



House of Commons
Environment, Food and Rural
Affairs Committee

**Committee on Climate
Change**

Oral and written evidence

Wednesday 26 March 2008

*Lord Turner of Ecchinswell and Mr David
Kennedy, Committee on Climate Change*

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Environment, Food and Rural Affairs Committee

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

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Oral evidence

Taken before the Environment, Food and Rural Affairs Committee

on Wednesday 26 March 2008

Members present

Mr Michael Jack, in the Chair

Mr David Drew
Mr James Gray
Patrick Hall
Lynne Jones
David Lepper

Miss Anne McIntosh
Sir Peter Soulsby
Dr Gavin Strang
David Taylor
Paddy Tipping

Witnesses: **Lord Turner of Ecchinswell**, a Member of the House of Lords, Chairman, and **Mr David Kennedy**, Chief Executive, Committee on Climate Change, gave evidence.

Q1 Chairman: Good afternoon, ladies and gentlemen. We welcome you to our one-off evidence session with Lord Turner of Ecchinswell. I hope I have pronounced that correctly.

Lord Turner of Ecchinswell: You have.

Q2 Chairman: Where is it?

Lord Turner of Ecchinswell: It is just south of Newbury, in the North Hampshire Downs.

Q3 Chairman: Does it have some very special feature which made you choose that as part of your title?

Lord Turner of Ecchinswell: I just happen to have a house there and I have had a house there for 20 years.

Q4 Chairman: That seems as good a reason as any. Anyway, you are very welcome, appearing before the Committee this time as the Chair of the Committee on Climate Change. Would you clarify for me, because you are operating in a shadow mode at the moment, are you officially the Chair or the Shadow Chair?

Lord Turner of Ecchinswell: I think that is a complexity that I usually leave for others. I guess the correct description is that I am the Shadow Chair of a shadow committee, which will become a committee at the time of the Royal Assent to the Bill. I have to say that we are simply, as a committee, getting on with the job that we need to do since we are on the hook to produce some reports by December this year, so we need to proceed as if we are in full operating mode.

Q5 Chairman: I gather, then, from that that you have already met as a committee as such. Are you able to give us at this early stage a flavour of the type of thing that you have been considering? You said that you had to produce a report by the end of the year, and so I presume you have been focused on formalising your work programme and how you are actually going to achieve your objective. Perhaps by way of introduction to your work, you could tell us what you have been up to since appointment and your first meeting.

Lord Turner of Ecchinswell: We have had two meetings of the committee so far. Those have built upon the very extensive work which has been done by the secretariat, which has existed in a shadow fashion for about five or six months now and which has done a lot of basic preparatory work. We have also held four different stakeholder meetings, meetings with NGOs, with business, with interested parties in London, Cardiff, Glasgow and Belfast simply to tell interested parties that we exist and to explain our work programme. By December we have to recommend what the carbon budgets will be for the first three budgets of 2008–12, 2013–17 and 2018–22, and I think it is very difficult for that timescale, which was originally meant to be September but the whole thing has slipped a bit. It really cannot slip much more because the Government has said that it will respond to our recommendations on the budgets by March next year and, in fact, by the time of the Budget in the sense of the fiscal budget, and, indeed, we are meant to produce our first annual report on progress against the 2008–12 budget by September next year; so I think that illustrates clearly that we cannot let that recommendation on those first three budgets slip. However, we have also been asked, and we need to do this in parallel, to look at some things which were not necessarily in the original intent of the Committee on Climate Change but they have been added to our task, one of which is to advise on what the 2050 target should be, whether that should be a reduction of 60% below 1990 levels, or 80%, or anything else which is above 60%, because the only constraint is that the legislation says at least 60%, and, clearly, one wants to answer that before one freezes the budget for 2020 because the stretch in the budget of the target for 2050 carries that implication. We also have to recommend whether the budget should, indeed, be set in terms of CO₂ alone or in terms of all greenhouse gases, including the other five main greenhouse gases, and we have to recommend whether, and how, and by what time international aviation and shipping should be included within the UK budget and target setting process. So, all of that gives us a great deal of work to get done between now and December.

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Q6 Chairman: You used the words “recommend” and “advise” in responding to my question. One of the things that this Committee felt when we produced our report on the then draft Climate Change Bill was that perhaps the Climate Change Committee should have the equivalent status of the Monetary Policy Committee.¹ The Monetary Policy Committee is given a target of inflation to hit by the Chancellor, but after that it gets on and works out its own salvation, as you know, in how it directs monetary policy to achieve that objective. What happens in your case? You do all this hard work and you come up with some recommendations and, hopefully, you have not fixed it behind the scenes with the Secretary of State before your report. How are you going to maintain your independence? What are you going to do if the Government turn round and say, “We do not actually agree with this. We think you have been a bit hard. We think we want to have a different set of targets and recommendations”? Are you going to sit back, lamely and quietly, and not comment at all or are you going to develop a state of independence and, if necessary, speak out?

Lord Turner of Ecchinswell: I think it is worthwhile being clear about where the analogy with the MPC works and where it breaks down. At one level it works, in the sense of this is an independent body set up by statute with clear independence from the Government. What is different is two-fold. First of all, of course, the Bank of England itself does not even recommend on what the target should be; it simply has to take the target as actually defined by the Chancellor. The 2% plus or minus 1% is not something even advised by the Bank of England, it is defined by government. So, at one level, in relation to what the target should be, the monetary policy of the Bank of England has less independence than we do. In relation to then hitting the target, of course it has total independence, but that is because in relation to inflation policy you can define one specific lever, the interest rate, and you can give that to an independent body to call up or down. You cannot really do that for the Committee on Climate Change, because otherwise you would have to give them pretty much the whole of government policy because the levers that we could pull cover building regulations, they cover speed limits, they cover appliance regulation, they cover the design of the EU ETS, they cover taxation, et cetera. So, I think one can accept that you cannot have a body for climate change which is given complete independence in pursuing a target, and so we end up with a remit which is two-fold: to recommend on what the target should be and also, necessarily, to recommend on what the policies are going to have to be to have any chance of hitting that target. We cannot end up saying what a target is for 2020 without also describing why that is a credible target. It is, therefore, a fuzzier issue than the independence of the Monetary Policy Committee of the Bank of England. There is not a nice, clear design of who sets

the target and who is responsible for delivering it, but, that said, we are going to be robustly independent. We will develop our own point of view on what the target should be in order to achieve the overall objective of the world stabilising climate change at below dangerous levels, we are going to set out our point of view on what the budget should be and then we will have to see how the Government responds to them. I think, necessarily, when the Government responds to our recommendation, it would be odd if we did not respond back and, therefore, if there were a very major divergence I think we would expect to see and, indeed, Parliament would expect to see and, indeed, I think the legislation requires that there is an explanation to Parliament of why the recommendations of the Government have diverged from the recommendations of the committee. I think there is going to be a dialogue on that and we certainly hope that the Government is going to end up with a formal policy which is very close to our recommendations, but I think one has, to a degree, to play that by ear within the context of the fact that we are an independent body which has been charged by government with having an independent point of view.

Q7 Chairman: You have got a long track record of being involved and developing an understanding of climate change issues. I have read a couple of your articles. You have not been backward in coming forward and stating your views about climate change, the response to the Stern Report, and so on. Are you going to be able to maintain, as Chair of this body, the ability to continue to comment in the wider sense about climate change issues, particularly if having got agreement, if you like, from the Government to the recommendations, the track is set, the direction of travel is clear, but then, for whatever reason, for example, we started to deviate, we dropped behind the target? Are you going to be able to stand up and say, “Something is going wrong, this is what I think it is and these are some thoughts as to how we get back on track”?

Lord Turner of Ecchinswell: I think that is clearly within the official remit of the committee, because we have to present reports each year on the progress towards the budget that we are then in the period of. So, in September 2009 we have to produce a report, and all we will know then is the 2008 result, so these reports will get more meaningful over time, but once we are up and running and we have got a couple of those underway and we can see the trend relative to the budget, we are charged by Parliament within the Bill of commenting upon the progress against the target, and it is pretty obvious that it is not the intent of Parliament that our report simply says, “The target said this, the figures are that”, end of report. Such a report in itself would take two lines. I think it is the clear intent that if we are off target we will comment on the reasons why, which policies are working, which policies are not working, whether new information has given us a greater understanding. I think also in those reports necessarily we will try and look at where in the

¹ Environment, Food and Rural Affairs Committee, Fifth Report of Session 2006-07, *Draft Climate Change Bill*, HC 534-I.

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economy we are off target, if we are off target. It may be that what we will end up with is going faster in reductions in some areas, be it transport or domestic residential buildings, slower in others, and we will comment on that. So, we will comment on the sectoral balance, we will comment upon whether we are on track and that commentary will necessarily have to involve a point of view on, if we are off track, why are we off track and how we need to get back on track.

Q8 David Lepper: I have a point on procedure. When you produce a report for government will that report become public at the same time that it goes to government, or will it go to government first, leaving aside the issue of leaks?

Lord Turner of Ecchinswell: I would have to remind myself, and I should know the answer to that, it is there in the Bill. The answer is it has to be laid before Parliament. The report which we produce by the Secretary of State, there is no ability for it to be sat upon. I think there is some time within it of when that has to go forward and when the Secretary of State has to respond on behalf of the Government as to what their reaction is, but these will be public reports, effectively, yes.

Q9 Chairman: Do you think Parliament ought to debate your report on an annual basis?

Lord Turner of Ecchinswell: I think that would make absolute sense. At least it should debate the response of the Government to our report. It does not necessarily need to have to have two bites of the cherry, but I think it is clear within the legislation that when the Government does propose its response to our reports there would be a debate at that time.

Q10 Dr Strang: As you know, following the Bali summit, negotiations are now beginning to produce targets for individual countries, developed and developing countries. How important do you think the Climate Change Bill is in this context in demonstrating to the world that Britain means business here and we really will achieve cuts in our emissions?

