ENVIRONMENT AND RURAL DEVELOPMENT COMMITTEE

Tuesday 22 February 2005

Session 2

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CONTENTS

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ENVIRONMENT AND RURAL DEVELOPMENT COMMITTEE
6th Meeting 2005, Session 2

CONVENER

*Sarah Boyack (Edinburgh Central) (Lab)

DEPUTY CONVENER

*Mr Mark Ruskell (Mid Scotland and Fife) (Green)

COMMITTEE MEMBERS

*Rob Gibson (Highlands and Islands) (SNP)
Karen Gillon (Clydesdale) (Lab)
Alex Johnstone (North East Scotland) (Con)
*Richard Lochhead (North East Scotland) (SNP)
*Maureen Macmillan (Highlands and Islands) (Lab)
*Mr Alasdair Morrison (Western Isles) (Lab)
*Nora Radcliffe (Gordon) (LD)

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Janis Hughes (Glasgow Rutherglen) (Lab)
Jim Mather (Highlands and Islands) (SNP)
Jeremy Purvis (Tweeddale, Ettrick and Lauderdale) (LD)
Eleanor Scott (Highlands and Islands) (Green)

*attended

THE FOLLOWING GAVE EVIDENCE:

Dr Bernie Bulkin (Sustainable Development Commission)
Professor David Crichton (Benfield Hazard Research Centre)
Ross Finnie (Minister for Environment and Rural Development)
Gerry Metcalf (UK Climate Impacts Programme)
Philip Wright (Scottish Executive Environment and Rural Affairs Department)

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Mark Brough

SENIOR ASSISTANT CLERK

Katherine Wright

LOCATION

Committee Room 5

Scottish Parliament

Environment and Rural Development Committee

Tuesday 22 February 2005

[THE CONVENER *opened the meeting at 14:03*]

Climate Change Inquiry

The Convener (Sarah Boyack): I welcome committee members, members of the public and witnesses to the meeting. I see that the networking session is still carrying on as we assemble around the table.

This is our fourth oral evidence-taking session for our climate change inquiry. I hope that this panel will allow us to round up some of the issues that we have been examining over the past few weeks. In particular, we will focus on adaptation, which has been mentioned in people's submissions.

Members will recall that, at the previous meeting, I said that we were having discussions with ministers about getting them along to give evidence. Ross Finnie is definitely coming this afternoon, and we have just about pinned down the exact details for the Minister for Finance and Public Service Reform, Tom McCabe. Nicol Stephen will attend and we are still talking to Jim Wallace's office. When I receive further information, I will update members, but that will be next week.

We move to our first set of witnesses. I welcome Gerry Metcalf, who is project manager of the UK climate impacts programme; Professor David Crichton of the Benfield hazard research centre; and Dr Bernie Bulkin, who is chair of the energy and transport steering group of the UK Sustainable Development Commission. As we have been able to read your submissions in advance, we will not ask you to make opening statements. My colleagues will simply kick off the discussion.

Mr Mark Ruskell (Mid Scotland and Fife) (Green): I kick off with a question for Bernie Bulkin from the SDC. It is clear that energy and transport are two areas where we need to make improvements if we want to tackle climate change. In your submission, you say that the Executive's transport policy contains inconsistencies, especially with regard to the air route development fund and strategic trunk road improvements. To what extent is Scottish Executive policy climate proofed and could such climate proofing be improved?

Dr Bernie Bulkin (Sustainable Development Commission): First, I thank the committee for inviting me to give evidence.

Climate proofing any policy probably starts with public sector procurement and the extent to which the public sector can make itself carbon neutral or can aim for a much lower carbon future. After all, the public sector is one of the biggest spenders and procurers. Schools, hospitals, roads and so on can be developed in many different ways and procurement policies can make a big difference.

On the conflicts or contradictions in policy that we mention in our submission, there is a laudable major commitment to public transport; however, there is also a commitment to build major new roads to facilitate car use. Moreover, we are all wrestling with the difficult problem of aviation, which will require some innovative thinking. Members will probably know that aviation is the fastest-growing source of carbon emissions in the country. Unless we find a strategy to tackle the matter, those emissions will dominate CO_2 or greenhouse gas emissions before long.

Mr Ruskell: I suppose that my question is really about how such decisions are made. How can ministers balance economic growth with sustainable development? For example, with a policy such as the M74 motorway, he or she might think, "This is good for economic growth, but there are environmental impacts due to climate change emissions." How do Governments reach decisions on such matters?

Dr Bulkin: You have raised a very difficult question. More often than not, we can find policies and actions that are good for economic growth and that can reduce carbon emissions; we simply have to look for them. For example, whenever we consider energy efficiency measures, we know that we are going to win both ways because we will lower costs, make businesses more competitive and reduce greenhouse gas emissions. We must look not for policies that cause conflict between the economy and the environment, but for policies in which both elements win.

Mr Ruskell: So you believe that we should abandon the conflicts and concentrate on the win-wins?

Dr Bulkin: Absolutely. However, we cannot duck the problem of aviation. As a result, we must consider demand-management tools as well as incentives. [*Interruption.*]

The Convener: Someone's mobile phone is going off.

Maureen Macmillan (Highlands and Islands) (Lab): On Mark Ruskell's point about aircraft emissions, I have difficulty with the idea that we

should shut down our airlines and get rid of the air route development fund, which seeks to increase the amount of air traffic in Scotland, which is minimal compared with that in the UK overall. Flights between Inverness and Shetland or Inverness and London do not count for all that much in the bigger picture. Surely we have to balance the worthy objective of lessening emissions from aircraft with the social objectives that apply in this country. The scattered communities in the north of the country need efficient, fast transport connections.

Dr Bulkin: Absolutely. We must balance those two things. However, we should ask why, two weeks ago, it cost five times as much to buy a standard fare train ticket from London to Edinburgh than it would have cost to buy an air ticket. That signifies that we do not have a rational pricing scheme. The issue might not be within the domain of the Scottish Parliament's activities, but we need to consider such things. How are airport slot fees set? What are our objectives? Are we fostering the use of high-speed train travel through rational fare systems?

Maureen Macmillan: I am the one who is supposed to be asking the questions. Perhaps you have answers to your questions.

Dr Bulkin: It is clear from today's fares that we are not doing so. Those things need to be considered. One of the SDC's principles is that the environmental costs of any activity must be incorporated into the cost of the activity; someone else should not be left to pick up the pieces. That is not the case with air travel today. We need a rational fare system that incorporates the severe environmental costs for local and global air quality and the impact on the climate. If those costs were included, we would have an effective demand-management tool that would lead people to say, "Okay, I am now able to make a rational decision about whether to fly or not." I would rather have given evidence today by videoconference, but that was not an option. We need to consider the tools that we provide and whether we are making aviation the only choice.

Maureen Macmillan: Okay. Thank you.

Rob Gibson (Highlands and Islands) (SNP): If either of the other witnesses wants to come in, that is fine, but my question is for Professor Crichton.

Your paper is interesting on the subject of insurance. What modelling have you done, or what evidence exists, to assess the impact of climate change on insurance claims in Scotland?

Professor David Crichton (Benfield Hazard Research Centre): I thank the committee for inviting me to appear before it today.

The insurance companies have different catastrophe models and many of the major insurance companies have better flood maps than either the Government or the Scottish Environment Protection Agency has. Although insurance companies have done a lot of work, in the main it has been to assess the overall capacity of the insurance industry to cope with a disaster.

Scotland has a much better land-use planning system than England and Wales has. Insurers are more concerned about England and Wales, and the London area in particular, where the potential for a major loss is growing rapidly. Insurers have not really modelled major losses in Scotland. The biggest loss that insurers have had to deal with in Scotland in the past 10 years resulted from burst pipes. Ten years ago, the Scottish Office held a public inquiry into the fact that burst pipes had cost the industry £350 million. Simple changes to the building regulations could prevent that from ever happening again. However, despite the inquiry, nothing was done. The fact that resilience to natural disasters is not considered and that we are dangerously distracted by the debate on energy saving is often quite frustrating for the insurance industry.

I was interested in what Dr Bulkin said about transport. There is a simple solution to the issue he raised, which is being adopted in the United States of America: the switch from petrol to ethanol. Ethanol can be used to power aircraft and is non-polluting and carbon neutral. The USA is racing ahead with developments in the manufacture of ethanol, even from domestic waste. Any organic waste, including waste paper, can now be turned into ethanol for about 20p per litre.

