Energy and Climate Change Committee

Oral evidence: The 4th Carbon Budget review, HC 959

Wednesday 8 January 2014

Ordered by the House of Commons to be published on 8 January 2014.

Watch the meeting

Members present: Mr Tim Yeo (Chair); Dan Byles; Ian Lavery; Dr Phillip Lee; Mr Peter Lilley; Albert Owen; Christopher Pincher; John Robertson; Sir Robert Smith; Graham Stringer; Dr Alan Whitehead

Questions 1-70

Witnesses: **Lord Deben**, Chairman, Committee on Climate Change, and **Dr David Kennedy**, Chief Executive, Committee on Climate Change, gave evidence.

Q1 Chair: Good morning. Sorry you have had to wait a few minutes. It is our first day back and our private business seemed to overrun slightly, but we are very glad to see you again. I think this is pretty well-trodden territory. You will not be surprised by the issues we are going to raise. I would like to start. When the 4th carbon budget was set, expectations about the economy were a bit more optimistic than materialised. The recession has been more protracted and deeper than most people thought three or four years ago. Would it not, therefore, be logical that, if there was to be any change in the 4th carbon budget, it should be to tighten it rather than to loosen it?

> ***Lord Deben***: I think the first thing, Mr Chairman, is that we do say in our report that the circumstances are such that, if any change were to be contemplated, tightening would be the most likely alternative to remaining as it is. We made that absolutely clear. Our own view is that the effect of the recession and other things, put together, means that the case for tightening is not sufficiently strong at this moment to overcome the better case for continuity and giving people a continuing understanding of where we are going. There are some things in the future that might make that tightening more necessary, not least if the British Government's pressure in the European Union were to be wholly successful.
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> If what Britain is seeking to get in terms of the European Union decisions were to come about, then we would have to look again at the way in which we were going to meet that, but it does not seem to us to be sensible to try to prognosticate on that. Where we are brings us at the lower level of what the European Union might be considering and that seems to us to be the safest place to be now, but you are perfectly right. There are a

number of pressures, not just that, which would lead one to think that perhaps tightening would be the better form. I think the balance is that continuity, consistency and giving people confidence that we go on as we promised are more important.

Dr Kennedy: On cost-effective measures and investments, there was a cost-effective set of measures that we identified when we advised on the 4th budget originally. That is largely unchanged since 2010 when we gave the advice. If you combine that with, as you say, the lower demand projections that are due to the recession then the cost-effective part entails lower emissions than it previously did.

Q2 Chair: Do you think that the very process of review and the discussion about whether the budget should be tighter or looser is going to affect, or is perhaps already affecting, investor confidence? A lot of the investment decisions in industries that are significant emitters are very long-term decisions. We are clearly going to have this debate about the budget review. Is that going to affect investor confidence?

Lord Deben: The first thing is it is obviously dependent upon the protraction of this consideration of the advice that we have given. It seems to me there is a proper balance in ensuring that we see that the budget, given that it has by its nature to be a long-term one, continues to be based upon the sensible criteria that we have laid down and which the Government has accepted. I am not unhappy about the process of review and, of course, it is written into the Climate Change Act, so it must be admissible. Given the security and strength of the advice that we have been able to give, if the Government is also able to accept our advice that it should be agreed rapidly, I do not think too much harm will have been done.

On the other side, you have to weigh that off against the public recognition that we do look at these things extremely carefully and in the most detailed way. I think that is helpful, too, because those who are unhappy about the whole system will find reasons for disagreeing with it but at least they can’t say that we have not looked at it extremely carefully. I think that is an extremely important part. There are both sides to that.

Dr Kennedy: As part of the review, we did consult with a wide range of industry players and there was a very strong message—it was not unanimous, but it was from nearly all of the players—that an early decision to keep the budget at the same level would help to improve their confidence. I think when we gave the advice the CBI has come out and publicly said they think it is probably sensible now to keep the budget at the same level.

Q3 Chair: How quickly would you hope this review process is going to be concluded?

Lord Deben: Like you, Mr Chairman, having been a Minister, I am always unhappy to press people to do things more quickly than the bureaucratic system works. I would hope that it would be as soon as possible and I think that that must be to the benefit of the Government and industry and indeed to the whole process of combating climate change.

Chair: We are about three months away from Easter. Would this be a realistic target?

Lord Deben: I am not going to be pressed to deliver the Government a date, which I did not do in the original document. Obviously the quicker it is done the better and if that can be done before Easter that would be particularly good.

Q4 John Robertson: To what extent do you think the potential negative social and economic impacts of meeting the 4th carbon budget can be managed?

Lord Deben: Mr Robertson, I take this particularly carefully and we do have a responsibility under the Act to consider fuel poverty as well as affordability. Obviously that is part of the whole discussion and you will see from the document that we have considered that very carefully. We have pointed out that the Government will need to have some additional measures, particularly to deal with the fuel poor who are dependent only on electricity. When we come to discuss these matters we tend and have to take the average, which is, if I am remembering rightly, about 80% of households who are dual-fuel households.

People who are particularly affected, as you yourself know from your constituencies, are those who depend entirely upon electricity and who have particularly badly insulated homes. Around that area, there is a very specific need for proper Government action. Some of it has happened. Some of it we think needs to be looked at again. Then there is the whole question as to whether the burden of other parts of this should be borne on bills or on general taxation, but that is a matter for the Government.

Dr Kennedy: It is just important to differentiate as well. There is a set of impacts for affordability and potentially for competitiveness that are related to the Government's current policies out to 2020. The Government has reviewed those recently and has decided that they are manageable. The incremental impacts associated with the 4th carbon budget are very small, both for affordability and for competitiveness.

Q5 John Robertson: You said that. If I am right, basically what you are saying is that fuel poverty has nothing to do with climate change. Is that what you are saying? That is how I read your report and that surprises me when there are millions of people in fuel poverty in this country and there will be a lot more by the end of this year.

Lord Deben: I am sorry if that is how the report can be read, because it is far from what is—

John Robertson: I will quote, "For example, incremental affordability and fuel poverty impacts are small."

Lord Deben: That is a distinction between the impact upon fuel poverty of the additional costs of implementing our climate change policy and the impact of increasing prices that come from the electricity companies themselves. In the one case we are talking about £500 and in the other case we have been talking about less than £100. So you are talking about the distinction between those two.

What we have said about the impact on fuel poverty, of that part of the cost that comes from the battle against climate change, is that the Government does need to have additional policies to deal with that specific element as well as the increases, which have been much bigger, from the electricity companies themselves. It is not a question of ignoring the impact on the fuel poor. We have specifically taken it into account and we have specifically pointed to the issues and we have specifically said that there is not sufficient coverage up to now.

Q6 John Robertson: Are you saying then that the Government has to protect the energy sensitive industries?

Lord Deben: We are saying that, too. We have done a full research, which I am sure you have seen, in which we have looked at the money available for those industries and we have concluded that the Government's promise for compensation, if that is the right word, for the extra costs for energy-intensive industries, is certainly sufficient to cover those extra costs. The problem is that the Government has not yet been able to pay that money because at the moment it is still, in the European Union, being looked at as state aid. It seems to us that it clearly is not state aid. It is a perfectly proper thing to do, but while that is happening these industries are not receiving the money. That is a serious matter and it is a matter that we very much regret.

Dr Kennedy: We also say that the package that is being offered by the Government at the moment and is being considered in Brussels only goes out to 2016, 2017 and it should be extended beyond that, given that electricity-intensive companies are making the investment decisions that go 10, 20 and 30 years into the future.

Lord Deben: That has a specific importance in Scotland, for example, where there are a number of examples where major investments by major companies would be dependent on getting that right.

Q7 John Robertson: It strikes me as though, in a lot of cases, where the savings in emissions and the investments have been made are all made, shall we say, in the middle to top range of the money chain, the poor are always the ones that are forgotten at the end of the day because there is no financial incentive to do anything there.

Lord Deben: The truth is that one of the problems we have is that the cost of the energy efficiency measures for the consumer, which are aimed at the poorest in particular, is a real cost and it is a cost that comes on to the bill. There are both sides of that. On the one hand, if you raise the money to do the work then who pays for that? Of course, some of that is being paid by the poorest consumers and that is why we pointed to the need for special additional measures as far as the very poor are concerned.

