

TUESDAY 2 JUNE 2009

Present

Colwyn, L
Crickhowell, L
Finlay of Llandaff, B
Haskel, L
Jenkin of Roding, L
Krebs, L
Methuen, L
Neuberger, B
Selborne, E
Sutherland of Houndwood, L (Chairman)
Warner, L

Witness: **Professor John Beddington**, Government Chief Scientific Adviser, examined.

Q1 Chairman: Welcome, and thank you very much for scheduling this. You have, doubtless, as busy a diary as the rest of those around the table. It is much appreciated. I think we have given you some indication of some of the areas we would like to talk about. We see this, not as a sort of “when did you last see your father?” type of interrogation, but rather an opportunity for a discussion between you – and the very important position you hold – and the Committee, as we think through our own future interests and areas of inquiry and discussion. Do you want to say anything at the outset?

Professor Beddington: No, I am very happy to move to question and answer. I think you have seen enough of me around in various parts for me not to make any formal statement to start.

Q2 Chairman: Never enough, never enough! Can I just start the ball rolling by asking, you have been in post now for a time, you are still almost new but not quite: what are the issues which are beginning to emerge in your own interaction with government and with the

departments and which will be the focus of what you want to do? What are the key issues you see?

Professor Beddington: If I could go through from, as it were, walking through the door and perceptions then, and then indicate how things have moved on, I think that on walking in the door two things immediately struck me. The first was that the penetration of scientific advice in departments was extremely patchy; and that given you have a job which is, shall we say, immodest to say the least, in the sense that you are responsible for science across government, then it seemed to me essential that I should try to get penetration into the departments of key scientific advisers, not necessarily as it were physical scientists and engineers but also social scientists and, where appropriate, other areas. That was the first thing that struck me when I came in the door. To an extent, David King had got some way forward in achieving this but only some way, and there were still a number of key departments that did not have scientific advisers. That was the first thing that struck me, and I will describe a little bit about how progress has been made on that. The second area, which I took rather seriously, was that I am head of profession for science and engineering in government, and walking in the door I was saying: “Okay, who are these and how can I find out more about them; what departments they are in and the distribution between engineers and scientists and so on?” It was very clear that there was no information base on this at all, so these were two things that I thought I had really got to grip. If I may, Chairman, I will take you through the Chief Scientists first and then go on to the other heads of profession!

Q3 Chairman: Yes, do.

Professor Beddington: What has now been achieved by virtue of reasonable discussion with permanent secretaries is that, with the exception of the Treasury, each main department of state and some agencies have appointed, or are about to appoint a chief scientific adviser, which I believe to be a good thing and absolutely essential. Indeed, we are in discussion with

the Treasury about whether it would be appropriate for them to have a chief scientific adviser also. Obviously, the roles of chief scientific advisers in different departments are significantly different, and the Treasury one would be very different. We interviewed about ten days ago for the chief scientific adviser for the Foreign and Commonwealth Office. There are no labs there, and so it is a rather different role; nevertheless, having that scientific advice at the highest level is really important. The other thing I did with the chief scientific advisers was that I energised the way in which they worked together by forming a core group of senior advisers in the main departments. We meet every six weeks. It is a meeting, with minutes taken, over a working dinner, and then a proper afternoon's or morning's meeting in which we deal with things in rather more detail. We have formed two sub-committees of that group of chief scientific advisers, one to deal with food security and climate change, and one to deal with counter-terrorism issues, which also involves representatives from the intelligence agencies. Those are the two we have formed. We had the plan, until the current swine flu epidemic took us over, to start one on infectious diseases, with some prescience, I suppose, but it arrived a little bit late. We have got that operating. I will stop there. I am obviously happy to answer some of the questions in detail. The second area is how we took forward the issue of the involvement of science and engineers in government. We started by circulating by department, saying: "Do you think of yourself as a scientist and engineer?" To an extent, I was concerned about this because I had heard dark tales that if you admitted to being a scientist or an engineer it is guaranteed that you had no chance of promotion, et cetera. I did not find that, and I still have not found that; I think it is a legacy of some previous time. We went round to the community and asked them to volunteer – you know, to admit that they were scientists and engineers -----

Q4 Chairman: A sort of coming-out, was it?

