developing up at Teesside, Eston Grange, could be ready by the 2013 time period.

**Q86 Joan Walley:** May I just ask what you mean by the financial support mechanisms in place? What would they consist of?

**Mr Sambhi:** In terms of going back to the question of what we have modelled, when we model the economics of a clean coal project, there are several uncertainties. One of the two biggest ones is how much it costs to build a clean coal project. The project we are pursuing is a pre-combustion project. The costs vary from between £1,300 per kilowatt to anything up to £2,000 per kilowatt. That is the range of uncertainty that we are working within at the moment. The other uncertainty is future carbon prices. Clearly we have clarity around phase two of the Emissions Trading Scheme but for a carbon capture project that is going to be ready by 2013 that is not really relevant; it is really phase three and beyond that we need to have more certainty on. In terms of where we are on the financials, because of the uncertainty that is created around the carbon price and the capital expenditure, if one looks, say, at the higher end of the capital expenditure range, then to make a project economic, there needs to be some longer-term support. Whether that is from Government, whether it is from an additional piece of legislation, we are not being definitive on. With the current Emissions Trading Scheme and the uncertainty around the future carbon price, no commercial entity would build a clean coal project today.

**Q87 Martin Horwood:** Could that long-term support simply come from a sufficiently high price of carbon? Do you need anything more complicated?

**Mr Sambhi:** If one had certainty around what range of carbon prices one might expect in phase three. The issue at the moment, because we do not know whether we are going to have 100% auctioning, which is something that we as a company lobby hard for because we do not know how tight any caps that would be imposed might be, is that the range of carbon prices could be anything from as low as €10 to as high as “pick your number” but consultants quote a range of €10 to €100 as the range of uncertainty on future carbon price.

**Q88 Mark Lazarowicz:** As a matter of interest, where would you say worldwide is the best example of carbon capture and storage actually in operation at the moment?

**Dr Chapman:** The fact is that there are no examples of carbon capture and storage on power plants. There are two examples of carbon capture and storage that are taking the CO<sub>2</sub> which happens to be associated with natural gas, one is in Salah in

Algeria, a BP project and Sleipner in the North Sea, which is a Statoil project. Both of those projects capture and store about a million tonnes a year. The fact is that that CO<sub>2</sub> would have to be separated from the natural gas anyway, so the biggest cost of CCS has been undertaken by the companies before storage. They are quite cheap in a sense; they save a million tonnes each a year of CO<sub>2</sub> very cheaply indeed. It is the lowest-hanging fruit of carbon capture and storage and it is good because it demonstrates things like security of storage and so on and allows people to develop techniques for monitoring storage. The other one is the Weyburn project which takes CO<sub>2</sub> from a coal gasification plant in North Dakota and interestingly shifts it across the Canadian border a distance of about 300 miles to Saskatchewan where it is used for enhanced oil recovery. I wanted to come back, if possible, on the EU Emissions Trading Scheme because it is very important. I completely agree about what has been said about the EU Emissions Trading Scheme, that it does not have the robustness into the future to be bankable. That is not the only reason why projects need support. They also need support because of the first mover, the early mover risk; they also need support because there is a large amount of infrastructure costs associated with the first projects that come on stream. I am sure we will get back to infrastructure. I would like to point out that the Government will raise at least €2 billion from auctioning allowances in the second phase of the EUETS, that is in the five years from 2008 to 2012. In the third phase there is likely to be more auctioning and, as was pointed out, we do not know how much auctioning there will be or what the price will be. The Government could be raising something between €2 and €20 billion euros per annum from auctioning after 2013. By the time you get to about 2014 or 2015, when this project is coming into play, the Government could have a war chest of money to spend on CCS. Basically, in order to finance these projects you need a way of collecting revenue and then a way of disbursing revenue. The Renewable Obligation, quite neatly, collects revenue from electricity consumers and disburses it amongst the projects that it supports. We have a way of collecting revenue because, let us face it, the cost of these allowances bought at auction, will be passed through to the electricity consumer and the electricity consumer will be assuming, if they know the difference, that this is going to some environmental good. If it just goes into the coffers of the Treasury, it probably is not going to any environmental good. If it is recycled to support projects of this kind, then it will certainly be doing environmental good.

**Chairman:** That certainly is an issue which the Committee has addressed and sympathises with your view on very much.

**Q89 Mr Stuart:** Taking you back, you said £1,300 to £2,000 per kilowatt as a cost. What price of carbon would you require assuming the upper end of those costs?

**Mr Sambhi:** Again, there are other variables around: what you assume the overall outright power price is going to be and a number of other factors. To give you an idea of range, we are looking at something, if it is at the higher range—and I have put some caution around that because it is the high end estimate—that would be north of €50 but at the lower end it could be as low as €25. The range is still quite wide. What I am trying to impress on the Committee is still the range of uncertainty around what it costs to build economically a clean coal project. The dilemma that we have, whilst we live with this cost uncertainty now, unless we commit to an accelerated build of clean coal projects, is that we put at risk the achievement of overall emission reduction goals. As I said, once you have exhausted all the low-hanging fruits, you very quickly come to invest in clean coal as an imperative to meet the emissions reduction targets.

**Q90 Mr Stuart:** Just to take you back to the question of using the money, if there were 100% auctioning, the principle of the system is of course by 100% auctioning, depending on the cap, that will dictate a price that would bring forward things like CCS, if it is essential, while the Government do just bank the cash. Is that not true? Is it not perfectly possible for the Government to spend none of that money on environmental good but still lead to investment in CCS because of the cap it has imposed and the need to deliver within the allowances allowed?

**Dr Chapman:** We all believe that in the long run the EU Emissions Trading Scheme and trading schemes in general will be the mechanism that will stimulate investment in low-carbon technologies, whether it is CCS or anything else. In the meantime we have to put something in place such as the Renewable Obligation that kick starts certain technologies. However, we have to go quite a long way out before we can ever think that there will be bankable certainty on the forward price of EU allowances.

**Mr Steele:** We estimate that you need about €65 per tonne of carbon dioxide to make carbon capture and storage economic with the technology as it is at the moment. That number can come down, if we make the technology work better. Right now we have visibility out to 2012 of a carbon price somewhere between €20 and €30 and no idea what it will be beyond that. You are talking about an investment which is going to have to pay back over 20 years. That is the problem, that there is simply not the visibility and solidity of a carbon price to make any of these investments stand up and there will need to be a bridge between the demonstration project that the Government had led the world in coming forward with and a situation where emissions trading will itself drive carbon capture and storage. That may well be happening past 2020, but it is that bridge that we need otherwise it is just not going to happen on the scale.

**Q91 Mr Stuart:** The point really is that the Government are going to see a major return from auctioning in the future and should invest a bit more now to help make CCS a reality.

**Dr Chapman:** Yes.

**Q92 Mr Stuart:** May I take you to the potential global market? What is the potential size of the global market for CCS industries? How do you see it developing over the next few decades?

**Dr Chapman:** It really is a very big open-ended question. Whichever way you look at it, the size of marketing CCS will be measured in trillions of pounds, dollars or whatever currency you choose, but it is that kind of order of magnitude. It has to be for it to have the kind of effect that you need it to have on climate change. The IEA have estimated that by 2030 we need 630 power plants equipped with CCS. You have just heard that the price of those power plants could be between £1,300 and £2,000. What are we talking about there? That is probably £2 trillion—thinking on the hoof here—and that is huge money. Of course if the UK gets first into this technology, it gets itself established with a slice of the action. The UK was very good in coming forward with policy on emissions trading and as a result of the UK being a leader in emissions trading policy, London has become the centre of the world's emissions trading. We have the opportunity to do this with CCS and we should step up to the plate.

**Q93 Joan Walley:** Can I ask you about the possibility of London being the capital of CCS and what the implications are for manufacturing?

**Dr Chapman:** We are not very good at manufacturing in the UK. We have lost a lot of our metal-bashing capability. I have to say that CCS, unlike conventional power plants, involves a great deal more process engineering and, as it happens, we are still good at process engineering in the UK.

**Q94 Joan Walley:** Where are the clusters for that?

**Dr Chapman:** There are several process engineering companies in the South East and in the North East. You are really talking about more soft skills than before. Typically, a quarter of the total cost of a power plant would be in things like services, soft skills and of course the added value in that area is very much higher. We should not worry too much about the fact that we have lost a lot of metal-bashing capability because the thing that makes money out of power plants is the project management, project financing, investment, all sorts of investment and investment matters, city services, environmental consultancy, engineering design, in this case I mentioned process-engineering, all of these things will be there in spadefuls in carbon capture and storage plants and some metal bashing as well. However, we will have to face that, for example, the likelihood that the equipment that's supplied for the demonstrator will probably be supplied from Japan, America or maybe Germany, but more than likely, not supplied from the UK.

**Q95 Mr Stuart:** I would like to come back to the global position. In terms of getting India and China to retrofit all their coal-fired power stations and indeed to fit to all new ones at some point, what is your vision for making that happen in policy terms

and technological developments? What is it going to take, because if we do not get China and India doing it, then we are wasting our time from an emissions point of view, are we not?

**Mr Steele:** That is why it is so important that we get to grips with the post-combustion technologies, because China and India are installing pulverised-coal-fired plants, which is a completely understandable decision because engineering-wise that is the obvious way to build the power station and those can only really be retrofitted using the post-combustion technology. From that point of view we are very supportive of the Government's decision to focus the demonstration project on post-combustion because that will—

**Q96 Mr Stuart:** Is that true of everybody on the panel?

**Dr Chapman:** I would certainly agree with that and I would add that even more important than demonstrating the technology is demonstrating political will. We cannot expect China to move without first of all demonstrating the political will.

**Q97 Mr Stuart:** I just meant on the post-combustion thing particularly. Are you all happy with the Government supporting post-combustion in the competition?

**Mr Sambhi:** Essentially we understand the arguments that have been put forward as to why post-combustion was selected as the exclusive technology. However, going back to the comments that were made at the beginning, clean coal must have a role to play in meeting overall emissions reduction targets. That means pre- and post-combustion technologies have a role to play. We see that when one compares post- and pre-combustion, both have a range of uncertainties around capital expenditure. Post-combustion is slightly less efficient than pre-combustion. The thing that led us down to selecting pre-combustion as the preferred technology was that pre-combustion has been demonstrated to work at scale. That has not yet been done on post-combustion. In terms of the technology for scrubbing flue gas from an existing coal plant or conventional coal plant that has still very much only been proven on a small scale. If it can be proven that that can work at scale, then we can understand why you prefer post-combustion, but where we are sitting today pre-combustion is the technology which has been proven at scale. We do not understand why you would exclude it.

**Q98 Mr Stuart:** We are going to come to this later but I just wanted a quick nod from you two and I apologise for interrupting you.

**Mr Steele:** I was basically making the point that in order to roll out capture and storage in China and places like that, it will be important to have post-combustion properly tested and assessed. We are hopeful that significant progress will be made in addressing the efficiency penalty that Centrica have mentioned. There is a chilled ammonia process for post-combustion capture that is making an appearance which has less than half the efficiency

penalty of the amine process that is currently being used, so that is a very exciting development. I will just mention that, on the pre-combustion route, our parent company, IBERDROLA, actually is a participant in a large-scale IGCC plant in Spain called Puertollano. It has not performed very well and that is one of the factors that have actually driven us towards the post-combustion angle.

**Q99 Dr Turner:** I understand that a little while ago there were ten CCS projects in the wings at various stages of development waiting to go, especially including BP's Peterhead project which is now being pulled. Were you truly happy that the government competition was limited to one post-combustion plant? Do you think we would have benefited from a broader spread of projects going ahead?

**Dr Chapman:** We are very happy that the Government are doing something, but I have to say it is not enough and it is not soon enough either because the timescale is slipping and that is important because every year that goes by we emit more CO<sub>2</sub> and that stays in the atmosphere and builds up the concentration. In short, I guess the answer is no, we are not happy. What we would like to see is a programme which rolls out whatever technology industry is prepared to put its money behind and to take the risk on. There are projects that would have delivered sooner than this demonstration project in a competitive environment if an appropriate fiscal instrument for initiative had been put in place; there are projects that would deliver even sooner than this demonstration and they might well be a pre-combustion technology, but if it were a competitive environment, that would naturally select one or the other.

**Q100 Dr Turner:** But of course post-combustion is attractive because that is the option which we might eventually sell to China and India.

**Dr Chapman:** Yes, I absolutely agree that, if your objective is to demonstrate the benefits of carbon capture and storage to China because there is so much pulverized fuel power plant on the ground in China now, that is a good thing to do. If your objective is to save UK emissions, then the best thing to do is to say you want to save UK emissions and leave it to commercial organisations to decide which the most cost-effective option to do that is.

**Q101 Dr Turner:** Clearly it is desirable to do both and it would not just be UK emissions that would be saved, other countries would save emissions by using pre-combustion plants as well.

**Dr Chapman:** Yes.

**Q102 Dr Turner:** What sort of system lever do you think would need to be pulled to get those projects going again, to bring them forward?

**Dr Chapman:** There are several options that could be brought to bear. First of all, let me say, I have probably satisfactorily demonstrated, that there is a mechanism for accumulating the revenue. The mechanism for disbursing the revenue is something different. You could have, for example, a feeding

tariff like there is on renewable energy in some other countries, you could have something like a contract for differences, which is when the Government makes a contract for the difference between the EUETS allowance price and the fixed price which is bankable, or you could simply have a carbon contract. Let us face it, if the objective is actually to avoid CO<sub>2</sub> emissions, then let us focus on the objective and try to incentivise the non-emission of CO<sub>2</sub>.

**Q103 Dr Turner:** Do you see a place for regulation in this process as well? What do you think would happen if the Government were to make it clear that they would in future only license new fossil fuel burning plant from whatever fossil fuel source if they were CCS equipped?

**Dr Chapman:** This has been considered at a European level and in fact at one stage there was quite a deal of support for this idea. There has been quite a lot of back-peddling on this and it is more than likely when the announcements are made from Brussels on 23 January that that idea will not be included because it can have perverse effects. There are certain European Member States that may not have access to storage, for example. There are certain European Member States that may not be able to live up to the timescale, whereas other Member States would be able to deliver well within the timescale. There are potentially perverse consequences. If you say to people that they must have CCS on their new power plant after a certain date, then there will be a natural tendency to sweat dirty assets. In the long run CCS will become business as usual for fossil fuel power plants, but at this stage we are quite a long way off that and we need to think of other methods.

**Q104 Dr Turner:** I take your point that other countries may be inhibited by lack of storage facilities, but the UK does not seem to have limitation.

**Dr Chapman:** No.

**Q105 Dr Turner:** Do you think it would be a practical proposition for the UK to do that unilaterally and, as for avoiding perverse consequences of companies sweating their existing dirty assets, will not the other bit of regulation, the Large Plants Directive, bite on that and stop that?

**Mr Steele:** The problem we have is that by around 2015 a significant proportion of the UK's generating fleet will have retired. We will not realistically be in a position to have working carbon capture and storage on day one on the plants that replace that and, as a company that takes very seriously our obligation to ensure that we can actually supply our customers with power, it would be premature, given where the technology is now, to make CCS mandatory. We are strong supporters of CCS, we are putting together a potential project and entry to the Government's competition but realistically the technology is not yet right to make it mandatory in this country.

**Q106 Dr Turner:** The technology is not that complex. If you are talking, say, the 2015 timescale, you still have up to eight years to get it there. Surely, given sufficient imperative and sufficient effort, it could be made to happen.

**Mr Steele:** No, we do not think so; that is our assessment. We can get the demonstration running by around 2015 and that is the basis of the entry that we are preparing for putting forward into the competition. To do the 20,000 megawatts or so that are needed to keep the lights on by that date, is a risk too far, that would be my assessment.

**Q107 Chairman:** May I just be clear? What will happen to the 10 projects in development after the Government's decision to confine the competition to one particular technology?

**Dr Chapman:** Of the 10 projects that I referred to—and if I counted Peterhead that would actually be 11—four of them are pre-combustion capture, they are IGCC projects. They are not likely to go ahead as power plants without carbon capture and storage and the incentive that goes with it. The other six project are all replacement paci for the e maing power station stock and those projects will more than likely go ahead. They are pulverised fuel projects; they are super-critical projects. The big portfolio generators need to keep their portfolio balanced and, as it is, they are closing coal-fired power plants and they need to keep a balanced portfolio because otherwise they become a hostage to very volatile gas prices. Gas power stations are cheap and as long as the price of gas is low, that is the cheapest way to generate electricity. If you want more long-term certainty over your business, you need to mix that with some coal plant. The fact is that as the nuclear plants come off stream as well, the likelihood is that because power generators will want to maintain this mix, the emissions from the electricity sector will go up over the next 15 years, not down.

**Q108 Jo Swinson:** If you think the six CCS plants that are post-combustion will be going ahead anyway, is it the best way for the Government to be supporting the industry to be running a competition putting all the investment into one of those projects? Would it not be better to use that same investment to provide some level of financial support for all six or indeed all 10?

**Dr Chapman:** You have heard from Mr Steele that the technology is not really there yet to build the plant. A demonstrator is a good idea, if that is the case. I am not an engineer so I cannot actually be absolute about that.

**Mr Steele:** May I try to clarify? There are two separate issues. One is the power station itself—that is replacing some of this very old 1960s or 1950s kit with modern super-critical coal-fired generation with significant improvement in efficiency. That is well understood. You can buy them off the shelf with performance guarantees. We have a project to do it at Longannet; a number of people have got projects to do it elsewhere. That is the easy bit. The bit that is harder is then capturing the carbon. Obviously the

super-critical refit gives you a big reduction in the carbon but then we want to go to the 90% fall and that means capturing the carbon. That is the new bit, the bit that the Government needs to support and it is actually very important that the Government have said they will fund 100%, or up to 100% of the incremental cost, because that means at least one project will definitely go ahead, assuming that the Government's terms are sensible. If they had funded only a proportion of the cost of the carbon capture, then there is a real possibility that nothing would have gone ahead.

**Q109 Jo Swinson:** Maybe I misunderstood. Dr Chapman just said that you think all six will go ahead. Do you mean you think they will refit their power stations not that the six CCS would go ahead?

**Dr Chapman:** No, it will not be six CCS, it will be six refits. The total of those six projects is 9,000 megawatts and, this is just to put it in context, the demonstrator is 300 megawatts. So in terms of a contribution to the emissions from that fleet of power stations, it is not a very big contribution. I am not sure it was the objective of the Government anyway to make that contribution, but it is not a very big contribution taken in that context.

**Q110 Martin Horwood:** I just want to be clear about the timescale. Are you disagreeing with Mr Steele? You said in your submission that the Government specified that the full CCS change should be demonstrated by 2014 or as soon as possible thereafter. This pace is too slow and represents an unnecessary further delay in the deployment of CCS. I understood Peterhead was going to be online ahead of 2015 and yet Mr Steele is saying 2015 is pushing it and we should not make it mandatory?

**Dr Chapman:** Peterhead was a gas project. The technology to convert natural gas into hydrogen and CO<sub>2</sub> is very, very, very well proven and it exists in oil refineries all over the world including in the UK. There was pretty well no technology risk there, it was a fairly straightforward project and could have been completed by 2009.

**Q111 Martin Horwood:** A few of the people who submitted evidence and in fact including Scottish and Southern Energy which is probably another one of your members I would guess, is it?

**Dr Chapman:** Yes, it is.

**Q112 Martin Horwood:** Also in the Treasury consultation on the competition, there was evidence from the UK Energy Research Council. Both suggested either multiple competitions or at least one other competition to support pre-combustion. Are you saying that is not really necessary?

**Dr Chapman:** No, I am not saying it is not necessary. What I am saying is that you can have competition, not necessarily a competition, but you could have in effect a roll-out programme and you can make that as big or as small as you want it to be. If that happens to be one project, that is one thing: if it happens to be several projects, that is something else.

**Q113 Martin Horwood:** Would you agree with multiple competitions or do you think there are other carrots that should be offered and if so, what?

**Dr Chapman:** I would be happy with multiple competitions. I would like to see a more generic process in place that was there to stimulate a number of projects. Bearing in mind, as I said earlier, that even one project can deliver savings that are the same order of magnitude as the Renewable Obligation is so far, and that has an instrument of policy all of its own, then there seems to be no harm in having one by one policy instruments that may alter over time.

**Mr Sambhi:** In terms specifically of the types of things that could make CCS viable, because, to be clear, to have any pre- or post-combustion project built at scale, there needs to be financial support if we are going to start building the plant now ready for the 2013 to 2015 time window, what are the type of things that could be envisaged? One is an extension of existing legislation that is applied to CHP which includes exemption from the climate change levy for carbon capture projects, that also includes 100% first year capital allowances, but even that is not going to be enough on its own. Put bluntly, there does need to be some form of capital grant, either for the upfront investment or for the ongoing costs and on the ongoing costs, Jeff has alluded to possible mechanisms such as a contract for difference on the carbon price.

**Q114 Martin Horwood:** So you would be in favour of some kind of capital grants programme on a project-by-project basis. Do you think the competition approach is a slightly clumsy approach?

**Mr Sambhi:** From our perspective a capital grant approach is a more simple measure and it is one that provides the investing company with some certainty around the future cash flows which are going to come out of the project.

**Q115 Mark Lazarowicz:** One issue which highlights another area where there is a lot to be done—you mentioned the difficulty of capture—is also the issue of storage and how you get the CO<sub>2</sub> to where it is going to be stored. That is a point which is mentioned in the Stern Review, which points out that carbon capture and storage will require major new pipeline infrastructures, with significant costs. Do you think there needs to be more direct government regulation and intervention to get that pipeline network actually available for the development of CCS? Otherwise will there not just be so many costs for the first movers that people will be turned off developing technology?

