



OFFICIAL REPORT
AITHISG OIFIGEIL

Environment, Climate Change and Land Reform Committee

Tuesday 7 February 2017

Session 5



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ENVIRONMENT, CLIMATE CHANGE AND LAND REFORM COMMITTEE
5th Meeting 2017, Session 5

CONVENER

*Graeme Dey (Angus South) (SNP)

DEPUTY CONVENER

*Maurice Golden (West Scotland) (Con)

COMMITTEE MEMBERS

- *Claudia Beamish (South Scotland) (Lab)
- *Alexander Burnett (Aberdeenshire West) (Con)
- *Finlay Carson (Galloway and West Dumfries) (Con)
- *Kate Forbes (Skye, Lochaber and Badenoch) (SNP)
- *Jenny Gilruth (Mid Fife and Glenrothes) (SNP)
- *Emma Harper (South Scotland) (SNP)
- *Angus MacDonald (Falkirk East) (SNP)
- *Mark Ruskell (Mid Scotland and Fife) (Green)
- *David Stewart (Highlands and Islands) (Lab)

*attended

THE FOLLOWING ALSO PARTICIPATED:

- Matthew Bell (Committee on Climate Change)
- Jim Densham (RSPB Scotland)
- Anne Gray (Scottish Land & Estates)
- Jo Green (Scottish Environment Protection Agency)
- Iain Gulland (Zero Waste Scotland)
- Dr Maggie Keegan (Scottish Wildlife Trust)
- Simon Parsons (Scottish Water)
- Jamie Pitcairn (Ricardo Energy & Environment)
- Bruce Reekie (Perth and Kinross Council)
- Professor Pete Smith (University of Aberdeen)
- Dr Emily Taylor (Crichton Carbon Centre)
- Chris Wood-Gee (Sustainable Scotland Network)

CLERK TO THE COMMITTEE

Lynn Tullis

LOCATION

The Robert Burns Room (CR1)

Scottish Parliament

Environment, Climate Change and Land Reform Committee

Tuesday 7 February 2017

[The Convener opened the meeting at 09:32]

Decision on Taking Business in Private

The Convener (Graeme Dey): Good morning and welcome to the fifth meeting in 2017 of the Environment, Climate Change and Land Reform Committee. I remind everyone present to ensure that their mobile phones are on silent for the duration of the meeting.

Agenda item 1 is a decision on taking business in private. Does the committee agree to take items 3 and 4 in private?

Members *indicated agreement.*

Draft Climate Change Plan (RPP3)

09:32

The Convener: Under agenda item 2, we will hear further evidence on the Scottish Government's "Draft Climate Change Plan: The draft third report on policies and proposals 2017-2032", or RPP3. This is the third of our oral evidence sessions. We will hear from three panels of stakeholders to discuss the overview of the plan and climate change governance. There will also be a particular focus on waste, water, the public sector and peatlands.

For the first panel evidence session, we have been joined via videoconference by Matthew Bell, who is chief executive of the Committee on Climate Change. Good morning, Matthew. Can you hear us?

Matthew Bell (Committee on Climate Change): Good morning. I can hear you very well.

The Convener: Mark Ruskell will ask the first questions.

Mark Ruskell (Mid Scotland and Fife (Green): Good morning, Matthew. It is nice to see you in front of the committee again, albeit in 2D rather than 3D.

What are your impressions of the third climate change plan? In particular, how does it relate to the advice that you have given the Scottish Government on the policies and programmes that you put forward in your report last year?

Matthew Bell: Thank you very much. I commend the committee on providing such a carbon-efficient way to give evidence, but I look forward to being with the committee in three dimensions soon.

I will give an overview of the plan and how it relates to our advice. At the highest level—the level of ambition in the plan; the recommitting to the 66 per cent reduction in emissions by 2032; the plan's coverage of all the sectors that we have touched on; and its picking up on areas that we think are important—the plan very much follows what we have asked for. Below that high level, a few areas of detail are worth picking out; maybe we can explore them in more detail during this session.

The plan differs from the types of scenarios that we have put forward in respect of the balance of effort across different sectors. When we put forward advice, we are always clear that it is scenario-based and that the Government is free to choose alternative paths.

On the differences between the plan and what we have said, the plan has relatively little ambition on transport compared with the scenarios in our cost-effective path and has high levels of ambition, particularly on domestic buildings and buildings in general, as well as on so-called negative emissions—carbon capture and storage combined with biomass of some form—compared with the levels in our plan. Overall, the Government's plan ends up in the same place as ours, but the balance of ambition across the sectors is quite different from the balance of effort that we had in our scenarios.

My second high-level point is that we have emphasised in our advice the importance of the governance and the monitoring framework around the plan. Again, there are welcome high-level steps in the plan, such as the commitment to set up a governance body and the identification of owners for the actions that the plan sets out, but I would like to see a little bit more detail to ensure that the governance and the monitoring will be as rigorous as we need it to be in order to achieve such an ambition by 2032.

Mark Ruskell: How were you involved in the development of the draft climate change plan? Last year, the Committee on Climate Change issued high-level advice, but were you involved in looking at the different pathways that could have been run through the TIMES model? Has there been a dialogue with the Scottish Government about the size of the different emissions envelopes and pathways?

Matthew Bell: As you say, we issued our formal advice to the Scottish Government. Within that, we set out in some detail the pathways that we thought represented the least-cost option for getting to the 2032 targets. That work included all our analysis.

There has been high-level dialogue between us and the Government; there has also been dialogue at a working level—for example, between the teams that do the modelling in my committee and those that do it in the Scottish Government. However, we have not seen or input into any of the detailed assumptions, analysis, pathways or thinking that has gone into the TIMES modelling.

Mark Ruskell: Your suggested pathways have not been put through the TIMES model. Is that correct?

Matthew Bell: I do not know; we have not seen the detail that has gone through the TIMES model. The Government might have put our pathways through it, but I do not know.

Mark Ruskell: How does RPP3 relate to RPP1 and RPP2? It is striking that there is no analysis of the carbon or the financial implications of policy

actions in the plan's third iteration. What is your view on that?

Matthew Bell: In order for the Committee on Climate Change to develop its scenarios, we find it helpful to use a range of evidence sources to try to understand the high-level picture—the Scottish Government has used the TIMES model to give that high-level picture—and to supplement that with other sources of evidence about specific carbon savings and financial costs and benefits that might come from particular policies. We tend to look at a range of models and sources of evidence in order to have, if you will, both a top-down and a bottom-up view.

As the committee is aware, in RPP3 the Scottish Government has shifted from a very bottom-up view, which was the approach in the first RPPs, to a very top-down view. Both approaches have their advantages and disadvantages. We tend to emphasise the need to adopt a combination of those two approaches to understand the nuances and the subtleties that are required to put forward a least-cost path.

Mark Ruskell: When will you do your next analysis of Scottish Government policies? When will your next progress report be?

Matthew Bell: Our next formal progress report is due in September.

The Convener: We of course recognise that time is constrained because of the 60-day restriction that we face, but has the Scottish Government asked you to comment on the plan? Would you welcome such an opportunity?

Matthew Bell: We have not been asked formally to comment on the plan, but we would certainly welcome opportunities to feed in our thoughts. It is important that we as the independent adviser can stand back and offer an independent view, so it is not for us to say precisely what should or should not be in the plan. However, we would welcome opportunities to feed in to your committee and more widely during this period.

Alexander Burnett (Aberdeenshire West) (Con): Good morning. You have talked about looking at the plan and understanding it. The TIMES model is to be handed over to universities. It is very much an open source and transparent methodology of assessing climate change issues. What plans does your committee have to use the model or to investigate how it works?

Matthew Bell: As you say, it is a good modelling framework, and we have used it in the past—we used it for the advice on the carbon targets from 2027 to 2032. We definitely welcome the opportunity to look in more detail at the specific analysis that the Scottish Government has

done, the scenarios that it used and how the answers that the model has come up with played through in the plan. The process that the Government is going through to hand over the model and the assumptions to academics and the wider community is good.

One point that I would emphasise about the TIMES model—and, indeed, any model—is that, in using it, we have to understand its limitations as well as its benefits. For example, we know that models often create dramatic discontinuities or changes in very short periods of time. We have to think about whether that is realistic in the real world and use a range of other evidence to inform that. I will give examples of the type of things that I mean and that appear to have come out of the TIMES model, although obviously we do not know the detail. On the buildings ambition, low-carbon heat makes up about 18 per cent of heat supply to buildings from 2020 to 2025, but it ramps up all of a sudden to 80 per cent from 2025 to 2032. Similarly, in transport, about 27 per cent of vehicles are electric in 2030, but that ramps up all of a sudden to 40 per cent in 2032.

Those are the sort of dramatic changes that models produce. All of a sudden, the model spots something that it thinks is inexpensive, so it fits in loads and loads of that very quickly. We have to step back and ask what wider evidence we have to understand whether such a dramatic change is achievable or whether in practice in the real world things might ramp up at a different rate and have more of a glide path.

As you say, the TIMES model is a very good, transparent and rigorous framework for considering a certain set of questions. However, in coming up with a plan, we need to take advantage of a wider range of evidence. That is the approach that we try to adopt in the Committee on Climate Change.

The Convener: Just to round up this section, in advance of publication of the plan, the UKCCC recommended that transport and agriculture should be required to do considerably more than they have up until now. The agriculture section of the plan has come in for some criticism, of its ambition and its language. From your perspective, are those criticisms valid?

Matthew Bell: The scenarios that we developed to inform the 2027 to 2032 set of targets, which were ultimately adopted, had more ambition in transport than exists in the Scottish Government's draft plan. We had a stronger set of measures—certainly a stronger process—on how we monitor agriculture emissions and how we might get emissions reductions over time. We had more ambition in transport and a stronger set of policies in agriculture.

09:45

It is clearly for the Government to decide the balance of effort across the different sectors and which policies to develop. If the plans for transport are going to be less ambitious, we want to see more of an understanding developing during the 60-day consultation and when the final plan comes out about how we can be sure that we are going to be able to meet the overall 66 per cent ambition for 2032.

Similarly, in agriculture, if there is going to be more of a softly-softly approach that involves the sharing of best practice, how can we be confident that it will make the overall contribution that it needs to make? What is the options analysis and what is the risk analysis in the event that agriculture is not progressing as quickly as needed? What will happen then?

David Stewart (Highlands and Islands) (Lab): Good morning and thank you for joining us by videoconference. I hope that the committee takes further evidence by videoconference and makes our own contribution on climate change.

There are a number of big assumptions in the plan on Europe, on transport and on carbon capture and storage. On CCS, given that the UK Government has withdrawn the £1 billion funding, how realistic are the assumptions in the plan?

Matthew Bell: I will speak at a relatively high level, because we do not have all the details from the plan.

First, the Committee on Climate Change is very clear that carbon capture and storage is part of the least-cost path to meet the 2050 target, both for the Scottish Government and for the UK Government. The UK and Scotland need to re-engage with carbon capture and storage, given the decisions that have been made over the past 18 months to two years. We need to find a way to move carbon capture and storage forward, in both a Scottish and a UK context.

The Committee on Climate Change has published our ideas and we have written to the Secretary of State for Business, Energy and Industrial Strategy in the UK Government setting out what we think is a sensible approach. We are looking for carbon capture and storage to be part of the emissions reduction plan that the UK Government has committed to producing in the next couple of months.

In our scenarios, carbon capture and storage starts to deliver emissions reductions and be available as a set of technologies in Scotland and the UK in the 2030s. Thereafter, the so-called BECCS technology—bioenergy with carbon capture and storage—which allows negative emissions, starts to develop into the 2030s. Those

scenarios take account of where we are today, the decisions that have been made and the relatively rapid series of policy and other decisions that need to be made over the next decade or so.

The Scottish plan appears to have BECCS coming in around 2027, which is earlier than in our scenarios and very quick, given where David Stewart suggested that we are today. In fleshing out the draft and coming up with the final plan, the Scottish Government needs to consider whether the next decade is a realistic time period in which to get something up and running that involves not just the carbon capture and storage technology but the negative emissions technology, given the levers that the Scottish Government has and the decisions that might need to be made at a UK or even a European level.

David Stewart: The other area that I touched on is our membership of the European Union. Clearly, we are in uncharted territory. There are a number of assumptions in the Scottish plan about membership of the EU in terms of policy development. What is your assessment of that, and of the future of the emissions trading scheme, which is very important in this area?

Matthew Bell: Frankly, it is too early to say a lot in detail about that. Last October, the Committee on Climate Change published a report on the implications of Brexit for tackling climate change in which we set out the range of policies that is currently negotiated by the UK at an EU level and then promulgated through the EU, and which will have to be dealt with in the context of negotiating Brexit. Clearly, the EU emissions trading scheme is one of the more prominent of those policies, and another that very much affects the Scottish plan is the carbon efficiency standards for new vehicles, which are currently being negotiated at EU level.

How such policies are transferred into UK law and, indeed, into Scottish ambitions could have a big impact but, right now, we are trying to understand how they are going to evolve and be translated. As the Committee on Climate Change, we will make very clear the areas in which we think that makes it more difficult to achieve some of the ambitions and those areas—which might include agriculture—where we think that will be easier.

David Stewart: Finally, I know that you have already touched on some of this, but transport is a vital area, given that it is such a big emitter. You have had some interesting things to say about—and indeed have very ambitious plans for—urban consolidation centres and the emphasis on active travel, and you have also set out more ambitious plans for electric and carbon-limiting vehicles by 2030. Could you say a little bit more about that and comment on current developments across Europe? For example, I note that in Madrid the

use of diesel vehicles is being banned, albeit on a rota basis, because of their huge effect on the environment.

Matthew Bell: First, our transport scenarios have a greater penetration of electric vehicles than is suggested in the draft plan for Scotland, which sets out a 40 per cent penetration of electric vehicles by 2032. Our scenario for Scotland has the figure at about 65 per cent, so there is quite a big difference in the level of ambition for transport. However, I referred earlier to the countervailing ambition in the Scottish plan for buildings, which is much greater than the ambition in our scenarios, and the Scottish Government has to judge whether it can deliver such a trade-off.