Lord Turner of Ecchinswell: I think the Bill is important as a commitment to cuts in our emissions. I think the further decision which will come after our recommendation on the 60%, 70% or 80% will also be important, and I think the budget which is set for 2020, which by the Bill has to be at least 26% below the 1990 level, will also be important; so I think there is within the Bill a clear statement on behalf of the UK Government and UK Parliament that we are on, as it were, a non-negotiable downward path—non-negotiable internally, I did not mean that in an international negotiation sense. The fact that we are committed completely to reducing our carbon emissions is set out there, and that is a useful stance, vis-à-vis the rest of the world. It will be important also to back it up with achievement. There is only so far that you can build credibility in international negotiations by the forward commitments that you have made rather than by the proof that year by

year, or at least two years by two years, or three years by three years you are on some sort of downward path, and I think that is the next challenge, because at the moment, as we know, for the last four or five years we are pretty much flat in terms of our emissions and we need to get them on a downward path, I think, to build our credibility in international negotiations.

Q11 Dr Strang: On the question of renewables, as you know the European Union has its 2020, 20 target, as it were, to secure 20% of the European Union's needs from renewables by 2020. Would you like to express a view as to what our target might be within that European Union objective and how it might be achieved?

Lord Turner of Ecchinswell: I will not express a point of view in a quantitative sense on that target right at the moment, though that is something that we will be thinking about carefully during the course of the year. One of the challenges that we have, or one of the things that we have to think about within the committee, is the extent to which we accept international arrangements or European arrangements, as it were, as external givens for our work or things where we might be to a degree recommending things, which in itself carries implications for the UK's negotiating stance within that, and that is going to be a tricky and not black and white thing to work out. For instance, there is going to be a European Emissions Trading Scheme, we know something about the basic structure of that, nobody would suggest we challenge that, but actually what exactly that will be in phase three, how tight will be the national allocations, how much will be auctioned, how much not, is not yet fixed and, therefore, we will have to operate in an environment of, on the one hand, keeping an eye on what is steadily being agreed at European level and at another level, where it is not fixed, being aware that our recommendations might in themselves feed into that. In relation to the 20% renewable energy target, there is now a clear commitment of the European Union and of the British Government to that. There are standard burden-sharing processes which the Commission will be working at. One can hazard some sort of guess, I am not going to give the figure now, of what that might end up with for particular countries, and we will be having a point of view of where that is likely to be for the UK on standard burden-sharing approaches and, crucially, what that implies for renewable electricity, because the most crucial thing is that that 20% renewable energy target is a renewable energy and, given that it is much more difficult to achieve renewable energy outside the electricity sector, it is going to imply a much higher figure both at European level and at UK level in relation to renewable electricity. So I am not going to give you a figure here, but I think, and I cannot remember whether it is the third or the fourth meeting of the committee, one of our key agenda items will be to go through the framework of international commitments we have made, in

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particular EU commitments, and what that implies about the constraints within which we should operate.

Q12 Dr Strang: Okay, I think you have said as much as we can expect on that. One final question. Would you like to comment on the feed-in targets?

Lord Turner of Ecchinswell: I think it is an issue which is going to have to be looked at at some stage, the balance between the ROC approach and the feed-in tariff approach. The ROC approach is a very clear, economic theory way of making sure that you try to buy your renewable energy at least cost to the taxpayer—that is how it has been devised—and it can, therefore, have some advantages in terms of achieving one's ends at least cost. I think it is clear right now that so far it is driving less progress towards renewable electricity than the feed-in tariffs which have been applied by, for instance, Germany or Spain. Of course, you can turn around and say, yes, but they have bought their renewable energy at a quite expensive level and perhaps an unnecessarily high expensive level, so that is an issue which I do think needs to be looked at, the relative pros and cons of feed-in tariffs versus ROCs. What I think is highly likely is if you want to generate a large amount of small-scale, decentralised renewable energy production, as may be required within the zero carbon homes commitment for 2016, which cannot be achieved entirely by insulation, which requires at least some degree of distributed renewable energy generation, I think there is a really open issue as to whether the ROCs regime works for small-scale players like that. The ROCs regime is necessarily somewhat complicated; it establishes a reasonable expectation of a future market price which is understandable to large-scale, sophisticated players in the generating market. I think it is unlikely to work if we are going to go down the route of encouraging people, as in Germany, to put solar panels on the roof of their house and sell that to the Grid. That may suggest that a mix of both policies may be required in the long-term.

Q13 Dr Strang: I think you are being understandably cautious, but presumably in due course—

Lord Turner of Ecchinswell: In due course that is something we will look at.

Q14 Dr Strang: It is up to you and the committee to say, “Look, we have really got to get down this road pretty quickly”?

Lord Turner of Ecchinswell: Yes, in due course we will do that.

Q15 Mr Drew: Can we pick up your point about trading and international carbon credits? This Committee did recommend, when we did our report, that at least 70% of the impact of reducing climate change should be purely domestic, and there were, and I think it is fair to say still are, concerns about using emissions trading and there was an

amendment in the Lords to that effect. We will not embarrass you by asking you whether you voted on that.

Lord Turner of Ecchinswell: I will tell you.

Q16 Mr Drew: All right, you can tell us. Where are we in the great scheme of things?

Lord Turner of Ecchinswell: I think it is important here to distinguish the principal and also the specific form of any amendment which is put forward or, in the case of the Lords amendment, it has been passed, so the Government now has the decision as to whether to reverse that or to amend the amendment when it comes back to the Commons. Overall emissions trading can be an important part of the overall armoury of techniques that we need to deal with this problem. The arguments in favour are that it should, in theory, enable us to buy emissions reductions at least cost, and that is an argument that can apply at the level of Europe, hence the EU Emissions Trading Scheme, or, indeed, at the level of the whole world. Indeed, I think in the long-term, probably our aim should be in many centres of the economy to have a global emissions trading system with global caps. We are not there yet in terms of global caps, and therefore we have something which is separate from the EU ETS, which is the purchase-in of emissions credits generated by reductions under CDM or JI projects. Again, those can be justifiable on two bases. First of all, they can be a way of achieving emissions reductions at low cost and, secondly, they can be a beneficial flow of finance for helping the movement of developing countries towards a low carbon economy. Indeed, those reasons why one should be in favour of emissions trading was why in the Lords debate Lord Stern actually said, do not constrain too much the use of emissions trading. However, I think Lord Stern recognises, and I certainly recognise, that in the long run you cannot rely on emissions trading to achieve your reductions. Indeed, I said in my speech on that House of Lords amendment that we have to work on the assumption that when we think about 2050 all of our reduction problem has to be domestic, because by 2050 you have no good reason for believing that there will be cheaper emission reduction targets anywhere else in the rest of the world. If we are to deal with this problem, by 2050 we will have to have the whole of the world on a downward path of emissions reductions and subject to binding caps, and at that stage there is no sound basis, from now looking forward, to believe that we will be able to be a net buyer of credits rather than a net seller of credits. China may by that time not want to be a net seller; it may want to be a net buyer. So the only reasonable assumption for the 2050 target is that, if we say that we must try and get our emissions down by 80% by 2050, we have to tell a story of a technological path whereby we and other advanced economies can run our economy with 20% as much carbon emissions domestically as we have at the moment. In the long-term we have to get the emissions down, and that is why there is also an argument for being cautious about over relying on the buy-in of credits on the path there. There is a

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legitimate role for it in the first, second and third and subsequent budgets, but unless we make progress domestically towards radical domestic cuts in the long-term, we are not achieving what we want to achieve. That is the background and that is why I am in favour, in principle, of emissions trading, but I certainly see the argument for making sure that we have an adequate level of domestic reduction as well. The reason why I actually spoke against the amendment in the Lords gets to the particular way that it is defined. If you define it as at least 70% of the reduction has to be domestic, you can produce a perverse result, which is this. Imagine two things which the committee might recommend. Suppose the committee recommended that by 2020 we should get an 18.2% reduction in domestic emissions and a 7.8% reduction achieved by buy-in of credits, a combination of 26%. That, under the Lords amendment, is legal because it hits the 26% and it hits the 70%. Now, suppose we, alternatively, want to recommend a 20% domestic reduction and a 10% reduction achieved by emissions buy-in for a total 30%. That is illegal under the Lords amendment because 20% is less than 70% of 30%, and that is why my argument was that those who wish to propose that we have a limit within the Bill should define it as a minimum level of domestic reduction, not a minimum percentage of the total reduction which should be achieved by domestic. If people wanted to come back and say that the minimum reduction by 2020 achieved domestically should be 18.2%, ie 70% of the 26% minimum, I am much more sympathetic to that than to defining it as 70% of the total figure. I think it was simply technically wrongly designed for the objective which it is seeking to achieve.

Q17 Miss McIntosh: Can I pursue this. You alluded to the European emissions trading system, which is very much in outline—we do not know specifically what it is going to say—you alluded to aviation and shipping, and yet road transport is by far and away the largest contributor. My concern is that we do not know within the context of the Climate Change Bill as it currently stands, it does not actually set out, what the relationship will be between a UK emissions trading scheme and a European emissions trading scheme, and it is my understanding that we could be faced with the possibility of having four separate domestic trading schemes, one for England, one for Scotland, one for Wales and possibly one for Northern Ireland. Have you considered this in the committee and, if you have, why did you not perhaps look at tabling amendments to that part of the Bill in the Lords?

