

WEDNESDAY 16 DECEMBER 2009

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Present

Arran, E  
Brooke of Alverthorpe, L  
Brookeborough, V  
Caithness, E  
Carter of Coles, L (Chairman)  
Lewis of Newnham, L  
Palmer, L  
Sharp of Guildford, B  
Ullswater, V

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Witnesses: **Mr Gareth Morgan**, Head of Agriculture Policy, and **Dr Mark Avery**, Director of Conservation, RSPB, examined.

**Q76 Chairman:** Good morning, Mr Morgan and Dr Avery, thank you for attending today. Could I just say that you have in front of you a list of interests that have been declared by Committee members. This is a formal evidence taking session of the sub-committee, and a full shorthand note will be taken. This will be put on the public record in printed form and on the Parliamentary website. Of course, we will send you a copy of the transcript, and you will be able to revise it in terms of minor errors. The session is on the record, it is being webcast live, and will be available subsequently on the Parliamentary website. Before starting your presentation, for the official record, could you state your names and official titles, please?

**Dr Avery:** Yes, thank you very much, my name is Dr Mark Avery, I am the Conservation Director of the Royal Society for the Protection of Birds.

**Mr Morgan:** I am Gareth Morgan, Head of Agriculture Policy at the RSPB.

**Q77 Chairman:** Would you like to begin?

*Dr Avery:* We would be very happy to go straight into your questions, quite honestly, because we are here to help you, so we do not want to make long speeches, although I cannot guarantee that some of our answers may not be long.

**Q78 Chairman:** You are keen to see a focus on sustainable adaptation to change in both agriculture and forestry, but we would like to get your views on how you see this developing in practical terms. I think you give examples of what you refer to as ecosystem-based adaptation solutions.

*Dr Avery:* Thank you very much. I think this might be one of our longer answers, if I can sketch out what we understand by adaptation, why we think adaptation is important for agriculture and forestry, and what sustainable means. We will try to give you some examples as well, because I think that might be helpful in answer to this question. So I think in a way, adaptation to climate change could be seen as a rather narrow subject, in that the climate will change, we have some quite good ideas about how the climate in the UK will change over the next few decades. We expect temperatures to rise across the UK, and in Southern England, for example, summer rainfall to decrease and winter rainfall to increase, and those types of climatic issues will be the background that every industry, not just agriculture and forestry, will have to adapt to. In some ways, that is just going to be part of life for agriculture. So the types of obvious needs for adaptation, we think, will be that -- I think there is a good analogy with the natural world here; after all, crops and livestock are living things, they are influenced by weather and rainfall. The RSPB, with researchers from Durham University and Cambridge University, carried out a very big analysis of the potential impacts of climate change on all European breeding bird species, and this was published last year as a Climatic Atlas. What that did, very briefly, is to model the current distributional range of bird species with climate variables, and then say: what will the climate be like, as far as we know, in several decades' time, towards the end of this century, and if nature has the same responses to

climate as it does today, where will those species live or where will the areas of favourable climate be? What came out of that analysis is that bird species, and there has been work done on other species which backs this up, will probably move on average about 550 kilometres, their range will shift 550 kilometres north; their geographic ranges will be about 20 per cent less than current, so they will lose range; and there will be about 40 per cent overlap between the current range of species and the future range. So those are really big changes, and we should expect big changes in agriculture along the same lines. So the types of trees we will grow and the types of crops we will grow in arable situations in a few decades' time may resemble the types of land use that are commoner a few hundred kilometres south of the UK at the moment. That is the type of change we might expect to see. We might expect to see lowland agriculture creeping up the altitudinal ranges of our hills, maybe soil types will not be good enough for us to grow wheat on the tops of the Welsh hills, but the climate may well allow very different crops to be grown. Those types of things, agriculture and forestry, will have to adapt as other industries adapt.

**Q79 Chairman:** Dr Avery, you have said that you expect some risk of environmental damage from that changing agriculture use, you specifically mentioned viticulture, we would be very interested to get more detail on that.

**Dr Avery:** I think that changes in what crops may be grown or where they might be grown have to be seen in the context of the other changes that will be happening in land use and the other pressures on land use, so agriculture and forestry cannot be seen in isolation from adaptation in other sectors. Agriculture will have to change in terms of delivering mitigation as well as adaptation. I think it is sometimes neglected by the agriculture community in thinking about how different agriculture will need to be in future decades; so not only will agriculture need to be able to operate under a future climate, but it will have to be able to operate under regulation and conditions where agriculture will have to be emitting far fewer

greenhouse gases than it does now. The Climate Change Act calls for 80 per cent reductions overall in the UK emissions by 2050. Agriculture will have to play a part; it may not be 80 per cent reductions from agriculture, but it will have to be big. Biodiversity will be adapting to climate change as well. So the conflicts are potentially if agriculture and forestry look at what their own sector has to do to be fit under a future climate, then there may be conflicts between that and what other industries and sectors of society want. I will come on to viticulture, not that we are great experts on wine growing, but there are three concrete examples, I think. One very clear factor that agriculture will have to adapt to will be lower summer rainfall in Southern England. So what do you do, as a farmer? You might say, well, I will need more irrigation, more water abstraction to be able to cope with less summer rainfall. But you have to see that in the context where there will be less rainfall for human water consumption, that there may be an increased population in Southern England, there is not abundant water in the South of England already, and therefore, the way that agriculture adapts to low water availability has impacts on the rest of society. So irrigation may not be a cost-effective or a socially acceptable way for agriculture to adapt, and an ecosystem-based approach to that may be that alongside crops and areas where water is needed to grow those crops, then you may need natural areas or more natural looking areas of wetland which can store water in winter, because we expect there to be more winter rainfall, store that water and release it to natural ecosystems to recharge aquifers but also to agriculture during the summer months. That would be an approach that landowners could adopt themselves as an adaptation strategy, or it could be something that society sees as being important that we have natural ecosystems that can store water.