Secondly, not only is there less ambition for electric vehicles in the Scottish plan, but the ramp-up seems to be very quick. The penetration of electric vehicles is only at 27 per cent in 2030 and then, all of a sudden, it jumps to 40 per cent in 2032, and the question is whether such a big increase in the space of only two years is an artefact of the modelling—after all, the model can easily switch things from one side to the other—and whether that is a realistic approach in the real world or whether you would start the process earlier and have a different level of ramp-up.

Thirdly, as you have pointed out, a big source of transport emissions is not passenger vehicles but lorries, heavy goods vehicles and vans. In this immediate period, it is much more difficult either to electrify them or to reduce their emissions in some other way, and that means that logistics and the smart planning and routing of those vehicles will form an important part of emissions reduction in that respect. I have not seen the detail in the Scottish plan to know precisely what has been planned, but ensuring efficient logistics through the use of the out-of-town consolidation centres that you have referred to and then moving towards the use of electric vehicles to bring them into towns might reduce carbon and—to respond to your final point—help to improve air quality. Perhaps a co-benefit of switching to electric vehicles, particularly in cities, will be that air quality issues will be addressed—or, if we look at it the other way, perhaps a co-benefit of a long-term, systemic plan for tackling air quality is that some carbon emissions will be tackled, too.

David Stewart: I think that I said that my previous question was my final one, but finally finally, might it not be useful to look at this in the same way as the smoking ban? It used to be seen as normal to smoke in pubs, whereas now it is seen as abnormal. I went to the Netherlands to see one of these urban consolidation centres that you mention in your report; they are systems in which HGVs deliver goods outwith cities and smaller non-polluting vehicles take those goods

into the cities. Can you see a scenario in Scotland and the UK in which diesel vehicles and taxis in cities are seen as abnormal? After all, there are clearly worries across Scotland and the UK about the level of pollution that is caused by diesel vehicles, particularly in our inner cities.

Matthew Bell: I think that our approach to smoking—how our attitudes to smoking, particularly indoors, have changed so much in a relatively short period of time—is a good example of how behavioural change can happen much more quickly than people often think it will at the time. The use of seat belts in cars is another example of a change that, not so long ago, people thought would be virtually impossible to make and to have widely accepted.

The speed at which the approaches to smoking indoors and wearing seat belts have changed illustrates not just how quickly behaviours can change with the right policies, the right nudges and the right information but how completely accepted the behavioural change can become as a part of the normal course of daily life. The indoor smoking ban is a good example of how that can happen with the right combinations of policies. It is partly about standards and regulation, but it is also about information, education and a range of other actions.

Kate Forbes (Skye, Lochaber and Badenoch) (SNP): I would like to know your analysis on the policy outcomes, including making the most of opportunities to secure wider benefits for health, jobs and biodiversity. Also, do you think that it is clear that those aspects have influenced the choice of policies and proposals in the plan?

Matthew Bell: I have not seen a sufficient level of detail in the plan or been involved in the process enough to know the extent to which the wider co-benefits of acting have influenced the decisions. The one that probably comes through clearest in the plan is the emphasis on energy efficiency, because of the co-benefits for fuel poverty that are associated with it. We have certainly emphasised that in other areas. As you say, whether it is healthcare, opportunities such as new jobs from the new sectors and the low-carbon economy, or biodiversity, there are co-benefits that it is important to take into account. We have not looked at the plan in enough detail to know the degree to which they have fed into the analysis.

Claudia Beamish (South Scotland) (Lab): Good morning, Matthew. It is very good that you have made the time to come before the committee and, as Dave Stewart pointed out, it is good in terms of climate change that you were able to do so by video link.

Is there anything that you would like to highlight as being missing from the climate change plan? I

will highlight one issue and ask whether you have any comment on it from the perspective of the Committee on Climate Change. It is to do with marine issues and blue carbon. As you might know, quite a robust marker was put down in RPP2 about blue carbon in the future, in the same way as in RRP1 a robust marker was put down about peatlands. The peatlands issue has now moved forward into what one might say is robust action. However, there is no mention of blue carbon in RPP3. To be fair, when they came before us recently, the Scottish Government officials said that they would look at that. Can you make any comment from your perspective about that omission?

Matthew Bell: I agree that the analysis that feeds into the plan needs to look at the full spectrum of possible areas to reduce carbon emissions, and blue carbon is one of those areas. As you say, there is not the detail in the plan for us to know whether it was assessed and rejected, for example, as being too expensive compared with some of the other measures, or whether it was not fully assessed. We would certainly welcome a more detailed examination of that.

In terms of other areas that you mention, at the high level, I will return to one of the things that I said at the beginning. I would like to see a sort of risk analysis. If it looks as if the very high ambitions—in buildings, for example—are not progressing as quickly as desired, what actions will be taken? That could also apply to increasing ambitions in transport or elsewhere. I would like to see more of an options analysis, rather than it being assumed that all the programmes will deliver precisely as envisioned, because we know that unexpected things will come up.

That is tied to the issue of who owns the programmes. As I said at the beginning, there is some welcome articulation of the ownership of particular policies, but it is often at a very high level. I do not know what conversations have taken place with Network Rail, Scottish Enterprise or local government to inform them that they are the owners of the programmes or, indeed, to establish precisely which bits of those extremely large organisations are involved and how they will be held to account. A bit more detail about the ownership and the monitoring framework that will underpin it would be useful.

10:00

The area of agriculture, land use and tree planting provides an example of both of those things. In that area, it would be useful to know how we are going to monitor whether we are achieving the ambition that is set out, what measures will be taken if the ambition is not commensurate with the

targets that are set out in the plan, what the options are and who the owners are.

Mark Ruskell: Three pretty big assumptions stand out in the plan when it comes down to individual policies and sectors. The first is that vehicle mileage will increase by one quarter by 2030. It would be good to hear your views on that.

The second assumption concerns agriculture and soil testing. In your report last year, you had a clear recommendation that soil testing should be mandatory rather than voluntary. I would like to hear your views on that, too.

Matthew Bell: I do not have a specific view on the number of vehicle miles in 2030. I can get back to the committee on what we think demand for vehicle mileage might be. As I emphasised in response to some of the other questions, the overall transport scenario is less ambitious than our scenarios. That includes travel issues and issues around drivers' behaviour and the decisions that they make, as well as the penetration of electric vehicles.

On agriculture and soil testing, as you say, our recommendation was to move towards a mandatory system. For a number of years, we have had a voluntary approach in Scotland. That was appropriate for a time but, at some point, you have to assess whether the voluntary measures are being taken up at the rate that is required. Soil testing should have co-benefits for farmers in terms of saving money and the application of appropriate amounts of fertiliser, as well as reducing carbon. Therefore, it would seem appropriate to introduce standards for soil testing in a mandatory way. We have had a period in which there have been trials, the approach has been tested out and best practice has been developed, and now we can move to something that is a bit more robust. That was the genesis of our recommendation.

Mark Ruskell: The third assumption that I wanted to ask you about concerns housing, and the dramatic shift towards low-carbon heating, which you have already commented on. What lies behind that? What is the technological change that is required? Industry is considering that question, as well, because industry needs confidence if it is going to change over time and invest in new infrastructure and training. What steps are implicit in that model, which will, apparently, get us to the target of having 80 per cent of residential properties heated by low-carbon sources by 2030?

Matthew Bell: In our scenarios, we set out three steps, all of which have to be done in parallel with the energy efficiency work. Rolling out energy efficiency domestically and in commercial buildings is important.

The first step involves taking the electrification of heat seriously—I am talking about electric heat pumps, ground-source heat pumps, water-source heat pumps and so on, particularly in houses that are currently off the gas grid, which is where those measures will be most cost effective—in order to start to create a supply chain and develop consumer acceptance, behaviour and understanding, as happened with smoking and other social changes. That requires a concerted effort to move forward at a UK level, with Scotland being part of rolling out the supply chain of heat pumps.

Secondly, we need to start to roll out district heat networks in high-density urban settings. There are some very good examples of that starting to happen in Scotland. We need to continue to roll out those heat networks in urban settings and start to have a low-carbon source of heat for those heat networks.

Thirdly, we need to examine and properly trial hydrogen as a potential low-carbon source of gas that could use the existing gas network, provided that we can source hydrogen in a low-carbon way. That requires carbon capture and storage when the hydrogen is created.

We have said that those three options need to be pushed forward in a concerted fashion between now and the mid-2020s in order for us to know by the time we get to the mid-2020s which least-cost route or combination of routes will be needed so that we do not have to make a decision when we get to 2025 in the absence of knowing the relative costs, the relative public acceptance and the relative benefits of heat pumps versus heat networks versus hydrogen.

We would expect to see those types of actions between now and the mid-2020s.

I do not know the details of what has happened in the TIMES modelling, but that modelling in the Scottish plan seems to have held low-carbon heat very constant between now and the mid-2020s and ramped it up all of a sudden. I go back to what I said earlier. That sort of thing is an artefact of a model that implicitly does the type of learning between now and 2025 that I talked about and then decides the technology that we can really ramp up quickly. In the real world, our understanding of the broader evidence is that we need to put in place programmes that will create that understanding as well as saving carbon between now and the mid-2020s in each of the three areas such that we can ramp up.

Mark Ruskell: Are some milestones missing in the journey to making a clear decision in 2025 about what technological pathway we should take?

Matthew Bell: From our analysis, I would certainly have expected to see a more gradual ramp-up that would have included the types of milestones that I suggested for progress in each of those three areas in order to test them and observe the carbon savings rather than there being a holding flat at 18 to 20 per cent and then an increase all of a sudden.

The Convener: Let us consider monitoring, evaluation and implementation. Will you outline for us how the approach to monitoring and evaluation as laid out in the plan fits with your recommendations and expectations, and how specific, measurable, achievable, realistic and time-bound the policy outcomes as they are presented are?

Matthew Bell: At a high level, I would like the Scottish Government almost to pull the monitoring framework out of the plan and say, "Here is our monitoring framework." In the short time that we have had to look at the plan—we will certainly look at it in more detail, and we will probably speak to the Scottish Government to understand it in more detail—it has sometimes been hard to pick out from all the details in each of the policy areas precisely how it will be monitored.

The SMART objectives and monitoring that you alluded to would probably start with the statement, "This is the outcome that we seek to achieve"—that is set out reasonably clearly; the outcome is a 66 per cent reduction in emissions by 2032, and there can be annual monitoring of the high-level targets—and the outputs that are expected from each different sector. There could be a bit more detail about what precise output we are looking at for transport, for example. Is that the 40 per cent level? What does that mean? What are the precise outputs in buildings and agriculture?

The detail that is perhaps most missing—or, at least, that we have not been able to find in the plan to the extent that we have reviewed it so far—is the input that we would expect to see leading up to that. What is the series of policies that will generate 40 per cent electric vehicles or 80 per cent low-carbon heating in buildings? How do we know whether we are on track to do that? Are we going to monitor vehicle sales, heat-pump sales or hydrogen use? What measures are we going to monitor, and when will those trigger a new approach, a new set of thinking or a trial of a different set of policies?

The Convener: Looking to the future, as the UKCCC, do you feel that, because of the use of the Scottish TIMES model, you will be able to scrutinise performance as effectively as you might want to? Beyond that, what role do you see—or would you hope to see—for the Scottish Parliament's committees in the future? Do you share the view that has been expressed, that it

would be open to the committees of the Parliament annually to hold the Government to account across a range of the subjects that are covered by the plan? Do you feel that that would be helpful?

Matthew Bell: The TIMES model is a very useful device for taking a broad overview of the entire Scottish economy and asking where the balance of effort should be and what the least-cost balance of effort is. However, we would always supplement a range of other evidence alongside the TIMES model, and that is important when it comes to monitoring.

It is to be hoped that, in the final plan that the Scottish Government produces, there will be a series of indicators, from outcome to output to input, with clear owners, and that we, as the UKCCC, will feel comfortable using that series of indicators to provide an independent assessment. If those indicators are not there, we are able to come up with our own set of indicators to provide the evidence that you, Parliament and the Scottish Government can use to inform your broader priorities. Indeed, that is what we have tended to do in the past.

We recognise that having the Scottish Government use one set of indicators while we use a different set and perhaps somebody else uses a third set is a bit confusing. Ideally, we would all have one set of indicators that we agreed was the right set, and we could then have a debate about the same things. However, we would certainly come up with a set of indicators if we thought that those in the final plan were not clear enough.

If the Scottish Parliament were to have an annual discussion of the extent to which the targets were being met, that would be a very good way of providing some checks and balances in the system.

The Convener: On the subject of appropriate checks and balances, do you believe that there should be a role for some of our stakeholders in the suggested governance body?

Matthew Bell: It is very much up to the Scottish Government, in discussion with others, to decide how it sets that up. It really comes down to what the role of the governance body is.

The UKCCC sees its role in the governance process as providing an independent assessment of where we are on the trajectory compared with where we need to be. I do not know, because I have not seen enough detail, but if the governance body is designed to take up that role and—given that the UKCCC has said, "This is where we are, relative to where we need to be"—ask what steps need to be taken and what policies and proposals need to be put in place, the ability to consult

quickly with a wide range of stakeholders could be very useful within the process. Whether we have those stakeholders on the governance body or consult them in different ways is very much for the Government and for you to discuss.

The Convener: Okay. Thank you. We will move on to behavioural change.

Jenny Gilruth (Mid Fife and Glenrothes) (SNP): Good morning. Last year, in evidence to this committee, in which you took part, Lord Deben spoke about the importance of behavioural change. You have spoken about that this morning, and about modal shift—for example, from road to rail—and how we might facilitate that. Part of the research for the draft climate change plan was a series of climate conversations, and the report talks about strong support for improvements to public transport more broadly. You said at the start of your evidence that there is little ambition in the plan in relation to transport. How well do you feel that measures to facilitate behavioural change and a modal shift have been embedded in the plan?