There are easy solutions to the transport issue. The main problem is that we cannot fence off our climate from that of the rest of the world. Given the growth rates in China, India and the USA that I mention in my paper, the impact of any contribution that we in Scotland make to energy conservation will be negligible when compared with the impact of climate change on Scotland. We must concentrate on adapting and becoming more resilient.

14:15

Rob Gibson: Your comments and the conclusions in your paper show that we must be prepared. I am thinking about storm damage and building regulations, which you have touched on. Some places are becoming uninsurable, although they are mainly in areas that are liable to flooding. We have seen storms that are causing certain places to be extremely exposed. Should the fuel poverty that you mention be a driver for

Government investment in more resilient buildings?

Professor Crichton: Often a more resilient building is also more energy efficient. There is no reason why we cannot have both, as that need not cost the taxpayer anything. Increasing resilience does not increase the cost of a new building very much and produces a building that is more likely to survive the next 20 years, to be insurable and to benefit society in the longer term. It is depressing that what research the insurance industry has done shows that houses built after 1971 are much more likely to be damaged by a storm than older houses are. The 1993 Braer storm in Shetland was the equivalent of a category 5 hurricane and lasted for 22 days. The damage that the storm caused to buildings was negligible, because buildings in Shetland are built well and substantially. I shudder to think of the costs in life and property if such a storm were to hit the central belt of Scotland. The further south that one goes, the weaker the buildings are.

Rob Gibson: I understand that. Given that the impact of climate change is being masked by economic activity to reinforce buildings, should we ask ministers to storm proof buildings in parts of the central belt, such as the cities, that have been less prone to extreme weather? Should such an approach be taken countrywide, rather than just in exposed areas?

Professor Crichton: Yes, it must be countrywide. The problem with storms is that the global general circulation models that model climate change are inconclusive on whether storms will become more frequent and severe. However, it is agreed that storm tracks are changing. The sort of storm that would previously affect only Shetland is moving south. There are all sorts of complicated reasons for that, which I will not go into. In the past 50 years, the number of storms crossing the mainland of Britain has doubled, so we must think on an overall, countrywide basis.

It is no longer enough to have different resilience standards for different parts of the country. Everything must be brought up to the same standard—the standard of resilience that exists in Shetland, for example. To do that, we need much more research and data. It is a big disappointment to me that the insurance industry is sitting on millions of storm damage claims that could be used to identify which bits of a building are most likely to fail at what wind storm speed. Only a trivial amount of money, plus endorsement from Government, would be needed to bring together those data and to produce reports on which bits of buildings need most attention. From previous work, we know that 60 per cent of building damage from storms relates to roofs and that prefabricated timbers in roofs are much more likely to fail than old-fashioned timbers that are built on site.

The presence of sarking boards makes a big difference and reduces damage to roofs, but many English builders come up to Scotland and put on roofs with no sarking boards, which is a recipe for the roof to come off. We spend so much time on disabled access—which is, no doubt, well meaning and well deserved—but what is the point of building a disabled-accessible, energy efficient home if the roof blows off in 10 years? Sarking boards have a big impact on resilience. We must concentrate on collecting data, analysing them and upgrading the building regulations.

Gerry Metcalf (UK Climate Impacts Programme): I thank the committee for the opportunity to give evidence.

David Crichton referred to the difference between retrofit and new build, but perhaps he did not emphasise it enough. The technologies and the regulatory routes are different. Although it is relatively easy to change the building regulations to introduce new mitigation and adaptation criteria for structural and thermal performance, that still has not happened in England and probably not in Scotland either. I encourage the committee to use its influence in that regard.

Given that the accepted figure for replacement of building stock is about 1 per cent per annum, the real challenge is the stuff that already exists. David Crichton pointed to the approach that needs to be adopted. As he said, we must work on the premise that the threat of storm damage is the same throughout Scotland, because the scientists do not know. However, he also pointed to the fact that the stock is different in different places. I reinforce that point. In some places, the stock is robust and we would not want local authorities to upgrade it by edict, but there are places where the stock might be vulnerable. A serious risk assessment must be made to take the decisions.

Professor Crichton: The Building (Scotland) Act 2003 already gives the Executive the power to require resilient reinstatement after a flood or storm, so primary legislation is not required. If the provision was used, the insurance industry would be first to carry the brunt of the costs of reinstating the most vulnerable properties—the ones that fail. I have spoken to all the major insurers and they are happy for the measure to be used. They know that it will cost more in the short term, but that it will make buildings more resilient in the long term. I ask the committee to recommend strongly that the Scottish Building Standards Agency exercise the powers that it has under the 2003 act. Parliament displayed great foresight and carried out admirable work in introducing that measure to

primary legislation, but nothing has been done to implement it.

The Convener: In answer to Rob Gibson's question, you said that not enough information exists about the most appropriate resilience measures. Risk assessments of bits of the country and types of buildings were also raised. You then said that the insurance industry has a lot of the information. Clearly, we need to pull that information together. Do you have suggestions on the best way to do that? Should the process be Scottish Executive led?

Professor Crichton: I have a university lined up—the Glasgow Caledonian University, which probably has the most expertise in doing such analyses of any university in the country. However, the university needs enough money for one research assistant—perhaps £30,000 a year. Even more important would be to have the endorsement of the Scottish Parliament for the collection of the information, because it needs to be collected from insurance companies and loss adjusters. Such an endorsement would give the scheme credibility.

I have experience of the matter in relation to flooding. We have the biggest database on flood insurance claims in the world. It is hosted in Scotland but it covers the whole of Britain and it is of incredible benefit to insurance and reinsurance companies because it lets them know which buildings are most vulnerable to flooding and how much premiums should be, depending on construction type. The database is funded by individual companies in the insurance industry, but the funding for it is running out.

An endorsement from the Parliament and enough funding for one research assistant would assist considerably with expanding the database. The analysis that has already been done is in the public domain, and it assists greatly with building regulations. The Department for Environment, Food and Rural Affairs is planning some work on the matter.

The Convener: That is great. Richard Lochhead wants to come in, but first I will take Bernie Bulkin, who had his hand up ages ago and has been waiting patiently.

Dr Bulkin: I wanted to come back on the point about fuel poverty and energy efficiency in buildings, because I think that they are related. I suggest two simple and effective policy measures that could make a difference. First, on new build, what do builders want that can be delivered by Government with no cost? They want rapid approval of their plans. A policy measure that has been used effectively in some places involves saying to builders, "Here is the energy efficiency of houses that are being built today. If you come in with a plan that is 15 per cent better than that, you will go to the front of the queue." Within a year, everyone is coming in with plans that are 15 per cent better and standards can continue to be raised. That is an effective, no-cost measure that raises standards rapidly.

My second point relates to existing stock, which has been identified as a big problem, because there is so much of it. The measure is straightforward. Whenever a house is sold, the owner has to not only disclose the level of energy efficiency but bring the house up to a certain standard. Housing stock is replaced slowly, but ownership turns over much more rapidly. That would be an effective measure that could do a tremendous amount to bring substandard housing up to a particular standard.

The Convener: That is an interesting thought. Does Gerry Metcalf want to come in?

Gerry Metcalf: The committee might want to approach the Association of British Insurers and the Council of Mortgage Lenders. The UK climate impacts programme is working with both organisations and they are working together to address the issues. One idea is that building societies could agree to lend more money to improve the standard of a reinstated piece of work; the work need not be wholly dependent on the insurer. Instead of the insurance company reinstating an element to its former standard, the building society, as the mortgage lender, would give another £5,000 or whatever to improve performance.

Discussions are also taking place about resale packs. Bernie Bulkin was talking principally about mitigation criteria, but the same applies to adaptation criteria. What evidence is there of a particular building's future proofing for a changing climate? It will take a long time for the idea to bite but it is, nevertheless, a tool that the Council of Mortgage Lenders is considering with the Royal Institution of Chartered Surveyors. The professional bodies and trade associations are a possible route. They are UK-wide, which could be an advantage or a disadvantage, but they are already active in the areas that the committee is discussing.

The Convener: Thanks—that was a good exploration of the topic. Does Richard Lochhead want to follow that up or move on?

Richard Lochhead (North East Scotland) (SNP): I have three questions.

The Convener: Are they on the same issue?

Richard Lochhead: One question relates to building and two do not.

The Convener: You can ask the building question first and the other questions later. Nora Radcliffe also wants to ask about building.

Nora Radcliffe (Gordon) (LD): My question is about insurance.