**Mr Steele:** May I tell you a little bit about where our thinking on this is? As far as our potential project at Longannet is concerned, we have identified some aquifers under the Firth of Forth and worked with various Scottish universities in researching those which could be accessed by a very short pipeline. We are also in discussion with various oil companies about storing carbon dioxide a little further afield. So from the point of view of our entry to the competition, we are confident that we can sort that

---

11 December 2007 Dr Jeff Chapman, Mr Sarwjit Sambhi and Mr Rupert Steele OBE

---

angle. Looking further forward, there is an issue about coordination of pipelines and organisation of the carbon capture and storage. We do, as the UK, have quite a lot of experience of dealing with this, with of course the gas flowing the other way from the North Sea developments. At ScottishPower we are quite confident that the Government will be able to put together a sensible regime on this.

**Dr Chapman:** The Government have actually commissioned and published a report on infrastructure for the North Sea. It is clear that there are certain clusters of places where a pipeline infrastructure could be put in place on land. Probably the most attractive of those is on Humberside and Yorkshire Forward is actually supporting a project which is looking at putting a pipeline collection system in around Humberside. It has access to by far the biggest cluster of point sources of CO<sub>2</sub> in the country, being all the power stations of South Yorkshire, North Nottinghamshire and all around that area.

**Q116 Mr Stuart:** Where in Humberside?

**Dr Chapman:** Just around Humberside. Basically, you have a lot of power stations along the side of the Humber: you have Drax and Ferrybridge and Eggborough. Then you have the Nottinghamshire power stations.

**Q117 Mr Stuart:** I am talking about storing.

**Dr Chapman:** Initially, southern North Sea offshore. Just as a matter of interest, even yesterday I was having discussions with a French developer who basically wanted to build an 800 megawatt power plant in Le Havre which would also be post-combustion capture. They intend to bring that on

stream by 2014 and they want to lay a pipeline up the Channel to meet up with the UK sector and to store it in the UK sector. Their option is to store it in the Paris geological basin.

**Q118 Mark Lazarowicz:** Can you really rely upon the development of, effectively, a reverse national grid in this kind of role with a fortuitous onus on particular schemes? Are you not going to use some more direct intervention or direct regulation effectively to bring about a national grid here? The national grid took some decades to get itself into its present form.

**Mr Steele:** I was thinking more of the system of oil and gas pipeline regulation which operates in the North Sea, where there is a degree of planning, discussion and control through the Annex B system. My guess is that the Government would probably draw on that wisdom in developing something suitable for CO<sub>2</sub> disposal. For example, we would expect, if something went ahead in Scotland, that the various large point sources of emissions along the Firth of Forth might be able to tie into a single pipeline in the same way as the Humberside idea.

**Dr Chapman:** There is likely to be competition for seabed space. The Crown Estates, who are the landlords of the seabed are very keen on spatial planning, especially with the announcement of the Secretary of State for BERR yesterday, there is going to be a lot more competition for seabed space in terms of offshore wind turbines. This is an important point and we do need to make sure that we plan as well as properly finance these offshore pipelines.

**Chairman:** We have kept you rather longer than we intended but it has been very helpful to us, thank you very much for coming in.

---

#### Memorandum submitted by The Aviation Environment Federation

The Aviation Environment Federation is pleased to respond to the Environmental Audit Committee's 2007 Pre-Budget Report Inquiry. The Committee has asked for comments on "*The Treasury's reforms to Air Passenger Duty (APD), and any other aspect of the PBR's approach to aviation*" and we detail our views below.

The Government's 2007 Pre-Budget Report and Comprehensive Spending Review document contained a section outlining future fiscal policies in respect of Air Passenger Duty and UK aviation's climate change impacts, pages 122–123, para's 7.54–7.56.

We welcome the removal of the anomaly concerning APD and passengers on "business class only" flights, who will be liable to pay the standard rate from November 2008, although a further year's grace before implementation seems excessive to us.

At para 7.55, the PBR document states that:

"The changes to APD . . . will deliver reductions equivalent to 2.75MtCO<sub>2</sub> a year by 2010".

It is unclear to us how these "savings" are identified, measured and forecast, or indeed what they currently might be as some savings are presumably already attributable to APD. Knowing what today's claimed CO<sub>2</sub> savings are, and have historically been under previous APD regimes, would allow us to see what progress will be made in reducing emissions further by 2010 by this method. These claimed CO<sub>2</sub> reductions need to be set against total UK aviation emissions growth with a clear explanation of their derivation.

We would ask the EAC to press HMT and DfT to provide this analysis to aid the Committee's deliberations.

We also welcome the clear statement in para 7.55 that:

“The Government believes that domestic air passenger duty (APD) is playing a valuable role in encouraging behavioural change, reducing emissions from aviation ***and ensuring that air travel makes a fair contribution towards the Government’s spending priorities, including public transport and the environment***”.

We have placed “and” in this quote in bold italics as it seems to us this Inquiry could usefully clear up whether or not APD does include a readily identifiable component and/or contribution towards general taxation or is an environmental tax.

When first introduced in 1993, APD was seen entirely as a means of raising revenue. The then Chancellor, Kenneth Clarke, stated in his Budget speech that:

“Air travel is under-taxed compared to other sectors of the economy. It benefits not only from a zero rate of VAT; in addition, the fuel used in international air travel, and nearly all domestic flights, is entirely free of tax”.

Again, in his November 1996 Budget statement, the Chancellor stated that:

“Air travel has also been under-taxed, because it has proved difficult—still proves difficult—to get international agreement to tax its fuel”.

Air travel’s basic fuel, kerosene, is therefore taxed much less heavily than other forms of transport and wider energy consumption. The overall figure of around £9 billion a year net tax benefit—subsidy—for the aviation industry through various tax exemptions is, we feel, a reasonable estimate.

That is the net benefit after paying APD at prevailing rates. The table and note below shows how we have worked this out:

<i>UK Aviation tax exemptions</i>	<i>£ billion per year</i>
Fuel tax	6.4
VAT	4.0
Duty free	0.5
Deduct APD	– 1.8
<b>Net tax subsidy</b>	<b>9.1</b>

NOTE: The figures above have been calculated as follows:

#### *Aviation fuel*

Fuel uplift in UK taxed at 50p a litre, the same as motor fuel.

#### *VAT*

The Treasury has refused to give an estimate of the revenue that would be raised if aviation were subject to VAT (or a sales tax at the same rate), and this refusal has been criticised by the Environmental Audit Committee (Fourth Report, March 2007). But the yield is thought to be over £4 billion.

#### *Duty-free and VAT-free sales at airports*

The Treasury have again refused to give a figure, but based on BAAplc figures it is thought to be worth about £0.5 billion.

#### *APD revenue*

Estimated yield of £1.8 billion in 2007–08.

Air passengers, just like motorists, should pay towards the cost of public services, such as education and health, their so-called general taxation contribution. We feel Government departments across the board wilfully refuse to engage with this issue in the context of setting fair and equitable general tax levels for civil aviation. We feel very strongly that any “polluter pays” tax should be imposed over and above any general taxation contribution. We consider that the yield from APD must all be attributed towards creating a level fiscal playing field, and should not be counted as contributing to the climate change costs of aviation or any other environmental externalities.

Whatever fiscal route is taken to control and reduce air transport’s GHG emissions and other associated climate change-inducing impacts, such as condensation trails and cirrus cloud formation, the “polluter pays” costs of air travel must be related to the desired environmental outcome in terms of actual emissions reductions for the civil aviation sector. There are no such targets.

Instead the Government offers a “hit and hope” policy combination of the following:

- 
- An extremely marginal fiscal measure, APD, that purports to “cut” emissions presumably by sending a demand-management price signal that prevents some passengers flying, encourages the use of alternative less-carbon intensive means of transport such as rail, or perhaps travel substitution for example by using video conferencing. The 2007 PBR proposal to convert APD into a per-plane per flight duty seems to adopt these same behavioural challenges as the policy driver, as well as the claimed incentive that drives airlines to become more fuel efficient. This latter target is often assumed to achieve supply-side gains by in particular encouraging airlines to buy best-in-class aircraft. We find it difficult to see any effect over and above what normal efficiency gains would have achieved anyway. Globally, airline fleet acquisition and aircraft manufacturing cycles work over 25–30 year time frames, and whilst we acknowledge that successive generations of aircraft are more efficient per passenger kilometre we simply do not accept that small amounts of tax have any additional influence on speeding up this cycle, either in the acquisition or manufacturing phases, over and above the fairly set-in-stone industry and UN IPCC estimates of efficiency gains that we quote in our next bullet point. In fact, sending airlines a low price signal aimed at improving fuel efficiency, however well-intentioned, may simply result in a straight forward pass-through to passengers that is entirely affordable. Low price signals may even be counter-productive as they simply cannot drive technology-based efficiencies. In any event airlines can make also make many other financial efficiency gains that could offset the “burden” of APD by outsourcing back office work; cutting marketing budgets; downsizing staff; negotiating lower costs with airports and so on to lower their cost base. We assume they are doing all this anyway.
  - Industry forecasts of technology and operational efficiency gains, a combination of the reasonable and the somewhat optimistic and aspirational, that may result in better fuel efficiency from aircraft and aero engines, plus other identifiable gains from fuel consumption-reducing ATM improvements, are in the region of 1–2% per annum from today through to 2030 and perhaps beyond, so we are told. The UN IPCC Special Report “Aviation and the Global Atmosphere”, 1999, estimated future air transport efficiency gains could be 50% by 2050 ie approx 1% p.a. from better aircraft and aero engine technology; operational gains including improved CNS/ATM would be 18% over the same period, an overall average efficiency gain of around 1.3%, a figure we prefer in the absence of any alternative, independent credible system-wide analysis. We are not unhappy at the rate of progress as we accept the that in some areas the industry is doing the best it can—it is after all in its’ all round interests to do so. But whatever the system-wide improvement, efficiency gains are inevitably overtaken by growth.
  - The future inclusion of aviation in the European ETS, according to the European Commission’s own figures, would mean that by 2020, instead of growing by 83% under a do-nothing scenario, aviation emissions would still grow by a still extraordinary 78%. And since the effect of the scheme would be to add only a theoretical maximum nine euros to the price of a ticket, it’s hardly surprising that it will have almost no effect on aviation demand. By the same date, under the proposals, instead of growing by 142%, demand is predicted to grow by 138%. The UK Government seems determined to implement aviation’s inclusion in the European ETS in such a way as to facilitate its growth with as low a cost as possible for, in effect, licensed pollution. Given the immense complexities and vagaries of ETS outcomes, such low prices, as we have said above, simply cannot and do not result in emissions reductions—supply side reductions as claimed in the EC’s analysis are entirely speculative and misplaced and would have very probably have happened anyway under the “natural” cycle of efficiency gains in the air transport sector.

We need to see an across-the-board assessment from Government of what they believe all these levers will collectively achieve thus:

- Actual emissions reductions from the sector over the time horizon of the current White Paper and perhaps beyond 2030 through to 2050. These should also be part of a clearly identified “whole economy” pattern of emissions reductions and in effect show future allocations and emissions output by sector so we can clearly understand **exactly what air transport’s share of future UK emissions will be**. This is somewhat opaque, to say the least, right now.
- How progress in each area, demand management, modal shift, travel substitution, technology and operations, will be identified and measured, not just estimates of their likely contribution.
- How aviation emission growth fits in with both UK and in particular the EU 2°C climate change policies as they are developed and implemented to deal with the much tougher stabilisation target of 450–500ppm CO<sub>2</sub>.
- It should also be remembered that in addition to GHG emissions, civil air transport has other external costs that should also be reflected in ticket prices. We believe that in total they are in the region of 3.6 pence per passenger kilometre (INFRAS/IWW at 2000 prices). If applied in total to present day UK air passenger kilometres alone, the amount raised would be around £10 billion.

On the penultimate bullet point, the seminal Stern Report pointed out that the social cost of carbon would need to be three times as high as at present to achieve this tougher stabilisation target over time.

The cost of carbon is frankly a bit of a nightmare. The current market price for carbon as traded on various exchanges involved in the European ETS is around the €23.70 per metric tonne of CO<sub>2</sub> mark as we write.

The Government figure for the social cost of carbon is based only on what is deemed necessary to achieve the current Kyoto target and does not include the cost of climate catastrophes. These weaknesses were highlighted by Sir Nicholas Stern in his recent report to Government. The Stern Review concluded that at 2000 prices, the social cost of carbon is £238. This significantly higher value is also consistent with other studies on the social cost of carbon, including INFRAS/IWW (External Costs of Transport Update Study, October 2004) and UN IPCC.

November 2007

### TOTAL COSTS IN 2000 BY COST CATEGORY AND TRANSPORT MODE

	<i>[million Euro/year]</i>														
	Total	%	Road					Pass		Freight		Rail		Aviation	
Car			Bus	MC	LDV	HDV	total	total	Pass	Freight	Pass	Freight	Pass	Freight	Freight
Accidents	156,439	24	114,191	965	21,238	8,229	10,964	136,394	19,194	262	0	590	0	0	
Noise	45,644	7	19,220	510	1,804	7,613	11,264	21,533	18,877	1,354	782	2,903	195	0	
Air Pollution	174,617	27	46,721	8,290	433	20,431	88,407	55,444	108,838	2,351	2,096	3,875	360	1,652	
Climate Change High	195,714	30	64,812	3,341	1,319	13,493	29,418	69,472	42,911	2,094	800	74,493	5,438	506	
Climate Change Low <sup>1</sup>	(27,959)	(4)	(9,259)	(477)	(188)	(1,928)	(4,203)	(9,925)	(6,130)	(299)	(114)	(10,642)	(777)	(72)	
Nature and Landscape	20,014	3	10,596	276	233	2,562	4,692	11,105	7,254	202	64	1,211	87	91	
Up-/Down-stream <sup>2</sup>	47,376	7	19,319	1,585	335	5,276	16,967	21,240	22,243	1,140	608	1,592	170	383	
Urban Effects	10,472	2	5,782	147	127	1,220	2,634	6,112	3,797	426	137	0	0	0	
Total EU17 <sup>3</sup>	650,275	100	280,640	15,114	25,491	58,824	164,346	321,301	223,114	7,828	4,487	84,664	6,250	2,632	

**Table 2** Total external costs of transport in the EU17 countries.

Remarks:

<sup>1</sup> Climate change costs for the climate change low scenario with a shadow value of 20€/tCO<sub>2</sub> (for information only, values not used to calculate total costs).

<sup>2</sup> Climate change costs of up- and down-stream processes are calculated with the shadow value of the climate change high scenario (140€/t CO<sub>2</sub>).

<sup>3</sup> Total costs calculated with the climate change high scenario.

Source: INFRAS/IWW External Costs of Transport Update Study, October 2004.  
Total external costs, all modes, all impacts at 2000 values for EU17.

### AVERAGE COSTS IN 2000 BY COST CATEGORY AND TRANSPORT MODE

	Average Cost Passenger										Average Cost Freight			
	Road		MC	Pass total	Rail	Aviation	Overall	Road LDV	HDV	Total	Rail	Aviation	Water-borne	Overall
	Car	Bus												
	<i>[Euro/1,000 pkm]</i>										<i>[Euro/1,000 tkm]</i>			
Accidents	30.9	2.4	188.6	32.4	0.8	0.4	22.3	35.0	4.8	7.6	0.0	0.0	0.0	6.5
Noise <sup>1</sup>	5.2	1.3	16.0	5.1	3.9	1.8	4.2	32.4	4.9	7.4	3.2	8.9	0.0	7.1
Air Pollution	12.7	20.7	3.8	13.2	6.9	2.4	10.0	86.9	38.3	42.8	8.3	15.6	14.1	38.5
Climate Change High	17.6	8.3	11.7	16.5	6.2	46.2	23.7	57.4	12.8	16.9	3.2	235.7	4.3	16.9
Climate Change Low <sup>2</sup>	(2.5)	(1.2)	(1.7)	(2.4)	(0.9)	(6.6)	(3.4)	(8.2)	(1.8)	(2.4)	(0.5)	(33.7)	(0.6)	(2.4)
Nature and Landscape	2.9	0.7	2.1	2.6	0.6	0.8	2.0	10.9	2.0	2.9	0.3	3.8	0.8	2.6
Up-/Down-stream <sup>3</sup>	5.2	3.9	3.0	5.0	3.4	1.0	3.9	22.4	7.4	8.8	2.4	7.4	3.3	8.0

	Average Cost Passenger						Average Cost Freight							
	Road Car	Bus	MC	Pass total	Rail Aviation	Overall	Road LDV	HDV	Total	Rail Aviation	Water-borne	Overall		
	[Euro/1,000 pkm]						[Euro/1,000 tkm]							
Urban Effects	1.6	0.4	1.1	1.5	1.3	0.0	1.1	5.2	1.1	1.5	0.5	0.0	0.0	1.3
Total EU 17 <sup>4</sup>	76.0	37.7	226.3	76.4	22.9	52.5	67.2	250.2	71.2	87.8	17.9	271.3	22.5	80.9

**Table 3** Average external costs of transport in the EU17 countries

Remarks:

<sup>1</sup> The modal differences in noise costs are directly related to the national noise exposure databases used and thus might be subject to different ways of noise exposure measurement.

<sup>2</sup> Average climate change costs for the low scenario (for information only, values not used to calculate total costs).

<sup>3</sup> Climate change costs of up- and down-stream processes are calculated with the shadow value of the "Climate Change High Scenario".

<sup>4</sup> total average costs calculated with the climate change high scenario.

<sup>5</sup> Noise costs for freight trains might be under-estimated as the simplified traffic allocation procedure applied did allocate most freight trains to daytime traffic.

Source: INFRAS/IWW External Costs of Transport Update Study, October 2004.

Total external costs, all modes, all impacts at 2000 values for EU17 in €'s per 1,000 passenger kilometres, and €'s per 1,000 tonne kilometres.

We note that the Government's official figure for the social cost of carbon is "*currently being reviewed with revised guidance due to be published shortly*".

Notwithstanding the debate on quantifying the cost, we would ask the EAC on our behalf to request that the DfT clarifies the use of the social cost of carbon in the context of the interim guidance issued by DEFRA in August 2007 (How to use the shadow price of carbon in policy appraisal).

The interim guidance notes that the intention is to "use the shadow price of carbon (SPC) to value the increase or decrease in emissions of greenhouse gas emissions resulting from a proposed policy. Put simply, the SPC captures the damage costs of climate change caused by each additional tonne of greenhouse gas emitted—we convert these into carbon dioxide equivalent (CO<sub>2</sub>e) for ease of comparison. The SPC is different from the previously used social cost of carbon (SCC) in that it takes more account of uncertainty, is based on a stabilisation trajectory, and is in line with the marginal abatement costs of reaching the stabilisation goal".

For us there is a major problem in the way the Department *for* Transport (our italics!) approaches this topic—because the Department's task is to promote the aviation industry, its' collective attitude is to develop and finesse policies that allow growth, paying lip service to actually controlling and reducing aviation's environmental damage. Such institutionalised dissonance means the Department for Transport lacks any real ability to tackle the sector's environmental impacts in any meaningful fashion and regrettably probably always will do.

For example the very recent DfT Emissions Cost Assessment consultation had a somewhat biased presentation. Take a look at Question 11, which asked respondents:

"Do you agree that the assessment should be based on Government data, such as the social cost of carbon, radiative forcing factor and emissions data, in order to ensure consistency and credibility going forward?"

The answer is, of course, yes. But the results of what superficially appears to be a reasonable scope for policy development need to be presented fairly. The Summary of Results presented in Figure 1 on page 29 of the consultation document, and the conclusions in paragraph 8.3, are extremely misleading.

The Summary appears designed to create the impression that, in most cases, APD covers the climate change costs of aviation. This is, we fear, a foretaste of how the emissions cost assessment will be used and is biased partly because it is assumed that APD is all set against climate change costs and has no revenue raising purpose.

It is also biased because it presents a combination of the two lowest variables (RFI = 1 and carbon cost = £84/tC), but omits the combination of the two largest variables (RFI = 4 and carbon cost at £163/tC).

We consider that a more accurate way of presenting the results of the assessment would be as shown in the table below.

In addition to the five scenarios presented in the consultation document, Scenario 6 gives the figures used in the consultation but which, as mentioned above, were omitted from the Summary of Results.

Scenario 7 uses an RFI = 1, and the Stern figure for climate change cost.

Scenario 8 uses an RFI = 4, and the Stern figure for climate change cost.

The footnote reflects our recommendations for the wording that should be added to the final presentation of the cost assessment results.

<i>Scenario</i>	<i>Climate change costs in 2005 £ billion</i>	<i>Net coverage, assuming APD (at £1.8 billion) set against climate costs £ billion</i>	<i>Net coverage assuming APD used for general revenue £ billion</i>
6. RFI = 4 carbon cost = £163	6.6	-4.8	-6.6
7. RFI = 1.9 carbon cost = £280	5.5	-3.7	-5.5
8. RFI = 4 carbon cost = £280	11.3	-9.5	-11.3

The figures in the right hand column show the amount by which tax on air travel should be increased solely in order to reflect its climate change damage.

Note: The results above are likely to underestimate the cost of climate change damage caused by aviation for the following reasons:

1. they exclude return flights by UK citizens;
2. they exclude the probable global warming effect caused by the creation of cirrus clouds; and
3. they are only sufficient to stabilise emissions at 500–550ppm: to achieve the tougher target of 450–500ppm CO<sub>2</sub>, which many scientists consider is desirable, the cost of carbon would need to be three times as high.