10:15

Matthew Bell: We have not had time to study the plan in enough detail to know where behavioural change is embedded in it, but we know that we need to make it relatively easy for people to change their behaviour. As you said, it is one of the issues that Lord Deben discussed with the committee when we were last in front of you. Particularly when it comes to something like transport, we need a combination of costs coming down—whether in technology, in public transport or in other areas—convenience and the provision of information to people. That whole package must be there so that people can make an easy choice to change their behaviour as opposed to its being a very difficult decision.

I have not seen that whole package in what I have seen in the plan, although it may be in the detail or in the broader thinking. I understand that part of the ambition for transport that is articulated in the plan was based on an independent study that was undertaken by Element Energy, but we have not seen that study so I do not know the range of assumptions and scenarios—behavioural, technological and so on—that it looked at. Understanding that in a bit more detail would help to inform the debate.

Finlay Carson (Galloway and West Dumfries) (Con): At the end of January, we took some evidence from Dr Rachel Howell from the University of Edinburgh. She welcomed the use of the individual, social and material—ISM—tool but suggested that it was not being used very well in developing the plan. She went on to say that we need bottom-up and top-down approaches and

that regulation is probably needed more. What is your view on the balance of voluntary and mandatory measures in the plan? You have already touched on soil testing, but can you expand on that?

Matthew Bell: The important thing is having a clear five to 10-year strategy for how we are going to reach the 2027, 2030 and 2032 targets. We can start by having a series of voluntary measures in some sectors and some instances. It is important to monitor those measures and understand whether they are being taken up, not because, if they are not being taken up, we need to come in with a big stick but because, if they are not being taken up, that is probably an indication that something is not quite right. It might be an indication that there is a degree of unfair competition, that information is lacking or that the costs are not quite in the right place.

If the voluntary measures are not being taken up, we must ask what additional action needs to be taken to ensure that they are taken up. In some instances—in agriculture, for example—that might involve providing a common set of standards for soil testing. In other instances, as in the smoking ban analogy that was given earlier, some nudges—whether regulatory or through the creation of standards—might be appropriate to allow people to experience something different and then realise that it is actually a good way of doing things. It is a question of having a systematic, step-by-step approach and knowing that, although voluntary measures will work in some instances, when they do not work that should be used as a diagnosis to determine the next intervention. The voluntary measures should not be allowed to extend for too long and reach a point at which it is too late to take the action that is needed.

The Convener: Thank you. Do you have any final reflections on the draft plan that we have not teased out this morning?

Matthew Bell: We have covered an awful lot of ground, and I do not think that there are any big areas left.

We have touched a lot on agriculture, but we have not touched specifically on tree planting and forestry, which is a very important area. It is an area in which there is quite a lot of ambition in the plan, but we know that we are falling short of the existing ambition, so there is a need to articulate how the degree of ambition in the plan is going to be met.

We have also touched on the very high ramp-ups in targets between 2025, 2030 and 2032 in a number of sectors, which I think need to be unpicked in more detail between the draft stage,

which we are at now, and the finalisation of the plan.

We have covered a wide range of areas, and those are the issues that I would pick out in addition.

The Convener: Okay. Thank you very much for your time this morning. We look forward to continuing our engagement with the UKCCC.

Matthew Bell: Thank you very much. It is a pleasure to do this. I am glad that the videoconference worked so well.

The Convener: Indeed.

I suspend the meeting for five minutes for a changeover of witnesses.

10:20

Meeting suspended.

10:23

On resuming—

The Convener: Welcome back. We continue our discussions of the Scottish Government's draft climate change plan—RPP3. We are joined by various stakeholders to discuss the plan's approach to waste, water and the public sector. We are joined by Jo Green from the Scottish Environment Protection Agency; Iain Gulland from Zero Waste Scotland; Simon Parsons from Scottish Water; Jamie Pitcairn from Ricardo Energy & Environment; Bruce Reekie from Perth and Kinross Council; and Chris Wood-Gee from the Sustainable Scotland Network.

I hand over to Maurice Golden.

Maurice Golden (West Scotland) (Con): The first theme is waste, and I refer to my declaration of interests in Zero Waste Scotland and the Chartered Institution of Wastes Management.

I would like to top and tail the theme with two general questions and explore three key areas thereafter. My first question is open to as many members of the panel as would like to contribute. Will the proposed outcomes, policies and proposals deliver emissions reductions from the waste sector? If not, what needs to change?

Iain Gulland (Zero Waste Scotland): Thank you for the opportunity to come to the committee. We believe that a number of policies that are in place will drive the change that is required to meet the targets for reducing emissions from waste that are set out in the plan. They are ambitious and we have come a long way from where we were through increasing recycling and, in particular, through food waste collection. More than 80 per cent of households now have access to a food

waste collection. We have significantly developed organic treatment capacity and more businesses are engaged through the waste regulations.

The focus on reducing waste—particularly food waste, which has a target reduction of 33 per cent by 2025—is ambitious, but the policies are well in play and we are engaging on waste prevention with local authorities and businesses across a number of sectors. That engagement is required to ensure that we keep up the pace.

Jo Green (Scottish Environment Protection Agency): There has been good progress, as you know. The direction of travel on waste is clear, but the issue is all about the implementation. SEPA came out of the waste resources framework with a clear perspective on what our contribution would be to delivering the circular economy. Some of that is about compliance from the waste sector and tackling serious environmental crime to make sure that there is a level playing field. We are also looking at waste efficiency and promoting that as much as we can in our delivery. There is a clear direction of travel and it is challenging, so it is now all about delivery.

Jamie Pitcairn (Ricardo Energy & Environment): I have a couple of general points. Matthew Bell picked up earlier on the question that Maurice Golden just asked—whether the outcomes will be delivered.

It is difficult to get fine detail on what the reduction in emissions will be, because that is not in the plan. Overall, if the policies that are in place are implemented, there will be a good chance of meeting the abatement targets. However, the assumption is that the targets will be met along that journey and, as Jo Green suggested, there are questions about the rate of change to implement the targets.

Figure 20 in the plan includes the assumption that the landfill ban will mean a change in the level of biodegradable waste that goes to landfill. With a good wind, the targets can be achieved, but what will happen this year, in 2018 and in 2019 to make sure that the zero waste regulations are adhered to and that the landfill ban delivers what it is required to deliver? To echo the point that Matthew Bell made, we need to understand some of the minutiae of what will happen in each of those years and to use the monitoring and evaluation to see whether that is working.

If the zero waste regulations and the requirement to segregate food waste are enforced properly, the targets will have a chance, but I have my reservations about the current level of enforcement to drive behavioural change and achieve the outcome.

Bruce Reekie (Perth and Kinross Council): We are certainly on a journey, and a number of

sectors, including local government, have made huge progress in increasing recycling rates and reducing the amount of waste that goes to landfill. That journey continues.

Challenges are coming up, including the availability of resources for local government to continue to drive the change, but it is heartening that, with what is in place at a Scottish level, we have a framework to work within.

10:30

Chris Wood-Gee (Sustainable Scotland Network): We have made good progress on waste so far, and the approach certainly seems to be working locally, but a key message is the need to get buy-in from the wider public in order to achieve more. That is where things such as the ISM model will feed in, because a cultural change similar to what was needed when we wanted the public to stop smoking in public places or to put seat belts on is required. Quite a change in the public's attitude is required to support progress. That is very much in line with what a lot of local authorities are trying to achieve through their waste policies. However, as is the case with a lot of the plan, that will be challenging.

Maurice Golden: Many of you have highlighted food waste, which is the first area that we will look at. The draft plan includes a key target to reduce food waste and a landfill ban on biodegradable municipal waste. Do we have the necessary policies and procedures in place to meet those two key targets?

Iain Gulland: The focus is turning more significantly towards food waste reduction; a target has been set on that and there is engagement with businesses. As I said, it is accepted that food is wasted not only in households but by businesses, and that wastage happens up and down the supply chain and throughout the food and drink industry. To deal with that, there must be engagement.

There is ambition not only from the Government but across a number of sectors to tackle the issue. Everyone is much clearer about the cost of waste to their businesses. That is getting people to the table to discuss how businesses can not only minimise food waste but reduce their costs and become more efficient. I hope that that level of engagement will make sure that we keep up the pace in reaching the waste target.

We have done a lot of work with a number of partners to engage with householders. That work was driven primarily by the cost to householders. The cost to individual households of wasting so much food—food that is bought but not consumed—is about £700 a year.

Policies are in place, but engaging people with them is one of the tougher areas to progress. Working in partnership is a big part of our work. It is not about doing all the work ourselves; rather, we have to work with local authorities and other people who have an interest or a stake in the food waste agenda, whether that be retailers, the food and drink companies or the producers. We can take a number of steps, but engagement is needed.

To capture food waste—that is, to keep it out of landfill—regulations are in place. We have seen great success in engaging with businesses and householders on the food waste collection infrastructure that has been rolled out across Scotland. As I said, about 80 per cent of households have access to food waste collection. Business regulations have come in, too. More people are now separating out their food waste for collection and the capacity to collect the food is there. The issue comes down to enforcement, which colleagues have mentioned, particularly as it relates to businesses.

Behavioural change has been referred to. Putting in a collection infrastructure and giving people access to it is all very well, but we need to make people aware of it and make it easy for them to engage with and use it. We need to do more work on that with local authorities, businesses and the waste management companies that provide services to businesses.

Maurice Golden: You mentioned engagement on food waste prevention campaigns. Do you have data on how successful that has been in reducing the amount of food waste that is presented at kerbside collections?

Iain Gulland: There has been a drop of, I think, about 8 per cent in household food waste in Scotland over the past couple of years, so we are—if you will excuse the pun—eating into the issue. We have certainly started the process, and the numbers are encouraging, but we have a long way to go if we look at the amount of food waste that we produce at home. As you will be aware, we are tracking the impact of that annually; there is work at a UK level, but we have Scottish numbers, too, and we are doing slightly better than the rest of the UK as far as impact is concerned. We work with individual local authorities to analyse the waste stream—what is being collected and what is going into residual waste—to keep tabs on any shift or trends in performance. We will continue to monitor the impact on food waste reduction as the food waste collection infrastructure matures.

Jo Green: I will make two points. First, in collaboration with local authorities, we carried out 7,000 business inspections to check on compliance with legal requirements on recycling,

and we found that 80 per cent were doing some form of recycling, which is positive. We then ran a bit more of a targeted campaign that involved 60 or 70 of the businesses that were not recycling, and we found that an indication of the possible use of our new fixed penalties was enough to shift behaviour in about 80 per cent of that pool. That shows that that is about implementation and enforcement.

Secondly, it is right to highlight the challenge that is posed by the managed retreat from landfill and getting the right mix of waste infrastructure that will support Scotland. There is a clear direction of travel on that, which is why landfill is one of the areas that we are looking at as we move towards a much more sectoral approach.

Maurice Golden: Do you feel sufficiently resourced and funded to ensure trade waste compliance with the regulations? When you said that 80 per cent of the businesses that you looked at were doing some form of recycling, did you mean that they were consistently providing waste for separate collections every week? I was not quite clear about that.

Jo Green: I do not have all the details and breakdown for the 80 per cent of businesses, but I am happy to come back to the committee on that.

On resources, we are trying to find smarter ways of working with the waste sector to support that work. However, we do not have any resourcing issues at the moment.

Maurice Golden: So you are confident that the 300,000 small and medium-sized enterprises in Scotland are all presenting their waste appropriately and as per the waste regulations.

Jo Green: No, but I will come back to the committee with more detail about the campaign that I mentioned.

Jamie Pitcairn: Iain Gulland is right, and I echo the comment of other witnesses that Scotland is in a good place through having the legislation already. It was really encouraging that that happened early through the strategies that were put in place; indeed, it has been great, because such things take time. As part of the waste regulations, we have the landfill ban for biodegradable waste, and getting food waste out of landfill is probably the biggest contribution that the waste sector can make to reducing greenhouse gas emissions.

According to figures from 2014 that support the landfill ban, in the region of 1.35 million tonnes of food waste arises in Scotland. Of that, 600,000 tonnes comes from households and roughly 740,000 tonnes comes from the business, commercial and industrial sector. However, if we look at what is collected separately as food waste,

we find that about 1 million tonnes of waste is not accounted for. The aim of the landfill ban is therefore to drive the change back up the chain for producers and the waste sector, which is where the challenge lies.

It has been really good to have the 50kg threshold, as it was in 2014, and the 5kg threshold, as it became in 2016. They have definitely made an impact, but I fear that their effect has started to tail off and that, until the landfill ban's teeth begin to bite, things will plateau.

I would like to see evidence of what will happen between now and 2020-21 to put in motion actions to ensure that the landfill ban is effective and that the targets are met. I do not know what those actions are, but I would like to hear discussion of how waste will be tested before it goes into landfill to find out whether it contains any food waste.

Currently, any waste management company that is not too concerned about adhering to the regulations will pick up residual waste and, although it knows that there is a lot of food waste in that, it will take the waste to landfill, where it will be accepted. That practice will continue until the ban is in place or at least until measures are put in place to stop it.

The ban process could be accelerated or at least some measures could be put in place to make the waste management sector aware that the ban is coming. Market signals will be needed before 2021 to allow the sector to put the infrastructure in place. We cannot just say suddenly on 31 January 2020 that the current waste practice is no longer acceptable and leave ourselves with 1 million tonnes of waste and nowhere for it to go. We need the organic sector and in-vessel composting to be already established to take the food waste material, and the waste management sector must be geared up to provide the required services.

This is a good time to look at all that, and the review of the plan is timely, because we have three or four years to put measures in place. The longer we drift and the longer some issues are not addressed, the more challenging the task will be.

Bruce Reekie: We welcome the use of food waste prevention schemes. The good food nation bill that is proposed for later in the year will be an excellent way forward. However, some food waste will unavoidably end up in the waste stream; it is vital that we continue to engage with not only householders but businesses to capture as much food waste as possible.