Lord Turner of Ecchinswell: Can I explain that my overall attitude to the Bill going through the Lords was that I was not myself going to get into the business of tabling amendments. I think it is slightly odd to, as it were, rewrite your own job description. I think you have to leave that to other people to do, albeit I did comment on that one amendment, simply because I think it could have been better written as an amendment and I think it could have perverse effects in limiting our freedom of action. You are absolutely right that the legislation allows

certainly Scotland, and I imagine you are also right in relation to Wales and Northern Ireland, to set up their own emissions trading schemes. When we were in Scotland recently and I met the Minister for Climate Change, he made it clear that it was not his intention to use that to set up trading schemes within Scotland and, indeed, I think there may be disadvantages in setting it up at a small geographic area level. The whole logic of an emissions trading scheme is to widen the geographic area across which you are searching for least cost emission reductions and to be able to trade; so there is something not right about then getting it down to a very specific, narrow level. I have to say, my present stance would be that although the legislation allows the devolved administrations to set up their own trading schemes, I think they should be fairly cautious about using that legislative freedom. Within the UK, of course, we are now committed to two trading schemes, one of which is entirely national and the other of which is at European level. The European level is the EU Emissions Trading Scheme, which covers energy intensive sites, large individual sites, which are in themselves large emitters of carbon. We are now also committed to the Carbon Reduction Commitment Scheme, which will cover large energy users who have multiple sites, like hoteliers, retailers, the retail banks, where the totality of their organisation's output is large even though the output from one individual site is not large. I do not think there is a problem with those two schemes; I think they have a clearly defined separation. It will be clear which sites are a member of which scheme and which are not and I think there is a fairly clear defined relationship—it is a one-way-street only relationship—between the Carbon Reduction Commitment and the European Emissions Trading Scheme, and so I think at the moment we have in those two schemes a fairly coherent policy mix. I think one can accept that if one was to proliferate lots and lots of trading schemes, one would have to look carefully at that and about the coherence of the relationship between them, but I think at the moment they are coherently related. I might add one extra point, which is within my comment on the last scheme. Of course, it is important within the European Emissions Trading Scheme to realise that we cannot actually in advance define the maximum amount of buy-in which will occur from the rest of Europe to the UK. That is not a policy variable which the UK Government or any other government can pre-fix within the scheme. The amount of buy-in will be whatever the market determines and will only become clear as we move towards the end of a budget period.

Q18 Miss McIntosh: Are you prepared to comment just on the road transport aspect? Should we not focus on the biggest polluter?

Lord Turner of Ecchinswell: I think one should be open-minded as to whether an emissions trading scheme is the correct way to go on that. There is a whole series of policy levers there. There is a regulatory policy lever through the voluntary and possibly the mandatory emission requirements on

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new cars being sold, though I think it is notable that at the moment we do not have the equivalent on light trucks and heavy trucks. We have much more of a framework of policy as it relates to the passenger car side of that than to the light trucks and heavy trucks. We have the bio-fuels issue, though that, of course, is contentious, and we have fiscal instruments, such as the fuel duty, but also, in particular, the new first-year vehicle excise duty. I think one has to look flexibly at all of those policy levers. What is clear is that transport is an area that we have to look very carefully at, because if you look at the last 15 years, the trends for industry, the trends for power generation, the trends for domestic emissions have been broadly flat. It is transport, both in its road transport aspects and in its international shipping and aviation, which in a developed world have been driving increases, so we have to have a way of dealing with that, and they are not covered by the existing trading schemes.

Q19 Lynne Jones: Have you any thoughts on what measures need to be taken to ensure that the price of carbon in carbon trading schemes adequately reflects the costs of carbon emissions and also what needs to be done to ensure that we have consistent and verifiable carbon accounting?

Lord Turner of Ecchinswell: On the latter, consistent and verifiable carbon accounting, actually we were intending to do it in one of our first two meetings but for scheduling reasons it has got a bit delayed. We will have appropriate people coming to us who can explain how the carbon accounting works and we will be going through the details. Obviously, when you set about an exercise like this, one of the first things you need to do is to assure yourself that the figures are complete and precise, and I should say on that that there is both the veracity of the carbon accounting and there is the speed at which we get the figures and the extent to which they are subject to adjustments. That is going to be something we are going to have to think about carefully in terms of when it makes sense for us sensibly to comment. The one thing I would say on all of that is that actually, in relation to CO₂ itself from energy use in developed countries, it is probably quite good, because we pretty much know how much petrol, how much diesel is burned, how much coal is used at power stations, et cetera: given the nature of the fuels that are used, given the fact that many of them are subject to taxation regimes or given the fact that they are burnt in concentrated amounts, those figures are fairly good. I think the areas which are much less certain are things like the other greenhouse gases. The level of precision on some of those emissions is probably not as great as it is from CO₂ energy and also things like land use, and so we are going to look very carefully at the dependability of the data which exists outside the CO₂ from energy fuel burning, which is probably the most precise of all the categories. In relation to the cost of carbon emissions, as has always been debated in the economics of climate change, there are, as it were, two ways to proceed: either to try and work out the marginal social cost of emitting carbon and then to

say, "I want to set the price of emitting carbon at that", and the quantity is whatever the quantity is for that price; or there is a way of starting from the quantity end, which is the UK has got to get its emissions down by X% by 2050, by X% by 2020. Therefore we think the EU emission trading system target should be this. Therefore, the price is whatever results from that quantity constraint. I have to say that I am somewhat more favourable to the latter approach than the former. I think attempting to work out with any degree of certainty the social cost of carbon is an exercise where you end up with an enormous range, and although it also involves judgments, it is somewhat easier to proceed on the basis of saying we believe the world needs to avoid X degrees centigrade temperature increases, the scientists tell us to avoid that with a high degree of probability, we need to limit the concentrations to this amount. To limit the concentrations to this amount, we need to be on this emissions target. We are, therefore, going to commit to these quantity reductions and, once we have committed to these quantity reductions, the price is what the price is. I think that is probably the more tractable approach to this problem than trying to have a debate as to whether the marginal social cost of carbon in any one year is 40 dollars, 50 dollars or so many euros or pounds.

Q20 Lynne Jones: So is that going to be done at a national level and then try and encourage other trading schemes to go along with that?

Lord Turner of Ecchinswell: I think necessarily the European Emissions Trading Scheme will be a European emissions trading scheme, and therefore a crucial part of UK policy on climate change is for us to argue for adequately tight limits within the EU Emissions Trading Scheme, including appropriate rules within the EU Emissions Trading Scheme about the buy-in of credits from the rest of the world because, again, one of the things that determines to what extent we are indirectly buying in credits from the rest of the world is the extent to which the EU Emissions Trading Scheme itself allows buy-in of credits from the rest of the world. It is why the buy-in of credits argument is very complicated. With relation to the UK, we will be advising on the UK target for 2050 and for 2020 and for each of the budgets. We will be looking at how much of that is likely to be achieved by our allocation within the EU Emissions Trading Scheme, but we will also, I am sure, be influencing UK Government policy as to how tight we think the EU Emissions Trading Scheme ought to be over time, but it is the case that one of the most crucial levers that we have in the energy intensive sectors is set at European level, not at UK level. We have to work within that and argue for an adequately tight approach to the EU Emissions Trading Scheme.

Q21 Mr Drew: Can I be clear that you would support the auctioning of entitlements within the EU ETS?

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Lord Turner of Ecchinswell: Yes, in principle.

Q22 Mr Drew: The notion of free allocation.

Lord Turner of Ecchinswell: I think in principle we should head rapidly to total, or almost total, auctioning of permits within the EU ETS. As any economist would point out, anything else is simply handing out an economic rent to existing incumbents which serves no good economic purpose; so we should undoubtedly head in the direction of auctioning as quickly as possible, which is, indeed, the UK Government's stance.

Q23 Chairman: What would you do with the revenue from auctioning domestic trading schemes which are a provision in the Climate Bill?

Lord Turner of Ecchinswell: Of course, the UK auctioning revenues will come to the UK as well. These do not accrue at European level, they accrue at national level, and one of the things that we are required by the Bill to do is to set out the consequences for fiscal revenues of our climate change targets, and one of the consequences of that will, indeed, be the stream of revenue that is going to go to government as a result of the auctioning of permits within the EU ETS. We will undoubtedly be involved simply as a mechanical exercise saying, given what we think the budget should be, given what we are assuming the EU ETS is going to be and should be and given the forecast that we will produce of what we think that will do to the carbon price—and we will be producing a forecast of what we think the carbon price will be—we will then be saying that is likely to produce X billion pounds of revenue for the Government. What should the Government then do with that? I do not think that is something that we will specifically recommend on. I do not think that one should necessarily think about that being hypothecated for specific carbon reduction activities. I think it is important to realise where that revenue is going to come from. It is going to come from a higher electricity price than would otherwise be the case. It is not pre-money. People have paid for it because that will be the impact—that is the primary impact of it—other prices will be slightly higher as well, and given that, I think it is perfectly reasonable for a government to be flexible as to whether it believes that that should be recycled on things which specifically drive down carbon reductions or whether it ought to be reflected in a somewhat lower level of taxation generally as a way of compensating people for the fact that they are going to have to pay higher electricity prices.

Q24 David Taylor: The Climate Change Committee is an unusually important organisation and whoever chairs it is a key person. You would agree with that presumably?

Lord Turner of Ecchinswell: Yes.

Q25 David Taylor: You have beaten a path from the CBI to the doors of the House of Lords and that has been followed by others in your wake. In those sorts of circles it is not uncommon, is it, for people to

approach people rather than to officially advertise posts? Were you approached or did you apply and were you appointed?

Lord Turner of Ecchinswell: There was an application process, it was widely advertised. If I remember rightly, the head hunters rang me—that is quite normal in this process. The head hunters sit down with the clients and lots of names are put in as, “This might be a name who might be interested”, but, having done that, there was a panel under the normal Nolan processes which reduced it to a short-list. You would have to ask them what the short-list was, but it had several names on it.

Q26 David Taylor: They produced it as a paper exercise or as a face-to-face exercise?

Lord Turner of Ecchinswell: No, there were face-to-face interviews. I had a face-to-face interview with the appropriate panel.

Q27 David Taylor: How big was the long-list?

Lord Turner of Ecchinswell: I do not know that. It is not actually normal when you are at the end of the process to know what the exact details were.

Q28 David Taylor: But you have found out since?

Lord Turner of Ecchinswell: No, I do not know long the long-list is. I think the short-list was about four or six, or something like that. You would have to ask Mr Mike Anderson, who was the civil servant in charge of that, but it was a clearly competitive process.

Q29 David Taylor: What do you think it was in your own background which the head hunters felt was highly appropriate to this job?