Indeed the proposed methodology of the emissions cost assessment shows that, if the Stern figure for the social cost of carbon necessary to meet these tough scientific climate change targets were used, it would mean increasing tax on aviation by over £14 billion a year.

That would represent an average extra tax on each passenger departing from a UK airport of about £120, say £60 on short-haul flights and £240 on long-haul. We recognise that tax increases of this magnitude might not be politically feasible in the short term but it is the true measure of the climate change damage caused by air travel.

However, a gradual introduction of tax at these levels, in the form of an annual escalator over say a 5–10 year period, coupled with a clear annual statement of where this green tax income had been spent, represents, we believe, a practical way forward.

We liked the contents of this recent Leader article from the *Guardian* newspaper of Monday 5 November 2007, entitled “Crude economics”:

“Addicts are not always put off by high prices. Sometimes the cost of the drug makes the craving more dangerous. But a world addicted to fossil fuels is in serious need of cold turkey. It could be getting it now from rapidly rising oil, gas and coal prices. The price of crude oil is close to \$100 a barrel, up almost \$40 since last year and at an all-time high. That has added to worries about a global economic downturn, and if it is sustained the price will have a negative effect, especially in the US. But the real problem with oil’s current price is not that it is too expensive, but that it is still much too cheap.

The world needs to use less carbon-based fuel and find other sources of energy. Putting the price up steeply is one way to encourage this shift. More than new international agreements or carbon-trading systems—though these matter too—sky-high prices for old polluting energy sources will spur the immediate search for new, cleaner ones. No politician would have dared impose a 35% increase in under a year on the price paid for oil—but the market has just done that.

But it needs to go further. Although oil sounds expensive, it is still cheaper in real terms than it was in 1980 during the last big oil shock. On top of that, consumers, including Britain, buy oil in dollars, and the falling value of the US currency has offset the rising price of fuel. Petrol prices are edging over £1 a litre, but that is only 15p more than at the start of the year, when the cost of a barrel of Brent crude was \$53, not \$94. Demand is also growing faster than supply. Oil is expensive, but not yet expensive enough to restrict its use by encouraging energy saving or alternative sources.

If oil’s upward march, which continued on Friday, is followed by a sharp drop next year to around \$80, as some predict, fossil fuels will remain cheaper than alternative energy sources, which require a huge amount of expensive technology and investment. If the price climbs, the market will invest in other sources of power—wind, solar, nuclear and others.

It would be foolish to think that the world can be weaned off its addiction immediately: new-technology renewable sources make up only 0.5% of the global energy supply, and fossil fuels will continue to be essential for a long time. But where governments duck the challenge of change, high prices can help. Ruth Kelly, the transport secretary, last week pleaded for Britain’s luxury-car makers to be protected from tough EU emissions targets, which she wants watered down. But in the US, where fuel costs are soaring, the sales of hybrid-drive cars are at record levels. Ministers or the market—which will respond faster to global warming?”

Political courage is sadly totally missing from the Government's air transport tax policies. Unrestrained air transport demand is simply nodded through, a worrying example of outdated, unsustainable "predict and provide" policies at their very worst.

The AEF strongly believes that it is vitally important to have a sound scientific basis in order to assess all air transport's climate change-inducing impacts. The UN IPCC reports provides this basis. The UN IPCC's 4th assessment report suggests that the RFI for aviation greenhouse gas emissions is now closer to 2 than 2.7 (as highlighted in the 1999 Special Report on Aviation and the Upper Atmosphere) we accept 1.9 (but preferably rounded up to 2!) as representative of the low range value. However, we note that all UN IPCC reports to date have excluded the potential effects of cirrus cloud formation from aircraft exhaust emissions at altitude, although they have identified the problem and current uncertainty values. Estimates for the impact of cirrus vary greatly but even using an RFI of 4 may not fully take account of its potential to substantially increase the climate change impacts of aircraft emissions.

This is why we believe all and any policies designed to control and reduce air transport's GHG emissions and related impacts would lack credibility if they failed to address these additional non-CO<sub>2</sub> effects. This absolute necessity outweighs any scientific gaps or uncertainty and is in line with the "precautionary principle", an oft-quoted but seldom implemented principle!

Market based-options have to deliver real CO<sub>2</sub> emission reductions in the air transport sector—it's the environmental outcome/target that's important, not a slavish adherence to a price. The price must be what's necessary to achieve the outcome taking factors such as consumer willingness to pay, price income elasticity and others fully into account.

It seems to us at the moment that policies to facilitate all air transport emissions growth via a rigged market are both cynical and a gamble too far.

For instance, if the EU emissions trading scheme is to work properly, each industry should start by paying a fair level of tax. If one industry, in this case the air transport sector, receives a large tax subsidy it will have a significant inherent advantage and will simply be able to buy up an undue proportion of emission credits.

Our observations of other industry sectors and their respective lobby groups is that they all believe emission trading schemes will magically allow them all to expand under business-as-usual scenarios with some marginal efficiency gains as their environmental contribution.

Our recommended outcome is that by adding all air transport's externalities to ticket prices demand will be halved to ensure that growth is in line with technology and operational efficiency gains, the magical 1–2% per annum. The industry can be allowed to grow but only within the parameters of these efficiency gains. An acceptable goal might be to try and stabilise the sector's emissions at say 2010 levels as part of this approach. We believe a tough demand management regime is a fair and equitable solution to controlling the emissions-related climate change impacts of the air transport sector, which are currently out of control.

The PBR focuses on the future development of a per-aircraft charging methodology(s), under the misguided belief that this will somehow speed up both technological change in aircraft and aero engine development, as presumably airlines pressure manufacturers for a better more fuel efficient product, and also speed up fleet change over rates. We have given our reasons above as to why there are difficulties in speeding up both processes.

We also believe that the current vogue for a per-aircraft charge is simply political expediency, a method of presentation to avoid any potential backlash for a straightforward per passenger charge, at least in presentational terms. But even if a per-aircraft scheme is developed, any cost increases will be passed through to passenger ticket prices even if added, for example, as a component to fuel surcharges. Or in the case of Ryanair, probably labelled something like "Robber Baron Gordon's Holiday Tax"!

However, there is a simple mechanism for identifying both passenger and freight emissions on a per-aircraft basis that can link emissions to available capacity.

Both passenger and freight capacity can be expressed as Available Seat Kilometres and Available Freight Tonne Kilometres and these are in effect an industry standard measures, covering both capacity and distance across legacy, low-cost, charter and freight airlines as well as the business and executive jet sector for each and every flight. We want to see a scheme that has the widest possible scope applied to all commercial air transport flights, including aircraft positioning movements. If it makes such a scheme easier to administrate, we would have no objection to the charge being levied one year in arrears, ie current tax based on the previous year's performance.

Fuel loaded for each flight is already reported by aircrew for each mission and each airline knows this in addition by conventional invoicing and accounting procedures as they pay suppliers.

Fuel, kerosene, is easily converted into CO<sub>2</sub> emissions by multiplying by 3.15.

The crucial elements are then what is the overall environmental objective in terms of emissions reductions; and what carbon price is necessary to achieve that objective. We have presented our analysis on both areas previously in this submission.

However, we are sure both HMT and DfT could develop a standard fits-all-sizes per mission tax rate perhaps called the ASK or ATK Aircraft Duty. They certainly have the capacity to do so.

Changing the design of APD to a tax based on the carbon cost of a particular journey is a step we would encourage. But despite the possible environmental benefits of a system of taxation based upon the levels of carbon emissions, there are many practical issues that would need to be considered before implementing such a tax per aircraft mission. For example, how would the carbon impact of each aircraft type be measured and verified; how would figures be obtained from overseas airlines; how would passenger load averages be included and checked; how would passenger flights and cargo flights be dealt with under one regime and how often are all these figures updated? Would the costs then allocated to each passenger vary by class of travel? And how would any such charging system integrate with any future ETS scheme?

We firmly believe therefore that the best way forward is to simply change APD to a distance related-tax at levels that reflect all the external costs of air transport and applied to both passengers and freight.

In summary the AEF would like to see:

- A clear emissions reduction target for the UK air transport sector.
- An unequivocal economy wide all-sector emissions forecast including those from UK domestic and international air transport for 2020, 2030 and 2050 so we can put aviation's rapidly increasing share in context within the UK's and EU's GHG reduction targets.
- A clear statement of what demand reduction, modal substitution, travel avoidance measures such as video conferencing, and aircraft and airline technology and operational supply-side improvements contributions will be under this proposed regime.
- The cost of CO<sub>2</sub>, and other externalities, must ultimately reflect a level of tax that reduces growth to exactly what the sector's efficiency gains will be in order to stabilise emissions perhaps at 2010 levels.
- Climate change costs must include an appropriate multiplier to take all aviation's non-CO<sub>2</sub> impacts into account and should over time reflect worst-case climate change damage costs or be at levels that can deliver emissions reductions in line with policies to deliver general climate stabilisation of 450–500ppm CO<sub>2</sub>.
- The general taxation contribution of APD should be retained as Treasury income and external costs added over and above this amount.
- Per aircraft charge is unnecessarily complicated.
- We recommend retaining the Air Passenger Duty name and developing it as a per passenger and per freight tonne kilometre average cost with regular updates on the range and accuracy of the sector's externalities; increases as necessary that also reflect inflation; and an annual statement of revenue raised and how it has been spent to aid public acceptance.

Finally, there are, as always, international political issues when attempting to introduce any taxes or charges related to fuel or emissions, witness the current threat levels from the USA and its allies regarding aviation's inclusion in the European ETS. We do not have either the legal expertise or financial capacity to give definitive advice on UN ICAO and bi-lateral air service agreements but point out that this area will be a major pinch point in successfully defending and introducing such policies. We notice that there has never been even a hint of a legal challenge to Air Passenger Duty in spite of Government statements that an element of it is an environmental tax.

We would be pleased to comment further if the Committee feels this would be helpful.

*19 November 2007*

---

*Witnesses: Mr Jeff Gazzard and Ms Cait Weston, Policy and Communications Officer, Aviation Environment Federation, gave evidence.*

**Q119 Chairman:** Welcome. We have about half an hour or so at our disposal, so I will not waste time with formalities at this stage. You have been calling for much higher taxes on aviation to curb the growth in demand; that is a view that this Committee is not entirely unsympathetic towards. How far would aviation taxes have to be raised to achieve any halving in the growth in demand?

**Mr Gazzard:** By about the kind of figures per passenger that we quote, which is this almost mythical 3.6p per passenger kilometre at 2000 prices. That is the reason why I included both of those tables from the INFRAS/IWW study in the report so you could look at what aviation's external costs are, but, importantly, in the context of other modes of transport, so you have the complete picture.

**Q120 Chairman:** Do you think it is right to try to draw a distinction? If you are raising tax on aviation, the truth is that if you are going to America from Europe, you are going to fly. However, within a continental land mass, even quite a large one now, the arrival of high-speed rail means that quite long journeys in places like France and Spain are knocking out most of the domestic aviation sector. Is there a place for targeting particularly an increased burden of taxation on those types of aviation where there is an opportunity for modal shift?

**Mr Gazzard:** Essentially that is what you are doing by the so-called blunt instrument of taxing aviation. There are two elements here. Because we have an alternative to short-haul rail, then that appears to make sense but there is a bit of a misunderstanding here. People think that short haul is much more environmentally damaging because it is more frequent and there are more frequent take-offs and landings which consume more power. However, actually it is long-haul flights which are equally as damaging because of the length of the trip. We take a very simplistic and straightforward view that you have to do both because there are alternatives to long-haul travel as well and that would be largely video conferencing or telepresence, as it seems to be called nowadays. For instance, I was invited to speak at a conference in Australia two weeks ago and I did not go, but I did it with the help of Tandberg and a software company from Egham and saved 12.1 tonnes of CO<sub>2</sub> at a cost of about £3,000, which is less than a business class trip and a hotel. In a sense there are alternatives for all of it and it is very easy to look at this in just a European context. I feel one of the dangers kind of strategically is that if you are imposing European positions on Europe because you can, then you are ignoring some of the growth areas and the potential for equivalent solutions elsewhere. One of the reasons for bringing my new colleague Cait Weston along today is that we have opened a second front on this issue of aviation and the environment in the US and perhaps right at the end we can find a minute for Cait to bring you up to date on that. This is very, very important.

**Q121 Chairman:** We have been calling, as a Committee, when we looked at previous Pre-Budget Reports, for air passenger duty to be levied on the basis of flight rather than passenger and we at last seem to have made some progress on the argument. Your members are a bit lukewarm about that. Why is that?

**Mr Gazzard:** Lukewarm is a very kind phrase. I quite like the public acceptance of a per passenger charge on a passenger, on an individual. All of the surveys that have been done by the Department for Transport and ourselves with some funding we got and ICM and the *Guardian* and the *Observer*, when they asked these issues, found there is a growing public acceptance of the impact of air travel and a growing acceptance of the willingness to pay. Accepting the fact that people always say that to opinion polls, the crunch comes: what is the amount and what will it do to your habits? In the context of the debate on road pricing, in the context of the debate on climate change being a personal issue and the Government themselves on their own carbon websites asking both businesses and individuals to think about their choice of travel and actually asking them to fly, in some instances, I am a great believer in getting the public on side, getting their acceptance of the need to tax air travel and it is my feeling, having worked in this area for 14 years, that a passenger charge is the way to get public acceptance of the need. Whichever way you slice it, and I have gone through the mechanism of how you might work out a per-aircraft charge, that charge is still going to be passed on to the public and the prime rationale, it seems to me, although nobody can explain it to me in terms that I can understand and I am supposed to be an expert, is how that charge will drive greater efficiency through either speeding up aircraft R&D or aircraft purchase. What I tried to do, quite rightly with a fair amount of scepticism, was to go through what we believe is the *status quo* of that whole area of aircraft design, fleet choice renewal. That seems to be what we hear from the Department for Transport as the prime reason for doing this and I just think that there are other ways, that if you put a cost on an airline ticket, airlines will shave their marketing budget or become more efficient or what have you. Do not forget they are becoming 1% per annum or thereabouts more fuel efficient annually anyway and we welcome that. That is why I am sceptical about it and I was also extremely sceptical, if not a bit rude, when I said that it is a political motivation in some instances to move away from not scaring the horses of public acceptance and shifting the burden onto airlines. If you look, as we have done, we have had conversations with Airbus, we have talked to Pratt & Whitney, because of our observer status at the two international institutions that run civil aviation and environmental and technical performance we have to know this stuff, that 25- to 30-year design in use, we know what we are going to get from aviation for the next 25 to 30 years. Price signals might speed up the change in fleet acquisition and they might make a difference of an airline deciding they were going to

---

11 December 2007 Mr Jeff Gazzard and Ms Cait Weston

---

go for that engine because it was cheaper or pay a bit more because that one was a bit better. I accept that. However, the point I will come back to is public acceptance of a per-passenger charge is the way to get this whole issue of the right price for air travel up and running.

**Q122 Chairman:** Is that how the available seat kilometre works and the available freight tonne kilometre?

**Mr Gazzard:** Yes; in essence. That is the complete load per airline and that is their availability of what they have to sell. They would tell you how much permission or their company's entire fuel purchases for a passenger trip and a freight trip and then you just make that a price that they would pay for all of that capacity. There is one problem here. What we are trying to do is to get more people per plane and more freight per plane to make it more efficient. Inevitably, that will encourage more people to fly. What we are also trying to do—and this is something I did not put in the report it only struck me afterwards—is to tell airlines how to sell seats. A charter airline has probably 80% plus capacity, which is pretty full. A low-cost carrier has 76% capacity, which is pretty full. A scheduled legacy carrier like British Airways has 67 to 70% capacity, which is pretty full. If they could sell those extra seats, they would be doing that. Please remember that airline marketing and yield management and demand is quite a sophisticated business and if they could have 100% full planes, they would have them. That is an important point; it did literally come to me on the tube train a couple of days ago. Are we in the business of getting the carbon costed ticket prices or are we in the business of telling airlines how to market empty seats into ticket prices? I just found that a bit paradoxical.

**Q123 Mr Stuart:** Let us turn to the APD and the Chancellor has announced with a great fanfare the doubling of APD on a short-haul economy flight to £10, which of course brings us back to the future, back to where we were in 1997. I wonder whether you could comment on that.

**Mr Gazzard:** It is probably slightly less, in terms of back to the future, allowing for inflation. There is artifice going on here. The Government and the industry are trying to construct a case where APD covers the climate change costs of aviation and that is it; it is self-evident that is what is going on in policy terms. What we try to point out is, as the previous witnesses said, the price of carbon. You either do it logically and sensibly à la Stern, a kind of non-neo liberal, kind of Keynesian analysis of what is fair and what is right. We welcome Stern in terms of its analysis and everybody wants to see those kinds of prices put on carbon eventually. We have done the figures and, to get back to what the Chairman asked me, if you put the price high enough, you both stimulate technology, which is difficult in this industry because it is doing it anyway, or you have a demand management function. We have run all these figures through the Treasury's model for GDP and the Department for Transport's passenger

allocation model and instead of 500 million passengers in 2030 in the UK, you get about 320 million. We think that is a fair and accurate number to have.

**Q124 Mr Stuart:** Talking of figures, the Pre-Budget Report estimated that a rise in APD would result in a savings equivalent to 2.75 million tonnes of carbon dioxide a year by 2010. I wonder whether you could comment on those figures and the way the Treasury reports them.

**Mr Gazzard:** We have actually asked the Committee to help us on that one too. As far as we can ascertain, it does not include any RF factor, so it is straightforward carbon. To be fair to the DfT, they do recognise there is an RF issue and they are quite clear about that and the science and everything else; it is the level of the multiplier that is being discussed. I would give them nine out of ten for sticking to the concept of the science of an RF factor because they are under incredible political pressure from the airlines to drop all that. I am not going to be churlish; let us give them nine out of ten. They will be happy to hear that. On this issue of what these savings are, I do not know. We have asked them and they cannot articulate it. I know it does not include an RF factor. We can go back and ask them again but we just felt the Committee might like to do that for us. I cannot explain it.

**Q125 Mr Stuart:** Last week, we had the WWF suggesting a third band for APD to cover long-haul destinations like Australia. Do you have any particular views on that?

**Mr Gazzard:** Yes; I like simple solutions. I quite like our version of that which is £60 at the moment on a short-haul flight and £120 on a long-haul flight. I know these are draconian figures and they do not have acceptance but frankly that is where we are going on a number of issues. I was listening to part of the previous discussion and if you look at the impact on electricity prices of the Renewable Option and all the things that have happened there, everybody pays hidden carbon costs already and we just simply are not aware of it. The problem here is that it is a very public debate and quite rightly too.

**Q126 Mr Stuart:** So you would be happy with £60, £120, £180 if the WWF's third band came in?

**Mr Gazzard:** I would be happy with £120 and £240 to be quite honest. We have gone as far as we can in pointing out a mathematically numerate basis for the cost of carbon and other externals, putting them all on travel and what that does and those are the figures. Other people reinforce that and banding and all the rest of it are fine but I go back to what I said to the Chairman. We really like the public accepting that they pay a per-kilometre charge and we think that is the way to gain acceptance of getting the right amount of prices on air tickets.

**Q127 Mark Lazarowicz:** Just one particular aspect of the changes announced to APD. There was a proposal to end the anomaly whereby passengers on business-only flights could escape paying the higher

business charge of APD. Would this have any significant input at all on carbon emissions? Do you have any estimate of how much money that change would bring in?

**Mr Gizzard:** That is an excellent question, the answer to which is little and I do not have any amount of money. There are only three airlines to which it applies. It was just a quirk in the way the legislation was written in that there were taxation classes according to economy or business class seats. There are three airlines—Maxjet and Silverjet and Eos—which are all business class, so it only applies to those three airlines. One of them has liquidity problems right now, announced in the paper over the last couple of days, and they are only small airlines flying from Luton and Stansted. I do not know what their carbon output is. I can let you know and we can make a guess on that<sup>1</sup>. The answer is that it was an important statement to get them to pay a business class cost and that has been done and we welcome that but the actual impact is marginal, both in terms of income and carbon savings. It will not have impact on their occupancy rates or stopping people flying on them. They will be able to do that themselves because they are not a very stable marketplace frankly.

**Q128 Jo Swinson:** You have calculated £4 billion a year for the cost of the zero-rating on VAT. How did you come to that figure?

**Mr Gizzard:** We just extrapolated that from the kind of sales that BAA report in their airlines and made an estimate of what that would be for the whole of the UK airport fraternity. What we have done is look at BAA's figures and just upscaled them. I think quite rightly, we have said that airports and airlines get a benefit from the profit on those sales. Airports get it in terms of funding their capital expansion plans and the general profitability and airlines get the benefit because there are better airports as a result of it. That is probably an underestimate but it is a pretty well accepted figure. We have banded these around now for about three or four years and nobody has queried them.

**Q129 Jo Swinson:** Last year the Committee recommended that the Treasury should publish its own figures and perhaps it is instructive that they have not challenged yours. They have argued that it is pointless even to try to estimate because there are so many obstacles in the way of charging VAT on the aviation industry. What are your views on that argument?