**Q80 Lord Lewis of Newnham:** Who do you think will be responsible for implementing that particular strategy?

*Dr Avery:* Well, we do not know, I think that is a real difficulty, because obviously the thrust of your question is that there is a landowners' need and a public need which may not mesh completely well, and so I think that it may be possible for large landowners to have the available land to do some of that type of work in creating natural ecosystems, natural wetlands, themselves. Some people may want to, they may see that as useful. That would not be an option for some landowners, and therefore, how does society respond to that?

**Q81 Lord Lewis of Newnham:** What would be your reaction then to saying, well, why do we not vary the crop type and use GM crops, which may have a much lower requirement for water? Are we not getting to a stage where we are reaching a crisis situation, and we have to be rapidly able to adapt? As you rightly point out, water is a very significant problem.

*Dr Avery:* I am glad you asked the GM question. The RSPB's position on GM crops has been that we will look at GM crops on a case-by-case basis, so we were active in opposing the commercial release of herbicide-tolerant GM crops whenever it was, eight or ten years ago, because we felt that the broad spectrum herbicides that would have been used on those crops would have been harmful to wildlife. Actually, the farm-scale evaluations that were carried out -- at the time, the Government Chief Scientist, Professor Sir David King had a Science Review Group, of which I was a member, which said that those particular crops would cause problems for biodiversity; probably not for food safety, and probably not for genes escaping and rampaging around the countryside, but because of the herbicides that could be used, they would cause problems. So that is the history. Actually, I am often asked something like this question by biotech companies, and I say to them that I look forward to the day when they bring forward a practical GM crop that is close to commercial release, that the RSPB could support and applaud. I think that would have to be a GM crop that had real environmental benefits, such as allowing less water use, really less herbicide use, and less herbicide effects; it could be drought tolerance, it could be salt tolerance. It is easy to see how there could be

GM crops that would be environmentally a boon. I have not been shown one yet that has been close to commercial release.

**Mr Morgan:** The recent Royal Society report, which I think you were debating recently, makes a good case that the current way in which research is constructed into these things is not geared towards the sort of traits we are talking about there, clearly it is largely commercially driven. So there may well be traits out there, it does not look at the moment whether most of them are close to market, but if we can define what we mean by sustainable adaptation of agriculture, it is clearly going to need a public research focus in order to discover what the sort of agriculture is that can handle these changes we are talking about.

**Dr Avery:** May I just give one more example of a conflict, because I think this might be an issue that might interest some of the Committee. So sea-level rise is happening at the moment and is a consequence of global climate change. That means that there is a very small proportion of the total agricultural land, but for some individual landowners, a high proportion of their landholdings, which are threatened by rising sea-levels. I think there is a question there about what is the right public response to rising sea-levels: so do we try to protect, through public investment often, building up sea walls to protect arable fields just on the other side of a sea wall, or do we say that that is maybe not very good use of public money, that it would be better to allow some sort of re-alignment of the coast, and that the natural defences that would arise from that, salt marshes, do have an agricultural use, you can graze them, but you would have to admit, it is not as profitable by any means an agricultural use as growing winter wheat most of the time? But there is the same public conflict between who is paying for the sea defences and who is making the profit from the land use; that is a difficult conundrum, but I think that is the type of issue which again has an ecosystem solution potentially.

**Q82 Earl of Arran:** What is the most worrying evidence that you have in the last 15 or 20 years that because of climate change, changes are happening in the bird population, as opposed to a change in farming practices?

*Dr Avery:* That is a good question. I will briefly say there are two types of evidence. One is that if you go back to the Climatic Atlas that I mentioned earlier, some of the projected future changes in distributions of birds which, at the time when that analysis was done, we were thinking, well, these are decades away, look as though they are already happening. The current changes in where birds are living fits with those future projections, and that seems to be happening more quickly than we thought. So I think there are species in Southern England that are losing ground, and one which may be of interest to some of the Committee is that by the end of the century, that Climatic Atlas suggests that there will be no red grouse living in England and Wales, their range will have shifted north, and to find red grouse, one would have to move to Scotland. That is one example. The second example which I think is much more difficult for us to know how it will work out is that every species in the food chain will be affected by climate change in some way. There is good evidence from studies in the Netherlands, and some studies in the UK, to show that insects are emerging earlier in the season, because of a warming climate. The birds that depend on those insects to feed their young are not moving their breeding seasons earlier, they are not responding to climate change as quickly as the insects, and so there is becoming a mismatch between when birds are breeding and when their food is available. If you look across migrant bird species in the UK, species that spend the summer here, but go elsewhere in the winter, many of those species are declining, and the ones which are declining most quickly are those species which appear to have been unable to bring their breeding season forward in the year. So on quite a big scale, affecting lots of species across the continent, we cannot be absolutely sure, but it looks as

though food webs are becoming disrupted, and that is the type of thing it is difficult to predict, and could have a big impact.

