ENVIRONMENT AND RURAL DEVELOPMENT COMMITTEE

Wednesday 9 February 2005

Session 2

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ENVIRONMENT AND RURAL DEVELOPMENT COMMITTEE
5th 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)

COMMITTEE SUBSTITUTES

*Alex Fergusson (Galloway and Upper Nithsdale) (Con)
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:

Professor Steve Albon (Macaulay Land Use Research Institute)
Lloyd Austin (Scottish Environment LINK)
Phil Flanders (Road Haulage Association)
Jeff Gazzard (GreenSkies Alliance)
Colin Howden (TRANSform Scotland)
John Kinnaird (NFU Scotland)
Dr Bob McIntosh (Forestry Commission Scotland)
Stephen Midgley (Scottish Coastal Forum)
Dr Roddy Yarr (BAA Scotland)

CLERK TO THE COMMITTEE

Mark Brough

ASSISTANT CLERKS

Chris Berry
Katherine Wright

LOCATION

Committee Room 6

Scottish Parliament

Environment and Rural Development Committee

Wednesday 9 February 2005

[THE CONVENER *opened the meeting at 10:02*]

Climate Change Inquiry

The Convener (Sarah Boyack): Welcome to this meeting of the Environment and Rural Development Committee. I am trying to remember how many sessions on climate change the committee has had—I think that this is our third or fourth session.

I welcome the three members of our first panel, who will talk about land use and climate change. Dr Bob McIntosh is director of Forestry Commission Scotland, Professor Steve Albon is head of science at the Macaulay Land Use Research Institute and John Kinnaird is president of NFU Scotland.

I thank you for your helpful and interesting written statements, which were submitted in advance of the meeting. Rather than having opening statements, we will proceed straight to questions.

Rob Gibson (Highlands and Islands) (SNP): I want to ask about forestry issues. To achieve reductions in emissions from housing, much more timber will have to be used in construction—I notice that that matter is mentioned in the context of sustainable construction. Is the industry geared up to provide the materials for a considerable increase in houses that are made from timber?

Dr Bob McIntosh (Forestry Commission Scotland): As you probably know, there will be a huge increase in the output of timber from Scotland's forests and a lot of work is being done to try to ensure that the market develops to use that timber. The market will consume the timber in a variety of ways, but we are keen for more of it to be used in sustainable construction. Much is happening to develop timber-frame housing and the use of timber in construction and decorative sources. Quite a lot of research is going on.

Things are beginning to happen, but the increased use of timber will be a long-term trend and it will be some time before there is a real increase in timber use in some areas of construction. Currently the approach is totally market driven and there is no market mechanism that gives credit to timber for its benefits in being a low-carbon-cost material, compared with steel and other construction materials.

Rob Gibson: Certain species are more useful than others. Is the Forestry Commission estate geared up to provide the species that we need for timber construction?

Dr McIntosh: In a sense, the approach is the other way round. We already have a large proportion of other species in this country and we can do nothing to change that, so we are trying to ensure that we research the properties of those trees and how to make best use of the species that we have in construction in future.

Rob Gibson: Is there a mismatch between the Sitka industry and construction?

Dr McIntosh: Not really. Sitka goes into construction quite happily; it is very fit for purpose up to a certain level. Sitka will not do for joinery, but it is a perfectly good timber for basic construction. Much work has gone into ensuring that the timber is processed in such a way that it can satisfy construction markets.

Maureen Macmillan (Highlands and Islands) (Lab): People are beginning to give serious consideration to biomass energy for heating community centres and even individual homes. Rob Gibson referred to the Sitka spruce industry; can Sitka be used for biomass or are you considering other species, such as willow or hazel, which can be coppiced? What would happen if the Forestry Commission were to consider producing biomass for heating?

Dr McIntosh: Happily, it does not matter too much which species we burn. All the tree species in Scotland are likely to be suitable for biomass to some extent, so there is no problem in that regard. As I said, there will be a huge increase in the amount of woody material that is available. Some of that material will go into the higher-value construction markets but, at the lower end of the market, there is huge potential for wood to be used in the production of energy for heat and electricity, ideally in small-scale local heating schemes and combined power schemes. As members know, the forum for renewable energy development in Scotland has just published a report, which I am pleased to say agrees that there is huge potential for using wood as a carbon-neutral fuel in renewable energy production.

Maureen Macmillan: Would it be better for the environment if we were to coppice wood for biomass, rather than grow trees, fell them and then replant?

Dr McIntosh: The extent to which short-rotation coppice, of willow for example, will be a future energy source is an interesting issue. We have a big, normal forest resource that produces a lot of wood; whether that should be supplemented by short-rotation coppice is an interesting issue. Currently there is no huge interest in doing that; it

will depend on the extent to which farmers regard the production of short-rotation coppice as a useful adjunct to their normal farming operations.

Maureen Macmillan: How much wood would be necessary? For example, what acreage of wood would be necessary to heat a community centre from biomass?

Dr McIntosh: Many hectares of short-rotation coppice would be required to fuel even a relatively small plant, so a lot of land is needed to make an impact—it is a hungry business. Whether farmers will be motivated or incentivised to set aside large areas of the quite good land that is needed for short-rotation coppice remains to be seen.

Maureen Macmillan: How much acreage of Sitka would be needed to keep a community centre heated?

Dr McIntosh: It is difficult to say, because it would depend on how much of the wood per hectare was used for heating. It is likely that the high-value timber would go into construction and so on, so only the timber for the smaller-scale end of the market would be used. Therefore, the output from quite a few hectares would be needed to heat a community centre. However, we have a lot of hectares.

Maureen Macmillan: I am just trying to work out what is available. Could this be widely used or will the acreage that is available curtail how much we can do?

Dr McIntosh: It is fair to say that in the foreseeable future more than enough woody biomass material will be available to support a huge number of heating or combined heat and power schemes.

The Convener: Everybody wants into the discussion, but it would be useful to follow up the forestry and wood issues in relation to climate change. Richard Lochhead and Nora Radcliffe are next on my list. Do either of them have questions on forestry? If not, we will take their questions as soon as we move away from the topic.

Richard Lochhead (North East Scotland) (SNP): I have a couple of questions on forestry. I understand that there is an aspirational target of 25 per cent forestry cover for Scotland. We are at 17 per cent at the moment. How long will it take to get to 25 per cent? What is Scotland's potential? What are the chances of our reaching 30 or 40 per cent? Is that just a pipe dream, or would there be no need for that anyway? Why has the figure of 25 per cent been chosen? Perhaps Bob McIntosh and Steve Albon could address that.

Dr McIntosh: Steve Albon might be able to comment on that. If we planted trees on all the hectares of Scotland that are capable of growing trees, the percentage would be significant, but obviously that is unrealistic. The 25 per cent target represents a significant increase on where we are now. The aspiration in the current forestry strategy, which will be reviewed this year, is to reach that figure by the middle of the century, which implies the creation of 10,000 to 12,000 hectares of new woodlands per year.

It is fair to say that there is nothing particularly scientific about the figure of 25 per cent. It seemed to everybody involved in the land-use sector to be a reasonable aspiration that would give a reasonable balance between the need for new woodland and the maintenance of an integrated land-use pattern.

Professor Steve Albon (Macaulay Land Use Research Institute): I agree with that assessment. We could do more, but we do not want to cover many of our valued habitats with trees. Also, there are large areas in which we could not possibly grow trees, or where the disturbance factor in trying to grow them would actually increase carbon emissions. We have to approach the matter in a considered way.

Richard Lochhead: My other question for Steve Albon and Bob McIntosh is on the complexity of forestry cover's role in tackling climate change. There is a big group of people out there that I call the ah-but brigade. When we discuss with non-governmental organisations the potential for woodland cover to contribute to climate change, they say that that is a possibility, but they go on to give many reasons for being careful about where we grow woodlands. They suggest that we are just putting off carbon emissions and postponing the problem, because the trees will be cut down one day anyway. What work has been done to identify appropriate places in Scotland to grow woodlands, given the other factors that have to be taken into account, such as disturbance to soils?

Professor Albon: We at the Macaulay institute considered straight land capability, but we have not qualified that in relation to the carbon budget, which, as you suggest, needs to be dynamic and to take into account the life of a forest from when it is planted. The drainage and disturbance that might take place at the time of planting can increase the loss of carbon because of erosion, because we lose the existing dissolved organic carbon into water and so on. We certainly have enough knowledge to model that dynamic process, and it is a priority for scientists to quantify it.

Richard Lochhead: On joined-up policy, the Macaulay institute submission states:

> "Care needs to be taken to ensure that site selection and the erection of wind turbines takes into account the potential contributions to carbon flux."

It goes on to say:

"there is no national strategy prioritising where wind farms or biomass-fuelled combined heat and power stations might be located either regionally, or within regions, in landscapes, which takes account of all the issues, including both climate change and biodiversity."

That is concerning, given the debate on where to place renewable energy projects such as wind turbines and forestry cover. We do not seem to know where are the best places to place such projects if we are to have an impact on climate change. You are clearly concerned by the lack of a Government strategy on wind energy.