**Mr Gizzard:** You would have to go back to the whole rationale for duty free which I just think is a nonsense. We have abolished it by and large within the EU for reasons which we campaigned long and hard for. A lot of this is not actually duty free. They keep the phrase "duty free" and it is just a discount store because they sell a lot and get good prices. If you were to do a price comparison between the costs of products, let us say perfume and consumer electronics, in the best high street outlets and what is

on sale at Heathrow, you would probably find there was very little difference. I take your point entirely and we will go away and do something about duty free, a wider study, and look at the prices on the high street, what you are getting, whether it is really duty free or whether it is just because you are there, you are excited, you have waited for two hours to get through security, you want to spend some money. I know that is not a complete answer but we think the figure is accepted. The Treasury's response is a bit dog-in-the-manger to be quite honest. Why do they not just tell us? They are the Treasury.

**Q130 Mark Lazarowicz:** In your memo, as far as the EUETS scheme is concerned, do you estimate that as currently envisaged the increase in emissions from aviation will be 78% as opposed to 83% by 2020 under business as usual? First of all, what is your baseline? That is 78% from what starting point?

**Mr Gizzard:** Those figures are the Commission's.

**Q131 Mark Lazarowicz:** From what year are you starting?

**Mr Gizzard:** That was from an average of 2004 to 2006. It is the Commission's own impact statement.

**Q132 Mark Lazarowicz:** That is accepted, as far as I understand, by our Government and by the Commission.

**Mr Gizzard:** Yes.

**Q133 Mark Lazarowicz:** How realistic are these figures in terms of actually leading to that kind of very minimal reduction?

**Mr Gizzard:** That is why we pointed it out. We feel very strongly that their supply-side reductions, basically in encouraging more efficient aircraft and all the rest of it—and we have said this in a previous submission—are going to happen anyway. You have to take apart the impact study and the consultants' report from C E Delft and most of those seem to us to be supply-side reductions from greater efficiency, better aircraft and fleet renewal rate. When we looked at the entrails of that, as it were, we felt they were going to happen anyway.

**Q134 Mark Lazarowicz:** What do you think the UK should try to get out of the discussion of the EUETS? What is a more appropriate figure for emissions reduction than the ones which are currently brought up?

**Mr Gizzard:** I have to be perfectly frank. The whole issue of the ETS from our viewpoint is let us get airlines in a scheme that starts to add some of their carbon cost to ticket prices. That is the political point that we would campaign on, the policy point. We ask the questions that you have asked me: Where is this going? What will carbon prices be? What impact will they have on the carbon market? What do you expect air transport's percentage of carbon to be in 10, 15, 20, 30, 40 years' time? Nobody can answer that. It is a question that we want an answer to. I do not have any idea or expectation of what carbon reductions will be from including aviation in the EUETS apart from this first estimate that has

<sup>1</sup> See Ev 57

---

 11 December 2007 Mr Jeff Gizzard and Ms Cait Weston
 

---

come from the Commission's impact statement. I just have no idea; nobody does. We asked the Department, we asked the Commission where this is all going to end and as a result that means that the only confidence we have in the aviation's inclusion in the ETS is that at least it is a start. This makes it sound pathetically wimpish in not knowing our subject but nobody can answer these questions for us and I have to tell you that I ask them of policy makers on an almost daily basis to the point where one or two of them do not quite give me a response anymore.

**Q135 Mark Lazarowicz:** It is hardly surprising that the aviation industry have no problems with whether they are included in the EU ETS or not. It does not make any difference to what they do.

**Mr Gizzard:** Good point. Our view of this is that it is a start; it is a small step to get aviation paying some of its environmental impacts and therefore we welcome it. However, you will know, both as a Committee and personally, my scepticism on this. For instance, in the context of the previous witnesses you get into arcane discussions about the price of carbon, its impact on capital investment and this applies to this industry just as well; nobody can give you a straight answer. One of the things we have tried to do on this is to take the figure which was in the Stern report, which is where are we going globally on CO<sub>2</sub>. Stern, apart from his mathematics that we actually need 87.5% cuts, let us call it 90%, in developed countries by the middle years of this century, actually gave a figure for what he expects the world CO<sub>2</sub> to be to comply with 450 to 550ppm range. That is five billion tonnes of CO<sub>2</sub> equivalent by the middle years of this century and we are at 42 right now globally. Aviation is 610 million tonnes worldwide today which is larger than the UK economy, the world's fourth largest. UK CO<sub>2</sub> emissions are about 590 million tonnes of CO<sub>2</sub>. Today, as we sit here, globally aviation is bigger than the world's fourth largest economy. We have had some figures from regulator databases that were in an unpublished paper that show that CO<sub>2</sub> from air travel, including efficiency gains could be 1.4 billion tonnes by 2030. I shall be happy to send you that paper.<sup>2</sup> It is a very authoritative report, a USFAA-linked think-tank, the Volpe Institute, Eurocontrol studies and our own MMU and QinetiQ. There are some variances, but broadly speaking aviation is set to grow from 610 million tonnes to 1.4 billion tonnes by 2030 globally. Out of five, that is an awful lot. What we are beginning to ask policy makers to tell us, in the context of the EU 2°C policy, is where this is going. What is Europe's future CO<sub>2</sub> load, how much of that will be transportation, commerce, power generation? What we are all doing is talking about the present, which we have to do, but we now have really, really good stuff from Stern on the econometrics of how you do all of this and how you get to that total. If you combine that with stuff like the seminal report a few years ago from the RCEP *Energy—The Changing Climate*, which was the best

exposition I have ever seen of how you get to a low carbon economy, and put those two things together then I will be able in about two years' time to answer your question "Whither air transport?" in terms of its CO<sub>2</sub> loading. Those figures just do not strike me as realistic.

**Q136 Chairman:** Conceptually the EUETS could be used to achieve a much tighter outcome. If they limited the amount of allowances to be either unfortunately allocated or, in my view preferably, auctioned at a sufficiently tight cap that would prevent a situation of the kind projected by the European Commission.

**Mr Gizzard:** The words "theory" and several "ifs" are the nub of that. I have to be frank again. I do not believe that an emissions trading scheme, not just for this sector but generally as an economic concept, is anything other than theory. We get quite good exposure to senior levels of the air transport industry and they ask us, me and particularly my colleague Tim Johnson our director, what this is all about. When you get chief executives of major airlines asking you what this is all about, there is a bit of a problem here because they should know. In theory you are quite right: there is an awful lot of brain power, policy and real commitment from a moral and an economic and a government weight invested in emissions trading schemes and that is good. Equally it leads to an element of group think. There are downsides in emissions trading as a concept which you alluded to in your couple of sentences and they are never looked at.

**Q137 Chairman:** The problem is that the schemes are all subject to produce and capture and the one we have had in phase one was effectively dreamt up by the generating industry for their own benefit. Aviation has every opportunity to do the same thing. If you said you were going to start with the aim of limiting emissions, you said all allocations will be auctioned, every operator would get a zero allocation, every flight, take-off and landing, inside or outside the EU would be covered and you would only auction the same number of emissions which are currently being emitted, you would achieve a cap. In my view a proper trading scheme is a more watertight method of addressing this than taxation. You could quadruple taxation and people might just pay. They might regard it as such a priority to go flying that they will not care how much; they will live in a smaller house, sell their car, take their kids out of school, not pay their taxes. The fact is you can actually define the emissions levels if you have a watertight trading scheme.

**Mr Gizzard:** That is the theory and we support that as a theory and as a concept for emissions trading. What I was simply saying was that it is a theory and theoretically you are quite right. Most of the lobbying effort we put into the European Parliament has been to achieve those aims. Currently one of the airlines did a study on where we were a couple of weeks ago on the potential burden as a result of all these parliamentary discussions. Finnair said it was going to be bankrupted, it was going to cost them €5

<sup>2</sup> See Ev 57

11 December 2007 Mr Jeff Gizzard and Ms Cait Weston

billion as an airline. Well, they have nine million passengers so it is €5 each and that is the problem. The hope I have for emissions trading is that it does ratchet up over time. Without betraying any confidences, that is what policy makers tell us. Get them in, whatever the sector is, and over time it will happen.

**Chairman:** Certainly we would agree. Our own report on the ETS acknowledged that the practice so far falls woefully short of the theory. We just want to focus on Heathrow and then we will hear about America very briefly.

**Q138 Martin Horwood:** We heard evidence from Friends of the Earth last week that the Government appear to have departed from Stern by setting a shadow cost of carbon which is some three times lower than the figures suggested by Stern when they were using the figures to calculate the economic benefit of the Heathrow third runway and therefore the consultation has come out with a net present value economic benefit of £5 billion. I guess I can almost predict the answer to this but what is your view of the shadow cost of carbon and the way that consultation used it?

**Mr Gizzard:** I am actually quite a fan of the economic approach to solving climate change problems. Let me make that clear. It is the way to get acceptance from industry and society as it is made up. The shadow price of carbon is a good mechanism, but it is currently £70 and the recent cost assessments and revised forecasts and the Heathrow document we have seen seem to imply that DEFRA and DfT have continued to back that figure of £70 because we are convinced that climate change is such an important issue that every other country is taking it seriously and is going to make strenuous efforts. I paraphrase what is in the document. That is why they have said that everybody else is going to be reducing it and therefore the price will stay the same. That is completely at odds with Stern. It is completely at odds with the CBI of a couple of weeks ago where the chairman of BT led their commentary which said that the price of carbon has to be two or three times higher than it is now. It is completely at odds with the previous witnesses who said similarly that the only way you can drive technology and/or demand management and/or energy efficiency or any one of those individually or collectively is by increasing the price of carbon.

**Q139 Martin Horwood:** Nominally it was DEFRA which came up with this calculation. Do you think it is really the Treasury which is driving this?

**Mr Gizzard:** Do I think it is really the Treasury? The answer to that is yes; of course I think it is the Treasury. However, what I find very odd about all of this is that we are able and have always been able increasingly over the years to get to talk. Treasury have a transport green economics team; they are lovely people, they understand the issues, they can express them, but not quite as succinctly as the Chairman did. You can have lovely conversations with these people but they are not in the business of constraining economic development.

**Q140 Martin Horwood:** To play devil's advocate for a minute, they do have an issue on economics of airports, do they not?

**Mr Gizzard:** It is about competitiveness.

**Q141 Martin Horwood:** If you impose a greater carbon cost on UK airports and charge your per-kilometre duty on top, is there not a risk that people will just start to hop to Schiphol and the long-haul flights will happen from there?

**Mr Gizzard:** There probably is a risk but it is a small risk. The people who will be doing that are business people for whom this is not an implication really; it is the leisure travellers who will stop doing that, which is why we have to have an EU-wide policy. I am a committed European, I do speak more than one language, and 27 countries, whose GDP is bigger than the States now, have a 2°C policy and we are trying to tease out of them where aviation will fit in with that. On the one hand it is very difficult being a campaigner because we are supposed to be dog-in-the-manger and attacking all the time but there are some real positives out there. The other thing I found out by studying the DfT report very carefully is that they have monetised all of these values through to 2080 but they did not carry the costs through to 2080.

**Q142 Martin Horwood:** Can I be clear? You say that is why we need an EU-wide scheme, which is obviously right. However, the reason the Government are saying they cannot put aviation up front in the mechanisms of the Climate Change Bill is because they think the international framework is not there. Are you saying we have to wait for an EU-wide scheme?

**Mr Gizzard:** No, we do not have to wait for an EU-wide scheme. What I am delighted to tell you, and we are just waiting for this in writing, is that the Commission have confirmed to me that the 2°C policy does include for counting into the EU's targets an allocation of aviation and shipping emissions.

**Q143 Chairman:** That is a step in the right direction.

**Mr Gizzard:** Indeed. I am not bothered really about the competitiveness of Europe as a whole. Europe has to make a stand on this issue. People will fly here to do business if they are businessmen almost whatever the price and there are 20% of flights now, and in the future, that is an increasing number; that is about the percentage of business travel. Eighty per cent is discretionary leisure, visiting friends and relatives and people have a right and an expectation to be able to do that but only if they take on the responsibility of paying the cost of their environmental damage and that is the underlying philosophy of all of these schemes, whether they are market-based options or an old-fashioned, child-of-the-fifties, command-and-control taxation regime. I make no apologies for that. What we are trying to do is to analyse the subject and come up with some solutions and to work on public and government salients of the problem and what the answer must be. Our view is that technology will not solve this; there

---

 11 December 2007 Mr Jeff Gazzard and Ms Cait Weston
 

---

has to be an element of demand management. We welcome emissions trading for this sector because over time it may deliver the kind of analysis that the Chairman has so eloquently and succinctly given.

**Q144 Chairman:** It could be argued that in one aspect it is actually economically advantageous to have a very tough regime on aviation at an early date in that if it stimulates investment in alternatives—and I have noticed that Friends of the Earth are now endorsing Eurostar, in which I declare an interest, as 10% of the emissions from the equivalent flights to Paris or Brussels. If Europe as a continent developed a really effective rail network, it would then have a huge advantage. In 50 years' time, if the cost of flying has really escalated to the sort of levels you and I probably think are inevitable, those land masses which have alternatives will economically have the advantage not disadvantage.

**Mr Gazzard:** I can give you one example of how daft this is. The most used city pair, that is aircraft terminology for a twin city route, is Barcelona and Madrid. They have a high-speed link. Do you know how many metres of track they are short of at a junction bottleneck somewhere in the Barcelona area? Ten metres of track. I know this sounds apocryphal and I heard it only yesterday from an unimpeachable source and we are going to ask for it in writing, but there you go, there it is. Most of those flights now are not Iberia, they are EasyJet flying from Barcelona to Madrid because of the spare capacity due to the expansion of Barajas. I will send you a little note on that because it was one of the things we were looking at.<sup>3</sup> To pick up a point Mr Horwood just made, if this tax take of £9 billion a year is taken and seen to be allocated to high-speed rail and all the rest of it, with a report and accounts published, that is another way to get public acceptance of this. Cait is just going to take us through a really important second front which we

<sup>3</sup> See Ev 57

have opened in the US on this issue and just one other comment yesterday from the media about including aviation emissions in air climate targets.

**Ms Weston:** It is a bit of encouraging news from overseas in that earlier this month, on 5 December, petitions were issued by five US states: California, Connecticut, New Jersey, New Mexico and Pennsylvania to the Environmental Protection Agency asking that the Government begin to regulate aviation emissions in the USA. The petition from California's attorney-general requests that the EPA should propose and adopt such regulations as are necessary to achieve and enforce the emissions standards requested and that these regulations could allow compliance through and should consider emissions limitations, work or operational practices and/or emissions fees or a cap-on-trade system. We are somewhat doubtful about what the immediate regulatory impact of these kinds of petitions may be and perhaps everybody shares some of those doubts, but it is significant politically that chief legal officers of US states are now talking about economic incentives and disincentives in relation to aviation emissions and that should allow us to feel bolder in the UK about the kind of steps which we are willing to take economically. Also, just to bring us up to date on the latest thinking on the UK emissions, a report was published yesterday called *Too Good to be True? The UK's Climate Change Record*. This suggested that, although official figures suggest that we are already exceeding our overall Kyoto target on emissions, once you include aviation emissions it starts to look more flaky and will do in future as the sector grows. In fact, if you include emissions embodied in goods which we now prefer to import rather than to produce on our own turf, then in fact there has been an increase of 19% between 1990 and 2003 of UK emissions. It was really just to say that the Americans at some level are starting to take aviation emissions seriously and that we can take seriously our opportunity to be international leaders in using economic and possibly fiscal measures to constrain aviation emissions.

**Chairman:** Thank you both very much indeed for coming in. Thank you very much.

---

### Supplementary memorandum from the Aviation Environment Federation

#### 1. *The cost of carbon and how it's applied to the cost benefit analysis of air transport growth*

We said we would clarify this in the light of the DfT's use of DEFRA's Shadow Price of Carbon guidance (<http://www.defra.gov.uk/environment/climatechange/research/carboncost/pdf/HowtouseSPC.pdf>) throughout the recent "Adding capacity at Heathrow Airport" consultation document. DEFRA say:

"The SPC is different from the previously used social cost of carbon (SCC) in that it takes more account of uncertainty and is based on a stabilisation trajectory".

We acknowledge that dramatic price increases, in this case via the theoretical overnight imposition of a high carbon cost to the industry, can cause shocks to the economics of air travel. We do think that a low carbon value over time, even when adjusted as the DEFRA document puts it:

"In the year 2000, in year 2000 prices, the SPC is £19 per tonne CO<sub>2</sub>e. This rises over time for two reasons:

- to account for observed (and assumed) inflation; and

- increasing by 2% per year to account for rising damage costs from higher greenhouse gas concentrations”.

is, however, so different from the Stern analysis as to be just plain wrong.

**Table 2**

**SPC FROM 2007 TO 2050 (IN 2007 PRICES)**

<i>Shadow Price of Carbon in 2007 prices (£/tCO<sub>2</sub>)</i>															
<i>Year</i>	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018			
SPC in 2007 prices and with 2% pa increase	25.5	26.0	26.5	27.0	27.6	28.1	28.7	29.2	29.8	30.4	31.0	31.6			
2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
32.3	32.9	33.6	34.3	34.9	35.6	36.4	37.1	37.8	38.6	39.4	40.1	40.9	41.8	42.6	43.4
2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
44.3	45.2	46.1	47.0	48.0	48.9	49.9	50.9	51.9	53.0	54.0	55.1	56.2	57.3	58.5	59.6

Source: <http://www.defra.gov.uk/environment/climatechange/research/carboncost/pdf/HowtouseSPC.pdf>

There is surely everything to be said for setting a specific carbon allowance for the air transport sector within say an overarching strategic climate change policy such as the EU20C policy or the UK’s own climate change targets, rather than simply permitting unrestrained aviation growth, the Government’s policy right now. The only control system on offer is aviation’s EU ETS entry which we believe will not deliver any worthwhile reductions in emissions from the sector. Using a realistic Stern-based carbon price via an annual escalator as part of an emissions control and reduction strategy for the sector is the best option. The Government’s use of a strangely and deliberately low carbon price is very worrying. The bar needs to be set much higher. The EAC has commented in previous reports that the growth of internal UK and UK-allocated international aviation emissions will have a grave, overwhelming impact on future UK climate change strategies. We agree. The way the cost of carbon is calculated and used right now needs to be urgently reconsidered. And it should be noted that there are other external costs, noise and air quality impacts, habitat loss and so on, which need to be reflected in ticket prices.

The EAC knows our views that growth for the air transport sector should be limited by appropriate carbon/external costs tax levels to 1–2% per annum, the rate of forecast technological and operational improvements, in order to stabilise emissions from aviation—this is half current growth rates.

There is another, in our view, highly questionable element of the DfT’s monetised benefit analysis—this concerns the Transport User Benefits of additional capacity at Heathrow, section 2.36, page 143 of the consultation document. Expanding Heathrow from today’s 480,000 movement limit to 702,000 by 2030 (with a 3rd runway opening in 2020) apparently results in £17.1 billion of Transport User Benefits between the years 2020–80. This paragraph commentary may not fit within the scope of the EAC’s current Inquiry but reading how these somewhat illusory “benefits” are described may help the Committee understand just how partial the DfT CBA processes can be.

2. *We were asked to clarify our estimate of the “worth” of the aviation industry’s VAT-free status*

In the joint DfT/industry sponsored study, “The Economic Contribution of the Aviation Industry in the UK”, Oxford Economic Forecasting, October 2006, the report stated that “The aviation industry generated £11.4 billion value-added in 2004”.

The term “Value added” is an economic concept which refers to the value of the output of the industry concerned less any input from other industries. Value added tax is based on the same concept in that the tax is levied on the final sales, in this case air tickets (for flights departing from UK airports), less any VAT that has already been paid by other industries which sell goods to the aviation industry. We calculate therefore that:

- £11.4 billion subject to VAT @ 17.5% = £2 billion
- Add 10% for growth, and rise in prices, since 2004 = £2.2 billion

December 2007

---

## Wednesday 12 December 2007

Members present

Mr Tim Yeo, in the Chair

Jo Swinson  
Dr Desmond Turner

Joan Walley

---

*Witnesses:* **Angela Eagle MP**, Exchequer Secretary to the Treasury, **Ms Rebecca Lawrence**, Head of Energy, Environment and Agriculture Team, and **Ms Lindsey Whyte**, Head of Environment and Transport Tax Team, HM Treasury, gave evidence.

**Q145 Chairman:** I extend a warm welcome to you. I apologise for the fact that you have had to wait outside. The Committee does not normally meet on a Wednesday. I think some colleagues were confused about what was going on, but you have some top-quality people here and I am sure that the extra 10 minutes on your brief will be reflected in the quality of our discussions. Thank you very much for coming along. This is our traditional annual outing on the PBR. I want to start with a question about the proportion of overall taxation represented by green taxes. It peaked in 1999 at just under 10% and since then almost every year it has slipped back. We are now down to just over 7%. In 1997 the Treasury promised that it would shift the burden of tax from goods to bads. It does not look as though that is happening, does it?

**Angela Eagle:** I welcome the opportunity to give evidence to the Committee. Perhaps I may first ask my colleagues to introduce themselves so we all know who is doing what.