The Convener: As we have not discussed the matter before, it is useful to follow it through.

Richard Lochhead: I will ask my building question and if you could allow me to ask my other two questions later, that would be great.

The Convener: I will do that.

Richard Lochhead: Professor Crichton's paper says:

"Buildings are the biggest source of carbon emissions, especially the embodied energy in building materials manufacture, transport and waste."

Do the other two witnesses agree?

14:30

Dr Bulkin: It is clear that, in general, houses and office buildings produce about 40 to 50 per cent of carbon emissions. Measurements of embedded energy—the amount of energy in materials—depend greatly on the building materials. Putting a lot of concrete on the outside involves a huge amount of embedded energy, but building a wood house or using natural stone does not involve as much. The amount depends on the building material.

Gerry Metcalf: I agree with the 50-ish per cent figure, half of which comes from housing. Those are the broad numbers.

Embodied energy is interesting, and I happen to have a thesis on it. As the thermal performance of buildings becomes more efficient and we use condensing boilers and so on, the energy cost of keeping a place warm and lighting it diminishes in proportion to all the other energy costs. At that point, the embodied energy starts to chime in. Historically, that has not been a factor, because we had open fires and so on and the energy costs of keeping a place warm were proportionately high. However, new building regulations, changes in regulations and changes in heating and ventilating equipment mean that embodied energy will represent an increasingly large proportion of energy. I do not quite agree with David Crichton, but the possibility is that the trend will go in that direction.

The bigger discussion concerns not embodied energy but embodied carbon. This will sound trivial, but it is important. If the ship that brings timber across the Atlantic or from the Baltic is sail propelled, it is carbon neutral. [*Laughter.*] I am being serious.

Professor Crichton: Building with timber sequesters carbon. Scotland has a great benefit over England because 70 per cent of new housing is timber framed, which is much better for the planet than two-leaf brick and mortar, because bricks are high in embodied energy, as is cement. It is also impossible to prevent carbon emissions when cement is made. Making cement produces a chemical reaction that produces carbon dioxide. When cement cures, it sucks in oxygen. Cement is bad for carbon emissions.

Some insurance companies, such as Munich Re, are rebuilding their office buildings without demolishing the concrete structure, because they know that demolishing the concrete structure and using new concrete will be bad for the planet. They remove all the cladding but leave the concrete shell, on which new cladding is put. That is much more environmentally friendly. I would like that idea to be tried here.

In looking for energy efficiency, I do not know why we do not use more thermal imaging, which some councils use. Thermal imaging can spot the main culprits of heat release. Councils have also found that it can help with resilience, because it can spot delamination of harling, which allows harling to be sorted out before it falls off. We could do much more with thermal imaging, even from modern satellites, which are very accurate.

Nora Radcliffe: If resilient reinstatement was demanded after a flood or storm, how would it impact on insurance premiums? Would higher resilience balance the added cost?

Professor Crichton: I am not in a position to say how it would affect insurance premiums. I repeat that insurers have resisted resilient reinstatement in the past because sometimes, although not always, it costs a little bit more. Moving electrical sockets higher up the walls and fixing plasterboard horizontally instead of vertically make the building more resilient to flood, but those things do not cost any more to do.

Insurers have told me that as long as there is a level playing field, which is what we would get from legislation, they are quite happy to reinstate more resiliently. Because of the state of the insurance market, which is going to make it harder for insurers to cancel policies, insurers know that they are in for the long run. Even when a house is sold insurers are guaranteeing to maintain cover for the new owner. That will become an attractive economic proposition for insurers. Therefore, there will not necessarily be an increase in premiums, but if there is, it will be a short-term one. More important, insurance is more likely to be available on a house that has been reinstated resiliently.

I emphasise that there are only two years left before the insurance guarantee runs out at the

end of 2007. Renewal of that will depend on the actions of Government departments in England—flood and wind storm insurance in Scotland depends on the Government in London passing equivalent legislation to the Flood Prevention and Land Drainage (Scotland) Act 1997. That seems crazy to me and it has upset many local authorities in Scotland. Despite all the work that they have done, insurance could well be pulled from under their feet at the end of 2007 because London has not passed legislation that already exists in Scotland.

Nora Radcliffe: Is it not possible for the insurance companies to behave differently north and south of the border?

Professor Crichton: Increasingly, they do. That is largely because I have been conducting a one-man campaign for the past 10 years to educate insurers in London that Scottish risks are different and, I think, better. That is mainly because of excellent land-use planning legislation and practice in Scotland. With the few exceptions that Ms Radcliffe will know about, Scottish councils follow Scottish Executive planning policy. The few that do not are finding that insurance cover is getting much harder to obtain and that will get much worse after 2007. The councils that follow Scottish Executive planning policy, particularly the excellent Scottish planning policy 7, which contains a risk framework based on the insurance industry risk framework, are finding it easier to get flood insurance. In the absence of action by local authorities or even the Executive, the insurance industry is going to drive differential premiums.

Mr Ruskell: To wrap up the section on building, the UK Government and the Executive hold several policy levers. Do you see the need for sectoral targets in this area? For example, is there a need for sectoral targets for energy efficiency? Would that be helpful?

Dr Bulkin: Unless you set a target—and an aspirational one at that—you will not improve.

The Convener: That is for mitigation. What about the resilience factor? That is something that the committee has not discussed previously. We have focused on reducing emissions and have not talked so much about how we adapt. How could we begin to think about adaptation targets?

Gerry Metcalf: I will just share with you where the revisions to part L of the building regulations for England and Wales are at the moment. They went out for consultation last July and submissions were received in November. They were very much driven by the European directive and, in a sense, whatever you wanted to do, you would still be largely influenced by the major changes on the all-round carbon performance of buildings. The English response has been to distinguish between domestic and non-domestic, and between new build and refurbishment, and to get as much legislation as possible applied to refurbishment, without it being retrospective.

Mr Ruskell: Does that allow some predictability in setting targets?

Gerry Metcalf: Yes. The whole thing is predicated on the sophisticated computer models that one will be required to use. If you are not familiar with that, I can give you the references for those consultation papers. The document for just one part of the building regulations is 200 pages thick.

To answer the convener's question about the adaptation side, we were delighted to see for the first time in part L of the building regulations a section headed "adaptation". Right at the end of the section, there are about 10 pages where the document begins to discuss the way in which the performance standards might be applied, through the building regulations, for future climate proofing. In micro-print it says that it is so complicated to do all the other stuff in the mitigation agenda that, although the document lays out some of the considerations, they will not be pulled in until 2010. Our response was that if that is the case, England and Wales will have five years of buildings that are not fit for purpose—given the capital programmes that are going on in hospitals and schools, that is bizarre. We have not had an answer to that.

Members will have noted that in my paper I point out the difference in the climate in Scotland, both against a baseline and in the future. Dramatic changes like the summer overheating in London will not impact in the same way on Scotland. Broadly, the temperature changes will be beneficial in Scotland. You will not need as much heating in the winter because it will be milder. You will not get extreme high temperatures in the summer except perhaps as a result of heat-island effects in the urban centres. Glasgow, Edinburgh and perhaps places further south might encounter those effects, but possibly not on a sufficient number of days to cause concern. We need to differentiate between performance requirements for adaptation in Scotland and those in England and Wales. The committee may already be aware of this, but quite thorough work on that is going on in the Office of the Deputy Prime Minister. We have yet to see the ODPM's conclusions about that difficult challenge. At the moment, the building regulations do not make any reference to a future climate. All the building design that goes on is based on last century's weather, which is bizarre, given the scenarios that we now have.

Professor Crichton: One of my concerns is the European Union construction products directive, which seeks to harmonise the standards of

construction products throughout Europe. It does not take into account the fact that Britain is the stormiest part of Europe and that many of those products, such as roofing tiles for northern Italy, which does not get any storms, can now be used in Scotland because they have the CE mark on them. The Scottish Building Standards Agency assures me that that will not be a problem in Scotland, but it could well be a problem in England. I flag that up as an issue that the committee might want to look into.

The other European issue with which the committee will no doubt be familiar is the water framework directive. I was very impressed by the Transport and the Environment Committee when it was debating the Water Environment and Water Services (Scotland) Bill to transpose that directive. The committee took account of a united front by the non-governmental organisations in Scotland, which were complaining that the water framework directive would increase flooding risk. The act correctly took flooding into account. However, I would also flag up that the committee's intentions are not being implemented in the correct way by SEPA. That is perhaps something to consider another day.