On the business side, we were part of the project with Zero Waste Scotland and the Scottish Environment Protection Agency that looked at compliance levels in our area. The compliance levels are good, although they are not 100 per

cent. The use of the fixed-penalty notice means that any engagement can be backed up with enforcement action, which is welcome from a local authority perspective.

Maurice Golden: I do not want to embarrass anyone, but Perth and Kinross Council is one of the leading lights, in that it was one of the first five authorities that took part in the trials of food waste collections and it has engaged proactively with its householders through comprehensive communication campaigns. In light of all that, can you articulate how many householders are engaged in your food waste collections, how that is likely to reduce the amount of food waste and how it will affect other contracts? How have you managed food waste collections in rural areas?

Bruce Reekie: To capture food waste, Perth and Kinross Council runs a mixed food and garden waste collection service. Out of about 68,000 properties, 55,000 use that service. We currently do not reach about 5,500 rural properties because of the resources that would be required to provide such a service. We are rolling out 140-litre general waste bins, and the evidence so far suggests that those bins are ensuring that more food waste is coming through our brown-lidded bin service. By reducing the amount of general waste capacity, we are increasing the amount of food waste that we capture. We want to continue to drive that.

The fundamental issue, which has been touched on, is engagement. When we engage with householders, there is a direct link to the amount of food waste that we capture at the back end of the process.

Maurice Golden: Are you projecting a 70 per cent recycling rate for Perth and Kinross Council by 2020, which would mirror the national target?

Bruce Reekie: Given the roll-out of the 140 litre general waste bins, we think that we will achieve a recycling rate of 60 per cent or so within the next couple of years. To get to the 70 per cent rate, we suspect that the waste will have to have some form of treatment before going to landfill. After the landfill ban comes in, we will look at different treatment options. However, we certainly think that we will be able to get to the 70 per cent target by 2025.

Maurice Golden: The Scottish Government has said that energy from waste is modelled to decrease throughout the period to 2032. Based on what is happening with infrastructure building at the moment, do you think that energy from waste will increase, decrease or stay the same over the course of the next 15 years? Also, can you say what proportion of waste should be burned in a circular economy?

10:45

The Convener: Nice and easy.

Jamie Pitcairn: I have not seen the information that is put into the model, so we are still flying blind in some respects. I have a reasonable knowledge of the energy from waste plants that are either planned or have been built. They have 20-year to 25-year contracts, so you can work out for yourself how long they will be receiving materials. I do not know the overall tonnage that they will deal with, but plants either exist or are planned in Glasgow, Edinburgh, Midlothian, Dundee, Dunbar, Aberdeen city and Aberdeenshire.

If there is a concern that there is competition between recycling and energy from waste plants, that should be monitored. The easy option is to put a lot of that material into energy from waste plants—certainly, if you want to avoid putting it into landfill. Mixed waste that cannot be put into landfill because of the biodegradable landfill ban needs to go somewhere else; if there is capacity in energy from waste plants, the chances are that that is where it will go.

It is probably right to monitor the situation. I cannot provide you with a more precise answer, as I have not seen the figures that are used in the modelling.

Iain Gulland: The issue presents a big challenge. Mark Ruskell mentioned the circular economy. That is a big ambition for Scotland and, with our partners and the Scottish Government, we have done a lot of work on that so that we can seize the huge opportunities that exist not only in terms of climate change but in terms of the economic and social objectives, which are clear to see. If we burn too much material, we will decrease those opportunities. There is a balancing act that must be undertaken.

Another challenge relates to climate change. Once we start moving towards incineration, those numbers go into the energy calculation rather than into the waste calculation. At the moment, with regard to the rate of decarbonisation that is going on in Scotland in terms of electricity and the carbon factor, incineration is already higher than the Scottish carbon factor, so it would be counterintuitive to start building things that are not as good as what we already have. That will be a challenge for the energy discussion. As I said, a balance must be struck.

When we talk about energy from waste, some people include anaerobic digestion in that discussion, which means that we are not just talking about mass-burn incineration. Anaerobic digestion is a good thing, and we are doing quite a lot of it in Scotland. Obviously, with the implementation of the biodegradable burning ban

in a few years' time, there will be more anaerobic digestion in Scotland and lots of investment in it. There is a role for energy from waste, particularly in anaerobic digestion.

Maurice Golden: If we take anaerobic digestion out of the discussion, is there a possibility that local authorities will be contracted both to burn waste and meet Government targets to recycle the same waste? Will that be an issue? I will ask Bruce Reekie about that later, but Ian Gulland has a view of all 32 local authorities.

Iain Gulland: Yes—that will be an issue. It is matter of timing. If plants are being built now that have 20-year or 30-year contracts, that will tie up a lot of material that, as trends in the circular economy become more apparent, could become the feedstock for other industries. What do we do about that? A balance must be struck, and there must be a wider integrated discussion around individual contracting, with a view to establishing a more strategic approach for Scotland. We need to think about how we can make the most of our capacity and not see it as a hindrance with regard to our future ambition for the circular economy, which is a highly attractive prospect in terms of economic and social impacts and in terms of climate change. Clearly, that is a discussion that needs to be had.

Jo Green: There might be a modest role for energy from waste in Scotland, but the emphasis should be on the maximum value that can be derived from the resources circulating within the economy, on making sure that waste is reduced and on having high-quality recyclates. In energy from waste, strict emissions limits should be enforced, and it should be ensured that residual waste only goes to such plants and that energy is recovered efficiently.

Bruce Reekie: To echo Iain Gulland's point, I say that the issue is timing. We want to drive as much as possible through recycling or composting channels. If we can retain the value of material, that will provide best value for the people and businesses of Perth and Kinross. We are looking for residual waste treatment only for the waste that cannot be recycled or composted. When we get to a figure in the low 60 per cents, we look to go out to contract. Residual waste treatment gate fees are considerably higher than recyclables or composting gate fees. There is therefore an economic imperative to minimise residual waste treatment as much as possible.

In procurement processes, we have to consider having much more flexible contracts. Waste is an ever-changing environment, so we need flexibility. Perth and Kinross Council looks at contracts of five to 10 years, rather than at longer-term 25-year contracts.

Maurice Golden: That is good to hear.

The last area that I want to explore is producer responsibility and what work is currently going on in terms of allocation of staffing resources, live tenders and contracts. Producer responsibility is a potential solution that has been identified by the Scottish Government for achieving many of our aims. To go outwith the public sector agencies, do witnesses have any comments more generally around producer responsibility in the Scottish context?

Iain Gulland: In "Making Things Last: A Circular Economy Strategy for Scotland", which was published last year, the Scottish Government set out the need to look at producer responsibility and investigate the establishment of a single framework. It referred to materials including furniture and tyres, which would be the first products to be looked at. There have been some discussions with Government and with SEPA about taking that work forward.

If we are going to embark on a producer responsibility exercise that covers a lot of different materials and products, it is right that we think about it in terms of a single framework. A single framework for all materials will mean that retailers, manufacturers and suppliers are aware of the ambition and the journey that we are on in Scotland. That would be preferable to the piecemeal approach of picking individual materials and trying to solve each issue, which would result in an array of producer responsibility schemes, some of which would cover the same sectors.

Jo Green: We can use producer responsibility as a tool to influence product design and waste prevention. I do not have the details of what we are doing specifically on resources, but I am happy to come back to the committee on that.

Maurice Golden: That would be useful. In your evidence you mentioned using regulatory tools. It would be interesting to know more about that in terms of waste prevention and influencing product design.

Jo Green: I would be happy to provide that information.

Iain Gulland: I want to reinforce the point. Another key element will be ensuring that whatever system is brought to bear works for all the objectives that we have on design and for all the economies of Scotland. Some producer responsibility schemes in Europe and elsewhere around the world are very good for the environment in keeping stuff out of landfill or incineration, but the knock-on effect might be that those materials are recycled or reprocessed outwith the country that has developed the scheme, or there might be other social impacts that were not anticipated. As part of our approach

in Scotland, we should find out how to maximise all those objectives and ensure that we have the right scheme to address all the issues, whether environmental, social or economic.

Jamie Pitcairn: Perhaps I can make two quick observations about the scheme. First, I think that producers that are putting product on the market are detached from their responsibility to ensure that it can be recycled. That gap creates problems, because a brand owner or retailer can put on the market product that really cannot be recycled under the existing systems. As I have said, that leads to problems for the local authority in collecting the waste or for the processor in having the infrastructure and technology to process the waste.

The issue could be looked at more from the viewpoint of the producer's responsibility. After all, according to research that I read at the end of last year, there is evidence to suggest that the UK has one of the lowest levels of compliance with regard to producer responsibility. I had not been aware of that interesting fact, so there might be an opportunity to see whether the producers that are putting product into the UK market are paying what they should be paying to ensure that those materials are recycled.

Maurice Golden: I believe that other members have supplementary questions.

The Convener: We do indeed. Just to kick off, I note that household recycling rates have essentially flatlined in the past few years. In 2011, the figure was 40.1 per cent on average, and the figure in 2015 was 44.2 per cent. That does not suggest that there is any great momentum at a time when we are moving into RPP3 and trying to ramp things up. Can anyone explain the situation to me?

Bruce Reekie: A number of local authorities are probably still in the midst of rolling out things such as food waste services, and there are also moves afoot among a number of local authorities to reduce general waste capacities. I have already mentioned the 140 litre bin, and some local authorities are considering having three-weekly and four-weekly collections. The picture is ever changing, with local authorities at different stages. Moreover, as has been mentioned, a lot of the back-up infrastructure and the processing capacity behind collections are in development.

We are on a journey, but you are right to highlight that there has been a slowing down, with a lot of the low-hanging fruit having already been captured by some of the big roll-outs. There are challenges as we move forward, but I think that, fundamentally, this is about investment not only in infrastructure but in engaging with members of the

public—the householders and the businesses—to ensure that we maximise capture, in that respect.

The Convener: I hear what you are saying, but how much of a factor are local authority budgets? An authority not a million miles from Perth and Kinross has been reducing the hours of its recycling centres, closing some centres and withdrawing from some rural food waste collections. Is that happening across the country and, if so, how much of a negative impact could that be having?

Bruce Reekie: Obviously there are pressures on local authority budgets, but I can speak only for Perth and Kinross Council. We have tried our best to protect the services that we have put in place. Our gains over the past 10 to 15 years with regard to improving recycling performance and achieving diversion from landfill have been hard won, and we do not want to take any retrograde steps at this point in time. We are working within a good framework, and we certainly do not want to roll back the services that we have worked hard to put in place. However, there are budgetary pressures on local government across Scotland, and waste services are not immune from them.

The Convener: It strikes me that a regional model for, or regional collaboration on, collection might help. Where rural areas sit on councils' borders, does not it make sense for one vehicle to collect waste from both sides of that border? To your knowledge, has such an approach been explored?

Bruce Reekie: I know that a number of local authorities are looking at collaborative arrangements; indeed, we are working with Dundee City Council and Angus Council on more joined-up approaches.

At national level, the charter for household recycling in Scotland is about applying a more consistent methodology across Scotland. I think that, at this point, 23 of the 32 local authorities have signed up to it. Action is being taken and there is a joined-up approach among local government, Zero Waste Scotland and SEPA to drive performance.

11:00

The Convener: Thank you. It is useful to get that on the record.

Claudia Beamish: There will be a circular economy bill in this session of Parliament, and the Scottish Government has already published its strategy on the circular economy—"Making Things Last: A Circular Economy Strategy for Scotland". Can Iain Gulland and others comment on multiple benefits? In a previous evidence session, officials

mentioned the possibility of employment benefits. Can anyone comment further on that?

Iain Gulland: Absolutely. The “Making Things Last” strategy sets out a number of areas of activity that the Government would like to take forward. It is well recognised that Scotland is seen as one of the leading nations not just in Europe, but globally, on the circular economy, and not only in respect of beginning to put policies in place, but in the work that we have done previously on evidence building.

We have considered with colleagues in SEPA and Scottish Enterprise not only the environmental benefits, but—as Claudia Beamish mentioned—the wider benefits for key sectors, of moving to a more circular approach. Jobs are one of the benefits. We have done work at macro level on some key sectors and have identified opportunities that are of value in terms of businesses and jobs. Manufacturing is a good example; our work shows that there could be between £500 million and £600 million of increased benefit to the manufacturing sector and that about 5,000 jobs could be created. Those opportunities are significant. There are obviously similar opportunities in food and drink, construction and the built environment, and in the oil and energy industries—both offshore and renewables.

The real change is that we are, as well as managing waste, shifting towards a circular approach. We are very good at collection and at developing infrastructure, but more than 70 per cent of the stuff that we collect is exported from Scotland to other parts of the UK, Europe and beyond. The circular approach is about looking both at how we harness that for our own economic prosperity and at systems to reduce the impact of waste in the first place by reuse, repair, remanufacturing and repurposing. There is a great opportunity for skills development that we could showcase to the world.

Those are big benefits, but the benefits in terms of carbon are also significant. Work that we did last year on the carbon impacts of the circular economy recognised that if our economy becomes more circular by 2050, the impact on our emissions would be five times greater than the amount of waste emissions from 2014. If we look across the whole economy at different industries, the impact would be greater. If we think not only about our own territorial emissions but global emissions—which we all need to think about—the impact would be another five times that, if we were to do more remanufacturing, reuse and repair in Scotland.

The environmental and economic benefits of the circular economy are fantastic. As we get into working with those sectors with partners including Scottish Enterprise and Highlands and Islands

Enterprise, we are beginning to realise the opportunities that exist for individual companies that we work with. We are looking at the macro picture and trying to understand how we can make this work in individual areas and local communities.