The other thing is that we have been looking at and will do in greater detail in our deep dive report, which will be published in July—under the Climate Change Act we are bound to do that, which is the four-yearly report—is the cost effectiveness of some of the measures. For example, I have already trailed the fact that there are some real questions about whether the use of money to deal with insulation of solid walls is the most sensible way to use that money.

John Robertson: That is a big problem in my area and the problem, of course, always is that if it is not financially worthwhile and you are not going to get anything out of it then nothing gets done.

Lord Deben: That is absolutely true.

Q8 John Robertson: Again, the ones down at the bottom end of the money food chain have a real problem. Could I finish by just asking, what are the potential wider benefits of maintaining the 4th carbon budget at its current level?

Lord Deben: The first thing is just to remind you that the cost of the 4th carbon budget is relatively small. We are talking about something in the area of £20 extra on to the bills. That is, roughly speaking, what it is. The discussions that we have been having are about costs that predate the 4th carbon budget. The second thing is that the wider benefits are, first of all, that industry, the consumer and the Government knows exactly where it is. There is continuity for investment, which is what we want. Secondly, it makes sure that we are on track to meet our statutory obligations to reduce our emissions by 80% by 2050, our obligations under the European Union's present agreements and indeed those that we are seeking to extend and our obligations under the United Nations agreements.

We are on track for that and we are on track for it in the most cost-effective manner. That, of course, is a big issue and that is one of the things we have to try to do because, however difficult the issues may be about fuel poverty and the like, the one thing we do have if we are going to solve those is to make sure that we are doing this in the most cost-effective way. One of the things we did was to look at what would happen if you did not do it in this way but you backfill, so to speak; you did it much later. The results of our work there suggest that under almost any conceivable scenario it would be very much more expensive. I think those are all benefits that come from keeping to the present trajectory.

Q9 John Robertson: While I accept what you are saying, there is still the problem of the moral obligation. Do you look at the moral side of not doing anything for the fuel poverty area?

Lord Deben: I do not know how I can be clearer to you that fuel poverty is a central issue for the Climate Change Committee, but it is personally a central issue too. Although I used to represent for many years a constituency that was seen as a relatively comfortable constituency, like so many rural areas I had some very poor people and areas. Some of the wards in Felixstowe, for example, are some of the poorest areas. All I can say to you is that I will not forget and cannot forget the fact that what we have to do is protect the poorest in the world and in Britain by getting our climate change policy right, but we must do that not at the present expense of the poorest. We have to have a policy that enables us to pay for this without charging the poor beyond what they can reasonably expect to afford and, of course, there are many who cannot afford anything.

John Robertson: Are you telling the Government this?

Lord Deben: That is clear in our report.

John Robertson: They are obviously not listening.

Lord Deben: That would be entirely improper for me to comment on.

Q10 Sir Robert Smith: You mentioned the solid walls and in rural areas, of course, the fuel poor are often in houses with solid walls. Unless we do tackle the solid walls, we are not going to tackle the—

Lord Deben: Sir Robert, I think what I am going to try to do is to present the Government, because this is a governmental decision, with the opportunity to see the costs that are involved in achieving a particular reduction in emissions by various routes. If the Government decides, because of the particular case that you mention and it is a very real one, that it wanted to go down a more expensive route then that is a proper decision for the Government, but it is a decision it must make. My job is to say, "What is the effect of these various things in terms of my and the committee's responsibility, which is emission reduction?"

Dr Kennedy: It is not black and white either. Solid walls will be cost-effective in some applications and they will be relatively expensive in others. What we will set out is where it is sensible to do solid walls and where it is more questionable.

Q11 Sir Robert Smith: Of course, from your perspective of emission reductions, doing it in a wealthy person's household is probably going to reduce emissions more than in a fuel poor household because a fuel poor household is limited in their energy use by their poverty. When you put in insulation measures, what you are doing is making their quality of life better and not necessarily reducing emissions.

Lord Deben: What you are identifying there is the fact that the issues we are dealing with have a multitude of facets and you can't divorce these. We have a responsibility to take full account of fuel poverty. That is not the simple choice that we would make, but what we have to do is to point to the Government—we are in this area absolutely the advisers of the Government—what the result is of particular decisions. First of all, what do you have to do in total to reduce the emissions? Then to say to them, "If you do these things, these things will arise. If you do those things, other things will arise". It is then for the Government to make that judgment.

I can have a personal view. One of the things I try to do, and it is quite hard to do it sometimes, is to stop what I would call mission creep. It is not part of the Climate Change Committee's remit to tell the Government that it should make that social decision as against that social decision. It is part of its mission to explain what happens if you do certain things and what happens if you do other things.

There is a particular problem with solid wall insulation that we are considering very carefully. It is alleged that the original calculations, made independently outside, as to what the effect of energy reduction of solid wall insulation would be, were in fact wrong. We must make clear that the Government must know what the facts are and then it must make the decisions.

Q12 Sir Robert Smith: One other thing. You mentioned that Scotland was particularly relevant to the intensive industries decisions. Do you have some projects in mind in that?

Lord Deben: As I understand it, there are six cat crackers in Europe as a whole that deal with gas. Two of them are in the United Kingdom and one of those is in Scotland. That is an area where investment might well be very important. I take that as one example. As you know, we have taken special care about Scotland because Scotland does have targets and such like that are particularly tough. It seeks to lead the rest of the United Kingdom, so we are watching it rather carefully.

Sir Robert Smith: I had better remind the Committee of my interest in the register of members' interests, in the light of that, to do with the oil and gas industry.

Chair: I had better remind members of the Committee of my interest in the energy industry as well.

Q13 Dr Whitehead: Just before I move on to what I particularly wanted to ask, as far as solid wall insulation is concerned, I think in your December report you suggested that a component target of the 4th carbon budget would be something like 3.5 million solid wall insulations achieved by 2030. Clearly a big chunk of the various components of achieving that budget would be taken up by that target. Last year there were 16,000 solid wall insulations achieved in the UK, which means that the target would be reached in, what, 212 years' time. Is that a matter of fundamentally blowing apart the statistical makeup of what the budget might look like in terms of its components or is that, as you say, something that is a palette of different options that may be pursued?

Lord Deben: It is a palette of many options and up to now there have been decisions made by DECC as to how the money should be spent and what are the proper areas for it to be and, again, I come back to it. Overall, we see that the budget can, with reasonable comfort, be met. How you meet it is obviously flexible and it is important for us to point to the Government that it can meet it in some ways that have socially-valuable additions, in which case it will cost them more, or it can meet it in other ways without those socially-valuable additions, which will still deliver the budget.

I still come back to the creep issue. I do not want to get into areas that the Climate Change Committee should not; although you will know, from my own views on these matters, it is very difficult to keep out of them because I do have a very strong view that there is an important social issue here. Just as the poorest suffer most from climate change and the poorest countries are least able to handle climate change, which is one of the reasons we have a particular model of responsibility here, so it is true in our community that the poorest are going suffer most from climate change because they do not have the ability. At the present time the poor suffer from all sorts of things and we ought to have a policy that manifestly has, in the words of David Sheppard, a bias to the poor.

Dr Kennedy: We were asked the specific question, "Given where we are with a low level of solid wall insulation at the moment, could you, over a 15-year period, grow that industry?" The answer is it is feasible. Yes, you could do that. You could get to several million insulations by 2030. Would you want to do that? Is it desirable? We have said that is an open question and we will come back on that one in the summer. There is the flexibility, as John says, within the budget to meet it in different ways with lower or higher levels of solid wall insulation or other measures such as heat pumps and whatever.

Dr Whitehead: Some level of solid wall insulation, one might think.

Lord Deben: Yes.

Dr Kennedy: You would want some level. The question is, quite how ambitious should we be?

Lord Deben: I was only going to say that the issue for us, yet again, is the Government must have the best advice we can give so that the decisions that are made are quite transparent. That must be, as far as possible, untrammelled by our own personal individual views about what those answers should be. That seems to me to be the decision I have to make, which is quite hard I admit.

Q14 Dr Whitehead: Could you then take us through the general approach you then took to reviewing the 4th carbon budget? You essentially touched on this, but were the factors that you considered in reviewing the budget solely guided by the words in the Climate Change Act or were there a number of other factors that you looked at as well?