The Convener: It is definitely something for another day. I am sure that we will come back to it, as the committee has been interested in the issue in the past. Members have different constituency interests in the flooding agenda.

Richard Lochhead: I have a couple of general questions. The UK target is to cut greenhouse gas emissions by 60 per cent by 2050. If you were the Scottish environment minister and you were responsible for putting together Scotland's response to climate change for the Parliament, what target figure would you set? The question is directed at all three witnesses.

14:45

Dr Bulkin: Sixty per cent is a fine aspirational target. Switzerland has set the target of a 90 per cent reduction in emissions by 2050. It is seeking to achieve that reduction, first, through massive change to its housing legislation, which makes it possible to accomplish a lot over 50 years, and secondly, through continued development of hydro power. A 60 per cent target is achievable with today's technology. However, we must implement it, through a variety of activities. I would stick with the 60 per cent target, which shows that a great deal can be done, but we also need stages along the way to indicate when we will achieve reductions of 20 per cent, 40 per cent and 60 per cent.

Gerry Metcalf: My response can be only a personal view, because this is a mitigation issue and our agenda relates firmly to adaptation. I am not quite as hung up about these blooming percentages as everyone else seems to be. I would seek other deliverables alongside the reduced greenhouse gas emissions. There are social, economic, cultural and other dimensions that are equally worthy—in some ways, more worthy. Comments have already been made this afternoon about the influence of the Scottish economy on the global picture. To be honest, it would be better for us to spend our time influencing China, India and the USA than fretting about whether the target is 52 or 61 per cent. That is a personal view, rather than one that the UK climate impacts programme would necessarily defend.

The Convener: I am sure that that will be made clear in the *Official Report*.

Professor Crichton: I agree with Gerry Metcalf. Targets can evoke a knee-jerk reaction that can lead to our going down the wrong road, especially when we have not explored all the technology. I return to the point that I made about ethanol from biofuels. Scotland has some experience of producing alcohol from plants such as barley and oats and we could do a great deal to make rural communities self-sufficient in motor fuel and electricity from biofuels. That could create a large number of jobs. The technology is available in the USA and could be imported. We do not seem to have explored that option.

We are all looking for quick, knee-jerk reactions involving more wind turbines, which—let us face it—people do not like. We will need a lot of energy when our nuclear power is shut down, which Mr Wallace implies will happen. I have no axe to grind for nuclear power but, as an insurance man, I would say that the statistics for nuclear power indicate that it is much safer than almost any other kind of energy, especially dams.

Dam failure will be a huge problem because of climate change. Government reports show that, with climate change, the chances of dam failure will increase by 10 to 20 per cent. Last year, 13 dams in the USA failed due to heavy rainfall. Are we to say that dam engineers in the USA are incompetent? I am not saying that. However, when British dam engineers say that our dams are perfectly safe, I sometimes worry, especially because, until the Freedom of Information (Scotland) Act 2002 was implemented this year, information about the condition of our dams was secret and one could not get hold of it. The enforcing authority is usually the poor highways engineer with the local authority, who has no training in assessing dam risk and no time to do anything about it. We need a sea change in the way in which we deal with dams. My recommendation is that we should end the

unjustified exemption that dams have from the Control of Major Accident Hazards Regulations 1999—the COMAH regulations. In a stroke, that would bring dams under the control of the Health and Safety Executive and would mean that they were supervised properly.

Dr Bulkin: I will comment on a couple of the points that David Crichton raises. First, the idea of the 60 per cent target is that it sets the aspiration for what we are trying to achieve; it does not tell us how to achieve it. Therefore, the target does not necessarily take us down the wrong path. If the target was to have 22 per cent nuclear by a certain date, that would be legislating for an end-of-pipe solution, which would be wrong. However, a target for a reduction in emissions by a certain amount is the right kind of target.

Secondly, I will give the SDC view on the three energy alternatives that have been mentioned. As our paper states, we agree that Scotland has a tremendous opportunity to increase the use of biomass as a renewable energy source, not just for transport fuel or power generation but for heating. There are lots of clean ways of using woody biomass for heating. A good thing to keep in mind is that all biomass utilisation is local, which I guess reinforces the point. We do not want to transport biomass long distances because that would give away all the advantages, but the source provides the opportunity to increase local energy self-sufficiency, of which we are all in favour. A number of technologies are available for that.

We strongly support the increased use of wind power, which at present is the most economic and easily implemented of the renewable alternatives. If I put myself in your shoes, I would ask whether Scotland wants a resource that it can develop and export, that England will pay a lot for—the price will probably increase over time—and that will never run out. Wind power is a tremendous natural resource that can be built up; it is low maintenance and will provide local and regional income for a long period. Wind power has been demonstrated to be reliable and the costs have come down to a reasonable level.

The SDC has a clear view on nuclear power, which was published a few years ago. If we look at nuclear power through the lens of sustainable development, taking into account the issues of whether the polluter pays and intergenerational impacts, we see that there are better alternatives for dealing with our need to reduce carbon emissions from power generation. Although nuclear power is a low-carbon alternative, except for the embedded carbon in the concrete in nuclear power plants, there are better alternatives and we would prefer them to be implemented.

The Convener: We are beginning to run out of time, but I will allow one more quick question.

Richard Lochhead: Given Scotland's unique characteristics and natural resources, what is Scotland's potential to contribute to the mitigation of—or adaptation to—climate change compared with that of the rest of the United Kingdom and other European countries? Do you think that we can make a disproportionate contribution?

Professor Crichton: I am sure that Bernie Bulkin would agree that because Scotland has a maritime climate it is well placed to take advantage of wind, wave and tidal power. I take issue with the suggestion that wind is a reliable source of power because we need the right type of wind. Wind farms had to close down during last month's storms because the wind was too strong, but for a lot of the time it is not strong enough. For that reason, wind power is not useful for the background or core electricity supply.

Strangely enough, I think that solar power has a big part to play in the future, partly because of its resilience; solar panels or slates on roofs are much more resistant to storms and they are installed locally on individual houses. Photovoltaics are now so advanced that, even in Scotland, a house can contribute electricity back to the national grid—the outlook is rosy. However, Scotland's biggest advantage is in relation to ethanol and biofuels.

Dr Bulkin: Another technology that is potentially important for Scotland is carbon sequestration. The technology is emerging—and the costs are not astronomical—to take CO_2 emissions from chemical plants, refineries and power plants, separate out the CO_2 and put it underground in depleted oil and gas reservoirs. There is a business in getting the CO_2 and storing it there because pumping CO_2 down will increase gas and oil production from the depleted reservoirs. That needs to be examined; I know that the Department of Trade and Industry is considering the technology, but carbon sequestration is a particular resource for Scotland and it could be important in the future. In time, it will play a role in the overall picture.

Gerry Metcalf: Adaptation is talked about most often as a response to the threat and hazards of climate change. That is mostly how we have discussed it this afternoon, but the UKCIP likes to sell the opportunities that are associated with it too. There are lots of commercial opportunities, depending on the market that one is in. Paradoxically, if one is the first player in the market to deal with things that appear to be threats, such as flood hazards, they can be commercial opportunities as well, both in Scotland and on a global scale. There are significant economic opportunities associated with giving

thought in advance to climate change on both a national and an international scale.

The Convener: Thank you all for your answers, which have given us a lot of food for thought. We are keen to consider practical challenges and solutions and we had not picked up on adaptation to such a large extent until today, so the session has been helpful to us. You are, of course, welcome to stay for the rest of this afternoon's meeting if you wish. Thank you for providing your submissions in advance and for being prepared to answer our various questions this afternoon.

14:59

Meeting suspended.

15:08

On resuming—

The Convener: We will now kick off our second evidence-taking session this afternoon. I thank Ross Finnie, the Minister for Environment and Rural Development, for being with us. We look forward to hearing you talk about what the Scottish Executive is doing on climate change. We are keen to hear your thoughts. Could you introduce your officials? After you have spoken, I will open the floor to questions.

The Minister for Environment and Rural Development (Ross Finnie): I am joined this afternoon by Philip Wright, Alistair Montgomery and Duncan Beamish, all of whom are from the climate change team in the Scottish Executive Environment and Rural Affairs Department.

Climate change is an almost totally cross-cutting issue—that rather odd term that we seem to have adopted—so my responsibility, as with sustainable development, is to ensure the co-ordination of policy on the issue. The Executive takes the view that although certain ministers have individual responsibilities in their departments, it is helpful to delivery in the Executive for one minister to be responsible for performing a co-ordinating role, for officials to be accountable specifically to that minister and for that minister to report to Cabinet on progress, lack of progress, where matters could be organised better and where they could be driven forward in a more co-ordinated fashion.