Professor Beddington: It was a coming-out party, yes. We judiciously had the first conference on a site known as The Brewery in the City, which we thought might *encourage*. That has worked pretty well: 1,600 people signed up for it. These are very hand-waving figures; I would say they are no more than hand-waving, but there is a little in excess of 10,000 engineers and 8,000 scientists in government as a whole, so we are at around 10 per cent of that. We held the first session in January of this year, and I got Sir Gus O'Donnell and Lord Drayson to speak to it. That was reasonably successful. We plan two more sessions for this community, and we will have an annual conference in January. We are also trying to extend this and we are shooting to double the number of people to elect to be part of government's science and engineering. There was some suggestion that we should call it a Government community of science and engineering, but I vetoed that on the basis of the acronym! Those are the two things that I felt were really important. There are obviously other subject in areas in government, but those are the bureaucratic things I have done. I should add too that I found it was really important that we should link together with the research councils in a regular way. Adrian Smith is the Director General of the Research Council and also the Chief Scientist in DIUS. He is part of the group of chief scientific advisers. We also meet every 12 weeks with the chief executives of the research councils, so in a sense everyone who is funding and is involved with science and government are meeting, at the very least, every 12 weeks. That was trying to get networks and communities to work together, and that was the thing that had struck me most. There were some subject areas, which we will get on to later, that I thought were important to draw to the attention of Government, but those were the first things that I have done, as it were.

Chairman: That is very helpful. Lord Haskel, do you want to pick up any of these points?

Q5 Lord Haskel: It says here the Government has been commended for introducing chief scientific advisers. It was actually the Conservative Government that introduced the role of

chief scientific adviser, carrying out a part of the Labour Party's manifesto policy in about 1993, if I remember rightly. Is this an example of science transcending politics?

Professor Beddington: I would hope it always does!

Q6 Lord Haskel: I hope so. The point that I would be interested to know is this: are the chief scientific advisers given the resources, and are they given the ability to carry out their work, or are they just a sort of figure?

Professor Beddington: It is a good question, Lord Haskel. The answer is that it is slightly a curate's egg. Some chief scientific advisers have very good support infrastructure; they sit on the departmental board and have representation; and others have less resources and have less status. I think I have now got it that it is ubiquitous that each of the chief scientific advisers has the right of access to the appropriate secretary of state and permanent secretary, so not necessarily all of them are on the departmental board. In terms of resources, you move from something like the Ministry of Defence with a budget of £2 billion or so and a very substantial infrastructure in support of the chief scientific adviser, to something like, I suppose, the CLG where there is a very limited scope for assistance to the chief scientific adviser; and that has presented problems. What I would say is that the access is essential. If you have a chief scientific adviser – and I would emphasise that it is not just scientists but engineers as well – if you have access to these people, they have to have access to a high level. If they felt that essentially they were reporting just to a line manager civil servant who might not have either an appreciation or a view or an appropriate assessment of science or engineering skills, then that would not be attractive. That is the first thing. Resources vary a lot between departments – the ones that need substantial resources, with one exception, have got them. The exception is the Department for International Development, and there is work in progress which I believe will be announced next month to significantly change that. Historically, Gordon Conway, who was the Chief Scientific Adviser, had very little support

given that he had £200 million a year science budget. I think that is changing now. I had discussions with the Department only yesterday about how that is changing. It has not been announced, so I prefer not to share that with you at the moment. I think that the other aspect of the scientific advice into departments that is really important is essentially the science advisory committees. There, I have not been quite as successful as I had hoped to be, and it is work in progress. For all departments that have significant science and engineering activity, I think there is real advantage in having an overriding science advisory council that is appointed independently, with an independent chairman, who can challenge the department and set their own agenda, but also respond to requests for the department. It is a limited number of departments that have got that and we are about to see that extended. The Ministry of Defence has had one for a long time, Defra has had one for a long time, the Home Office has had one, and the Food Standards Agency. Culture Media and Sport are in the process of appointing a science advisory council, which is really quite important. Quite shortly the Department for International Development will do as well. In a sense, taking a department like the Foreign and Commonwealth Office, there really is not an awful lot of point in having an independent panel to do it because the chief scientific adviser would link in with a group of chief scientific advisers and play a challenge role there. In departments that have significant activity, like Defra, you really need that independent science advisory council. There are lots of individual science and advisory committees, but the overarching council is one that I would really like to see in the main departments with substantial scientific activity.

Q7 Lord Haskel: The Foreign and Commonwealth Office has science attachés all over the world. Is there a way in which their work is inputted into Whitehall?

Professor Beddington: They are enormously valuable, but actually the Foreign and Commonwealth Office is in the process of jettisoning them.

Q8 Lord Haskel: Really!

Professor Beddington: Last year the Science and Innovation Network, as it is called – part of the budget was taken up by DIUS, and the London-based team was moved to DIUS and is operating out of there. The process is lasting two years, and with a run-down of the FCO budget. In the absence of these attachés now, who work within the embassies and high commissions throughout the world - but they are reporting into the Science and Innovation Network in DIUS rather than directly into the FCO - with the appointment of the new FCO chief scientific adviser, the reality is that that will probably change quite significantly, because, as you say, they are an enormous asset. I was in America last week and they organised impeccably the sort of people I needed to meet, and the agenda, and they got you into the right places. They have a very, very good level of intelligence.

Q9 Lord Haskel: But science is an international -----

Professor Beddington: Absolutely.