**Q83 Earl of Arran:** They will probably adapt to climate change, nature is a wonderful tool.

*Dr Avery:* I think the interesting thing so far is that some species have shifted their breeding season, and they are the ones that have declined least or not declined at all, but so far, and you could say we will have to give them a bit longer before they manage it, other species have not shifted their breeding season. If they do not, then they are going to be left high and dry, because the insects will get earlier and earlier; for example, if you are a wood warbler and you winter south of the Sahara, there may be constraints on you in places like Burkina Faso which mean that you cannot rush back to an oak wood in Wales or Scotland any earlier, and therefore you are always going to miss that earlier flush of insects.

**Q84 Earl of Caithness:** I would like to ask a specific point. You mentioned that climate change will vary throughout the UK. Given the fact that the peat in large parts of the North of England and Scotland came about as a result of climate change some thousands of years ago, has any research been done on the effect on peat of what you think might be climate change, or the scientists think might be climate change, that in fact we will lose all the peat which we have had, which will have a huge effect on our soil and on bird life.

*Mr Morgan:* And on climate change itself.

**Q85 Earl of Caithness:** Because you will lose your carbon sink.

*Dr Avery:* There has been some research on that. I think we have realised how big a carbon sink the peatlands are, and therefore how much more we should value them than we appear to at the moment. One of the problems has been that peatlands have been degraded, so they have been affected by acid deposition, acid rain, a common problem in the Peak District and

the Pennines. They have been affected by drainage, drainage for agriculture to make the land more suitable for sheep grazing. They have been affected probably by burning, sometimes by accidental burns that have got out of control. Therefore, one of the things that we ought to be doing is protecting those peat bogs and trying to get them back into better shape as quickly as possible. Now here again, we come across an issue of what the landowner's interest is compared with the public interest, because if you are a landowner and you own a degraded peat bog, you do not get reward from the public purse at the moment for restoring that peat bog and making sure that it acts as a good carbon store or an even better carbon store than it is at the moment. Perhaps we need to adjust the way that landowners are rewarded for land use, so that those issues are taken much more into account.

**Mr Morgan:** Just to remind you, it is not just an upland issue. We have recently done some work with Cranfield University on peat in the Fens where clearly there is an immediate potential clash between the agriculture adaptation agenda and the biodiversity agenda. The carbon in the peat is heavily concentrated in quite a small area of the Fens. Difficult decisions need to be made about how you reconcile very productive agricultural uses in those areas with actually securing the peat in the carbon store that is stored there.

**Dr Avery:** There is an issue about restoring peatlands: if you have a dried out peat bog and you simply rewet it, then we know that there is a flush of methane that is released, which is a very potent greenhouse gas. The RSPB is actually doing research on our nature reserves, and also with partners in countries such as Belarus and Ukraine, to look, over a long period of time, at that release of methane, how much is released, and how quickly the carbon-storing properties of the peatland come back. So over the long term, the hope would be that the pulse of methane that is released is a short-term problem and that you then recapture the equivalent greenhouse gases by slow accretion of peat. But that is something that nobody is quite sure

about how the sums work out, and they may well work differently in different countries, different climates, different temperatures, different histories of peat.

**Q86 Earl of Caithness:** Will we still have peat, given the expected change of temperature?

*Dr Avery:* It does depend how we manage the uplands, so we can still have peat in many parts of the UK, but only if we protect those peatlands, and their water sources, and if we do not overgraze them, we do not overburn them. So I think the answer is definitely we can do; we may well have fewer, because we have tended to lose peat in the uplands over history and some of that may occur particularly at the southern end of the current peat distribution.

**Q87 Lord Lewis of Newnham:** I am rather concerned about the use of this word peat. It is not a singular business. More years ago than I care to think about, in the 1950s, I looked at some of the chemistry of peat. It is a very variable commodity, depending very much upon which part of the country you take it from; not only that, even which part of the field you take it from. When you talk in these terms, is there some standard to which you are referring all the time? Peat is very acidic to start with. You mentioned the fact that acid rain had an effect on it. Presumably this is from the point of view of the degree of oxidation, anaerobic oxidation, as opposed to aerobic oxidation, which is your methane problem.

*Dr Avery:* And affecting the vegetative cover, what can live and clothe that peatland. I do not think either of us would claim to be an expert on peat, you may be more expert than we are, but I think we could be on fairly safe ground in saying that the carbon stored in any peat soil is vastly greater than it would be in mineral soils. What we have done over time, in the Fens for example, is to lose huge amounts of peat, and we are now getting down to mineral soils that have far less carbon sequestration value.

*Mr Morgan:* I suspect the take-home message of what you say there is that the adaptive response to climate change is going to be highly spatially specific, in that one-size-fits-all solutions are not going to be appropriate.

**Q88 Lord Lewis of Newnham:** In your report, you refer to the timetables that have come out of the White Paper, and if you remember, it is up to 2013, and then 2013 to 2020. You seem to be rather disappointed, I think to use your phrase, about the requirements for sustainability adaptation in agriculture and forestry for the shorter period; and in the case of the longer period, you have also commented on the significance of the contribution towards society as a whole, but you also make the very, very basic statement that you think sustainability adaptations should be enshrined in regulation and not limited to farm payments. However, I think a little while ago the impression I had was that you were suggesting that farm payments could be a very useful mechanism of solving some of the problems which you were envisaging arising from the point of view of the adaptation or even mitigation problems.