Lord Turner of Ecchinswell: I have actually been interested in the economics of climate change for many years. When I was at the Confederation of British Industry, I think I pushed the CBI and encouraged the CBI to take the issues of climate change seriously. That was the time when the President of the CBI, Sir Colin Marshall, as he then was, did a study on the Climate Change Levy and, obviously, we talked extensively about that. We produced reports. We were probably the first industry association anywhere in Europe to say that climate change was a reality and we had to respond to it rather than taking the classic prior stance of industry associations, which was to say it may or may not be a problem but your key concern in government should be our competitiveness. So, we engaged extensively with that.

Q30 David Taylor: How many years ago were you saying these things approximately?

Lord Turner of Ecchinswell: Ten years ago, 1998, when I was running the CBI I was doing that. I then produced a book in 2001 called *Just Capital*, which has a chapter in it called *Green Capitalism*, which actually argued that we did need stretching CO₂ targets. It also did a very early form of the Stern Commission calculation and it said that the cost of this to the economy was unlikely in the long-term to exceed 2% of GDP. Subsequent to that I was on a

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taskforce put together by the IPPR think-tank, an Australian/US/UK taskforce which produced recommendations at the head of the Gleneagles G8 meeting, and it was a taskforce combination of scientists, business people and NGOs who were involved in the climate change space, so I got more involved at that stage.

Q31 David Taylor: So, in addition to this range of skills and experience that you are related to it, what other facets of your life's work, as it were, do you think led you into this job?

Lord Turner of Ecchinswell: To be appointed?

Q32 David Taylor: Yes.

Lord Turner of Ecchinswell: I think it was a combination. I am a trained economist and I have input significantly to the debate about the economics of climate change. I helped Nick Stern a bit—there was a credit to me in Nick's foreword—I have been for about a year and a half an economic adviser on climate change to the Sustainable Development Commission, which Jonathon Porritt asked me to do, I have written extensively on climate change. I have, for instance, got extensive press articles responding to Bjorn Lomborg's book and I am also involved in business. So, I think it was the combination of three things really. It was a business experience, so I understand business, it was as an economist who has been quite extensively involved in debates about the economics of climate change and all those issues about discount rates and how we respond which are in the Stern Review, but it was also, I think, having been Chairman of the Pensions Commission I had been involved in an area of quite contentious public policy where it was perceived that the net result was a successful move forward in our policy reflected in two bills that have gone through both houses of Parliament with cross-party support. I think those were the combination of skills which it was perceived that I would bring to this job.

Q33 David Taylor: You still chair the ESRC?

Lord Turner of Ecchinswell: I do chair the ESRC.

Q34 David Taylor: Are you a non-executive director?

Lord Turner of Ecchinswell: I am a non-executive director of Standard Chartered.

Q35 David Taylor: Paternoster?

Lord Turner of Ecchinswell: Paternoster.

Q36 David Taylor: Siemens?

Lord Turner of Ecchinswell: Siemens.

Q37 David Taylor: UBM?

Lord Turner of Ecchinswell: UBM, although I am going to come off that in about a month's time, two months' time.

Q38 David Taylor: How much of your time have you devoted?

Lord Turner of Ecchinswell: If you add up the formal commitments of all of those, they do not come to more than about 120 days a year: because if you add up each of them as written down some of them do take more time than that. As described in the job description for the Committee on Climate Change, it said that this would take three to four days a month and I think it is highly likely that I would spend about eight days a month on it and, I have to say, for the last two months I think I have probably spent about 15 days a month on it. I will make a commitment of about 40% of my time to this, and that is quite straightforward to fit in with everything else that I am doing.

Q39 David Taylor: One of your earliest observations to the Committee this afternoon was that there is a great deal of work to be done by September of this year.

Lord Turner of Ecchinswell: Yes. December, I said.

Q40 David Taylor: I am sorry, December of this year. Are you convinced that there will be time in your hectic life with your responsibilities in this place and the ESCR, et cetera, to deliver on these very crucial early stages of the CCC?

Lord Turner of Ecchinswell: I think the answer is, yes. If I was to stick remotely to the three or four days per month described in the job description, the answer would be, no, but given that I have made it plain that I will put whatever is required into it, the answer is, yes.

Q41 David Taylor: Do you think you have been misled, or were the people that wrote that description—

Lord Turner of Ecchinswell: They were optimistic as to what could be achieved within a certain amount of time.

Q42 David Taylor: They were deluded, perhaps, were they?

Lord Turner of Ecchinswell: I think it was an underdescribed necessary commitment of time.

David Taylor: That is a useful phrase we can use in the future.

Q43 Chairman: Just before we move on, you mentioned your role as an economist. In the Government's Climate Change Bill Final Impact Assessment the range of costs of the measure which have got to be taken to deal with climate change appear to range from a low figure of 30 billion to a high figure of 205 billion. Do you think your committee might be able to refine that a bit so that we know a little more clearly what the costs are actually going to be of responding to that?

Lord Turner of Ecchinswell: Is that the total costs from now to 2050?

Q44 Chairman: Yes

Lord Turner of Ecchinswell: The answer is one may not be able to refine it very, very precisely, but what we can have an assurance of, I believe, is that the total cost as a percent of GDP is not very large, and

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that was the key conclusion of Sir Nicholas Stern's (now Lord Stern) analysis. He said, and I agree entirely, and these are figures that he and I debated extensively for quite a long time, that the cost to a develop-rich economy of cutting our carbon emissions by, say, 60 or 80% by 2050 is likely to mean that by the end of that process our GDP per capita might be of the order of 1 to 2% below what it would otherwise be. I could take you through the logic of why it is not going to be 5 or 6 or 10%, it is going to be 1 or 2%. The way to then think about that is that what that means is that the UK would then have to wait until some time between June and December 2050 to reach the standard of living it would otherwise have reached in January 2050, a standard of living which is likely to be about two to two and a half times the present level. That is what you mean when you say that you have given up 1 or 2% of GDP in 2050. You have slipped the pace, because GDP normally grows at 1 to 2% per annum. I do not think we necessarily will be able to get it much closer than that because I think it is just not doable to get it closer, but I think that we should proceed on the basis that the cost is actually not very large. Compared with the great challenges of the twentieth century, fighting world wars, where we were giving up 30 or 40% of GDP, the amount of sacrifice of prosperity that we have to make to deal with this problem is really quite trivial.

Q45 Chairman: It is noteworthy that benefits are defined in a much smaller range of 82 to 110 billion pounds, but we will move on.

Lord Turner of Ecchinswell: Not in the Stern Committee's report. In the Stern Committee's report—

Q46 Chairman: I did not say it was in the Stern Committee's report. It is in the Government's own Final Impact Assessment of the implications economically of the Climate Change Bill.

Lord Turner of Ecchinswell: Right. I would be surprised. If you are forward thinking about the total adverse consequences to human welfare of climate change, which you avoid by mitigation, I think they are potentially an order of magnitude higher than that.

Q47 Paddy Tipping: Can we return to the work you have got to do by the end of December? It is pretty daunting, three budget periods and to comment on the 60 target by 2050. Can you do it?

Lord Turner of Ecchinswell: The answer is we will do it as best possible. In an ideal world I would have a longer timescale. If you look at the work of the Pension Commission, we actually did 15 months before we produced a report which was merely descriptive of the situation and then another year before we produced a report which said: here is what the policies should be. I think, though, we are where we are. In an ideal world it would have been great if the Climate Change Bill had gone through Parliament last year and the committee had been set up earlier and could get on with it quicker, but we are making a set of legal commitments to have a set of

budgets which start on 2008–12, so we have to get on and answer that as quickly as possible and so we are going very, very fast. The secretariat has been set up for four or five months now, it now has about 22 people in it, these are very high quality people and they are doing great works, so we have lots of stuff in place. So we have hit the ground running in terms of the presentations that the committee has seen at these first two meetings, but I accept entirely, there is a hell of a lot to do and we will simply have to do the best we can by then. Necessarily when you are faced with that you sometimes have to say: some things maybe have to be tentative. Maybe we will not have fully bottomed-out the other two CO₂ gases and we say all we can say at the moment is let us proceed on the CO₂ budget to begin with but we propose that we should produce a really high quality report on the non CO₂ gases, the other GHGs, by a bit later and bring it in at that stage. It may even be on the 60/80, that way it should be at the very least 70, but we want a bit more time to tell you before it is 75 or 80. I am not saying we are going to do that, but I think there are ways whereby one can manage those problems over time. The thing that we clearly have to do, because it just needs to be done to meet the requirements of the Bill, is we have got to have those three budgets fixed, and they have got to be more than 26% below 1990 by 2020 but we have got to get on and do it. So, that is the bit which has got to be done by that stage. Would I like another six months in an ideal world? Yes, I would love it, but it is not an ideal world.

Q48 Paddy Tipping: What about extra staff? You have got 22 staff. Is that enough?

Lord Turner of Ecchinswell: We are going up to about 24, 25. I would not want to put in more. In dealing with a problem like this there is a size of team beyond which, if you doubled it again, you would spend so much time in managing the interfaces. I think it is a very high quality team and I think it is the correct size for the job, and so I do not think one can speed that up by chucking in more resources, we have to work within the resources that we have got.

Q49 Paddy Tipping: Let us just return to the 60% target by 2050. You have been sold a bit of a book on that: "The Government has been under a lot of pressure to raise the target, it is all very difficult politically, Lord Turner sort it out for us again." What is your provisional thinking on increasing that target?