Q10 Earl of Selborne: I wanted to raise the question about the case for having lead departments. Just to give an example, you may remember we did a follow-up report recently on systematics and taxonomy; and in fact that was the third report we had done over some years. It seemed to be one of these orphan disciplines, quite critical in areas such as delivering biodiversity and conservation commitments under the treaty. The whole time we came across the fact that there is no one single government department that has responsibility for this; it is diffuse responsibility, for which you could read “no responsibility”. We found that DCMS, which is certainly involved, Defra and the Scottish Office – all these have no coordinated approach, and no one department has been designated in this specific area at least. We suggested that DIUS should be designated the lead department, and that

recommendation has not been accepted. Is there not a case in areas like this for trying to designate a lead department?

Professor Beddington: Yes, I was aware of the discussions and, as I understand, there is a plan: NERC is doing a study to report on this. First of all, to take the issue, it is an enormously important discipline and it underpins so much of the concerns we have about biodiversity and conservation, and indeed the way in which climate change will operate and the way in which we can exploit ecosystems in a sustainable way. The first point is that I absolutely accept it is of fundamental importance. The second point is that it does present a slight organisational difficulty. As you say, the Natural History Museum is a very substantial base, which is part of Culture Media and Sport, and I do not see quite how easy it would be for DIUS to either take over the Natural History Museum – because it would be outside it – or take over just the scientific part of it. While I sympathise with the idea that there needs to be better coordination of work in there, I think I remain unconvinced, Lord Selborne, that a lead department is the answer because it is, after all, a subject area. I am not convinced that lead departments for every subject area, or indeed some key subject areas, would be essential. I can think of many examples. Let us take the nuclear world: it is enormously important both within the Ministry of Defence and Energy – but do we have a lead department in that? In the weapons field we do, with the MoD; and on the nuclear side for civil energy we have DECC at the moment. I have enormous sympathy with the position that taxonomy needs to be brought up and made certain to work properly, but I am not certain that the solution that this Committee proposed is the one that will work. I am going to wait to see what the NERC committee reports and take it from there. I do wonder whether this is one of the things where the community of research council chief executives and the chief scientific advisers might usefully play a role. One of the things I will see coming out of that report is whether they

make any suggestions. The other problem – forgive me, I am going on a little bit – is that departments come and go.

Q11 Chairman: DIUS today and who knows tomorrow!

Professor Beddington: To be orphaned twice is probably a bit unfortunate! This is not any sort of prediction that DIUS will cease to exist as a department, but I do think that tying a particular subject area into a department base, when reorganisations can occur, can be quite problematic; whereas if you had cross-government links, and properly managed the subject area, that might be slightly more robust.

Q12 Earl of Selborne: I might just point out this issue is not just about taxonomy and systematics - there are other orphan disciplines - but we were slightly surprised to find from the Government response that it had clearly not consulted the Scottish Government. It did seem to be that if ever there was a case of having a lead, someone at least would have gone round the houses to make sure that all input was put in. In the second response, that was taken care of.

Professor Beddington: It is the Scottish Government. I should have mentioned that their Chief Scientific Adviser, Anne Glover, is part of the group of chief scientist advisers who meet regularly, and she sits on the Climate Change and Food Sub-Committee; so I think if we did take some degree of responsibility for coordination in that area you would be bringing in the Scottish Government at the scientific advisory level. The Welsh Government has not yet appointed a chief scientific adviser, though they have an acting one; and when one is appointed they will be invited to attend our meetings.

Q13 Chairman: The issue for us is not necessarily that we would see the need for a department to organise everything under a particular roof, but rather that there are cracks, and

things fall between the cracks because no individual agency of Government has the responsibility of saying, “Well, this is our patch; that is their patch; what has not been covered?” I think that is the real issue.

Professor Beddington: I really share that concern because I see it in projects. One of the things I have encountered and which I have raised is what we now call “orphan issues”, not subject areas. We are finding quite often areas where nobody is prepared to own particular projects, and therefore find the money, and there are cross-government interests. Very early on in my stay I visited Brazil, where proposals were made to us to launch a satellite to monitor the rainforest. They were going to pay for the launch and the satellite, and wanted a camera from us. It was quite difficult to find a department that felt that this was important enough to do. That was ultimately found, but it had to be taken at a fairly high level, and it was £1 million! It seems to me that monitoring a rainforest is so fundamental to our issues on climate change; and there are other examples of what I would call orphan issues. The Cabinet sub-committee that Lord Drayson chairs, which I attend, is looking specifically at these orphan issues and raising the question. I am scheduled to put together a paper with Treasury about how we might have some form of floating fund that would be able to be used to support orphan issues like that. That is very much work in progress, but it is important, and the subject area – one has similar concerns. There are cracks in the system, and we have got to make certain that important things do not fall through them.

Q14 Lord Methuen: You mentioned some numbers for scientists; I think you said there were about 18,000 scientists and engineers employed by the Government.