Mark Ruskell: I should probably declare an interest, as I am a councillor on Stirling Council. I will ask Bruce Reekie about the shift that we have seen in local authorities towards a consistent collection method. I have certainly noticed that shift in my local authority; we are probably moving towards the model that Perth and Kinross Council has now. Are there any trade-offs in terms of what we are discussing today, which is climate change and carbon? I think that the driver for the shift has predominantly been savings—for example, local authorities have moved away from kerbside sorting. If we have a model that is based more on centralised facilities, will that mean that we will ship around more garden and food waste to centralised facilities throughout the country and potentially push up carbon emissions?

Bruce Reekie: Obviously, there are transport considerations with waste. We tend to find that local authorities go through procurement exercises to secure treatment facilities, and try to minimise transport as much as possible. In our situation, there is backhaul and reverse logistics: vehicles deliver goods into an area that is near us, and we can then use reverse logistics. Obviously, there are transportation efficiencies to be made.

On infrastructure, we know that local treatment facilities are available, and we try to use them as much as possible, given the procurement regulations that exist.

Mark Ruskell: What is Iain Gulland’s view on that?

Iain Gulland: I hope that an impact of the move to a circular economy and reusing, repairing and remanufacturing will be that products and materials will last longer and that there will be an—I hope positive—impact on freight in terms of importing materials and moving brand-new things around the country.

I am not sure about Mark Ruskell’s point. On technology—particularly, anaerobic digestion—there are obviously big treatment plants. That is where the technology has been, but there have been advances in smaller technologies that can be applied more locally, which could open up parts of rural Scotland for food waste treatment and treatment of other materials.

The key thing is providing consistency of materials. In Scotland, we struggle with the materials that we collect for recycling. They are from various locations and are of different quality and consistency, and there are different mixes of

them. That is very hard for any industry, whether we are talking about one company in the middle of Scotland that is trying to invest or a number of players that are trying to identify how to access the flow of materials in the pipe. I believe that, once we have consistency, that will open up other opportunities that could be more locally based.

The shift to the circular economy is very much about entrepreneurs or people who are disrupters looking at matters in a different way. They can access single streams of material more easily than they can deal on a mass waste basis, which is the traditional waste-management infrastructure.

We are beginning to see a shift in waste-management companies and other players that are coming to the market, and local authorities are more aware of that now. Our work with the charter that Bruce Reekie talked about was very much about engaging with local authorities not just on the infrastructure for collection, but on what happens to materials and the real economic opportunities in the shift to the circular economy. Separation of materials or collecting things in a different way with a more consistent approach could drive local economic regeneration and create opportunities for existing and start-up businesses.

That is perhaps the message that we need to get across more to people. The waste infrastructure is basically a pipe of resources that we can tap into and make more of at local and national levels.

Mark Ruskell: You mentioned the supply chain earlier. Every year in the UK, thousands of tonnes of perfectly edible food are ploughed into farmers' fields because of contractual difficulties between supermarkets and farmers. Is there anything that we should take cognisance of in the plan to try to deal with waste that occurs further up the supply chain? A lot of the focus is on reducing waste and on treating waste as it comes out of residential and business properties, but what about the stuff that we just plough into fields?

Iain Gulland: The work that we have done on the food waste target has primarily focused on household waste and the stuff that is visible in the supply chain. However, discussions are going on with the agriculture sector around getting some numbers that will enable us to assess exactly how much of that activity goes on in Scotland and what the issues are around that at a local level, so that we can address them.

Waste prevention is key. Growing vegetables that are simply going to be ploughed back into the ground is not very good in terms of carbon reduction. The agriculture sector has raised that point.

People are increasingly engaged in that issue, partly because of things that we are now seeing on television around this agenda. The public are more engaged in it and are asking questions about it, and much more work is being done on it, including by suppliers and retailers. We need to address the specific challenges and opportunities in Scotland.

That leads into issues such as the biorefinery work that has been going on with Scottish Enterprise. That is not so much about solving the food waste problem as it is about thinking about how we can add value to the by-products of our food and drink industry. Some successful things are being done in that regard in the whisky industry, through Celtic Renewables and Horizon Proteins turning by-products from that industry into high-value chemicals and proteins. There are many such opportunities, and I think that we will start to see some of them being taken advantage of at a local and national level as the circular economy starts to get into those areas.

Jamie Pitcairn: I would back up what Iain Gulland has just said. The circular economy has been great at shining a light on opportunities and on areas in which we can do better. A lot of the bio-resources that flow around the Scottish economy are not being valorised or used as well as they could be because—I think—we have just got lazy as a society. There is a great deal of inefficiency across various elements of these sectors. What can we do about that? We have to understand that the problem exists and do something more meaningful with resources, rather than putting them into landfill, throwing them away or burning them.

Inorganic fertiliser is one of the biggest issues in relation to the greenhouse gas abatement targets for agriculture, yet we have millions and millions of tonnes of organic materials flowing around our economy that are not being put into useful agricultural production but which could be. The nice thing about the organic materials that are out there is that they are organic. They help the composition of the soil. There are big issues now around the fertility of the soil because we are not holding organic material in there. We have this material that could displace inorganic fertiliser, but we are not really challenging ourselves hard enough to use it. There are reasons why we are not doing that, but it is not beyond the wit of man to make it work. We can say that organic material cannot go into landfill or be incinerated and that it is available to be used so let us do something with it. As I said, the circular economy has done a good job of shining a light on some of those inefficiencies.

The Convener: Those points are useful. Thank you.

Finlay Carson: My question is probably for Bruce Reekie and Iain Gulland.

We have heard that a good framework is in place now and that more collaboration is going on. I declare an interest as a councillor in Dumfries and Galloway, where we have seen quite substantial failures in our western region, with the rural waste collection completely failing and the process having to be revisited. Are such huge failures by councils now unlikely, because there is more sharing of good practice?

Bruce Reekie: Obviously, I cannot comment on the Dumfries and Galloway situation, because I am not fully aware of the facts. However, I can say that there is very good sharing of best practice across Scottish local authorities, through the waste managers network and under the auspices of Zero Waste Scotland. Particularly for those councils that have signed up to charter compliance, there is good support on offer from Zero Waste Scotland to support the roll-out of those programmes. Hopefully, the kind of failure that you are talking about should not occur in future.

11:15

Iain Gulland: That puts Zero Waste Scotland slightly on the spot. Our role is to facilitate the sharing of good practice by the people who are running the services and to provide technical support as and when it is required. The charter gives us a framework that we perhaps did not have in the past, with people moving towards a more consistent service, which means that there can be clear learning outcomes.

We have a variety of systems, and it has been difficult for people to share good practice because their systems have been so different. However, the charter gives us the opportunity to address that. The focus of our programme of work with people who have signed up to the charter is on how we can work with them individually and, more important, how we can create a community of best practice, so to speak, in which the officers on the ground learn from one another. I think that that is where the future lies. I hope, then, that those issues will be overcome.

Emma Harper (South Scotland) (SNP): I have a quick question on anaerobic digester plants. The Scottish Tenant Farmers Association's submission says that we have large numbers of livestock in small areas, and that is where we might use anaerobic digesters more efficiently. We also have lots of land that is used specifically to provide non-food crops for anaerobic digestion. What are your thoughts on whether we should be monitoring or analysing the use of non-food, grass-fed digesters versus the use of slurry or waste? There are

obviously issues around using a lot of land for non-food production.

Iain Gulland: The anaerobic digestion infrastructure that we have been helping to support is based more on the collection of food waste and organic material from householders and businesses than on using waste from farming. I am well aware that it is an option that some farmers are taking forward. Ideally, we would like to see a mix of materials, which would provide better generation of power than just using slurry and so on. There should be a mix.

As I said, I think that there are opportunities in the rural parts of Scotland. Anaerobic digestion technology is changing. There are new ideas on the market in relation to the approach, the mix of materials and generation. They should be looked at to see whether there are opportunities there.

If we are going to start growing crops simply for energy, there is something to be said for monitoring what the impact is, and not just at the local level but at the national level. That sort of monitoring is not part of my remit, but we could provide technical support for it, as and when required.

We are very clear about the infrastructure that we are helping to support, for which the feedstocks come from householders and businesses more than from agriculture.

Chris Wood-Gee: One of the challenges with that ties back to agricultural emissions. One of our neighbours is putting in an AD system for which I think that they are growing rye as feedstock. However, there is a challenge when people use inorganic fertilisers, whose carbon footprint is about 298 times worse than that of straight CO₂. It is about getting a balance. Using food waste in AD is fantastic if you need to use green organic matter, but it is a challenge to get the balance right between how crops that go into AD systems are grown and the low-carbon fuel or gas that you get out at the end.

Jamie Pitcairn: To come back to the point about the circular economy, there are lots of materials already in the economy. We need to get more inventive. Waste water sewage sludge can go into AD. What other waste streams can complement that, not only to help the AD process but, perhaps, to make a higher-value fertiliser at the end? Could we add marine algae and seaweed into some of those streams? In some areas, there might be a sewage treatment plant or waste-treatment plant that does not have the volume to feed an AD plant. Other feedstock could be added: we could amass enough to make that viable and create a much higher-value fertiliser. We have used seaweed to fertilise the land for

years. What else could we do by being inventive with those streams?

I do not want to say that we should not be adding in agricultural crops, but that seems slightly perverse to me. We have all these bioresources flowing around the economy. Can we not be a little more inventive in seeing how we can take more value from them?

The Convener: Thank you. That is a very useful point. Let us move on to look at the public sector.

Claudia Beamish: I want to drill down into questions around the public sector. There is an enormous range of public bodies in Scotland in terms of scale, size and function. It would be helpful if the witnesses representing the public sector could answer, as they see fit, my three initial questions. I also have a couple of supplementary questions.

To what extent have the public bodies represented today been involved in the climate change plan? How clear are you about the roles that you are expected to play in achieving the planned emissions reduction that is set out in RPP3? There has been a lot of comment already about waste, so I would prefer it if that was excluded from this discussion. I want to focus on public buildings, on which there are two challenging policies, but panel members can focus on other areas.

I do not want to put Simon Parsons on the spot, but I want to bring him into the discussion, so I would like him to start.

Simon Parsons (Scottish Water): Good morning, everybody, and thank you for the opportunity to come along today. For Scottish Water, our role and responsibilities in relation to climate change are clearly laid out. We have a periodic review process through which we make our commitments to the activities that we will undertake in and around delivering the Scottish Government's climate change ambitions.

Climate change and carbon emissions have a huge impact on Scottish Water as a business because we are hugely dependent on the weather and the environment. A good, healthy environment is very important for us in terms of producing the high-quality drinking water that we are all drinking here today. The changing climate results in flooding and drought, for example, which are big, long-term risks for us. We are looking to ensure that we have the right adaptation plans to deal with them.

As a body, we are clear about our role in supporting the achievement of the targets and in ensuring that, as a critical service, we have adaptation plans in place. We have a rigorous regulatory process that allows us to identify, study,

understand and mitigate risks over a period of time.

You mentioned public buildings. Although the vast majority of Scottish Water's carbon footprint is associated with pumping water and with pumping away and treating waste water, a small proportion of our footprint—a few per cent—is associated with public buildings. We are always looking for opportunities to reduce the energy demand of those buildings and to see whether we can heat them differently. For example, we have an intelligent control system in a building in Stepps called the bridge, which some of you might have had the opportunity to visit. It is a good example of our focus on what can be done to reduce energy use in a building, from how we contracted the construction of that building through to its day-to-day management.

I will give another example that picks up on some of the earlier questions on the circular economy and heating. Scottish Water Horizons, which is the renewables end of our business, has done some work with Borders College on reusing heat from sewage—the water that comes out of people's houses, which is warm—to provide the college with heat. That is the first example of such a process in the United Kingdom and it is viewed as a real success, with lots of opportunities going forward.

The Convener: Before Claudia Beamish comes back in, I have a question. What role do you see Scottish Water playing in relation to peatland restoration and the achievement of the targets in the climate change plan? Next year, the Scottish Government will commit circa £10 million to peatland restoration, and there will be direct benefits to Scottish Water in certain areas through the quality of the water that you will have to deal with—you will save money because you will not have to clean some of it. What role, if any, is there for Scottish Water in investing in peatland restoration?

Simon Parsons: With regard to peatland restoration, the general area of catchment management is a relatively new one for us. We have been doing lots of work, supported strongly by SEPA, to understand how we can best manage our existing catchments.

As you said, we are hugely dependent on water that comes off peatland, which is a water source for the whole of Scotland. At the moment, we are very much in a period of understanding what we can do with the peatland that is currently there. To date, we have done no restoration work in and around peatland, but there is no doubt that we need to get more involved in the area in future. There are examples of very localised peatland improvements in the rest of the UK improving water quality directly.

The Convener: My apologies to Claudia Beamish. I just wanted to get that question out of the way. We can move on to the other public bodies now.

Claudia Beamish: I would like Simon Parsons to say to what extent Scottish Water was involved in the plan. Just a brief answer, please.

Simon Parsons: Our involvement so far will have been to respond to consultations around the plan.

Claudia Beamish: Thank you. I hope that I am not bombarding the witnesses with too many questions, but Simon Parsons has just highlighted governance in Scottish Water. If there are ways in which the witnesses feel that governance can help them to deliver on the climate change challenges that we are all facing, it would be really helpful if they could cover those in their answers.

Jo Green: To answer your first question, SEPA was involved in both the early and the late stages of the plan. Sessions were held with us—certainly on the outputs from the TIMES model.

The second question was on leadership, and whether our role is clear. The plan sets out a really clear direction of travel. Within that, I think that leadership is really important and could possibly be emphasised more in the plan.

The committee is probably aware that SEPA is trying to shift as an agency. We have a critical role to play around compliance and providing a level playing field in that regard. Compliance is the minimum expected of everybody. Given the pressures around climate change and resource use, simply achieving compliance will not get us to where we need to be. Therefore, as an agency, the big shift for us is how we secure compliance. We have a huge reach, so how can we support businesses and those who regulate across Scotland to do more, how can we support innovation, and how can we support people to reduce emissions, waste and use of water? That is a big drive for us in taking a different sectoral approach.