10:15

Professor Albon: Yes. Although I comment as a layman on the specifics of the contribution of wind energy to our energy needs, I have relevant knowledge about the impact on the environment and landscape of wind energy projects. As I understand the matter, we have not set about zoning where the best places are for the regional development of wind power, nor have we considered the environmental costs and benefits of locating projects in particular habitats and locations within those regions. We could do much more to maximise the energy gain and to minimise the landscape loss, or the perception of it, given that some people view wind farms as unsightly. We need a much more integrated approach.

Perhaps this is naive, but I would like to think that if we could sell the point that we are assessing the issues and creating an evidence base, wind power would be more acceptable to the public. Many members of the public are inherently behind alternative sources of power or energy, but, in ignorance, they are often scared of them. We could do much more to inform the public and the planners and policy makers about how to engage and come up with a much more coherent and specific strategy.

The Convener: I point out to Richard Lochhead that we are trying to stick to forestry for the moment. A big shift has taken place recently, with Highland Council producing a regionally specific wind farm strategy, so we will return to that issue.

Nora Radcliffe (Gordon) (LD): I have two small questions on forestry. As we have an expert here, I would like to know whether, when the brash is left behind after felling, that is because it has no value or because it has an input to the next crop of trees. If the brash had value and was used for biomass, what effect would stripping it out have?

Dr McIntosh: That is an interesting question. There is a lot of interest in that process, but practical problems arise from the economics of taking brash off site and there are ecological issues about removing nutrients from the site. However, given that most of the nutrients that are left behind are in the needles, if we wait until the needles have fallen off, taking out the branch wood is probably okay. The issue is more about how practical and economic it would be to remove that material for biomass energy. However, such a process might well play a part in future.

Nora Radcliffe: Will John Kinnaird give us the farmers' point of view on coppicing? Is it being considered?

John Kinnaird (NFU Scotland): Yes. There have been pilot projects in the south of Scotland and a biomass plant might be constructed in the central belt. Farmers and agriculture will consider coppicing, but we must also consider water usage and be careful not to produce another crop that takes more water away, because, in the longer term, water could become a scarce and valuable commodity. We must get a balance, but farmers and agriculture will consider biomass crops.

The Convener: When the committee went on a site visit to Breadalbane a couple of years ago, we saw some small-scale woodlands—at individual farm level rather than of Forestry Commission scale. One point that farmers made to us was that the grant scheme does not let them carry out traditional farming beside management of small woodlands. Also, the local school could have used wood fuel, but no connection had been made. Have changes taken place or have opportunities arisen from the reform of the common agricultural policy that might allow more small-scale integrated farming?

John Kinnaird: CAP reform will not make any difference. What is needed is a commitment from the Government and perhaps from the Executive to go to the next stage—the production cycle—because that is the important bit. It is easy to produce the primary product; the hold-up is in processing that further down the chain. Many of those who have undertaken the pilot project are frustrated that they cannot progress to the next stage. Processes should be developed further down the line.

The Convener: The suggestion was that the rethink as a result of CAP reform and consideration of integrated rural development means that different funds might be accessed and channelled locally. The processing side is very much the issue. Trees could be grown, but they could not be chopped or people could not afford to put up a barn to do the work. What you say is interesting.

Dr McIntosh: We are looking hard at the matter. The advent of land management contracts provides good potential. We are considering introducing new farm woodland support grant schemes to encourage farmers to make more of their small farm woodlands. One of the proposed schemes is targeted at the production of wood fuel from small farm woodland areas.

The Convener: That is helpful to know.

Mr Mark Ruskell (Mid Scotland and Fife) (Green): Does a demand issue arise? We know that wood-fuel boiling systems are widespread in Austria and other countries. We in Scotland are building many new schools and public buildings. Does Scotland have enough demand for biomass energy systems to allow the investment in processing that will bring the technology into the here and now so that we can all start using it in our homes?

Dr McIntosh: It is a bit of a chicken-and-egg situation. Until people see good examples of such systems up and running, they are less inclined to take the risk of adopting them. Good examples of the use of wood in heating are beginning to come along. Technology, our knowledge of how to use it and our support systems for people who want to use it are improving. We are at the early stage of a cycle of increasing confidence in the use of wood as a fuel. As you say, in countries such as Denmark, district heating schemes that are fuelled by wood are the norm and are an everyday occurrence.

Mr Ruskell: Is it now cost effective for sawmills to produce chips that are suitable for biomass production? What level of viability are we at?

Dr McIntosh: Sawmills would be keen to find an alternative market for their chips. If energy were one of those markets, that would be fine. Once a wood-fuelled energy plant is up and running, it is very competitive, but an additional capital cost is incurred in establishing a wood-fired scheme rather than one that uses conventional fossil fuels. One issue that emerges from the FREDS report is whether more public support should be given for that initial investment, to ensure that more schemes come to fruition, because the long-term benefits for the public, CO_2 emissions and climate change are significant.

The Convener: Alex Fergusson has a follow-up question on forestry. I should have said earlier that he is formally replacing Alex Johnstone today. I welcome him.

Alex Fergusson (Galloway and Upper Nithsdale) (Con): I am substituting for Alex Johnstone rather than replacing him.

The Convener: It is just for one meeting. I know that Alex Johnstone has not been bumped.

Alex Fergusson: The word “replacing” has a permanence that is not appropriate.

Nora Radcliffe talked about the brash that is left behind. As I come from Dumfries and Galloway, which already has 25 per cent coverage, I cannot help but be impressed by the amount of potential energy that is left behind after a clear fell. I appreciate the financial difficulties of using brash as fuel, but how much research is being conducted into the technological aspects of taking it off site and using it as a fuel? Where is that research being done? Does it point to a viable future for brash in energy use?

Dr McIntosh: Logistics are the issue as much as anything. Brash is used as a mat to allow harvesting machines to go on to a soft site and prevents them from sinking. Removing the brash mat without machines bogging is a problem.

Work has been done on machines that lift, compress and roll the brash into a log-type shape, which can be taken off the site and handled much more easily in transport systems. We know how to do that, but the question is whether the fuel-wood market exists and whether the economics of removing the brash stack up.

Alex Fergusson: What needs to be done to get to that position? What comes first? Is it the technology to deliver the fuel or the capital funding to enable someone to investigate the subject?

Dr McIntosh: We need the demand from plants that are capable of using the material.

Alex Fergusson: So the technology is there.

Dr McIntosh: There is enough technology to allow us to get the material into the supply chain.

Alex Fergusson: I might be wrong—in which case, please point that out gently—but I understand that, in England, there are incentives for producing timber for a coal and timber mix. Can you cast any light on that? Do the same incentives apply in Scotland?

Dr McIntosh: The Renewables Obligation (Scotland) Order 2004 allows for co-firing, to encourage generators who burn coal to mix a proportion of wood in with the coal. People who do that will qualify for renewables obligation certificates. The current renewables order is geared towards encouraging that to happen through short-rotation coppice rather than through conventional wood products. That is largely because, traditionally, there has been more interest in short-rotation coppice in England than there has been in Scotland.

The renewables order is being reviewed and there is an issue about whether the requirement to use short-rotation coppice in co-firing can be relaxed to include all wood products. That would certainly enable co-firing to be more of a significant enterprise in Scotland than it is at the moment.

The Convener: In our first session on climate change, forestry came up as one of the ways in which we could perhaps mitigate the effects of climate change and as a short-term issue that we could engage in, because we already have wood crops.

However, it was quite difficult to get into the subject of soil and the extent to which Scotland is different from many other countries in that regard. That comes across strongly in the Macaulay Land Use Research Institute paper that is before us. Could you tell us more about that, Professor Albon? At our first session, we talked about short-term and long-term things that we could do to stop climate change, but there was also an issue about how we deal with and adapt to climate change. Obviously, soil is an important subject, but it has not become as prominent as others that we will be dealing with.

Professor Albon: The important point that we are trying to stress in the final paragraph on the first page of our paper is that, while forestry is an important source of carbon, it is estimated that in Scotland nearly 170 times more carbon is locked up in soils than is stored in all vegetation. Much of Scotland is covered in deep, peaty soils. On a European scale, that is incredibly important. We hold a disproportionately large amount of the European organic matter of soil because of those peats.

Anything that disturbs those peats—activities such as those that one of my colleagues from RSPB Scotland, who is sitting behind me, is concerned about—will increase rapidly the loss of carbon through drainage and erosion in general. Our concern is that all the climate change predictions are that we are going to have much wetter winters and more storm events, which means that, unless we are careful, we will lose organic matter through flash floods and so on. Many of you might have seen examples of that sort of thing.

Agricultural practice is also significant—John Kinnaird might want to comment on that. The long-established practice of growing winter cereals has a negative effect when we are getting wetter weather and more storm events in the winter. We have seen flash floods in which only the tips of the barley are visible and which result in large volumes of organic matter being stripped from the soils and getting into our water. That is an issue for the quality of water under the water framework directive. Not only chemical quality, but biological quality is important. The issues are intimately linked. The hydrological cycle is being influenced by climate change and our land-use practice can have a big impact on that important store.

We need to be much more aware of our important soil resource and to establish more active processes to conserve it. It would be disastrous to carry out lots of activities to sequester more carbon through trees, but end up losing it elsewhere where there are no trees. That is why I emphasise the importance of soils to our long-term future and the health of our ecosystems.

10:30

The Convener: What does that mean in practical terms? Is that a land-use planning issue?