Professor Beddington: Yes.

Q15 Lord Methuen: Is that tending to go up? Do you have difficulty recruiting them?

Professor Beddington: I could not tell you about the trend, Lord Methuen, because I think the figures are so shaky and so inaccurate that it would be impossible to say whether the trend was up or down. In terms of recruitment, there are departments that recruit directly through the Ministry of Defence, and then there is recruitment into a fast stream, of which scientists and engineers are a reasonable part. I think there is an issue here that we need to be thinking about: in the Civil Service that we have at present, and the problems they are facing, all science and engineering skills are really important. The DIUS Committee did an inquiry on science and engineering, and we are planning a response in a positive way to say that we see a real need to enhance the recruitment of engineers but also scientists.

Q16 Lord Methuen: You must have a problem perhaps of making it attractive in some departments.

Professor Beddington: I think in some departments you can feel rather lonely, I should imagine, if you are a scientist and engineer, but I want to say that in general I think there will be big differences. The other issue is that most of the scientists and engineers in Government are not working in labs or in front of computers; they have a background in science and engineering but they work in the policy or administrative areas of their departments. They are equally important because they bring some skill base that is different from, as it were, those that would have done social or humanities degrees.

Q17 Lord Methuen: You need integrated teams.

Professor Beddington: I think so, yes.

Q18 Lord Warner: I have some questions about money. The science budget has clearly grown, and the Government has taken a lot of credit for the rise in the science budget, but departmental R&D looks to being pretty flat, and certainly in the last five or six years it has

been slightly dipping down. Do you have a picture of R&D budgets across the departments? Do you have areas of concern, and are you worried about what the impact is likely to be on some of these budgets in an economic downturn and a tough public finances climate?

Professor Beddington: Yes. The first issue is that the sub committee that Lord Drayson chairs has charged me with doing a survey of scientific spending in R&D budgets in departments. We set about doing that. There is a problem that some do not have budgets to spend, so you are slightly comparing apples and oranges. The Home Office, for example, has no R&D budget, but spends substantial amounts of money on R&D, so looking at their budget alone is difficult and you therefore can only look at their spend *post hoc*. That is a difficulty. That is one issue. The second is that we have agreed that I will report quarterly to this Cabinet committee on the budget of all the individual departments. The agreement is that if there is going to be a significant cut-back in the R&D budget or spend of a department, this needs to be discussed with the Treasury and myself. That essentially has been agreed. Am I worried? Yes, I am. The biggest worry I have had recently concerns the Ministry of Defence, where there has been a decision to take a very substantial cut. I wrote to John Hutton about this and expressed real reservations – and I can share this with you because it was shared not by myself but the *Financial Times*. I was particularly concerned about two aspects. One was that potential cut-backs would mean significant redundancies at DSTL, which is an enormous asset not just in terms of straight MoD business but also in terms of counter-terrorism and the way we work closely with the Americans. I felt that the capacity, once lost in DSTL, would be almost impossible to regain over a short period of time. The second area that I wrote about was that I was very concerned about the funding they provided for the Hadley Centre. In the first case there has been change. I attended the research board of the MoD where we discussed this, and albeit they are cuts, they are cuts that do not involve substantial redundancies at DSTL. In terms of the Hadley Centre funding, that has just stopped. It is not

a very large amount in the MoD spend, but they did not feel that this was an appropriate use of their funding in difficult financial circumstances. We are exploring with other departments how that shortfall in funding can be made up because the Hadley Centre is a pearl in our crown, as it were. In the current very difficult financial situation, it seems to be essential that we try to monitor it, and that there is at the very least significant discussion about any decisions to cut back. It would be a thing that I would try very hard to oppose – anything where there would be some arbitrary cut, and R&D is the obvious one because you need to cut spending. I think this needs to be up for debate. Ultimately of course it is a ministerial decision on the advisory role, but I would push the point fairly hard. One area where there was some degree of relief was the decision by the Government to ring-fence the science budget for research councils. That was very satisfactory. The other area that is good is that the R&D expenditure, following the Cooksey report in the Department of Health, is ring-fenced. Those are the only two. I must confess that I would like to see that movement to ring-fence other R&D budgets and departments, but there has been relatively little progress and now is a very difficult time to be trying to achieve that.

Q19 Lord Crickhowell: Taking you back to a reference you made earlier to the appointment of a chief scientific adviser to the Treasury, and with the evidence on the same point that you gave to a Commons committee on 18 May, you said just now that faced with a cutback you would want to discuss it with, among others, the Treasury. I can imagine, particularly at a time like the present, that those conversations with the Treasury were not necessarily very helpful. My experience from the past is that they might be rather difficult. What is the role going to be of the chief scientific adviser for the Treasury? Is he there hopefully to bring in to the Treasury the view of the significance of decisions that are likely to be taken from a scientific point of view, when otherwise they might be looking at them only from a financial point of view? Could you elaborate a little on what the role of the Treasury is going to be?