We are also going to trial new tools, such as sustainable growth agreements, which are voluntary agreements with businesses in which they not only achieve compliance but have aspirations to go further. We will use those agreements to get people to set aspirations.

We are not perfect, but we try to lead by example. We have reduced our own greenhouse gas emissions by 22 per cent since 2007. We have looked to rationalise our estate and to share with others—one of the objectives around that is to try to take a lower-carbon approach.

Claudia Beamish: Thank you.

Bruce Reekie: I believe that my colleagues from another section in Perth and Kinross Council have been involved in the consultation process. From my own reading of the plan, I think that it sets out a clear role and remit for local authorities.

At the moment, we undertake annual reporting through the public sector climate change duties. That information was submitted in November 2016. As Jo Green said, the council tries to lead by example. We have an internal low-carbon working group that looks at a range of activities that are undertaken by the council on energy management, building management, street lighting and waste management. Every year, we look to improve our position, and we will continue to report annually to the Scottish Government.

11:30

The Convener: We are hearing about public bodies that are switched on. From your experience, are there others that might require some support, guidance or direction—or a kick up the backside? Are there such beasts out there?

Chris Wood-Gee: I am sure that there are. Over the past few years, SSN has been working to develop the public bodies reporting framework. This year saw the first mandatory run of that, and, albeit that it is early doors, it is probably one of the better systems anywhere that is actually pulling all of the public sector together. I think that only five people did not respond, but we got the details from all the major players.

There are opportunities within that to build on, particularly in relation to the wider role that public bodies can play. That is about the leadership role that the public sector has, which might involve local authorities working with their communities in partnership to develop ideas, and SSN's role is to support them to take forward that work. For example, we have worked with communities in Dumfries and Galloway to develop ideas.

We recognise that there are massive challenges. For example, we know that 50 per cent of our carbon footprint is linked to buildings. How we deal with that will be particularly challenging, because reducing that footprint will be a fairly expensive business in a time of stringent financial circumstances. However, there are opportunities to undertake that work, an example of which is sewer-source heat. We have been discussing with our colleagues whether that could be used in the main council offices as an alternative heat source to gas-fired heating. We are exploring many options, but it will be challenging in the longer term.

Claudia Beamish: I will be brief, because time is moving on for everyone. Jo Green has commented on behavioural change. Will the panel

highlight any additional support that is needed to progress such change?

The knotty issue of conflict resolution comes up regularly when we discuss how to progress climate change issues. Are there any comments on any additional support that might be useful in that area, too?

Jo Green: Your first point links back to the question on leadership. There has been debate about the balance of technical solutions and innovation versus behavioural change in the draft plan. The scale of the challenge is absolutely clear: everyone and every single sector in Scotland is going to have to shift and play their part. We firmly believe that the only sectors and businesses that will be operating in the future are those that can do so sustainably. That will require leadership and behavioural change.

The draft plan has a part to play in emphasising the role that each and every one of us can play in leading that behavioural change. Quite a few people here have touched on that issue as it relates to their remit but SEPA is trying to think more smartly about what influences behaviour, including in supply chains and even on the investment side.

On conflict resolution, it is fairly familiar territory for our stakeholders to say that we are too close to business or that we are preventing growth. The issue is the need to have a common aim. Again, the Government can bring leadership to bear on what type of Scotland and what sustainable economic growth it wants to see. We are arguing about the same things, so an element of clarity and leadership is needed.

Maurice Golden: My question is for Jo Green. I appreciate that you say that you have made efforts to change the carbon footprint of your organisation, but the location of your offices is a challenge. The offices in Perth and Stirling and those on the M8 corridor are not easily accessible to all, particularly if a person wants to travel by train. I appreciate that you cannot do anything quickly about the matter but, in the long term, are you looking to locate in areas where it would be easier for people to cycle to your offices and to take public transport to access your workforce?

Jo Green: On our current estate, we have what we have, but such access must be supported in the future. We are currently installing an electric vehicle charging point outside our corporate office. We have to push on.

Jamie Pitcairn: I want to return to Claudia Beamish's question. Although we are not in the public sector, we interact with it regularly.

Chris Wood-Gee made a point about the wider opportunities for the public sector. I want to

emphasise the role of sustainable procurement and the leadership and governance opportunities that it brings. The vast expenditure of the public sector comes with responsibility, so procurement must be done in a way that drives the country in the direction that we want to go in. That covers everything from the way in which public sector-procured buildings are designed to the way in which services are procured. A lot of work has been done in challenging staff about whether something is needed or whether it can be leased.

There is not enough in the climate change reporting duties on the wider role that the public sector can play. The public sector is looking at its carbon footprint, its estate and its transport, but it is not really focusing on the influence that it can have through procurement. That is a big opportunity that has not been harnessed to date and that could drive change across the Scottish economy.

The Convener: We talked earlier about collaborative working across council area borders, particularly on recycling. Is there any wider collaboration going on, perhaps in developing a wider climate change implementation plan at a regional level?

Bruce Reekie: I am not sure, as another area in the council deals with that. Through the auspices of SSN, there is a lot of good work going on in the sharing of good practice. Regarding public sector climate change reporting, validation was undertaken by SSN and other partners.

Chris Wood-Gee: I guess that the answer to that question is yes—there is a lot of work going on. It might not be in formal plans but, as well as organisations such as SSN, all the energy officers in Scotland get together on a regular basis, and I think that transport officers do, too. There is a lot of collaborative working and sharing of experience.

Whenever someone says, "We have a wonderful idea that will save you another 50 per cent of your carbon footprint," the first thing that we do is go to somebody else who has already tried it. Across Scotland, we share experience about what works or does not work to find out whether something is a good thing to chase. We even support private sector organisations when they come up with good ideas—we say, "Have you spoken to so and so?" That happens across the whole of Scotland, but there is plenty more that we need to do on that.

The Convener: It would be useful for the committee to see some examples of that work—perhaps not right now, given the constrained timeframe that we are working on, but in the future.

Jenny Gilruth: With regard to behavioural change and public sector bodies—which has been

a common theme in today's meeting and previously—what role can the public sector play in supporting wider low-carbon behavioural change, and how is that reflected in the policies, proposals and delivery routes that are provided in the plan?

Chris Wood-Gee: In my day job, we have an estate that probably reflects what is happening for most industries and most households. If we try different ways of insulating buildings, changing heating systems and so on and we then share that information, it gives some comfort to other people who are about to invest in different technology—biomass or whatever—to know that it works. Local authorities and other public sector organisations are respected as honest brokers, so, if we can test some of those ideas to see whether they work and share that information with the wider public through an energy agency or other bodies, that is one way for us to provide leadership and comfort to people and to help them to meet very stringent targets.

Simon Parsons: One area for behavioural change that we have seen is water efficiency. In Scotland, we generally have an unmetered water supply, so people are not necessarily sure how much water they use on a day-to-day basis. However, people are aware of how much energy they use, and there is a clear link in households and businesses between the amount of water that is used and the amount of energy that is used. We are working with the Energy Saving Trust and a number of local authorities to trial water efficiency measures around Scotland as a way of rolling that out, which will impact on the best part of 50,000 people over the next few years. The trial is looking at making the link between waste—whether that is water or energy—and the potential savings that people can make.

Mark Ruskell: How we plan the physical development of our communities affects behavioural change. There is a planning review under way at the moment. Are any particular changes required in relation to planning, and how should those changes feed into the climate change plan?

The Convener: You have stumped them.

Mark Ruskell: An example of that might be making climate change mitigation a central purpose of the planning system—I do not know. It is an idea.

Chris Wood-Gee: That was mentioned at the Local Government and Communities Committee last week. Planning is a crucial part of how we go forward by, for example, putting houses in the right places and in walkable proximity to shops in order to reduce transport needs. Planning is a key issue, and we need to make sure that it is fed into the climate change plan because whatever we do

planning-wise will impact on how effective we are in meeting our targets.

Bruce Reekie: In Perth and Kinross, planning in relation to climate change is vital. The work that we have undertaken on supplementary planning guidance has addressed not only adaptation in relation to flood risk and flood risk assessments but forest and woodland strategies, zero-carbon and sustainable construction and zero-waste guidance. The aim is to develop that guidance as part of the planning system.

Jo Green: Absolutely. Planning influences many different things about the way in which we organise communities and even behaviour, and thinking about climate change is absolutely critical for the planning system in dealing with waste resources, infrastructure and types of travel. Partly through our involvement in the Stirling city region deal, we are trying to inject thinking around sustainability, active travel, local food and renewable energy sources. A lot of that ties into how the community is organised and the infrastructure around it—it is absolutely critical. The big push to tackle air quality, which has benefits in relation to climate change, can also result in much nicer communities to live and work in. It is all part of the picture, and it has to be.

The Convener: Thank you, everybody, for your evidence this morning. It has been most useful, and we look forward to meeting you again.

I suspend the meeting for five to 10 minutes for a changeover of witnesses.

11:42

Meeting suspended.

11:49

On resuming—

The Convener: I welcome everyone back to this meeting of the Environment, Climate Change and Land Reform Committee to continue our discussions of the Scottish Government's draft climate change plan. We have been joined by various stakeholders to take evidence on peatlands, and I welcome to the meeting Jim Densham from the Royal Society for the Protection of Birds; Anne Gray from Scottish Land & Estates; Dr Maggie Keegan from the Scottish Wildlife Trust; Professor Pete Smith from the University of Aberdeen; and Dr Emily Taylor from the Crichton Carbon Centre.

Good morning, everyone. I would like to kick things off by seeking your views on the emissions pathway for land use over the period from 2017 to 2032 as set out in the climate plan.

Dr Maggie Keegan (Scottish Wildlife Trust):

As far as land use and land use change are concerned, we are seeking to reduce the emissions pathway. Indeed, the Scottish Wildlife Trust talks about the creation of carbon-sequestering landscapes, if possible. The ambitions for peatlands as carbon sinks are very good, and there are good ambitions with regard to forestry, although we would like to see native woodland included. However, we do not think that the plan is ambitious enough with regard to lowering emissions in agriculture; it says nothing about blue carbon; and there is no mention of a land use strategy, which would be helpful in creating these ambitious carbon-reducing landscapes.

The Convener: We will come to the land use strategy and blue carbon in due course.

Professor Pete Smith (University of Aberdeen): Looking at figure 22 on page 122 of the plan, I find it difficult to tell the contribution that each component of the land is making to the targets. If I remember correctly, RPP2 listed each of the policies and proposals separately, and as far as transparency is concerned, I think that it would be easier for anyone to understand what has been proposed if the various aspects were disaggregated a little. That would allow us to see the relative contribution that forestry, peatlands and other types of land use were making to the overall targets.

The Convener: That was useful.

Dr Emily Taylor (Crichton Carbon Centre):

The work on peatlands is excellent. It is really nice to see a commitment to long-term sustainable peatland management, and I am happy that the plan recognises peatlands as an incredibly important carbon store.

Anne Gray (Scottish Land & Estates): I do not have a lot to add, except to say that, as an organisation, we recognise that the land use sector is the only one that can result in negative emissions. We therefore see our members and other farmers, landowners and foresters across the country as being really critical to the delivery of climate change mitigation.

Jim Densham (RSPB Scotland): We very much welcome the policies on peatland restoration, because it can make considerable savings to the atmosphere with regard to carbon emissions from damaged peatlands.

As for forestry, it is a bit disappointing that the envelope graph tends to go the wrong way, but as we know, that is because of past policies and not planting enough trees. However, we understand that, as we move towards 2032 and beyond, emissions from land use will become negative again. If we keep up current tree-planting rates—

we might come on to that issue later—we will achieve a more positive impact for the climate.

The ambition for agriculture is disappointing. I found it useful to read in the Scottish Parliament information centre briefing that it would mean a 0.9 million tonne saving to 2032, but that is less than 1 per cent a year. In other words, it is a year-on-year reduction, and it is really not enough as far as that sector is concerned. We need to move more quickly in that respect.

The Convener: We will touch on agriculture and forestry, but our principal focus today is on peatland. Our sister committee will focus more on the agricultural side of things.

With regard to the practicalities of delivering on the targets, can you say what the challenges and benefits might be? In that respect, I am thinking beyond the obvious issue of sequestration to, for example, job creation in the rural economy.

Dr Keegan: The challenge is to get the right processes in place to deliver restored peatlands and to ensure the ease of that process and future funding streams. We took part in the peatland action project when it was running, and we had six sites that needed restoration. However, another challenge is knowing which sites need to be restored. Landowners and land managers might not necessarily know the condition of the peatland, but we were lucky to have had management plans and to have already done some research. As a result, we knew that six lowland raised bogs needed to be restored.

One challenge is to have advisers to help land managers to identify what needs to be done, because certain pioneering techniques such as the peat bunding and sphagnum reseeded that we carried out might need to be used. Those are technical things, but it is possible to create jobs. It was discovered through the peatland action project that the companies were not necessarily available in Scotland and a company from Cumbria came up to do a lot of the peatland restoration. Surety of money in the future is a challenge—if a company is to be set up, it needs to have the confidence that it will still be viable in five to 10 years.

Dr Taylor: Building on that, from the challenges come the opportunities. In meeting our targets, the initial challenge will be the lack of well-trained contractors that can deliver the restoration work on the ground. We are vulnerable to big peatland projects kicking off in England, because they suck up all the contractors down there, with the result that they do not come up to Scotland for the smaller jobs. If we have a long-term commitment to funding, so that local contractors can feel that they can invest in their staff and equipment, within two to three years we will have the resources to do

the work ourselves. That is great; we might even get to the point at which estates take on the work themselves. I know people who have spoken to estate owners and they have said that if they could get money for peatland restoration, they would do it in-house and part-fund a full-time member of staff on the team.

Initially, the capacity and resources might not be quite there to enable us to deliver on the targets but, with investment, they soon could be.

Anne Gray: I endorse what Maggie Keegan and Emily Taylor said. The plan sets out that we need funding and awareness raising, and it says that we must work in partnership if we are to deliver such restoration.