Professor Albon: Yes, I think so. As we are limited in what we can do in the peatlands and the more productive soils, we might need to change our policies and, for example, offer incentives to farmers to grow spring rather than winter cereals. The current economic drivers might not support such an approach, but it should be investigated. That brings me back to the comment on the last page of my submission about having more joined-up practice and policies across the various organisations and departments that are stakeholders in this issue.

The Convener: Does NFUS wish to comment on that? Obviously, such an approach would require a change in your current working practices, but I imagine that climate change is already making farmers start to think differently and to adapt to the new situation. After all, people are already noticing changes such as the times when plants can grow.

John Kinnaird: You make a valid point. Picking up on Professor Albon's comment, whether we produce spring or winter cereals is determined by simple economics. When it comes to the bit, we have to continue to produce winter cereals. However, the act of farming itself—how ground is cultivated prior to sowing—is quite significant. For example, the advent of minimum tillage represents a huge step forward and will help to mitigate some potential climate change problems. We tried to encourage the Executive to take on board the value of minimum tillage and to put it into land management contracts, which have already been mentioned. We certainly felt a degree of disappointment that that did not happen. Such an approach has not been accepted in Brussels, which is a retrograde step.

As far as the future is concerned, we can contribute an awful lot, not just to food production but to fuel production. Indeed, fuel production represents a massive opportunity for agriculture and the Executive to work together in partnership, and I want to cover that matter later. Everyone has heard about food miles, but I am curious about the number of people who know about fuel miles and their impact on climate change. This climate change was triggered 30 or 40 years ago, and we need to examine what Scotland can do to mitigate and adapt to its effects and to help to build for the future.

Mr Ruskell: Land use is a key area of Scottish Executive control. I wonder whether all three witnesses could set out their top three land-use policy priorities. How can the Scottish Executive ensure that CO_2 emissions from our land are

reduced and what kind of policy tools should be introduced? John Kinnaird has already mentioned one priority, and I am interested to hear about any others.

John Kinnaird: We definitely have other priorities. For example, using biogas to produce biofuel has huge potential; after all, farm animals produce about 13 million tonnes of slurry and manure—which is a very nice subject to raise at this time of the morning. If that material were used correctly, it could produce fertiliser and, ultimately, an energy equivalent of between 70 million and 96 million litres of diesel. We have a massive opportunity to use something that already exists to create the equivalent of £170 million-worth of electricity per annum. Such an approach would both save money and mitigate the effects of climate change.

Moreover, biofuels represent a huge untapped resource, and farming and the Executive could work together to produce biodiesel. We do not do enough of that in this country. It is absurd that we can, and currently do, produce a certain amount of raw material for biofuel, but we export it to another country for processing and then import the biofuel. It is absolutely absurd to burn fossil fuels to produce biofuels. Why do we not produce biofuel in this country? Surely that is the logical thing to do.

If we used biofuel in, for example, public transport—it can be used in cars, vans, lorries or almost any vehicle with little or no adaptation—we could cut greenhouse gas emissions by 50 or 60 per cent. That would make a positive contribution by cutting down the amount of food miles and, at the same time, the amount of fuel miles. Consider the amount of time and money that is spent on food travelling between primary production and the consumer shelf via processing. If that has to carry on, surely it would be better if vehicles used biodiesel. That would be positive. The same argument applies to the use of trees and forestry. It would be hugely positive if lorries in that industry used biodiesel.

Mr Ruskell: Can I have views from the other panellists? Clearly, if we are aiming to produce all our fuel from land, at some point we will run out of land. Although I see a role for fuel production from land, what other top-line issues should we be dealing with? We just talked about the fact that the carbon in peat is 170 times the amount that is locked up in forestry. What policies do we need for land management, not just for the products that come from the land, such as forestry and biofuel?

Professor Albon: We would have to be careful about putting forestry on peat, because of the disturbance in the initial stages, which would be retrogressive, although over its lifespan such forestation might be useful. We would put forestry on less organic soils, such as the mineral soils of eastern Scotland.

I said earlier that we are growing cereals, but could we grow spring cereals rather than winter cereals, and therefore reduce soil erosion through winter flooding and storm events? There are other issues that we have little control over, but changing to cropping systems where the fallow period is as short as possible is important. There may be scope for such a change as our climate warms—the summers will get warmer and drier—but as it does so the rate of carbon loss will increase. It was thought that carbon loss due to increasing temperature was limited, but a paper in January's *Nature* suggested that we have completely underestimated the carbon loss as we heat up our soil.

We may be forced to change our practices, but that has to occur in combination with economic incentives to maintain people's livelihoods, because without that we will not be able to do it. It comes back to having imaginative land management contracts, and giving people the option of doing the right thing.

Mr Ruskell: So you see that as the Scottish Executive's main policy tool to tackle climate change emissions from land.

Professor Albon: I think so, because we are about sustainability. We must maintain our rural communities, so we must have proactive, realistic contracts with land managers, which is possible.

The Convener: That is a helpful and important point. We examined land management contracts extensively over the past year in terms of CAP reform, but we have not explored climate change and how land management contracts could be incorporated into the criteria that would influence what farmers do.

Does Bob McIntosh want to respond to Mark Ruskell's question on the top line? What do you think are the top priorities?

Dr McIntosh: They are the three that are currently being pursued: encouraging further afforestation, and the sequestration values of that; encouraging more use of wood as a renewable energy source; and encouraging more use of timber in construction projects. Those are the three key areas for policy development.

The Convener: Thank you. That was concise.

Alex Fergusson: It is well known that incentives for farm woodland in Ireland are considerably in excess of those offered here. Has any work been done to show how much extra timber would be planted if incentives were the same in Scotland as they are in Ireland?

Dr McIntosh: Not that I am aware of, although both countries are bound by the European rural

development regulation and rural development plan, so we should be working to the same agenda. The rural development plan will be reviewed in 2007 and the question of what support there will be for afforestation is under discussion as part of that review.

The Convener: We have a series of questions about food, agriculture and climate change.

Rob Gibson: There are two things to ask about here. In his paper, John Kinnaird did not amplify the food miles issue in relation to what we can produce. Steve Albon's paper also talks about a reduction in cattle and sheep-stocking density in some parts of Scotland. We are interested in how climate change will affect what we can produce and what locally produced food people might be able to get on the market. Could you amplify your point about the balance between the pastoral economy and the crop economy in terms of climate change? Does that mix meet Scotland's needs for a basic diet when we consider the food miles issue?

John Kinnaird: The issue is a lot wider than just food miles. Any reduction in output from any sector will be determined by economics at the time.

If we are going to have wetter winters and warmer summers, there might be extended grass growth. That suggests that we will have more, rather than fewer animals. Unless things get too wet, grass will become more significant. We need better research into and development of different types of grass, because that will help with production.

I do not think that there will be a massive shift apart from simple economics. No one would be against more locally produced food if it were practical. However, how that food is processed after it leaves the farm is the difficult bit. That is where there are fewer opportunities and that is why so many food miles are being added to processed food. It is important to consider how and where food is produced and how we can mitigate food miles in certain instances. I repeat: the issue is all about how food is transported and what fuel the vehicles run on. That can be quite significant.

We might well see a change on the back of CAP reform, but one of the worst things that could happen is non-production. That would exacerbate the problem. We must have structured development that allows the production of food and/or biofuels so that they can work together for the benefit of all. That includes forestry, which is equally important. Making best use of the land mass in Scotland is what we must address.

Rob Gibson: I thought that there might be an issue about a reduction in the amount of pastoral land. At present, there are areas in Scotland that have the bulk of pastoral activity. If we were to lose that, we could lose production because those areas are not suitable for growing cereals and so on. How do we tackle that in the context of climate change?

Professor Albon: Land abandonment, which may come in some areas because of economic and other factors, may be beneficial in some cases. If someone maintains the vegetation, they might increase the scrub cover, which means that we are sequestering carbon and we are not losing it through stream erosion and so on. In addition, the other value is that it may be good for biodiversity. If we look at the whole picture, we will see that many of the changes that would be good for climate change are also good because they enhance biodiversity. In terms of the total land management package, there could be many gains.

10:45

Rob Gibson: Although I hear what you are saying, I am concerned that the debate could open up into the larger question of the sheep, cattle and so on that are still produced on the islands and in remote areas, both of which have peat soils.

I have one small, final point about methane. This inquiry has not as yet tackled the issue of cattle, sheep and deer. If the Scottish climate were to become wetter and warmer, the potential arises for us to increase stock levels. Is it possible to tackle methane emissions as part of the climate change agenda?

John Kinnaird: Yes, I believe that it can and should be tackled. The issue goes beyond the farm, into the area of research and development. The question is what research has been conducted into how and what animals are fed in order to try and reduce the methane that cattle, in particular, produce.

I return to the fact that we need a partnership approach to the problem. There is no quick and easy answer. We need to look beyond the primary production stage at how certain production cycles could help to alleviate the problem. I believe that that can be done through the likes of research and development into the animal feeds that could reduce methane output. Although that work has started, not enough is being done. The picture is not a narrow one; it is a big picture. If we are to address the issue, we will all have to work together.

Maureen Macmillan: John Kinnaird talked about food miles. What about biofuel miles? The NFUS submission lists a number of schemes through which biofuels might be grown or produced by farmers. You include oilseed rape, casualty animals and bio-ethanol from fermentable materials.