*Mr Morgan:* I think there is an element of realism in the two-phase approach the Commission is proposing here, in the sense that the main policy tool that is going to be available for agriculture in this sphere is going to be the CAP. We have had a mid-term review of the CAP, and the next major change is not going to start until 2014, so in terms of large-scale application of resources and change of policies, there is a limit to what can be done during this period. The disappointment is that that does not mean to say that there is not scope to be doing the preparatory work to ensure that we have appropriate policy tools available through the CAP from 2014, because if we do not get it right for that juncture, then we are waiting another potentially ten years to 2020, and the actions will have to start right at the beginning of 2014 on some of this. In terms of the policy tools that are available, yes, applying the €45 billion that is available through the CAP is going to be crucial to this, but it is not entirely going to be driven by incentives and Pillar Two type approaches. An obvious example of the

responses to climate change is the viticulture example: the logical response of a business in Sussex is to look to the potential to expand, to look at viticulture as an option there. The likely location could well be on steep-facing chalk slopes which are currently grassed over. Now in that particular scenario, we are going to have to be looking at whether the regulatory framework is sufficient to guide the planting of grapes to the areas that are appropriate, where you will get the least soil damage, and the least loss of grasslands. Beyond that, certainly you are going to need to be looking at positive incentives to landowners, who want to be doing the appropriate management on those sort of sites.

**Q89 Viscount Ullswater:** Perhaps we can deal a little bit more closely with what the White Paper is saying, and the distinction between the preliminary stage up to 2013 and then the review of the CAP afterwards, because the White Paper calls for those measures to be undertaken for adaptation and water management, but I think you note in your paper that some of the Member States have shown varying interests, and some perhaps a lack of interest in accessing those funds. I wonder if you could give us your view as to why that might be the case, and whether there are some obstacles that you have identified.

**Mr Morgan:** Yes, we were not intending specifically to imply that at the moment, the funding is not available. The main opportunity that Member States have had at the moment is to use the Health Check of the CAP which has generated more funds in all of the Member States except the UK and Portugal in order to apply to their rural development programmes, but Member States were given a huge amount of discretion about how they wanted to utilise that money. There has been a potential to use that to guide the response of agriculture to climate change, but that varies significantly between Member States, and at the moment, there is not a clear overall picture about how the EU 27 Member States are using those resources that are available in the current round. So we first need to have an assessment from the Commission

of how well the receipts of voluntary modulation that are being used in rural development programmes have been applied.

**Q90 Viscount Ullswater:** Then if we turn to the position after 2013, the White Paper also indicates that the CAP review must look at the contribution that it can make to adaptation. It is really a question of whether the rural development programme can be sufficiently adaptable to take in the need for the adaptation which I think you see, both in agriculture and forestry. Can mitigation and adaptation go hand in hand? Are there synergies between the two which can be developed?

**Mr Morgan:** I think we will take that in two parts, we will come back to the synergies issue in a moment. In terms of the use of the CAP after 2014, I think first of all, we should not limit our discussion to what can be done through rural development programmes. The RSPB is very committed to trying to secure the resources that are available through the CAP at the moment, and to make sure that they are available to meet these huge challenges that are going to face us during the period 2014-2020. So there is some distance between us and the current UK Government position on that, in terms of whether there is a dividend from the CAP. We need those resources to be applied to meeting the climate change challenge, but that does not have to be done just through rural development programmes, we need to look at the whole of the CAP, and we should not limit ourselves to thinking Pillar One, Pillar Two at the moment. Indeed, the Commission itself is already suggesting that there might be a third pillar to the CAP, which would be to address the climate change challenge. I am not sure if that is the best approach, but we certainly should not just limit ourselves to saying, can we tweak the agri-environment programmes and the rest. I think we need to go back to the whole of the budget that is available through the CAP, and think about whether that is being appropriately applied to the challenges we have got. Our contention is that most of the money is not effectively being used for that purpose. It is available through the single payment, it could be

being used to help farmers adapt to these new challenges, but it is not being done, and certainly after 2014, we need to look at that money in the round.

**Q91 Viscount Ullswater:** It looks as if there is going to be what we have been talking about in other reports as a shift from Pillar One to Pillar Two post-2013. Do you think that cross-compliance, for instance, needs to be tightened up on the Pillar One payments, so that it gives some sort of benefit? I can see your reserve about just having a Pillar Three, because the pot will not be big enough really; if you start dividing the pots up, they are not going to be big enough.

**Mr Morgan:** We are supporters of cross-compliance. I think we have to recognise the limitations that it has. It is quite useful at, as it were, restricting inappropriate activities, but it is not a very useful way of incentivising people to do the sort of things you want. That is its big limitation. I think the specific area in relation to climate change where it could be more effective at the moment is the whole issue of retention of grasslands. It makes no sense, either in climate change mitigation terms, or in terms of adaptation and the wider ecosystem services that are available, for us to be using grasslands at the moment. We have evidence from Germany where permanent grasslands are being ploughed up in order to produce maize which are then turned into biogas. That makes no sense, no logic in terms of climate change. So cross-compliance should be addressing this problem, and the UK Government is currently looking to simplify the grasslands protection through cross-compliance, and that would seem to be a retrograde step. Having said that, as I have said before, cross-compliance has its limits, and to use that as our major tool to address these challenges is restricting ourselves.

**Q92 Viscount Ullswater:** You said you wanted to come back to adaptation and mitigation, whether there were any synergies between them.