Lord Turner of Ecchinswell: Let me describe the methodology that we are going to use; then I will give you a feeling on the initial thinking. I think the way to proceed is, first of all, to start from a global point of view and then the UK within it, and the global point of view you have to synthesise, and all that it is is synthesis, because we are not going to do new scientific work, obviously. We have to synthesise, listen to, pull together, and read and summarise the best recent scientific thinking on what is dangerous for the world in terms of degrees of centigrade, of warming, and I think the answer is, in an ideal world we would not go above two degrees,

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three degrees is getting really worrying and four degrees, most people would agree, is very, very scary indeed. We will fine-tune that and we will write out stuff which references the best scientific evidence on that. That is what we will do on that. The crucial thing then is what is the stabilisation of CO₂ and other greenhouse gases in the atmosphere which leaves us with a high probability of staying below two or three or four degrees. There are versions of those sorts of probability tables in the Stern Report. The Hadley Centre produces them and the Hadley Centre will be helping us and we will look at some of the other centres as well. We will look at those probability estimates and they say things like if you stabilise at 450 parts per million, then you have a 95% probability of avoiding going above four degrees centigrade, but you still have a 60% probability of going above two degrees centigrade. We cannot re-do those probability tables but we have to work out what is the range of those probability tables by respected scientists around the world. We do not have to put that into a judgment, and this is the bit where it is pure judgment, there are two judgments, first of all, what is dangerous, two, three or four and, secondly, what is an acceptable probability, because if you want to reduce it to a .01% probability of going above four degrees centigrade we had better be dragging carbon out of the atmosphere already, so there is something there which is entirely judgmental. Out of that we will make a judgment which says we think the world in total should be on something like this trajectory, and we will then say here on a variety of principles of burden sharing here is what the UK's target ought to be as our contribution towards that, and that is what we will do, and you cannot do more of that. There are lots of scientists who have to do the underlying work for that but the synthesis work is to pull that together. I think it is highly likely that we will suggest that 60% is not enough and here is why: the 60% target came out when the Royal Commission on Environmental Pollution reported in 2000, and that was a figure that they came up with at that time. Since then two things have happened, first of all, I think in the scientific community there has been an increasing understanding of the sheer complexity of the climate system and the presence of amplifying feedback loops within it which mean that if you go above a certain level of temperature you are in danger then of accelerating away, and that pushes you towards much greater caution than before, and so the people like the Hadley Centre are really questioning whether 550 parts per million, which some people used to think was an acceptable stabilisation park, are now talking about 450 parts per million. That is one thing that has changed. If anything, we know that since the 60% was discussed, the science has been pushing us towards more worry rather than less worry. Secondly, the total level of emissions in the world is going up significantly faster than we then anticipated because of the faster rate of growth and the very high carbon intensity of growth of, in particular, India and China. We are increasingly aware of the pace at which their emissions are growing and therefore we do not have

the luxury of saying we will get the developed world down to a semi adequate level by 2050 and then to a really adequate level by 2100, and the developing world will catch up with us in the late 21st century. The fact is that China could have a higher level of per capita emissions than Europe by 2020 or 2025, so they are going to have to be on a downward path, as are we, so there are much greater emissions being put out, earlier than we thought, and that again argues that the target is almost certainly going to have to be more stretching than 60%. I think the Prime Minister said that in a speech before Christmas. However, I do think it is a perfectly sensible thing to hand to the Committee to express a point of view on, rather than simply leap into let us not do 60, let us do 80, because I think there is a value (even if we do end up simply saying yes, 80% is the right figure) in setting out the reasoning of why it is and also perhaps exploring a set of alternatives because we do not have to say 60 or 80, we could say 70. We could say 70% in 2050 but 90% by 2070; we could say 70% as a UK unilateral commitment but 85 as part of an international agreement, so I think it is sensible to give the Committee the task of thinking through all that, but I would be very surprised if we simply came back and say 60% is absolutely fine, end of story.

Q50 Chairman: Just before we leave that point, I can understand the macro breakdown, the burden sharing and the arrival at a more demanding target, and that is certainly the conclusion that this Committee reached when it looked at the Bill originally, but coming from the other way round, the bottom up, and practically how we are doing it in this country, I am still concerned because at the moment all of our target-setting seems to be on a simple linear progression of one per year. If we go back from 1990 through to 2050 that is what we have got to do but we are running behind already.

Lord Turner of Ecchinswell: We are running behind.

Q51 Chairman: And we made our biggest leap forward by the move to gas-fired power stations. We know that domestic emissions are still rising, we know that we have not cracked the transport emissions and we are about to add in aviation and shipping, and I am struggling to understand, it is all right ramping up the target to 80 but how much of your recommendation is going to be informed as to can we actually do it?

Lord Turner of Ecchinswell: I should have added something further. In addition to looking at what the world needs to do and what the UK should do within it by 2050, we will also set out a technological vision of what is going to be possible by 2050, so we will be talking about the different technologies which are currently available, or might be available in future at different costs, to drive down our emissions. I think the answer is there is a high degree of confidence that it is possible, with one tricky area. The trickiest area, bluntly, is international aviation because so far there is no clear technological fix to international aviation. It is possible to decarbonise pretty much the whole of electricity production if you use all the different technologies which might be

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available, which can include renewables, can include nuclear, can include carbon capture and storage, and of course there are supporters of all three of those technologies, but we start from a point of view that all three of those are on the slate of things that you can use. It is possible to do that and if you can decarbonise electricity production, ultimately, you can decarbonise surface transport as well because you can run all your cars on electricity; aviation is trickier. I think the most difficult thing in the doability is not actually 2050, it is 2020. I think it is more difficult to describe the path whereby we are going to get to 26% by 2020, or indeed to the sort of level that we ought to be at by 2020 to do good progress to 2050, than it is 2050 simply because one is 12 years away and the other is 42 years away. There are simply some constraints in the short term. If you want nuclear as part of the mix you have to start acting pretty soon to have them on stream by 2020. If we want renewables to be in the electricity mix to be in line with the 20% by 2020 renewable energy target, we have really got to start freeing up some of the planning constraints and grid connection constraints which at the moment are creating a big bottle neck. These are not technical doability things; they are simply speed of implementation things, and that is the biggest worry about how rapidly we can start doing that to hit the 2020 target.

Q52 Paddy Tipping: Is the 2020 target right then? Is it achievable?

Lord Turner of Ecchinswell: I think it is good for it to be stretching. It is certainly doable by way of the buy-in of credits. I think it is good that we have said even if we cannot find a way to do it all domestically, we are going to buy in the credits. My colleague in the Lords, David Puttnam, described buying in credits as a “get-out-of-jail-free card”. I did point out to him that it is not it is a get-out-of-jail-free card; it is a get-out-of-jail-at-\$40-a-tonne card, so it is not costless, and that is a discipline, and indeed that is a discipline on government because if it is not brought in within the EU ETS, it has to be government-to-government purchases within CDM and the Treasury is going to think carefully about that. I think it is very good that we have a target of 26%. Having said that, let us be clear that the target which is compatible with the European Union’s 30% within international arrangement or which is a reasonable path towards, say, 70% by 2050, will have to be higher than 26%.

Q53 Paddy Tipping: Let me ask you a final question which is the call for evidence that you put out last November. Presumably you have had a lot of responses?

Lord Turner of Ecchinswell: Yes.

Q54 Paddy Tipping: Just give us a feel of how many responses and the kind of organisations that are replying.

Lord Turner of Ecchinswell: I do not know the answer to that but I have a man behind if I am allowed to consult him. We had a couple of hundred

in addition to the Climate Change Bill consultation and indeed we used the people who put in written consultations at that stage as the basis for the invites for the stakeholder events which we have just held in London, Cardiff, Glasgow and Belfast.

Q55 Paddy Tipping: And do you think consciousness is changing, that the public mood has changed, that people really now take this on as a serious issue?

Lord Turner of Ecchinswell: I think people are taking it on as a serious issue. There is a window of opportunity for political leadership to take advantage of that and I think if we do not take advantage of it and do not have clear policies, we may end up with exhaustion level and we may find that some of that public commitment dissipates over time. Right at the moment my judgment is that there may be a greater willingness among the public to accept bold policy actions than sometimes is believed at political level.

Chairman: Three quick supplementaries.

Q56 Mr Drew: You have not mentioned rationing and personal carbon allowances, which some of us feel, certainly in the field of air transport, are actually inevitable. Is this too political for you or are you going to have the guts to say, “Look, you can have all this trading, you can have all these wonderful technological solutions but unless individuals and households are prepared to accept some level of rationing, we have not got a hope in hell of getting to the sort of figures for carbon reduction that we need to get to”?

Lord Turner of Ecchinswell: I think that is an issue which we will look at later.

Q57 Mr Drew: You have said yourself the difficult time is 2020.

Lord Turner of Ecchinswell: Yes. I doubt if it is necessary to hit the 2020 targets. I think there is a very very long-term issue whereby if there is not a technological fix available on international airlines that we may find out that the unrationed level of international airline traffic in 2050 in itself might put out more carbon emissions than the absolute maximum that the whole world will have at that stage. Of course, there is one answer to that which is simply you put it as part of a global emission trading scheme at that time; the price is the price, and you ration through price, but if there is no technological fix to aviation, you may have to limit it in the long term either by a personal rationing system or by price, and of course a personal rationing system with free trading of those ration tickets is just price by another mechanism.

Q58 Lynne Jones: Should you not stop talking about “burden sharing” and start talking about “opportunity grabbing”?

Lord Turner of Ecchinswell: Funnily enough, we were having exactly this debate at the Climate Committee last week. I guess the terminology of burden-sharing is the technical term which has been used at EU and international level for once you have

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got an EU target of 20%, do you take 15%, do you take 30%, et cetera. I accept entirely that it is an unfortunate term which implies that there is some massive economic cost, which I do not believe there is and which does not stress some of the benefits, so the answer is I was probably failing to remember one of our conclusions from our Committee just last Thursday when we said that we ought to start using a word other than burden-sharing.

David Lepper: Opportunity-sharing in view of what you have said about public acceptance and willingness.

Lynne Jones: Opportunity-grabbing not sharing, getting a piece of the action.

Q59 David Lepper: I prefer sharing. You stay with the Thatcherite agenda if you like; I will go for sharing! Just a minor point of detail about the responses that you received, your colleague behind you said something like 200. Could you just give us a flavour of the range of organisations.

Lord Turner of Ecchinswell: This is David Kennedy and he is the head of the Secretariat so I suggest he responds to that.

Chairman: You are on the record now, David.

Q60 David Lepper: I am interested in the range of organisations or sectors that responded to you. Was there a preponderance of any kind or was it all the usual suspects?

Mr Kennedy: It was the usual suspects. It was business which has an interest here, it was NGO, academics, it was across the board. It was the same range that responded to the Climate Bill consultation.

Q61 David Lepper: Just a final point on that, what balance of it was scientific-based responses and how much of it was based on economics and other issues?