What do you envisage might happen? I assume that it could be counterproductive to have to haul fallen animals to a central point. I used to live near a knackery, so I can imagine what that might smell like. Have you thought about that?

I assume that you would expect these projects to be fairly localised? How much thought have you given to the suggestion? How will people work co-operatively at the local level, for example? How might the rural development fund be used to help farmers to diversify into these sorts of businesses?

John Kinnaird: That is something that we have developed with other partners and which is progressing quite a lot. The biggest stumbling block is the production cost of biofuels. Plants could be built in Scotland, but we need Government to cut the duty to allow any plants that are built to be competitive. We have taken the proposal all the way. We have partnerships that are more than willing to process the fuels, but they cannot do so simply because of increased costs. The Executive in particular could help in that respect. As I said, at the moment we produce oilseed rape in Scotland. Although it is grown primarily for fuel production, it has to be shipped down south, which is ridiculous—we could process it in our own back yard.

The member also mentioned fallen stock. I am sure that all members are aware that the burial of fallen stock is now banned. However, as long as there is stock, there will always be an element of fallen stock—or brock, as it is called in farming. Surely it is more than sensible to use the fallen stock to our advantage, and to the advantage of the community? We should process fallen animals into biofuel for use by the country. It can be done: the research is there and a plant is currently near completion that could convert fallen animals and bioproducts from abattoirs into biodiesel. It is a significant area; we should develop it.

Maureen Macmillan: Does the same drawback apply in terms of duty?

John Kinnaird: It does, because the production costs are slightly higher. Primarily, it is all to do with duty. If we could get Government on board, I think that we could produce a lot more of our biofuels and biodiesel within Scotland and within the United Kingdom. Germany's arable land area is somewhere in the region of two and a half times the size of the UK's, yet Germany is currently producing 80 times as much biodiesel. Surely there is a massive opportunity there for us to do a lot to help ourselves and this country by producing more biodiesel and biofuels.

The Convener: That is quite an interesting proportional statistic. We shall keep that in mind.

Richard Lochhead: My question follows nicely from John Kinnaird's last point. What support and incentives are being given to farmers in other countries in comparison to Scotland? I note that the NFUS submission says on the debate over energy crops that if farmers are to commit themselves to energy crops, processing facilities would have to be installed. You also call for a similar level of support to that in other European Union countries. What happens in other EU countries? What level of support do farmers get?

John Kinnaird: I do not know the exact level, but I know that considerable funding and grant schemes were made available to get biofuels up and running and for the production of those biofuels. Funding is needed not only for the farming—or primary production—but for the processing. That is where the funding went in that allowed countries on the continent to steal a march on the UK. Those countries continue to produce a lot of environmentally friendly biofuels and we are light-years behind. We need to catch up. We have a huge responsibility to develop that—not from a farming point of view but from a Government point of view. It seems absolutely ridiculous that we can produce the raw material for biofuel, but that we export it and then bring the biofuel back into the country. There need to be grants, not for the primary production side but for the processing side, and that is where central Government must play a significant role.

Richard Lochhead: Where do we export the raw materials to?

John Kinnaird: To the continent; mainly Germany and France, but sometimes Spain. We then import the biofuel.

The Convener: What are the costs for the kind of production plant that you are talking about?

John Kinnaird: Over and above fossil fuel production?

The Convener: No, just to build a biofuel plant. What is a ballpark figure?

John Kinnaird: That is something that you would need to ask people on the processing side. I do not have that information, but I could quite easily get it and forward it to the committee.

The Convener: That would be helpful.

I thank all three witnesses for answering a varied range of questions and for giving us their useful papers in advance.

10:52

Meeting suspended.

10:59

On resuming—

The Convener: I welcome our second panel of witnesses, who are Stephen Midgley, project officer with the Scottish coastal forum and Lloyd Austin, chair of Scottish Environment LINK. I point out to members that Stephen Midgley has replaced Professor Bill Ritchie, who is ill, at short notice. Before members start asking particularly complex questions—which we might well do—I inform them that Stephen Midgley has promised to do his best to answer questions this morning, but if we ask him too many questions in too much depth, he has made a commitment to get back to us in writing afterwards.

The land-use planning system and how it could be used either to mitigate or to enable us to adapt to climate change came up in the previous part of the meeting. From the coastal and wider LINK perspectives, what are your views on how well equipped the planning system is to cope or to seek those outcomes?

Lloyd Austin (Scottish Environment LINK): As in all policy areas, the opportunity exists in the planning system to consider both adaptation to climate change and mitigation of future carbon emissions. I point to things that the land-use planning system could do—this feeds back to what the first panel said—including ensuring that development does not damage soils, peatlands in particular, that are important carbon stores.

As regards adaptation, the planning system has the potential to examine matters such as managed realignment on the coast; Stephen Midgley might be able to say more about that. The system also has the potential to plan for flood management in our river valleys and to look at more sustainable methods of flood management to alleviate the impact of increased flooding, rainfall and storm events.

Stephen Midgley (Scottish Coastal Forum): I certainly support those comments. There is a need to examine planning in the marine environment. One of the difficulties that the Scottish coastal forum has found is that planning stops at the low water mark. There is also a need to look further out into the marine environment to try to combine terrestrial planning with what happens in the coastal marine environment. There is definitely a need for more research into those issues.

The Convener: How does that relate specifically to climate change? Can you give us examples?

Stephen Midgley: Much current research is examining how carbon can be sequestrated from salt marshes and mudflats, but there is not enough research specifically in Scotland on that. I would like more to be done, but it is a new and emerging science that needs further development.

Maureen Macmillan: I agree that we need to integrate planning with the marine environment. A start has been made with the award of aquaculture planning powers to local authorities. I hope that that will roll out to other marine uses.

I want to ask particularly about wave and tidal power, which are always held up as the great white hopes in which all is good and nothing is bad. Is that the case? Are there environmental concerns about use of wave or tidal power and how they might affect the marine environment? I would hate to go down that road and then suddenly to have lots of environmentalists or others screaming at us that it will cause erosion of the coastline, or whatever.

Lloyd Austin: I agree. At the risk of referring back to what has been said, marine environment developments, like all developments, include a "Yes, but—". The previous panel spoke about forestry and other developments, and in the same way, we have to get marine environment developments in the right place. The Executive's strategic environmental assessment of the marine coastal area will provide us with the background information that we need to try to get those tidal and wave developments in the right place.

There is huge potential in those technologies. Equally, there are risks that they will be developed in the wrong places and that they will have adverse environmental effects on other resources that we are trying to conserve. Like all responses to climate change, we must ensure that our response is itself sustainable. Strategic environmental assessment is a tool that we can use to ensure that.

Maureen Macmillan: That seems to suggest that wave power or tidal power will not offer a quick fix, and that it is not simply a case of getting the machinery up and running. As you say, strategic environmental assessments are required. What sort of timescale will be needed for that? There is a lot of pressure from people who say that they do not want wind farms and that we should use wave or tide machines now to deliver renewable energy. How long would it take to assess whether a device was suitable for a particular location?

Lloyd Austin: The answer to that question would be site specific; it would depend on the amount of data that were available for particular areas of coast. I am aware that the Joint Nature Conservation Committee—the body that co-ordinates nature conservation throughout the UK—is studying the distribution of birds in the marine environment. It has sought additional resources from the UK Government and the devolved Administrations so that it can speed up that process. I support that call. This is about getting scientific resources and manpower focused

on the strategic environmental assessment in order to get it done as quickly as possible. I find it difficult to suggest a specific timetable for that, however. Assessments will be carried out quicker in some places than in others–it will depend on how much knowledge we already have about the locations concerned.

Stephen Midgley: There is also an issue with respect to the industry. Wave power, and tidal stream power in particular, are not yet commercially viable. A lot of development work is on-going and that needs to be supported. Environmental assessments can be carried out at the same time, which will let us understand how the emerging technologies will impact on the environment. The industry is keen for that to be done at this early stage in development of the technology.

Maureen Macmillan: Whose responsibility is it to do that work in advance? Is it the responsibility of the planning authority, which does not yet exist? Who will carry that out?

Stephen Midgley: The Crown Estate is examining many issues, with respect to wind energy in particular. The British Wind Energy Association is examining the new technologies for wave and tidal power, and is supporting their development. As far as environmental assessments and the JNCC are concerned, I am not quite sure exactly who is involved.

Lloyd Austin: The Scottish Executive initiated the environmental assessment to which I referred. That covers matters in the marine environment for which the Executive or its agencies are responsible. There are, of course, also reserved matters that come into play in the marine environment. I guess that the Department of Trade and Industry or the Department for Environment, Food and Rural Affairs might have some responsibilities.

Mr Ruskell: I want to bring the discussion back to targets. During previous meetings, we spoke a lot about sectoral and national targets for CO_2 reduction. How significant do you believe land use is with respect to reducing our CO_2 emissions? Could the Executive set a sectoral target for land use?

Lloyd Austin: Land use is very important. As the previous witnesses said, that is especially the case in Scotland, which has extensive blanket bogs and peaty soils. The UK review says that 89 per cent of the UK's land-use emissions come from Scotland. As has been said, land-use matters are devolved fully to the Scottish Executive, so that is a key issue for the Executive to address.