The Executive is committed to the principles of the Kyoto protocol, which—thank goodness—finally came into full force and effect last week. In 2000, we introduced a preliminary programme for dealing with climate change. Although we can always do better on environmental matters, our emissions are at least on a downward trend. Between the base year and 2002, while the economy was growing by more than 25 per cent in crude terms, Scottish greenhouse gas emissions declined by 6 per cent and carbon dioxide emissions declined by 3 per cent.

As the convener is aware, we are in the middle of an extensive consultation on the review of our climate change programme. In the initial stages of the review, we were committed simply to making an equitable contribution to the UK's adopted targets. That means that we would take the same or similar action in the areas in which we have devolved powers. In 2000, that seemed to be a reasonable thing to do. In the consultation document, we raise a number of questions about whether we could have some disaggregated targets.

The most ambitious of our energy goals is for 40 per cent of our electricity to come from renewable sources by 2020. As members know, as part of the climate change programme review we are engaged in establishing a much more focused energy efficiency strategy in Scotland. We have promoted the highest thermal insulation standards in our building standards regulations. As each generation of technology comes forward, there is always scope to do more in that area.

Over the period of the spending review—2003 to 2006—we have committed ourselves to improving efficiency in our transport services and to ensuring that, by the end of that period, 70 per cent of our transport expenditure relates to public transport. We have guaranteed £350 million over the next three years to local authorities to fund the national waste plan. The forestry strategy commits us to expanding the area of afforestation. We have initiated and published research that makes recommendations on land use practices, to reduce nitrous oxide emissions from the Scottish agriculture sector.

We have carried out some research and development. However, I do not claim that we have all the answers, which is why I am hoping for a fulsome response to the current consultation. All that we did in 2000 was make a start. I think that it was a reasonable start, but I am conscious of the fact that things have moved on. There are areas in which we can drive the programme forward, as part of the consultation. The committee's inquiry into climate change is very timely and I hope that some of its outcomes can be included in the final process, after we have completed our consultation.

The Convener: We welcome the suggestion that, once we finish taking evidence and complete our report, it will be read, digested and, hopefully, acted on. The committee is keen that its inquiry should be of use not just to the Parliament, but to the Executive.

Before you arrived, I explained that we have just about tempted your colleagues to answer

questions about their particular areas of interest. However, I take the point that you are the person who oversees the implementation of the climate change strategy. This afternoon we are keen to focus on the strategy and Scotland's role in it. Members would also like to ask questions about the environment and rural affairs elements of your brief, because a number of issues in those areas have been raised over the past few weeks.

15:15

Richard Lochhead: I have two questions, the first of which is general. If you were to set a target for cutting greenhouse gas emissions in Scotland, how would you set it and benchmark it? There seem to be three ways in which that could be done. One is within the context of the UK, which has a target that could be emulated or exceeded in the longer term. Alternatively, you could consider other countries that have similar characteristics or resources. Finally, you could just not benchmark with anyone and come up with a target that you think is appropriate for Scotland. We have heard from previous witnesses that Scotland is in a good position to make a disproportionate contribution to the response to climate change, given our natural resources and other characteristics. How do you intend to set the targets and benchmark for Scotland?

Ross Finnie: Your final comment raises a fascinating question. While we undoubtedly have access to resources that potentially allow us in some respects to do better than other countries, the phrase "a disproportionate contribution" illustrates the difficulty of targets. For example, in the energy sector, because of our high dependence on nuclear power and given that energy accounts for a high proportion of greenhouse gas emissions, it is difficult to visualise how, in a purely Scottish context, we make a disproportionate contribution, given that our level of performance is good by international comparison because we use nuclear energy.

By and large, with the right measurements, targets give a better sense of whether we are making progress, the outcomes and where we are going. Given our commitments under the Kyoto agreement, it is important that we have a set of measures that allow us to make an informed judgment about whether the Government and the whole of Scotland are making progress towards meeting the overarching Kyoto objectives. I am not sure that we need to make an international comparison with other states. All states must go back to the 1990 baseline and acknowledge that they must achieve the 60 per cent reduction in greenhouse gas emissions. We must then see whether, by sector and subsector, we can achieve something.

I wonder whether Richard Lochhead is suggesting that the Scottish population should consume less energy. How would we set the carbon reduction target? Would it be set using the amount of energy that is produced in Scotland or the amount that is consumed? Those questions are fundamental. If we used consumption as a measure, we would be talking about what individual Scottish citizens do; if we used the energy market, in which Scotland exports energy to the rest of the United Kingdom, the target would be set by reference to consumption habits elsewhere.

I do not for a minute say that we cannot set a target; just that the matter is a little more complex than plucking a figure from the air. I am anxious for us to have targets so that we can demonstrate more transparently than we can at present that we are making progress towards meeting our international obligations under the Kyoto agreement.

Richard Lochhead: We will put targets to one side, although no doubt we will return to the issue.

My second question is about prioritisation in the Government's response to climate change. Clearly, governments have limited resources and ministers have limited time, so you must prioritise in deciding how to devote your resources. We heard from previous witnesses that buildings are the biggest source of carbon emissions, which perhaps indicates that buildings should be a priority. You must have enough information available to give the committee an indication of what you see as the Government's priorities in tackling climate change.

A couple of weeks ago, in your announcement on investment in the water industry for the coming years, you said that one priority for the industry is to connect 120,000 houses to the sewerage infrastructure. That suggests that Scotland will have 120,000 new houses in the next few years. What steps are you taking to co-ordinate the Government's response to ensure that those 120,000 buildings will be energy efficient and contribute to tackling climate change? What steps have you taken as a priority?

Ross Finnie: In setting priorities, we consider what the major contributors to greenhouse gases are throughout the UK. Scotland has slightly but not hugely different figures. Energy is far and away the biggest single contributor, and transport is second. If we are talking about disproportionate contributions, the emissions from our organic soils make a wholly disproportionate contribution in the UK, and other sectors follow. If we are to make a real contribution to meeting the Kyoto targets, it is obvious that that must involve the biggest single contributor—energy. You are right that the energy efficiency element has not been sufficiently

focused, which is why we must have a strategy to drive up energy efficiency in public and private sector buildings and elsewhere.

In housing, energy efficiency has been a priority, but we can always try to do better. We have changed the building control regulations to the extent that we now have the highest thermal insulation requirements in the UK. We have begun the process, but there is no question but that more can be done.

Co-ordination of housing policy involves two procurement elements. We have limited control over some housing developments, so our biggest stick is the building control regulations. On the other hand, much public investment property exists. I have had discussions with the Minister for Finance and Public Service Reform, who is essentially in charge of public procurement and is very aware of the need to build into contract procedures specifications to ensure that we improve energy efficiency, the level of which needs to be raised. I am not suggesting that the present contractual arrangements are good enough. Energy efficiency will oblige public procurement in a range of sectors to raise the ante.

The Convener: I am keen to follow up that point. When I talk to local housing associations and builders, they are reluctant to do more than the minimum. How do we encourage them to think more creatively? I can think of projects in my patch for which we want renewable energy facilities to be installed and the technology is proven, but persuading the housing associations to put in the extra effort to make that happen remains a challenge. Those who do that locally are seen as the exception to the rule, rather than the norm. How can we turn that round?

Ross Finnie: The way in which finance is organised for public-private partnerships provides serious lessons for how we organise building projects in environmental terms. That is interesting and I never thought of it as a plus point, but I confess that it is. I am not saying that all PPPs operate in that way; I am talking about the theory of how to finance them. A PPP involves considering the lifetime costs of a capital project. If that is carried to its logical conclusion, we are supposed to assess the maintenance and running costs of a building over its life. If that is done properly, it ought not to be beyond the wit of our planet to calculate the price that we are prepared to pay for the capital cost of the building and to work out its maintenance and running costs, which gives us the lifetime cost.

What is the lifetime cost of a building in which we adopt at the outset a more sustainable approach to its thermal properties, the materials from which it is constructed and its energy use cost over its life? All of us must try to make those in charge at Government, non-government and quasi-government levels take far more seriously the consideration of a building's lifetime costs. If we do that, we might start to make the right decisions when we set about constructing a building, rather than adapting a building halfway through construction to make it more thermally or energy efficient.