Mr Kennedy: I think it was predominantly based on the latter, so economics and policy as opposed to the science.

Q62 Lynne Jones: I am supposed to ask you about cumulative emissions, but I think earlier on you talked about the need to analyse the trajectory in which we need to move and you talked about starting with the global trajectory and then apportioning it. Does that define exactly what you are going to do and do you think that we should recast the targets in terms of cumulative emissions or will you take account of the trajectory in saying what you think the annual targets should be?

Lord Turner of Ecchinswell: We will take account of the required process on cumulative emissions in suggesting budget period by budget period what emissions should be. Of course, that is most important at global level, and I return to the point I made earlier that one of the things that has happened since the Royal Commission Report in 2000 is the pace of growth of emissions from China and India in particular, which simply means that the accumulation of emissions over the last eight years is simply higher than we anticipated. Certainly when you are dealing with it at global level you need to

think about not simply a point in 2050 but the cumulation from here to there, and there is absolutely no value in proceeding on the basis of well, we want 70% by 2050 and then we run a least-cost optimisation model that tells us that the least cost way to get there is to do nothing until 2049 and then suddenly reduce, which is the somewhat absurd result that can come out if you use least-cost optimisation models too mechanically. We will be thinking at a global level not only about how low it has to be by 2050 but what the path from here to there has to be, and if that path requires early reductions, I do not think it is okay for the UK to say that is what we want the world to be but we will back-end our reductions. That is not a reasonable contribution and it is not a credible negotiating stance in international negotiations, so, in brief, yes, we will be looking at the trajectory both in terms of its technological doability and whether you have to make progress early in order to be technologically on a path to a low level but also its implications for cumulative emissions.

Q63 Lynne Jones: Is there any point in having the upper limit for the 2020 target?

Lord Turner of Ecchinswell: The upper limit for the 2020 target has now been removed in the Lords so it is up to the Government, and I think the Government has accepted that amendment.

Q64 Lynne Jones: Do you think there was any point in it? They told us there was!

Lord Turner of Ecchinswell: The Government argued that it at least made people think that the mid-point was 29 if you said it was 26 to 32, whereas the danger if it is 26 is everybody thinks that it is really 26 rather than at least 26. I think it is incumbent on us not to believe that at least 26 means that we can say, "26, oh, that is great."

Lynne Jones: I do not think I need to ask my next question, it has already been covered.

Q65 Chairman: Can I carry on from there because in the advice you are going to be giving on the setting of the first three carbon budgets, one thing I am struggling to understand is there was a long debate about whether we ought to have annual targets, and again this Committee did not agree with that, but you have got to be able to measure on a continuing basis whether you are on track. You have used the word 'trajectory', but are you going—I will not pin you down necessarily now—to define what the trajectory ought to look like in concert with the setting of each of the three budgets?

Lord Turner of Ecchinswell: We will recommend a trajectory from here to 2020 in the sense of what the first five-year budget should be and the second and the third, so that is a trajectory at that level. What I do not think we will do is then say you did not ask for annual budgets but here is what we imply within it. However, I think when we get to our annual reports on progress towards budgets, a starting point will be to say it would not be daft to assume that in order to be on progress towards the next budget something like a roughly equal annual

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reduction from budget one to budget two would be sensible, and if you were running behind that roughly equal amount that would raise questions that you would expect us to comment on.

Q66 Chairman: But we are running behind at the moment. Therefore in the budget-setting process when are you going to start moving towards catch-up?

Lord Turner of Ecchinswell: We are going to start from the present level and we are going to say it is going to have to be at least 26 below the 1990 level by 2020. We will take the present level and within our work programme what we have said is our starting point is equal annual percentage reductions from now to 2020. You set that out and you really need a reason for diverging from that.

Q67 Chairman: Why has it got to be equal because we are back to where we started with a linear progression?

Lord Turner of Ecchinswell: The answer is in the methodology. If you knew nothing at all, if you knew nothing about the pace at which power stations are going to run off and new investment possibilities are going to emerge, if you knew nothing about when it was feasible for new policies to come in, if you knew nothing about when the EU ETS is going to really bite, it would be a reasonable thing to say that if you want to hit a target by 2020, and this is your starting point, a roughly equal annual reduction might be a sensible way to get there. What you then do is say but there might be all sorts of reasons why it is sensible to diverge from that, either up or down, and at that stage you feed in the run-off of the life of the existing power generators, the timing at which existing policies already committed to are going to be in place, the EU environment, the feasible limits to how fast windmills could be built even if you declared that they were to be built in large number tomorrow, and then you have to feed that in to make a judgment on whether the path that you recommend is faster or slower than the zero knowledge sensible stance (which I think would be a straight line on a piece of log paper, not a straight line on a piece of normal paper, if I can put it that way).

Q68 Chairman: We look forward to the comparison between straight lines and reality when the job gets moving.

Lord Turner of Ecchinswell: Constant percentage annual reduction.

Q69 Chairman: If we move on from that to again a practical situation, you are reporting to Defra but there are other key players, BERR and Transport to name but two, in the climate change mix, and one of the things that I would like to know whether the Committee is going to do is also within the budget framework provide some form of sectoral analysis/sectoral target-setting so that you can see who is contributing and who is not to the general track of progress.

Lord Turner of Ecchinswell: Yes we are. First of all, we are required to set out how much of the emissions reduction should come from the EU Emission Trading Scheme and how much should come from all other things in the non-traded sector of the economy. ("Non-traded" for this purpose means carbon trading.) Secondly, we will certainly comment within an overall budget on how much of that we think might come from transport, how much of that we think might come from power generation, how much from insulating houses, et cetera, because it is not possible to tell a story of a credible budget by 2020 without describing at that level of detail what it is that is going to happen, so we will be doing that and that is why we will be having an extensive interface with the relevant departments. I have already met with the Secretary of State for Transport. I will shortly be meeting with the Secretary of State at BERR. The head of the Secretariat, Mr Kennedy, and the Secretariat have regular and formally defined links with the civil servants in those other departments, so we will be very aware of the policies that they have in place; we will be in discussion and dialogue with them about the different policies; and we will end up commenting on the sectoral mix.

Mr Drew: Are you not very depressed already with the confusion of policy instruments out there? We did our report on the Citizens' Agenda and the simple message that we got back was people do not really understand what it is they are entitled to if they want to convert their house to solar panels, for example.² I have a constituent who wrote to me yesterday and he is trying to put a borehole in and he said if he was in Scotland he would get at least a third of it paid for, but here in England he does not know if he is going to get any money at all for this. There is a panoply of different initiatives out there but knowing what is really happening is immensely confusing, is it not, and can you sort this out?

Q70 Lynne Jones: Is it your role to sort this out?

Lord Turner of Ecchinswell: Clearly one of the things that we are going to do at an early stage is look at the range of policies that are in place, look at the estimates of the impact that they are going to produce, and we are going to have a point of view on the credibility of those estimates, because there is no point in us recommending a budget on the basis of the fact that policy A is going to produce some result unless there is a credible reason why it might produce some result. I think I would accept that one of the challenges for government policy looking forward is going to be a clearly understandable set of policies for people. There are some sectors where it is probably working better than others. If you look at what is now called CERT and used to be called EEC and is sometimes called the Supplier Obligation (within which may itself lay a story about communication that we have these different acronyms for the same thing) that does produce numbers because there is a requirement on the utility

² Environment, Food and Rural Affairs Committee, Eighth Report of Session 2006-07, *Climate change: the "citizen's agenda"*, HC 88-I

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companies to go and identify lower income people and to actually do things in their houses. I think when you move outside the group of the lower income fuel poor who the energy companies are approaching on a proactive basis and ask individuals of medium income what level of support they can get from government subsidy et cetera, I think you are right, the degree of knowledge would be very small and of course what is also the case is the degree of knowledge not only of where to go in government but where to go to providers who do not provide any sort of one-stop shop, which is pretty poor as well, and that is a challenge for government because we know that the technical analysis always tells us that there is a huge opportunity to reduce emissions not only at low cost but at negative cost, ie at benefit to the individual and the economy, in the area of for instance home insulation. We know that on the cost curves, as they are called, this is the negative cost bit of the cost curve. You do it and the individual is better off than they were before and GDP is higher than it was before. The challenge is going to be how do we make those positive return projects happen, and the challenge for us as a Committee is going to be how much of those technically possible negative cost/positive benefit actions do we assume can be achieved, because of course if they were easy to achieve they would have been achieved already if they give a positive return. You have to ask why if they are a positive return have they not been achieved already, and it is because there are all sorts of barriers to understanding and hassle factor and difficulty that prevent people going out and insulating their houses and 18 months later having more money in the bank than they had to start with.

Q71 Lynne Jones: Is it the role of your Committee to consider these things?

Lord Turner of Ecchinswell: It is the role of our Committee certainly to consider the range of policies which are in place and the effectiveness of those policies because without that we cannot recommend what is a credible budget. There is no point in us simply saying we think the budget by 2020 should be X, Y and Z without being able to tell a story of a credible path from here to there.

Lynne Jones: You will be commenting on an awful lot of government policies, will you not?

Chairman: I will take two quick supplementaries, one from Patrick and one from Peter.

Q72 Patrick Hall: I just want to go back to the overall economics of this and seek some clarification, Lord Turner. You referred to Stern, and also your earlier work, and Stern said that dealing with this issue of emissions is affordable, but I think the argument from Stern was it is affordable if we get on with it. It is affordable over the whole period of, say, 40 or 50 years if we get on with it now, and the longer we delay the less affordable it will be, and if we do nothing it could completely disrupt the global economy. Is there a contradiction in there somehow that in order to deal with the issue of cumulative emissions we have to make a serious,

radical start soon? Your report in December is going to address that in terms of the first three five-year budgets and therefore there will have to be an expenditure cost soon that is not being paid for at the moment and people will complain soon about that not being affordable, so there is likely to be resistance. I hope I am making myself clear. Is your argument going to be, yes, it is affordable even if people do not think it is because if they think that is not affordable they have got to wait a bit longer and see if we do nothing?