The important thing to bear in mind with respect to targets is the policy outcome that we seek. The policy outcome that we are looking for in relation to the climate change programme is a reduction in emissions. It is clearly logical to have a target for reduced emissions and if we can break that down into targets for different sectors, linked to the different policy responses for each sector, land use and type of energy, that will enable us to judge how we are doing in the different policy areas. We will be able to assess which policy areas are responding well under the climate change programme and which are not, so that we can identify which we need to review and tweak.

Stephen Midgley: More work remains to be done on the value of the coastal environment, including salt marsh and mudflats, for carbon sequestration. That work needs to be done before we can set targets.

Mr Ruskell: Okay. Is it possible to aggregate a target from sectoral targets up to a national target? Throughout the inquiry, we have heard scepticism about whether a national target could be set and how that would work. Is it possible to aggregate the figures for the sectors? Would that be meaningful?

Lloyd Austin: It could be possible. It would take somebody with technical knowledge to advise on how it could be done, but I see no reason why it could not be done. The difficulty that has probably been raised with the committee is that there are in some sectors actions that are outwith the control of the Executive—perhaps concerning UK, European or international matters—and for which the policy levers are in different hands. There may be reluctance to set targets for things that other people do. The key challenge is to set a target for things that we can do, so that we can judge our own response and how well we are doing.

The Convener: You say that we still need to do more work before we consider what would be an appropriate target for coastal areas. Are there any other areas in which we lack information to date, and in which more work needs to be done?

Lloyd Austin: If that is the case, interim targets could be set, or targets that could be adapted as the work comes on stream could be set. Alternatively, a target could be set for the other sectors and, when that work was done, a target for a specific sector could be added to the aggregated target.

Richard Lochhead: I have a couple of questions for Lloyd Austin. Your submission says that you would like Scotland to play a greater role in international negotiations. Can you elaborate on that and give us some examples?

Lloyd Austin: There is potential for Scotland to play a greater role, especially in setting good examples and demonstrating good practice. In land-use matters, Scotland is responsible for 89 per cent of the UK's emissions. That is an area in

which Scotland could lead within the UK by demonstrating good practice and good policy responses and by working with other countries to find solutions.

Richard Lochhead: My second, more general, question relates to what we heard from our previous witnesses. Does Scottish Environment LINK share the concerns that have been expressed about the lack of a national strategy for, and analysis of, the location of renewable energy projects in Scotland, especially wind farms, which are topical?

Lloyd Austin: Yes, we do. We have said that we would like a national locational strategy. As discussion with the previous panel showed, that applies to a wide range of responses to climate change. Renewable energy is one of those responses, but we also heard about the need for forestry to be located in the right places—on mineral soils rather than on peat soils—and, in response to your first question, I referred to land-use planning. Although each of those responses to climate change is good, it is important to get them in the right place in order for them to be sustainable. That would be best achieved through locational guidance.

Richard Lochhead: My final question is for the Scottish coastal forum. Your submission refers to the potential for water-borne freight transport. Despite Scotland being a maritime nation, what we can do to get more freight off the roads and on to the sea seems to be quite low down on the agenda for debate. Can you elaborate on your concerns and tell us whether there has been any analysis of where that could happen and what the cost and benefits would be?

Stephen Midgley: It would probably be best to get the ports authorities and ports industry to give you more details on that. The matter has been raised predominantly by the ports industry's representatives on the forum. They want a concerted effort to be made to develop ports and their facilities to allow them to handle freight transport, to compete with other European ports and to improve links to European states and the Baltic. A detailed response would be better coming from the ports authorities.

11:15

The Convener: I suggest that we pick up that point in our questions to the transport panel. A couple of the submissions refer to it, so we can follow it up.

Mr Alasdair Morrison (Western Isles) (Lab): I have a question for Lloyd Austin on peatlands and their role as carbon reservoirs, in respect of which I apologise immediately for my ignorance. Can anything be done to reclaim peatlands, as it were, or to enhance the role that they play?

Lloyd Austin: Yes. As Bob McIntosh said, RSPB Scotland and the Forestry Commission are working on and, indeed, are carrying out peatland restoration in the flow country of Caithness and Sutherland. The Scottish Executive and RSPB Scotland have recently commissioned research from the University of Edinburgh on how that can be improved. It is equally important to stress that protection of our existing peatlands to prevent emissions from increasing, as well as restoring already damaged peatlands, is important.

Stephen Midgley referred to the figures on the amount of carbon that is already stored in peat. Peatlands cover about a million hectares in Scotland and it is estimated that about 5,000 tonnes of carbon are stored per hectare. That is greater than the carbon content of all the UK's vegetation. An immense amount of carbon is stored in peatlands and peaty soils. Given the whole climate change scenario, it would be immensely foolish to allow that to be released.

Mr Morrison: Is that basically an argument against peat cutting?

Lloyd Austin: It is certainly an argument against large-scale industrial peat cutting for horticulture and so on. It could be argued that the small-scale hand cutting that has gone on over many years is modest, particularly given that the area of peat that is left behind after hand cutting is still wet and will therefore emit less carbon than will the large completely drained hectares that are cut for horticulture.

Mr Morrison: You will appreciate that I am familiar with RSPB Scotland's innate ability to move the goalposts and to change its position with regard to wind farms and other issues. I am still trying to come to terms with the issue of peatland restoration and potential emissions. Do you envisage a situation in which we could have emissions at one level and restoration that would mean that there was no net change?

Lloyd Austin: In effect, you are saying what I am saying: in considering any activity on peatland we must carry out a full life-cycle assessment of the potential carbon emissions to ensure that we do not permit an activity that, while it seeks not to emit carbon in one way, emits it in another. It could be argued that even if an activity produced no net emission, carrying it out in a non-peaty habitat could create a better win overall. If we have to do a lot of work to prevent emissions from peaty areas, we might be better off siting a renewable energy development or forestry on mineral soil so that we get a greater net carbon saving.

Mr Morrison: Even though it can be proven conclusively that, taking into account efficiency, electricity generation and the socioeconomic

benefits—as well as the environmental prizes that have to be secured—the best place to site a development would be on peatland.

The Convener: Are you thinking of a particular place?

Mr Morrison: I am just following a train of thought.

The Convener: I can feel a planning issue coming on.

Mr Morrison: There is no planning issue. The issue is substantive—it is fundamentally important for me.

The Convener: I was thinking about how you ended your question. There is an issue to do with awareness of what is on peatlands and how the process addresses matters, which might be what you are teasing out. It is clear that some parts of the country have many more peatlands than others, and the issue is how there are trade-offs and the extent to which they are explicit. You asked about how much we know about that and how it gets picked up. Is that right, Alasdair?

Mr Morrison: Yes. I am fine, thanks, convener.

Maureen Macmillan: I have a wee supplementary question. There has been much talk about putting things on mineral soils rather than on peat soils. What proportion of Scottish land is mineral? Can everything be squeezed on to mineral soils?

Lloyd Austin: I am trying to do some sums. I think that just over 1 million hectares of Scotland would be described as peatlands, but I can provide figures to the committee later. The most significant peatlands are in the far north and on the islands.

The Convener: I presume that that is quite an issue.

I would like to continue to where I think Alasdair Morrison was going with his questions. If it is decided that areas cannot be developed because carbon is locked in the soil, those areas will potentially be at a social or economic disadvantage. I suppose that the issue is how some kind of carbon trading can be built into different discussions so that there is equity in how decisions are made. We are quite a long way from such a process being adopted with respect to planning issues, for example.

Lloyd Austin: There are two aspects to that. First, there is sustainability of whatever use is made of peatlands. As a member of the previous panel said, it is important that land use is sustainable not only in environmental but in socioeconomic terms. For example, it is important to try to develop land management contracts for graziers of those lands so that they are rewarded for storing carbon and so that things therefore become sustainable in economic terms for the land user. It is equally important to develop techniques to assess the carbon balance of one form of development versus another so that decision makers can take informed decisions.

The Convener: Is that in the Scottish climate change strategy?

Lloyd Austin: I am not aware that it is in the current strategy, but I suggest that it should be in the reviewed strategy.

The Convener: Perhaps we can take that up with the minister when he is here.

Mr Ruskell: It is clear that there are issues to do with carbon releases that are related to individual projects and their location. Obviously, there is a lot of variation in soils and in the impacts of digging up those soils. Are such issues covered by environmental statements on individual projects?

Lloyd Austin: It depends. Those issues should be covered, but our experience is that different projects do things to different extents. The Executive could take a generic approach and seek improvement so that decision makers are more aware through environmental statements.

The Convener: I thank both witnesses for coming to answer our questions and for giving written submissions in advance of the meeting. You are welcome to stay for the rest of the meeting.

11:23

Meeting suspended.

11:26

On resuming—

The Convener: We kick off our last evidence session this morning on our climate change inquiry. I thank the third panel of witnesses for coming and for submitting their comments in advance. The panel includes Roddy Yarr, who is environment manager at BAA Scotland, and Jeff Gazzard—have I got the pronunciation of that right?

Jeff Gazzard (GreenSkies Alliance): That will do.