If we made such decisions at the outset, we might be in a far better state. In considering the problem of persuading people to be more up for adopting energy efficiency techniques in building, it is my observation—and it may also be that of some of your witnesses—that that should be one of the ways of doing it.

The Convener: I was just thinking about going beyond energy efficiency to energy production. It is not a required issue, but it is a desirable one.

Ross Finnie: You will not come to the conclusion that it is desirable in financial terms—because we tend to be terribly driven by finance—unless you are calculating the lifetime cost of a building.

The Convener: But the system has got to allow you to do that. We may come back to that.

Mr Ruskell: You outlined your cross-cutting role in the Cabinet on sustainable development and on climate change emissions. Are you aware of the climate change impact of specific projects and policies? I am thinking of the M74 motorway and the air route development fund.

Ross Finnie: That is not just a casual role on our part. On the environmental side, we are involved in taking a balanced view of the environmental impact of major projects. We have considered emissions not just in relation to the environmental footprint of the M74 but in relation to the footprint right through the M8 and M74 corridors. We also have to balance sustainability against social and economic impacts. In our discussions with officials and with the Minister for Transport, we try to find some balance between economic issues, and environment and climate change issues. The same applies to other transport projects.

Mr Ruskell: When the decision was taken to put such projects and policies into the partnership agreement, did you analyse the carbon footprint? Did you analyse the emissions and the contribution to climate change that would arise from those projects and policies?

Ross Finnie: I am not sure that we put them into the partnership agreement. That might have added a degree of sophistication to the partnership agreement process that would have elevated it to another level.

Mr Ruskell: You identify tree planting as a way of offsetting those projects and policies, so there must have been some calculation.

Ross Finnie: That was when they were put into the policy programme. Your question quite specifically mentioned the partnership agreement. I do not deny that those are difficult decisions, but we have to deal with life as we find it. There are issues both in terms of the total contribution of the emissions and in terms of economic development in the whole of west central Scotland. There are also issues to do with the alternatives and options in a system. I know that you would not build roads at all, but if you had to have a roads programme I am not sure that you would design one which involved crossing the Clyde twice when it was not even necessary to cross it once. The current road system is less than ideal in its present form.

Mr Ruskell: If you are making trade-offs involving the economy, surely you need to be clear and up front about what the impact of projects and policies will be. If we allow the air route development fund to increase air traffic to Scotland in addition to rural lifeline air travel, and if we allow road-building programmes to increase our climate change emissions, where else will transport sector reductions come from?

We are trying to reduce the transport sector's impact on climate change; at the moment, it is part of the problem because its emissions are growing rather than reducing. What other areas can take the hit and reduce their emissions to offset the increases that you have allowed because you have made the judgment that they are beneficial to economic development?

15:30

Ross Finnie: I will take air transport as an example. I want to be absolutely clear about the Government's policy. As the Minister for Transport will confirm, we have no interest in cheap flights per se and we do not allocate any funding to them. They are available due to economic decisions that are made and people benefit from them, but the Government does not actively contribute to them. In relation to route development, we are more concerned with economic development, because Scotland's economic future lies in trading its intellectual capital.

The other side of the coin is that air travel as a whole makes a disproportionate contribution to greenhouse gases. For that reason, we—and indeed the UK Government—wholly support the moves to include air transport in stage 2 of the carbon trading emissions programme. That is wholly appropriate; there will be a dampening down in that use even by people who are able to compete because its inclusion in the programme will affect everybody. That will not put Scotland at an economic disadvantage per se, but will be a penalty that is imposed on all 25 member states, all of which will have a similar ability to compete.

Mr Ruskell: The question was, leaving air transport aside, where else—

Ross Finnie: It is a major contributor.

Mr Ruskell: Absolutely, but given that it will continue to grow, even with the emissions trading in Europe, where else in the transport sector can we make savings? If we allow the M74 extension and continue with the air route development fund, are we left with increased congestion charging? What policy levers are you co-ordinating to ensure that we bring emissions right down?

Ross Finnie: I stress that no minister has said that the current programme is skewed 70 per cent in favour of public transport. What we are committed to is that the balance will be 70 per cent by the end of the programme. Our investment in and encouragement for public transport is a major contribution. Indeed, we use some of the transport fund to take vehicles off the main roads. Some of our transport initiatives have taken transport—particularly food transport to the north of Scotland—off the roads and on to rail. In such areas we have to give greater emphasis in addition to unblocking—

Mr Ruskell: Are you confident that you can measure that in terms of CO_2 reduction?

Ross Finnie: I would certainly hope so. In individual cities our 70 per cent investment in public transport is a huge issue. There are major problems in that we have huge amounts of forestation that are about to mature and we are spending considerable sums of money to try to ensure that they are not put on to our roads and do not add to congestion or road miles. I am not suggesting that that is easy, but in our public transport investment we have a strategy to try to reverse the balance.

The Convener: One of the comments that we heard from the previous panel is that it would make a lot more sense not to transport products around the country—particularly biomass products—but to have a more localised focus. Has that idea formed part of your calculations?

Ross Finnie: That is fine as far as biomass is concerned, but it does not overcome the need to get forestry products to timber mills or timber processors. The biomass issue is a key issue in terms of the resource that is available in the forestry estates and in agricultural terms. In Scotland there is a far greater division between standard agricultural activity and forestry than there is in mainland Europe, where the two are much more integrated.

Rotational crops such as short rotation coppice for biomass, which would augment the local availability of biomass for heat-power exchange, must and will be part of that programme. I wholly agree that we should not transport the whole forest estate around and that we could do with more biomass plants.

The Convener: Some areas do not lend themselves to transport and lengthy distances are involved. Localised rural energy production and local use rather than export has been raised a few times.

Ross Finnie: Yes. Sadly, far too high a percentage of our forest estate was planted without any notion as to how it would be extracted.

Maureen Macmillan: My questions are about the other side of the coin. In the previous evidence session, we heard that even if Scotland reduced its carbon emissions to nil, we would continue to be affected by climate change. It was said that the type of storms that were once confined to Shetland are moving further south and that we must consider how to cope with the effects of climate change. Today, I had pictures sent to me by e-mail of severe coastal erosion in Tiree as a result of the recent storms. Harbours and houses have been damaged right down the west coast. We have heard that houses, as well as not being energy efficient, cannot withstand storms. What plans does the Executive have to help us cope with the inevitable effects in the next few years?

Ross Finnie: At the outset of the adaptations programme, one of its key physical elements related to flooding. The programme must now be moved forward and it is clear from discussions with those in the design, building, architectural and standards sections of the Executive that we need to revise and review the standards—I make no bones about that. As part of the adaptations programme, we must consider what revision of the standards might be required and we are already doing that. During the storm in which the Braer tanker went down, damage to buildings on Shetland was fairly minimal.

In the past, we have allowed developments to take place that were built way above sight lines and we may need to review that. One can go on a hill walk and see a bothy that is in line with one's eye and a modern development that has crept way up past the skyline. Apart from wanting to look after skylines better, there are other issues about the location of buildings. All of that must be part of a revision of the adaptations programme. The evidence that the committee has received during the inquiry will add to the review process.

Maureen Macmillan: We heard interesting evidence earlier that insurance companies keep a database of areas that are more likely to be affected by storms. It would be a good idea for the Executive to ask insurance companies for a keek at the database, to see if it would help planning. You talked about buildings, but what about issues such as coastal erosion? What thought have you given to the coastal towns and harbours that have been damaged recently and the threat of rising sea levels?

Ross Finnie: The vast proportion of the present adaptations initiatives for flooding currently relate to coastal areas, which is right, given our situation. The programme is on-going. We started with the most sensitive areas that have the worst record of incidents, but, as you rightly say, that must be constantly updated. That will be a rolling programme. At present, there are one or two inland flooding issues, but most of the initiatives are for coastal areas.

Philip Wright (Scottish Executive Environment and Rural Affairs Department): It is interesting that the insurance industry holds data on damage to buildings—I have known that for some time. The question is how we use those data. A few years ago, we managed to obtain for the first time information on properties that are at risk of flooding, which allowed us to start to think about a proactive approach to managing flood risk as opposed to the reactive approach until then—when Perth or Paisley was hit by a flood, the local authority responded to that.

We are starting to see the evidence that you mentioned, such as an increased number of storms and an increased impact on buildings, and now we need the evidence base for thinking about how to respond. We have done that with flooding. There is a long way to go, but at least we are moving in that proactive direction. Colleagues and ministers must think about how to respond to the evidence that is appearing.