Lord Turner of Ecchinswell: I think there is a very compelling case which is set out in Lord Stern's report and other reports that the developed, rich economies, and ultimately the whole world, can run on a fraction of the carbon emissions that they have at the moment. They can reduce it by 60 or 80% from present per capita levels in, for instance, Europe, and the estimates that he produced are that the cost of that might be between minus 0.5%, ie you do a set of things and we are actually better off at the end of the day, through to plus 2.5%, ie we do all these things and the GDP in 2050 and ever thereafter is 2.5% below what it would otherwise be but, as I made the point earlier, that simply means that you have slipped by a year the rate of increase. I think that is very compellingly proven by the fact that there are lots of costless ways of people changing behaviour, there are lots of positive return projects which improve energy efficiency, and even if we cannot do those two things and we have to buy our energy more expensively, it is not so much more expensive. A rich developed economy like the UK spends only about 5% or so of its GDP on energy. It bobs around a bit with the oil price but it is about 5%. If you have to buy that 40% more expensively than you otherwise would because all these renewable technologies are 40% more expensive, that is still only 2% of GDP. It is that very simple back-of-the-envelope calculation which roots those figures. Sometimes the best insights in economics can be got off the back of an envelope rather than a highly sophisticated model. That is why it is of the order of 1 or 2% and not of the order of 20 or 30 or 40%. What is absolutely right is that in order to do that and in order to have that low cost by that time, we need to get on with driving those technologies now. We need to put the commitment to invest in the array of technologies that there are, whether it be renewable or whether it be nuclear or whether it be carbon capture and storage. Let me give you an example on carbon capture and storage. There are three blocks of technology—renewable, nuclear and carbon capture and storage—but the one which is going to be absolutely essential is the third, carbon capture and storage. Given the sheer amount of coal-fired power stations which the Indians and Chinese are now putting in, particularly the Chinese, if we do not have workable carbon capture and storage within the next 15 years I think it is highly likely that the world will heat up by three or four degrees and you can almost say goodbye to any lower target. At the moment there are a lot of people simply assuming that carbon capture and storage will be available at some time, but it is only going to

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be available at a reasonable cost if somewhere in the world we get on quickly with driving it through the R&D process and actually illustrating that it works not in small labs or small demonstration sites but at scale and, if we make sufficient commitments to driving at that scale, that the engineering resources are available in sufficient number to actually put it in in all these power stations, because often the pace at which you can deploy a technology is constrained simply by the number of trained engineers or the number of companies that are capable of doing this thing. Given the pace at which carbon capture and storage has got to be introduced across the world within the next 20 years, very soon we have got to have large numbers of people doing this because they will only be able to do a certain number each year, so, yes, we do have to get on with it. Are there going to be costs? Yes, there are going to be costs. The fact is there are costs already. The cost of electricity in the UK is higher because of the EU Emission Trading Scheme. The cost of carbon is reflected in the cost of electricity. Many people may not know that but it is true. It may be a relatively small effect so far compared with the oscillations in the cost of gas but it is in there. One has to have a political process and political leadership to make sure that if there is suddenly a strong opposition to slightly higher electricity prices, we still stick to the path that we are on. That is one of the reasons why there has to be the political management of the fuel poverty issue because whereas in relation to middle and high-income people you can say, yes, your electricity price has gone up but ultimately it has not made much difference to your standard of living; with lower incomes it does. The overall thing is we should give people the confidence that the costs are sufficiently small that if we look back over 50 years we will hardly see the impact on the rates of growth of the economy. It is not a major shift away from the growth of material prosperity which the market economy gives, but it is still non-trivial, and we have to have the political determination to face those not huge but still non-trivial costs.

Q73 Sir Peter Soulsby: It is really on the political determination that I wanted to ask a question, because you say you have met with secretaries of state and civil servants in some of the other departments that are going to be affected. I do not know whether this is capable of a generalised answer but do you actually think that in some of those other key departments there is yet a realisation of the scale of the challenge that is going to face them and the policy implications that they might have to deal with?

Lord Turner of Ecchinswell: My impression so far is that there is. I think in particular the commitment last year to a very stretching renewable energy target has made BERR aware that it has to look at things perhaps more radically than it previously might have. There is a growing awareness across government that the Climate Bill is quite a radical thing to have done. I know we can all have esoteric debates about what it means for a government to place a legally binding constraint upon itself, and

lawyers can have a field day on that, but I think the political reality of it is that once we have these legally binding targets they are going to create a very strong external discipline on government, and I think that is something that across the board departments, not just at secretary of state level but at Civil Service level, are increasingly aware of.

Q74 Chairman: Can I just ask on the structure of government, do you not think there ought to be one climate change Cabinet-level minister full stop? You have got the Committee that you are chairing, you have got the Office of Climate Change; it is such an important job that if you had a Cabinet minister who was in charge of climate change and had the sanction on the budgets of subordinate departments who could deliver the solution, you may have more focus than the disparate situation that we have and to which Peter Soulsby adverted a moment ago?

Lord Turner of Ecchinswell: I think even if you do that you have to realise that that person is going to have to work through other departments. At the end of the day we are going to have some people in charge of transport and some people in charge of building regulations, and there is going to be the Treasury driving tax decisions, there is going to be a whole set of rural and farming issues which govern farming practice, et cetera, so if you declare that there is a Minister for Climate Change, unless you give them about 40% of the entire government, they are going to have to work through other things. The answer is there may at some stage be legitimate machinery of government issues about how you drive sufficient change but ultimately they are going to have to come down to some process either of the Prime Minister deciding what the priorities are between different competing secretaries of state if they have different points of view, and if you had a Climate Change Secretary of State they are only going to be powerful insofar as when they end up with a debate with the departments the Prime Minister backs their judgment. I do not exclude the possibility but I have to say at least for a couple of years and until that is clearly an agenda that somebody puts on us to think about (and if and when that occurs we might express a point of view on it) I think we have lots of other things to do before we get to that and it may not be ever appropriate for us to be the people who opine on that.

Q75 Mr Drew: Information is power and I wonder where you are going to get your sources of information from? Are you prepared to make yourself unpopular in some of the things that you are going to say? Have you had a word with David Puttnam about making a film of this or have you got your own TV series lined up already? I know it sounds laughable, but to communicate with the Great British public you are going to have to use all the means available to you including some, dare I say, hectoring about "you have got to do this chaps otherwise we are all doomed". This is all on the agenda, is it?

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Lord Turner of Ecchinswell: When you started talking about information I thought you meant something else, and let me comment on the ‘something else’ first. We are reliant on information and one of the things we have to do is double check the information and debate the information. For instance, we start with a baseline forecast of what will happen to emissions if you do nothing which comes from a model which BERR runs and we have to use it. We have to use it but also challenge it, and indeed we have had an external set of consultants having an outside in look at that model and saying here are the bits which appear clear and here are the bits where judgments have been made where you might want to put the judgment the other way, so across a whole series of technical inputs, whether it be baseline emissions or cost models, we will be using the models which exist already but we will also have to challenge that either within the team or use external consultants to help us challenge that to see whether they are at all debatable. The thing you were focusing on mainly was external communication, as it were, selling the story. We will have some communication expertise but it will not be huge, and I think we will have to play that one by ear as we proceed. I think at the appropriate time there is a role for the chair of the Climate Committee which is to be involved in the public debate about how we have to change, in the same way that there is a—

Q76 Mr Drew: It is going to make better television than a fix in the bank rate.

Lord Turner of Ecchinswell: —In the same way that there is a role for the Governor of the Bank of England to be telling people why even though increases in interest rates are not always loved they are required for the long term. We will have to think about to what extent we need external communication, but yes I think at the appropriate time—and it may be when we produce our budgets on the 2050 target—we will have to explain why we are recommending what we are recommending and explain it in ways which are not just technically understandable but have some ability to be part of a wider public debate.

Q77 Dr Strang: I was interested that you made reference to the conversation you had with the minister responsible for climate change in the Scottish Government. Your organisation you will know better than me is sponsored, I think is the correct word, by the devolved administrations as well as the UK Government which is just as well it is. The Scottish Government envisages bringing forward a Climate Change Bill, is probably the way I would put it and probably it is no stronger than that. It could of course choose to set up its own advisory committee, and I suppose there are other things it might choose to do, but I wonder whether you might make a comment on that.

Lord Turner of Ecchinswell: We did have these three stakeholder meetings in Cardiff, Glasgow and Belfast within the last two weeks and we spent a day at each, and in addition to holding a two to three-hour meeting with the stakeholders we met with the

relevant ministers and other groups of people to understand the whole background of policy in those areas. I think it is very good that at devolved level there is a commitment to act as well as at UK level. I think that is helpful and, as you probably know, there may be a slight bit of competition in this in that it is possible that the Scottish target will simply say, “We will set 80% ahead of the UK level getting round to it.” I think the challenge in all three devolved administrations—and we had very useful discussions about this—is how to make sure that our work and their work was really building on each other rather than duplicating it. We found there was a very intelligent appreciation of what it was sensible for them to do and what it was not sensible for them to do. For instance, there is not a great deal that the devolved administrations can do about inputting to the operation of the European Emission Trading Scheme. Ultimately that has to be a debate between the UK level as one of the constituent parties of that and the European level, and if there was a lot of second-guessing coming at devolved level of saying we think it should be like this or like that, that would be tricky. Having said that, there are particular local issues. The Welsh are particularly concerned about very heavy industrial users in internationally traded sectors of the economy because of the steel industry at Port Talbot, in a way that other areas of the UK are not, so it is legitimate for them to be saying, “Hang on, have you thought about how this is going to work for steel industry competition and simply assuring themselves that that is something we are going to think about in our input to the EU ETS. There are some things like that which are important at devolved level. I think what is really interesting is for the devolved administrations to focus on the things where they have devolved policy levers, and of course they do have devolved policy levers: they have planning levers and they have building regulation levers. The structure of the equivalent of the Energy Efficient Commitment or the CERT is at devolved level, with one or two differences between the degree of devolution in each. In Scotland, Wales and Northern Ireland we were talking about the fact that we would really encourage them to do really good work on rural areas and farming issues, because that is an area where we do need to get into and there has not been much work because those have a greater degree of importance in those areas. Where you have a dispersed rural community you have a lot of people who are off gas grid who are often reliant on oil-fired central heating, which is very inefficient in carbon terms, very expensive and therefore with consequences for fuel poverty, where there probably is a greater role for distributed generation, local generation, be it wind on a small scale in the Highlands of Scotland or Wales than there is in, say, south-east England, so what we were trying to do—and we found we had excellent discussions in each—is first of all understand their whole framework and make sure that they were aware what we were doing and that we were aware what they were doing, and that in particular identify areas where they have the levers or where they have an issue in bigger proportion than it exists at the

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total UK level, and therefore where a particular focus on their side would be helpful. We are early days of working out that relationship but we found we had very fruitful discussions in each case.