Professor Beddington: The first thing I should say is I think that is the sort of role I would like to see, but I should emphasise that these are discussions with the Treasury, and that has not been necessarily accepted. Clearly, as you have outlined, Lord Crickhowell, there is the opportunity for having an informed voice in the Treasury with an appreciation of the contribution that science, engineering and technology can make to our economic base. I would not like to suggest that Treasury officials ignore this, but some idea of distinction between particular areas of science in which you have the ability for a rather more detailed appraisal would be attractive, and it seems to me to have genuine attractions. Perhaps in a few months' time, when these discussions have moved on, I would be very happy to come back and explain to this Committee how that has developed. It is very much work in progress at the moment.

Q20 Lord Krebs: Can I take you back to an earlier comment where you said one of your perceptions when you arrived in the job was that the penetration of science across departments was patchy.

Professor Beddington: Yes.

Q21 Lord Krebs: We hear a lot about evidence-based policy, and I wondered to what extent you found that there was an effective mechanism for folding scientific evidence in the broadest sense into policy formulation, perhaps particularly thinking about the social sciences. My own perception is that in some government departments the natural sciences are well integrated into policy decisions; but there are also questions, particularly in relation to the social sciences. If I could illustrate with one example, I heard a presentation recently from a Professor Belsky at Birkbeck College, who informed us that the Government's Sure Start programme, where a significant amount of public money has gone into helping children from the most deprived communities, was launched against the advice of scientific experts, without

any evidence base to support the particular interventions that were carried through. In the evaluation afterwards, in the first phase, it was revealed that the Sure Start programme had had, if anything, a negative effect on most children in the most deprived families and communities. I wonder what your perception is, particularly in social sciences, of the strength of evidence-based policy!

Professor Beddington: Well, this is not a cop-out, but we actually do have a head of profession in social sciences in Professor Wiles, who is the Chief Scientific Adviser to the Home Office. I agree. I would say it is fair to say that a number of departments do not have sufficient numbers of social scientists, and social science advice is therefore less mature. In the particular case you mention I cannot comment because I do not know about it. We have done some reviews of the efficacy of advice and penetration of science into departments. The two I recall particularly well are the review of Defra and the review of the Department of Health. Both reviews recommended strongly that you need strength in the social science evidence in those departments. In the case of Defra, which was done some while ago, they have come back to us and indicated that they accepted that recommendation, and they are strengthening social science. I responded to the Permanent Secretary, indicating “well done, but there is quite a lot still to go” – because so much of the Defra agenda is clearly in social science. A number of the chief scientific advisers in departments are in fact social scientists, but it is fair to say that I would not be complacent about that. We have to think hard about the way social science evidence is dealt with. I had a similar question about that when I appeared before the DIUS committee on 18 May, again concerning some social research, this time to do with child reading, where there are real concerns. I will undertake to have a look at some of these examples and consult with Professor Wiles and see if I can come back with a view on it.

Q22 Lord Crickhowell: I come to two related questions. One is the independence of the scientific advice. I noted Lord Drayson's recent comments: "It is vital to stick to the Haldane Principle. Peer-reviewed judgments of the science community and the independence of research councils are all key to our continued success." Fine, but in your evidence on 18 May, to which I have already referred, you told the committee in another place that there are a lot of science advisory committees in government, of the order of 100 or so on particular subjects, and that only a few departments have science advisory councils that span across the individual departments – the Ministry of Defence, the Home Office, Defra and the Food Standards Agency. The obvious question is: do we really need, and is it sensible to have, so many? If you have too many people are we not all going to have nothing but jaw, jaw, and very little action? Would it not be better to consolidate a little and have rather fewer people doing the job?

Professor Beddington: Yes. I would give a slight counter example from discussions I am having with the Department for International Development where there are issues. Let us take their agenda, where they have issues of poverty, clearly, but also health and agriculture. Those are the three areas where an overall advisory committee would not necessarily be appropriate because of the disparity of the scientific areas discussed. Going to Defra, where for a while I chaired the overall science council, that was useful in the sense that we were able to span Defra's agenda, but we were supported by a whole series of smallish committees which dealt with details sometimes at a fairly esoteric level, for example in virology on the virology of the Blue Tongue Disease. You need a great deal of detailed expertise to advise the civil servants and policy people. I think it is a reasonable question. Having given that evidence to this Committee, I should say that if it turns out that it is not hundreds - it is less than 100 – it is about 75 according to my officials who monitor these for me - it is always worth asking whether a particular committee has a role that can be useful, and I expect

departments to do that. The other question we need to ask is how long they should be sitting. Are they particular issue committees? I have some concern that committees are set up and then they have a life of their own and a bureaucracy of their own, and they keep going. I think a reasonable question to pose is: “Has this committee served its useful purpose?” I think I would be supportive of – what is the expression – “sun-downing” a number of these committees. In terms of the overall science ones, I would accept, and indeed said a little earlier this afternoon, that there is a need for an all-embracing committee that goes right across a department’s subject area, and that is really important because it should provide a challenge function to the permanent secretary and the chief scientific adviser, and they should be able to ask questions about everything else. It is also important that a number of these committees do not set their own agenda; that they are asked questions by the department, sometimes technical and sometimes policy related, and they are asked to respond to those particular questions. I think that that has a very useful function, but I think there is also a need for independent committees in departments that set their own agenda and pose their own questions.