**Ms Whyte:** I am Lindsey Whyte, Head of the Environment and Transport Tax Team in the Treasury.

**Ms Lawrence:** I am Rebecca Lawrence, joint head of the Energy, Environment and Agriculture Team in the Treasury.

**Angela Eagle:** On the “tax” point, obviously one of the ways in which you can see how seriously we view environmental concerns is to look at the percentage of so-called environmental tax take, but I do not believe that that is necessarily a sensible way to do it. It is certainly part of the jigsaw. For example, if one had a circumstance in which the environmental tax take went up that might be because one was not dealing with the problem of pollution but simply taxing it. As with a lot of these issues I think we have to look behind the figures and see what is happening. It is true that the environmental tax take has fallen but we have done a whole range of other things in order to incentivise better behaviour. I believe other economic instruments have a direct bearing on whether we can make the progress we need to make to achieve the Kyoto targets such as the EU cap and trade system, the emissions trading scheme. There is a range of other potential instruments that we can use, of which tax is one, to incentivise good behaviour, for example by giving credits for zero carbon homes which were announced in the recent PBR. That has not registered in any of our figures yet simply because we have just announced it. You have to look at the overall direction of policy, not

just a measure as crude as the environmental tax take as a percentage of GDP. Obviously, if you tax an environmental bad or pollution and prevent it happening one of the results is that the tax take goes down.

**Q146 Chairman:** Of course, and you can say that that is a mark of success. Let us look specifically at fuel duty. I note that last month you made a speech to the International Carbon Markets Conference in which you said—I hope I quote it accurately—“Tax has a part to play by influencing behaviour and incentivising low carbon technologies, and as the main way of tackling emissions from surface transport.” We would very much agree with that. This Committee has made a whole series of recommendations about the taxation of surface transport. It has always seemed to me to be one of the easier hits because there are low carbon surface transport options which people could be incentivised to choose through the tax system. As to fuel duty, let me quote from this year’s Budget: “By 2009-10, main fuel duty rates will still remain 11% lower in real terms than they were in 1999.” That statement, which is perhaps made with a degree of pride, appears to run directly contrary to what you have said you would like to do.

**Angela Eagle:** I think it was a statement of fact. I am not sure that we have pride, or any other emotion, in the PBR. In my limited experience, perhaps there is exhaustion in producing it. It is true that the tax take from fuel duty has gone down in recent years, simply because the escalator was taken off, as we all know, but I believe quite a delicate balance is to be struck in having an environmental tax take and an ever-escalating fuel duty. When we consider the importance of freight to our economy and individual transport, we have to provide people with reasonable alternatives rather than simply load costs on them when they do not have other choices. As with all these things, it is a question of getting a balance from where we are now, which is not ideal, to where we want to go, namely a future, as outlined to some extent by Julia King’s interim report, where individual cars are a lot less damaging in terms of carbon emissions and people can make other sensible choices about getting round. That implies some time lags while we change the nature of the choices we have: investment in public transport, which is certainly happening, incentives such as changes in VED rates to give environmental signals there and the work we are doing with car

---

12 December 2007 Angela Eagle MP, Ms Rebecca Lawrence and Ms Lindsey Whyte

---

manufacturers to try to pull through some of the lower carbon-emitting technologies for cars. All of this takes time and we have to balance it. You will know as well as I that we have announced duty increases in the 2007 Budget and two more are planned. Not everybody is happy about that.

**Q147 Chairman:** I am sure they are not.

**Angela Eagle:** I get many representations from all sides of the argument about what the Treasury should be doing about fuel duty. It is important to remember that, given the importance of getting freight and goods around our economy based on the present infrastructure, we have to plan these changes in a sensible way that does not damage the economy but balances our environmental concerns.

**Q148 Chairman:** You have now gone wider than fuel duty, quite rightly. I noted with interest that the Mayor of London is choosing to raise the congestion charge. At the moment someone with a very high emission car who lives inside the zone pays £4 a week. I believe that in February that person will pay £25 a day with no discount available. That looks like a 30-fold increase in the congestion charge for a high emission car. That is a pretty strong signal and one which I am sure most Members of this Committee would fully support. I recognise that you have introduced more differentials in the VED, which I applaud, but the differences are still not that great. It is interesting that the mayor is doing this two months before he is up for election. That suggests he believes there is tremendous popular support for it. I am surprised that the Government has not been more radical. It may believe that the mayor is not very smart politically. I know that you have had your differences with him in the past, but on this occasion it appears he has made quite a clear judgment about what will get him re-elected.

**Angela Eagle:** It is clear that the success of the congestion charges has given the mayor some interesting options that do not appear in other areas where we do not yet have such charges and where we can begin to give environmental signals. The reason for changes in VED rates was precisely to create an infrastructure where we could begin to develop those signals. I assure you that we shall be looking very closely at how we might refine those signals in the 2008 Budget and in future years, but first we have to create the signals and the infrastructure and changes in VED rates. We are obviously anxious to see—Julia King also points this out—whether we can persuade people to go for lower emitting cars in the same bands. We shall keep the nature of the bands under view and obviously we would like to see more cars in the lowest band. This takes time, but I think the signals are clear. We shall be looking at how we may be able to strengthen them in future budgets.

**Q149 Chairman:** Do you agree with the poll published by the Green Fiscal Commission which shows a substantial amount of public support for green taxes but that support rises still further when the revenue from those taxes is hypothecated—I

know that is a word we are not supposed to use in the Treasury—to projects which might be seen also to provide low carbon alternatives?

**Angela Eagle:** In Treasury terms it is a terrible word; it is almost banned from the dictionary. There is always a balance to be struck. I do not sit here and say that in all circumstances hypothecation is always and everywhere bad, but if you get into hypothecation into a big way it means that there are fewer flexible choices as you go forward because money that you may be able to raise in revenue is put away for particular reasons. There are examples of hypothecation, for example the climate change levy and the reduction in National Insurance contributions. That is still a tax cut to business since we have recycled more money back in reducing NI contributions than we have collected. That can play a part, but we have to be careful that we do not get ourselves into a circumstance where paradoxically if we are hypothecating large amounts of revenue we cannot achieve what we need to achieve as we shift to a lower carbon-emitting economy.

**Q150 Joan Walley:** I am very conscious that previously you have held briefs on the green agenda in other departments with responsibilities for environment, transport, the regions and so on.

**Angela Eagle:** That was a few years ago.

**Q151 Joan Walley:** I particularly remember the discussion we had when the regional development agencies were set up about whether or not they should have a duty in respect of sustainable development. What lesson have you brought from your previous roles and how does that work in your present role as a Treasury minister? In a way, you approach it from a slightly different perspective. Can you bring any lessons to the Treasury as a result of having had all those battles under previous guises?

**Angela Eagle:** I hope so. Being out of government for five years doing other things and then coming back gives you a chance to see whether things have changed in the interim. What strikes me most is how much this agenda is now being mainstreamed. There is a tipping point in the whole area. We and the world realise that this is a case for urgent action which must infuse the whole government effort domestically but crucially internationally. That was the nature of the speech of the UN Secretary General yesterday in Bali, with which I agree. The interesting change that has occurred in the past year is how much business is now seized not only of the importance of this agenda but the opportunities that it provides for creating exciting new opportunities and jobs. That is completely different from the atmosphere around the Kyoto negotiations in which I was involved under a previous guise at the DETR. I believe that that gives us a tremendous opportunity to make rapid progress. The interesting thing is how the Treasury is now seized of this. I do not believe that that is necessarily the case yet in many other countries. The Treasury is very much engaged in doing the analytical work to try to bring about the change we need to make in the most cost-effective and economically efficient way. That will help to

---

12 December 2007 Angela Eagle MP, Ms Rebecca Lawrence and Ms Lindsey Whyte

---

demonstrate that there is a practical and efficient road map to de-carbonising our economy and we hope to be able to keep with us the population which naturally aspires to improved living standards and greater opportunities. When visiting other countries I do not discern that their finance ministries are as yet quite as engaged in this process. I believe that the Climate Change Bill which essentially will create a parallel structure to measure carbon and see what we can do to reduce it, alongside market mechanisms like the EU cap and trade system, will bring that financial and economic rigour into the arguments that inform our way forward. That is the basic change that has happened since I was last engaged in these issues about 10 years ago.

**Q152 Joan Walley:** All of that is very interesting. Of special concern to me is that when all those years ago we were discussing the imposition of a duty on RDAs for sustainable development it was not a question of whether or not we should be placing duties on other agencies that are now being set up because the whole argument has moved on. I was very interested in the George Monbiot article in the *Guardian* yesterday which spoke about encouraging more exploration and tax breaks for mineral and oil extraction. What I am interested in are the debates now taking place, because if we are to take on an international leadership role we also need to look at both the demand and supply side. Looking at your role in the Treasury, it is not just mitigating action that needs to be taken; there is a preventative issue in respect of the supply side of carbon. I just wonder how you get advice from industry or whoever. Is it the vested interest of the CBI? Presumably, from the CBI's recent report there would be much more support for a green way forward in respect of the Treasury and other technologies. I just feel that a huge gap is widening up and in some way your particular role can get that balance right. It does not seem to be there at the moment because we are encouraging companies to go hell for leather for extraction which will give us more problems to deal with; it is literally an end-of-pipe solution.

**Angela Eagle:** I understand what you say. I do not believe that the best way forward is necessarily to halt all oil extraction now, simply because we have to continue to power our economies. People expect the lights to turn on when they operate the switch. It is important that we get the balance right between a shift from the heavy carbon-polluting technologies on which we now rely to abatement technologies which give us the space to develop new cleaner technologies. For example, we are aware of the development lead times for wind power and wave power which is only at the demonstration stage. Those are long lead times. Dare I include nuclear power, although I do not express a personal opinion on that? Some people in the area of green development, particularly James Lovelock, now support nuclear power. Cleaner technologies cannot be brought on stream immediately, so we have to think about abatement and more energy efficient use of the polluting power sources that we have at the moment. That is why I think that clean coal

technology, carbon capture and storage and abatement issues are really important in the interim. We are in a period of switching. What we have to do is concentrate on those interim actions and technologies that can abate some of the carbon emissions that inevitably we will generate in the next period but also pull through, as the Stern report demonstrates, possibly new cleaner technologies. We are in a hybrid period at the moment. The Government must balance the ability to keep the lights on with more energy efficient use and as few polluting emissions as possible, but also to develop technologies that can take the carbon being produced and store it somewhere safe.

**Q153 Joan Walley:** The Committee had before it Stephen Hale who was an adviser to DEFRA. He felt that the Treasury tended to block more ambitious proposals because there was a belief in government and the Treasury that the UK was already leading the world on this agenda and so there was not a strong case for going further. What are your brief comments on that in the light of the recent United Nations human development report? How much of a world leader are we when someone as senior as he, who was advising the Government until fairly recently, has that critical comment to make?

**Angela Eagle:** I think we should be proud of the leadership we have shown so far. There are plenty of examples of it, not only in the diplomatic field: the agreement at Kyoto and the G8 systems running up to Gleneagles. All of that is on the record. It is not unusual for people to be disappointed that the Treasury tries to block them; that is just one of the things that happens in government, but I am surprised he takes that view. If you look at the developments now under way and the ways forward outlined in the Pre-Budget Report, particularly with respect to helping the creation of new technologies, putting in price signals for zero carbon homes, the demonstration project for carbon capture and storage and the Environmental Transformation Fund which looks to see how we can help developing countries.

**Q154 Joan Walley:** We are aware of that.

**Angela Eagle:** All of that is a pretty firm base on which to work. I do not believe that the Treasury will say yes to absolutely everything DEFRA might suggest, but in working with that department, BERR and DIUS, which are involved in a lot of the technological developments that must happen in research councils, we have a pretty good base on which to be optimistic about the future, but I do not want to be complacent about it either.

**Q155 Jo Swinson:** I should like to turn to one of the provisions in the Climate Change Bill which allows local authorities to charge for rubbish collection on the basis of pay-as-you-throw. Do you see it as just an additional way for local authorities to raise more money, or do you think it will be revenue neutral? Will it just be stick or is there an opportunity to have some carrot as well?

---

12 December 2007 Angela Eagle MP, Ms Rebecca Lawrence and Ms Lindsey Whyte

---

**Angela Eagle:** I think that in all these transformations there must be carrots and sticks. I do not believe that they are politically sustainable if it is all stick. One of the strongest signals in the DEFRA settlement with respect to local authorities was the huge increase in PFI credits of up to £2 billion for capital expenditure on recycling and waste facilities which will enable us to put in place infrastructure to do a lot better in terms of getting value from waste. Clearly, there are two elements of that. To begin with, you have to minimise waste. There is a range of instruments in place to try to do that extending from the EU packaging directive all the way through to individuals being asked to separate out and minimise their waste as much as possible. According to my understanding, that is why we intend to run some pilot schemes in which local authorities can try to test out different ways to encourage home owners to change their behaviour in terms of both the waste they generate and the way they separate it and leave it to be collected. We will look at those with interest. I do not believe that at the moment there is any solution on which I would like to give a firm opinion ahead of the pilots.

**Q156 Jo Swinson:** In looking at pay-as-you-throw, is it your expectation that it will be revenue neutral?

**Angela Eagle:** If we are to ask people to change their behaviour it is important in the first instance that it is not viewed cynically as just another way to raise money. At the same time, my understanding is that the pilots are trying different ways to bring about behavioural change. I do not want to make it look like I am ruling out any of them until we have seen how or whether they work. It is quite important to learn from these pilot issues and demonstration projects rather than think in advance that you know all the answers.

**Q157 Jo Swinson:** We took evidence from the Green Alliance. One of the things it has called for is a product tax on environmentally damaging and hard to recycle items, such as disposable cameras and so on, where there are alternatives and taxes might make a difference. The Treasury seems to be reluctant to implement those types of taxes. Why is that?

**Angela Eagle:** The first thing we want to do before we implement any kind of tax is to see whether or not it is proportionate and it will achieve its aims. Our priority to date has been big white goods and energy efficiency issues rather than smaller issues, although we have done something about light bulbs. We have attempted to pull through more efficient technologies and encourage the development of second generation efficient light bulbs. We are open to ideas on that, but it is important to deal first with big emitting or energy inefficient items rather than become too involved in micro-tax policies on smaller goods.

**Q158 Jo Swinson:** I very well understand the rationale in not singling out product categories here and there, but would there be scope for introducing additional taxation on things that use virgin

materials and certain subsidies for production methods that use more recycled materials? Would that not have an impact across a wide range of products without micro-managing it?

**Angela Eagle:** We already have some environmental signals in place about issues such as landfill taxes, packaging and waste. We would need to be persuaded that we have to dig down into tinier and tinier bits of the product market and that that is a reasonable and proportionate effect. We have to look at how these things are administered and categorised and whether they are worth doing, which is what we generally do in the consultations we hold before we introduce such measures, or whether some of the other signals in place with respect to landfill, packaging and recycling are doing the job. You have to make a case on individual grounds to see whether or not it is worth going into that kind of detail. We have to avoid doing something to make it look like we are doing something even if it is fiddly and does not have a lot of effect overall. We must be proportionate about the way we approach these things.

**Q159 Jo Swinson:** I turn to plastic bags. In the past this Committee has recommended a tax on these items and the Treasury has put forward the argument that it is not as clear cut as it might appear and it might result potentially in perverse effects, such as people using heavier bags. We have now heard a positive signal in this direction from the Prime Minister. What is the Treasury's view on this now? Is a plastic bag tax now the way to go and, if so, how might it be taken forward?

**Angela Eagle:** Already changes are being made to the sorts of bags being made available by retailers. Our first response would be to consider whether we can deal with this in ways that are not simply about a tax on plastic bags. It is quite interesting to see what has been happening recently. Big retailers in particular supermarkets give away longer-lasting bags made of biodegradable material. If we think that our aims can be achieved that way then our preference, believe it or not, would not be to tax for the sake of it but to see whether the market could deliver a solution like that without a heavy-handed intervention. Clearly, we always keep these things under review if we do not think there is enough progress in that area.

**Q160 Joan Walley:** I turn to the environmental transformation fund. There are two aspects to that: how it will work domestically and internationally. In respect of the domestic ETF, do you believe that the funds are sufficient? We understand that £170 million of new money over a three-year period is coming from budgetary increases in the Comprehensive Spending Review. Is that adequate? I spoke to a colleague who is doing a lot of work with local community groups. It seems that there are some restrictions on who can claim this funding in order to get demonstration projects off the ground at local level.

**Angela Eagle:** The fund domestically is shared between BERR and DEFRA and it is up to them to decide in detail how they wish to ensure that the money does the job it has to do. It is really about developing low-carbon technologies and it can involve any suggestion in the entire area from initial research to commercial deployment.

**Q161 Joan Walley:** Is it only businesses that can apply for it, or can residents apply if they want to demonstrate some heating arrangement within their own community?

**Angela Eagle:** Are you referring to a combined heat and power project or something like that?

**Q162 Joan Walley:** Yes.

**Ms Lawrence:** The criteria for allocating the funds have not yet been set, so DEFRA and BERR are in discussion. They will be open to new ideas and suggestions and there is a process in place for getting agreed criteria so that the funds across the two departments can be truly transformational.

**Q163 Joan Walley:** It may be interesting to have a note on that.<sup>1</sup> I know that a colleague in Nottingham is looking at how this funding can be used for a demonstration project there. There are serious issues. We would like to know whether or not there are barriers in terms of who can claim and get access to funds for that purpose.

**Angela Eagle:** DEFRA and BERR are consulting with each other at the moment ahead of consulting more widely before they make announcements about how the funds will be made available. We will send a note.<sup>2</sup> It may be worth asking your contacts in turn to contact the department directly and make suggestions about how community involvement in those kinds of things can be encouraged.

**Q164 Joan Walley:** Earlier you mentioned Stern. In the light of what Stern says is needed—massive increases in research and development—are you content that the £170 million will be enough?

**Angela Eagle:** It is a significant start. You must remember that there are other areas being pulled in as well. There is science and technology funding for development and research which can be coupled with it. A public/private partnership is also being put together to bring research moneys to bear on technological change which I believe has already attracted £300 million of private sector money alongside some of the matched funding from the research councils. It is not simply this fund that will be applied to the technological changes we need in order to switch to a much lower carbon-using economy.

**Q165 Joan Walley:** Are you looking to fund some of that out of phase 2 of the European ETS?

**Angela Eagle:** Are you asking whether European ETS will be hypothecated?

**Q166 Joan Walley:** But not from the auctioning of phase 2 of the European ETS?

**Angela Eagle:** I do not believe that so far we have made decisions about what to do with the money we will raise from auctioning phase 2 of the EU ETS. We certainly would not hypothecate it in that way. It may be that once we have raised the funds we may decide to do something like that with them, but it will not be an automatic hypothecation.

**Q167 Joan Walley:** Do you have any idea how much you would expect to get globally from the auctioning of phase 2, irrespective of whether or not it is hypothecated?

**Angela Eagle:** Phase 2 allows for auctioning of up to 10%. We would certainly want that to go up over time and, certainly in phase 3, to auction a much higher percentage, but it is too early to say. That anticipates the futures of a futures market. As a minister I do not have a crystal ball.

**Q168 Joan Walley:** I turn briefly to the international element of the environmental transformation fund. There is a big welcome for the way this has been taken forward. When we were in touch with WWF it had particular concerns about the detail of how the international element of it would be implemented. I would like some clarification on the details of the fund, how it is spent and whether it will count towards the Government's commitment to devote 0.7% of gross national income to official development assistance or it will be additional to it. There were also concerns expressed by WWF both during its evidence to us and subsequently relating to the World Bank and how the whole thing fits together, for example when the loan is repaid to whom it is repaid and out of whose budget that repayment is made.

**Angela Eagle:** At the moment the fund is divided 50-50 between DfID and DEFRA. It is mainly capital and it can be classified as official development assistance. One of the ways we are thinking of dealing with this is to set up a multi-donor fund. That is why we have asked the World Bank to help us design a trust fund that will deliver in a timely fashion to developing countries the chance to have these transforming technologies available as they develop. The bank circulated for consultation at the annual meeting a prospectus outlining how the fund could work with others. We are keen to talk to other countries to see if they will put money into the fund that we wish to create. I know colleagues in Bali are having discussions around the fringes about what is happening there and how the fund might be bolstered by other countries. But at the moment that is how we plan to do it, and it will be part of ODA.

**Q169 Joan Walley:** Are you aware of the concerns of WWF about the relationship between the loan and the ODA and whose money it becomes when it is paid back? Is there any possibility of the Treasury perhaps having more detailed discussions with WWF in terms of how this can be incorporated into a transparent accounting system?

<sup>1</sup> See Ev 68

<sup>2</sup> See Ev 68

**Angela Eagle:** It is important there is transparency and that people realise the funds are being used for the purposes for which they were created and not for any other. We are quite happy to talk to the WWF about any concerns they have and about transparency of accounting which is absolutely vital to the work we do.

**Q170 Joan Walley:** As a follow up, one of the issues we have been looking at in detail is biofuels. There is anxiety in some quarters that if the World Bank oversaw this loan it would be much more attracted to projects which gave the highest returns which could well be biofuels. I am just wondering whether that would be in line with government policy or the Treasury would seek some accountability over the way its loan, which would then be managed by the World Bank, would be handled. We would not simply want to see a huge depletion of rainforests and so on.

**Angela Eagle:** It would be patently absurd if in order to deal with transport emissions, which globally account for about 14% of emissions, we got rid of all the forests which are the carbon sinks that help to keep the climate balanced and also host much of the biodiversity. It would be a law of unintended consequences in the extreme if we flattened the rainforest to grow a load of things to make biofuels, whether it be detropha or wheat. There is increasing understanding of the double-edged sword that biofuels can be, although they are certainly useful in reducing emissions in the short term or this hybrid period if they are of the right sort and have not been shipped half-way round the world. I rather agree with Julia King's view that we need to start to develop a carbon whole life cost analysis of these things. If we could do that we would be able to see which biofuels were worth having and which were not. The more we understand whole life emissions and the balance from growing all the way through to final use the more we realise that these things must be analysed carefully. We can produce unintended consequences if we simply subsidise all biofuels without analysing whether they are good or bad.