Lord Deben: We are bound by the Act. The Act is very clear as to what we should do and that is to take the factors upon which the original budget was based and then assess whether those factors have changed sufficiently to demand a tightening or a loosening of the budget. That is precisely what we did and we did not do anything else because that is our statutory duty. Were we to confuse it in any other way, it seems to me that that would be not the way that you behave. We have put very clearly what the Act says you should do. That very much helps the point that the Chairman made about whether this process undermines investment confidence. It might undermine it if I had introduced all sorts of factors that were not part of that and not part of the Act, so I think trying to keep to that is necessary.

Dr Kennedy: There are 10 criteria in the Act upon which we gave our original advice. Just to collapse those into something that is generally intelligible, we advised on a budget that is the cost-effective path to meeting the 2050 target subject to the impacts of being on that path being manageable. The question for the review is: has anything changed? Has there been a significant change that either the cost-effective path is different or the impacts associated with being on that path—affordability, competitiveness and the other factors—has anything happened to make those now prohibitive in a way that they were not previously? Our conclusion is no, the cost-effective path is broadly the same and the impacts are broadly the same.

Q15 Dr Whitehead: But are there other factors that perhaps you did not consider in terms of the 10 criteria in the Climate Change Act that could be seen to possibly be influences of your review, particularly in terms of what factors have objectively changed over the period?

Lord Deben: There are no factors, of which we are aware, that would lead one to complain about the requirements of the Climate Change Act. In other words, there is nothing that we would want to say in brackets, "Oh, but by the way, although the Climate Change Act does not allow us to do this, we think we ought to take this into account”. There is nothing of that sort, which I think is the only way one would look at it.

Q16 Dr Whitehead: That appears to loop back to the Climate Change Act itself and suggests that, should that position be reached in terms of analysis, then there is no legal justification for changing the 4th carbon budget.

Lord Deben: That is our view. Having been through the Climate Change Act and discussions and the rest of it, the intention of the Climate Change Act after all is to have as secure and sure a trajectory as is possible in this confusing world. That is what the purpose was and that is why it is laid down in this way. We have to say—and this is our duty—the only reason for change would be in certain circumstances we are not now able to be certain about, when there might be a requirement to tighten it. That is the only thing we could say and we have said that very clearly. We have said that our duty will be to monitor that and, if we were to come to such a point, we would have to give that advice but it is certainly not something that we would believe to be true now nor in the immediate future.

Dr Kennedy: There is an exhaustive process we have gone through in terms of our analysis but also, in wide consultation, nobody has suggested to us any specific significant change upon which you could change the budget. It is not just our view. Nobody has brought this forward to us either.

Q17 Dr Whitehead: In the light of that, were you rather dismayed to hear just a little while ago that a Minister in the Department of Energy and Climate Change firstly did not appear to have read your extensive letter heralding the conclusions of the two reports that you sent to the Department in October or the two reports themselves that you sent to the Department in November and December and concluded that the report is just advice?

Lord Deben: You know I have been around a long time.

Dr Whitehead: Not that he had read it, but—

Lord Deben: I have been around a long time and one thing I am very careful about is not entirely crediting every report of what Ministers say. I did not hear it said and I think it is better not to comment on that. I know what we have proposed. I know what our legal position is and what the legal advice is. We have kept to that: it will be for the Government to do the same.

Dr Whitehead: I think the essential point is, in the light of what the Act itself says and how your report is couched, what the Act said in terms of its own conclusions, the point at which advice becomes rather more than advice and whether you are happy to have your reports and correspondence described in that way.

Lord Deben: I do not know whether it was described in that way because I have no personal knowledge of what the Minister said. I am clear as to what the Act says. I have been very careful to understand what the Act says, as you would expect. You should not be the chairman of a committee that depends upon an Act without understanding what it says. Those areas in which I was unsure, I have asked for proper advice so I know precisely where we are legally and that is made clear both in the report itself and in the introduction. I have no doubt as to where we are. No doubt people will have their own views and all the rest of it, but the fact of the matter is I think what we say there is exactly consonant both with the Act and with the legal position that has appeared.

Q18 Graham Stringer: How did you go about reviewing the latest climate science and how did that influence the recommendations on the level of the 4th carbon budget?

Lord Deben: Obviously we had the advantage, certainly latterly because we have been doing this research over a period, of the latest report from the IPCC and we note that that report is consonant with every report that it has had since the beginning of those reports. We have a committee of experts who have raised the issues and we have gone through those. We have a team that supports them and we have had discussions with experts and organisations outside to come to these conclusions.

Dr Kennedy: One other thing we did, which goes beyond the IPCC report—there has been a lot of debate in the last year or two about climate sensitivity and there is a high degree of uncertainty over what climate sensitivity is—we said, “Rather than assume the most benign number for climate sensitivity or the most concerning, let us look across the range of that sensitivity”. We did a lot of modelling of global emissions pathways across the range of uncertainty for climate sensitivity and we concluded, given those uncertainties and given the risks, the previous assumptions we made are still appropriate at the moment.

Lord Deben: What I should say, Mr Stringer, is this. I think the duty we have, particularly my duty as being the person on the committee who is not either an economist or a climatologist, is to be almost cynically sceptical about what comes in front of me. It is one of the reasons why I do not like the phrase “climate sceptics”, as if it means that the only people who are sceptical are those who take a view opposite to the IPCC. I think my job is to be very sceptical. Were you to sit in on the committee meetings, you would find me asking the questions that certainly one or two members of this Committee would ask and certainly a lot of people outside. I have tried very hard to make sure that nothing is taken for granted. That is the duty of the committee because one of our requirements is to advise on the science.

Q19 Graham Stringer: Would it be fair to say that what you are doing is a review of the latest literature with prominent and respected scientific advisers? That is how you are assessing it.

Lord Deben: I did not hear the word after “prominent”.

Graham Stringer: I can’t remember what I said now.

Chair: Respected.

Graham Stringer: Yes, respected.

Lord Deben: Yes. Certainly that but also, at the same time, I and other members of the committee keep a very close eye on what those who take a different view think. I could not miss that because they remind me of it on my Twitter account even if I did not pick it up elsewhere. One is always asking those questions and I think that Dr Kennedy would accept that he very often gets a note in the morning saying, “So and so said this. Now, how does that fit in with what we said there?” One has constant discussions about that. Nobody who has a different view should be unaware that every one of them is looked at very carefully.

Dr Kennedy: But, again, with climate sensitivity we have looked at the full range of views from the most benign to the most concerning and across that range you come to the same conclusion: that early action at the global level is needed to achieve our climate objectives.

Lord Deben: I am pleased that that was raised because that is a very good example. There are people who are unhappy about the measures that we are taking and who take the benign end, if you see what I mean. We said to ourselves, “Although that is not the view of the majority, let’s assume for a moment that they are right. What would that mean in terms of how you would recommend action?” We came to the conclusion that, even if you take the most benign interpretation of the evidence, you would still want to stick to the 4th carbon budget. Of course, if you take the other end of the scale, you might want to move very much faster, but you have to do what is reasonable and so that is what we have done.

Q20 Graham Stringer: I share your attitude to scepticism. One should not argue with the facts, but be sceptical about what is put in front you. Your conclusion is, “The latest evidence generally gives more confidence in the reality of climate change, in its causes and in projections for the future.” Why do you have more confidence when the models have failed to predict the global surface temperature? Wouldn’t that lead you normally to have less confidence?

Lord Deben: First of all, that refers to the overall pattern and picture. In so many areas the predictions have turned out to be correct. The evidence has continued and that is an overall statement, not a specific one to that, but we have also looked particularly at that issue. David, I would like you to express what conclusion we came to on that issue itself.

Dr Kennedy: Yes. The “more confidence” repeats the IPCC statement, which is about attribution of temperature change that we have seen in the 20th century.

Q21 Graham Stringer: I am saying that is very strange as well when the computer modelling has not managed to predict the temperature either in the past or the future.

Dr Kennedy: It is true that there has been a period of slower temperature increase, if not no temperature increase. There has been a slower temperature increase. That is to be expected within a pattern of longer term temperature increase in climate change. That is what we have seen historically. It is what the models suggest. The models are not designed to be able to predict the temperatures over five, 10, 15, and 20-year timescales. They are designed to give us a projection of what is likely to happen over much longer timescales of 50 and 100 years.

The fact that temperature has only gone up in small terms over the last 10 or 15 years does not change the longer-term predictions coming out of the model. There is nothing that makes us think differently about the greenhouse effect, for example, first of all. There is nothing that makes us think differently—

Graham Stringer: That is established physics.