The targets are challenging; 20,000 hectares a year is a lot of peatland to restore. The funding that we know that we have got through the public sector would meet about half of that. I am not suggesting for a minute that the public sector should stump up the other half, but we need to look at where other funding might come from to make meeting the target possible.

We also need to look at the idea of natural capital accounting. The private sector might want to offset emissions or to look at offsetting its business impacts on biodiversity, water quality and so on, so we might need to look at that. The International Union for Conservation of Nature peatland code has been introduced to try to achieve a shift of private sector money towards restoration, and it is worth considering that.

Continuity of funding is important, because if we are to deliver on the targets, we need good-quality peatland officers and we will only get those if we can retain them. We also need good-quality contractors and, as Emily and Maggie said, we will only get those if we can retain them. It also takes a while to plan the really useful landscape-scale projects; we need to be planning two or three years in advance.

The Convener: We asked the Government officials who gave evidence to us whether the package of funding and the budget for next year is to fund restoration or whether we will get sucked into having to provide funding for fencing to protect restored peatland from the ravages of deer. That is an interesting issue that arises from all the work that is coming down the track.

Anne Gray: That is a completely fair point, but here we get into land use strategy territory. Even in the plan, we take a sectoral approach. We talk about the uplands and the lowlands, but there is sometimes more conflict and debate about what the uplands should be producing. We need to have a balanced approach that allows trade-offs to be made and which recognises that we cannot get all the things that we want the uplands to deliver. It

is important that we put a bit of effort into delivering the regional approach that the land use strategy advocates.

The Convener: We will explore the land use strategy in that context in a moment.

12:00

Jim Densham: On the practicalities, there are different ways to restore peatlands, but we strongly promote the peatland action programme, which has worked really well in the past few years. It had dedicated officers to co-ordinate work in various areas. Those people are on the ground and they know the landowners and land managers, they know where the issues are and they know the areas that need restoring. They can go out and raise awareness, share experiences and be a hub for activities to spread out the money. It is important to do that rather than take a more hit-and-miss approach, whereby people just say that they have a bit of land that they can restore. The peatland action programme is important, because it has at least six dedicated officers in various regions working in trusted organisations.

We also need monitoring so that we know what has happened. In the past, it has been a bit hard to understand how much has been restored through different measures, so that will be important in future. The peatland code, which was mentioned earlier, aims to bring in private funding to mix with the public funding to spread through the programme. That is another thing that really needs to start flying and get going.

As has been mentioned, the agriculture section of the plan contains a proposal for payment for carbon sequestration, which is aimed at farmers, although it needs to be aimed at all land managers. We need to think about the situation post-Brexit and future common agricultural policy payments. We should consider how we reward farmers who have just restored land and who do not want to put sheep, for example, back on it. We do not want that land to be damaged again, so we need to reward farmers for carbon sequestration and for the other public benefits that they provide; we have heard about the water-quality benefits. It is important to do those sorts of things to reward people for providing public goods.

The Convener: What scale of projects should be supported? What type of peatland should we target as a priority—the badly degraded stuff or the land that is the easiest to repair?

Dr Taylor: On the scale, initially, we need to value the smaller projects. We are still at the stage at which a land manager might decide to do some restoration on a small and discrete area that is out of the way because they need to see what it looks

like, how their land responds and how they can continue to farm around it or with it. That is how the projects that I have been involved in have worked. After that small area has been restored, we can then build up to consider where that can be replicated across the estate.

There is definitely still a need for smaller test sites as an initial demonstration to others and to landowners. We can then build up to much larger projects. Increasingly, however, we are talking about catchment-scale restoration. There is now a huge appetite to look at peatlands not just for carbon reasons—water quality is now a big issue for fisheries interests and for those who are interested in water supplies and issues of acidification. That is bringing a lot of people together. For instance, fisheries trusts are getting more and more interested in peatland restoration. We are all aiming for landscape-scale restoration, but we need to be practical and realise that people still need to be persuaded that it will work for them, so we still need to value the smaller projects.

The Convener: Which type of peatland should we prioritise?

Dr Taylor: To get the biggest carbon benefit, we would go straight for the actively eroding sites, where peat is literally blowing off or washing off the lowland raised bogs. That will give the biggest carbon savings. However, those are the most expensive areas to restore, so simple and easier-win projects such as ditch blocking can often be much quicker to get off the ground. If we have ambitious annual targets, we will need a mixture of those things to happen to get the area of restoration that we need.

Jim Densham: We need to prioritise, but we need to do it all. At some point, we have to restore all that damaged peatland—the plan says that it is 600,000 hectares. Therefore, we need to do a bit of a mix. We need to remember that the areas that are least damaged can return to a pristine state or a near pristine state earlier than others and can provide other benefits, especially biodiversity and water-quality benefits, in a much shorter timescale. Those areas are also perhaps less likely to give off methane and other emissions. They get to the point of actively sequestering carbon much more quickly. We know that restoration is not just about cutting what is being lost now; it is about getting to the state in which areas are sequestering between 1 and 2 tonnes of carbon per hectare every year.

The Convener: Maggie Keegan wants to come in. I ask her to cover the co-benefit of improving biodiversity.

Dr Keegan: I was just about to mention that. The six sites that we looked at were lowland raised bogs and, as far as turnaround is

concerned, it cost £150,000 over two years to undertake the restoration work on all those sites. Some of them are nationally important as sites of special scientific interest, and they have been brought back to recovering status because of our work. As a result, we have also been able to deliver biodiversity benefits, because what we are really doing is restoring ecosystem health across that type of landscape.

There is low-hanging fruit such as the putting in of plastic dams, but that sort of thing can be delivered through the Scottish rural development programme or by taking sheep off the hill. However, techniques such as sphagnum seeding and building bunds to hold back water have been delivered not through SRDP but through peatland action, and we will have to see what methods will be used as we move forward. After all, some of the methods are quite sophisticated, and it would be difficult to expect a landowner or land manager just to jump in and do such work without specialised help.

The Convener: So we will need to build some capacity when we make decisions about priorities.

I know that colleagues have their own questions to ask, but I want to wrap this section up with a final question. What sort of monitoring framework do we need to put in place to ensure that we get the full benefit of that work and that we can say with some accuracy what such investment is delivering?

Dr Taylor: The key thing with monitoring is to look at the success of restoration. Some of the techniques that we are using are tried and tested; for example, ditch blocking with peat dams has been great. Initially, we thought that there would be a 10 per cent failure rate, but the figure—certainly for the sites that peatland action has worked on—is nothing like that. We are also using other more novel techniques, and the beauty of the peatland action project as a stand-alone fund is that we can trial new things that might not have worked in the Pennines but which might work in, say, the Cairngorms.

Such things need to be monitored, but the monitoring itself can be very simple. For example, is the bare peat being covered? How long does it take for the bare peat to be covered up? Are the peat dams holding the water back? Initially, that monitoring will be undertaken by people on the ground—indeed, peatland action officers went out and monitored some restoration projects—but, in the future, remote sensing might well be used for monitoring purposes. Realistically, if there are at least 600,000 hectares of degraded peat and something like 4,000 hectares of bare peat way up on top of the Cairngorms, that will not be easy to access, and remote sensing will be key as we go forward.

Dr Keegan: Monitoring is essential, not least because we need to demonstrate the impact of the money that is being spent and to improve accounting in any future use of the TIMES model. If, in the end, we are trying to create a carbon market, we need to validate what is happening and to know the best techniques to use.

Professor Smith: My response partly relates to the last question that was asked, but it also covers what is missing. With regard to what the report says about peatland restoration, we get the biggest bang for our buck by reducing on-going carbon emissions from degraded peatlands. However, the subtraction is that we have over a million hectares of peatlands that are not degraded. Of course, they should not be taken for granted, because they store a huge amount of carbon. They might sequester relatively small amounts, but they have large stocks, and if we take them for granted and do not monitor them to ensure that they are not becoming degraded, we might be missing a big trick.

In future, overall monitoring will require on-the-ground action to look at restoration projects, but we will also need ground troops with boots on the ground to back up remote sensing in not just the restored areas of peatland but all over the peatland estate. We need to monitor the areas with very large carbon stocks to ensure that they are not slipping out, because they are very important to biodiversity.

The Convener: What about the use of peat for horticultural purposes?

Professor Smith: Frankly—I know that this is an elephant in the room—I think that that sort of activity is inconsistent with our climate targets. Just as the UK has moved to phase out coal, we ought, in my opinion, to have a plan to phase out the horticultural use of peats.

The Convener: There seems to be some agreement around the table on that. Does anyone else want to come in on that specific point?

Dr Taylor: It is hard to push the argument for doing ditch blocking to landowners because of what they see going on in the lowlands, with big, open and bare peat sites being harvested. It is very important that we put a stop to it as soon as we can.

Dr Keegan: Recently, we have objected to some planning applications for peatland extraction from lowland raised bogs. Frankly, any planning authority that gives consent for such applications is going against the climate change duty. There is no mention of horticulture within RPP3. Until products such as peat-free compost become cheaper, consumer behaviour will not change—consumers will still buy peat compost because it is cheaper.

The Convener: How urgently do we need to address the issue?

Dr Keegan: In terms of overall emissions, peat compost is not the biggest elephant in the room. However, it would be a simple matter to address if we worked with the companies that sell peat compost. An educational intervention is needed.

Professor Smith: There is an important educational role. Significant behavioural change needs to happen throughout the period covered by RPP3. On the consumption side, if we, as consumers in Scotland, consume peat from elsewhere, we still have a climate impact, even if it is not within our territorial boundaries. There is an argument for moving towards having no horticultural peat sold in Scotland, not just ensuring that none is produced in Scotland.

Claudia Beamish: I have a related question that connects to behavioural change and action. There has been quite a lot of mention of estates, the contribution that they can make and the training that they need. I have some experience of the issue that Maggie Keegan mentioned about lowland raised bogs and there has been quite a lot of community involvement at Langlands moss, Braehead moss and other places. To what degree can community involvement and even citizen science support the aims that we all have?

Dr Taylor: Public interest is growing in getting involved in peatlands and understanding the benefits of managing them well. However, it can be difficult when we are talking about the difference between the uplands and the lowlands. People generally live in the lowlands, rather than the uplands, which are quite hard to access and very brown and bleak so it is hard to build the connection with people.

We can come from the angle of landscape—in Dumfries and Galloway, we are looking at a landscape partnership project that features peatlands quite heavily and we have communities that are fully engaged and looking to run water quality sampling campaigns and get involved in the research that will inform how the area is managed. The appetite is there but the sites can be tricky.

Jim Densham: Members may have noticed that I am wearing my green heart for show the love week, which is all about sharing the things and special places that we might lose as a result of climate change. Where people are close to such places it is perhaps easier to get them involved—for example, for lowland raised bogs close to the central belt, it might be easier to get people to understand the links between climate, habitat loss and their own lives. That is possible even in far-flung places such as our RSPB Forsinard Flows reserve in Caithness and Sutherland, which is a

huge area where we are doing a lot of work and showing it to people.

The more that we can communicate that sort of thing and help people to understand, the more likely it is that people will put two and two together and understand that using peat-free compost, looking after nature and looking after carbon in the soil are really important.

12:15

Mark Ruskell: How satisfied are you with some of the good-practice protocols that have been established with other sectors that also use the uplands? For example, the onshore wind sector and the forestry sector are hugely important for reducing our emissions, but they could conflict, through poor design, with the aspirations to restore peatland areas. Alternatively, they could enhance peatland restoration through financial support or good design. To what extent does the good practice in each of those sectors satisfy you?

Dr Keegan: In relation to wind farms or renewable energy, we would advocate not putting turbines on deep peat, by which we mean more than 1m, because of the volume of peat that comes out of the ground. However, we are still seeing applications for turbines on deep peat without good restoration projects and actually, the businesses that are out there could be doing a lot on peatland restoration where they are plonking their wind farms.

We would not condone commercial forestry or even replanting on peatland. When I was in environmental consultancy, I was in a forestry plantation surveying for a substation. The peat depth there was more than 5m and there was a proposal to plonk a substation on that site, which would have meant digging out all that peat. There was a suggestion about burying the peat in a borrow pit, with the thought being that it would survive for however many years, but it would actually be a hazard. Where there have been coniferous plantations on deep peat, there should be efforts to try to restore the peat and let those sites recover and to put the commercial forestry in more appropriate places.

Dr Taylor: It is often not very clear what the operators of wind farms have done to mitigate their impact on peat. It is difficult to get information about what they have carried out. We may be able to see the environmental impact statement about what they plan to do, but what has happened on the ground is hard to decipher.

I do not think that peatland is considered at the planning stage of a wind farm. There may be an option to put a track through one intact hydrological unit of bog. The operators do not seem to plan to move the track to try to save as

much bog as they can. A lot more can be done at the planning stage of wind farms and at the monitoring stage. There has been interaction between peatland action officers and clerks of works on wind farms who have worked on peatland restoration. That needs to be built on, because we could be sharing far more best practice on ditch blocking and restoring bare peat.

There is certainly stuff that can be done on wind farms and in forestry. There are local examples where peatlands have been really well integrated into forest design plans, and really excellent progress is being made by Forest Enterprise Scotland down in Dumfries and Galloway. However, the woodland planting targets that are set are a constraint, so there is definitely a conflict.

On the peatland side, we are less happy to see the drive to just look at the yield class of trees in order to determine whether we should replant a deep peat area with conifers or whatever. We think that the yield class is way too low, and we need to take into account the long-term carbon stock in the peat, which could be damaged by two rotations, three rotations or even one rotation of commercial forestry.

Jim Densham: RSPB Scotland has done some work with the peat carbon calculator, which we recognise is a useful tool. However, it needs to be updated as we understand more about the impacts on peatlands. Scottish Natural Heritage has a peat habitat map. One thing that we would say about that is that it tends to describe category 5 as deep peats, but not with peatland habitats on it. It is almost saying that if there are trees or other habitats or vegetation or other things on that deep peat, it is not restorable. We take issue with that—we say that those areas are deep peat and they can be restored. It is very important to classify category 5 on that map as restorable.