Rob Gibson: I will raise two issues, the first of which is forestry. The paper that Colin Forrest—the eponymous Mr Forrest—submitted suggested that forestry offers more scope for emission reductions than was previously thought. About 16 per cent of Scotland is woodland and about 38 per cent of the European Union is woodland. We have a target of about 25 per cent woodland cover by 2050. If we could reduce emissions much more by sequestering carbon in forests, we could make a large contribution to a carbon-neutral budget. Uplands that are used for rough grazing and deer forest could form a large part of the land that is required for such forestry or native woodlands. How could we persuade the owners of those lands to switch to forestry?

Ross Finnie: As I have said, the point that you make about the statistical contribution to forestry for our relative latitude is clear in terms of mainland Europe and typical or comparable

topography. You are right to say that the forestry strategy expects growth—albeit relatively modest growth—in total forestation under the Forestry Commission Scotland.

The biggest single bugbear for that long-term investment has been the present trough, which is the longest recorded, of very poor timber prices. People do not enter forestry for the short term, but they review the cyclical trends and we have undoubtedly had the longest cycle of below-average prices, adjusted for inflation. That arose largely from the removal of the east-west dialogue, the release of the Baltic states and their realisation that they had a huge forestry asset, which they began to trade much more freely in the market, which has caused substantial price reductions. I am not sure whether any Government can deal with the fundamental economic issue, although the situation is beginning to balance out, because timber prices have bottomed, although they have made little recovery. A recovery would be helpful.

The key for us is to press the Government strategy of greater integration of agricultural and forestation practice. That is an attitudinal matter for Scotland to overcome. We must make people understand that trees are in a sense longer-term crops that can be made part and parcel of a balanced and mixed agricultural economy. We are keen for the Forestry Commission to continue to drive for an increase and to bring the private sector with us.

Rob Gibson: If we took that approach to forestry, we would need to obtain open moorland and other areas to use, as I said. It has been suggested on one measure that up to one third of our emissions could be captured in that way.

The point leads on to the question of how we measure carbon emissions. How does our Government do that in the round? I preface that with a little example from Unst, which is doing an energy balance audit on how people in Unst use energy; it is obvious that it is possible to change people's habits on an island more readily than in some other areas. We must know how we will apply the measurement first of all, and then how we will apply it over a wider area.

15:45

Ross Finnie: I suppose that if that applies in Unst, it might well apply throughout the United Kingdom, as we are still an island. Philip Wright is the expert on measuring; he does nothing else.

Philip Wright: I do nothing else. I may have to defer to other experts, but monitoring emissions from within the UK, specifically in relation to land use and forestry, is the most complex of areas and is full of uncertainties. Those uncertainties exist at UK level. The UK operates and produces the so-called UK inventory of greenhouse gases, behind which lies an inventory for each of the six gases that are covered by the Kyoto protocol. It then drops down into the individual sectors, and if you think that transport is difficult, land use and forestry are particularly difficult. At devolution, all the data and statistics that we had were at the UK level; that was an issue, and it has taken us some time to develop disaggregated inventories, which we now have and have had for the past few years.

That has given us a much better feel for where the emissions are coming from. However, if there is uncertainty at the UK level and then there is disaggregation, further uncertainties are built in. Looking at the history of the greenhouse gas inventory, one can see that there have been changes over time. That is because the science and the monitoring methodologies are developing all the time. Each time, we have to go back through the base year—1990—and each of the subsequent years to revisit those statistics. It is a difficult area in which to undertake comparisons in terms of historical trends or comparisons with other parts of the UK or with other countries. There is a complex regime for monitoring our emissions.

Rob Gibson: My final point is about the fact that we have higher levels of organic soils and peatlands in Scotland. There has been an assumption that we have to protect such land at all costs, because it acts as a carbon sink. However, the University of Edinburgh research suggests that greenhouse gas emissions from organic soils and peatlands that have been afforested are likely to be less than was previously estimated. When I asked about forestry, I was thinking about areas in the centre of Scotland that are not high in peat soils but in which we could use the moorlands to help us to sequester carbon.

Ross Finnie: There are at least three issues there. First, we have commissioned research on the excessive gas emissions from our organic and peat soils. I cannot remember which university we have commissioned to do that research, but we are doing it in conjunction with the National Assembly for Wales. That should give us a better handle on and understanding of those soils. There are certain assumptions about their carbon sink properties, but there are also issues about soils.

The next issue is what we should do. We are not at all clear about what happens in certain soils and what effect afforestation of those soils has in some areas, and a huge amount of research is being done to try to determine that.

On carbon sinks, our view—although the climate change review may alter it—is that the Forestry Commission per se has recognised the value and worth of carbon sinks, but it has never set out to set an afforestation plan purely on account of

forestry's contribution as a carbon sink. The Forestry Commission has always thought that it should be making a balanced contribution in terms of the environment and in terms of an economic resource that allows it to have an income, so that it can continually replant and renew forests. In any afforestation policy, there is a balance to be struck between the point that you legitimately make and a wider view of environmental concerns.

The Convener: Did you have a question, Nora?

Nora Radcliffe: Maureen Macmillan picked up the question that I wanted to ask about adaptation. What are we doing in relation to existing buildings? The building regulations are fine for influencing new build, but how will we bring the 99 per cent of the building stock that is not new up to standard with regard to thermal efficiency?

Ross Finnie: That is a good question. We do not have many levers that allow us to act on that, so it is difficult to take action. The attitude of the energy companies to people who live in properly insulated homes with reasonably efficient central heating—which, I appreciate, are not the buildings that you are talking about—is interesting. They recognise that getting people to turn down their heating by a degree, which does not make much difference in their homes, assists with energy use. However, that is not the sector that you are talking about.

It is a question of providing public information and setting up public programmes. We probably have to sell energy efficiency as an economic benefit to those who do not immediately recognise the environmental benefits. In other words, we must tell them that energy efficiency will allow them to substantially reduce their energy costs and that, by doing so, they will make a contribution to the energy saving programme. We need to impress on individual citizens the changes that they can make. Once we have launched the energy efficiency programme from top to bottom, we might be able to direct a specific element of it towards that segment of the population that would benefit most from it. The message will be the same but, sadly, not everyone will adopt energy efficient measures immediately for environmental reasons. Some people may feel compelled to take such action because of the economic benefits that will result.

The Convener: As Minister for Environment and Rural Development, how will you ensure that land management contracts will be climate proofed? LMCs are hugely important in relation to future support for the agriculture industry and rural diversification. Has that system begun to deal with climate change proofing yet?

Ross Finnie: It is difficult enough to get the EU to agree to the common fisheries policy regulation.

The Convener: We have talked about LMCs in environmental terms, but today's discussion allows us to be more focused. To what extent can you ensure that LMCs benefit us from the point of view of climate change?

Ross Finnie: I am not sure. I imagine that tier 3 contracts might deal with such matters, but the issue is more about agricultural policy. We started off with a sheet of basic measures that were about trying to improve management processes and to get farming to be more economically sustainable. We are nowhere near our goals; there are all sorts of practices that still need to be addressed.

I do not wish to be boring, but energy efficiency is a pretty major issue in the agriculture sector. It is relevant to some of the mechanised procedures that are used, such as those for drying crops. There are all sorts of energy efficiency measures that would make a significant impact. The properties in which farmers store materials could benefit from such measures. In some cases, sustainable farming practices are not as sustainable as they might be. In those areas, there are greater opportunities to use the LMC menu progressively to say, "If you aren't in that game, you ain't getting support." Before we use the LMC menu, there are a number of practices that we must address. I hope that in the revision of agricultural strategy on which I am about to embark, we can be much more focused on some of those issues.

The Convener: My final question is a bit broader. We have a target of reducing carbon emissions by 60 per cent. One of our previous witnesses suggested that we needed to have a phased approach to meeting that target. When people are told that we need to reduce our carbon use by 60 per cent, they look a bit like rabbits that have been caught in headlights. Many people find the issue difficult to cope with. Apparently the Swiss are going for a 90 per cent reduction. How do we move from where we are now to that outcome, and how do we do it over a number of years? Are you thinking about a phased approach to make it practical and real for people?

Ross Finnie: In relation to trying to break the 60 per cent level, we are almost back to the very first question. I know that many committee members are keen to have some form of targeted and measurable approach. I have indicated to you that I am keen to have that also, which may mean addressing the issue sector by sector or according to whatever is measurable.