Dr Kennedy: Absolutely, and there is nothing that makes us think we are not putting large amounts of greenhouse gases into the atmosphere that are well outside the million year cycle now, so you would expect to see some significant warming in the future if we do not do anything.

Q22 Graham Stringer: Would you accept that there is no scientific process known at the moment that can separate background variation from that warming caused by the greenhouse effect and carbon dioxide and the only way we have of doing that are the computer models, which are not getting it right?

Dr Kennedy: You can work through and you can say, "What are the different possible causes of the temperature increase we have seen over the last century?" You can say, "Is it solar radiation?" for example, and you can rule that out. That is reasonably well established within the physics. Again, the conclusion of the IPCC, looking at all of the evidence, is that the only reasonable explanation of what we have seen over the last 100 years or so is that it is human-induced temperature increase.

Now, there are alternative theories. For example, the recent one that people talk about is this stadium wave theory that suggests there is a lot more natural variation we have seen over the last 50 years than other people have thought and we have to consider that. We have to take it into account, but it is not the consensus view at the moment.

Graham Stringer: What do you mean by "consensus"?

Lord Deben: Could I just make—

Graham Stringer: Sorry.

Lord Deben: I am sorry. I just wanted to make a point about how one has to proceed in this world. It is always possible, with any argument, to suggest that there might be another explanation of which we have not thought. You have to say, "Well, if there is one we have to look at it". Then it is possible to say, "Well, we have this explanation that we think is a better one than the one that you are using". You do have to consider that and you have to consider it very carefully. All I can say, Mr Stringer, is that we have come to the conclusion, using the best evidence that we have, that no other explanation begins to be anything—I was going to say "likely", but I think it is nearer to certain in that sense—likely to be as certain as the concept that human intervention of the kind we have been talking about is causing and will continue to cause this effect on the climate.

That does not mean to say that, were there to be other proposals, other ideas, things that we do not know about, we would not be looking at them, but human beings have to proceed on the best evidence that they have. There is no other way of doing it. If we do not proceed on the best evidence we have, we are going to proceed on less good evidence and maybe the worst evidence that we have. I know your position and it is one I respect and we have had discussions on other committees in that way and I think you would agree that we more or less come to much the same logical approach. I just want you to know that at no time do we fail to look at any suggestion and that is because I wish climate change was not happening because I do think that it is a very significant challenge to us. Therefore, frankly, if I could find an easier answer I would want it. I am emotionally concerned to do what you want me to do.

Q23 Graham Stringer: Can I just go back to what Dr Kennedy was saying about the consensus? This is an extraordinarily complicated area of science. A lot of people involved are not scientists. The vast majority of people are not climate scientists. The crutch that people go back on then is there is a consensus. Do you accept the criticism there has been of the major paper that gives the 97% consensus of Doran, Anderegg and Cook that somebody like me, who is probably more sceptical than you are about this issue, would be included as a supporter of the consensus, whereas I am not? Many major scientists have complained that, in the review of their papers, they have been included in that consensus and there are other papers that say that within climate science itself it is about 50/50. I can give you the papers if you want: Bray and Hans von Storch.

Lord Deben: I have read those and the work that has been done. I do not think that I take the “consensus” word as referring to the 97%, that particular paper. What I take it from is the undoubted fact that overall those who are concerned in this field have clearly come to a view, which is that the climate is changing significantly and that that change is the effect of human activity or at least the effect of human activity is a major part of that. I am not doing it on the basis of adding up and saying, “That one and that one”, and that does not seem to be the right way to do it. I think you have to look at the proof.

Even if you take the 50/50 argument, of course what you have to look at is what bits of those papers are applicable in these circumstances. I think that gets you much closer to the original paper than the 50/50 argument but, again, the big issue is to say, “What is the most likely explanation? What do the people who are most involved in this and who have looked at this most closely think? What, indeed, in your mind do you think of the evidence?” You have to come to that and I certainly believe that to say that there is scientific consensus in this area is true; just as to say, as I understand it, that every applicable learned society would take that view.

I think that, in the circumstances, this is the view that one should properly take, without ever resiling from the fact that there could be new evidence. If you are a scientist or if you are trying to deal with science, you always have to say what you are saying is the evidence you have at the moment and if something else happens tomorrow then you have to revise. It is not a theology. It is not religion. It is not saying, “That is what has been said and, therefore, it will always be true”. It is in fact science. Therefore, all I can say is that, from all that I read and all that I work at, the consensus is very clear, but tomorrow someone may produce something that would suggest we should think about it again and, if we do, we will think about it very quickly.

Q24 Mr Lilley: Dr Kelly mentioned that it is possible to explain, as indeed it is possible to explain, the pause in any statistically significant warming over the last 15 years by natural variations. If natural variations are that substantial for that period, could they not have been that substantial for a similar period in the opposite direction over the previous 20 years? Could they not have made a significant contribution to measured warming during the period of warming between 1975 and 1997?

Lord Deben: You can answer that, but I will answer too if you like.

Dr Kennedy: You can't rule that out. It is possible. Natural variation is uncertain. I talked about this thing that a lot of people now are talking about, the stadium wave theory, which says we have underestimated the impact of natural variation in the historical record and overestimated the impact of human influences. You can't rule that out, but would you base policy on everything we have seen is natural variation and we shouldn't worry about the future and putting a load of greenhouse gases into the atmosphere and we would not expect to see a significant temperature increase? That is not the basis for policy at the moment.

Q25 Mr Lilley: But you would expect, over the longer term, natural variations to cancel out?

Lord Deben: I do not think that is the way you should even think about natural variation. You would expect over the longer term for natural variations to have different effects at different times and you would take that into account. Yes, that is perfectly true. There is a sort of mechanistic concept that you have a lot of natural variations here that have one effect and then that is countered by a lot of natural variations here that have a different effect. I do not think that is the way you have to look at it. You are trying all the time to see what effect natural variations at any particular time have and also the effect of man-made changes that come from emissions and you have to do that on a sensible basis. I would not do that absent that, no.

Dr Kennedy: If you take the stadium wave theory, it is important to note that the principal author of that paper says, "While this is important looking back over the last decade, it has no implications for our understanding of long-term temperature increase." That was the principal author of that paper: no implications at all.

Mr Lilley: I was not referring to that paper but I imagine he values his grant, so he would make that sort of statement almost all the time.

Lord Deben: Can I just say, Mr Chairman, and I am going to say this very directly, I do think—

Mr Lilley: Sorry, may I finish my point, please? May I finish my point and then you can respond to it?

Lord Deben: Of course you can.

Mr Lilley: Almost every paper I read, even when it contains substance that raises doubts as to the strength of global warming, ends up by saying, "But it is terribly important, we must not reduce our efforts". That seems to be a mantra that is required of people in this profession; not surprising given the state employs 3,600 people on climate science.

Lord Deben: I want to say something very clear and it is this. I do not think I have ever accused those who disagree on climate change with unworthy motives. People working in the climate change area do so because they are scientists and because they want to find the truth. I find it increasingly unacceptable for people to undermine their position by saying they are only doing it for the grant or they say this to protect themselves for the grant. I do not think that is a worthy way for any of us to behave. I have never said this about the Global Warming Foundation, even though I am surprised where we do not know where the money comes from. I have never done that because our job is to try to look at the facts and I do not think that ad hominem arguments are acceptable in any circumstances and we will not use them.

Mr Lilley: Good. That is very splendid and I hope you will say that to those who accuse some of us of being motivated by financial incentives, which we do not even have. May I continue?

Lord Deben: As you said it specifically to me, Mr Lilley, could you point to an occasion in which I have done that?

Mr Lilley: No, I am not saying you have. No, no. I was hoping that you would make your splendid statement to those who accuse—

Chair: Can you move on?

Q26 Mr Lilley: Absolutely. The CMIP 5 global climate models give an estimate for warming over the next couple of decades of between 0.48 and 1.15ºC, yet the fifth assessment of the Working Group 1 final draft reduces that by 40% to a range of between 0.3 and 0.7ºC on the basis, I gather, of expert assessment. In other words, the experts think the models are wrong. I would like your comments on that and ask whether it is consistent, having assumed they are wrong for the next 20 years that they are running too hot, why rely on the models for the remainder of the century?