For us and for the Forestry Commission Scotland, deep peat is anything more than half a metre—50cm. That is generally classed as something that the commission will not plant on and that is really great, but we need to understand more about the shallow peats—anything less than 50cm.

In evidence to the Rural Economy and Connectivity Committee last week, Robin Matthews talked about new work that the James Hutton Institute is doing on the impact of tree planting and disturbance on soil carbon, which will be published through ClimateXChange. It is important to keep that up to date. Planting trees alone is not always going to save carbon immediately; it might take a long time—perhaps 10 to 15 years—to get to the point of starting to save carbon. The right tree in the right place is important.

Anne Gray: I think that it is about doing the right thing in the right place. I am going to mention the land use strategy again—that is what it is about, really; it is about looking at everything in the round and working out where we get best value for the things that we want to see delivered in particular areas.

The Convener: Let us raise the issue of the land use strategy, which Anne Gray has rightly attempted to do a couple of times. There is a distinct lack of mention of the land use strategy in the climate plan. What are your thoughts on why that might be?

Professor Smith: The TIMES model works on a sectoral basis. Lots of greenhouse gas accounting is done on a sectoral basis. That is why agriculture is separate from land use and from other aspects too.

The land use strategy tries to do the opposite and treats land use as an integrated whole. In terms of greenhouse gas accounting, since 2006, the Intergovernmental Panel on Climate Change's revised guidelines for the land use sector have been bringing together agriculture, forestry and other land uses, so it seems sensible to treat the land as an integrated whole.

Parts of the report on agroforestry in the agricultural sector say that we need to plant more trees in agricultural landscapes. That is treated independently of the forestry aspects in the climate change plan, and there could be much better linkages. It would incentivise better landscape management if all those things were considered together in the same area.

It is to do with the sectoral breakdown in the TIMES model. The TIMES model is used to assess what the mitigation pathways are. We could still reintegrate the sectors afterwards and present them in an integrated way.

The Convener: There will be the opportunity for the committee to explore that with the cabinet secretary in a few weeks.

Dr Keegan: I looked back at RPP1 to see what it said about the land use strategy in 2011. It said:

"Enabling land-based businesses to succeed in a low-carbon economy is central to this agenda."

It also said that

"the Strategy will help Scotland get more from its land, including the contribution that can be made towards meeting our greenhouse gas emissions reduction targets",

so the strategy was extremely important in 2011. Its implementation is difficult, but if it is seen as a tool that could be used at the catchment scale, we could deliver multiple objectives.

Dr Taylor: There is a huge appetite for the land use strategy, but on the ground, people just do not

know how it is going to work. Demonstrating how the land use strategy will be implemented is vital.

Anne Gray: It is surprising that the land use strategy is not referred to in the draft climate change plan, as it came from the Climate Change (Scotland) Act 2009. That is an omission and the strategy should be in the plan.

There is a difficulty at the heart of the plan in that, historically, we have thought very sectorally. The land management sector and the Government think sectorally and everything is set up in a very sectoral way. A big behaviour change is required across the board to make us think in a more rounded and holistic way.

The Convener: We need to take that forward as a committee with the cabinet secretary.

Before we leave the land for the sea, we have one slightly tangential question from Emma Harper.

Emma Harper: I am aware that peatlands are the optimal way to sequester carbon but I notice that the climate change plan does not talk about the benefits of conservation tilling. I know that the Rural Economy and Connectivity Committee is looking at that.

The convener has a constituent who is practising conservation tilling, with its associated benefits.

The Convener: I hope that it is more than one constituent.

Emma Harper: One of the submissions in our papers says that an increase of 2 per cent over 10 years in conservation tilling

"would be sufficient to mitigate all of the annual ... agriculture"

emissions. Please comment.

Professor Smith: I can comment on that. The evidence review for the agriculture sector I think refers briefly to tillage practice as being one of the methods that could be used for carbon sequestration. However, the claim that the member refers to, about how much could be done, is vastly overblown.

There are a number of issues. Conservation tillage can help to sequester some carbon, but the amount is often overstated. The practice tends to concentrate the carbon in the surface layers, and it is the carbon in the surface layers that is then measured, whereas if the land were ploughed, the carbon would be put further down. When we look deeper, we find that there are actually losses in the lower layers, which compensate for the changes in the top layers. There are also changes in the bulk density, which is basically how fluffy the soil is, which mean that that if we go back and

measure at a given sampling depth, we are not measuring the concentration in the same amount of soil.

There are, therefore, a number of technical issues associated with conservation tillage, but it does have many benefits. It can help with water-holding capacity and soil workability. I am not knocking it, but it is one of those areas where there have been some largely overblown claims about its climate mitigation potential, which we should be wary of.

The Convener: To what extent has it been exaggerated? What actual figures are you aware of?

Pete Smith: Some of the figures for conservation tillage suggest that doing it could offset a large proportion of the carbon. The best values that we have for our sort of climate are about 0.1 to 0.3 tonnes of carbon per hectare—less than 1 tonne of carbon dioxide—and, even then, there could be issues associated with the data, such as whether it was measured at an equivalent depth.

The Convener: It is still worth doing, then.

Pete Smith: It might be worth doing, but we should compare it against all the other mitigation options in the agriculture sector, such as reducing overfertilisation. Nitrogen fertiliser produces N_2O , a molecule of which is nearly 300 times more potent than a molecule of CO_2 . There are other measures that we should consider in addition to conservation tillage. It is part of a portfolio of measures and it is worth doing—I am not saying that it is not—but it is not the magic bullet that it is sometimes proposed to be.

The Convener: Are there any other views on that, or are we content with that expert assessment?

There are no more views, so we will move swiftly on to the sea. I call Claudia Beamish.

Claudia Beamish: I start with a statement rather than a question. From the discussions today, it seems that there has certainly been some progress on peatlands between RPP1, RPP2 and now this CCP. I want to turn our thoughts now to blue carbon. Those of you who have been able to make the time to follow our committee scrutiny will know that, in the first evidence session on the issue, the Scottish Government officials acknowledged that blue carbon is not part of the third plan. You will be aware that RPP2 at least had a small box that highlighted blue carbon. An SNH report that was published last week said that scientists estimate that

“The amount of carbon stored within Scotland’s inshore MPA network is equivalent to four years of Scotland’s total greenhouse gas emissions”.

The International Union for Conservation of Nature has, with international partners, reported on coastal blue carbon. Why is blue carbon missing from the CCP? If it was put into the plan, how would that look?

12:30

Jim Densham: We are in the same place with blue carbon as we were with peatlands some time ago. Obviously it is not in the inventory. We are carrying out research to understand more about it; we know that it can have benefits, but we need Scotland-specific figures so that we can understand exactly what is happening.

More work is going on; indeed, I recently met a researcher who was looking at carbon storage and sequestration in the marine blue carbon harbour habitat of sea grass meadows. A previous SNH report, which came out before the marine protected areas report, provides quite a lot of detail about the different habitats; what they can do to store and sequester carbon, which is significant; and how we can get to the same position—or around about the same position—in some of those habitats as we have reached with peatland. As the MPA report has highlighted, there is a lot of sedimentation in inshore waters; that, too, stores carbon, and as long as it is kept secure, it will store it for a very long time. A lot more sequestration can happen in sea grass and salt marsh habitats along our coasts, and we want all of that to be understood better and brought forward.

As RPP3 was being developed, we asked the Government what was going to happen with blue carbon, without very much result. Now we see that it is not even mentioned in the document, and it is good that the committee is pushing for it. We want it to be reinstated not just so that we can research it more and understand it better but so that we can seek to put in place the same protections for blue carbon habitats as we see in MPAs and restoration measures. After this, I am going to the Sniffer flood risk management conference to talk about coastal management and change and the need for more managed realignment of our coasts. We need a blueprint for our coasts that takes in everything, especially our soft coasts, and which makes it clear that blue carbon habitats are really good at two things: buffering us against sea-level rise and future coastal change and protecting us through the sequestration of more carbon. Again, we need to bring different Government departments together to ensure that we understand the bigger benefits.

Dr Keegan: Funnily enough, in anticipation of RPP3, we prepared a briefing on blue carbon, which is available on our website. Then we found out that it was not in the plan. In preparing that

briefing, we discovered a lack of information on what we have and where it is. We just do not know where all these sea grass beds and so on are. Indeed, that might be one reason why blue carbon is not mentioned in RPP3—the authors probably thought that there was not enough information. However, that does not mean that it could not have been the subject of a proposal; after all, there was a proposal in the previous report to investigate the issue more.

I also note that blue carbon is mentioned in the national marine plan. As with peatlands, there could be a recognition of not just the carbon sequestration but the biodiversity potential of MPAs and a suggestion that what can happen in such areas should be considered, particularly in the case of, say, maerl beds, which store a lot of carbon over a long period of time.

The Convener: Just to be clear—and I think that Jim Densham touched on this—I recollect that we went for years doing very little about peatlands because we were told that there was no accepted or recognised measurement. Are we in the same place with blue carbon? I am not trying to make excuses, but I want to be clear about this for the record. Is there an accepted international measuring mechanism that would allow us to count this into our targets?

Dr Keegan: There is an IUCN report that has looked at the blue carbon potential of mangroves, but there is nothing that is specific to Scotland—

Claudia Beamish: Perhaps I can stop you there. As a layperson, I have had only a brief look at that report, but I know that it refers to tidal salt marshes—I think that it even mentions that in its title—and sea grass meadows. It might have an international focus, but a lot of work on peatlands was international at first and then proved to be transferable.

I am sorry to have interrupted you.

Dr Keegan: Perhaps we do not know Scotland's full potential in this respect, because a lot of it has been estimated on the basis of samples taken from across the country rather than from known, particular areas, whereas we have a very good handle on where our peatlands are.

The Convener: Did you want to come in here, Jim?

Jim Densham: Yes. As I have said, there are different areas to take into consideration. In the sea grass study, seven Scottish sites were looked at and 57 tonnes of carbon per hectare were found in the top 50cm. People are doing standardised estimations on a site-by-site basis around Scotland; it would be fantastic if we could find the rest of the habitats but, as with peatlands, it is all about the science getting done and understood

and the issue being taken further towards the IPCC. Pete Smith might know more about that than I do, but I know that the Centre for Ecology and Hydrology will very soon bring out the figures that will go into the inventory for peatlands. The issue needs to get to the stage of being fully accepted, and then an organisation will be tasked with going away and getting standardised figures to put into the inventory. As for any other habitat, we need to get to the point of everyone accepting that these habitats are good for blue carbon and of having standardised figures that can go into the inventory for different types of habitat.

Professor Smith: The simple answer is that the science is less mature than it is in other areas. Dr Keegan says that we know where the peatlands are, but putting together where they are, their depth and their condition for the peatlands data is really quite a challenge, even though they are above ground. Therefore, it is no surprise that we do not know where all the blue carbon is around our coastline, and I think that we should be putting more scientific effort into that.

Moreover, blue carbon has probably received less attention because, as with peatlands, although we are talking about a large stock of carbon, it might be difficult to see how we can manipulate it. With most land, we can increase carbon by manipulating vegetation, the soil and so on; however, with areas where there might already be a large stock of carbon, we might want to protect it but there might not be much that we can do to increase it, except through the kind of restoration that we have been doing for peatlands.

Those might be reasons, but another pragmatic reason might be that the TIMES model's representation of the land, let alone the coastal system, is very rudimentary. Building in such components might be another target for us as we further develop the model that we are using to set our emissions reduction pathways.

The Convener: That is another area that we will explore with the cabinet secretary in a few weeks' time.

Did you wish to ask a question, Mark?

Mark Ruskell: Just a brief one, convener. On a point that Jim Densham made about what was effectively climate adaptation, I note that, last year, we took evidence on coastal realignment, and there is perhaps a lack of focus on that in the plan. In general, in this plan, which is about climate mitigation, is there enough read-across to areas of adaptation with regard to the environment and the vulnerability of our peatlands and coasts to climate change? Is there a synergy between those two aspects and, if so, is it adequately addressed in the plan?

Jim Densham: There is definitely a synergy that should be explored further. I know that adaptation is mentioned as one of the co-benefits in the detail of the plan, but if we do not restore peatlands, not only are we not going to get the carbon benefits of stopping emissions but they will get into a worse state because of the drying and wetting that come with climate change and which is not good for peatlands in general.

As I have said, it is the same with coastal habitats; we need to bring those things together. In its recent report on how we are doing in adapting to climate change, the Committee on Climate Change said that there are things that we need to get better at. The coastal issue gets lost between land and marine policies, which is why I said that we need a real blueprint for coastal change. People understand this sort of thing; with regard to climate impacts, they get that the sea level is rising, that there will be coastal flooding and so on. If we are to make people aware of climate impacts, we need to focus on the coast, make something happen, have a blueprint that helps us to store and sequester carbon and adapt our towns and communities in future.

Professor Smith: Broadly speaking, I think that most of the mitigation actions that we take in peatland restoration not only deliver mitigation but improve resilience and, to some extent, future proof things. There are combined mitigation and adaptation co-benefits.

Given that peatlands exist where the temperature is below a certain threshold and where it is wet enough for, say, sphagnum to grow and suchlike, it might be worth investigating further whether there will be any threats to the current distribution of peatland as the climate warms from 2050 to 2100 in order to future proof our restoration and improve resilience against future climate change threats. It is very important that we consider adaptation when we put forward mitigation proposals.

The Convener: On that note, I thank the witnesses very much for their attendance and for what has been a most useful evidence-taking session. I look forward to meeting up again in due course, as I am sure we will.

At the committee's next meeting, on 21 February, we will take evidence from the Cabinet Secretary for Environment, Climate Change and Land Reform on the climate change plan.

As agreed, we now move into private session, and I ask that the public gallery be cleared.

12:40

Meeting continued in private until 13:00.

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