**Q171 Joan Walley:** Therefore, we can expect the Government to have some control over how the £800 million is spent through the World Bank?

**Angela Eagle:** We do not intend to give control away in that sense, although we are anxious to create funds that could attract other funds and therefore work harder to have the technology transfer which gives to developing countries opportunities to develop in a way that is not as damaging to the climate as the way we developed.

**Q172 Joan Walley:** In respect of the Congo forest conservation initiative, do we know yet how it will operate and how soon it will commence?

**Angela Eagle:** The Congo forest initiative of £50 million was announced last year. I am not sure how well defined it is.

**Ms Lawrence:** The two co-chairs, Wangari Maathai and Paul Martin, are together developing a proposed governance structure and agreeing its

terms of reference together with a detailed development plan for the fund. As we all know, avoided deforestation is potentially really significant and a pretty cost-effective way of reducing global emissions, but it is crucial to get the governance right and work collaboratively and constructively with the countries in which the trees stand. That is what the co-chairs are doing right now.

**Q173 Joan Walley:** Some claims have been made that the management of this scheme was excessive. Has that been looked at so we can draw lessons from it?

**Angela Eagle:** I have not heard that, but if there are criticisms you want to pass our way we will certainly investigate them. You always have to strike a balance between ensuring that the funds are used for the purpose for which they are created and provide the best opportunity and ensuring you are not overly-bureaucratic about it.

**Q174 Dr Turner:** One matter that featured in the Pre-Budget Report was the CCS demonstration plant competition. That the Government is doing something to promote this technology is welcomed by the CCS community, as it were, but there is some concern about whether this is the right way to go about it. There could be 11 projects, including BP's pre-combustion project at Peterhead which is at an advanced stage of preparation, going forward to produce infinitely greater savings than we will get from this one post-combustion demonstrator; and we would also have had a wider choice of technologies available for exploitation had the Government done it slightly differently. Why is the Treasury so committed to this single plant and this sole technology?

**Angela Eagle:** We decided that we wanted to focus on post-combustion because we thought that was the most relevant in terms of capturing carbon with the potential to retrofit existing plants and looking at the kind of plants being built even as we speak. It is important that post-combustion technology is developed but that does not prevent work being done on pre-combustion technology; it is simply that the Government's demonstration project is about post-combustion technology. There is no commitment to fund more than one project. What we wish to do is get ourselves into a situation where at the end of the competition we have a scaled-up, working post-combustion carbon capture and storage facility which has the potential to be retrofitted to a lot of existing generating plant. Coal reserves will probably continue to be burned for the next 50 years and it is therefore vital that we try to develop abatement technology to deal with the consequences of it. We felt that if we could develop a solution post-combustion this was the best and most useful one to have.

**Q175 Dr Turner:** That is clearly essential in the context of China, India and indeed some of our own future stations, but pre-combustion plant could make an equal contribution.

---

12 December 2007 Angela Eagle MP, Ms Rebecca Lawrence and Ms Lindsey Whyte

---

**Angela Eagle:** Pre-combustion is important, but since we already have plant that is putting a great deal of carbon into the air and that developing countries, particularly China, have a great deal of dirty coal and are building power stations at a rapid rate to supply their own energy needs, retrofit post-combustion seems to us to offer the best chance, if it can be delivered, of maximum abatement capacity which is beneficial in the battle against climate change. That was the nature of our decision. I emphasise it does not mean we believe that pre-combustion technology should somehow be abandoned but simply that the Government's demonstration project wishes to concentrate on this particular area.

**Q176 Dr Turner:** I completely understand the logic of it. The question is: is this the Treasury's last word or will it bring forward other support mechanisms for a broader range of CCS technologies in future?

**Angela Eagle:** It may well do so if it is demonstrated they work, but in the context of having a demonstration project which is being run by BERR in a competitive environment we have decided to provide government support for post-combustion abatement of 300MW. That does not preclude the possibility at some future time, if such pre-combustion technologies appear, of the Treasury looking at how it can reward carbon capture and storage achieved by other methods, but the context of our discussion here is that where there might be a market failure because the technology is available but practically it cannot be created and brought to market for cost reasons we try to support the work being done so we can fast-track the development of the technology which is badly needed in order to fight climate change.

**Q177 Dr Turner:** The only difficulty is that the other technologies are unlikely to develop in this country to demonstration stage without some Treasury support. All roads lead back to the Treasury.

**Angela Eagle:** In consultation with other government departments the Treasury has announced its decisions on what sort of demonstration project it wishes to support. BERR has already held an industry day to which it has invited developers who wish potentially to become involved in the forthcoming competition. There is good interest around. If you ask me whether half-way through the competition process we will agree to do pre-combustion as well the answer is no; we are concentrating on a post-combustion project of the sort we have announced.

**Q178 Dr Turner:** Obviously, the Government has decided that its capital grant support, presumably, will go to this project, but it is quite possible that industry will invest in other projects if the fiscal conditions are right. It does not necessarily mean capital money up front from the Government.

**Angela Eagle:** At the moment we are concentrating on trying to create and demonstrate the technology in this particular way. We have no plans to give other capital support to other projects being developed. It

is silly to rule things in or out at this stage, but I have given you quite a strong indication of where the Government's priorities lie in terms of trying to bring to market a carbon capture and storage plant that will be useful. Other experiments are going on in other countries with different technologies. For example, Italy and Poland are doing post-combustion and Germany is doing pre-combustion. There are other potential international developments around and obviously we shall be keeping a close eye on them. It is important for the world as a whole that we crack this technological problem and we are able to capture and store carbon emissions. In the next 50 years that may well be one of the most vital things we can do to prevent run-away climate change, but that does not mean the UK has to do all of it.

**Q179 Dr Turner:** The Pre-Budget Report quotes savings of about .7 million tonnes of CO<sub>2</sub> a year from the demonstration project, whereas the Energy White Paper refers to savings of between 1.1 million and 3.7 million tonnes of CO<sub>2</sub> a year. Can you account for the huge difference in the figures?

**Ms Lawrence:** There is a simple technical reason in the sense that the Energy White Paper gave an illustrative estimate for the purposes of assumptions of the policy matrix and the full range of policies. Now that we are in a competitive phase we do not firm up the illustrative numbers because this is one of the elements of the competition where bidders will be able to say what savings they propose and at what cost. Therefore, the technical answer is that we are in a different phase at the moment.

**Angela Eagle:** We would be delighted if they could save even more.

**Q180 Chairman:** Recently you made a speech in which you said that the response to the challenge of climate change was international and that carbon emissions needed a global price, not just a UK or EU price. How do you think it is possible to set a global price for carbon if we do not yet have a global cap for emissions?

**Angela Eagle:** It is extremely difficult but we have to make progress. If we waited for market mechanisms to work and had global agreements and caps, which you will know are controversial internationally and will not be easy to achieve, we would lose vital time when we could be making progress. As the Stern report demonstrates, carbon abated now is worth much more than carbon abated 10 or 20 years from now. Therefore, we believe that the development of cap and trade systems, the EU ETS being the most obvious and well developed one to date, give us the vital savings we need now. We have to get on with it and very much hope and work for international carbon caps, but meanwhile there is quite a lot we can do. Looking at the potential, even the United States is now developing cap and trade mechanisms at state level despite the administration's hostility to the thought of engaging in compulsory emissions reductions. Even the states that are talking about developing a cap and trade mechanism at the moment, including California obviously, are about

the fourth largest emitting areas in the world. There are great gains to be made by getting on with it and making the agreements we can ahead of the full monty, if I may put it that way.

**Q181 Chairman:** I can see the logic in everything you said in that answer and would strongly agree with it. What I think you are saying is that the only way forward is a piecemeal approach. Let us encourage the Californians and other states and various other people to get on with it and gradually the coverage of cap and trade schemes will expand geographically. Is that what you say?

**Angela Eagle:** We must work hard for an overall agreement, and obviously work has started and is going on in Bali this week, leading we hope to some sort of agreement in Copenhagen in 2009 ahead of Kyoto running out in 2012. At the same time, we have to do all we can now in the areas where we can make progress, which is why it is important that phase 2 and then phase 3 of the EU ETS are as robust as possible. But we should not underestimate the interest that is beginning to be shown around the world in the potential for carbon markets and trading. The overall size of the carbon market now is about 30 billion. That is beginning to attract significant interest by the United States and those who like to make money by making markets. The more we develop the depth and liquidity of these markets the more people will want to engage in trading in them. Clearly, there are the cap and trade parts of the market but also the voluntary part is beginning to grow. We must try to develop these institutions and markets in order to attract as many economies and individuals as possible to participate in them. I believe that is a reasonable way forward from where we are now.

**Q182 Chairman:** Do you think that one problem with the proliferation of markets, which on the whole appears to be desirable, is that some may be more robust than others and you get different carbon prices in different parts of the world?

**Angela Eagle:** At the moment since we are building geographically from the bottom up rather than the top down the important thing is to work from particular principles. One of them, if we can achieve it, must be the compatibility of markets so they can trade with each other in a sensible way. Obviously, that means the infrastructure of the market and computer software, but it also means, if possible, definitions so that we can trade across geographical areas as well as within particular areas. That would be the ideal. Clearly, it is important we make that argument as these things develop. It is in the interests of those who wish to benefit from developing these markets that they are compatible, and we hope that can be achieved.

**Q183 Chairman:** Does the Treasury have a view as to what sort of carbon price globally in the future will be needed to incentivise investment in low carbon technology? Is there any feel for what sort of level we must reach? Clearly, the EU ETS in phase 1 has not achieved that and we know why. We hope to

get closer in phase 2, but if we look ahead over the next five years massive investment in low carbon technology will be needed.

**Angela Eagle:** I think we would need a crystal ball to try to work that out from where we are now. I wish I had that kind of insight. We know the way markets work. If there is reasonable scarcity in a market we will get a better price and that will assist in pulling through the technologies we need. Short of making those very basic economic observations, there is not a lot of detail I can go into.

**Q184 Chairman:** This Committee has talked about the need for transparency in the way emissions trading is reported. In his Pre-Budget address to the House the Chancellor said that the UK had already reduced its "greenhouse gas emissions by almost a fifth since 1990." In the PBR itself that figure was clarified and appeared to include the purchase of 27 million EU ETS allowances. Given the nature of that scheme, are you confident that the allowances we have purchased have reduced emissions anywhere in the world by 27 million tonnes?

**Angela Eagle:** The point of a cap and trade system is that you cap and then trade. If you pay for allowances with money you have to make an assumption that that reduces emissions somewhere else where the system is working, and since the damaging effects of a tonne of carbon are the same if the emission is in Devon or Delhi I do not think it matters that much. We have to be confident in order to incentivise emissions reductions. If we can identify the domestic and international nature of the reductions that is the transparency we need.

**Q185 Chairman:** Do you think that at a time when we are trying to draw some countries that are poorer than Britain into commitments about emission reductions it is easy for us to take up a position that because we can afford to buy all these allowances abroad we can go gaily on at the present level of emissions domestically and we do not need to make any reductions in the UK? Will that not make it rather difficult to argue that poorer countries have to get on and do something as well?

**Angela Eagle:** Yes. Again, there must be a balance since we are trying to reduce emissions overall. As I said earlier, emissions reduced now are worth a lot more than emissions reductions in future in terms of preventing uncontrollable climate changes. It is therefore important that we reduce as much as we can now. From the point of view of moral leadership it is absolutely right that we must try to reduce our emissions domestically, but I do not think that somehow we should be sniffy about buying reductions elsewhere through the clean development mechanism; indeed, the Kyoto process explicitly wishes that to happen. You need progress in both areas and that is why the international part of the environmental transformation fund is important in that it transfers technology, opportunities and know-how for emissions reductions to places where perhaps they would not arise naturally in order to be

---

12 December 2007 Angela Eagle MP, Ms Rebecca Lawrence and Ms Lindsey Whyte

---

of assistance. I believe that is a crucial part of the battle we must fight to prevent run-away climate change.

**Q186 Jo Swinson:** To turn to the DEFRA budget, obviously in real term the environmental headlines increase the PBR, but the change in spending priorities, as the Select Committee on the Environment, Food and Rural Affairs found out, means that they will need to find £270 million in efficiency savings over the next three years. Do you have any idea where those cuts are expected to come from within DEFRA's budget and how that might impact on the programmes for mitigation and adaptation to deal with climate change?

**Angela Eagle:** I do not agree that efficiency savings are necessarily cuts.

**Q187 Jo Swinson:** This is £270 million on top of the normal efficiency savings.

**Angela Eagle:** It is important to realise that, just as energy efficiency can play an important part in ensuring we do not waste the energy we produce and we use it more effectively, the money that departments are allocated is used effectively and they constantly take a view about how they might re-engineer what they do to achieve more efficient use of public funding. I do not accept your argument that an efficiency saving is a cut. If we look at efficiency saving requirements across government it is important that individual departments, which are the experts in what they do and how they do it, make these decisions. All of them have signed up to and agreed those targets. Therefore, it will be for DEFRA to decide how it meets the requirements to which it has signed up; it is certainly not for me to dictate from a central place. For example, I think that in general there are big savings to be made in how government departments carry out procurement. We have strengthened the role and

<sup>3</sup> See Ev 68

efficiency of the Office of Government Procurement to give assistance to all government departments in the many decisions they have to make. I believe there is great potential there. To give an example, the other day I attended an e-auction for the procurement of IT which was done in a completely different way from normal procurement. On average it saved 38% of the price that departments normally paid for IT infrastructure. Centrally we can help on a series of matters, and government departments must have a good, ongoing look at all the assumptions they make about spending and ensure they increase efficiencies.

**Q188 Jo Swinson:** I accept that, but this is £270 million in addition to its normal requirement to find efficiency savings. It is a very significant part of its budget; it is a reduction of 6 or 7% for each year for the next three years. Are you saying you really do not believe that will have any impact on DEFRA's ability to fight climate change?

**Angela Eagle:** One must remember a number of things, for example the big increases in DEFRA's capital budget in order to create infrastructure to help fight climate change. I referred to the waste infrastructure and PFI credits. There is a range of things that is not touched by efficiency savings. It is also important to remember that DEFRA did sign up to these targets and I assume it would not have done so if it thought they were completely unattainable. That is what part of the budget process is about. I look forward to the department achieving those efficiency savings.

**Q189 Chairman:** At least one of my colleagues has tabled an oral question and we must draw this session to a conclusion. There were a number of other areas we were interested in discussing with you. If we may, we will send a written note with some further points on which we would seek clarification before we write our report.<sup>3</sup>

**Angela Eagle:** Please do; I look forward to receiving it.

**Chairman:** Thank you very much for your time and that of your colleagues in coming to talk to us.

---

### Letter from the Chairman of the Committee to Angela Eagle MP, HM Treasury

The Environmental Audit Committee were grateful for the opportunity to question you in our evidence session on 12 December, and appreciated your thoughtful comments.

Unfortunately we were not able to get through all the topics we had hoped to cover in the time we had available to us. At the end of the session you kindly agreed to send us a written answer to any remaining questions we had. Accordingly, to help inform our report on this year's Pre-Budget Report, we would be very grateful for some written answers to the following questions:

1. Monetising the impacts of climate change.
2. According to Friends of the Earth, the Shadow Price of Carbon (SPC) is three times lower than the Social Cost of Carbon advocated by the Stern Review. Why is this?
3. The Defra website explains that the Shadow Price of Carbon is "target consistent". This means it is based around an assumption that the world will meet a certain greenhouse gas target in the future; and on this basis the projected costs of carbon are reduced from what they would be under a "business as usual" scenario of emissions growth. How do you address the criticism that by setting a lower value for the Shadow Price of Carbon, the Government is encouraging the development of carbon-intensive projects, and thereby making it more difficult to achieve the very stabilisation targets the SPC is based on?

4. According to WWF, the cost-benefit analysis in the Heathrow expansion consultation follows Treasury guidance in using a discount rate of 3.5% for the first 30 years, then 3% thereafter; and that this outweighs the effects of the Shadow Price of Carbon, which rises by only 2% to account for the rising stock in greenhouse gases in the atmosphere. Why is the Treasury enforcing such a high discount rate on the future costs of carbon, especially when that used by Stern was so low?

5. How will the Treasury ensure that impacts from climate change that are hard or impossible to convert into monetary figures are properly reflected in cost-benefit analyses throughout Government?

6. To what extent did the Government consult externally on the Shadow Price of Carbon?

7. Aviation taxes.

8. This year's Pre-Budget Report announced that Air Passenger Duty will be reformed into a levy per plane, rather than per passenger. Can you give us some more details as to how this reformed APD will be applied in practice, and what difference it will make to APD's impact on carbon emissions?

9. The PBR announces a reform to end the anomaly whereby passengers on "business class only" flights could escape business class APD. How big an impact will this have on carbon emissions and how much money will it bring in?

10. WWF have proposed that there could be a third band added to APD to cover "very long haul destinations", such as Australia. What are the Treasury's views on this idea?

In view of our publication schedule, and the need to prepare any supplementary memorandum we receive for publication alongside the evidence we have already gathered, we would very much appreciate it if you were able to send us your answers by Wednesday 16 January.

13 December 2007

---

#### **Letter from Angela Eagle MP, HM Treasury to the Chairman**

Your letter of 13 December 2007 requested information on the Shadow Price of Carbon and APD, which we were not able to cover during my appearance before you on 12. Please find below the Treasury's response to your questions.

1. According to Friends of the Earth, the Shadow Price of Carbon (SPC) is three times lower than the Social Cost of Carbon advocated by the Stern Review. Why is this?

The Stern Review shows clearly that the value of the social cost of carbon depends on the level of atmospheric concentrations (It is higher for higher levels of GHG concentrations), so the value we should use today depends upon the expected concentrations in the future. The \$85/tCO<sub>2</sub> figure in the Stern Review is based upon business as usual, ie no action to mitigate climate change. Clearly, we are taking action nationally, and internationally, to address climate change and therefore the business as usual figure is not the correct one to use. The Stern Review suggests aiming for a range of 450–550ppm CO<sub>2e</sub> as the stabilised level of concentrations in the atmosphere in order to mitigate dangerous climate change. The new shadow price of carbon is based upon Stern's suggested stabilisation range, and hence is the appropriate figure to adopt rather than using the business as usual social cost of carbon. Please see Box 13.3 in the Stern Review for further information.

2. *The Defra website explains that the Shadow Price of Carbon is "target consistent". This means that it is based around an assumption that the world will meet a certain greenhouse gas target in the future; and on this basis the projected costs of carbon are reduced from what they would be under a "business as usual" scenario of emission growth. How do you address the criticism that by setting a lower value for the Shadow Price of Carbon, the Government is encouraging the development of carbon-intensive projects, and thereby making it more difficult to achieve the very stabilisation targets the SPC is based on?*

It is true that the higher the value assigned to the SPC, the greater the weight that will be given to carbon mitigation policies. And indeed the new value we have adopted for the SPC is significantly higher than the Social Cost of Carbon estimates previously used for policy appraisal purposes—it is 19% higher for valuing carbon in 2020, 32% higher in 2030 and 67% higher in 2050. This means that there will be a greater disincentive to undertake carbon-intensive projects than previously. But it is also true that the higher the value assigned to the SPC, the greater the costs that must be borne by society in seeking to avoid dangerous climate change. Therefore in setting the SPC Government must consider at what point the costs of climate change (that are avoided through carbon mitigation policy) begin to be outweighed by the costs of implementing the policy itself.

This is the approach Government has taken in adopting a new value for the SPC. As explained in the answer to the previous question, the values we have used are based on estimates of the social cost of carbon at the stabilisation level suggested by the Stern review. Within the Stern range, the tighter the emissions target, the lower the SCC will be, since there will be less damage from climate change. Thus in Stern's

suggested range, the SCC is highest for 550ppm CO<sub>2</sub>e. In order to be more certain that the UK is undertaking sufficient abatement to help achieve the stabilisation goal, we have therefore adopted a SPC based on the SCC at the top of the 450–550ppm CO<sub>2</sub>e range.

We recognise that there are considerable uncertainties surrounding estimates of the impacts of climate change, and that is why Government continues to conduct further research. The Met Office Hadley Centre provides in-depth information to the Government on climate change issues, including the Integrated Climate Programme. This will develop state-of-the-art climate models which (i) help detect and attribute current climate change, and (ii) predict future global and regional climate viability and change, on decadal to century timescales. Government will also continue to be informed by the results of further work by the Intergovernmental Panel on Climate Change and the wider academic community on the SCC and damage cost estimates. This will include taking account of Integrated Assessment Models which can be used to further examine the impacts of assumptions about the economics of risk, uncertainty, catastrophic and irreversible events, and approaches to equity on the SCC and damage costs, and also taking account of results from other detailed models about the socio-economic impacts of climate change and their valuation.

In addition, Government will assess the case for an alternative method of calculating the SPC that would involve setting it in line with the marginal abatement costs (MAC) required to enable the world to meet a given stabilisation goal. As set out in the new explanatory note on the SPC issued by Defra,<sup>1</sup> available evidence provides some indication that the current value of the SPC is consistent with meeting global stabilisation and national emissions reductions goals, but we will conduct a more in-depth assessment (through further research on UK and global MACs) over the next year.