**Mr Morgan:** Where there are synergies; I was just thinking of an example, which does not fit this perfectly, but an example of where RSPB is involved, which exemplifies the sort of wider ecosystem service argument we are making here, is our site at the Ouse Washes in the Fens, which is a major flood-relief facility that is available to wider society, but because of increased flooding, possibly as a result of climate change or changes in climate patterns, the Ouse Washes are flooded a lot more frequently than they have been in the past, and there are summer floods as well. It is a European protected area, a very important breeding site for birds, and it is also agriculturally very important. There is a large number of livestock that are utilising the Fen washes in the summer months, which have to be taken off every time there is a flood event. The way the RSPB is tackling this is by acquiring land from farmers who are adjacent to the Ouse Washes who are finding it increasingly difficult to farm there because this land is becoming wet. We are taking that out of arable production and making it available as back-up land, so that when the cattle have to come off the Washes so they can fulfil their primary flood defence purpose, they can be put on the land that is adjacent to the Ouse Washes. That seems to me an example where you have got a win for mitigation of climate change, you have an adaptive response, and both farmers and the environment benefit at the same time. So there are win/win scenarios out there, I am not saying they are all going to be like that, and that easy, but those are the sort of answers that we need to be looking for.

**Q93 Viscount Ullswater:** Could you flag up any maladaptations that you see currently, that we need to perhaps put an end to?

**Mr Morgan:** There are some striking ones possibly from the southern Member States in Europe. We work with our bird life partners in these areas. The notion that intensive vegetable growing is going to be possible throughout the Iberian peninsula in the way that it is at the moment, with the water resources that are going to be available, does not seem credible. We can keep going deeper and deeper to bring the water out of the ground, but eventually the

decision will have to be made that trying to force vegetables out of those areas comes with too many environmental drawbacks, and is not sustainable for the farmers themselves in the long-term; and we are going to have to look closer to home for our vegetable production, for example. So I think Southern Europe is already facing this more acutely than us.

*Dr Avery:* There is an example from Spain which could be seen as a warning for what could happen in the UK if we do things badly. There is a site, a Natura 2000 site called the Tablas de Daimiel, which is south of Madrid in Castilla - La Mancha. There is fantastic wetland for wild fowl, it has cranes wintering there in the winter, lots of ducks, lots of wetland species. It has been known for a very long time to be incredibly important, and yet it is now largely dry, because in the area in which it is set, intensive agriculture has taken the water that feeds that wetland, and grown largely wheat in that area, and that wetland is hardly a wetland now. In fact, in the last year, there have been subterranean fires in the peat because it has become so dry. And that is a wetland that was storing carbon. It still is quite a nice place to go for a walk, but it was a fantastic place full of wildlife, it has lost its wildlife, it is probably not providing the same services to the local environment, and that is because of unsustainable agricultural use. That is the type of issue that we may see increasingly in the UK and in Northern Europe in future. As regarding synergies between adaptation and mitigation, I would like to stress again that I think that a few decades hence, we will have to have a very different form of agriculture if agriculture is to contribute, as it will have to, to the greenhouse gas emission targets that the UK has set itself. So we are trying to meet 80 per cent reduction targets by 2050. Almost every industry says, "Well that is a jolly good idea, but we will have to be a bit less than 80 per cent"; in agriculture, the farming unions have been quite vocal in pushing that, food production is very important as it is, and it may well be that agriculture does not have to meet 80 per cent greenhouse gas emission reduction targets by 2050, but they are going to be big. It is inconceivable that there are not going to be 20, 30,

40 per cent reduction targets, which means that the type of agriculture we will have to look at, it will not just be a different type of agriculture because the climate will be different, but also because the whole regulatory framework and way that we have to live our lives will be different. We said that cross-compliance does not always work, and we are very keen on agri-environment schemes, but agri-environment schemes do not always work either. They are a voluntary approach, we are very much in favour of that, but you can imagine that in a future situation, then there may be different ways of funding farming that allow for adaptation, but require mitigation in the same package. That is the type of future farming and type of funding for farming that -- we have a few decades to work it out, but that is where we ought to be heading.

**Q94 Viscount Brookeborough:** I should declare an additional interest, firstly that I am a member of the RSPB, and secondly we own lowland raised bogs at home. When we talk about peat, we normally talk about peat within a bog, as opposed to peaty land that we might use. I understood you felt that some of these bogs might disappear by drying out, but if they dry, they will still be peat, they will just be dried peat.

**Dr Avery:** Thank you very much for being a member of the RSPB. Dried peat, oxidised peat, will emit carbon and instead of being a sink, and perhaps a slowly growing sink for carbon, it will be a source of carbon emissions, and that is a bad thing, generally speaking, if we can avoid it.

**Q95 Viscount Brookeborough:** Thank you very much. Looking at Phase I, Pillar Two and the integration of the adaptation of agriculture and forestry into other Community policies, how else might the adaptation of agriculture and forestry be assisted by EU policies both within the EU and other areas of the world? You may wish to comment on your paragraph 21, where you mention the Water Framework Directive, and also on your

paragraph 24, perhaps you could also say something about the comment, "The EU must take responsibility for all impacts resulting from its decisions, and not simply export problems overseas." I am not quite sure how the adaptation actually exports the problems, and what you are talking about.

**Mr Morgan:** As much as anything else, that was a "note to self". The RSPB is acutely aware, through our engagement in the debate about biofuels, that there is a huge issue about ensuring that we do not merely export our climate change impacts to other countries, whether that is about exporting our footprint in terms of food production elsewhere, or energy production elsewhere, so we need to deal with these problems at home, and avoid knee-jerk solutions -- an extreme one would be, well, you could plant the UK up to trees, for example, to meet our greenhouse gas targets. It does not really get you any further on, that is obviously an absurd example, but we need to own these problems within our own boundaries. So as much as anything else, it was about the way the RSPB needs to approach this as well as wider society.