Lord Deben: The first principle I have is that one should take, if I may dare use the word, the most conservative view about these matters into account. Therefore, I think it is absolutely right, if people feel that this may be so, that should be taken into account. There are other areas where evidence suggests that this may be a significant underestimate and we have seen lots of discussions since then that have led to that view. One has to accept that this is the best evidence that we have, that there is quite a lot of evidence that this is underestimating what the effect is and—

Mr Lilley: Sorry, which is: the models or the experts?

Lord Deben: The reduction may be at the conservative end of it, if I am using it in that sense, but I am sticking to that and that seems to be sensible.

Mr Lilley: The reduction may be at the conservative end?

Dr Kennedy: Let's be clear. We have not relied on climate models to come to our conclusions. We have looked at three lines of evidence. We have looked at energy balance models, we have looked at the historical record and we have looked at climate models; those three. That is what gives you the range of uncertainty for climate sensitivity. I have said that we modelled and it is very clear, if you read the reports, that we have looked across the range of estimates of climate sensitivity from all three lines of evidence. We have not said climate models are superior to energy balance models, for example, or vice versa. We have said we need to look at all of those and consider, across the range of uncertainty and across the range of risk, what the appropriate response is.

Q27 Mr Lilley: I am merely quoting what the IPCC is doing. They are effectively saying that the models have been running too hot and are expected to continue to run too hot for the next 20 years, but thereafter they will come right again. Didn't that undermine your confidence a little in this process?

Lord Deben: If that were the only thing we were basing ourselves on it might, but that is not the point. The point is, as David has said and I was going on to say, that we have taken different routes to look at this and we have come to our conclusions not by putting dittos under the IPCC's report but saying, "Looking at this and looking at these other things, we have come to this conclusion". That is our job.

Dr Kennedy: If all we relied on was the climate models, at the 80 percentile you would have to say it probably is not stringent enough and we should be doing more—if that was all we relied on—but because we do not rely on the climate models, because we look at all of the different lines of evidence, we have said, "It is okay to keep with the 80% for now, but let us watch very carefully what happens in this area". That is important as well. We always continue to look at the scientific evidence. We have the flexibility to respond to that.

Mr Lilley: How do you make a forecast without a model?

Dr Kennedy: We use models, but you can put the numbers into the models that come from all the different parts of the literature. You can say, "Well, what is the expected temperature increase if we assume", to use the jargon, "a climate sensitivity of 1.5, which is the very low end of the range, in the IPCC report? If that was the case, what is the temperature change you would expect to see in 2100 based on assumptions about emissions over time?" That is something that you can do. The way that the climate models work, if you do not put that number in at the low end of the range, they tend to use a higher number; so they get a higher temperature increase. We have said, "Well, let's take the numbers out of the climate models. Let's put the lower numbers that people have suggested into a model and see what happened then". That is what our recommendations are based on.

Q28 Mr Lilley: Good. I just return to the point that my colleague Graham Stringer made earlier. Although I would not expect anything that has happened to remove your confidence or indeed my own confidence that the underlying greenhouse effect will continue, given the fact there has been a pause and the fact that recent studies have tended to come out with these lower climate sensitivities you have mentioned, wouldn't that make you think that on the whole it was a bit less alarming than previously it had been?

Lord Deben: I don't think that is the result of what you said and it certainly is not the result if it is taken in the context of other evidence that has a different view. I think the moderate position that we take is the right one and that is that there is sufficient evidence to lead us to believe that any sensible, responsible person should seek to ensure that we do not increase the emissions but indeed reduce them very significantly as a matter, at least, of insurance and probably of absolute necessity. That seems to me to be unchanged and I am more confident in that today than I was a year ago and I wish I was not.

Q29 Mr Lilley: Earlier you asked me whether you had ever cast doubt on the motivation of climate scientists and I now remember that you did precisely that at the conference that we both spoke at in Cambridge at Fisher House where you advised everybody to read the book called *The Deniers* and they would see the real motivation of these people. Afterwards Dick Lindzen came up to me and said he thought that was the most disgraceful remark he had ever heard.

Lord Deben: If that is an exact word of what I said, it is exactly what I believe. The book *The Deniers* does not talk about the scientists. The book, *The Deniers,* does not talk about the scientists, it talks about the coal industry and other industries who are taking actions that are very parallel to those of the tobacco industry, largely dealing with the United States, not referring either to the scientists or to people like yourself, who take a principled view, and one that you have always taken. I can remember you telling me off for believing in climate change in the way that I did after a Cabinet meeting some 20 years ago. I know perfectly well that you have always taken that view and I would not dream of saying it was other than a totally principled view.

The book, *The Deniers,* has very specific evidence of large-scale, largely American businesses spending great sums of money to cast doubt upon the scientists. If you are concerned about that, there is a very interesting interview with one of the major climate scientists saying exactly what happened to him in those circumstances. But that is not the same as denying the perfectly proper position that you, Lord Lawson and Matt Ridley have on this issue.

Chair: Let’s return to the 4th carbon budget. Robert.

Q30 Sir Robert Smith: You also were looking at international action in terms of reassessing your recommendations. What exactly did you take into account, looking across the international spectrum?

Lord Deben: You have to try to get first of all what people say they are doing and then you have to look at what is the reality of that, because there is often a distinction between that. What we tried to do is to see first of all what people in other countries, other organisations were doing or saying they were doing and then seeing what in effect they were doing. That led us to make the conclusions that we had there.

Q31 Sir Robert Smith: You did conclude the UK is not acting alone. What other countries would you say have a comparable ambition to the UK?

Lord Deben: The phrase "comparable ambition" is a very helpful one, because I think that is the right phrase, "to compare". I think that China does, and countries as surprising as Mexico do. In their own different ways, of course, most of the members of the European Union do, but certainly the European Union as a whole. Then because of the way that things work, significant parts of the United States have comparable ambitions. The whole of that West Coast Alliance that stretches from California right into Canada with British Columbia is certainly committed to similar ambitions to ourselves.

Q32 Sir Robert Smith: On the other hand, Canada as a whole or Australia and Japan are dropping their ambitions.

Lord Deben: Indeed, and very sadly. Canada is an interesting case, because as you say, as a whole it is doing that, but yet there are some of the Canadian provinces that are sticking to very strong measures indeed. If people asked me what I thought about actual measures, I think the British Columbian carbon tax system is one well worth looking at as a mechanism, because it seems to me to have a number of valuable elements to it and has been supported by both political parties in those circumstances. You are perfectly right. The picture in Australia is much more gloomy and of course it is difficult if you have a Government that does not believe the science in any way.

Q33 Sir Robert Smith: Does that not have an implication for the UK if the other countries are taking a backwards step, going back I suppose to the earlier—

Lord Deben: Other people in the same time have been doing more. I do not want to come back to the issue, but if you look at what is happening in some of the countries we have referred to, a great deal more is being done, and in the areas where a very high proportion of the emissions are made, a great deal more is being done. On balance, we have to say around the world it is better than it was, with significant and very sad decisions by the Australian Government and the Canadian Government. The effect of the Australian Government of course was to reverse things that were pretty recently imposed by the previous Government. I am sorry about that, but in the whole, it does not alter the fact that many other people are doing what we would expect them to do, and some are doing some more intensive things than we are.

Dr Kennedy: If you think in terms of has there been a significant change, which is what you would have to identify to change the budget, in 2010 we said there will be a UN process. There have been some Copenhagen Accord commitments and there is a challenge to deliver against those commitments. Our assessment currently is that the UN process has moved forward in the way envisaged, so it was envisaged it would move forward towards a conclusion in 2015 and that is still the aim and the expectation. Second, the Copenhagen Accord commitments, whereas those may have looked very stretching at the time, they now look realistic, for example, both for the States and for Canada, so that is a positive change in that respect.

We are also clear there is still a big challenge getting global agreement and getting global agreement that goes beyond 2020, but there is not any reason there to say, "We should change the budget because that remains as a challenge".

Q34 Sir Robert Smith: How important is the UK's ambition to securing global agreement?

Lord Deben: First of all, the United Kingdom has put itself into a position over the years of leadership in this, notably at Kyoto, when John Prescott certainly did that, and notably in the European Union as a whole. The first thing is I think the European Union's position on this is crucial to provide that agreement and our role in the European Union is vital to that.