Q23 Lord Crickhowell: I am rather encouraged by parts of the answer you have given there, but I would like to see how you achieve the sun-downing. We might follow that up in due course. Take an area that one of the sub-committees of this Committee is looking at at the moment, nanotechnology. We are finding that although there is some very thorough work going on in certain areas, particularly critical areas, there is practically nothing known and very little research being done, for example, in the gut. It is crucially important. Maybe something is coming out of Europe where there is a lead coming on some of the research. How do we ensure that when key issues are emerging you get this plethora of committees homing in and giving a lead to see that the crucial questions are being examined?

Professor Beddington: I think that is a good example of subjects we need to think about, because nanotechnology obviously spans a number of departments' responsibilities. It is arguably an issue for the Department of Health, for Defra, the Food Standards Agency and the Health Protection Agency and others. It is quite difficult to think about a mechanism whereby you go through a particular subject and say, "This committee has that responsibility." This is the sort of area where having committees of chief scientific advisers is quite helpful. As I know you will be aware, we had the Royal Commission on Environmental Pollution report on technology that came out, and Sir John Lawton came and presented the report of that to the Committee of Chief Scientific Advisers. We have a group of officials looking at how that might be best taken forward in response to that committee. I confess that that was the last two meetings, so about three or four months, and I cannot tell you how the officials have taken that forward; but at least it is a mechanism for thinking about that across government. It may be going rather slowly, but I will check on that.

Q24 Chairman: We are encouraged to note you have cut the number from 100 to 75 in a very, very short period!

Professor Beddington: No pressure on further sun-downing!

Q25 Baroness Neuberger: You have answered part of this but your remit includes reviewing the use of science in departmental policy-making. You said a bit about how Defra has accepted the need to strengthen its social science advice. How effective have such reviews been in the past? What can we do to strengthen that process now?

Professor Beddington: I will answer the process question first and then the results later, if I may. In terms of process, I think that the reviews were far too long and far too detailed. I sat on the review that Sir David King had of Defra, and it lasted well over a year, by which time things had kind of changed! I made a fairly early commitment to change this. In fact, one of

the things I have been very pleased with is that I started a review of the reviews and seeing what was wrong with them, because everybody was saying that this is ridiculous and far too long; and we commissioned a consultant who then produced a report that came to the Heads of Analysis Group, which has the Chief Economist, the Chief Statistician, the Chief Scientist – myself – the Chief Social Scientist; and we looked at this consultant’s report and made recommendations about how scientific reviews should occur in future. In summary, first the suggestion was that they have got to be shortened and would need to have much higher level input from external advisers and consultants to look at how they were going, and to make certain that these were essentially mandatory. The “mandatory” was significantly resisted, as you might imagine; but I am glad to say that the Civil Service Board decided about three weeks ago to agree to my proposal that all departments that had not had a review should have a mandatory review. So I now have in place a programme which will review all departments which have not had a review; that is 11 departments we are going to be reviewing, including big ones like the Ministry of Defence. We will finish that programme by March 2011, so we will have done them all. The idea then is that there will be follow-ups and assessments going on. In addition to the departments, we have done reviews of some of the agencies, the Food Standards Agency and the security services. The latter is obviously one that is not public – but all reviews that we are making will be public documents and will be available on our website and published. That is the intention and has been the practice. The latest one we did of an agency was the Food Standards Agency, which was published about three or four weeks ago. That process of transparency is really important. In terms of how effective the reviews are, I would have to say that the early very long and very, very detailed reviews had probably success that was not quite commensurate with the investment and the amount of time it had taken. I felt there was some progress. For example, I alluded earlier to the recommendation to Defra that they should have significantly more social

science. I think that some practices were changed on the basis of some of the early reviews. The ones I was aware of and more familiar with were the Defra one, because I was Chair of the Advisory Council of Defra, and then the ones that I have inherited since I took the position. In the Department of Health, we had a very extensive discussion with the Department of Health as we finalised the review. I think a lot of the recommendations we came to were almost accepted at the time. That process will be ongoing, and I am hoping to see where that leads subsequently. I have high hopes for it, and I think they can be important, and we will at least have done all of the departments by 2011. The concern I have is that these reviews were taking well over a year and there are 17 departments, which would kind of outlast me; so I am sufficiently egocentric to decide that I would really like to do a review of all of them before I leave the job!