**Q96 Viscount Brookeborough:** It is not because our raptors might go to another country or anything like that?

**Dr Avery:** I think that is unlikely, although some of them may feel more at home in other countries.

**Q97 Viscount Brookeborough:** Would you like to comment on your paragraph 21, where you mention the Water Framework and Floods Directives; do you think that enough has been taken account with this?

**Mr Morgan:** The primary funding mechanism that we are going to have available I think will remain the CAP, so in terms of how we actually do this stuff, that is where we are going to have to look for for resources. Having said that, our response to climate change needs to reflect the Water and also the Nature Directives, so these need to be a key test of whether

agriculture is moving in a direction that is actually adapting in a sustainable way. In terms of specific resources, I do not think they are going to come via those mechanisms. I would place the CAP as a primary source.

*Dr Avery:* I think it is quite interesting that the Water Framework Directive England and Wales, in the implementation so far of the draft River Basin Management Plans which are at the present with the Secretary of State put most of the onus on improving the quality of rivers and water bodies on the water companies, despite the fact that diffuse pollution from agriculture is one of the big problems in water bodies. Now that diffuse pollution comes from the use of inorganic fertilisers on the land, that is one of the main sources of that pollution. It is not deliberate pollution. Some of it may be careless, but the use of inorganic fertilisers is a big source of nitrous oxide emissions which are potent greenhouse gases. So we do not seem to have much of a join-up in the way that we are implementing the Water Framework Directive to try to reduce diffuse pollution from agriculture, which would have positive knock-on effects on reducing greenhouse gas emissions. There is an issue about the join-up between all of that and the Nature Directives, or even domestic legislation: where you look at SSSI quality in England, one of the main sources of unfavourable condition for SSSIs -- much progress has been made, we applaud DEFRA in what they have done, but one of the main remaining problems for biodiversity on protected sites is poor water quality because of diffuse pollution. So you have something that the Water Framework Directive could affect, which would benefit the Birds Directive and the Habitats Directive objectives, but those linkages have not really been made, and the link between the Water Framework Directive and CAP is not strongly made either. Bringing all these things together is difficult, but I go back to an earlier point if we had a better picture of what we thought agriculture ought to look like, three or four decades out, then we could use all of these mechanisms that are at our disposal now to move towards that agreed position. It feels to us as though we are not really moving in any

particular direction, and therefore, we are moving in a rather jerky way and rather slowly rather than heading towards a thought-through position for future agriculture.

**Q98 Viscount Brookeborough:** Would you like to tell us what you might like to see from the EU's forestry policy, and therefore the UK's forestry policy, and how it might be updated to assist with the adaptation to climate change?

*Mr Morgan:* There is obviously a huge issue here about if and whether there is an EU competence in the forestry sphere, and one could have a discussion about that. I think that the main issue is that, because it is largely not a European competence, and because agriculture is a European competence, it is quite hard to move both sectors along together, because they are subject to different incentives and different regimes. So the constraints operating on the forestry sector vary a lot between Member States, whereas there is at least a common approach to agriculture through things like cross-compliance and rural development. Whether that will be solved by developing European competence in forestry is another matter, but unless some kind of synergy can be achieved between those two mechanisms, it is going to be quite hard to provide a joined-up signal to landowners and farmers about what their appropriate land uses are. Clearly, afforestation is going to be one of the responses to climate change, both from an adaptation and mitigation point of view. At the moment, it is difficult to achieve a coherent approach to that at a European scale.

**Q99 Viscount Brookeborough:** Would you like to tell us just very briefly what you think of the current forestry policy in this country, and its achievement or success, and how you might like to see it changed.

*Dr Avery:* We have a relatively low level of forest cover in the UK compared with most other European countries. Forestry has been pushed on to low grade land by agriculture in the past,

so many places where we are growing trees are not the best places to grow trees, they are the places that have been left over after we have decided --

**Q100 Viscount Brookeborough:** And presumably the type of trees, you are not really in favour of evergreens?

*Dr Avery:* It depends where they are and which species they are.

**Q101 Viscount Brookeborough:** What would you like to see in practical terms, what do you think might be achievable in a general change of policy?

*Dr Avery:* On our own land, we are encouraging greater areas of forest cover in the uplands, at nature reserves such as Abernethy.

**Q102 Viscount Brookeborough:** Of conifers?

*Dr Avery:* Those are Scots pine, because they are the native species. At our nature reserve in Geltsdale in the North of England, again we are planting trees there, a mixture, mostly broad leaves but broad leaves and conifers, in the stream valleys, in the cloughs, in places like that to diversify the habitat.

**Q103 Viscount Brookeborough:** Will this be a commercial crop? Obviously in straightforward terms, forestry is normally taken as being a commercial crop, whereas environmental planting is almost environmental and rural enhancement.

*Dr Avery:* In places like Geltsdale it will not be a commercial crop, but the carbon that we will be sequestering over that period, society is getting it for nothing from us.

**Q104 Viscount Brookeborough:** You have not really formulated a view on how forestry should as a whole play a big part in adaptation.