*3. According to WWF, the cost-benefit analysis in the Heathrow expansion consultation follows Treasury guidance in using a discount rate of 3.5% for the first 30 years, then 3% thereafter; and that this outweighs the effects of the Shadow Price of Carbon, which rises by only 2% to account for the rising stock in greenhouse gases in the atmosphere. Why is the Treasury enforcing such a high discount rate on the future costs of carbon, especially when that used by Stern was so low?*

The discount rate and the uprating of the SPC are two separate concepts. The SPC represents the cost of the lifetime impacts of an incremental carbon emission. It is based upon the work of the Stern review, and rises at 2% a year to reflect the rising incremental damage of each unit of carbon as atmospheric concentrations of greenhouse gases and temperatures rise.

The Green Book discount rate of 3.5% is used to discount the net total of costs and benefits related to a project, carbon or otherwise, to take account of social time preference—the principle that, generally, people prefer to receive goods and services now rather than later. Appraisal of spending projects according to the Government’s Green Book rules takes place in terms of constant base year prices, thus excluding the effects of general inflation.

The SPC is not therefore “outweighed” by the discount rate. Since it rises by 2% pa (on a constant price basis) relative to other prices, the relative increase in the damage costs of carbon compared to other future costs and benefits (from the same time period) is maintained when the total is discounted.

The comparison between the discount rate used by the Stern Review and that set out in the Green Book is a separate issue. The figure used by the Stern Review was different for several reasons that would make it inappropriate to use for standard appraisal of public sector projects, and these reasons are outlined below.

The Stern Review set out to assess, from a global perspective, the effects on the welfare of current and future generations of very large and for all practical purposes, irreversible changes to the environment, resulting from pollution induced climate change. The standard Green Book assessment of the economic costs and benefits of expenditure proposals, is rarely concerned with such major changes to the wealth and welfare of future generations. Discount rates are, however, made up of several elements and the implications of each for the Review and the Green Book are examined below. It will be important for Government and the academic community to continue to consider whether there are other areas to which similar considerations apply—particularly with regard to the risk and equity elements of the discount rate.

While starting from the overall standard Green Book approach to discounting, the Stern Review, because of its particular frame of reference, had to consider some fundamental ethical issues concerning the responsibility of the current generation to future generations. This led the review to conclude that it was not ethically defensible for a pure rate of social time preference to be applied to future cost benefit calculations where these involved significant and for all practical purposes irreversible wealth transfers from the future to the present. This consideration applied to the 0.5% pure social time preference element of the standard Green Book discount rate.

<sup>1</sup> The Social Cost Of Carbon And The Shadow Price Of Carbon: What They Are, And How To Use Them In Economic Appraisal In The UK. Available at: <http://www.defra.gov.uk/environment/climatechange/research/carboncost/pdf/background.pdf>

The Stern Review also had to take account of the effects on wellbeing of a large number of possible alternative growth projections, analysing the probability of these outcomes through a Monte Carlo simulation.<sup>2</sup> To allow for the effects of these different growth projections the Review used the standard Green Book parameter of 1 for the marginal elasticity of the utility of consumption (which reflects the fact that £1 means more to a poor individual or country than a rich individual or country) and then applied this to each growth projection. This follows Green Book guidance and enabled the Stern Review to properly allow for the differing wealth effects of each growth projection.

Last but not least, the Stern Review included a lower figure (0.1%) in its discount rate for the element relating to catastrophic risk. The Stern Review's figure accounts for the possibility of future events resulting in the extinction of the human race. This is an estimate, it being the lowest possible at the one decimal place level, and the review argued that it is a generous allowance for such a possibility. In comparison, the element of the standard Green Book discount rate allowing for this catastrophic risk is higher, at 1%. This allows for a larger set of possible risk factors that apply to individual projects than species extinction, and lies within the range suggested by academic investigation. This larger set of factors relates to the risks to typical public expenditure projects, and includes unforeseen changes in social and political objectives and priorities, and to possible wider changes in the economy, society and technology, which are not part of the risk assessment for specific projects. These factors were largely irrelevant to the Review's assessment of climate change.

4. *How will the Treasury ensure that impacts from climate change that are hard or impossible to convert into monetary figures are properly reflected in cost-benefit analyses throughout Government?*

The Green Book methodology is clear that all social costs and benefits should be taken into account with the proviso that they should be monetised wherever possible, and set out and explained clearly where they can not be quantified.

Work continues on a number of issues concerned with appraising and pricing the effects of climate change.

5. *To what extent did Government consult externally on the Shadow Price of Carbon?*

The new shadow price of carbon has been peer reviewed by a panel of academic experts, including an academic who worked on the Stern Review. These peer reviews, as well as the Government response to them, will be published on the Defra website in early 2008.

6. *This year's Pre-Budget Report announced that Air Passenger Duty will be reformed into a levy per plane, rather than per passenger. Can you give us some more details as to how this reformed APD will be applied in practice, and what difference it will make to APD's impact on carbon emissions?*

A formal consultation document will be published in January 2008 and will consider all of the details of the operation of the duty policy. We are unable to provide an estimate of the impact on carbon emissions before the details of how the duty will work are finalised. It is intended that the details of the policy will be announced at Pre-Budget Report 08.

7. *The PBR announces a reform to end the anomaly whereby passengers on "business class only" flights could escape business class APD. How big an impact will this have on carbon emissions and how much money will it bring in?*

This reform will provide a small increase of £5 million in revenue to the public finances. The impact on carbon emissions of this change has not been estimated and is presumed to be negligible as there are only three business class only operators in the industry and business class passengers are assumed to be insensitive to price. This change was made to correct a competitive distortion rather than for environmental purposes.

8. *WWF have proposed that there could be a third band added to APD to cover "very long haul destinations", such as Australia. What are the Treasury's views on this idea?*

A formal consultation document will be published in January 2008 and will consider all of the details of the operation of the duty policy. The formal consultation will consider in particular, how the duty can be better correlated to distance travelled.

I trust that this information is helpful.

---

<sup>2</sup> Monte Carlo analysis allows an assessment of uncertainty about key inputs simultaneously, and can take account of correlations between these inputs. It involves calculating the probability distributions of possible values for key inputs. Typically, the choice of probabilistic inputs will be based on prior sensitivity testing. The calculation is then repeated a large number of times randomly (using a computer program) to combine different input values selected from the probability distributions specified. The results consist of a set of probability distributions showing how uncertainties in key inputs might impact on key outcomes.

# Written evidence

---

## Memorandum submitted by the Woodland Trust

1. The Woodland Trust welcomes the opportunity to respond to this inquiry. The Trust is the UK's leading woodland conservation charity. We have four main aims: no further loss of ancient woodland, restoring and improving woodland biodiversity, increasing new native woodland and increasing people's understanding and enjoyment of woodland. We own over 1,000 sites across the UK, covering around 20,000 hectares (50,000 acres) and we have 300,000 members and supporters.

### SUMMARY

PSA 27, "Lead the global effort to avoid climate change", contains a promise to facilitate the transformation of the UK into a low carbon economy. Clearly reducing the intensity of the UK's carbon usage is vital if the emissions targets are to be met, however this aim does not sit easily with the Government's plans for major infrastructure development of which airport expansion could be the most damaging.

PSA 27 pays some heed to challenge of adaptation, however like many other areas of climate change policy it does not go far enough and fails to address impacts on biodiversity.

PSA 28, "Secure a healthy natural environment for today and the future", outlines the mechanisms the Government intends to use for protecting and enhancing our ecological systems. Nonetheless indicator two, the changes in wild breeding bird populations, is a very limited way of evaluating success. We have great concern about management of the natural environment being entirely driven by the needs of birds, when other indicators, of species at a similar place in the food chain, such as bats, might point to a different approach—certainly this would be the case regarding woodland. A recently proposed indicator from Bat Conservation Trust shows bat populations increasing significantly in woodland.

Overall the Agreements and CSR fail to demonstrate a joined-up approach to the challenge of mitigating and adapting to climate change. A desire to invest in "cleaner, safer and greener" communities is often expressed by members of the Government and yet the settlement handed to Defra, the leading agent in this field, is inadequate. Neither is it clear how the CSR intends to integrate biodiverse green space with an agenda which appears to heavily emphasise infrastructure development, and ensure that the latter will not be at the expense of the very environmental resources which must be protected in the face of climate change.

Aviation is one of the key contributors to climate change and the Woodland Trust is pleased to see that the Government has now decided to reform Airport Passenger Duty (APD).

The report on "Moving to a global low carbon economy, implementing the Stern Review" reaffirms both the economic and moral imperative for taking early action to avert dangerous climatic change. Again, given that we are dependent on a healthy ecosystem there is a worrying lack of emphasis on adaptation strategies.

There is concern that Defra's funding reward of 1.4% could actually represent a cut when the cost of implementing policy is likely to rise. This is all the more disconcerting as Defra will lead on PSA's 27 and 28 and yet the department may be inadequately resourced to deal with the challenges faced.

Unfortunately the environment chapter in the PBR contains very little in the way of innovation, and appears to pay only cursory attention to creating fully functioning and ecologically robust landscapes that will enable species to migrate and adapt to climatic change.

### PSA 27, "TO LEAD THE GLOBAL EFFORT TO AVOID DANGEROUS CLIMATE CHANGE"

2. PSA 27 will determine how Government intends to adopt policies which will make the UK a world leader on climate change and secure effective and robust global commitments. We are pleased to see that the commitment to avert dangerous climate change is reaffirmed in the PBR. It is critical however that such a vision is shared across all departments.

3. Biodiversity is alluded to in paragraph 1.6, "The Government also recognizes the need for and supports a robust and accessible evidence base to support adaptation to climate change impacts, including an established monitoring network for detecting changes in biodiversity". To help establish this network we argue for a landscape scale approach that seeks to develop an ecologically functional landscape rather than small isolated sanctuaries of biodiversity. This can be achieved by conserving all semi-natural (BAP) habitats not just a representative sample, and showing consideration of the synergies between all semi-natural (BAP) habitats. Further to this investment is needed to restore all semi-natural (BAP) habitats planted with non-native conifers, and targeted habitat creation where biodiversity has the best chance of survival. Government policy should seek to increase the resilience of semi-natural (BAP) habitats by targeting habitat creation to buffer them from negative edge effects and, should allow the widest biodiversity to move across landscapes by reducing the intensity of intervening land use. Landscape scale action will not treat conservation as a segregated activity but will integrate biodiversity with the wider benefits it delivers, for example, in relation to soil conservation, air and water quality, flood alleviation, high quality food, health, employment and recreation. Whilst habitat creation should be targeted to concentrations of ancient

or semi-natural (BAP) habitat, it is important to note that the other principles seek to protect and restore semi-natural habitats across the country and will avoid greater intensification of agriculture, forestry and built development across intervening landscapes.

4. The desired outcomes of this PSA are outlined in paragraph 3.3 and the Woodland Trust is reassured to see a commitment “to stabilize atmospheric concentrations of greenhouse gases at a level which avoids dangerous climate change”. Nevertheless if this target is to retain credibility then it must be inclusive of shipping and aviation emissions.

5. Another outcome in paragraph 3.3 that will form a key measure of Government success is “international action to minimise emissions from land-use and deforestation”. We are reassured to see the Government recognise the key role of these two factors in relation to climate change and would now ask that more is done at a UK level to promote environmentally sustainable land-use. The Woodland Trust is currently contesting 474 cases where woodland is under threat showing that domestic felling of an ecologically rich and irreplaceable resource remains a major concern. Not only should government policy seek to prevent international deforestation it must also be robust domestically by protecting our own ancient woodland.

6. In paragraph 3.5 Defra has been given prime responsibility for the successful implementation of the PSA. Much of this vision focuses upon mitigation and if Defra is going to have the authority to be successful it must surely be given the energy portfolio. As the recent EAC report into *The Structure of Government and the Challenge of Climate Change* concluded “the movement of energy to DBERR rather than Defra constitutes a missed opportunity”.<sup>1</sup> If emission reduction targets are to be achieved then Defra will need to have a greater influence over a full range of policy areas including energy and planning.

7. Adaptation strategies will become increasingly important as the now unavoidable effects of climate change take root. Paragraph 3.21 details how “Defra will lead on the development of a cross-government adaptation framework, setting out priority areas for ensuring the UK is adapting well across a range of key areas where climate change will have potentially serious impacts including flood risk and coastal erosion, water supply and quality, and biodiversity and agriculture”. As stated previously, it is helpful that biodiversity is mentioned, but nonetheless it is not easy to discern how determined the Government is to restore, protect and enhance habitats when the Defra settlement was so low in comparison to other departments. Moreover much of this money will be invested into flood prevention and coastal erosion, and will leave little of the settlement for biodiversity restoration.

8. Planning is a key tool for addressing climate change, and paragraph 3.24 exhibits how “CLG will ensure that planning policies developed directly address climate change mitigation and adaptation, and through the planning policy statement on climate change, put it at the heart of what is expected from good planning”. Such a statement would appear to be contradicted by reality as the Planning White Paper offered no new guarantees that the natural environment will be protected from development. Once again there is a reasoned argument that Defra should be given some authority over planning given that this area of policy impacts so greatly on climate change and the ecological system on which society is dependent.

9. Another key delivery body will be Natural England and paragraph 3.42 outlines how they “will work on national partnerships to promote and develop the understanding of the natural environment, collaborating with the farming industry to identify how to enhance the role of land managers as carbon managers. They will also play a key role in ensuring our biodiversity and ecosystem services are managed in such a way as to respond to the threats of climate change and minimize the impacts”. Whilst we acknowledge the important role Natural England can play, there is as yet little evidence that they will receive enough resources to fulfill what are ambitious commitments.

#### PSA 28, “SECURE A HEALTHY NATURAL ENVIRONMENT FOR TODAY AND THE FUTURE”

10. The Woodland Trust would support the Government’s vision as outlined in paragraph 1.1 which is to “secure a diverse, healthy and resilient natural environment”. To achieve the aims outlined in the vision including: sustainable water use, biodiversity value and safeguarded, sustainable living landscapes, and people caring for the natural environment, our research indicates that the Government should adopt a landscape scale approach. This would involve conserving all semi-natural habitats not just a representative sample, targeting habitat creation where biodiversity has the greatest chance of being put on a sustainable footing, and seeking to increase the resilience of semi-natural habitats by buffering them through woodland creation from negative edge effects and land use. In a highly fragmented landscape such as the UK’s activity outside of designated reserves is hugely important, and as such conservation should not be segregated from other land uses.

11. Indicator 2 paragraph 2.1: “Biodiversity as indicated by changes in wild breeding bird populations in England, as a proxy for the health of wider biodiversity”, may be unsuitable for encouraging landscape scale strategies. We have great concern about management of the natural environment being entirely driven by the needs of birds, when other indicators, of species at a similar place in the food chain, such as bats,

<sup>1</sup> *The structure of Government and the challenge of climate change*, House of Commons Environmental Audit Committee (Ninth Report, Session 2006–07), p 25.

might point to a different approach—certainly this would be the case regarding woodland. The needs of the natural environment cannot be determined by one taxonomic group. A recently proposed indicator from the Bat Conservation Trust<sup>2</sup> shows bat populations increasing significantly in woodland.

12. We are reassured to see that indicator 5 paragraph 2.1 recognises that the Government must measure the positive and negative impacts of farming. Further reform of the CAP, and greater investment in pillar two of the agri-environment scheme would assist in reducing the negative impacts of farming.

13. In paragraph 3.7 Defra “will continue to take action on biodiversity under the England Biodiversity Strategy focusing action on protecting the best wildlife sites; promoting the recovery of declining species and habitats; embedding biodiversity in all sectors of policy and decision-making; enthusing people and developing an evidence base”. For this commitment to be met Defra will also require greater authority over planning, as many decisions currently made at CLG will impact on biodiversity and its capacity for survival.

14. The continued assertion that the Government will encourage sustainable farming and food is vital as it will allow Defra to meet their commitments on biodiversity. Indeed, in paragraph 3.10 it is argued that “Defra is also developing a more holistic and integrated framework for policy-making and delivery on the natural environment, based on an ecosystems approach”. An ecosystems approach as mentioned above reinforces the importance of the Woodland Trust’s landscape scale principles, and as such lends weight to our belief that indicator 2 may need revising.

15. Sustainable planning is essential if the UK is to meet the obligations held within the UK Sustainable Development Framework and the Biodiversity Action Plan. To achieve this, paragraph 3.24 states that CLG become “a formal delivery partner for this PSA and will ensure that the planning system takes full account of the natural environment”. However, given the considerable concern which surrounds the Planning White Paper, which was informed solely by economic concerns, we are unconvinced that a planning system reformed along the lines set out in the Planning White Paper will be capable of protecting the UK’s green infrastructure.

16. As outlined in paragraph 3.28 the Forestry Commission “has a range of statutory duties and delivery mechanisms with which to deliver government policy and make a significant contribution to the woodland aspects of this PSA”. As a major land owner it should be incumbent on the Forestry Commission to be an exemplar of the ecosystems approach mentioned earlier in the PSA.

17. Ensuring a healthy natural environment will in many cases be incumbent upon regional and local bodies, and these responsibilities are outlined in paragraph 3.36: “Local Authorities will be key partners in protecting and enhancing the natural environment at a local level, through Local Strategic Partnerships, Sustainable Community Strategies, LAAs and their statutory duties”. The Woodland Trust welcomes the recognition that regional and local bodies are responsible for delivering environmental as well as economic and social objectives, and urges a rethink of the proposals set out in the Review of sub-national economic development and regeneration which seem to be shaped by the same economic preoccupation as the Planning White Paper.

18. Presently there is a lack of clarity regarding adaptation strategies for nature, and as a consequence it is refreshing to see paragraph 3.47 outlining the need for more work; “The natural environment must be able to cope with a changing climate and this will require both specific adaptation measures, as well as reducing other non-climate change threats”. Adaptation strategies can be implemented without the need for international agreement, and given that society is dependent on a healthy natural environment a greater deal of Government urgency and leadership is required to ensure that the UK creates ecologically functional landscapes. The Climate Change Bill represents a strong opportunity to move forward work in this area.

#### THE EXTENT TO WHICH THE PSA’S REPRESENT A JOINED-UP APPROACH TO GOVERNMENT

19. We believe that the PSA structure fails to represent a genuinely joined-up approach to government, and that this is vindicated by the conflicting environmental and economic concerns present within the Agreements.

20. A key example of this is demonstrated by the PSAs dedicated to local and regional bodies. Such organisations’ will be crucial in pursuing sustainable development, yet despite an obligation held within PSA 28 nearly all the other measures of success are informed by narrow economic concerns. Indeed five out of the seven indicators in PSA 7, “improve the economic performance of all English regions and reduce the gap in economic growth rates between regions” relate to economic development, and only one deals with addressing climate change. None of the measurements appear to protect either green infrastructure or biodiversity.

21. A lack of emphasis on adaptation strategies and the provision of only one indicator for measuring biodiversity appears to prove that despite environmentally friendly rhetoric, the Government’s emphasis is upon economic rather than sustainable development.

<sup>2</sup> The Bat Conservation Trust at, <http://www.bats.org.uk/nbmp/documents/NBMPAnnual Report2005.002.pdf>

#### THE REFORM OF AIR PASSENGER DUTY (APD)

22. With aviation being one of the major contributors to climate change it is reassuring to see the proposed reform of APD. A further action that would make flying accountable for its cost is the inclusion of both aviation and shipping emissions in the emissions reduction target.

23. Another Government led action that would demonstrate a genuine desire to mitigate against climate change and protect the natural environment is a moratorium on all airport expansion. At present it could be argued contradictory to state a desire to cap emissions by at least 60% in 2050, whilst simultaneously expanding airport capacity.

#### “MOVING TO A GLOBAL LOW CARBON ECONOMY: IMPLEMENTING THE STERN REVIEW”

24. “Moving to a global low carbon economy: implementing the Stern review” reinforces the imperative for early action to mitigate against climate change. There is a clearly defined triangular policy framework for mitigation which now includes establishing a carbon price (paragraph 1.16), accelerating technology (paragraph 1.18) and encouraging behavioral change (paragraph 1.18).

25. However a policy framework on adaptation is less easily discerned, and as outlined in paragraph 1.24, the ideas are solely focused on human requirements without considering how Government policy can encourage a healthy natural environment.

26. We are pleased to see the role of deforestation highlighted in paragraph 3.9, “With up to 18% of global greenhouse gas emissions coming from deforestation, an international framework needs to include efforts to reduce emissions from deforestation, and to enhance carbon sinks by sustainable forest management and land use practices”. Indeed given the very limited coverage of ancient woodland and trees in the UK, it should be incumbent on Government to act and protect an irreplaceable resource here in the UK as well as taking action internationally.

27. UK wide adaptation is discussed through paragraphs 4.77 to 4.82, yet the report pays negligible attention to creating ecologically sustainable landscapes. The UK is dependent on a robust and fully functioning natural environment for the delivery of our air, water and food quality objectives, and as such failing to outline any strategies for the natural world appears a major missed opportunity.

#### THE DEFRA SETTLEMENT

28. The 1.4% a year settlement to Defra appears meagre given the size of the challenges and could demonstrate a lack of ambition, vision and determination on the part of the Government.

29. The amount of investment that will reach projects designed to help protect, enhance and restore biodiversity may be entirely inadequate as a substantial percentage of the settlement will be taken by flood prevention and coastal erosion.

30. The final figures show a lack of impetus from the Government which does not square with the urgency of the problems faced.

#### PBR CHAPTER 7, “A MORE SECURE, FAIR AND ENVIRONMENTALLY SUSTAINABLE WORLD”

31. We support the setting of binding targets for emissions reductions, although the present 60% is insufficient given recent scientific evidence. This should now be upped to 80% as this gives the UK a better chance of averting dangerous climate change.