Secondly, we are a country that has used a specific mechanism, the Climate Change Act, to give ourselves a proper, paced procedure to reach an end. That has been increasingly influential throughout the rest of the world, people doing it in their own way, but seeing this as their model. As I go around the world and people come here, one of the things that they always say to me is that the United Kingdom has set a fine example, so we are very important, and keeping to the way in which we are proceeding is very important to the rest of the world, whether it is in South Africa or Mexico, or whether it is among what I call the more progressive views in the United States and Canada.

Q35 Sir Robert Smith: In 2015, if the pessimistic scenario comes out and the international agreement does not push forward, would there be a tipping point at which the UK has to say, "We are going it alone too much"?

Lord Deben: Hypothetical situations are not ones that I want to respond to, but it seems to me that of course you could have a situation in which nobody is doing anything anywhere and then you have to ask yourself what do you do as a nation, faced with calamity on the one hand and the rest of the world refusing to take it seriously on the other hand? I do not think we are going to get to this. I do not think it is an answer that I would want to make.

Dr Kennedy: We will look again in 2015. We have to look again anyway when we give the Government and Parliament advice on the 5th carbon budget. What we have shown in the 4th carbon budget is that it is robust to a whole range of outcomes at the international level, so it does not rely on there being the most ambitious international agreement signed up to in 2015. If there was something less ambitious, the 4th carbon budget would still make sense. There is a boundary beyond which you may look at lowering the ambition, but we will come back and we will look again at that time.

Q36 John Robertson: Lord Deben, you were quoted as saying that Britain must press on with fracking. I understand your comments about security. Where does that fit in with the emissions and our targets for future years?

Lord Deben: If you look at the way that we have constructed the most cost-effective route to 2050, that does require or expect a use of gas, not at the end of the scale but as an interim use. It seems to us—or it seems to me—that if we were able to produce that gas from our own resources there are significant advantages to that, because you do not increase the emissions. If you are going to use some gas, it is better to use your own gas. That is the first thing. Secondly, fracking of course is not just a question of the production of gas for energy purposes. We do not know yet, because we have not done it sufficiently to know what the composition of the gas is in each place, but fracking could easily produce the fractions that are necessary for using gas as a feedstock. If that was so, then you would not be talking about the same thing at all. You would be talking about a very valuable resource being used in the best possible way.

I think most of us would prefer fossil fuels, which are of their nature finite, to be used in the best way, and as a feedstock that would be very valuable. My view is that we should proceed to see what fracking can take place, what it produces. It can play a proper part. There are three things perhaps to be careful about. One is not to invest in an infrastructure that means that you find yourself in the circumstances in which you have to use gas when there were better alternatives, because you have spent so much money on the infrastructure. That is an issue you have to take seriously.

The other two issues to take seriously are either end of the spectrum. I think that those who have a kind of theological objection to fracking at the one end of the green movement are just factually wrong. I do not see the argument. You do have to have proper environmental controls, but that is a different issue. I also think those at the other end, who suggest that this is a sort of wonderful save-all for everybody have not looked either at the scientific facts and the likelihoods or indeed of the real difficulties and the differences between this country and the United States. It seems to me somewhere in the middle is the right position for us to be in, as far as I can see it, because it is what the Government is—

Q37 John Robertson: If we invest into fracking, people will want a return on their money, that is for sure, but I know from being at climate change conferences they have all stated that by the time we get to 2030, we have to wind down our gas so we can meet targets for 2050. Is that not right? I see Dr Kennedy shaking his head over there.

Dr Kennedy: There will still be very significant gas consumption in this country in 2030 in a world where we are carbon—

Q38 John Robertson: No, that is not what I am saying. I am saying you would reach a level, but from that point on, you have to wind down.

Dr Kennedy: You wind it down, but the gas demand in 2030 we would expect to be much more than any shale gas coming into the market in this country and that would continue to be the case, so there is not an inconsistency that says, "If we have shale gas, it will dwarf gas demand". It is the other way around: gas demand will dwarf the shale gas probably coming to the market.

Lord Deben: As I am sure you will agree, Mr Robertson, if we were in that position, we would be much more likely to want to scale down the imported gas, particularly that which comes from regimes where perhaps we would be happier not to be dependent.

Q39 Mr Lilley: Can I return to the issues raised by Sir Robert about whether the failure of others to curb their emissions makes our own efforts almost nugatory? When we last met at this Committee, I took issue with you when you said the Chinese Government has tightened its five-year plan and its policy is to reduce emissions very significantly. I said it was not planning to reduce emissions, it was planning to reduce the intensity of its emissions and you said that that was the position but it has changed and, over the last three months, there is subsequent evidence of that. Since we have had some correspondence and you have set the record straight, I wondered whether you would like to set it straight in public.

Lord Deben: The letter is very clear. I think when one reads exactly what I have said, it is consonant with what our letter says. I have said in the letter because I mean it: I am sorry if my comments resulted in a misunderstanding. You read the comments and clearly some people have read it in a different way from that which was intended, or indeed which I think it means, but I do not want to mislead anybody. I just said I am sorry that people have interpreted it in a different way. I stand by what I said and the letter makes that very clear.

Q40 Mr Lilley: Oh, you stand by what you said, that it is the policy? I have misread your letter.

Lord Deben: I am sorry, if I may say so, I am quoting the letter and the response and the quotes that were in the letter that you or Mr Yeo sent.

Q41 Mr Lilley: I am quoting the text of our discussion and you said, "The Chinese Government has now tightened its five-year plan. Its policy is to reduce emissions very significantly" and it has not and it is not.

Lord Deben: First of all, it has tightened its five-year plan.

Q42 Mr Lilley: But we asked for evidence and you failed to provide it.

Lord Deben: I have said exactly what I believe to be so in the letter. Let me just refer for the point: I have explained exactly, because we are in very close contact with those who are dealing with these matters in China, and I have to try to give the Committee, as far as I possibly can, my estimate as to what is happening in China. I have no interest, so to speak, but I am just trying to give you the best knowledge that I can, and all that I can say is that within the Chinese Government at the moment, the discussion that is going on is not about carbon intensity issues. The discussion is about when peaking will happen. That is what the discussion is about. They will make their political decision as to when they make that decision, as to what the date will be, and when they say it, but the best information I can give this Committee is what I have given it. I stick by that and that is all I am going to say.

Q43 Mr Lilley: So you agree or disagree with the statement? I originally raised it, and I mentioned that this Committee itself had produced a report that said that half the growth in carbon emissions between now and 2030 would come from China and I found that difficult to square that with the idea that they were taking stringent measures to reduce their emissions significantly.

Lord Deben: As you know, the emissions from China have been increasing sharply, much of it because of the fact that they are manufacturing for the rest of the world, and they have committed themselves some time ago, which the Committee referred to, to reduce their carbon intensity, but not their total emissions. I was trying to explain to the Committee that our evidence from China is that the Government understands that peaking is certainly possible and obtainable. They are discussing as to when that might be. They have not announced a date or indeed an intention, but my job is to try to tell you all that I know, and all that I know is that that is what the discussion is about. It is not about not doing this, it is about doing this. Therefore, that is evidence, that is something that has happened since the Committee made its excellent report, and that is all I was trying to do, and put that in the context. We shall see whether a change takes place and we shall see whether they go further than I have suggested or less far, but I can only give you the evidence that I have.

Q44 Mr Lilley: Moving on from that rather unsatisfactory exchange, in your document on the 4th, you say, "Our analysis suggests that the UK targets imply reductions in carbon intensity to 2020 comparable to other countries, including China" so we are being as rigorous as China, rather than them doing something very dramatic, it would appear.

Lord Deben: In the particular period of time, that is correct, but I can hold that perfectly rationally by saying that at the same time what they are intending to do appears to be significantly greater in a very much more difficult circumstance, which of course is true in a country that is developing in the way that China is.

Q45 Mr Lilley: Though your report also says, "Per capita emissions in China are now comparable with the UK and EU average" so they are comparable now, they are going to increase substantially and account for half the increase in emissions worldwide, yet they are certainly going to use a lot more per capita than us and yet we are taking as stringent action as them to reduce our emissions.

Lord Deben: I do think one has to take seriously the difference in the situation. Here is a country that is making its development and paying for its huge social problems largely by doing there what we do not do here any longer. That is what they are doing and therefore a very large number of their emissions are the result of what we in the West are demanding. That is part of life. Here is a country trying to come to terms with this, and I am merely saying to you, Mr Lilley, that this is a country that has not caused climate change up to now. In this part of the world, we have. We have a past responsibility and model of responsibility of some importance. That is not theirs; they have not done that.