The Convener: Jeff is from the GreenSkies alliance. The other members of the panel are Phil Flanders, who is director for Scotland of the Road Haulage Association, and Colin Howden, who is the campaigns manager of TRANSform Scotland. I welcome you all and thank you for your written submissions, which committee members have read; they will help us to fire questions at you.

Transport was raised at the start of our inquiry into climate change during an evidence session for which we had a very big panel. Members have already asked questions on transport.

Rob Gibson will start with a question about how we are adapting to climate change. A representative from the Scottish coastal forum was on the previous panel.

Rob Gibson: Which areas of society do you believe are under the most threat from the impacts of climate change around the coast of Scotland? Are those areas prioritised in policy terms? In particular, I seek your views on roads, railways and so on and the provision of coastal transport.

The Convener: Would Phil Flanders or Colin Howden like to start on adaptation? It has been a huge issue in Alasdair Morrison's constituency in the past few weeks.

Phil Flanders (Road Haulage Association): I might as well bite the bullet.

Most of the roads around the coast are fairly low level. In order to get goods to and from ports it is very important that we look after those roads and ensure that they are kept open. The fishing industry, the timber industry and just about any type of product that goes to the Scottish islands would be under threat from rising sea levels, wind and waves. It is important that those issues be given serious consideration.

Colin Howden (TRANSform Scotland): That issue does not feature in the evidence that we submitted to the inquiry, but I am happy to go back and have another look at the matter.

Our rail industry members have in the past certainly been concerned about the issue and the effect that it might have on the rail network. It could be argued that the increase in stormy weather might affect the viability of the east coast main line's electrification, for example, because there will be an effect on overhead wires. There will be an impact on the public transport network as well as on the road network. However, I cannot present detailed material on that.

11:30

The Convener: Is enough being done to consider such issues? The Minister for Transport certainly discussed the matter after Christmas.

Colin Howden: Pass.

Rob Gibson: We must follow the matter up, because considerable investment might be necessary if we are to make having roads and railways in the right place a priority. Colin Howden acknowledges that there is a problem—thanks to Phil Flanders. However, the adaptations that we must make will cost money—doing nothing would also cost money. It is necessary to spend money if key parts of the country's transport network are to be able to function. Surely you have more specific ideas about the matter than you appear to have.

Colin Howden: It is TRANSform Scotland's view that we should be taking action to head off climate change and the damage that will result from it. That should be the focus of our activity. However, I am happy to go back and consider adaptation.

The Convener: That is useful.

Mr Ruskell: There is clearly a problem with transport in relation to climate change, because transport is the fastest growing sector and the transport emissions cake is growing. Are Executive policies reducing or increasing the size of that cake? Which policies are making the problem worse and which are alleviating it?

Colin Howden: The Executive's figures show an 8 per cent increase in greenhouse gas emissions from the transport sector between 1990 and 2002, so I concur that transport is perhaps the sector that is contributing the largest growth in greenhouse gas emissions. The Executive's record is mixed. To be fair, the Executive says that it will prioritise spending on sustainable transport so that 70 per cent of transport expenditure will be on sustainable transport by 2005-06. However, in our submission we question the robustness of the Executive's figure and ask whether it is skewed by the Executive's commitment to a large road-building spend. The Executive made a strong commitment to stabilising road traffic levels by setting a target to stabilise road traffic at 2001 levels by 2021. However, the Executive predicts a 27 per cent growth in road traffic levels over that period, so if it is committed to meeting its target it will have to take serious measures to make that happen.

There must be infrastructure spend on public transport, walking and cycling, but other measures, such as information and travel awareness measures, must also be considered. Fundamentally, we must also consider economic instruments. We must consider whether the price that we pay for travel reflects the externalities, by which I mean the impact on society, on the environment and, given the context of the committee's inquiry, on climate change.

Mr Ruskell: Are the externality costs of air travel and motoring in particular currently being internalised?

Colin Howden: No. Our submission mentions the institute for transport studies at the University of Leeds, which produced three years ago what is pretty much the state-of-the-art report on transport prices and costs. In relation to car drivers rather than freight, the report concluded that drivers meet

between a third and a half of the externality costs of motoring.

Mr Ruskell: I want to consider the total cake of emissions from the transport sector. BAA suggests in its submission that it accounts for quite a small slice of that cake. However, over time its slice of the transport sector emissions cake will grow, even if emissions trading has an impact. Where will cuts in emissions come from? Will they come from the road haulage industry, from private transport or from the air travel sector? If it is imperative that we reduce emissions in the transport sector to meet climate change targets and stabilise the climate, where should the reductions come from?

The Convener: A variety of witnesses can give us the answers.

Jeff Gazzard: It is a question of scale. I was racking my brains to think of an example of adaptation or mitigation in the airline industry, and I have come up with one. I am sure that committee members can imagine the amount of concrete surfacing on aprons, taxiways and runways at airports. Airports are going to have to consider their drainage systems big time, to see how they will cope with the massive amounts of water and run-off from the impact of climate change. The DFT has done a study, in which I think BAA was involved.

About 16 million passengers fly into and out of Scotland's airports each year. That figure will rise to somewhere between 26 million and 51 million by 2030, depending on how big the market is. I have not been able to disaggregate the figures to calculate how much Scottish CO_2 that will represent, but we will be launching a database with the parliamentary group that we are involved with at Westminster. The database has been created by QinetiQ—people from the old Defence Evaluation and Research Agency. It will allow you to look at CO_2 and other pollutants by airport and by country. For the first time, it will also cover information on military aviation over the next 30 years. I will therefore be able to get back to you to let you know the figures for Scottish aviation's CO_2.

What should we do about the figures? There are two ways of considering fiscal instruments. Emissions trading is the flavour of the month, but we are pretty sceptical about it because we have looked at what the costs might be. If British Airways, with about 22 million European passengers, were to buy all the carbon for every single passenger, that would put about £3 on a return ticket, which would not have much impact on demand.

Our current forecast of the effect on the price per ticket of an airline's entry into the European emissions trading scheme is based on a 95 per cent allocation of 1990 levels. I hope that members are familiar with how the emissions trading scheme works, although it is complex. The effect would be an increase of 41p for a single ticket, or 82p for a return ticket. That is why emissions trading is the flavour of the month.

BAA, to its credit, is promoting the scheme. However, if we consider what that fiscal measure is supposed to do, we see that it is supposed to impact either on demand—but 82p per ticket will not stop people flying—or on supply. However, it will not have much impact on the supply side either—for example, by forcing through newer, better and more fuel-efficient technologies. We therefore feel that emissions trading is a bit of a get-out-of-jail-free card. In our submission, we have tried to give figures to back up that statement.

Yesterday, the Green Alliance, in conjunction with WWF-UK, issued a very good paper on how the European ETS had performed in its current stationary sector applications. All the complexities of national allocation plans and pricing are in the paper. I strongly recommend that members have a look at it.

We would like there to be some kind of demand-management regime—like it or not—that involves taxing fuel over time at the same rate as petrol pump tax, a VAT regime on tickets or the internalising of external costs. Currently, the external costs of UK air travel every time a passenger flies 1,000km—which is a return trip from Glasgow to Luton on easyJet—would be in the region of €52. For freight, the external costs in the UK are about €273 per tonne. I am sorry that I have not converted those figures into pounds. If £30 were put on the price of an easyJet ticket from Glasgow to Luton, members can imagine the impact that that would have on demand.

Mr Ruskell: I want to go back to the question, just briefly.

The Convener: Very briefly, because I want to bring in the rest of the panel, who have not yet answered your first question.

Mr Ruskell: I wanted to pursue the point with the other witnesses. Just to refresh memories, the question was about which part of the transport cake shows the biggest potential for a reduction in CO_2 emissions. Where can we achieve gains—from the airlines, from the road hauliers or from personal car transport?

The Convener: Roddy Yarr and Phil Flanders will give us the industry perspective.

Dr Roddy Yarr (BAA Scotland): I can answer for BAA. One of the issues that arises is how much BAA can contribute. We represent our

airports at a European level and I am not sure that the Scottish element can influence that directly. A lot of the lobbying work that BAA does is at European and international level.

To answer the question directly, I do not know by what percentage emissions should be reduced in the different parts of the sector such as road, rail and air. I think that everybody must do as much as they can. BAA has made it clear that it is happy to participate as much as it can in the emissions trading scheme, on which it is helping the UK Government. It is important that the Government drives the scheme, initially at a European level but ultimately at an international level. Given that the use of fiscal measures such as a fuel tax might be detrimental to the European market's ability to compete with the rest of the world, we need to balance the benefits of such measures against the economic facilitation that airports provide to Scotland and the rest of the UK.

I am not sure what the percentages should be for the different parts of the sector, but we are doing as much as we can with our sustainable development policy to reduce our impact and to manage the growth demands on the aviation sector. We will work with our airlines to take things forward as much as we can—remember that we are an airport operator, not an airline—but we recognise the need to move forward.

Phil Flanders: Over the past 25 years, emissions from trucks have dropped dramatically. Under the Euro programme, Euro 4 engines will be introduced this year and Euro 5 engines in three years' time. At each stage of the programme, emission levels are reduced. Today, it would take 20 vehicles to produce the same amount of emissions that were produced by one vehicle in 1990. Coupled with that is the research and development that is being invested in alternative fuels. In addition, most hauliers are looking at how they can become more fuel efficient—some current schemes suggest that we could save 10 per cent on fuel consumption. It augurs well for the future that the road haulage industry is playing its part in reducing emissions.