Chairman: There are two areas left that we would like to talk about. One is very specific and a matter of significant concern to us, as I think to you as well, on pandemic flu, and there are some specific questions on that. Then there is a broader issue about the tensions between priorities in science and the so-called Haldane Principle and whether these are compatible. I wonder if we could take the pandemic flu questions now and then perhaps go out on a big broad note of the Haldane Principle!

Q26 Lord Jenkin of Roding: I am a co-opted member of the Committee for the purpose of pandemic flu, and I have been listening to you for the last hour with fascination. What strikes me of course is that your style seems to be very different from that of your predecessor. I am not at all surprised, in that different people work in different ways. On the pandemic flu question – and we are still continuing our inquiry – it has aroused a good many anxieties about which the Department of Health has not always been able to satisfy us, and we are still looking for an opportunity to have a further discussion with ministers there. However, there was one issue that struck me which arose in a footnote from a paper we had from Professor

Neil Ferguson, who gave us a long, very interesting paper, on the whole question of different treatments for different stages in a pandemic flu. There was a footnote to Professor Ferguson's paper when he had said: "Another uncertainty was the identity and critically the lethality of the specific strain which might cause the next pandemic." The footnote says: "The matter which has concerned the Government Chief Scientist John Beddington was the Department of Health planning assumption of a two per cent mortality as a reasonable risk scenario, whereas H5N1" - which is not the one we are currently confronted with - "was more like a 60 per cent mortality rate." I wondered whether you would like to enlarge on that a little because it makes a huge difference to recuperation and how you involve all the people who have to look after the dead bodies. It is a major issue.

Professor Beddington: It is a significant issue. In H5N1 the mortality rate that you observe of people who actually catch it by contact with birds in South East Asia is around 60 per cent. I raised that issue with the independent committee that dealt with pandemic influenza, chaired by Sir Gordon Duff, and said: "I am sorry, can somebody explain to me what are the mechanisms where you might have a reason to be concerned that 60 per cent mortality would erode, either due to some form of biological mechanism or co-evolution or something, or that there is some indication in the analysis that perhaps we were looking at a sub sample, that we were only looking at the very worst affected individuals; and so that individuals identified with avian influenza were those which had it the worst and therefore there would be high mortality rates and so on. I am afraid to say that I am still not entirely satisfied. The current department planning is for what they call a "reasonable worst case scenario", which they use as a comparison with the previous pandemics in the twentieth century; and 2.5 per cent mortality is round about there. I am still concerned about H5N1 and whether in fact our planning is appropriate for that; but we are in the midst of the swine H1N1 epidemic at the moment, where mortality rates seem to be well below ----

Q27 Lord Jenkin of Roding: At this stage.

Professor Beddington: At this stage – indeed. It is a crowded agenda at the moment, and I suppose I am looking to appropriate planning for how we deal with the swine flu epidemic in the autumn. It is not impossible that there is some evolution of the H5N1 virus, but that has always been a possibility. I think the key at the moment is to deal with the problem we have. For example, let us take the advice on vaccines. Perhaps, if I may, Chairman, I could say how scientific advice is going into the current pandemic exploration. I chair the Science Advisory Group in Emergencies which reports directly to the ministerial committee. This Committee consists of -----

Q28 Lord Jenkin of Roding: Which ministerial committee?

Professor Beddington: It is the ministerial committee that deals with the epidemics as chaired by the Secretary of State for Health. The jargon is comparable, but it is the CCC.

Q29 Lord Jenkin of Roding: I do not think we had one when I was Secretary of State.

Professor Beddington: Basically, I chair this Science Advisory Group in Emergencies. It consists of independent people who are on the SPI group, the pandemic influenza modelling group. I co-chair it with Sir Gordon Duff, who chaired that, and I also co-opted a number of individuals on to that group to generate further expertise in particular areas. For example, when we had a very detailed discussion on vaccines, I co-opted on to the committee amongst others Roy Anderson, an epidemiologist, with five senior virologists and vaccinologists who were able to comment on it. The recommendation for that committee, of the SAGE committee to the Cabinet committee was entirely that we should go ahead with procurement of the vaccines for the H1N1 on the expectation that there is a real concern that this may come back as we get a second or third wave in the autumn. As I am sure this Committee is aware there is a degree of happenstance, in the sense that it has emerged in the northern hemisphere

during our summer, but it is operating in the summer hemisphere now at significant levels of infection. The concern we have is that in the autumn it will return. The decision was very much that we could have at any time some new attack, but we have resources to deal with one which we know may be there; but it was unanimous that we felt this was the one that was important to deal with at the moment.

Q30 Lord Jenkin of Roding: Can I follow this up? You said that it is still a matter of concern.

Professor Beddington: Yes.