32. However it is disappointing that once again this chapter of the PBR lacks emphasis on adaptation, and fails to demonstrate how the Government intends to allow for an enhanced emphasis on built infrastructure provision including airport expansion, and, simultaneously protect the UK’s green infrastructure.

33. We agree that sustainable development, as outlined in paragraph 7.60 is a crucial principle and agree that policy needs to recognise “the importance of protecting and enhancing our natural environment so that domestic growth is more environmentally sustainable”. This though appears in direct contrast with the economic drivers that informed the potentially environmentally damaging conclusions of the Planning White Paper and sub-national review.

34. In paragraph 7.61 the Government outlined the three main challenges they believe will affect the UK and these are, improving water quality, dealing with waste and reversing the historic decline in biodiversity. What is now needed is an understanding across all Government departments’ that these challenges are a shared responsibility.

---

**Memorandum submitted by the Association of British Insurers**

I am writing in response to the Committee's inquiry into the Pre-Budget Report (PBR) and Comprehensive Spending Review (CSR) 2007, to set out the insurance industry's serious concerns about the level of flood defence expenditure and the consequences of this for homeowners and businesses.

The flooding in June and July 2007 was the most extensive to take place in the UK since flood insurance became a standard feature of property policies in the 1960s, highlighting the importance of an adequate flood management system.

The total insurance cost will be in excess of £3 billion, the largest natural catastrophe insurance loss ever recorded in the UK. And this is only a proportion of the economic and social impact. Businesses that were not insured have faced severe difficulties. In a "just in time" economy the consequences of disruption are also felt beyond the directly affected area. At an individual level many people, particularly those in social housing, have lost possessions that without insurance they will struggle to replace.

The ABI believes that the financial case for flood defence expenditure is well made. The Environment Agency itself calculates that it secures a much higher level of economic return than most other publicly funded projects. We also strongly believe that this is an area where the public and private sectors need to work in partnership. If flood defence expenditure adequately addresses increasing risk, insurance will remain available and affordable. Households will buy it and so protect themselves. If it is not adequate and insurance is less attractive, people will not be adequately protected and will look to the state for compensation and protection.

We are therefore very concerned that the floods have shown up serious shortfalls in spending on flood risk management at national and local level. Flood defence expenditure has benefits that greatly outweigh the costs, and yet key projects, including protection of major city areas and public infrastructure, have been delayed for want of money.

The flood defence spending announced at the PBR and CSR— £650 million for 2008, £700 million for 2009, £800 million for 2010–11—is inadequate. It does not address major issues, including drainage, that were revealed over the summer and fails to match the importance of improving Britain's flood defences.

The recent floods highlighted how vital the insurance response is to the recovery process. The UK is unique in having flood cover included as standard in household policies and in the vast majority of business policies. It is essential that the Government responds to these floods effectively so that the insurance industry is able to continue to provide this protection.

The ABI is contributing to the Pitt Review, which is assessing the lessons to be learnt from the recent floods. We hope that this Review will enable the Government to assess how response mechanisms performed and will identify what now needs to be done to protect homeowners and businesses in the future.

Until the Review is complete and we understand the full scale of the problem, it is difficult to specify an optimum figure for flood defence spending. However, it is clear already that the lessons from this summer will not be addressed within current funding levels.

It is vital we now have a strategic plan for investment in defences and surface water management which looks beyond the usual three year spending cycle. For example, the ABI identified that £8 billion would be needed over the next 20–25 years to tackle East Coast flooding alone.

In December the ABI will publish our own assessment of lessons from the summer floods and will send a copy of this to the Committee. In the mean time, do contact me if you require any further information on the issues raised in this letter.

*November 2007*

---

**Memorandum submitted by Scottish and Southern Energy**

Scottish and Southern Energy plc (SSE) welcomes the opportunity to respond to the Environmental Audit Committee's inquiry into the Pre-Budget Report, and in particular to the request for views on the Carbon Capture and Storage (CCS) demonstrator competition, and also general policy with regard to funding and developing CCS.

SSE is one of the largest energy companies in the UK and has been involved in CCS activities for many years, through the Peterhead project with BP and a variety of other activities. Although the Peterhead project was based upon pre-combustion technology, ruled out by the CCS competition criteria, SSE is also involved in post combustion activities, and is not wedded to either technology. Against this background, SSE believes the CCS technologies are not sufficiently mature to choose a winner today, and both require demonstration in the near to medium term. Longer term, SSE believes the market will decide which is the most appropriate CCS technology, and it is likely that both will have a role.

The key criteria of the CCS competition as published, are that it should be a post combustion technology applied to coal; it must demonstrate a working end to end chain of capture, transportation and storage by 2014; a staged approach may be appropriate and can be taken where 50–100MW are demonstrated by 2014 (with transportation and storage), and between 300–400 MW size as soon as possible thereafter.

The rationale given for the criteria was the international relevance of post combustion technology for rapidly industrialising countries such as China and India, and ongoing international activities in relation to pre-combustion and natural gas fired post combustion capture technologies in the US and Norway respectively. SSE believes the implication of this decision will be to delay the implementation of a meaningfully sized CCS demonstration in the UK. This and other issues arising from the CCS competition criteria are discussed below.

Prior to the announcement of the criteria for the competition, a large number of pre-combustion projects were under development, reflecting the increased maturity of the technology. Any of these projects would ensure the storage of a significant volume of CO<sub>2</sub> (2+ Mtes/year); support the installation of a meaningful transportation and storage infrastructure; and be available in the 2012–14 timescale. These benefits are now at risk due to the narrowing of the competition to just one technology.

The competition criterion recognises that a phased approach may be required, and states that this is acceptable providing 50–100 MW of CCS is installed by 2014. Given the CCS activity worldwide, it is highly unlikely that the UK will be teaching the world anything new in 2014 with 50–100 MW of CCS.

SSE is sceptical that the competition as announced will succeed in having any great impact on the technology choices made in China. We question, given that UK faces its own energy challenges, whether it would not be more sensible to use this competition to focus on meeting our own challenging energy needs at home—assisting China more directly through the CDM mechanism or other international funding vehicle. In the meantime the UK has its own challenging emissions reduction targets and a desire to maintain fuel diversity. With the right support CCS could play an important role in this over the next 10–15 years.

The phased approach is potentially inconsistent with the requirement for demonstration of the end to end chain by 2014. Early start on a phased approach will involve the use of a sub-critical plant. The quantity of CO<sub>2</sub> capture, the location of the plant, and the short term nature of a phased technology development step, means that investment in transport and storage may not be justifiable. SSE believes that long term post combustion capture CCS operation should be with supercritical plant, but none exist today. If the phased technology development is delayed until a new supercritical plant is available, will the CO<sub>2</sub> quantity and the short term nature of the phased technology development step justify the investment in transportation and storage infrastructure, to achieve the 2014 ambition?

In conclusion, if a phased approach is required, and it is delayed until supercritical plant is available, SSE see a real risk that the larger scale 300 MW demonstration may not be operational until nearer the 2020 timescale.

Whilst there were a number of serious pre-combustion projects under development, SSE doubt if there are many post combustion projects under serious consideration which would match the criteria.

Whilst SSE can appreciate the desire to develop a technology of international relevance, it will most likely result in smaller volumes of CO<sub>2</sub> captured and stored in the medium term, and delay the development of transportation and storage infrastructure. If this likely outcome is not acceptable, then the wrong technology choice has been made, and an alternative project based upon pre-combustion technology is required. There has been too much focus on the combustion technology at the expense of ensuring the competition delivers viable long-lasting and re-usable transportation and storage options.

SSE suggests that if the objective is early end-to-end chain implementation, then pre-combustion is the more appropriate technology.

SSE welcomes the leadership shown by the UK Government in the field of CCS, but feels the CCS competition as envisaged will not result in the sufficient material progress, with the real danger that the UK will lose the leadership in this area that it has enjoyed to date.

SSE believes the Government should quickly announce a more comprehensive, cost effective and ambitious approach to demonstrating CCS in the UK. This should be achieved by creating the right policy environment to encourage a collaborative approach—bringing together government, energy companies, engineering specialists and other relevant stakeholders. The new approach should involve a combination of pre-combustion technology to underpin the end-to-end chain infrastructure, alongside a phased development of post combustion technology, connecting into the end-to-end chain infrastructure. SSE believes this is best achieved through the early announcement that the UK intends to support a second demonstration project in the same time period and that this competition will focus on pre-combustion technology and shared used of transportation and storage infrastructure. SSE believes it is essential for the UK to retain its leadership in CCS.

With regard to policy for funding and development of CCS more generally, comments made above notwithstanding, SSE welcomes the commitment shown to date by the UK Government in these areas, and supports the continuation of the activity going forward. We believe that a broad policy objective to reduce the UK's carbon intensity coupled with a stable and longer term framework for the EU ETS will be sufficient to support the wider deployment of CCS once both technologies have been demonstrated at scale.

SSE trusts the Committee will find the views expressed in this letter helpful, and is available for clarification if required.

### Memorandum submitted by Sea and Water

#### INTRODUCTION TO SEA & WATER

1. Sea & Water was set up in 2003 to provide a representative voice for the inland waterways, short sea and coastal shipping industry, and to promote water freight as a viable alternative to the movement of freight on the UK's roads. We provide information to members and supporters, communicate the case for modal shift to other stakeholders, highlight the benefits of water freight to the environment, economy and society, and address the barriers that prevent the greater take up of water.

2. Sea & Water is funded by a grant from the Department for Transport, by research monies from the European Union, and by annual subscriptions and sponsorship from our supporters, who are mainly drawn from the water freight industry in the UK.

#### WHY WATER FREIGHT?

3. Amongst the benefits of inland waterways and short sea shipping is that by comparison to road transport it is considerably less carbon intensive. Domestic water transport emits 80 less carbon dioxide per tonne kilometre than road, and also 35 less nitrogen oxide. Water also relieves congestion: a single 300 tonne barge takes up to 15 lorries of the road.

4. Investment in increased capacity for water freight transportation is an efficient way of cutting carbon emissions. The latest data from the Tyndall Centre for Climate Change research shows that:

- 25% of carbon emissions are from Road Freight (13MtC) in terms of energy per freight tonne-km.
- 2% of carbon emissions are from domestic shipping (1MtC).

In terms of carbon per freight tonne-km in 2004:

- Road freight was responsible for about 0.08 tonnes of carbon per 1,000 freight tonne-km.
- Water freight was responsible for about 0.02 tonnes of carbon.

As these figures demonstrate, road transportation has four times higher carbon intensity for moving the same number for freight tonne-km in comparison to that of water freight.

5. These environmental benefits are of course recognized by Government—as is demonstrated by its support for Sea & Water. But we believe that departments other than the DfT could take more account of the benefits of water freight when formulating policy.

6. Our evidence focuses upon four policy areas, relating to the challenge of climate change, that are outlined in the in the 2007 Pre-Budget Report and Comprehensive Spending Review. These are: (1) the technology policy, formulated in an effort to implement Stern Report guidelines; (2) the creation and promotion of more efficient home and office products, both domestically and throughout the EU; (3) the adoption of a more sustainable waste strategy; and (4) the continuation of the Defra Climate Change Agreements (CCAs).

#### TECHNOLOGY POLICY

7. In order to implement the proposals contained in the Stern review, Government is, according to the Pre-Budget Report, currently developing a new low-carbon energy technology strategy, which is to be published in 2008. As part of this, Government has said that it will fund innovation “across the full chain from initial research and development to demonstration, deployment and diffusion [of increasingly environmentally friendly technology], in order to maximise the cost-effective potential for cutting emissions in the UK and internationally”.

8. We believe that amongst the technologies that should be funded on this basis is water freight. Already water freight is the most environmentally friendly and sustainable way of moving goods domestically: with additional innovation its efficiency will further improve. This is precisely the investment called for by Stern, who has emphasised the need to tackle climate change gas emissions from transport.

9. We urge the Government not to overlook what may be seen as an ‘old’ technology, such as water freight, given the contribution it can make to meeting the challenge of climate change.

#### ENVIRONMENTALLY FRIENDLY HOME AND OFFICE PRODUCTS

10. The Pre-Budget Report notes that improving the energy efficiency of products used in homes and offices provides one of the most cost-effective ways to meet the Government's climate change and energy goals. It says that the Government will advocate that the EU "improves product information and compliance to help consumers make better choices and drive fair competition".

11. We strongly argue that what is needed is recognition of carbon emissions that are produced throughout the "life-cycles" of home and office products. That includes the cost of transporting them from the point of manufacture to the point of consumption—and policies should be developed to promote water freight as an environmentally friendly alternative to other modes.

12. However, neither the proposed EU "Eco-label", nor the environmental food labelling project being pursued by Defra, currently include the promotion of transporting goods on water. This lacuna appears to extend to the Pre-Budget Report. Given the very strong environmental case for doing so, these programs must be augmented to include the promotion of water freight transportation.

13. Government is also seeking "voluntary action by retailers, manufacturers and service providers to phase out the least efficient products and to raise their own standards". We believe that voluntary action by retailers, manufacturers and service providers should be sought such that, when feasible, they transport their goods by an environmentally sustainable mode—water.

#### BEHAVIOURAL CHANGE: THE CLIMATE CHANGE LEVY

14. The Pre-Budget Report also indicates that the Government intends to continue its support of the Climate Change Agreement (CCA) scheme until 2017. Under CCA it provides financial incentives to companies in energy intensive sectors that agree to improve energy efficiency and/or reduce emissions.

15. At present, such companies are not rewarded for transporting their goods on water, rather than relying on the road network. Again, we believe that such sustainable modal shift ought to be encouraged and rewarded. According to Defra, the incorporation of such water freight transportation considerations under CCAs is being considered. We hope that this rapidly becomes a reality.

#### WASTE STRATEGY

16. As part of the effort to protect the UK's environment, the Pre-Budget Report also draws attention to the proposal for a more sustainable waste strategy. It highlights the challenges of "dealing with waste, especially from households, in a way that reduces environmental impact", and the need for a "significant investment in more sustainable waste management solutions".

17. However, the majority of waste in the UK is transported to landfill or to recycling facilities by lorry, which is the most polluting mode of freight transportation. For example, according to a Report by the Mayor of London (2003), approximately 2.7 million tonnes of waste were transported out of London in 2001–02. Of this:

- 27% was transported by rail.
- 27% was transported by barge on the Thames.
- The remainder (46%) was moved by road.

It is worth noting that London is exceptional in the degree to which it uses the Thames: most other cities would make even greater use of road transport.

18. We believe that any effort to make waste management more environmentally friendly and sustainable cannot overlook its transport. We therefore believe that Government must ensure that less carbon intensive transport modes for waste, such as water freight, are encouraged. Government could, for example, provide further support for investment in infrastructure to make water freight transportation a more viable and attractive option.

#### IN SUMMARY

19. We hope that the Environmental Audit Committee will endorse the comments and recommendations we have made in this evidence. We believe that if the Government better incorporated freight transportation into the policy initiatives we have identified above, the Pre-Budget Report would go further towards achieving the "more secure, fair and environmentally sustainable world" that is called for in the Report itself.

20. Finally, we are delighted to be able to submit evidence to the Environmental Audit Committee. Should it be helpful to the Committee we would be very happy to expand on our comments either in writing or in oral evidence.

26 November 2007

---

---

## Memorandum submitted by E. ON UK

### INTRODUCTION

1. E.ON UK would like to comment on the Carbon Capture and Storage (CCS) aspects of the Committee's inquiry into the 2007 Pre-Budget Report and Spending Review.

### CONTEXT AND NEED FOR CCS

2. The UK electricity industry requires substantial capital investment over the coming decade to deliver reductions in carbon dioxide emissions, ensure security of energy supply and deliver affordable prices. By 2015 we are expecting that about 5GW of nuclear and 14GW of coal and oil-fired plant will need to be replaced. Much of the new plant will need to be, or become, low or zero carbon if the UK is to make effective progress towards its 2020 and 2050 CO<sub>2</sub> emission reduction targets. While some further investment in combined cycle gas turbine (CCGT) power plant is required to maintain security of supply in the near term, replacement of all retiring plant with CCGTs alone would not be the most effective means of meeting the UK's energy policy objectives, as it would lead to high levels of UK dependence on natural gas. It is important that UK energy companies have access to a range of other investment options, including renewable, coal and nuclear plant.

3. CCS enables CO<sub>2</sub> to be captured from power generation and large scale industrial processes, transported and injected into geological structures for secure, permanent storage. CCS is a crucial technology in that it enables the continued use of coal for power generation in a carbon constrained world, whilst enhancing security of energy supply, as coal is available in large quantities, with substantial remaining reserves, is freely traded on world markets and can be easily stored. CCS technology can capture in excess of 90% of the CO<sub>2</sub> emitted from fossil fuel plant and could further reduce CO<sub>2</sub> emissions when combined with co-firing of coal and biomass.

### GOVERNMENT SUPPORT FOR CCS AND THE DEMONSTRATION COMPETITION

4. E.ON UK welcomes the Government's continued support for CCS over the last few years and in particular the decision to support a full scale CCS demonstration here in the UK. The Government's decision to support post-combustion technology only in the competition announced at the time of the pre-budget report and CSR has attracted some comment. Prior to this announcement, E.ON had been pursuing the development of an integrated gasification combined cycle (IGCC) project with pre-combustion CCS at Killingholme on the Humber, on the basis that this could represent the most economic technology choice for new coal-fired plant incorporating CCS.

5. Nevertheless, given that funds are only likely to be available to support a single project in the UK, we believe that the Government's decision to support demonstration of post combustion demonstration technology fitted to conventional coal plant is rational given the Government's stated policy objective of encouraging China and other countries to retrofit CCS to the coal-fired plant built or to be built over the next decade or so, which will be overwhelmingly conventional in design. Making the technology choice now will enable developers to focus effort and expenditure on projects which will best meet those policy goals and avoid further expenditure on those it does not. We therefore support the Government's decision.

6. The details of the competition released by BERR, including the Project Information Memorandum and the Preliminary Qualifying Questionnaire have been helpful to developers. We believe it was sensible to delay the competition finishing date until summer 2009, as this gives E.ON and other bidders adequate time to formulate cohesive bids.

7. E.ON is evaluating post-combustion options to enter into the CCS competition. We hope to announce formally our participation in the competition and outline our bid in the New Year.

8. It is important that pre-combustion CCS technology is also available to the market as this may prove to be the preferred economic option when CCS is incorporated in new plant. For this reason E.ON is one of the industrial supporters of the pre-combustion FutureGen project in the United States, but future pre-combustion projects should also be supported in demonstration programmes within the European Union. We would therefore welcome a further competition, or other measures funded by HMG or the EU, to support demonstration of CCS technologies in the UK, encompassing pre-combustion CCS.

9. E.ON UK believes that CCS, when commercially demonstrated, and other low carbon investment options are most economically incentivised by the EU emissions trading scheme which allows participants a range of low carbon investment options to reduce CO<sub>2</sub> emissions in response to a carbon price. The development of the next phases of the EUETS after 2012 will be crucial for providing a robust long-term framework to incentivise investment in CCS and other low carbon technologies in the power sector.

*December 2007*

---

### Supplementary Memorandum submitted by Friends of the Earth

At your 4 December 2007 oral evidence session on the Pre-Budget Report and Comprehensive Spending Review, I said I would send further information on a couple of points.

Firstly, Defra has issued new guidance on the use of a “shadow price” for carbon, to be used in policy appraisal. In our view this is flawed on a number of levels, not least because it assumes that strong climate policies will be implemented, leading to low climate damage, leading to a low shadow price. Use of a low shadow price actively prevents strong policies being passed. This is an entirely circular situation which will prevent the Government meeting its climate commitments.

In the enclosed briefing,<sup>3</sup> we set out the implications of the use of the new shadow price for Heathrow expansion—its use means the proposal has an alleged net economic benefit, and so gets through the Impact Assessment, and as a result hundreds of millions of extra tonnes of carbon dioxide will be emitted. With a more reasonable shadow price, the opposite outcome would result.

You also asked how policy appraisal might be done differently, without reliance on cost-benefit analysis. I have pleasure in enclosing an interesting new piece of work commissioned from Tufts University, USA, which argues that cost-benefit analysis leads to inherently ineffective decision-making, and proposes more effective alternatives. This research also critiques the Government’s new shadow price of carbon on pages 22–23.

Finally, you asked about domestic production of biofuels. I have included overleaf a short answer on this point from our Biofuels Campaigner.

I hope you find these documents of interest, and thank you for the invitation to speak at your inquiry.

#### NOTE ON BIOFUELS

*Q. In terms of the domestic element of the fund, would Friends of the Earth support further research and development on biofuels or do you think that is a dead-end?*

Friends of the Earth would support further research and development of some biofuels but not of all. It can be very difficult to distinguish between good biofuels and bad, but as a rule of thumb we would support research into technologies that enable us to turn our waste products into fuel. We would not support research into further developing biofuels made from large monoculture crop plantations specifically planted for the purpose. This is because there are too many risks associated with these systems, including:

- difficulties of ensuring land of high biodiversity value or important carbon sinks have not been cleared;
- questions around displacement—ie biofuels plantations are not themselves established on cleared land, but push other agricultural activities into new land; and
- difficulties of monitoring and verifying compliance with sustainability standards or certification systems and their inability to address key issues (including those above).

We also believe that there are far easier ways to reduce our emissions from the transport and energy sectors.

Friends of the Earth would support research and development of second generation biofuels, under the same conditions. It is important, however, that the need for research in this area is not used as a reason to develop markets for current generation biofuels, we believe that this is a skewed logic.

*1 February 2008*

---

<sup>3</sup> Not printed.