*Dr Avery:* Well, I do not think we have, and I do not think anybody else has either. If you listen to the agricultural sector, and they would be right to say this, they would say the world population is growing, we will need more food, we need productive land to grow food. They do not say, therefore agriculture should be the primary land use, but you could infer, that is where they are heading. If you listen to the Forestry Commission and the forest sector, they will quite rightly again say that the benefits in terms of carbon sequestration, and sometimes in biodiversity, of growing more trees are great, that they are obvious. What nobody has yet done is to say, yes, but there is a conflict between these two. If we want to grow more food and more trees, how do we do that without there being a conflict between those two land uses? I have to say that from our perspective, the land use that usually loses is actually biodiversity, it is natural areas which do not have a very obvious economic value which over decades and maybe in the future get nibbled at by agriculture and by forestry, and that is partly because their real economic value is not a market good, not in market terms, but in terms of carbon sequestration, in terms of quality of life to people in terms of allowing recreation, in terms of providing clean water. It is the same argument as why rainforests are cut down to plant soya; you can make money from the soya, and you can make money from cutting down the trees, you cannot make money from the value of those rainforests remaining standing, even though if we did the economics properly, if there were a better way of assessing all these things, we would say it is much more sensible to leave the trees there. So there is a market problem, a dysfunction in the way that we value things.

**Chairman:** I think we follow that point, thank you.

**Q105 Baroness Sharp of Guildford:** Moving to some extent back to the subject that we have already been talking about, you talk about the primary source of funding being the CAP, and yet you observe in paragraph 15 that funding, including the co-ordination and pooling of resources, may be one of several obstacles to the provision of adaptation solutions. What

level of public funding would you like to see directed to the adaptation of climate change of agriculture and forestry across the EU over the next five to ten years? What is your view of the possible sources of funding mentioned in the White Paper, the concept of this Pillar Three, market-based mechanisms, public/private partnerships, financial products and the revenues from the Emission Trading System? How else might the adaptation of EU agriculture and forestry be financed in the future?

*Mr Morgan:* It will not surprise you to find out that we do not have a figure with us.

**Q106 Baroness Sharp of Guildford:** It does not at all.

*Mr Morgan:* But clearly it is something we have thought a lot about. I think one point to make in this is that in terms of farm business enterprises, a lot of the adaptation that they will do to climate change is something that they will not particularly need public resources for. Farmers are canny businessmen, and they will spot opportunities and they will exploit them, so the process of agriculture adaptation itself is something that will happen following normal economic pathways. Our particular interest in this, and the figure that will be very interesting, will be to what extent do you need to offer incentives to farmers to follow pathways that offer wider environmental benefits and sustainability benefits in the way that they are responding? I think it would be fair to say that the good starting point for that will be the resources that are currently available through the CAP, as I have said before --

**Q107 Baroness Sharp of Guildford:** And the shift from Pillar One to Pillar Two.

*Mr Morgan:* It seems unlikely, as was mentioned earlier, that there are going to be lots of new resources for this, for example if we invent a new third pillar for the CAP, there is no suggestion there is any new money for it, so we are working within existing resources. There are those who want less resources; I think it would be prudent to undertake the sort of assessments you are talking about to find out whether those current resources are adequate,

and indeed we are working at the moment with the European Landowners Organisation on trying to quantify some of these benefits through the RISE Foundation, to find out what sort of budget is needed for these tasks. I think the more difficult issue is that a lot of the funding is in particular silos, and how do you secure the join-up between different funding sources to make things happen? To go back to the example I cited of what we are doing on the Ouse Washes in the Fens, the Environment Agency is involved, there is a flood protection benefit, which then accrues to private owners of houses upstream in Bedford. There is a farmer who has land that is needed for an alternative purpose, and he has to be brought on board. The RSPB is involved, trying to put a value on the nature benefits of these schemes, and there are the graziers involved in the operation there. Lots of different potential funding streams and potential interests there, so bringing those together so that you come together with a package that works, so that you achieve all these benefits, is the trick. It is a bit easier when the RSPB is in the middle of this, because we can act as an animator for this process. If it is a lot of private individuals, that is going to be very difficult.

**Q108 Earl of Arran:** The White Paper seems to suggest that the impact of climate change on forestry and agriculture needs to be beefed up, it needs to be developed. Do you agree with this? Can you perceive gaps in the knowledge that you think are missing at the moment?

**Dr Avery:** I think there are always gaps in our knowledge, and I think with climate change, because we are talking about something that is a long-term process, it is difficult to see out into several decades hence. It is difficult to study the future; you can study the present and try to work out what the future will look like, but I think there are too many things that we do not understand for us to be completely confident about what the future will look like. Having said that, I think we do need more research into what new crops would fit, I will go back to this again, a future vision for farming, that it is not simply an adaptation question, it is a mitigation question; what type of land uses will we need altogether? So we may need to be

developing GM crops that will help us. I am not sure whether that is best left to big multinational companies, I am not sure whether their interests exactly match the public interest and the public need several decades out, but then I am also not sure that Government-funded research is necessarily going to be spot on either. So I suspect we need some quite clever people to think about this, and we will need a range of new research to tell us the way forward, but I do think it would help quite a lot if we knew where we were trying to get to, and that the road towards getting there might be helped by individuals making money out of it, as we move in the right direction; but private profit will not necessarily be the route that gets us to where society wants to be in the long term. Personally, I do not think that that is a very certain route to where we might all want to get to.

**Q109 Earl of Arran:** It is really peering into the unknown to a very large extent. Just incidentally, could you remind the Committee of your membership numbers, and also your land ownership interests?