We face the problem that Philip Wright mentioned, which is that these things are not in every case simple. However, there is a need to make the issue more manageable, so that people do not think that it will never be achieved. Of course, that was the essential thrust of the do a

little, change a lot advertising campaign. That campaign was in direct response to survey work that we did, in which the point that you make was clear from the public response. We said, "What do you think you can do?" I am generalising, but the overwhelming response was, "Me? This is a big, big problem. This is not for me." The issue was to say, "No, it is for you. Every one of us doing a little could change a lot."

We probably have to do more, although there are those who think that that campaign did not hit the mark and needs to be changed. However, the basic philosophy behind it was right. We were trying to ensure that the individual citizen took responsibility for making their contribution, but the message has to be one that the individual citizen can get their head round. You are right about the feeling of being caught in the headlights. The 60 per cent reduction will not be achieved unless people regard it as realistic. There must be a combination of our setting out a climate change programme in a way that can be more easily assimilated by individual groups, and examining public information and how we can promote a programme to encourage people. However, I quite liked the do a little, change a lot campaign.

The Convener: The question of the audience is relevant. Some of our witnesses have talked about taking an individual approach to carbon trading. We all railed against that a bit, because it seemed fantastical, but it was about getting people to think about the practical implications of their everyday lives and lifestyles. At the other end of the scale, there are big companies. How do you make the issues real for everybody, and how do you give them a route map from where we are now to where we need to be?

Ross Finnie: We need to change public attitudes. I went to a meeting the morning after one of the do a little, change a lot campaign adverts had been aired, and was taken aback by a discussion afterwards between 10 and 20 people from the audience of 60 or 70. The discussion was like some kind of confessional—each of them was an absolute tea jenny and every time that they made a cup of tea they filled the kettle. The advert had struck home to them how stupid it was to do that. We then have to get managers and big companies to realise that what they do replicates that behavioural problem, which means that they consume huge amounts of energy. It may seem like going from the sublime to the ridiculous, but we have to change attitudes at both levels.

The Convener: I have two colleagues who want to come in, both of whom have the capacity to ask questions for half an hour. I see Rob Gibson raising his hand, but he is not one of them. I will let them come in with brief questions.

Mr Ruskell: Further to targets, direction and the route map towards a 60 per cent reduction in emissions by 2050, we have heard a lot of positive evidence about the need for sectoral targets. Presumably, you favour that approach as opposed to or as part of setting a national target, because there are sectors that are more within the Executive's control than others. Which sectors do you see as most within your control and which would you consider setting targets for?

16:00

Ross Finnie: I have two views on targets, Mark. The first is that I am persuaded that we ought to have them, if I can make them measurable and deliverable. To be honest, the energy sector is clearly the area that one would want to get into. The decision that I have to take is whether to attach the measurement to the producer or to the consumer. That is quite important.

Secondly, I want to get things in place for the general public. We can impose targets on Government, but if we are going to make a substantial difference to climate change we will have to make it clear in a public information programme that a much wider segment of the public has to sign up to this.

I do not have a fixed view on the subject, which is why I asked a head-on question about targets in the consultation on the climate change programme. I wanted to signal a desire for targets. I have picked up on what everyone has been saying; I am pretty clear about it all. What we set out was where the difficulties are and what decisions have to be taken. As I said, I have no fixed view on the subject. Targets need to be identifiable and much more clearly measurable. To return to the convener's question, we need to get a sense that people can see themselves delivering; it is in that way that we can go forward.

Mr Ruskell: Presumably those sectoral targets could be aggregated into a meaningful, measurable and attainable national target?

Ross Finnie: Yes—absolutely.

The Convener: I call Richard Lochhead, but ask him to be brief.

Richard Lochhead: Briefly, I have a question on adaptation. Some parts of Scotland are more at risk of climate change than are others. How can ordinary people find out the degree of climate change risk in their area? Do you believe that there should be total transparency so that people can find out the information for themselves?

Ross Finnie: Yes, I certainly do.

Philip Wright: You heard from Gerry Metcalf in the previous session about the work of the UK

climate impacts programme—UKCIP. The programme has developed scenarios that tell us what the future holds for us in terms of climate change impacts. The data has been brought down to a regional level. We use those scenarios as a storyline to try to encourage people to think about how climate change will impact on them.

Of course, the most obvious and explicit risk is flooding. When the possibility first arose of publishing flood risk maps, I was nervous of doing so. If we were to be so transparent in letting people know that their houses were at risk of flooding, their property price might drop and they might have difficulty in insuring their property. We have moved away from that position to one of 100 per cent transparency: we are giving people the information that they need in order to come to a decision themselves as to what the flood risk means for them.

In terms of other impacts, it is not easy to say whether Edinburgh will be impacted in one way and Dundee or Glasgow in another. There are some broad changes in our future weather patterns, but they are not sufficiently clear for us to be able to say explicitly what the case will be in each region. We are keen to get the story out as to what climate change means for Scotland and for its regions.

Richard Lochhead: Finally, is there any obligation to disclose that information? If someone in a flood risk area is selling a house, how do prospective buyers know what the flood risk is?

Ross Finnie: Caveat emptor.

Rob Gibson: What is that in Gaelic?

The Convener: We will not push you on that minister and I will not be asking you for it in writing afterwards.

Ross Finnie: Let the buyer beware.

The Convener: Rob Gibson asked you for it in Gaelic.

I would like to conclude the session. We have had you in front of us for an hour, minister.

Ross Finnie: Based on some other of my other recent appearances, an hour is an unusually short period.

The Convener: In that case, two committee members are desperate to get in. If they keep their questions short, I will call both of them.

Maureen Macmillan: NFU Scotland gave us evidence on the possibility of producing biofuels from oilseed rape and fallen stock. Have any discussions taken place or is any research under way on that subject? I realise the UK implications of the matter.

Ross Finnie: On biofuels and fallen stock, we have assisted a company—it will not be the only company; we are not trying to give it a monopoly—that has set up such an operation. Indeed, I understand that it is entering production only this week.

On biofuels from oilseed rape and other stocks, the NFUS promoted two interesting and sensible matters. We were certainly well aware of the fallen stock biofuel potential, but the matter is also interesting if it is considered not only as a contribution to managing climate change, which was the thrust of the evidence. We often talk about diversification in agriculture. We then ask, "Diversify into what?" We should be serious. The concept is nice and loose. The NFUS's evidence to the committee was a serious suggestion about the work into which people can diversify to create alternative income streams and it would have the additional benefit of contributing to managing climate change. I have had preliminary discussions with the NFUS on trying to progress that in a constructive way.

The Convener: Rob Gibson may ask a brief question.

Rob Gibson: My question is indeed brief.

It has been proven that the Government's buildings and fleet of cars have not exactly set the best example in the Government's first six or seven years. Could the Government set an example on such things in the next period and give members of the public a lead so that how vehicle emissions and buildings standards are treated is changed?

Ross Finnie: Are you referring to liquid petroleum gas?

Rob Gibson: Not necessarily. Biofuels, which we have just discussed, could be involved.

Ross Finnie: I am sorry, but you said, "It has been proven". It would be helpful if—

Rob Gibson: Apparently, there has not been a huge move to LPG, especially in buildings.

Ross Finnie: So you are not talking only about Government cars, but about Government across the piece.

Rob Gibson: I am talking about Government vehicles.

Ross Finnie: Ministers use LPG vehicles.

Rob Gibson: But Government vehicles are—

Ross Finnie: That takes us back to discussions that I have had about public procurement with Tom McCabe. I have made it clear that public procurement is a huge area with respect to sustainability and climate change, and we are

considering programmes closely. You are right. There are opportunities for us to impose standards for public procurement—and not only for vehicles and buildings, to be honest. Tom McCabe and I accept that, and people who are involved in public procurement and setting contract standards are considering that.

Rob Gibson: That is a positive point to end on.

Ross Finnie: Indeed.

The Convener: We will quit while we are ahead, then.

I thank the minister and his officials very much. The session has been quite long, but we have managed to get an overview and explore meaty issues. I will let the minister and his colleagues depart.

Item in Private

16:08

The Convener: Agenda item 3 is consideration of whether to discuss in private at future meetings the draft report on our climate change inquiry. The clerks and I would like to know what members think. I suspect that we will deal with the draft report not next week, but the week after. Do members agree that we should consider the draft report in private at all meetings until we have finally agreed it?

Members *indicated agreement*.

The Convener: That is great. I thank colleagues for some excellent questions.

Meeting closed at 16:08.

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