The Convener: I have a list of members, but I will take them in order, starting with Karen Gillon.

Karen Gillon (Clydesdale) (Lab): I have difficulty with the idea that we should, in effect, price poor people out of the market. I can afford to pay an extra £30 on a flight ticket, but my mother probably cannot. Why should I be able to fly abroad more frequently than others just because I have a greater level of income? How do we square those two things, so that middle-class and upper-class people are not the only ones to benefit from a transport system that takes them abroad?

Jeff Gazzard: Getting people to pay the right price involves social equity issues. For bus travel, we cope with those by providing passes for old-age pensioners. For domestic fuel, we cope with fuel poverty issues through systems of subsidies and allowances for those at the lower end of the economic spectrum. I do not know whether you are seriously suggesting that we should provide allowances to let poorer people fly just because flights are a good thing in themselves. People take flights either for business purposes or for holidays, but many people have sensible and great holidays without flying. The explosion in the growth of low-cost flights has not benefited people at the lower end of the economic spectrum. Most of those flights are booked by credit card over the internet, to which poorer people do not have access.

Your question about access for all to air travel is one for society rather than for me to answer, but we need to try to reduce CO_2 outputs on a per capita basis. Some of those who are already hitting the targets that we will all need to achieve by the middle years of this century are those who do not have cars—either on principle or because they cannot afford them—and who use public transport instead, whether by choice or necessity.

Karen Gillon: I am interested in hearing the views of other panel members.

Dr Yarr: The emissions trading scheme and any other measures that arise must embrace the concept that you described. It is clear that there has been an explosion in low-cost air travel, which makes flights more available to those with a lower income, compared with the traditional, historic usage by business passengers.

11:45

Karen Gillon: I am interested in the concept of holidays without flying. It takes about two days to get to the Spanish coast by bus. Does Jeff Gazzard do that, or is he suggesting that everybody else should? Is he suggesting that people who can afford to pay £300, £400 or £500 to fly should be able to fly and that people who cannot afford it should take the bus?

Jeff Gazzard: Lots of people in Scotland go by train to the south coast for holidays. I have been on packed Virgin voyagers with people who do that. That is a choice that people make. It is not essential to fly to have a great holiday. Flying does not have to be part one's holiday; one could go to a campsite in Wales—that is what I do annually. I do not fly abroad on principle.

If you are asking me whether we are trying to price poor people out of air travel, the answer is no, but there are social equity issues. If you want to come up with a scheme that enables people at the lower end of the socioeconomic scale to have access to every form of transport, surely Mercedes-Benz dealers should give them a discount too.

Karen Gillon: I never had a foreign holiday in all my life because of the situation that my family was in. People in my situation now are able to have a foreign holiday, to have that cultural experience, to fly and to enjoy the side of life that everybody who had much higher salaries was able to enjoy before. As a politician I am reluctant to say to them, "You have had that social advance and you are able to enjoy a part of culture that very rich people were able to enjoy for many years before you, but you will not be able to do that any more. You can get the bus or train to the south coast, and everybody else can go on holiday abroad."

Jeff Gazzard: No, I think that the point about holidaying abroad is that it is an experience that everybody should have. The difficulty is that the damage that people are doing is out of control; I quoted the number of flights that will occur if the proposals in the white paper come to fruition. People cannot afford to do lots of things. Many people give up smoking or going to the pub to pay for their summer holiday. My mum and dad did that when I was a child. People have choices to make. It is tough.

The Government's forecast for the growth in air travel is based on a 1 per cent cheapening of prices annually. What we are saying is not that people cannot fly as much as—or even slightly more than—they do at the moment, but that the demand-management regime must be put in place to reduce the runaway growth in air transport emissions. The answer to Mark Ruskell's question about how much air transport contributes to savings in the climate change cake is that it contributes nothing. The air transport sector expects other sectors to fund its growth through an emissions trading scheme.

Karen Gillon: "People have choices to make. It is tough"—that sums it up.

Richard Lochhead: Jeff Gazzard mentioned that there is a projected increase in air travel in Scotland, and it sounded quite considerable. I ask him to elaborate on the basis on which that projection was made.

Jeff Gazzard: The projections are based on a sophisticated UK-wide model called SPASM. It takes into account gross domestic product by region and propensity to travel on a socioeconomic basis and it comes up with an increase from 186 million passengers today to 476 million by 2030. The model allocates the figures back to airports, and it shows that the 16 million passengers in Scotland today could rise to between 26 million and 51 million by 2030. Those figures are predicated on air fares becoming 1 per cent cheaper each year for the next 30 years.

Richard Lochhead: What about the argument that most people in Scotland either pay more for their flights because they have to pay a supplement to fly from Scotland or have to get an extra flight to an airport in London or elsewhere in England and fly out from there? If there were more direct flights from Scotland, those problems would be cut out of the equation. Has any analysis been carried out on what impact that would have on climate change?

Jeff Gazzard: That is in the figures that the DFT produced as part of its white paper, but all that would happen is that some loadings, some profit and some passengers would be taken out of other airports.

Roddy Yarr can answer this better than I can, but the way in which the system works is that there are hubs in the European system, so there will always be that traditional model of people flying to bigger airports to go onwards. There is obviously potential for Scotland to grow numbers of direct flights but then we get back to the question whether that is environmentally desirable.

Richard Lochhead: I have been reading recently—as I am sure most people have—about the hydrogen highway that has been built in California by Arnold Schwarzenegger. Also, last week BP announced that it is opening its second hydrogen refuelling station in Singapore. Scotland seems to be quite far behind when it comes to the development and use of alternative fuels. Does the panel believe that we should be doing more? Has the Government been doing enough on that?

Phil Flanders: I am led to believe that emissions are low when producing hydrogen, but the cost of production is extremely high, so there is no real gain. I could not give the exact figures but that is what I am led to believe.

Richard Lochhead: That is the case if we use fossil fuels for electricity in the production of the hydrogen, but not if we use renewables.

Phil Flanders: Yes, but if we are running trucks on a pure hydrogen engine, the cost of producing that engine in terms of emissions is high, even though emissions from the vehicle will be low. I do not have the exact figures so I cannot tell you what the balance is.

The duty on biodiesel at the moment is about 28p per litre compared with 47.1p for normal diesel. That still makes biodiesel about 30 per cent higher in cost than normal diesel, so there is no real incentive for hauliers to use it. That 30 per cent probably means 10 per cent extra on the costs that a haulier would have to pass on. Because the market is so competitive, it would take a brave man to be the first one to put 10 per cent on haulage rates. Perhaps the UK Government should review that and give hauliers more incentives to consider that kind of fuel.

Colin Howden: I endorse what Phil Flanders has just said. The problem with hydrogen as a fuel is with how it is produced. If it is produced using fossil-fuel energy, there are questions about how efficient that is when producing fuel for vehicles.

Phil also mentioned that he reckons that the road haulage industry will be dependent upon fossil fuels for the next 30 to 40 years. Unfortunately, given the way in which things are going in the development of alternative fuels, while it might be beneficial to move to hydrogen if it is created using renewable sources, it looks as if fossil fuel will continue to be the main source of power for all road and air transport for the foreseeable future. That is why the evidence that we are giving is about demand management and about trying to restrain the growth and use of those fossil-fuel-powered transport modes.

Maureen Macmillan: I go back to what Jeff Gazzard was saying about the air industry. You seem to be thinking about business travel and tourism. If what you want was to come to pass, no tourists would fly from this country to Spain, for example, and no tourists would fly in to Scotland. That would probably have a very serious impact on the tourism industry.

Let me come on to what I really want to ask. If you live in Tiree and you have to go to the dentist in Oban, are you going to make a three-day journey in a ferry or are you going to fly and do it in a day?

Jeff Gazzard: I am going to fly, and I should be able to.

Maureen Macmillan: Absolutely, and if you are going to put a supplement on aviation fuel, how much is that going to cost? Do you agree that you have to take into account the fact that some airlines, particularly in Scotland, provide lifeline services and that those services have to be protected and made as cheap as possible, rather than there being supplements on fares?

Jeff Gazzard: I agree completely. You have addressed the real question of real peripherality and need in the Highlands and Islands and communities that are separated from basic services by water. There is a facility for public service obligations, and although the environmental impact of those flights, which are small in number and volume, might not be infinitesimal, the balance is worth while. I agree with you completely.

We are not saying that we should roll back the number of people who are flying today. If the pricing policy that we suggest was implemented, instead of an annual reduction in prices of 1 per cent for the next 30 years, they would rise by 1 per cent annually, and instead of 476 million passengers annually in the UK by 2030, we would have about 315 million, which is still a lot more than the present figure of 180 million. We are not saying that people should not fly; we are saying that we need to have a sensible look at a charging regime that takes into account the environmental impacts of the related noise, land use and climate change.

We are signed up to a huge amount of UK and EU primary legislation that has the aim of internalising external costs in all transport modes. The question is about scale and need. I agree completely that some services are necessary, such as the services to Heathrow that were mentioned, and that some services may need to be protected. However, Scotland is not the only country in Europe with peripheral areas that face such difficulties. Society must decide how much air travel it wants and find the balance between the growth figures—which are utterly fantastic—and the damage that will be caused. I repeat the figure that I gave earlier: growth from 180 million passengers annually to about 315 million would bring the sector in line with technological and operational improvements, but growth to 476 million would be environmentally unacceptable.