*Dr Avery:* Yes, membership is 1,060,000, that is across the UK as a whole. About 160,000 of those are young people, so about 900,000 adults. As I always mention to members of the other House, that might be 900,000 people who will vote in the next General Election. Our land holding is about 140,000 hectares, of which about half is owned by the RSPB, I think it is slightly more than half is owned by us, and the rest is on leases, most of which are long-term, some of which are fairly short, because we may only recently have acquired them, or whatever. So 140,000 hectares is --

**Q110 Earl of Arran:** 300,000 acres approximately.

*Dr Avery:* Yes, it is slightly larger than Bedfordshire which is the county where our headquarters is based, but Bedfordshire is a quite small county.

*Mr Morgan:* A significant proportion of which is agricultural, I think about 20-30 per cent is probably farmed in some way or another.

*Dr Avery:* I thought it was slightly higher.

**Q111 Earl of Arran:** Are you still acquisitive on agriculture and forestry as an organisation?

*Dr Avery:* We are still buying land, yes. It is a rather tough time for any organisation that is dependent on the voluntary contributions of even 1,060,000 people, so our ambitions for land acquisition are less, but in theory, we would like to be spending about £4 million a year on acquiring land. We have just over 200 nature reserves in the UK; much of that is just adding the odd field to existing sites when they come up. Some of them will be new sites. A new project which the Committee may have heard about is on the coast of Essex, Wallasea Island, which is, I think, 600 hectares of land, it is arable land at the moment, and over quite a long period, we would revert it to salt marsh and mudflat.

**Q112 Lord Brooke of Alverthorpe:** If I may continue with the diversion just for a moment, 1,060,000 people probably actually have more acreage than you have yourselves, your members.

*Dr Avery:* Yes, absolutely.

**Q113 Lord Brooke of Alverthorpe:** Do you give them advice on what they should be planting now, the changes that are coming, and how they should be preparing their little gardens or their big gardens for the future?

*Dr Avery:* Yes, we do. So part of our advice to our members relating to gardens: a whole range of advice about what food to put out for birds, what nest boxes, which plants to grow --

**Q114 Lord Brooke of Alverthorpe:** I was thinking particularly of trees.

*Dr Avery:* I was going to say, we also extend that advice to saying go for drought tolerant species, so that they have less impact on water resources, you do not have to be watering them from your tap in your house.

**Q115 Lord Brooke of Alverthorpe:** Do you do any monitoring to see whether you are having an impact?

*Dr Avery:* Not in that way.

**Q116 Lord Brooke of Alverthorpe:** Or thinking of doing any monitoring?

*Dr Avery:* I think it would be quite difficult for us to monitor what our members do in their gardens in any meaningful way, but it is an interesting idea, and I will take it away and think about it. In general terms, we also give advice to farmers, landowners, so we try to be an organisation that works collaboratively with all sorts of stakeholders, and where we do have some knowledge, we try to share it in the most appropriate way.

**Q117 Earl of Caithness:** You mentioned some of the problems that climate change might pose in the UK. You have also mentioned and highlighted some of the things that are going wrong in Spain, and clearly from the evidence we have received, Britain may well be better off with climate change than a lot of other countries. You indicated that there are going to have to be restrictions on the way we farm, yet at the moment, which is a subject we have not touched on, 15 per cent of the world go to bed hungry, the population is going to increase by 2 billion; what more should the EU be doing to try and address this massive problem?

*Mr Morgan:* I think a good starting point would be the IAASTD report,<sup>1</sup> which Professor Bob Watson produced, it was an UN report, I think about 18 months ago. We clearly need to

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<sup>1</sup> International Assessment of Agricultural Knowledge, Science and Technology for Development.

balance what we are doing in Europe and ensuring that we are maximising the sustainable production of food at home.

**Q118 Earl of Caithness:** That is the first time you have said maximising food production, thank you.

**Mr Morgan:** Maximising sustainable food production, a little qualifier there. The problems of malnourishment, as you are well aware, are primarily in developing countries, and therefore, the EU also has an important role in enabling those countries to feed themselves rather than, as it has been doing until recently, directly dumping food on them, so that they need not develop their own agriculture industry. So I think there are some quite complex links between what Europe does at home and what it needs to do in those places where malnourishment is going to be an issue. But the implication of your question was that food production here needs to be part of this equation, and my earlier comments about the fact that we need to take ownership of these issues at home is part of that. There is no point in exporting our climate footprint or our food footprint elsewhere for others to deal with. We need to be finding solutions to the challenges that Mark has mentioned earlier about making sure that agriculture can achieve an 80 per cent reduction in its greenhouse gas emissions whilst continuing to produce in a changed climate, that is the challenge which we need to be putting ourselves to at home in Europe, I think.

**Dr Avery:** I think if the world's population goes up by 2 billion, and we continue farming in the same way, we are going to just be in more trouble in 2050 than we are now. I think that greater food production has to be part of the solution, but it is not all of the solution. There is a huge amount of food waste in the so-called developed world, I think the figures are that about 40 per cent of food that is purchased is thrown away.

**Q119 Earl of Caithness:** 30.

*Dr Avery:* Let us say 30 then. It is an awful lot. A good place to start with the problems of energy production and food production would be for us to waste far less than we do at the moment, and that is a role for the developed world to take a lead on. There is an awful lot of food that is wasted in a different way in developing countries because of storage and food going off, so if we provided fridges for Africa, it might be better in some cases than providing GM crops, although we have said already that we are quite open-minded about GM crops. So tackling food waste is one issue. There is the issue of what type of food we eat; if that increase in population has the same type of diet as the average diet in the developed world, that will make the issues of providing food even greater, so again, what we eat, moving to a higher proportion of vegetarian days in the diet, might help a bit.

**Chairman:** Thank you very much.