Q78 Chairman: Just to draw matters to a conclusion, there is the thought that there might be a sub-committee of your Committee dealing with adaptation. Have you come to any preliminary views on that?

Lord Turner of Ecchinswell: We have never quite seen it as our job to come to a clear view on that. What I have always said is that we are not out there in the market trying to grab adaptation. We would be perfectly happy not to have adaptation because, frankly, we think we have got quite enough to do by focusing on the mitigation and budget side. If we were given adaptation it would be part of our operation, but a parallel part of our operation, in that we would have to set up a separate committee with the appropriate skills which would be different from the skills which are on the Committee which has been put in place. One might ask one of the people on the present Committee to either chair or be on that other committee in order to create a communication bridge, but it would be a parallel set of activities. We would also have to define bottom-up the Secretariat to support that which would be a different wing of the Secretariat with different skills

than those which are there already and would need to be a whole extra set of resources. I said earlier that we are not after more resources to do our mitigation work but we need all the resources we have got to do our mitigation work. We would be quite happy if that job, which is an important job, was given to another separate group of people but that we had perfectly sensible communication links with them and maybe the occasional joint meeting. We would also be happy for it to be given as a sub-committee to us, provided we were given the extra resources, and also provided people realised that our timescale for delivering something on that will probably be slightly delayed. You could not put that into the December reporting deadline that we have and expect anything useful out of that, so we are willing to play it either way, and I think it is for others to decide.

Chairman: Thank you very much indeed. We very much appreciate the way that you have put across your early activities. It has given us an idea of the flavour of your direction of travel. We look forward to seeing how the detail emerges and I am sure that the Committee will want to talk to you when you produce your first report to explain how progress is going. Can we thank Mr Kennedy too for his contribution. We look forward to seeing how you progress and we wish you well. Thank you for coming to be our witnesses.

Memorandum submitted by Lord Turner, Chair, Committee on Climate Change

Thank you for your follow up letter, 27 March 2008, to my appearance in front of the EFRA Committee, regarding the questions that there was not time to ask.

ANSWERS TO EFRA QUESTIONS:

Was I involved in choosing the other Committee members? If so, how?

Yes, a standard process was used to come up with a shortlist, and I was consulted on the appointments.

Are your and other members' contracts renewable or non-renewable?

Yes, our contracts can be renewed once.

Members' appointments are for five years. What problems will this cause if you all leave at the same time?

We do not envisage everyone leaving at once/one option would be to extend beyond the initial five year period in a staggered way.

Will your colleagues also be part time, and how many hours a week will they give to CCC work?

Yes, part time, up to two days per month.

Lord Turner
Chair, Committee on Climate Change

March 2008

Memorandum submitted by Prenergy Power

BRIEFING PAPER

About Prenergy Power

Prenergy Power is a UK company owned by experienced energy industry professionals who have worked in the biomass sector, as developers and operators of woodchip fuelled Renewable Energy Plants (REPs) and as suppliers and traders of woodchip feedstock.

Prenergy was recently granted planning consent by the Department for Business, Enterprise and Regulatory Reform to develop a REP on disused land in the port of Port Talbot. The REP will be a world scale biomass plant, the largest single baseload renewable energy project in Europe, and will reinforce the message that the UK is dedicated to trying to meet their climate change targets through effective renewable systems.

The Plant, which will become operational during 2010, is designed to operate over 8,000 hours per year, and will have a maximum capacity of 350 megawatts. It will deliver close to 70% of the Welsh renewable electricity target for 2010.

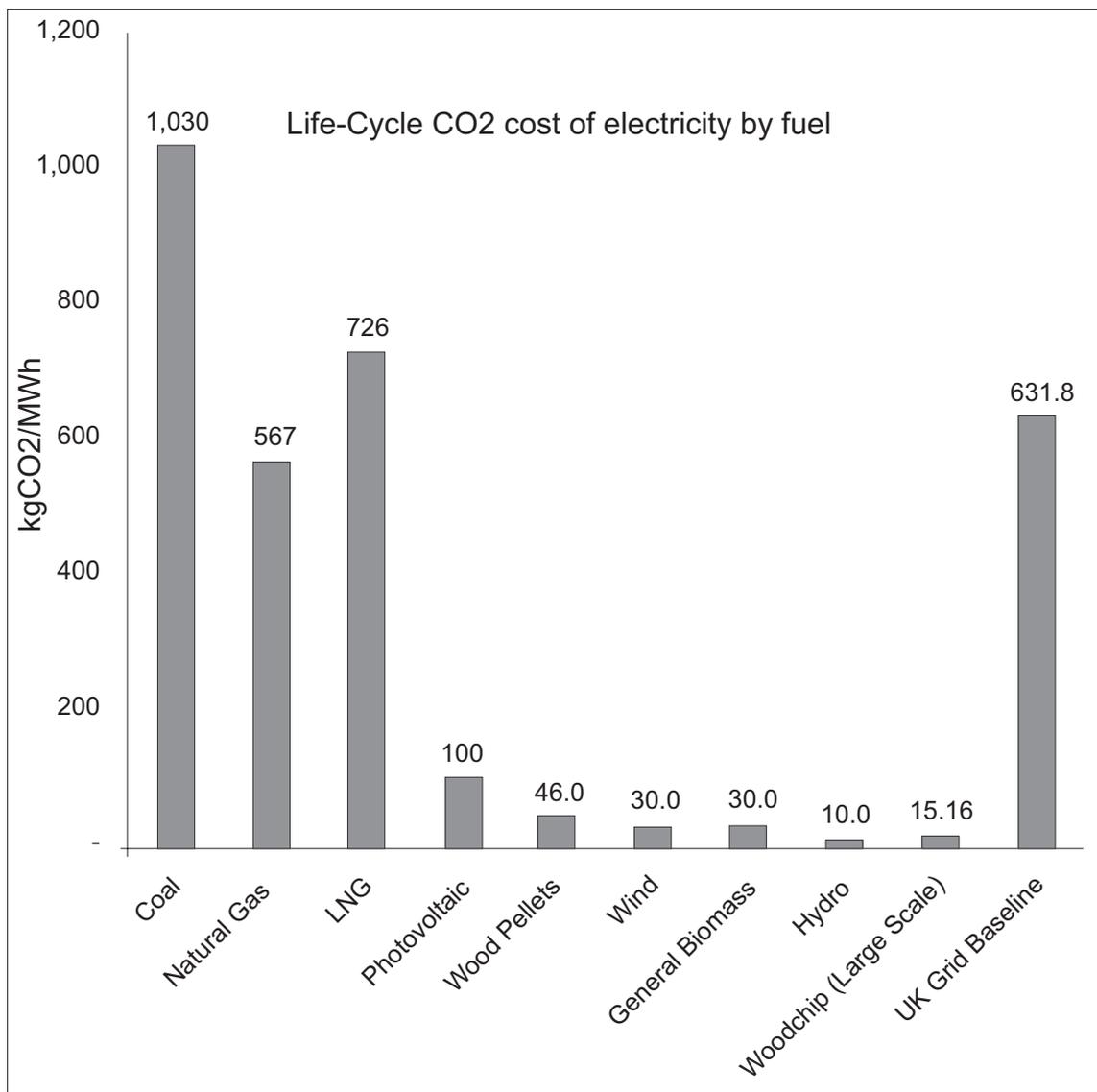
Developments such as this are crucial for the UK in order to achieve the Government's target of ensuring 15% of electricity is supplied from renewable sources by 2015.

Woodchip Fuelled Renewable Energy Plants: Key Facts

- UK energy supply and security, and the need to reduce carbon emissions were two of the key themes of the 2006 Energy Review. The Government recommended that energy security should be maintained through the diversification of sources of energy, suppliers and supply routes. Woodchip fuelled REPs satisfy these criteria through the introduction of new energy generation sources and fuel supply arrangements.
- The use of woodchip as a fuel for electricity generation is recognised as being carbon neutral as the CO₂ released is equal to that absorbed during the growth of the tree. Replanting of the harvested trees ensures sustainability.
- REPs are fuelled by woodchip from certified sustainable sources.
- Woodchip fuelled REPs have a lifespan of up to 25 years and operate as a baseload (full time, 24 hours per day, 365 days per year) plant. This has significant advantages over other renewable energy supplies which only operate some of the time.
- Large scale woodchip REPs have the additional benefit of having a higher net efficiency than smaller plants. This means that they need less feedstock to produce the same amount of electricity; carbon costs associated with transporting the feedstock are therefore lower for large scale REPs.

Power Generation: Lifecycle CO₂ Emissions By Fuel

Renewable Energy Plants burning woodchip have a very low CO₂ emission lifecycle. The graph below outlines how they compare to other energy sources. This includes all transport carbon costs.



Sources: International Energy Agency, Carnegie Mellon University, Prenergy Power

Going Forward

Prenergy Power believes that woodchip fuelled Renewable Energy Plants have an important role to play in ensuring the UK meets the renewable energy targets that both the Government and the EU have set. The Government is due to publish a Renewable Energy Strategy in Spring 2009 and Prenergy hopes that they will take the opportunity to endorse woodchip fuelled Plants as one of the measures needed to meet the EU's target of securing 20% of all its energy from renewable sources by 2020.

Prenergy Power

March 2008

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