Colin Howden: One solution to the peripherality issue is to consider the availability of services locally. Should it be necessary for people to travel long distances either by road or air to get the basic services that Maureen Macmillan mentioned? Public policy should focus on that issue. We should talk about accessibility, which relates to a person's ability to travel where they need to go, rather than about mobility, which relates to a person's ability to travel, full stop. More thought needs to go into that.

Maureen Macmillan: Possibly.

Rob Gibson: BAA's submission contains a pie chart that suggests that aviation produces about 11 per cent of the gas emissions that contribute to global warming, whereas the energy supply industry produces about 29 per cent. How closely does BAA co-operate with the renewable energy industry? Can you throw some light on the objections to the proposed wind farm development on Eaglesham moor, at Whitelee, which might have resulted in a reduction in carbon emissions that was greater than the amount of carbon emissions from the aircraft that land at Glasgow airport?

Dr Yarr: I do not know the specifics of the application, but I suspect that our objection related to the principle of wind farms and air safety. The Civil Aviation Authority and the airports are responsible for air safety. Part of that responsibility is handled through a process called safeguarding. The point is that wind turbines and rotor blades impact on the radar picture that air-traffic controllers see. I do not want to go into more

technical details, but the issue is about air safety. BAA is involved in the renewables sector through our energy consumption. Part of our climate change policy is to use renewable energy resources. The specific point about the Whitelee proposal is air safety—clearly, nobody wants to compromise air safety.

Rob Gibson: Earlier, we discussed adaptation to climate change, as well as mitigation. Renewable energy can help to mitigate the effects of climate change, but the way in which you enforce air safety affects wind farm proposals not just near Glasgow airport but near airports in Stornoway and other places. You have said nothing to make me think that BAA or the air safety organisation has done anything to address the issue. As climate change is upon us, we need to press you on whether you are prepared to make adaptations.

Dr Yarr: You have asked me what BAA is doing, so I will respond in kind. BAA is working with the CAA and the energy companies, such as Scottish Power, to try to reach a compromise, to understand the issues and to realise the benefits of mitigation measures. BAA is actively promoting such measures and engaging with the relevant stakeholders.

12:00

The Convener: The issue is important. Germany has many more wind farms than we have and has managed to incorporate air safety and renewable energy without the conflict that we in this country seem to have had.

Jeff Gazzard: The CAA is leading a working party that will produce practical solutions. The issue is not such a problem in real life, because pilots and air-traffic controllers know what the radar signature is after time. Turbines are not technically in the safeguarded area; they are a long way away. I believe that the working party is studying stealth technology for turbine blades and an identifier on radar that says that an object is a wind farm rather than a fighter. Practical solutions exist, some of which have been implemented in Germany. To its credit, BAA is involved in that.

Alex Fergusson: We are talking about global warming, but I recently became aware through the medium of television of the rather frightening phrase "global dimming". That was underlined by the fact that, in the three days immediately after 9/11, a scientifically recognisable lowering of the amount of aircraft vapour in our skies, which is apparently the cause of global dimming, was discerned. That is terrifying. However, I am sympathetic to Karen Gillon's argument that the answer is not to price half the population out of the flying market.

Phil Flanders told us that a twentyfold improvement has taken place in truck emissions in a comparatively short time. Is that achievable in aircraft engine emissions? If so, what is being done to achieve it? Is anybody up to answering that?

Jeff Gazzard: The study to which you refer was by a team of NASA scientists. It was purely by chance that interesting science arose from a tragedy. "Global dimming" is a bit of a misnomer; the impact of condensation trails is part of climate change and global warming.

There is no question but that the fuel efficiency of individual aircraft has improved because of growth in size, airframe technology and engines. The improvement rate has been about 1 to 1.2 per cent per annum in the past 30 or 40 years. However, it is increasingly difficult to find such savings. We work with an alliance of the Department of Trade and Industry and aerospace manufacturers on the subject, which was covered in the seminal United Nations Intergovernmental Panel on Climate Change report.

The best that we can look forward to is systemwide improvements in fuel efficiency, technology and air-traffic management of about 1 to 2 per cent annually. However, the growth rate is forecast to be 3 to 4 per cent. That is the basic argument that we use for cutting growth by half, to bring the industry's emissions in line with its technological and operational improvements.

The commercial aviation sustainability strategy—my colleague Roddy Yarr is involved with its steering group—is due to be published this summer and will address future technological contributions and operational matters. However, we already know more or less what they are—there is nothing new. It becomes increasingly expensive to squeeze the last drop of performance out of engines, because they are about as good as they will ever be, although things can be done for airframes.

Some studies have been conducted into using hydrogen, but we understand from the industry that that is not a flyer—pardon the pun—at any time. We will never see a commercial hydrogen-powered aeroplane.

Mr Ruskell: Colin, what do you see as the Scottish Executive's main positive tools to tackle emissions from road transport, rather than just aircraft, which we have focused on in this session?

Colin Howden: The Executive needs to continue with its process of switching expenditure to sustainable modes of transport, such as walking, cycling, public transport, rail and sea freight. It also has to restrain the growth of transport, if it is to have any hope of meeting the top-line target of stabilising road traffic at 2001 levels by 2021.

While action is being taken at UK level on road pricing for UK road haulage, it is important that we see progress in Scotland by Scottish local authorities and the Scottish Executive on local road user charging schemes, such as the one proposed by the City of Edinburgh Council. The council forecasts that, if the Edinburgh charging scheme referendum is won and the scheme is introduced by 2006, there will be a 10 per cent reduction in CO_2 emissions in Edinburgh—which is a reduction of 4,000 tonnes of CO_2—every year from year 1 of the scheme's operation. The London scheme, which has been in operation since February 2003, saw a 19 per cent reduction in CO_2 emissions in the central London cordon.

It is essential that Edinburgh and other Scottish cities come forward with such schemes if CO_2 emissions are to be tackled. I do not see the Executive, other parties or local authorities promoting anything else realistic on the horizon that will do anything to hit that national road traffic stabilisation target.

The Convener: Presumably such measures would also be allied to significant public transport investment, so that people have choices and do not have to bring their car into the city at every opportunity.

Colin Howden: Absolutely. It is important that that is carried through. As part of a sustainable city strategy, we must have demand-management measures for road traffic vehicles as well as investment in public transport. TRANSform Scotland's evidence refers to the professors' letter of 2002, which suggests that, although politicians would like to be told that just spending money on public transport will solve everything, that would be fundamentally incorrect and we need road traffic demand-management measures to be implemented.

The Convener: That is not the point that I was making; it was that we need both approaches, not one in isolation from the other.

Colin Howden: Absolutely. I agree.

The Convener: The topic has exhausted members. At the end of the previous couple of sessions, I have tried to sum up, but that would be difficult with this session, because it has illustrated the extent to which there are conflicting views on how and the degree to which we should address the issues. We will reflect on the evidence that you have all helpfully given us and try to identify what we want to focus on in our committee report and when we make representations to the Executive. Thank you all for your written submissions and for giving us detailed responses and views this morning, which have been helpful.

We will have a short suspension to let panel 3 escape.

12:08

Meeting suspended.

12:11

On resuming—

Subordinate Legislation

Potatoes Originating in Egypt (Scotland) Amendment Regulations 2005 (SSI 2005/39)

The Convener: Item 2 is consideration of a statutory instrument under the negative procedure. The Subordinate Legislation Committee has already considered the Potatoes Originating in Egypt (Scotland) Amendment Regulations 2005 (SSI 2005/39) and has made no comment. If members have no comments, I ask whether they are content with the regulations and are happy to make no recommendation to the Parliament.

I take that silence as assent. We will make no recommendation to the Parliament.

Climate Change Inquiry

12:12

The Convener: Agenda item 3 brings us back to our climate change inquiry. I simply want to alert the committee to the fact that we have not yet concluded with ministers exactly who will attend the meeting on 22 February. I will get back to you as soon as I receive that information, but I am very aware of the fact that we are in recess next week. In any case, members should hold the date in their diary.

Richard Lochhead: Which ministers have been invited?

The Convener: We have invited four ministers, but I do not yet have a finalised list.

Richard Lochhead: Will UK and Scottish ministers attend?

The Convener: No. Only Scottish ministers have been invited.

Mr Ruskell: Which ministers did we invite again?

The Convener: We have invited the Minister for Environment and Rural Development, the Minister for Transport, the Minister for Finance and Public Service Reform and the Minister for Enterprise and Lifelong Learning. As soon as I receive an update, I will clarify the matter with members.

Mr Morrison: Is it not a hugely ambitious aspiration to invite four ministers to a meeting? I think that we need an injection of realism.

The Convener: Well, the committee agreed to that course of action. Until I have further information, I cannot provide any more clarification. I just wanted to bring members up to speed.

Nora Radcliffe: I just want to counter Mr Morrison's remark. Ministers have all got to be somewhere. If they have given climate change priority, they will be here.

The Convener: Thank you, colleagues. I will see you on 22 February.

Meeting closed at 12:13.

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