Q31 Lord Jenkin of Roding: The fact that you have a matter of concern will be of some concern to this Committee. Everybody has agreed, and all the advice we have had seems to suggest that this will come in waves. We are in the first wave at the moment, and it seems to be a very mild form, but on the basis of previous pandemics it can come back in a much more serious form, with no doubt some mutations, and with a very much more serious impact on those who contract the disease. If it is anything like the H5N1, which you referred to, then one is dealing with a higher rate of mortality. Ought the department to be making provision or taking some action so that they could respond to that, if necessary very quickly?

Professor Beddington: I would respond, Lord Jenkin, that I think there is absolutely no scientific reason whatsoever to believe that the current virus would mutate to something that would have anything like the level of mortality we are observing if it is a direct transmission from an animal to a human. This is transmission human to human. I think it is extremely unlikely we would have to be concerned about very, very high levels. The mortality that was observed in Mexico is somewhere of the order of about 1.2 per cent. I think what we do not know is whether a mutation will make it more or less mild or, for example, that this current version of the virus is susceptible to antivirals. We do not know whether there may be

mutation that means it is less susceptible to antiviral treatment. We also have concerns whether any mutation will mean it is more or less susceptible to a vaccination. There has been quite a lot of work done, and even if the efficacy of the vaccination is not as good as one might hope, nevertheless the control of the epidemic would be quite substantially enhanced by having a vaccine that was partially so. The vaccine that has been ordered involves an adjuvant which enables the efficacy of the vaccine across different viral strains to be somewhat widened. So there is some degree of comfort to be had from that. I cannot see any reason why this particular strain would mutate; it would be completely unprecedented to have some increase of 60-fold mortality, and there may be biological reasons why that cannot be the case. I think the reasonable worst-case assumption that is being considered by the Department of Health and which has been under discussion at SAGE, is whether the mortality rate assumption of cases should be 1.5 or 2.5 – and that is based on the comparison with the pandemics of the previous century.

Q32 Lord Colwyn: I am not quite clear which vaccine has been ordered. Is that the one for H5?

Professor Beddington: No, the H1N1 – it is the swine flu vaccine. That is the one that is there. That is the one that is currently operating in the southern hemisphere and which we may get along with our normal seasonal flu in the autumn. It seems to be highly infectious. It hits young children and it does not seem to be hitting the elderly population – so there are real issues about how you deal with it.

Q33 Lord Colwyn: Is it thought that infection from the current virus would provide some form of immunity for the virus that may change -----

Professor Beddington: It could possibly be, but it is not a thing one could completely rely on. There may be partial immunity. I certainly would not be recommending that people go out and catch it!

Q34 Lord Crickhowell: You have spoken about the speed with which it came on young people; can you give us more information about that? We have seen that it clearly spreads very fast if it gets into a roomful of young people in a school here – but I hear that in the United States there is real concern, that it is spreading very fast. It is a more significant spread than in Mexico where they acted quite efficiently early on. Have you any information about the world-wide spread?

Professor Beddington: We can provide you with detailed statistics ---

Q35 Lord Crickhowell: It would be quite useful if we could have that.

Professor Beddington: I visited the USA last week and went to visit the Center for Disease Control to discuss the epidemic in the USA. In terms of the overall symptom spectrum, it is very similar to what we are observing here. It is a relatively mild event. The monitoring system the USA has is not a universal one because the monitoring is done by individual states, and therefore the ability to get comprehensive statistics is more limited. There is also the concern that there is a fair amount of relatively mild influenza which never goes as far as reporting to their system; so whereas they have reported somewhere between 8,000-9,000 cases, which they have confirmed, that is, as it were, the tip of an iceberg, and there is a substantial number of unconfirmed cases, which you deduce from the way the epidemic is doing it. It is quite difficult to come out with very firm figures, other than to say that there is a significant under-estimate of the numbers. I would emphasise that these are really uncertain and there might be a factor of 10 or 20 – so there might be 100,000 or 200,000 cases in the USA. The first thing to say is that it has spread quite quickly through the USA. It was noted

in Mexico when you started to get severe respiratory illness and deaths, but you have not had that. The latest figures – I could not tell you, but when I was there last week they had had ten deaths out of about 8,000-9,000 people who had sufficiently serious symptoms to be noted by doctors and reported by the state authorities.

Q36 Chairman: Can I thank you very much! I know that you have other commitments and we will leave our big topic, which we may well be coming back to ourselves. Perhaps we will invite you to come and talk to us then. It has to do with selectivity and prioritising research things and so on, and the Haldane Principle on the other side. That will remain with us. We thank you very warmly. It has been very helpful. We will now digest what you have told us, and look forward to one or two pieces of paper coming from you with statistics.

Professor Beddington: Sure. Thank you Chairman, for the discussion. I am happy to return on your big topics.

Chairman: Good. Thank you.