Our job is to create a world in which it is possible for them to develop without endangering the planet, so what I am looking at is what is this country doing, which is on a trajectory like this? First of all, it says, "We are going to reduce the carbon intensity". This is very parallel with what major companies have done. They have said, first of all, "We will reduce the carbon intensity of our production". It is the first thing they say, and then they are pressed to say, "That still means if you are going to produce more bottles or more packages, then you are going to increase the amount of carbon you use" and they say gradually, "We have to come to a situation in which we do not increase the amount of carbon, even though we are increasing our business". That is what China is talking about now in a very serious and specific way in the Government as to how they move from the present situation, which you perfectly rightly identify, in which they have been—and I agree with you, not only for climate change reasons, but for pollution reasons—tightening on a regular basis, that how they move from that to a point at which they peak, the information that is important is that peaking is possible within the 2020s and that they are discussing where that might be. It is likely that they will make political decisions on that basis, but they will be as political as anyone else as to when they announce it.

Q46 Mr Lilley: One final point, if I may, from your very helpful report. You said they are now thinking of planning to reduce their carbon intensity, indeed by 40% to 45% by 2020, compared to 2005 levels. You also say that since 1990, Chinese emissions have grown by 290% and GDP by 699%. That implies that they reduced intensity by 58% over 20 years, for example, at roughly the same rate as they are intending to continue reducing intensity over the next 15 years. There is nothing much new there, is there?

Lord Deben: I would have to look at that rather carefully before I answer.

Mr Lilley: It is your report.

Lord Deben: No, the particular way in which you have looked at it, I will look at it very carefully and write to you.

Mr Lilley: Thank you.

Q47 Dan Byles: Following up on the discussion we had earlier about your view of international action, can I particularly focus on EU developments? Could you just tell us how your review of EU developments in particular influenced your recommendations on the level of the 4th carbon budget?

Lord Deben: There are two elements to this. One is what is happening and what people are doing in Germany and various countries and the other is the process by which the EU is coming together in order to make its decisions for the future. In the first one, obviously there are some very encouraging decisions being made in a number of countries. Germany and Denmark are two you would pick out particularly where those things are happening. Very interesting effects in Spain, for example, after a rather difficult stage on their renewables, it seems to be moving into the right position now. We would take all that into account.

Then there is the EU itself, and that is more difficult, because we have the present situation and we are in the middle of deciding what the next situation will be, so what we did there was to say, "Let us put a whole series of scenarios down. Let us imagine the very least ambitious. How would that be consonant with the 4th carbon budget?" That is why we were able to come to say that if the EU does the very least that is sensibly likely, the 4th carbon budget would still be the position that one would want to be. It also made us come to the view that if the EU accepted the Government's proposition, that is when we would seriously have to look at tightening the budget, because that is the effect of taking that view. Of course you can't prognosticate. Life is such that it is very often true that you do not get the most ambitious answer.

Q48 Dan Byles: Did you consider a more ambitious 4th carbon budget in light of the UK Government's public position on a tighter 2030 EU?

Lord Deben: We considered what would be the effect, but we thought that it was wrong to try to do now what you could not do with certainty until you came to that certainty, and as that certainty may be as much as three years' time, given the speed with which these organisations move, obviously one hopes that it will not be. It is more likely to be a bit earlier than that because of the 2015 date and because of the French very considerable concern to make that work, so obviously one expects that, but we thought it was better to say clearly that we would have to monitor that and if that were to arise, then we would have to advise the Government on that matter.

Q49 Dan Byles: Is that something you would do any parallel work on? If you recognised there was a real possibility that could happen, might you start work now on what that might mean in terms of a tighter budget or would you have to wait until it happened?

Lord Deben: No, we have done some work on it. I think we have done as much as one could do in advance, but we had to do that because we had to be able to say what would be the circumstances, what would be the effect, but we have done that work. We intend to keep this sort of thing as care and maintenance, if you know what I mean, where we care to do the work as it goes on, but I do not envisage doing any more work on that particular figure unless it became clear that we were winning and there is some indication that there are people who are trying to get towards that aim.

Dr Kennedy: We have identified the range, as John says. We will come back in July with our parliamentary report and say, "Has anything happened in the meantime?" and there are two things that will happen. There will be a White Paper that will come from Brussels and there will be a Heads of State meeting in March where this will be discussed, so we will take stock of those events, but we have said in our advice on the 4th carbon budget we will have to come back anyway and look at this in a deeper sense in 2015, when we advise on the 5th carbon budget under the Climate Change Act. This will be one of the central issues, not the only one but an important one.

Q50 Dan Byles: Out of interest, do you see yourself as having a role in, in effect, advising the Government on the implications for the UK's carbon budgets of their policy of supporting a tighter 2030 target? If you see what I mean, because it is easy for a Minister to say, "We should support a stronger 2030 target", but they need to understand what the implications will be for national policy.

Lord Deben: Absolutely.

Dan Byles: Do you consider that to be part of your role, that sort of speculative advice, as it were?

Lord Deben: We would certainly consider that to be part of our role. It would not be part of our role to advise the Government as to what its proposition should be. It would be part of our role to say, "If you propose this, this is the effect on the United Kingdom" and that is—

Q51 Dan Byles: Have you done that? Would you agree that you have done that?

Dr Kennedy: That is in the report. For example, the budget is 1,950 megatons of CO_2 equivalent for 2020 through to 2027. If the Government were to be successful in getting its negotiating position, you would tighten that to something like 1,800 from 1,950.

Q52 Dan Byles: But in terms of what that then means in further detail, that would not—

Dr Kennedy: How could you achieve that? We—

Dan Byles: Yes. You probably would not do that unless it was happening?

Dr Kennedy: No.

Lord Deben: No. I think that is right, yes. Unless the Government said, "Look, we would like to know that" then of course one has that role covered.

Q53 Dan Byles: But they have not asked you that?

Lord Deben: They have not asked us specifically.

Dr Kennedy: If we were ever to suggest a tightening of budget in response to an outcome in the EU, we would have to say, "This is how you should meet that more ambitious budget, either through doing more in this area, that area or buying credits in the global carbon market".

Lord Deben: Then that would be entirely advisory. To come back to Dr Whitehead's point, that would be entirely advisory. You would say, "These are the areas that seem to us to be the most likely areas of being able to get that at the time".

Q54 Dan Byles: If you can allow me just to speculate a little, imagine that the UK is successful in a shorter timeframe than your sort of pessimistic three years. What would be the mechanism and the timeframe for you responding to that in terms of reviewing, genuinely changing the carbon budget?

Lord Deben: The mechanism would be that we would have to interpolate that so that it took precedence over any other work that we were doing, because it would be necessary for the Government to know that. We would do it as rapidly as we could, and given the parameters and the knowledge that we have, that would not take a very long time, because you would be merely applying different figures to information that you already had, so I do not see that as—

Q55 Dan Byles: You would be changing the parameters of the model rather than building new models, yes.

Lord Deben: Yes, you would.

Dr Kennedy: The Government could come and say, "This has been agreed. Should we now change the budget?" That is one thing. If we advise on the 5th carbon budget and Europe has agreed a very ambitious target and we suggest a 5th carbon budget compatible with that target, it would be odd if we did not also say, "Should we now adjust the 4th carbon budget to be giving us a coherent pathway through to 2030?" There are two mechanisms for that kind of change.

Q56 Dan Byles: I know you said it could be done relatively quickly. Can I press you to be more precise on what that might mean or would you hesitate to be more precise at this time?

Lord Deben: I am only hesitating because it depends on what circumstances it were done and where we were on it. Just simply imagine that—

Q57 Dan Byles: Are we talking months? Are we talking a year?

Lord Deben: Months, but not many months. I do not think that would be—

Q58 Sir Robert Smith: You mentioned that Germany was performing well. I thought there was a view in the street that Germany had sort of slipped.

Lord Deben: Again, you can both be performing well and you can be said by some to have slipped from doing the things that they thought that they were going to do. I think that one does have to say overall that they are performing well. They have a particular problem, which is that they have so far achieved their use of renewables, but it has outpaced other decisions in the system, so they have this odd situation in which they have renewables that are currently producing—I am speaking from memory—about 30% of their energy and at a peak point 60% of it, but of course the renewables tend to be able to provide the energy at the peak point, which is the lunchtime as far as they are concerned. That causes real difficulties in terms of the cost of the baseload, which are increased by the fact that there was some what would now be thought perhaps wrong decisions made by the major generators to renew their coal-fired power stations, where there is a mismatch between that and their gas ones now. So there are a lot of problems there. What the Government is having to look at is exactly how it sorts that out. It is another of the transition period things. The transition period starts by how do you get enough renewables on the grid, how do you make this work? Then the next bit comes, when you have made it work and you want to move to the next stage, which you moved from 30% perhaps to 50%, how do you then deal with the baseload and how do you operate that? That is what they are doing at the moment. This is a slightly two steps forward and one step back situation, and of course it is made complicated, as sometimes these things are, by the coalition politics of Angela Merkel, not that I think it would have been very different if she had other coalition politics.

Q59 Ian Lavery: Very early on in the discussions today, Dr Kennedy, you mentioned the cost-effectiveness of the pathway very briefly. How did your review of the cost effectiveness of the pathway influence the recommendation on the level of the 4th carbon target?

Dr Kennedy: It was central to our assessment. I have said that the 4th carbon budget is designed to pick up the relevant part of the cost-effective pathway to the 2050 target, so we have said, "Has anything changed with the cost-effective pathway?" and we have said, "If anything, the cost-effective pathway now entails lower emissions than it did, which might point you towards tightening the budget", but we have said it is premature to do that, given the various uncertainties, particularly over the European context, so we should hold off on that at least for the time being.

Q60 Ian Lavery: It was central?

Dr Kennedy: Absolutely, and the key message coming out of this is you can either be on the cost-effective pathway to building a low-carbon energy system and economy or you can delay that. We said, "What if you did delay that for 10 years, if you did not do anything beyond 2020 and then you tried to pick up the pace in the 2030s, in the 2040s?" That led us to conclude that under central estimates, with no assumption that the gas price increases, for example, you would save £100 billion by being on that early action pathway. If you delay, it will cost you £100 billion, and more if the gas price were to increase, so there is a significant benefit in being on the cost-effective pathway.

Q61 Ian Lavery: When updating the assessment towards 2050, what new evidence did you look at?

Dr Kennedy: We look at all of the elements that go in there, so when you are looking at the cost-effective pathway, you say, "What are the technology cost estimates of electric vehicles, heatpumps, solid walls, offshore wind generation?" For example, the whole set of low-carbon technologies. You say, "What are the costs of the counterfactuals?" so using conventional technologies, fossil fuel technologies, and they depend in part on fossil fuel price projections and they depend on carbon price projections, so we looked at the latest assessment of all of those things. Technology costs, fossil fuel prices, carbon price projections and the energy demand projections are also an important part of that.

Q62 Ian Lavery: Does decarbonisation of the power sector play a major role in ensuring that the pathway is cost effective?

Dr Kennedy: Certainly, so the decarbonisation of the power sector is central to economy-wide decarbonisation. It is a sensible thing to aim to do earlier rather than later, and again, we did a report last May that looked at the benefits of investment in a portfolio of low carbon power generation technologies, so renewables, carbon capture and stores and nuclear, and again it says, "If you invest in that portfolio beyond 2020, then there are significant benefits compared to giving up in 2020, having spent a load of money over the next five years or so, having a dash for gas and then trying to pick up the pace again in the 2030s". That is not an economically sensible way to proceed, so the cost-effective pathway at the economy level embodies early power sector decarbonisation, yes.

Lord Deben: I am sure, Mr Lavery, perhaps one could go back to the original methodology, which is that the Climate Change Act enshrined the fact that we committed ourselves to an 80% reduction in emissions by 2050. Our responsibility is to say, "If you are going to do that, what is the most cost-effective way of getting there?" At all stages, it is central to doing the 1st, 2nd, 3rd, 4th, 5th carbon budget. Obviously that is what we have to do, and if you review it, then you of course review it in exactly that way. You look at it to see whether it still remains the most cost-effective way, and was there a better one, and in order to do that, we took the very serious and perfectly reasonable thing to say, and most human beings like to say, "Well, what if we put it off, if we did not do it now, we did it later and left it for someone else to do? Would that be sensible?" That is why we came to the conclusion and have those figures as to what the extra cost would be for doing that.

Q63 Dan Byles: Can I very quickly ask you a question that is related, but slightly at a tangent? You have calculated a £20 cost per household of the levy control framework. Is that between 2020 and 2030, is that right?

Dr Kennedy: Yes, it is the additional amount—

Q64 Dan Byles: Yes. Can you confirm though that you have changed the benchmark for how you are calculating the cost of the levy control framework post-2020 for how you calculated it before 2020? Is that right?

Dr Kennedy: Yes. What we have said is the levy control framework should measure subsidy for technology development. It is a subsidy that is there for a good reason, but what you want to measure is subsidy. The way that the power system works and the wholesale market works is the more low-carbon technologies you have on the system, then the wholesale price is not a relevant benchmark for comparing how much subsidy do we need to give over and above that wholesale price. As you invest in low-carbon technologies, because of the nature of those technologies, they have low short-run marginal cost, you depress wholesale prices in the market, and that would tell you that you are giving massive subsidies for low-carbon technologies, which is not the case. Instead, we have said, "What you should do is compare the cost of the low-carbon technologies with the cost of the alternative that you would invest in" which is gas-fired generation, and if you do that, then the low-carbon technology additional costs become very small. It is the only sensible way to think about a levy control framework in the 2020s.

Q65 Dan Byles: So in the benchmarking for the 2020s you used the cost of a new CCGT?

Dr Kennedy: Yes, which are the two things you compare. They are the two alternatives.

Q66 Dan Byles: Do you strip out the cost of the carbon floor price or do you include the cost of the carbon floor price in the CCGT cost, if you see what I mean, the carbon price?

Dr Kennedy: We include the costs of the carbon floor price there, so the carbon price will go up, which will push up the costs of CCGT over time, then there is £20 over and above that, which is the low-carbon technology cost.

Q67 Dan Byles: By doing that, you are assuming the carbon floor price in effect is not one of the measurements that we are trying to measure the additional cost of on consumers?

> ***Dr Kennedy:*** No, we factor that in as a baseline cost of gas generation. Whether it is the carbon floor price or whether you assume it is the EU ETS price that has risen to a similar level by that time, but it is the cost over and above that.

Q68 Dan Byles: Out of interest, do you do any work on the cost in which you do not include those as given costs, because it does seem that if the goal here is to establish the additional cost of climate change policy, EU ETS and carbon floor price are both part of climate change policy. Do you see what I mean?

> ***Dr Kennedy***: Yes. We thought about do you make a distinction there in the sense that when you are reviewing the 4th carbon budget*,* you are not reviewing, for example, the UK's commitment to the EU Emissions Trading Scheme and the carbon price that that will differentiate, so we wanted to isolate the incremental impact, but if you look in the report, there is a figure—I cannot recall it off the top of my head—that is the incremental impact on consumers of the rising carbon price through the 2020s, so that is there. But as I say, the incremental, what is the delta associated with the 4th carbon budget*,* assuming that we are still part of the EU ETS, that is the £20, and that is relative to the alternative investment in gas-fired generation.

Dan Byles: Thank you. I just wanted to be clear how—

> ***Lord Deben***: Thank you for asking the questions, but what we try to do is to make the distinctions that are necessary in what is a very complex matter. One of the things that I think bedevils the argument is that people tend to take a selection of these things and say, "That is what it is" and then someone else will take a different selection, so what we have tried to do is to give you the opportunity of being able to see that. The £20 is a useful figure, because it makes a useful statement about what happens if you do X rather than do Y, but it is not a complete answer, which is why we have put the rest of it in there.

Q69 Dan Byles: I just wanted to clear that up, because it is not always clear, as you said, what each figure is referring to, is it? The things you get quoted as—

> ***Lord Deben***: Yes. I have to look it up again.

> ***Dr Kennedy:*** You are right, and it is important, there is a figure quoted for the decarbonisation target in 2030 of £125. That is compared to a wholesale price that is close to nothing, which is a kind of nonsense calculation, and again, if you use the relevant and sensible calculation, compared to a CCGT, then you get the £20 figure.

Dan Byles: Thank you very much.

Q70 Chair: We have covered a useful amount of ground. Thank you very much for coming in and I am sure we shall continue to discuss these issues with you in the course of this year.

> ***Lord Deben***: Thank you very much.